THREADING CATALOG

ISCAR's Reference Guide for Threading Applications



Member IMC Group

ISCAR

www.iscar.com

Dear Thread Maker, Customer and Colleague,

As a manufacturer of cutting tools, our main objective is to ensure optimal production with the most advanced and high-performance tools that meet the requirements of modern technology.

Machining the thread faster and more accurately reduces processing time and cost, and also lowers the possibility of manufacturing defect parts. Although the cutting tool is often considered to be of minor value, it is the key to increasing productivity and quality.
At **ISCAR** we understand this fact well, and our ongoing research and design activities are aimed at creating cutting tools that will improve overall performance and make the threading process more effective.

Intensive research and development have resulted in innovative and effective solutions for our customers' diverse range of requirements. As the variety of **ISCAR** tools is vast, sometimes it can be a challenge to make the right tooling decision for specific manufacturing needs.

We hope this threading catalog, will help you with the right tool selection and that it will be a useful supplement to the other **ISCAR** catalogs and leaflets.

This threading catalog, is specifically divided into number of main chapters, taking into account specific features of threading and highlights the latest threading solutions.

Introduction with general formulations such as parameters and thread classifications, standards and their field of application, accuracy, possible ways to machine threads, and general information about **ISCAR**'s Threading Lines.

Thread turning , Thread milling , Taps , Drilling chapters introduce the methods of threading and milling tapping and Pre-threading drilling, recommend the right **ISCAR** products to be used for each application, and explain how to select and use the correct tools.

Cutting Materials Grades and Engineering Materials introduces various types of **ISCAR** grades with their recommended range of use, and material groups according to **VDI** 3323 standard.

We hope this catalog will be a useful tool and helpful guide to thread machining.

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INTRODUCTION



Introduction

A lot of things around us, whether it be everyday objects or industrial products, have a thread connection. The history of thread connections began many years ago.

The first fastening parts with threads were used in ancient Rome. However, due to the high cost, they were only used for jewelry, medical instruments and other expensive products.

Bolts and nuts were widely used in the 15th century. They connected the mobile segments of armor and parts of watch mechanisms. The first printing machine, invented by Johannes Gutenberg between 1448 and 1450, had threaded connections - its parts were fastened with screws.

At the beginning of the 17th century, a threaded connection appeared similar to the type found today. Initially, the thread pitch was only in inches until the French introduced the metric thread only at the beginning of the 19th century.

At the present time, parts with threads are widely used in many different industries.

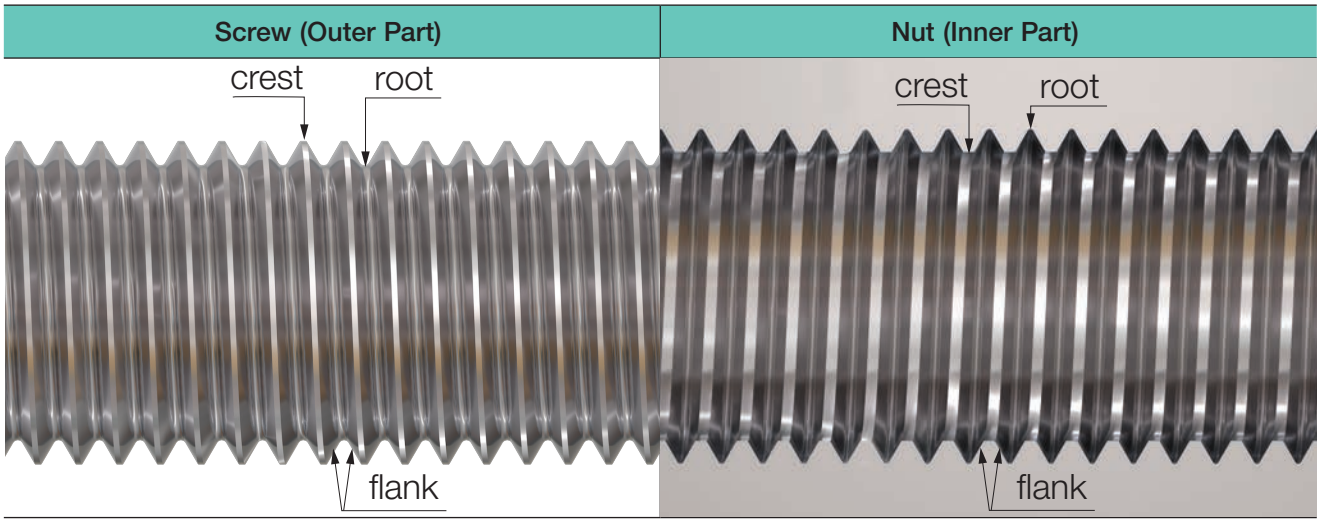
What is a Thread?

A thread is a surface formed by a helical movement of a flat contour along a helical line. The basis of threading is the principle of obtaining a helix. There are many different standards, types and ways of producing threads. In many cases, the thread process occurs in the final stages of manufacturing the part, thereby occupying a responsible role for obtaining quality parts. The key to high quality and efficient thread processing is a correct and well-composed technological process.

The assigned thread machining strategy is directly related to the correct selection of the cutting tool. It is the tool, a small and seemingly minor element in the production of threads that can significantly increase productivity and quality. **ISCAR** understands the role of the tool, particularly in threading and metal processing in general, and aims to provide our customers with a reliable tool that will meet their requirements.

Thread Parameters

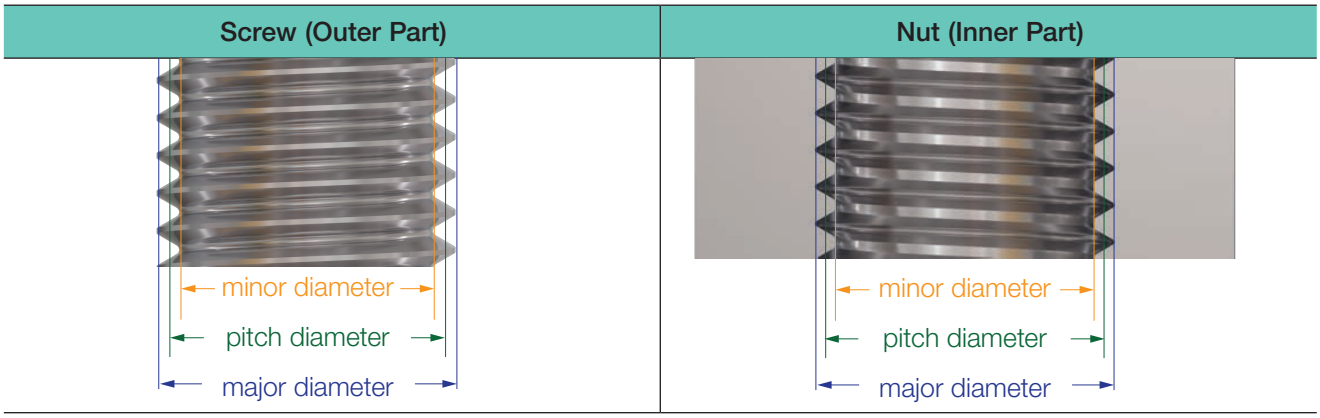
Thread can be defined as a continuous helical ridge on the nut (inner part) or screw (outer part) of a cylinder. The ridge is called a crest, and the dip or space between each crest is referred to as the root. The side of the thread surface that connects the crest and the root is called the flank.



Thread geometry with value, angles, radiuses, etc. contain tolerances defined in thread standards. The main parameters of thread geometry and thread functionality are: diameters, pitch, lead, helix angle, lead angle, and truncation.

Diameters

There are three main thread diameters: major diameter, pitch dimeter and minor diameter. Value and tolerances for each diameter differ according to each thread standard.



- Major Diameter – the largest diameter of two extreme diameters.
  In external threads, the major diameter defines the end limit of a thread profile and in internal threads, the major diameter defines the start of a thread profile. Therefore, for external threads the major diameter is an outer thread diameter and for internal threads, the major diameter is an inner thread diameter. Usually the major diameter of external threads is smaller than the major diameter of internal threads, if the threads are designed to fit together.

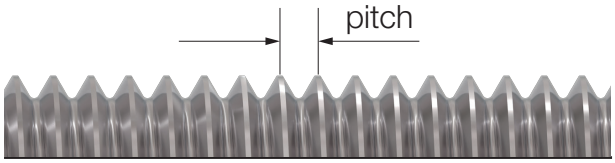
- Minor Diameter – the smallest diameter of two extreme diameters. In external threads, the minor diameter defines the start of a thread profile and in internal threads, the minor diameter defines the end limit of a thread profile. Therefore, for external threads the minor diameter is an inner thread diameter and for internal threads the minor diameter is an outer thread diameter. Space between the minor diameter of an external thread and the minor diameter of an internal thread should be minimized to ensure correct thread functionality, if the threads are designed to fit together.
- Pitch Diameter (Effective Diameter) – the pitch diameter is also known as an effective diameter, since this is the most probable area for the external and internal threads to engage. Pitch diameter is a theoretical diameter representing the place where the width of the basic thread profile is equal to half a pitch.

Pitch / Threads per Inch (TPI)

Pitch and Thread per Inch (TPI) define the same threading feature, only in different terms.

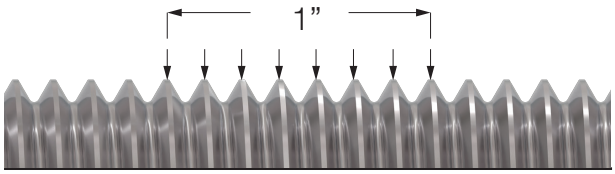
Pitch - a main and common parameter for all types of metric threads, usually expressed in millimeters. Pitch defines the distance along a line parallel to the axis of the thread length between the sides of the thread profile placed in the same axial plane on one side of the axis of rotation.

Pitch for Metric Threads



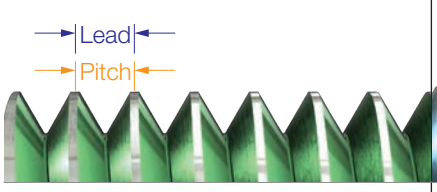
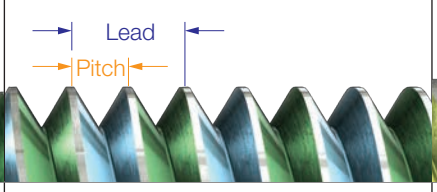
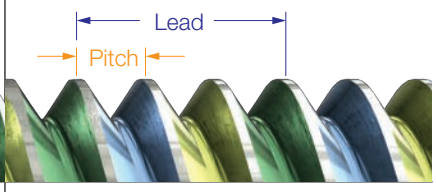
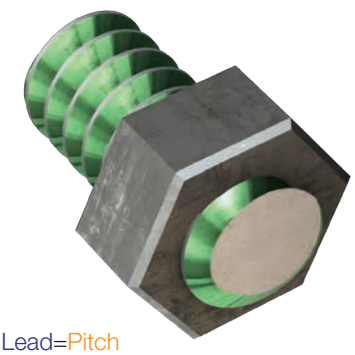
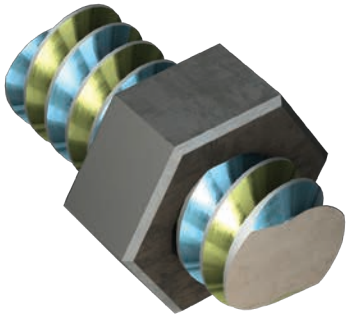
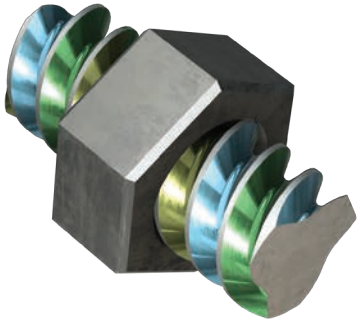
Thread per Inch (TPI) - a main and common parameter for all types of inch-based threads. TPI defines the count / number of threads per distance of 1 inch along the length of threads placed in the same axial plane on one side of the axis of rotation.

Theads per Inch (TPI)



Lead

Lead is the distance that defines an axial movement of any point moving in relative motion per one full turn (360°) along a line parallel to the thread axis. In a single-start thread, the lead is equal to the thread pitch. In a multi-start thread, the lead is equal to the thread pitch multiplied by the number of starts.

Single-Start	Double-Start	Triple-Start
		
		
Lead=Pitch	Lead=2xPitch	Lead=3xPitch

Helix Angle

The helix angle of the thread influences thread efficiency and is necessary for calculating torque in thread applications. The helix angle of the thread can be defined by unraveling the helix from the thread, representing the section as a right triangle and calculating the angle that is formed.

$$\varphi = \arctan\left(\frac{P}{\pi \times Dpitch}\right)$$

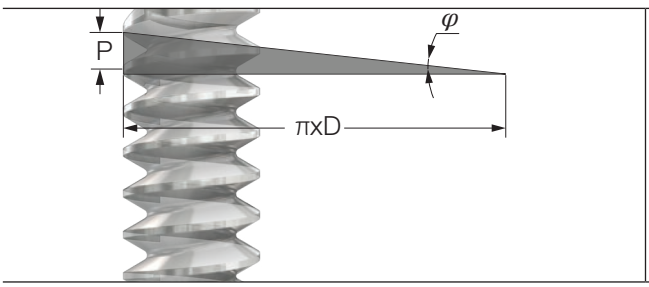
When:

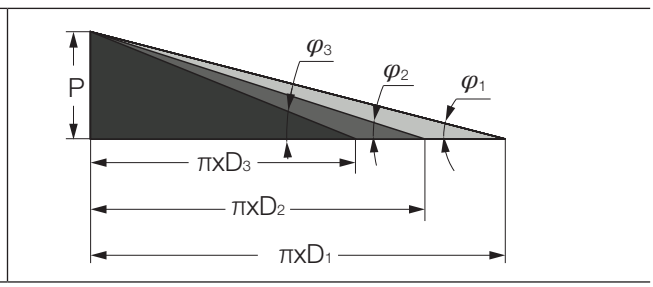
φ = Helix angle

P = Thread pitch

Dpitch = Pitch diameter (effective diameter of thread)

π ≈ 3.142





Lead Angle
Lead angle is the angle between the helix of thread and a plane of rotation. The lead angle of the thread depends on the pitch diameter, thread pitch, and the number of thread starts. This parameter can be represented as a sweep of a right triangle.

The angle of the thread is calculated by the formula given below:

$$\varphi_L = \arctan\left(\frac{Lead}{\pi \times Dpitch}\right)$$

$$Lead = n \times P$$

When:

φ_L = Lead angle

Dpitch = Pitch diameter (effective diameter of thread)

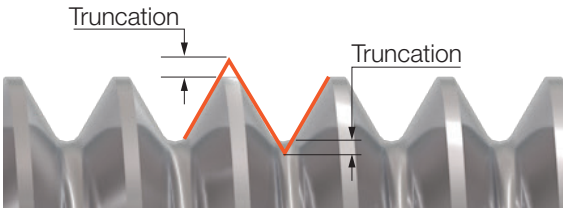
P = Thread pitch

n = Number of thread starts

$\pi \approx 3.142$

Where the thread is single-start, the lead angle is equal to the helix angle.

Truncation
Truncation is the perpendicular distance to the axis of the thread from the imaginary point of intersection of two adjacent sides of the thread profile to the nearest point of its top or bottom.





Thread Classifications

Threads can be classified by the following criteria:

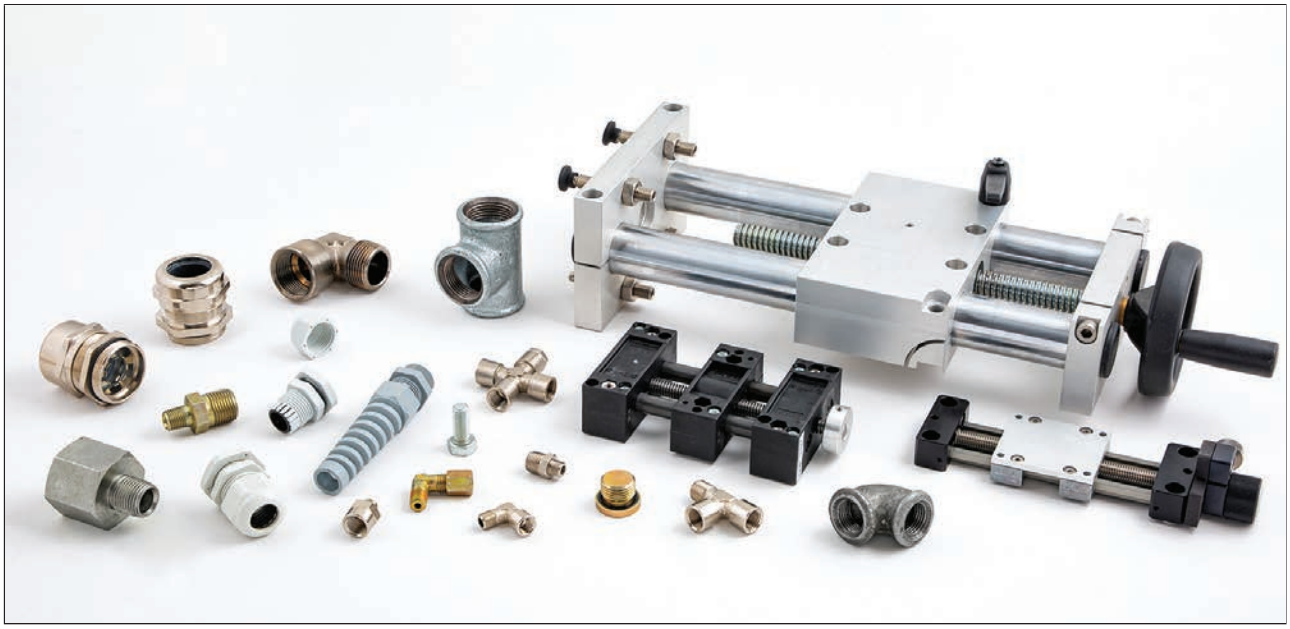
Gender

Depending on the location of the surface, the thread may be external (cut on a rod) or internal (cut into a hole).

External Thread	Internal Thread
	

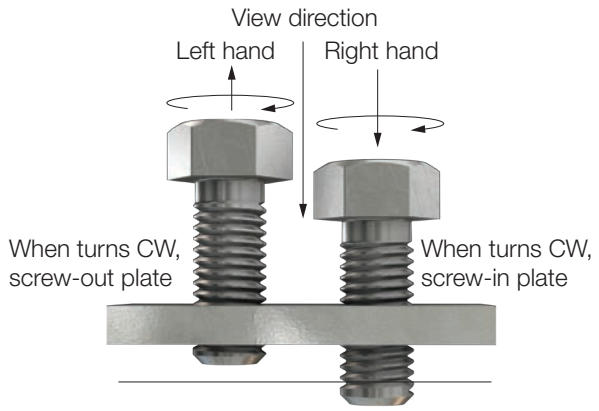
Designation

The threads are divided into fasteners or connection parts, running or kinematic (in a movable connection) by main application. Often the fastening threads carry a second function - sealing the threaded connection, ensuring its tightness.



Handedness

This represents the direction of the thread helix, which can twist in two possible directions: clockwise (CW) and counter-clockwise (CCW). When the thread is designed to be turned in a clockwise direction, it is known as a "right-handed (RH) thread." When the thread is designed to be turned in the opposite direction, it is known as a "left-handed (LH) thread."



Pitch

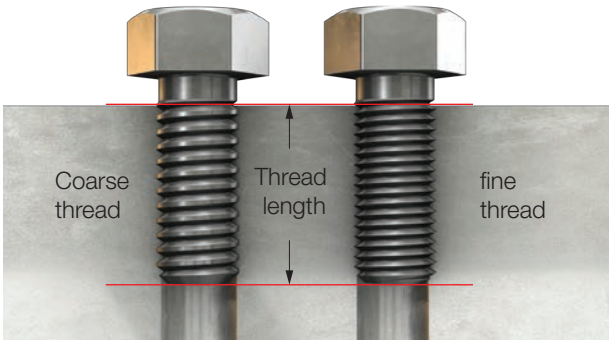
Thread pitch can be classified by "coarse pitch" and "fine pitch." The terms refer to the size of the threads relative to the screw diameter and do not imply differences in thread quality, tolerances, or cost. They can be compared as follows:

Coarse Pitch

- Fewer threads per axial distance
- Larger thread form relative to screw diameter
- More resistant to stripping and cross threading due to greater flank engagement
- Install much faster as they require fewer turns per unit length

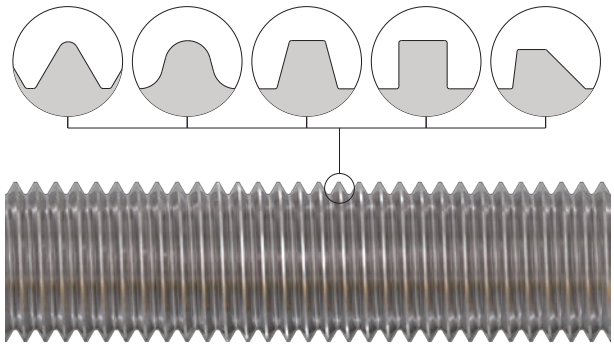
Fine Pitch

- More threads per axial distance
- Smaller thread form relative to screw diameter
- Stronger due to a larger stress area for the same diameter thread
- Less likely to vibrate loose as they have a smaller helix angle and allow finer adjustment
- Develop greater preload with less tightening torque



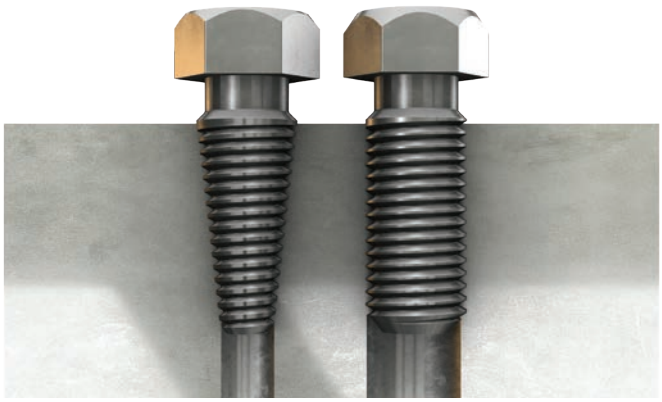
Profile

Thread profile, also called thread form, which refers to the cross-sectional shape of a thread. It may be square, triangular, trapezoidal, or other shapes.



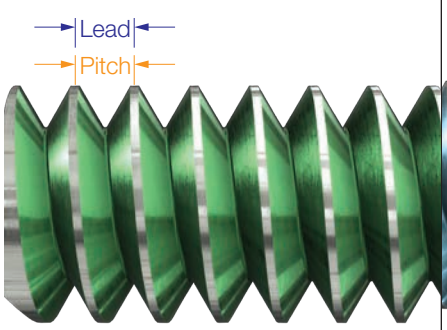
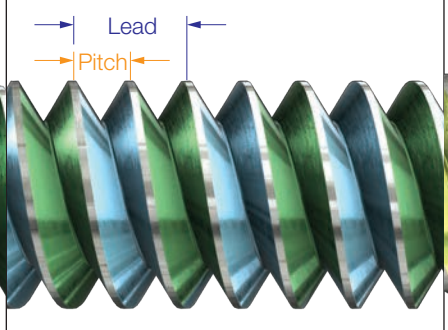
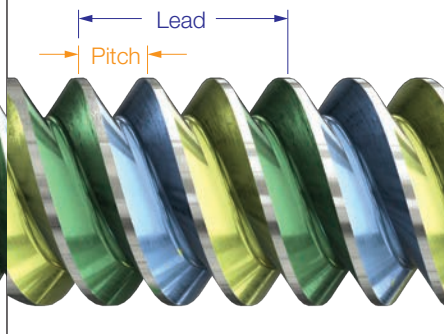
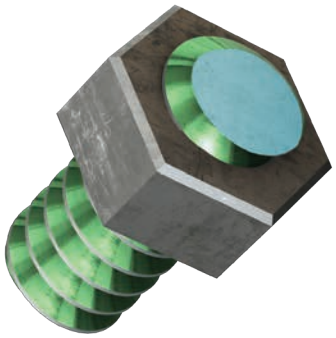
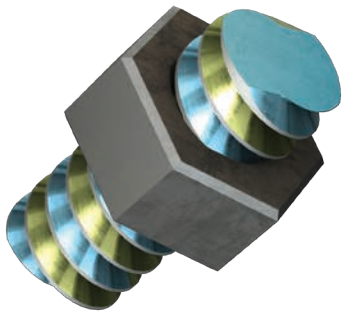
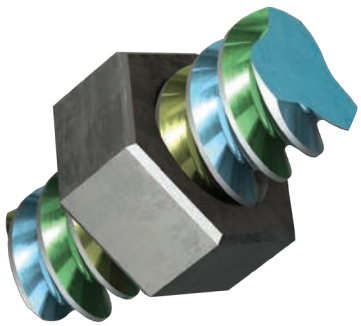
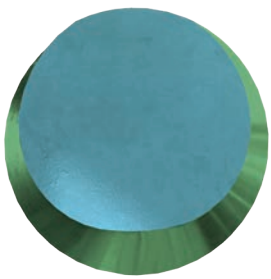
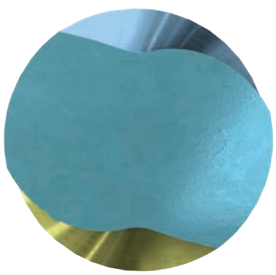
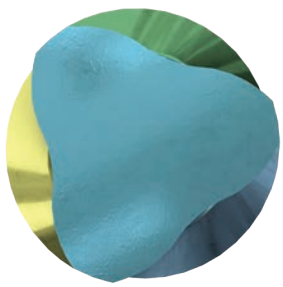
Surface Shape

The shape of the surface on which the thread is cut: it can be cylindrical or conical.

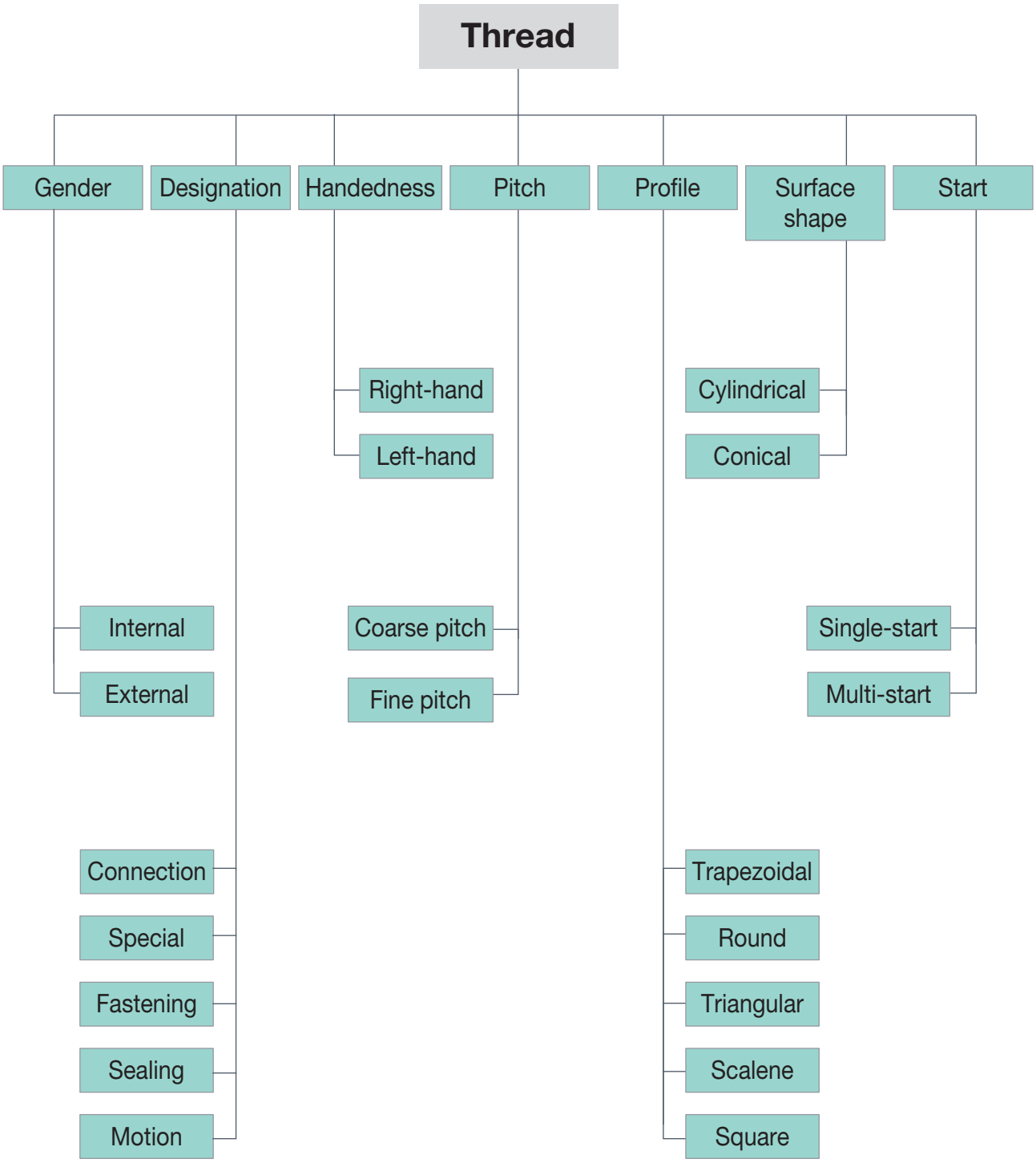


Starts

According to the number of starts, the threads are divided into single-start and multi-start threads. A single-start thread has one continuous thread running along the body of the screw. A multi-start thread consists of two or more intertwined threads running parallel to one another. The lead distance of a double-start thread is twice that of the single-start thread and a triple-start thread has triple that of the single-start thread. For example, if the end of the workpiece part is divided into two or three equal parts, and the threads start from each of these points, then this indicates double or triple thread starts.

Single-Start	Double-Start	Triple-Start
		
 Lead=Pitch	 Lead=2xPitch	 Lead=3xPitch
		

Thread Classifications



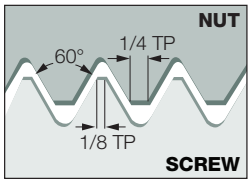
Thread Standards

To ensure the interchangeability of threaded products for the main parameters of thread profiles, it is necessary to set the appropriate standards.

The Most Common Standards According to Their Purpose

Machinery and General Use

ISO



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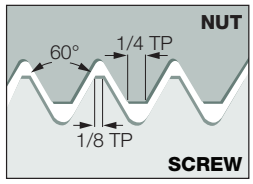
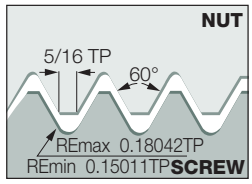
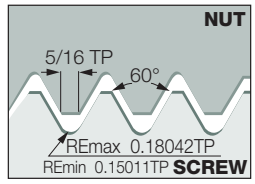


Aerospace Industry

UNJ

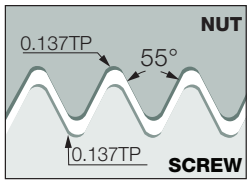


MJ

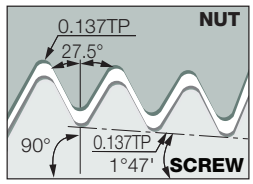


Pipe Threads (Connection, Fittings and Sealing)

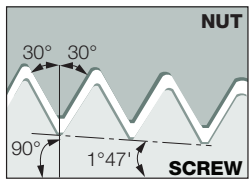
BSW



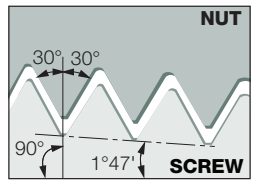
BSPT



NPT

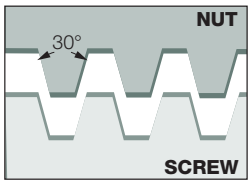


NPTF

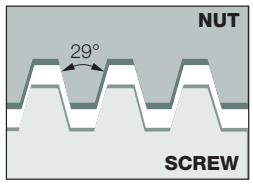


Trapezoidal Worm Threads for Power Transmission

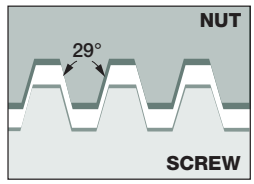
Trapeze



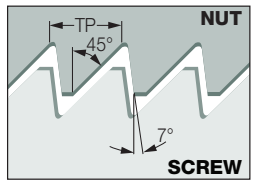
Acme



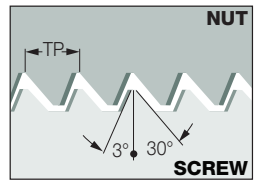
Stub Acme



American Buttress

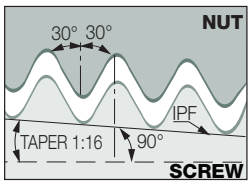


SAGE - Metric Buttress

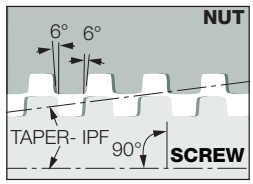


Oil & Gas Industry for Pipes and Couplings

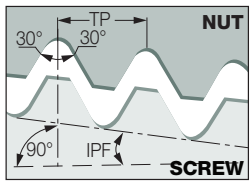
API Round



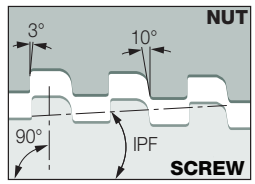
Exteme Line Casing



API

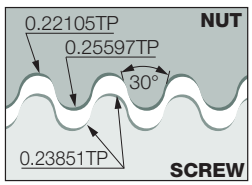


Buttress Casing



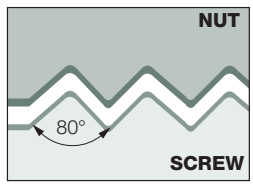
Fire Fighting and Food Industry Pipe Couplings

RND



Electric Cable Connectors - Join Pieces of Electrical Conduit and Cable Glands

PG



Thread Accuracy

In thread manufacturing, permissible limits are defined for the actual thread profile's deviations from the theoretical thread profile. To ensure correct threading operations, the thread profile cannot cross the theoretical profile, and therefore, this permissible limit is set by tolerances. The external and internal thread should only contact the sides of the threaded profile, therefore the main parameter that influences thread tolerance is the pitch diameter. Tolerances on major and minor diameters are set in such a way as to exclude the possibility of collision on the tops and bottoms of the thread. Each thread standard contains a different tolerance method.

ISCAR provides tools for thread production at all standards and in all accuracy classes

Tolerance System ISO Standard

In accordance with the ISO standard, threading accuracy is determined by the combination of tolerance grade and tolerance position.

Tolerance grades are classified by numbers according to major, pitch and minor diameters and are different for internal and external threads.

Internal Threads		External Threads	
Dimension	Tolerance grade	Dimension	Tolerance grade
Minor diameter	4, 5, 6, 7, 8	Major diameter	4, 6, 8
Pitch diameter	4, 5, 6, 7, 8	Pitch diameter	3, 4, 5, 6, 7, 8, 9

Tolerance positions are classified by letters and are different for external and internal threads.

Gender	Tolerance Position
Internal Threads	G, H
External Threads	e, f, g, h



Possible Combinations of Thread Tolerances:

Internal (Nut) Threads



Basic Size

undersized — more precise

H		G	
Pich Diameter	Minor Diameter	Pich Diameter	Minor Diameter
8	8	8	8
7	7	7	7
6	6	6	6
5	5	5	5
4	4	4	4

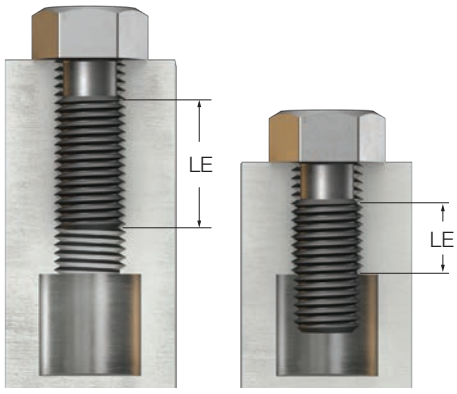
External (Screw) Threads



more precise — undersized

e		f		g		h	
Pich Diameter	Major Diameter	Pich Diameter	Major Diameter	Pich Diameter	Major Diameter	Pich Diameter	Major Diameter
3	4	3	4	3	4	3	4
4	6	4	6	4	6	4	6
5	8	5	8	5	8	5	8
6	-	6	-	6	-	6	-
7	-	7	-	7	-	7	-
8	-	8	-	8	-	8	-
9	-	9	-	9	-	9	-

Thread accuracy can be classified by three classes: fine, medium, and coarse, depending on the length of thread engagement (the length of interaction between the fastener and nut member (i.e. nut or mating material for the screw) which is divided into three groups: short, normal, and long.



LE - length of thread engagement

Recommended tolerance classes for internal Threading

Tolerance Class	Position G			Position H		
	Short	Normal	Long	Short	Normal	Long
Fine	---	---	---	4H	5H	6H
Medium	5G	6G	7G	5H	**6H**	7H
Coarse	---	7G	8G	---	7H	8H

Recommended Tolerance Classes for External Threading

Tolerance Class	Position e			Position f			Position g			Position h		
	Short	Normal	Long	Short	Normal	Long	Short	Normal	Long	Short	Normal	Long
Fine	---	---	---	---	---	---	---	4g	5g4g	3h4h	4h	5h4h
Medium	---	6e	7e6e	---	6f	---	5g6g	**6g**	7g6g	5h6h	6h	7h6h
Coarse	---	8e	9e8e	---	---	---	---	8g	9g8g	---	---	---

When:

1st choice	2nd choice	3rd choice

** bold - most common

There are several options for thread description with accuracy class according to the ISO standard:

Internal Threading

Major Diameter	X	Pitch	-	Tolerance Class for Pitch Diameter	Tolerance Class for Minor Diameter

M8X1.25 – 5H 6H

Major Diameter	-	Tolerance Class for Pitch and Minor Diameter

M8 – 6H

External Threading

Major Diameter	X	Pitch	-	Tolerance Class for Pitch Diameter	Tolerance Class for Major Diameter

M8X1.25 – 5g 6g

Major Diameter	-	Tolerance Class for Pitch and Major Diameter

M8 – 6g

Tolerance System UN/ UNC/ UNJ/ UNR/ UNS/ UNRS/ UNF/ UNEF Standards

The UN/ UNJ/ UNR/ UNS/ UNRS/ UNF/ UNEF standards define 3 classes of accuracy for external threads and internal threads:

External Threading	Internal Threading
• 3A (Tight tolerance) • **2A (Medium tolerance)** • 1A (Loose tolerance)	• 3B (Tight tolerance) • **2B (Medium tolerance)** • 1B (Loose tolerance)

** bold - most common

The value and range of the tolerance according to accuracy class are described by tables, formulas, and charts in the UN standard.
Possible combinations are described in the UN standard.
Not all combinations exist in all three tolerance classes.

Examples for thread description according to UN/ UNC/ UNJ/ UNR/ UNS/ UNRS/ UNF/ UNEF standards with accuracy class:

Major Diameter	Thread per Inch (TPI)	Thread Standard	-	Accuracy Class

External Threading	Internal Threading
3/8 16 UNC – 3A	3/8 16 UNC – 3B
1/2 20 UNF – 2A	1/2 20 UNF – 2B
9/16 24 UNEF – 1A	9/16 24 UNEF – 1B

Thread Unified National Standards Compatibility			
External / Internal	UN*	UNJ	UNR
UN*	✓	-	✓
UNJ	✓	✓	✓
UNR	✓	-	✓

UN* insert can produce thread standars UNC, UNF; UNEF

Tolerance System BSW Standard

The BSW standard defines 3 classes of accuracy for external threads and 2 classes of accuracy for internal threads:

External Threading	Internal Threading
• Close Class (Tight tolerance) • Medium Class (Medium tolerance) • Free Class (Loose tolerance)	• Medium Class (Medium tolerance) • Normal Class (Loose tolerance)

The value and range of the tolerance according to the accuracy class are described by tables, formulas, and charts in the BSW standard.

Recommended combinations:

- Close Class for external threading is intended for use with Medium Class for internal threading
- Medium Class for external threading is intended for use with Normal Class for internal threading
- Free Class for external threading is intended for use with Normal Class for internal threading

There are two options for thread description according to the BSW standard:

	Major Diameter	-	Thread per Inch (TPI)	B.S.W	(Accuracy Class)	Bolt (for External Threads) Nut (for Internal Threads)
W	Major Diameter	-	Thread per Inch (TPI)		(Accuracy Class)	Bolt (for External Threads) Nut (for Internal Threads)

Examples for thread description according to the BSW standard with accuracy class:

External Threading

- 5/16 -18 B.S.W. (close) bolt or W 5/16 -18 (close) bolt
- 1/2 -12 B.S.W. (medium) bolt or W 1/2 -12 (medium) bolt
- 11/8-7 B.S.W. (free) bolt or W 11/8-7 (free) bolt

Internal Threading

- 5/16 -18 B.S.W. (medium) nut or W 5/16 (medium) nut
- 11/8 -7 B.S.W. (normal) nut or W 11/8 (normal) nut

Useful formulas:

1 inch = 25.4 mm

$$\frac{25.4}{\textbf{T.P.I.}} = \text{Pitch (mm)}$$

Thread Production Methods

Threads can be produced by various methods according to thread size, accuracy, available equipment, size of requested part, material, workpiece geometry, production time, production cost, etc.

Main Methods for Thread Production

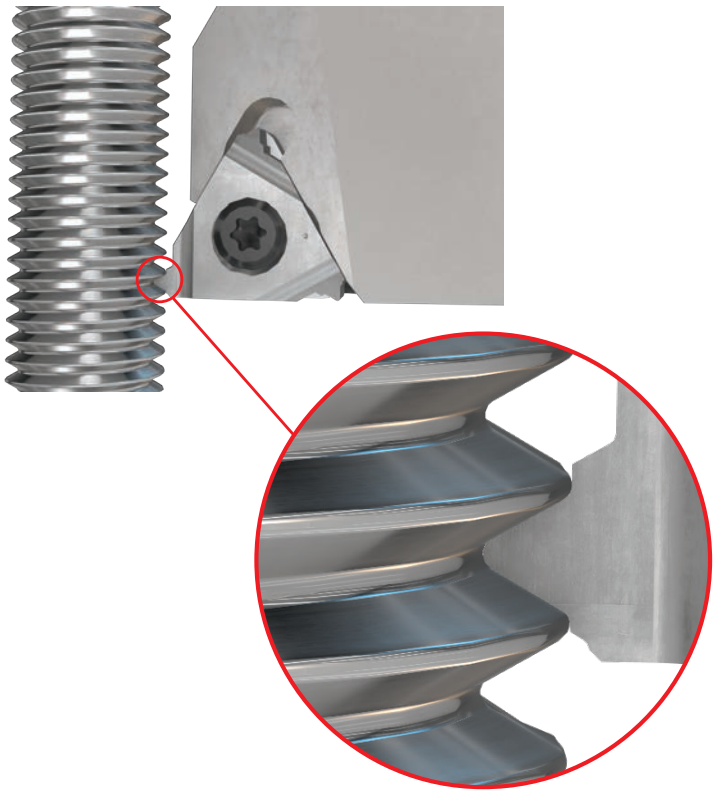
Machining Method	Deformation Method	Non-Traditional Method
• Thread Cutting • Thread Turning • Thread Milling • Thread Tapping • Thread Whirling • Thrilling • Helical Broaching (Punch Tapping) • Thread Grinding • Thread Lapping • Threading with EDM	• Rolling • Molding	• 3D printing

ISCAR offers solutions for thread production for most types of machining methods.
The use of appropriate tools to produce threads is undoubtedly one of the main factors influencing the success of the process.

Profiles for Thread Production

Insert profiles for thread production can be divided into three main types: full profile, partial profile, and multi-tooth.

Full Profile



Inserts belonging to this group are designed to produce a full profile of the requested thread. Each full profile thread tool is suitable for a specific thread profile and pitch only. Full profile tools are recommended for mass production.

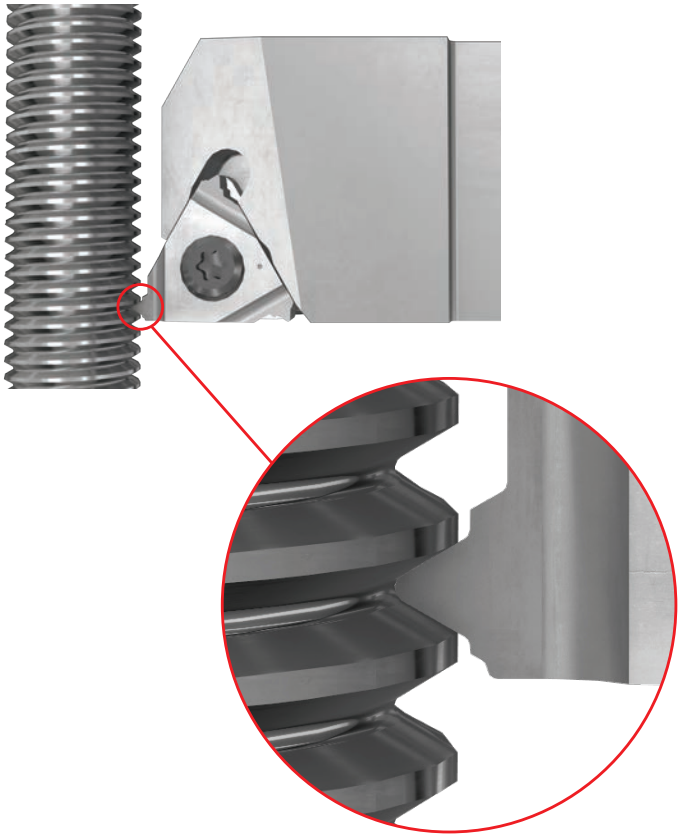
Advantages of Full Profile

- Finish the thread in one operation
- Bigger corner radius means better tool life
- Ensures correct depth of thread
- No deburring

Disadvantages of Full Profile

- Cutting edge is suitable for the relevant thread profile and pitch only
- Requires a wider variety of items in the workshop

Partial Profile



Inserts belonging to this group do not produce the outer diameter (major diameter) of external threads or the inner diameter (minor diameter) of internal threads, which means that one or more additional operations are needed to complete the thread diameter. These Inserts are not recommended for mass production.

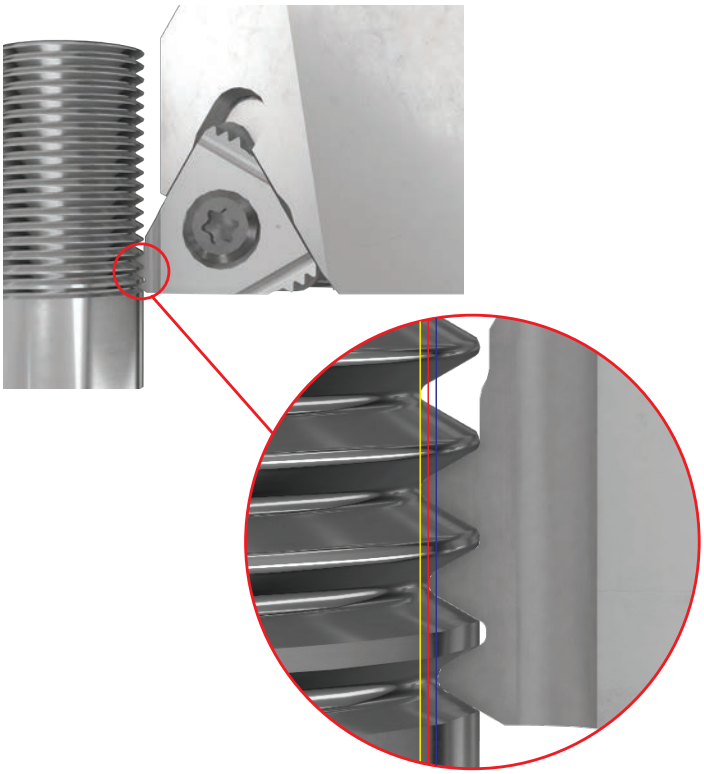
Advantages of Partial Profile

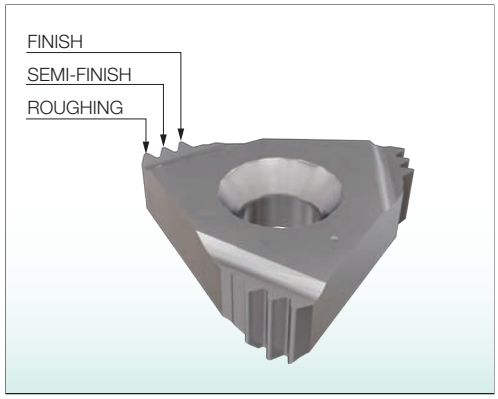
- Small corner radius, suitable for many pitch sizes
- Reduces stock of many different full profiled inserts

Disadvantages of Partial Profile

- Small corner radius will result in shorter tool life
- Requires additional operation/s to the complete the outer (major) or inner (minor) diameter, depending on the thread gender

Multi-Tooth





Multi-tooth inserts produce a full profile of the requested thread. These inserts, usually have two or three cutting teeth. The thread profile is produced by the last tooth and the previous teeth (or tooth) are used for rough and semi-finish operations, thereby facilitating the work of the last tooth. These inserts are recommended for mass production.

Advantages of Multi-Tooth

- Finish the thread in one operation
- Reduces the number of passes for high productivity – multi-tooth tools are similar to full profile tools but have more than one cutting point (two-pointed tools give double productivity, three-pointed tools give triple, etc.)
- Ensures longer tool life
- Ensures correct depth of thread
- No deburring

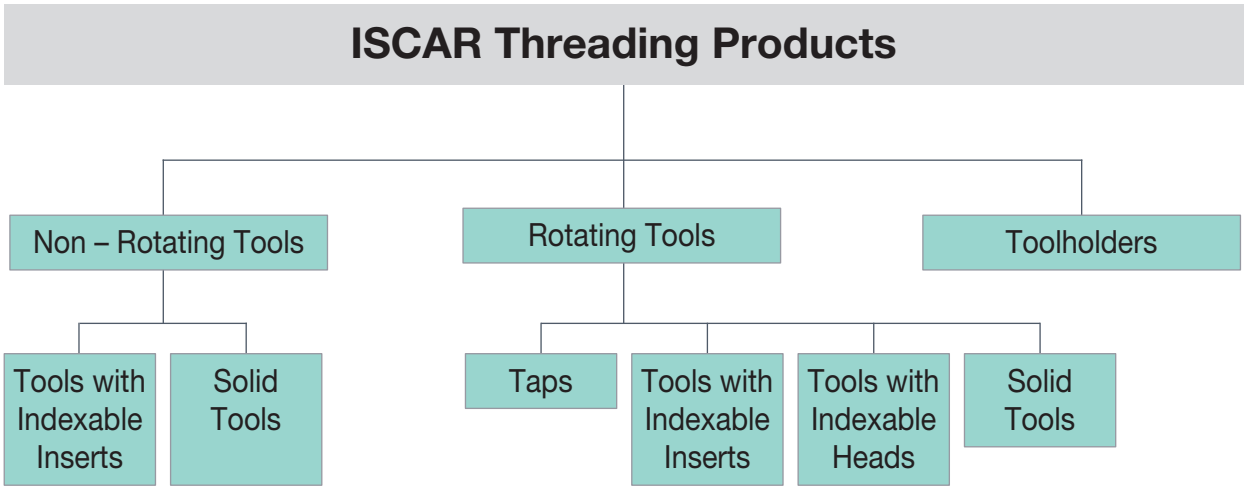
Disadvantages of Multi-Tooth

- Can not work next to shoulder and requires wide thread relief
- High cutting forces
- Requires a larger variety of items in the workshop

The **ISCAR** catalog of thread products contains all types of threading solutions.

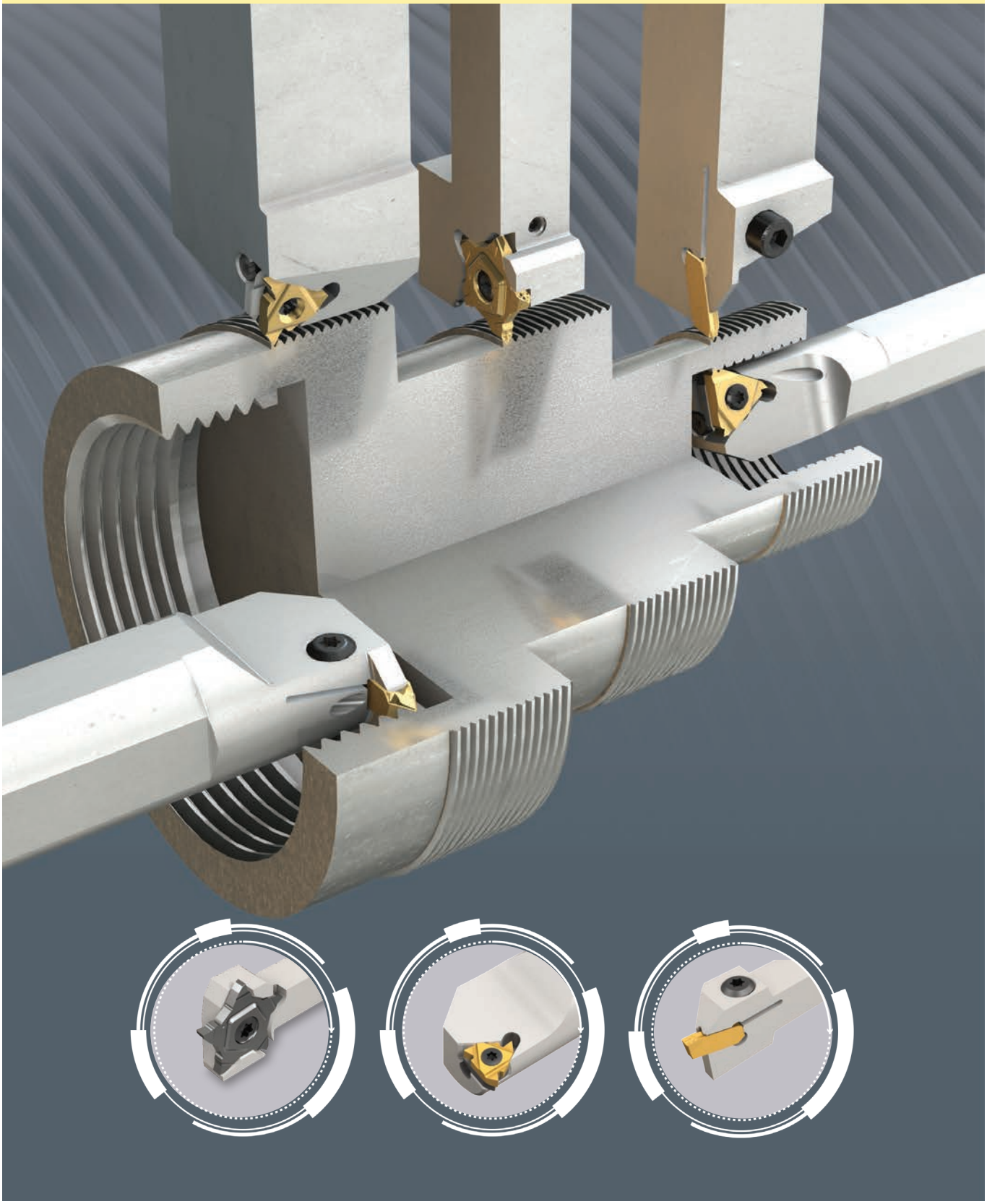
ISCAR Threading Products

ISCAR offers a wide range of threading tools for most industries and applications, covering internal and external processing and processing of small-sized parts. Whatever the method of processing, **ISCAR** will identify a suitable tool for the requested thread.





THREAD TURNING

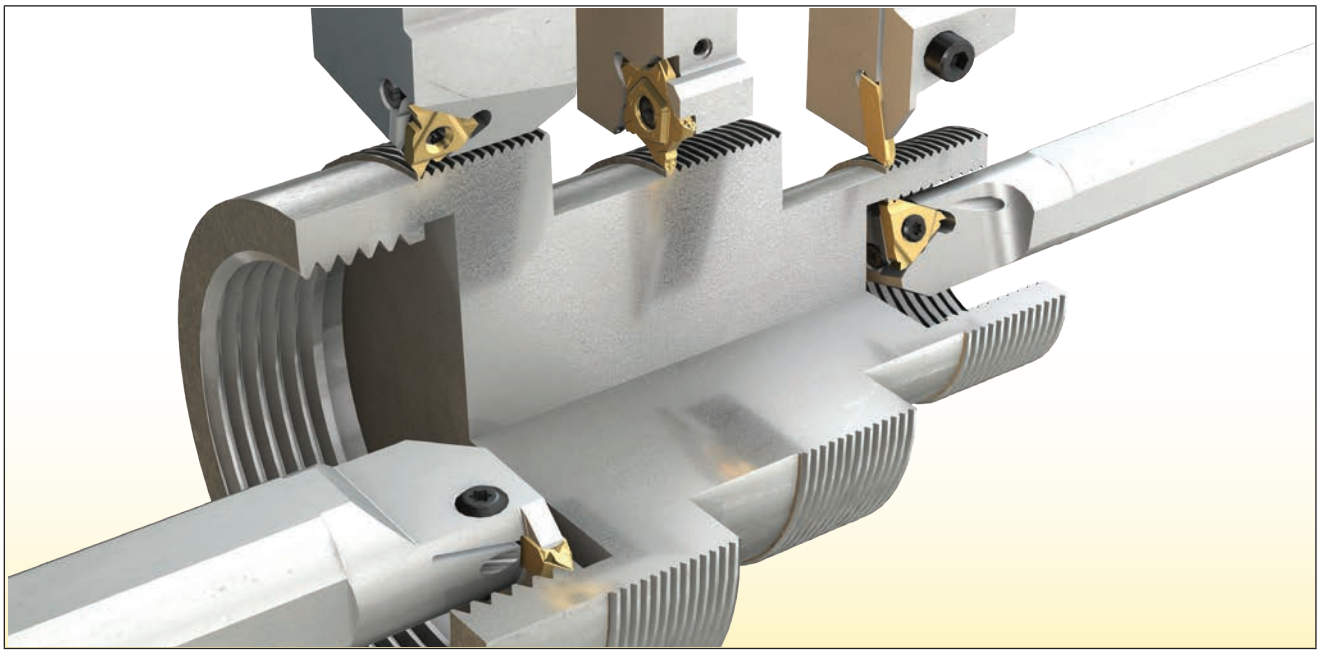


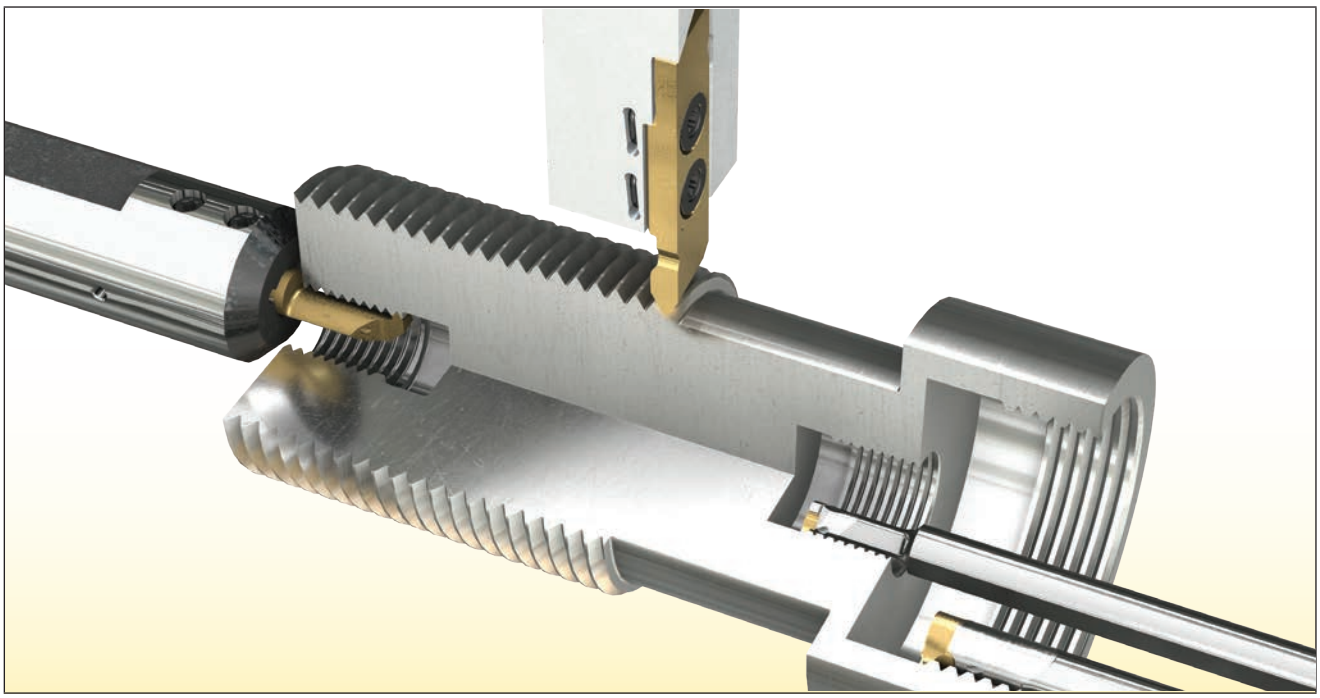
Thread Turning

Thread production by turning operation is possible for external and internal threading.

The principle of thread production by turning operation is based on the constant linear movement of the tool/insert relative to the rotational movement of the workpiece.
The geometry of the threading profile is identical to the cutting edge profile. On lathes or turning stations, threads are cut into several passes, and after each pass the cutter moves back to its original position. The number of passes is determined by the material of the workpiece, type of cutter, threading type, requirements for accuracy, surface finish, etc.

ISCAR offers a wide range of tools and inserts for all types of thread turning



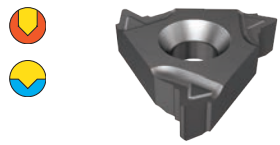
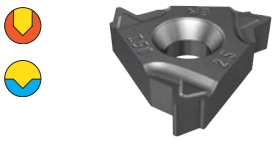
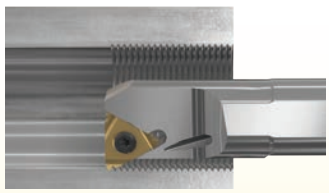
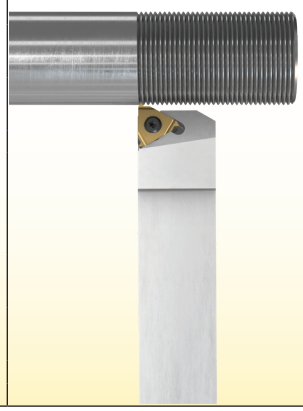


ISCAR Product Families for Thread Turning

ISCAR offers product families that provide solutions for both external and internal threading according to most standards.

ISCAR's products for thread turning operations can be divided into three main groups, each containing several families/lines:

- Tools carrying **ISCAR** threading laydown inserts - used for both external and internal threading.

B-TYPE	M-TYPE	ISCAR Internal Threading	ISCAR External Threading
			
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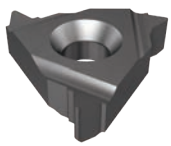
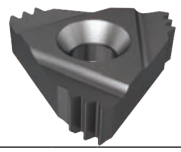
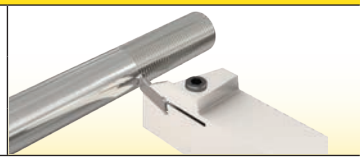
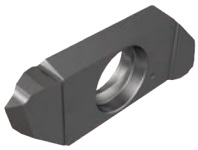
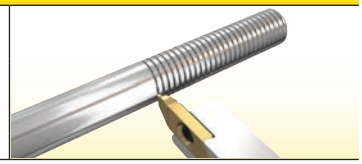
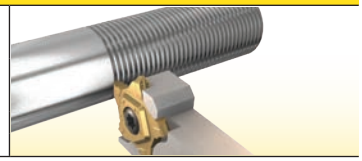
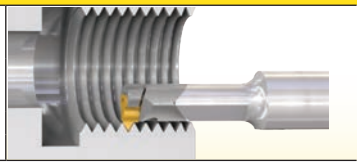
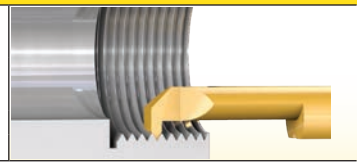
			
Multi-Tooth			
			

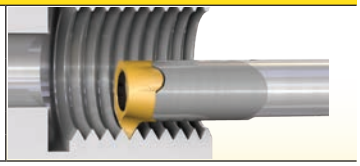
- Tools carrying **ISCAR** standard inserts - mainly used for external threading

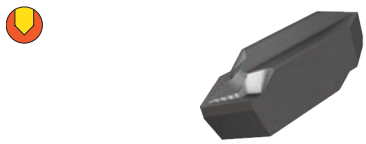
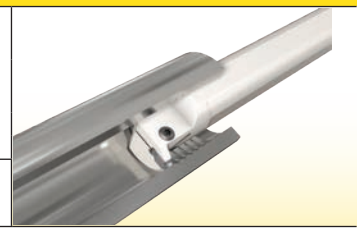
CUT-GRIP External	
	
SWISSCUT External	
	
PENTACUT External	
	

- Holders carrying **ISCAR** standard inserts - used for internal threading only

MINICHAM Internal		
		
Minimum bore dia. 4 mm		

PICCOCUT Mini-Bar		
		
Minimum bore dia. 2.4 mm		

CHAMGROOVE Internal		
		
Minimum bore dia. 8.0 mm		

CUT-GRIP Internal		
		
Minimum bore dia. 12.5 mm	Minimum bore dia. 20 mm	

Partial profile

Full profile

Tools Carrying Threading Inserts

There are various types of tools that are used to machine external and internal threading. The difference between the tools and the choice of correct tools depends on machining connection type, threading type, requirements for accuracy, surface finish, etc.

External Threading

- Square Shank Tools with Bottom Fed High Pressure Coolant System
- Square Shank Tools without Coolant Channels
- Square Shank Tools with High Pressure Coolant System
- Tools with CAMFIX/CAPTO Exchangeable Tapered Shanks with Coolant Channels
- Interchangeable Adapters without Internal Coolant Channels
- Square Shank Tools with Coolant Channels
- Drophead Square Shank Tools without Coolant Channels
- Interchangeable Adapters with Internal Channels for High Pressure Coolant
- Interchangeable Adapters with Internal Coolant Channels
- Blades

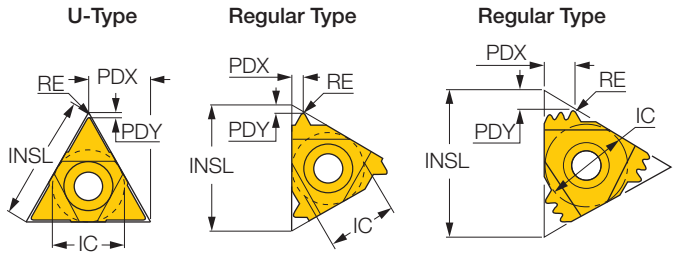
Internal Threading

- Tools with CAMFIX/CAPTO Exchangeable Tapered Shanks with Coolant Channels
- Square Shank Tools without Coolant Channels
- Perpendicular Holder
- Interchangeable Heads without Internal Coolant Channels
- Threading Bars with Coolant Channels
- Multi-Use Holder
- Interchangeable Heads with Internal Coolant Channels
- High Precision Holder with Coolant Channels

Laydown Inserts for External and Internal Threading

Laydown inserts belong to the **ISCAR** threading family. The geometry (length and IC) of these inserts is designed according to ISO Standard, and laydown insert can be used for internal and external threading.
The cutting edge profile of laydown inserts can be adjusted to most threading sizes of different threading standards. **ISCAR** classifies laydown inserts into 3 types: **B**-Type, **M**-Type, and **G** type. There are 2 configurations: **U**-Type and **Regular** type. The inserts are available with one tooth on each cutting edge or with a number of teeth on each cutting edge (multi-tooth inserts).

Basic Dimensions of Laydown Inserts



IC — inscribe circle diameter

PDX — Distance between the insert and the corner radius

PDY — gap between the corner radius and the theoretical triangular vertex

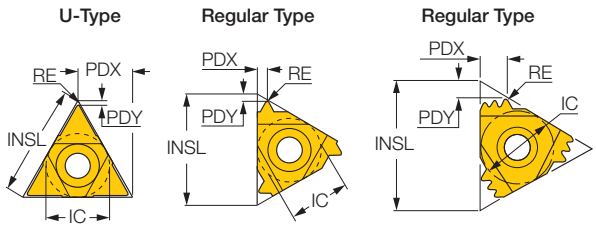
INSL — insert length, triangular leg length

RE — corner radius

Laydown Insert Description According to the Template Below

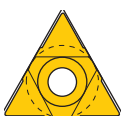
16	E	R	M		1.50		ISO		□		IC908
1	2	3	4		5		6		7		8

1 Insert length (INSL)



INSL (mm)	IC (Inch)
06	5⁄32 "
08	3⁄16 "
11	1⁄4 "
16	3⁄8 "
22	1⁄2 "
27	5⁄8 "

2 Insert configuration





U-Type	Regular Type
UE — U-Type for external threading	**E** — regular type for external threading
UI — U-Type for internal threading	**I** — regular type for internal threading
UEI — U-Type for external and internal threading	

* U-Type configuration is recommended for big threading profiles

3 Insert Clamp Direction

R — right-hand

L — Left-hand

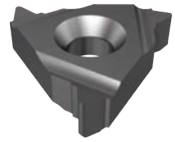
RL — right and left-hand

4 Insert type

B — pressed chipformer and peripheral ground profile

M — pressed to size insert with pressed chipformer

□ — no indication, G type is an insert with deflector

B-Type	M-Type	G-Type
		

5 Pitch

	mm	TPI
A	0.5-1.5	48-16
AG	0.5-3.0	48-8
G	1.75-3.0	14-8
N	3.5-5.0	7-5
Q	5.5-6.0	4.5-4
U	5.5-9.0	4.5-2.75

6 Threading Standard

60 — Partial Profile 60º

55 — Partial Profile 55º

ISO — ISO Metric

UN — American UN

W — Whitworth

BSPT — British BSPT

RND — Round DIN 405

TR — Trapeze DIN 103

ACME — ACME

STACME — Stub ACME

ABUT — American Buttress

UNJ — UNJ

NPT — NPT

API RD — API Round

BUT — API Buttress Casing

API — API

EL — Extreme Line Casing

MJ — ISO 5855

7 Number of teeth

□ — not indicated, 1 tooth

2M — 2 teeth

3M — 3 teeth

* Multi-Tooth inserts increase productivity and are recommended for mass production

8 Grade

IC1007, IC908, IC808, IC508, IC250, IC228, IC50M, IC806

The insert type geometry recommended to select per material of workpiece is shown in the table below.

Insert Type Geometry per Material		ISCAR Threading Laydown Line		
		B-Type	M-Type	G-Type
Material	Steel	V	V	V
	Stainless Steel	V	o	V
	Cast Iron	o	V	•
	Nonferrous	•	o	V
	High Temp. Alloys	o	o	V
	Hardened Steel	o	o	V

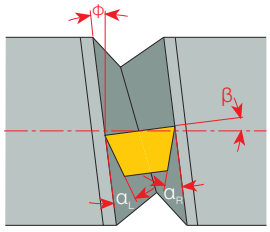
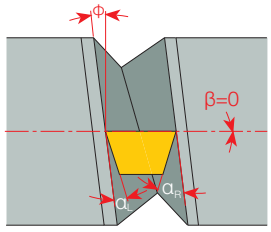
Guidelines	Sign
Recommended (1st Choice)	V
Suitable (2nd Choice)	•
Can be Selected (Optional)	o



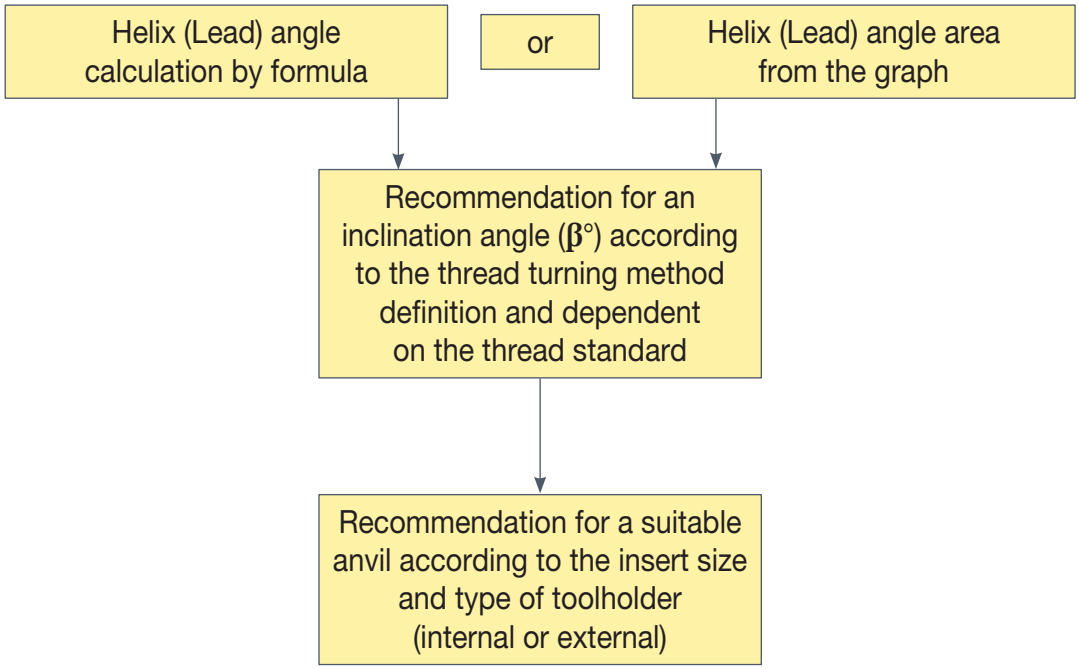


Anvils for Laydown Inserts

The parameter for tilting the threading insert relative to the helix angle of threading is of great importance when threading is produced. This parameter ensures proper operation of the insert during threading production in terms of equal load distribution applied to the insert, equal distribution of forces operating on the insert, development of uniform wear on both sides of the cutting edge, and avoiding friction of the insert with the side of the threading profile. If the side clearance insert angles (α) are not equal in relation to the helix angle (φ), the insert must be tilted. This is performed by using anvils.

Recommended	Less Recommended
$\alpha_L=\alpha_R$	$\alpha_L\neq\alpha_R$
	

Quick and Easy way to Select a Correct Anvil



The anvil should be selected from the table according to the threading standard. The correct anvil depends on the right inclination angle (ß) and insert size. The inclination angle (ß) is obtained by selecting the thread turning method and finding the helix angle (φ) for single-start threading, or lead angle (φ_L) for the multi-start threading. The helix angle (φ) and the lead angle (φ_L) are determined as exact values by using the formula below or as a graph area (see below: Helix (Lead) angle area by using graph, depending on the threading diameter and lead.

Helix Angle (Φ) Calculation by Using Formula Single-Start Threading	Lead Angle (Φ_L) Calculation by Using Formula Multi-Start Threading
$\varphi = \arctan\left(\frac{P}{\pi \times Dpitch}\right)$	$\varphi_L = \arctan\left(\frac{Lead}{\pi \times Dpitch}\right)$ **Lead= n×P**
When: **φ** = Helix angle **Dpitch** = Pitch diameter* * effective diameter of threading **P** = Threading pitch **π** ≈ 3.142	**When:** φ_L = Lead angle **Dpitch** = Pitch diameter* * effective diameter of threading **P** = Threading pitch **n** = number of threading starts **π** ≈ 3.142

Usable Formulas

Lead (inch)= $\frac{1 \text{ inch}}{TPI}$ ×No. of starts

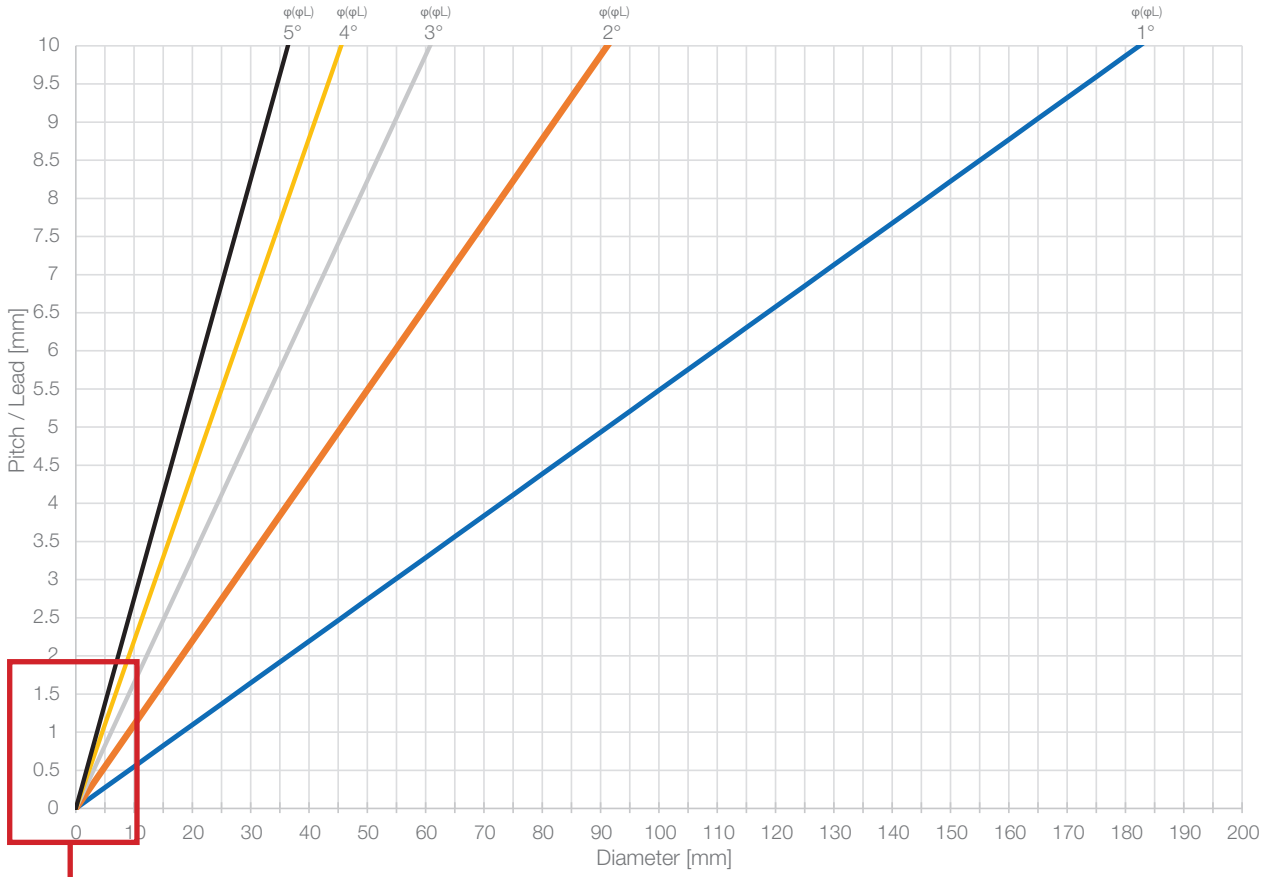
TPI = No. of threading per inch

1 inch = 25.4 mm

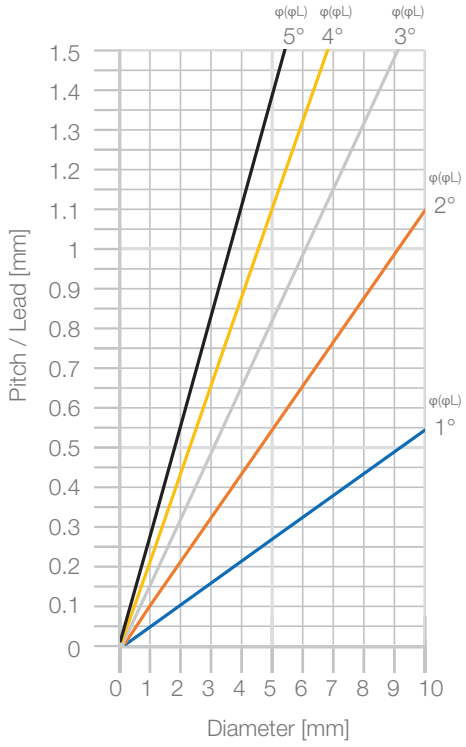
Pitch (mm)= $\frac{25.4}{TPI}$

Helix (Lead) Angle Area by Using Graph

Helix Angle Evaluation

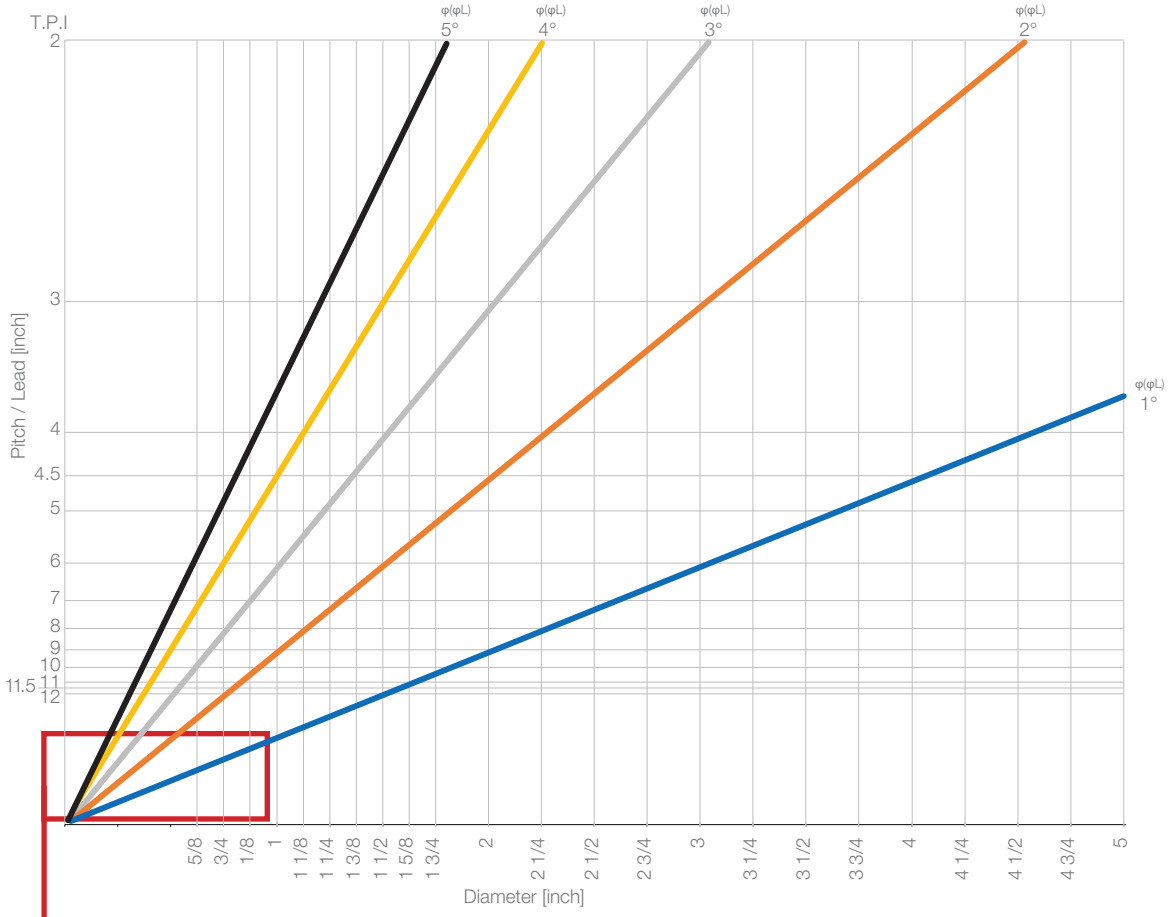


Detailed View for Small Pitch/Diameter

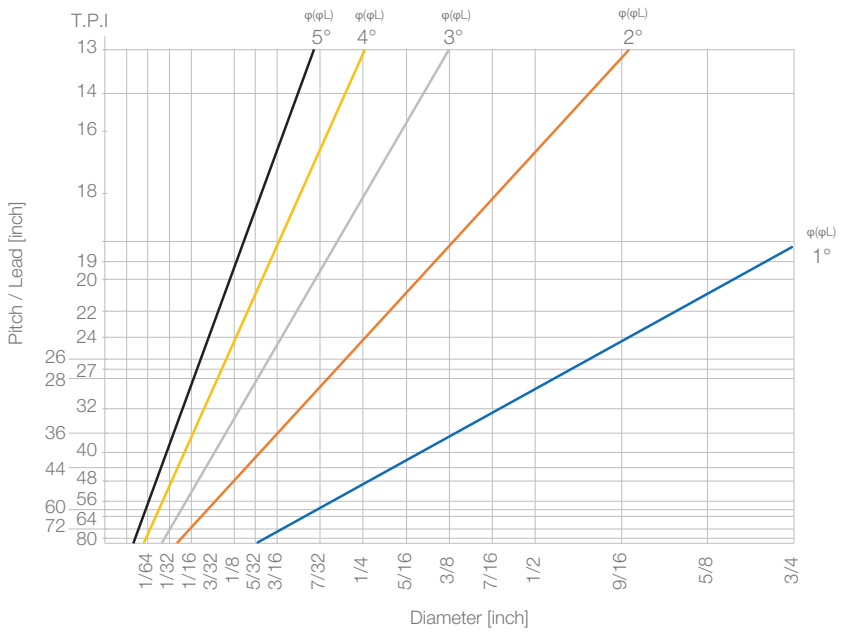


Helix (Lead) Angle Area by Using Graph

Helix Angle Evaluation



Detailed View for Small Pitch/Diameter

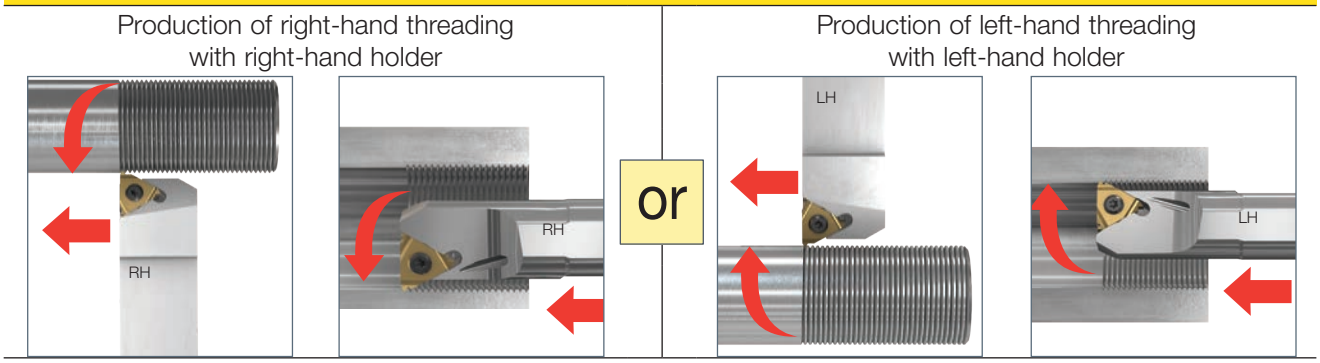


Anvil Selection for Symmetric Threading Profiles

The table below defines the recommended insert inclination angle (ß) and anvil selection according to the helix angle (φ) for single-start threading and the lead angle (φ_L) for multi-start threading, depending on the threading turning method for machining the following symmetric threading profiles:

- partial profile threading with angle profile of 60°, 55° only
- full profile threading according to ISO, UN, Whitworth, NPT, BSPT, Trapeze, ACME, RD standards only

Thread Turning Method

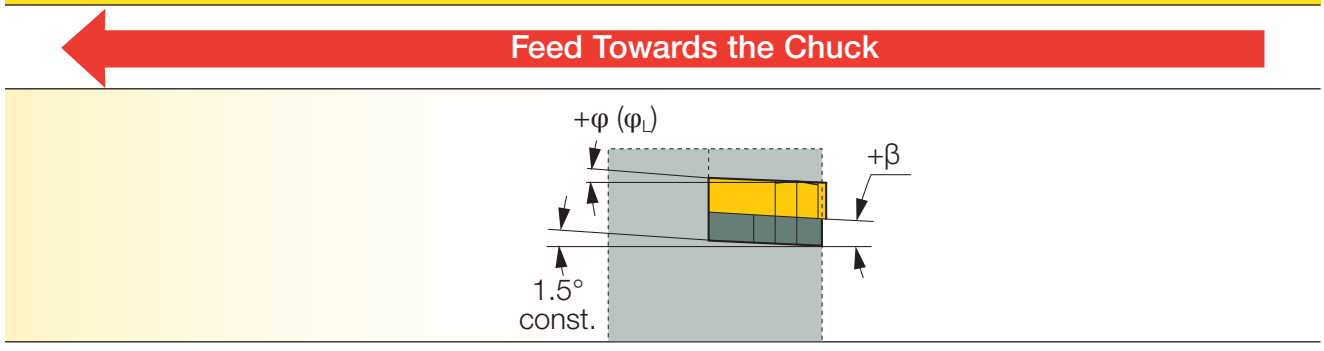


Anvil Selection

			Positive Anvils				
Threading Helix (Lead) Angle φ (φ_L)		φ (φ_L)≥ 5°	4°≤φ (φ_L)<5°	3°<φ (φ_L)≤4°	2°<φ (φ_L)≤3°	1°<φ (φ_L)≤2°	0°<φ (φ_L)≤1°
Inclination Angle β			4.5°	3.5°	2.5°	1.5° (std)	0.5°
IC	Toolholder	Anvil Designation					
16 (3/8)	EX RH OR IN LH EX RH OR IN LH	special solution	AE 16+4.5 AI 16+4.5	AE 16+3.5 AI 16-3.5	AE 16+2.5 AI 16+2.5	* AE 16+1.5 * AI 16+1.5	AE 16+0.5 AI 16+0.5
22 (1/2)	EX RH OR IN LH EX RH OR IN LH		AE 22+4.5 AI 22+4.5	AE 22+3.5 AI 22+3.5	AE 22+2.5 AI 22+2.5	* AE 22+1.5 * AI 22+1.5	AE 22+0.5 AI 22+0.5
27 (5/8)	EX RH OR IN LH EX RH OR IN LH		AE 27-4.5 AI 27+4.5	AE 27+3.5 AI 27+3.5	AE 27+2.5 AI 27+2.5	* AE 27+1.5 * AI 27+1.5	AE 27+0.5 AI 27+0.5
22U (1/2U)	EX RH OR IN LH EX RH OR IN LH		AE 22U+4.5 AI 22U+4.5	AE 22U+3.5 AI 22U+3.5	AE 22U+2.5 AI 22U+2.5	* AE 22U+1.5 * AI 22U+1.5	AE 22U+0.5 AI 22U+0.5
27U (5/8U)	EX RH OR IN LH EX RH OR IN LH		AE 27U+4.5 AI 27U+4.5	AE 27U+3.5 AI 27U+3.5	AE 27U+2.5 AI 27U+2.5	* AE 27U+1.5 * AI 27U+1.5	AE 27U+0.5 AI 27U+0.5

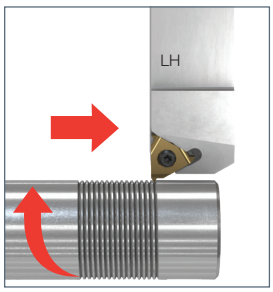
* Standard anvil supplied with tool

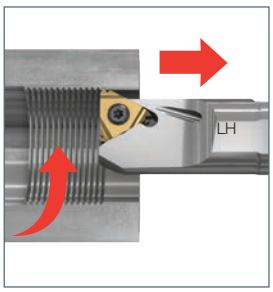
Positive Anvils



Thread Turning Method

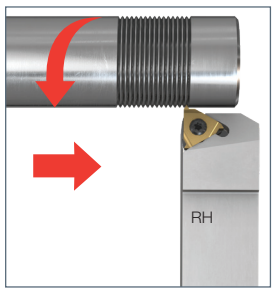
Production of right-hand threading with left-hand holder*

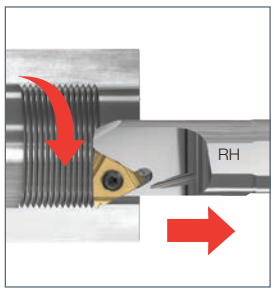




or

Production of left-had threading with right-hand holder*





* Change anvil to negative

* Change anvil to negative

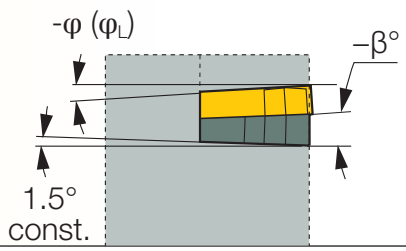
Anvil Selection

		Negative Anvils		
Threading Helix (Lead) Angle φ (φ_L)		**0°<φ (φ_L)≤1°**	**1°<φ (φ_L)≤2°**	**φ (φ_L)≥2°**
Inclination Angle β		**-0.5°**	**-1.5°**	
IC	**Toolholder**	**Anvil Designation**		
16 (3/8)	EX RH OR IN LH EX RH OR IN LH	AE 16-0.5 AI 16-0.5	AE 16-1.5 AI 16-1.5	special solution
22 (1/2)	EX RH OR IN LH EX RH OR IN LH	AE 22-0.5 AI 22-0.5	AE 22-1.5 AI 22-1.5	
27 (5/8)	EX RH OR IN LH EX RH OR IN LH	AE 27-0.5 AI 27-0.5	AE 27-1.5 AI 27-1.5	
22U (1/2U)	EX RH OR IN LH EX RH OR IN LH	AE 22U-0.5 AI 22U-0.5	AE22U-1.5 AI 22U-1.5	
27U (5/8U)	EX RH OR IN LH EX RH OR IN LH	AE 27U-0.5 AI 27U-0.5	AE 27U-1.5 AI 27U-1.5	

- EX - Anvil for external threading
- IN - Anvil for internal threading

Negative Anvils

Feed Towards the Tailstock

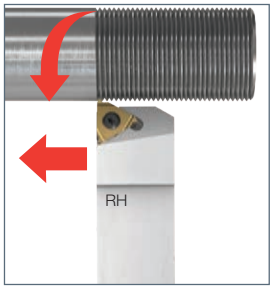


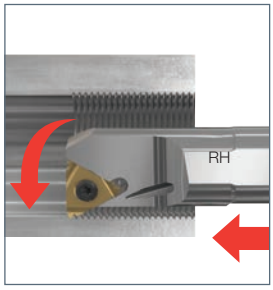
Anvil Selection for ABUT Threading Standard Only

The table below defines the recommended insert inclination angle (β) and anvil selection according to helix angle (φ) for single-start threading and according to lead angle (φ_L) for multi-start threading, depending on the threading turning method for machining asymmetric threading profile according to ABUT threading standard only.

Threading Turning Method

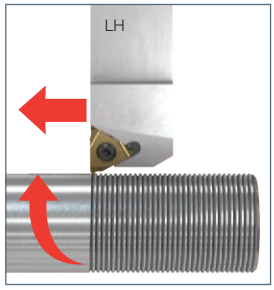
Production of right-hand threading with right-hand holder

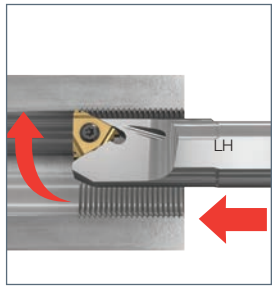




or

Production of left-hand threading with left-hand holder



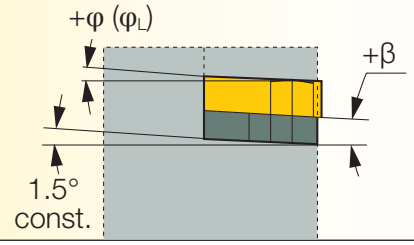
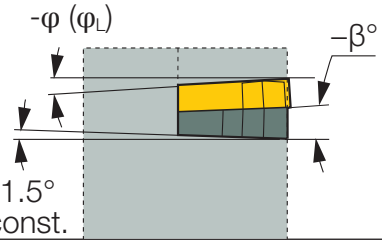


Anvil Selection

			Positive Anvils		Negative Anvils	
Threading Helix (Lead) Angle φ (φ_L)		φ (φ_L)>3.5°	3°<φ (φ_L)≤3.5°	2°<φ (φ_L)≤3°	1°<φ (φ_L)≤2°	0°<φ (φ_L)≤1°
Inclination Angle β			1.5° (std)	0.5	-0.5°	-1.5°
IC	Toolholder	Anvil Designation				
16 (3/8)	EX RH OR IN LH EX RH OR IN LH	special solution	* AE 16 +1.5 * AI16 +1.5	AE 16 +0.5 AI16 +0.5	AE 16 -0.5 AI 16 -0.5	AE 16 -1.5 AI 16 -1.5
22 (1/2)	EX RH OR IN LH EX RH OR IN LH		* AE 22 +1.5 * AI 22 +1.5	AE 22 +0.5 AI 22 +0.5	AE 22 -0.5 AI 22 -0.5	AE 22 -1.5 AI 22 -1.5
27 (5/8)	EX RH OR IN LH EX RH OR IN LH		* AE 27 +1.5 * AI 27 +1.5	AE 27 +0.5 AI 27 +0.5	AE 27 -0.5 AI 27 -0.5	AE 27 -1.5 AI 27 -1.5
22U (1/2U)	EX RH OR IN LH EX RH OR IN LH		* AE 22U +1.5 * AI 22U +1.5	AE 22U +0.5 AI 22U +0.5	AE 22U -0.5 AI 22U -0.5	AE 22U -1.5 AI 22U -1.5
27U (5/8U)	EX RH OR IN LH EX RH OR IN LH		* AE 27U +1.5 * AI 27U +1.5	AE 27U +0.5 AI 27U +0.5	AE 27U -0.5 AI 27U -0.5	AE 27U -1.5 AI 27U -1.5

* Standard anvil supplied with tool

- EX - Anvil for external threading
- IN - Anvil for internal threading

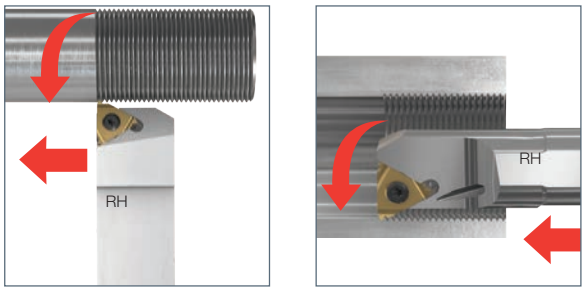
Positive Anvils	Negative Anvils
Feed Towards the Chuck	Feed Towards the Tailstock
	

Anvil Selection for SAGE Threading Standard Only

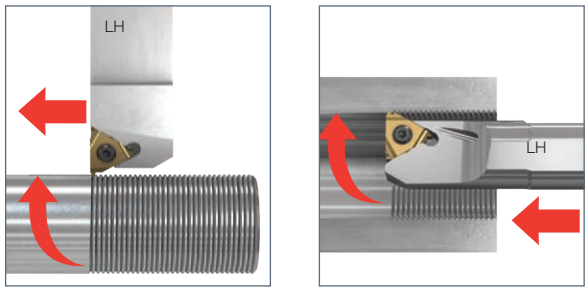
The table below defines the recommended insert inclination angle (ß) and anvil selection according to helix angle (φ) for single-start threading and according to lead angle (φ_L) for multi-start threading, depending on the thread turning method for machining asymmetric threading profile according to SAGE thread standard only.

Thread Turning Method

Production of right-hand threading with right-hand holder



Production of left-hand threading with left-hand holder

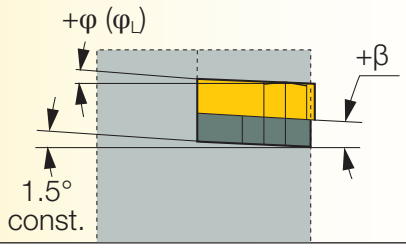
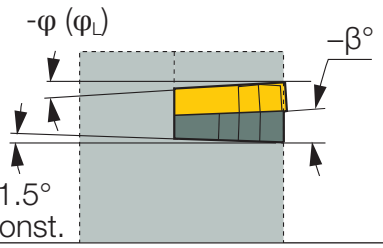


Anvil Selection

			Positive Anvils			Negative Anvils	
Threading Helix (Lead) Angle φ (φ_L)		φ (φ_L)>5.6°	5°<φ (φ_L)≤5.6°	3°<φ (φ_L)≤5°	2°<φ (φ_L)≤3°	1°<φ (φ_L)≤2°	0°<φ (φ_L)≤1°
Inclination Angle β			2.5°	1.5°(std)	0.5°	-0.5°	-1.5°
IC	Toolholder	Anvil Designation					
16 (3/8)	EX RH OR IN LH EX RH OR IN LH	special solution	AE 16 +2.5 AI 16 +2.5	* AE 16 +1.5 * AI 16 +1.5	AE 16 +0.5 AI16 +0.5	AE 16 -0.5 AI 16 -0.5	AE 16 -1.5 AI 16 -1.5
22 (1/2)	EX RH OR IN LH EX RH OR IN LH		AE 22 +2.5 AI 22 +2.5	* AE 22 +1.5 * AI 22 +1.5	AE 22 +0.5 AI 22 +0.5	AE 22 -0.5 AI 22 -0.5	AE 22 -1.5 AI 22 -1.5
27 (5/8)	EX RH OR IN LH EX RH OR IN LH		AE 27 +2.5 AI 27 +2.5	* AE 27 +1.5 * AI 27 +1.5	AE 27 +0.5 AI 27 +0.5	AE 27 -0.5 AI 27 -0.5	AE 27 -1.5 AI 27 -1.5
22U (1/2U)	EX RH OR IN LH EX RH OR IN LH		AE 22U +2.5 AI 22U +2.5	* AE 22U +1.5 * AI 22U +1.5	AE 22U +0.5 AI 22U +0.5	AE 22U -0.5 AI 22U -0.5	AE 22U -1.5 AI 22U -1.5
27U (5/8U)	EX RH OR IN LH EX RH OR IN LH		AE 27U +2.5 AI 27U +2.5	* AE 27U +1.5 * AI 27U +1.5	AE 27U +0.5 AI 27U +0.5	AE 27U -0.5 AI 27U -0.5	AE 27U -1.5 AI 27U -1.5

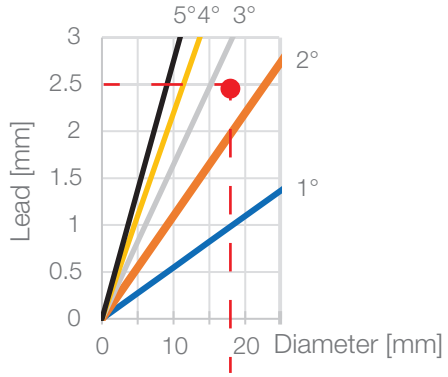
* Standard anvil supplied with tool

- EX - Anvil for external threading
- IN - Anvil for internal threading

Positive Anvils	Negative Anvils
Feed Towards the Chuck	Feed Towards the Tailstock
	

Example for Anvil Selection According to the Following Data

- External right-hand thread
- Threading profile: ISO standard
- Thread diameters: Major diameter: Ø20 mm, effective diameter: Ø18.376 mm
- No. of starts: 1
- Pitch: 2.5 mm
- Holder: SER 2020 K16
- Insert: 16ER 2.50 ISO IC908
- Thread Turning Method: Right-hand threading with right hand holder

Helix Angle Calculation (φ°) by Formula	Helix Angle Area From the Graph
$\varphi=\arctan\left(\frac{P}{\pi \times D_{pitch}}\right)$ $\varphi=\arctan\left(\frac{2.5}{\pi \times 18.376}\right)$ $\varphi \approx 2.5°$ **When:** φ = Helix angle Dpitch = 18.376 mm P = 2.5 mm π ≈ 3.142	 **2°<φ≤3°**

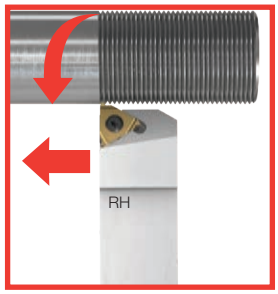
or

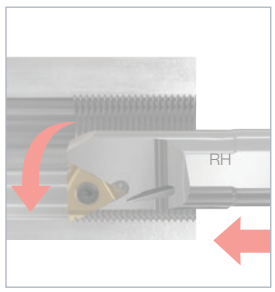
Recommendation for an Inclination Angle (β°) According to the Thread Turning Method Definition and Threading Standard

- Inclination Angle (ß°) for symmetric profile according to the ISO threading standard for right-hand threading production with a right-hand holder and obtained helix angle (φ)
- Defined inclination angle: ß=2.5 for range of helix angle 2°<φ≤3°

Thread Turning Method

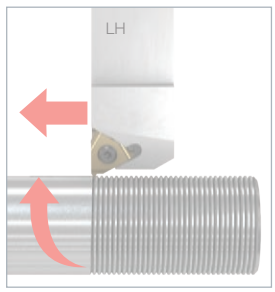
Production of right-hand threading with right-hand holder

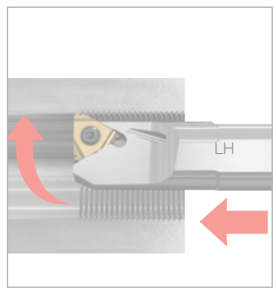




or

Production of left-hand threading with left-hand holder





Anvil Selection

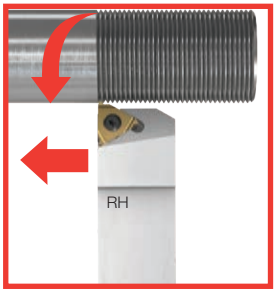
Threading Helix (Lead) Angle φ (φL)	φ (φL)≥5°	4°≤φ (φL)<5°	3°<φ (φL)≤4°	2°<φ (φL)≤3°	1°<φ (φL)≤2°	0°<φ (φL)≤1°
Inclination Angle β		4.5°	3.5°	2.5°	1.5° (std)	0.5°

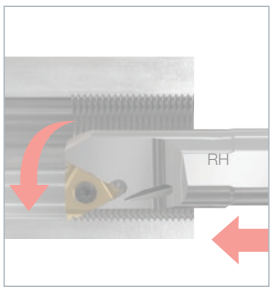
Recommendation for a Suitable Anvil According to the Insert Size and Type of Toolholder

- Suitable anvil for external or internal toolholder depending on the insert size and considering the obtained Inclination Angle (ß°)
- Defined anvils for Inclination Angle: ß=2.5°

Thread Turning Method

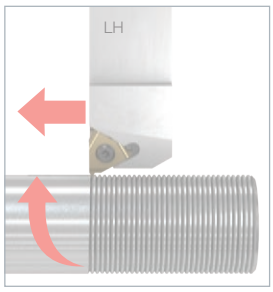
Production of right-hand threading with right-hand holder

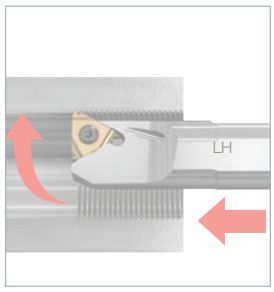




or

Production of left-hand threading with left-hand holder



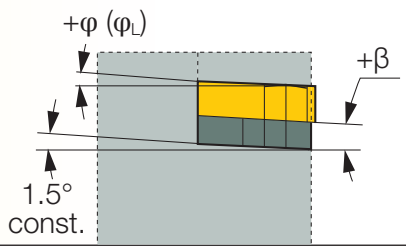


Anvil Selection

Threading Helix (Lead) Angle φ (φ_L)		φ (φ_L)≥5°	4°≤φ (φ_L)<5°	3°<φ (φ_L)≤4°	2°<φ (φ_L)≤3°	1°<φ (φ_L)≤2°	0°<φ (φ_L)≤1°
Inclination Angle β			4.5°	3.5°	2.5°	1.5° (std)	0.5°
I(d)	Toolholder	Anvil Designation					
16 (3/8)	EX RH OR IN LH EX RH OR IN LH	special solution	AE 16+4.5 AI 16+4.5	AE 16+3.5 AI 16-3.5	AE 16+2.5 AI 16+2.5	* AE 16+1.5 * AI 16+1.5	AE 16+0.5 AI 16+0.5
22 (1/2)	EX RH OR IN LH EX RH OR IN LH		AE 22+4.5 AI 22+4.5	AE 22+3.5 AI 22+3.5	AE 22+2.5 AI 22+2.5	* AE 22+1.5 * AI 22+1.5	AE 22+0.5 AI 22+0.5
27 (5/8)	EX RH OR IN LH EX RH OR IN LH		AE 27-4.5 AI 27+4.5	AE 27+3.5 AI 27+3.5	AE 27+2.5 AI 27+2.5	* AE 27+1.5 * AI 27+1.5	AE 27+0.5 AI 27+0.5
22U (1/2U)	EX RH OR IN LH EX RH OR IN LH		AE 22U+4.5 AI 22U+4.5	AE 22U+3.5 AI 22U+3.5	AE 22U+2.5 AI 22U+2.5	* AE 22U+1.5 * AI 22U+1.5	AE 22U+0.5 AI 22U+0.5
27U (5/8U)	EX RH OR IN LH EX RH OR IN LH		AE 27U+4.5 AI 27U+4.5	AE 27U+3.5 AI 27U+3.5	AE 27U+2.5 AI 27U+2.5	* AE 27U+1.5 * AI 27U+1.5	AE 27U+0.5 AI 27U+0.5

Positive Anvils

Feed Towards the Chuck



Tools Carrying Laydown Inserts

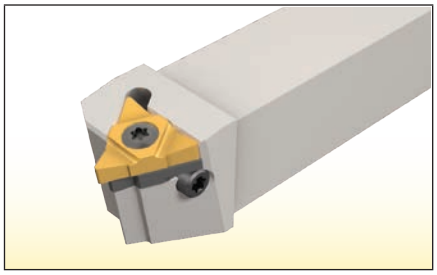
Solution for External and Internal Threading

The **ISCAR** threading family includes 5 types of tools for the production of external threading and 4 types of tools for the production of internal threading.

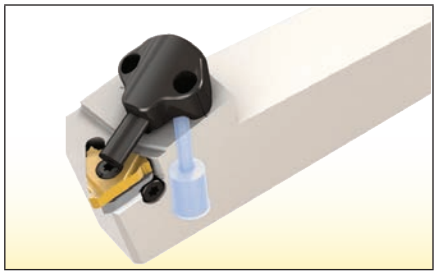
All tools belong to the **ISCAR** threading family and are suitable for mounting laydown inserts.



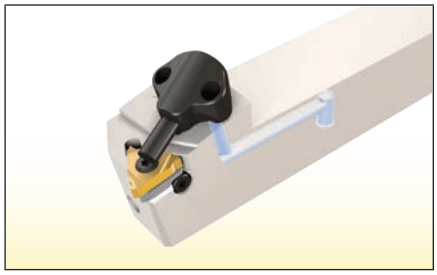
ISCAR Threading Tools for External Threading



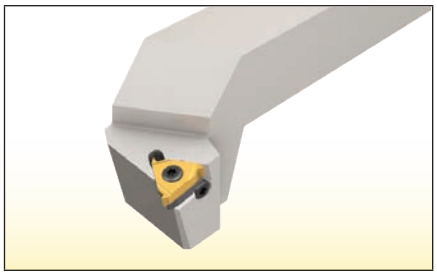
SER/L
Square Shank Tools



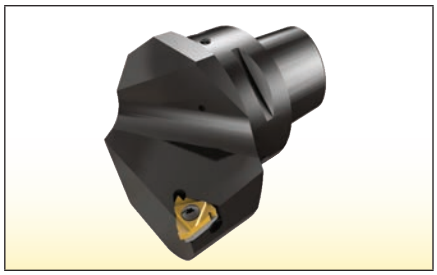
SER/L-JHP
Tools with High Pressure Coolant System



SER/L-JHP-MC
Tools with Bottom Fed High Pressure Coolant System

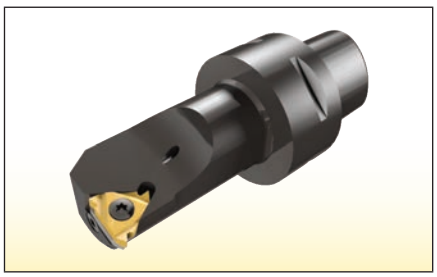


SER-D
Drophead Tools

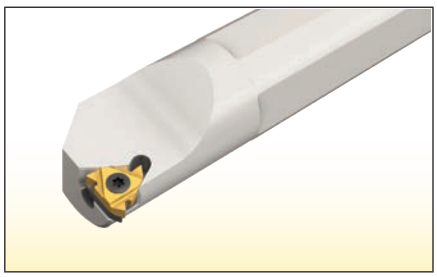


C#-SER/L
Tools with CAMFIX Shanks for Polygonal Taper Interface

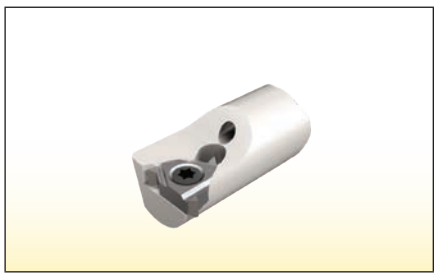
ISCAR Threading Tools for Internal Threading



C#-SIR/L
Shanks for Polygonal Taper Interface



SIR/L
Internal Threading Bars



E-SIR-HEAD
Interchangeable Threading Heads

Description of ISCAR Threading Tools According to the Template Below

S	E	R	2020	K	16	□
1	2	3	4	5	6	7

1 Clamping System

S — Screw Clamping

2 Application

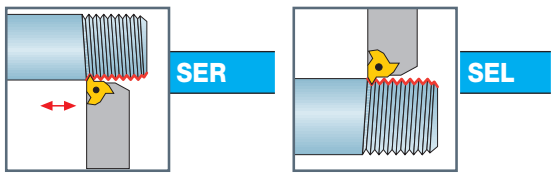
E — External

I — Internal

3 Hand of Tool

R — Right-hand

L — Left-hand

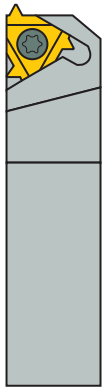


4 External Toolholders

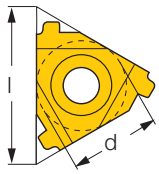
Shank: hxb 2020
20x20 mm (0750-.75"x.75")

5 Tool Length

D	—	60 mm	2.5"
F	—	80 mm	3.25"
H	—	100 mm	4.0"
K	—	125 mm	5.0"
L	—	140 mm	5.5"
M	—	150 mm	6.0"
P	—	170 mm	7.0"
R	—	200 mm	8.0"
S	—	250 mm	10.0"
T	—	300 mm	12.0"
U	—	350 mm	14.0"
V	—	400 mm	16.0"



6 Insert Size



l (mm)	d
06	5/32"
08	3/16"
08U	3/16"
11	1/4"
16	3/8"
22	1/2"
22U	1/2"
27	5/8"
27U	5/8"

7 Optional Specifications

U — For U-Type inserts

B — Bore for coolant

C — Carbide shank

O — Offset style

D — Drop head

G — Gang tool

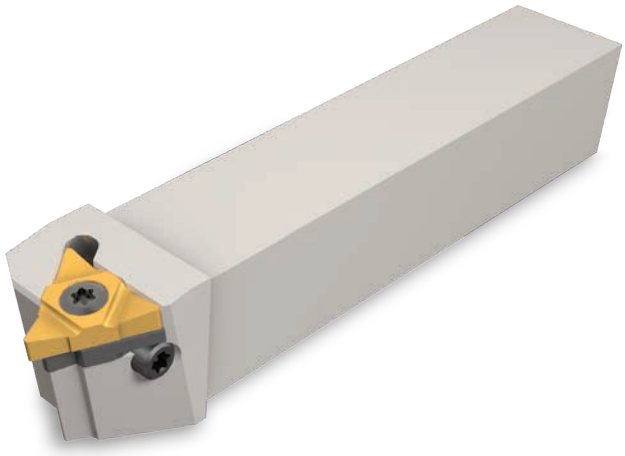
SP — Special

Optional Prefix

C - Chamfix Shank
HSK
KM

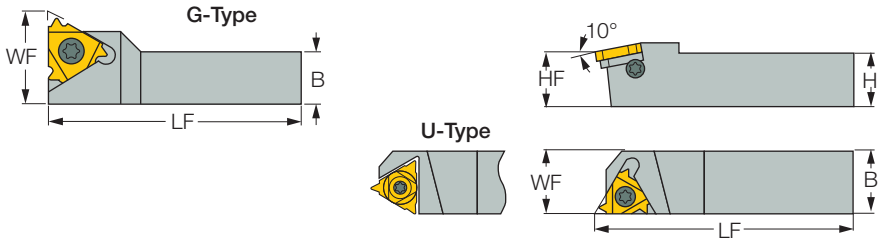
] Exchangeable Adaptation System

Square Shank Tools Suitable for External Threading



Threading square shank tools are designed according to the ISO standard. These are simple tools suitable for all types of lathe machines and do not have coolant channels. The coolant should be supplied from the turret.

Basic Dimensions of Square Shank Tools



HF — Functional height

H — Shank height

B — Shank width

WF — Functional width

LF — Functional length

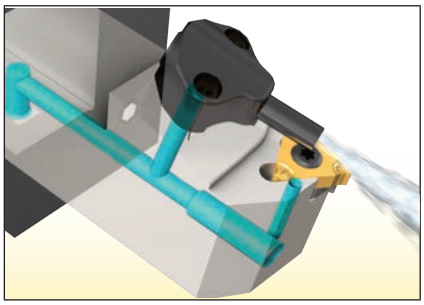
Main Advantage:
Suitable for all types of lathe machines

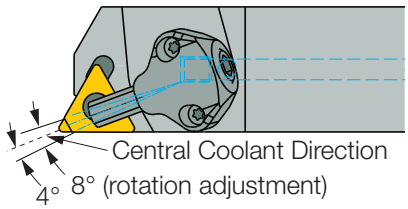
Tools With High Pressure Coolant Systems Suitable for External Threading



Threading tools with high pressure coolant systems (high pressure coolant is described in chapter 2.13) consist of a square shank according to the ISO standard and a unique cooling system (JHP) designed and patented by **ISCAR**.

The JHP system is composed of a static housing and telescopic tube to direct the coolant exactly to the cutting edge of the insert. The telescopic tube is embedded in the housing skews - right and left according to the working direction of the tool (see drawing below). The advantage of this system is that there is no need to detach the housing of the tool when changing an insert. This reduces setup time.



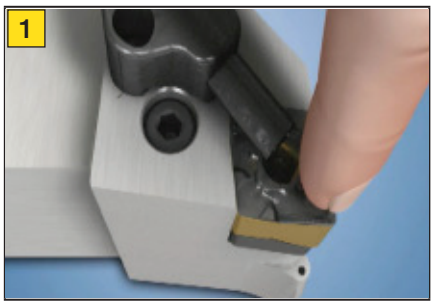


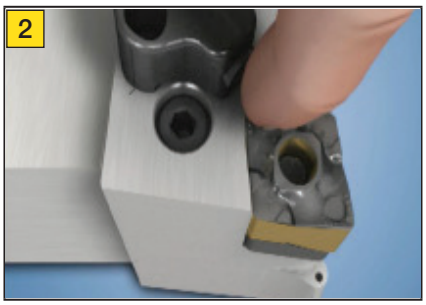
The use of high pressure coolant is growing as manufacturers are looking for ways to reduce cutting time, improve machining process reliability and achieve longer tool life.

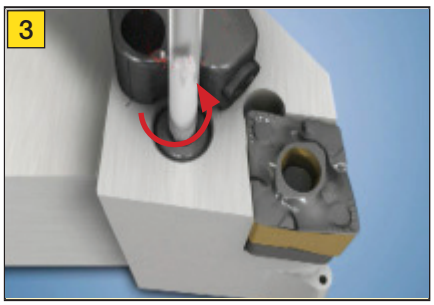
ISCAR's JHP tools provide all these advantages. Shorter chips are easily managed and do not tangle around the work piece or machine parts, and therefore, there is no need to stop the process frequently. With conventional cooling, the chips usually prevent the coolant from reaching the insert rake face in the cutting zone. The coolant stream of the JHP tools is directed precisely between the insert rake face and the flowing chips. This results in longer tool life and a much more reliable process.

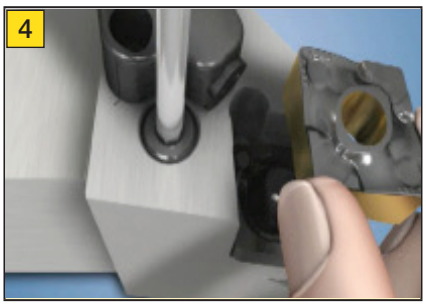
Changing or mounting inserts is done by pressing the telescopic tube in a backward direction. After indexing the insert cutting edge, starting the coolant will extract the tube automatically to its operating position.

Insert Indexing Procedue



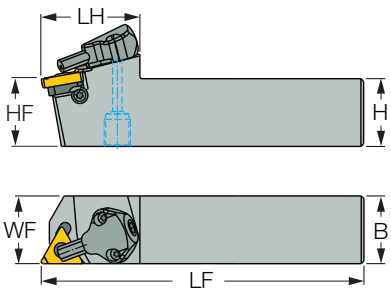






Ensure maximum coolant in cutting area

Basic Dimensions of Threading Tools With High Pressure Coolant Systems



LH — Head length

HF — Functional height

H — Shank height

B — B - shank width

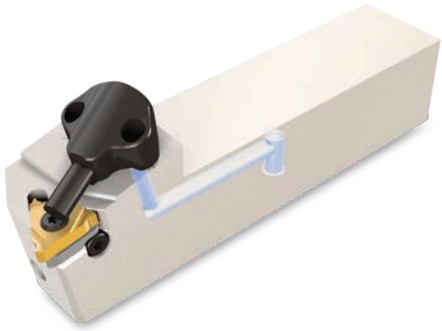
WF — Functional width

LF — Functional length

Main Advantages

- Reduces cutting time
- Provides longer tool life of cutting edge
- Very effective cooling down of the cutting edge, reducing sensitivity to heat fluctuations
- Enables better chip evacuation

Tools With Bottom Fed High Pressure Coolant Systems Suitable for External Threading

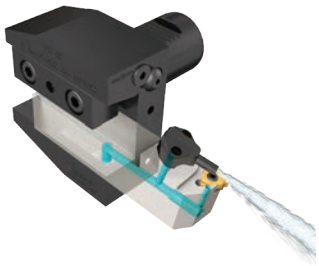


NOTE: The shank lengths of the tools with bottom fed high pressure coolant systems are shorter than the lengths of equivalent standard tools - adjusted to the VDI Toolholders

Tools with bottom fed high pressure coolant systems belong to the Multi-Connection **JHP-MC** line and are suitable for mounting on **VDI DIN69880** Toolholders.



The tools include a bottom coolant inlet hole and the **VDI JHP-MC** Toolholders feature a long coolant outlet slot that enables adjustment of the tool's overhang.

Max. tool overhang	Min. tool overhang
	

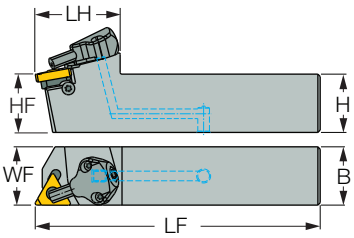
VDI DIN69880 is the most popular quick change adaptation system for CNC turning machines with disc-type turrets. This standard holder adaptation serves mainly stationary turning tools.

VDI DIN69880 Characteristics

- Easy and fast setup
- High stiffness, thanks to straight shank and flange face contact
- Rigid design due to a serrated clamping system
- High accuracy and center height repeatability
- Compact and light design
- Efficient coolant supply internally through the tool and externally through the flange

Multi-Connection **JHP-MC** Line for **VDI** Toolholders with a bottom fed coolant system to ensure maximum coolant in the cutting area

Basic Dimensions of Threading Tools With Bottom Fed High Pressure Coolant Systems



LH — Head length

F — Shank height

B — Shank width

WF — Functional width

LF — Functional length

Main Advantages

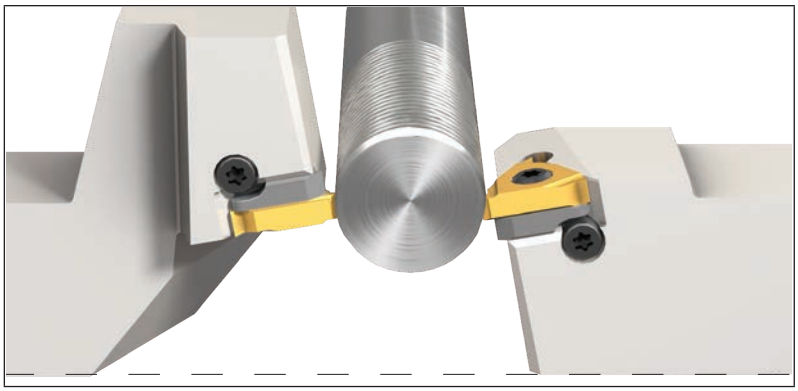
- Reduce cutting time
- Provide longer tool life of cutting edge
- Very effective cooling down of the cutting edge, reducing sensitivity to heat fluctuations
- Enable better chip evacuation

Drophead Tools Suitable for External Threading

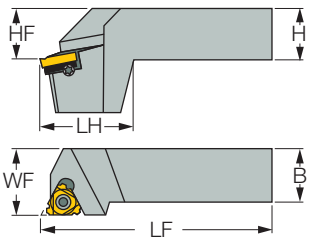


Drophead tools are designed to be held in an upside-down position, keeping the height of the cutting edge at the same level as regular tools without having to change the clamping in the turret and allowing machining close to the tail stock.

In many operations, it is beneficial to use the drophead in an upside-down position to help remove chips more effectively.



Basic Dimensions of Drophead Tools



LH — Head length

HF — Functional height

H — Shank height

B — Shank width

WF — Functional width

LF — Functional length

Main Advantages

- Allows machining close to the tail stock
- Allows upside-down threading production

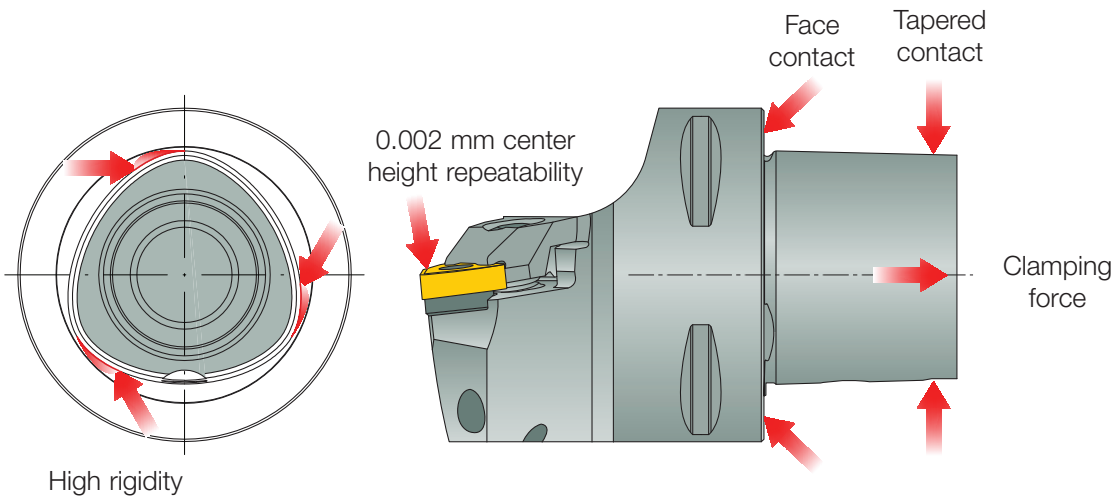
Tools With CAMFIX Shanks

for Polygonal Taper Interface Solution for External and Internal Threading

Tool for External Threading	Tool for Internal Threading
	

External and internal threading tools with **CAMFIX** shanks for polygonal taper interface (ISO 26623-1 standard) enable quick change and reduce setup time - most important for mass production industries. These threading tools feature coolant channels for efficient flushing of heat and chips from the cutting edges.

Polygonal Design-Self Centering

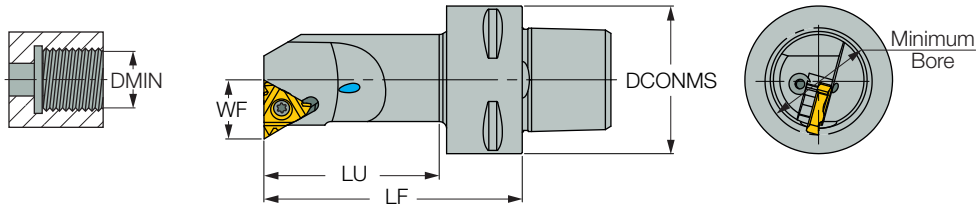


The **CAMFIX** system features high accuracy, excellent rigidity against bending forces, stability and high torque transfer. This is achieved due to the polygonal cone and face contact.

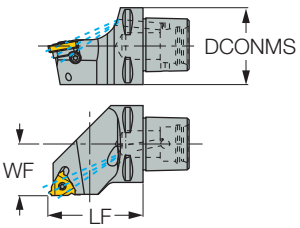
Multi-Connection **JHP-MC** Line for **VDI** Toolholders with a bottom fed coolant system to ensure maximum coolant in the cutting area

Basic Dimensions of Threading Tools With CAMFIX Shanks for Polygonal Taper Interface

Tool for Internal Threading



Tool for External Threading



LU — Usable length

DCONMS — Connection diameter of machine side

WF — Functional width

LF — Functional length

Main Advantages

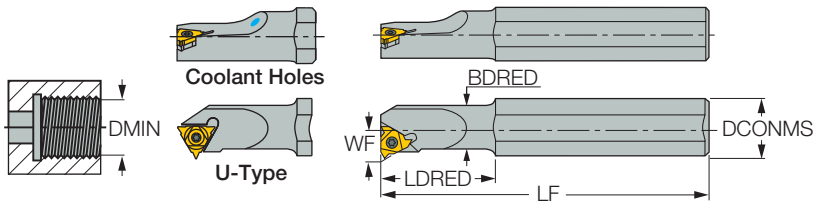
- Reduces cutting time
- Provides longer tool life of cutting edge
- Very effective cooling down of the cutting edge, reducing sensitivity to heat fluctuations
- Enables better chip evacuation

Bar Shank Type Holder Suitable for Internal Threading

Bar shank type holders for the production of internal threading are designed according to the ISO standard. These are simple tools suitable for all types of lathe machines and can be produced from steel or solid carbide.
These types of tools are available with and without coolant channels.



Basic Dimensions of Bar Shank Type Holders With Coolant Channels



DMIN — Minimum bore diameter

DCONMS — Connection diameter of machine side

BDRED — Body diameter

LDRED — Body length

WF — Functional width

LF — Functional length

Main Advantage

Suitable for all types of lathe machines

Interchangeable Heads for Internal Threading

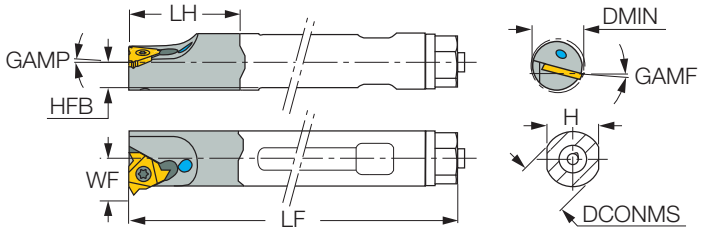
Interchangeable heads can carry laydown inserts and are mounted on solid carbide shanks. These heads are available with internal coolant and are suitable for the production of internal threading. Solid carbide shanks are used for economical boring with various interchangeable heads for internal threading, internal grooving, and internal turning.





Interchangeable heads - economical and diverse solution

Basic Dimensions of Interchangeable Heads With Coolant Channels



DMIN — Minimum bore diameter
DCONMS — Connection diameter of machine side
H — Shank height
LH — Head length
GAMP — Rake angle axial
GAMF — Rake angle radial
WF — Functional width
LF — Functional length
HFB — Functional height



Main Advantages

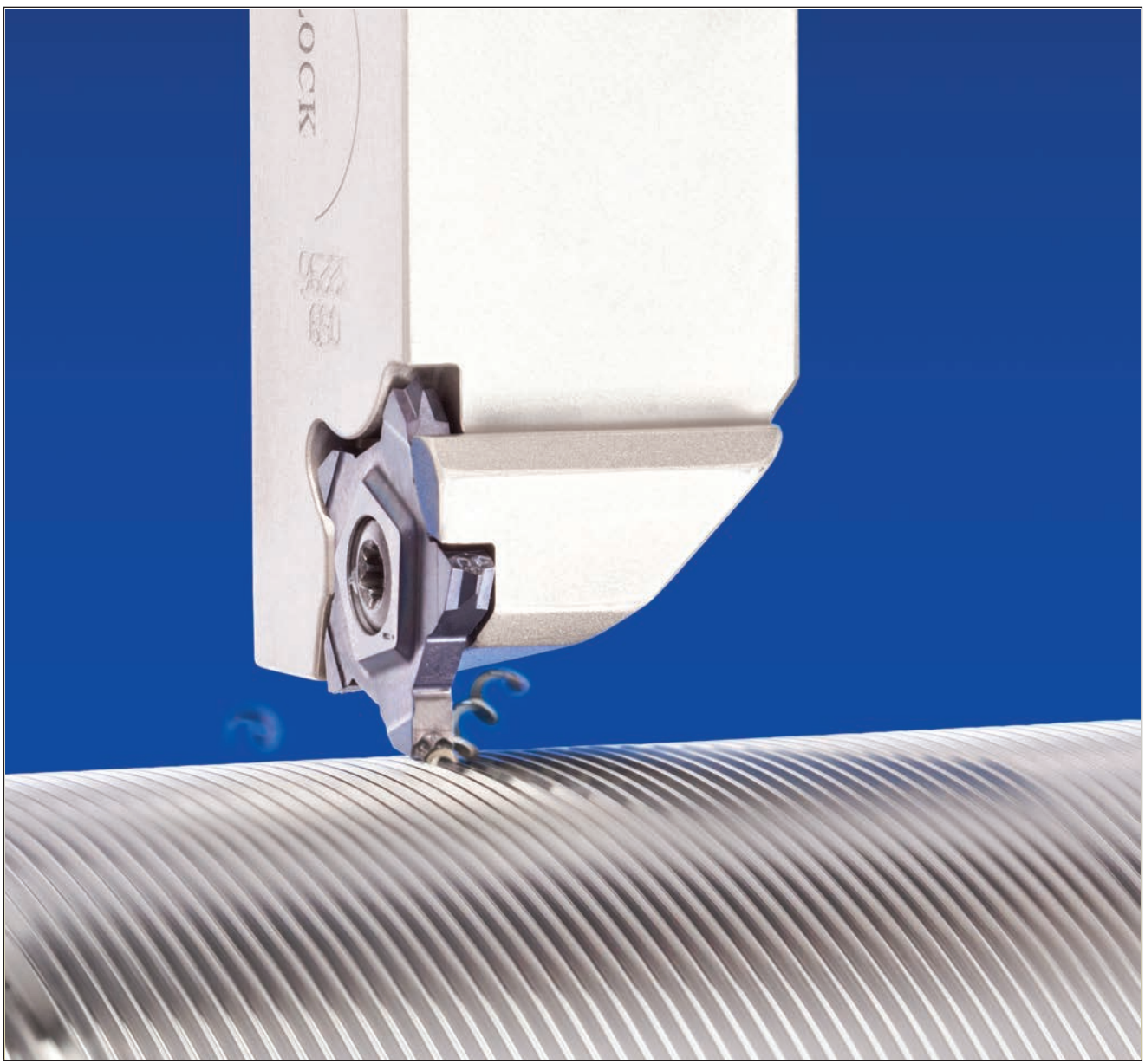
- One shank can carry various interchangeable heads
- Available with internal coolant
- Economical solution

PENTACUT Threading Insert With 5 Cutting Edges for External Threading

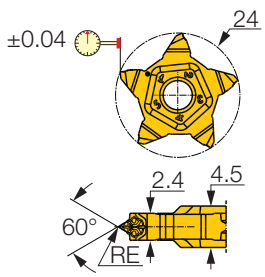
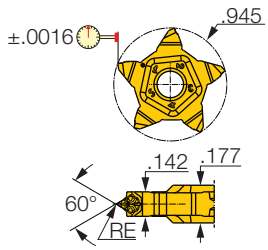
PENTA is an all ground insert where each cutting edge on the pentagonal shaped insert is equipped with a unique chipformer that provides excellent chip control, short and easily exposed chips, high accuracy and surface quality. The insert is tangentially mounted on a side of the holder, positioned against two peripheral contact surfaces to ensure accuracy of the center height. Clamping of the insert is by a side torx screw. The torx screw can be activated from either side of the holder to enable insert indexing (rotation) without having to remove the holder from the machine turret, i.e. easy and fast edge indexing from either side of the holder. In case of edge breakage, the tool will survive, and other cutting corners still can be used.

The **PENTACUT** line offers solutions for partial profiles and full profiles for most popular standards and is suitable for the production of external threading Iscar producing also special solutions for internal applications. The PENTA insert has a strong design and, combined with a very rigid clamping system, enables threading at very high machining parameters. This insert can be used for threading between walls to enable complete part production on bar feeder machines.

PENTACUT offers a very stable and economical solution



Basic Dimensions of PENTACUT Inserts

Metric	Inch
	

IC — Inscribe circle diameter

W — Width

CW — Insert width

RE — Corner radius

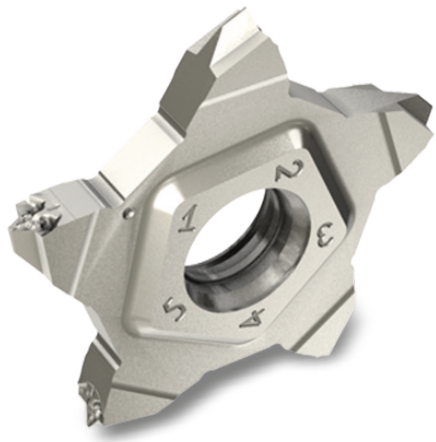
A — Angle of cutting edge

Main Advantages

- Suitable for work next to shoulder
- Suitable for threading production between the walls in narrow grooves
- Economical solution in calculating insert cost per cutting edges
- Rigid clamping system
- Easy and fast insert mounting and cutting edge indexing
- No setup needed after each insert indexing
- Easy handling of insert

Notes

- Standard inserts are intended for symmetrical thread profiles
- Consider chip evacuation when working in big diameters, Ø200 mm and more.

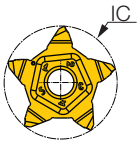


Description of PENTACUT Inserts According to the Template Below

Partial Profile

PENTA	24	-	MT	-	0.05	IC908
	1		2		3	4

1 Inscribe circle diameter (IC)

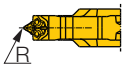


2 Angle of cutting edge (A)

WT — 55°

MT — 60°

3 Corner radius (RE)



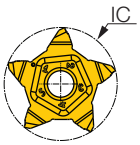
4 Grade

IC908

Full Profile

PENTA	24	-	1.25	-	ISO	IC908
	1		2		3	4

1 Inscribe circle diameter (IC)



2 Pitch

Value by number:
0.5 - 2.0 mm, 14 - 28 TPI

3 Threading standard

ISO — ISO Metric

UN — American UN

W — Whitworth

BSPT — British BSPT

NPT — National pipe threading

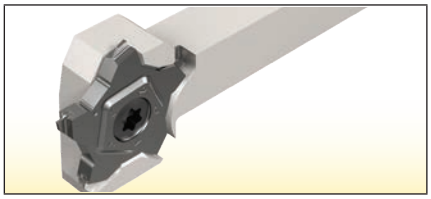
4 Grade

IC908

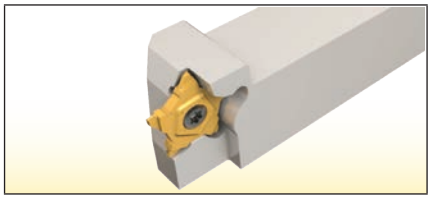
PENTACUT Tools for External Threading

The **PENTACUT** family is a combination of a very rigid clamping system and a strong insert design to enable machining at very high machining parameters. The **PENTACUT** family includes 6 types of tools for the production of external threading. All tools belong to the **PENTACUT** family and are suitable for mounting PENTA inserts with 5 cutting edges. All tools for PENTA inserts are designed for easy and fast edge indexing from either side of the holder. In case of edge breakage, the tool will survive and other cutting corners may still be used.

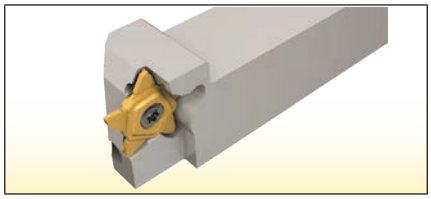
PENTACUT Tools for External Threading



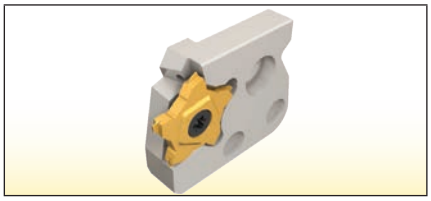
PCHR/L-24
Square Shank Tools



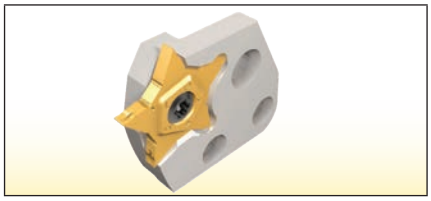
PCHR/L-24-JHP
Tools with High Pressure Coolant System



PCHR/L-24-JHP-MC
Tools with Bottom Fed High Pressure Coolant System



PCADR/L-JHP
Interchangeable Adapters with Internal Channels for High Pressure Coolant



PCADR/L
Interchangeable Adapters without Internal Coolant Channels



PCHBR/L
Double-ended Blades

Description of PENTACUT Tools for External Threading

PCHR	20	-	24	-	JHP	-	MC
1	2		3		4		5

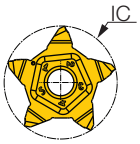
1 **Hand of Tool**

PCHR — Right-hand

PCHL — Left-hand

2 **Shank dimensions**

3 **Inscribe circle diameter (IC)**



4 **JHP**

With high pressure coolant channels

5 **MC**

Suitable for **VDI** adaptation system

Description of PENTACUT Interchangeable Adapters for External Threading

PC	AD	L	24	-	JHP
1	2	3	4		5

1 **Insert type**

PC - **PENTACUT** family

2 **Tool type**

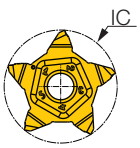
AD - Interchangeable Adapters

3 **Hand of Tool**

R — Right-hand

L — Left-hand

4 **Inscribe circle diameter (IC)**



5 **JHP**

With high pressure coolant channels

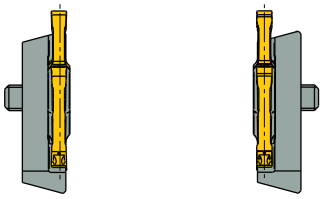
Description of PENTACUT Blades for External Threading

PCHBL	32	-	24	R
1	2		3	4

1 Blade Prism Direction

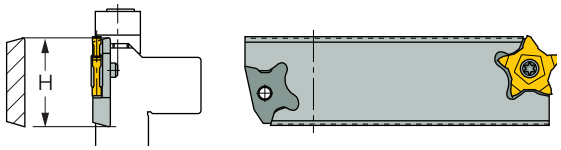


PCHBR — Right-hand

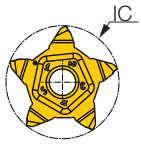


PCHBL — Left-hand

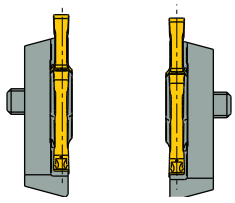
2 Blade height (H) (H)



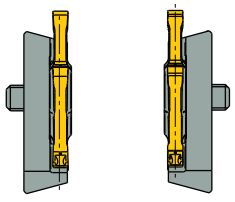
3 Inscribe circle diameter (IC)



4 Pocket location depending on Blade prism direction



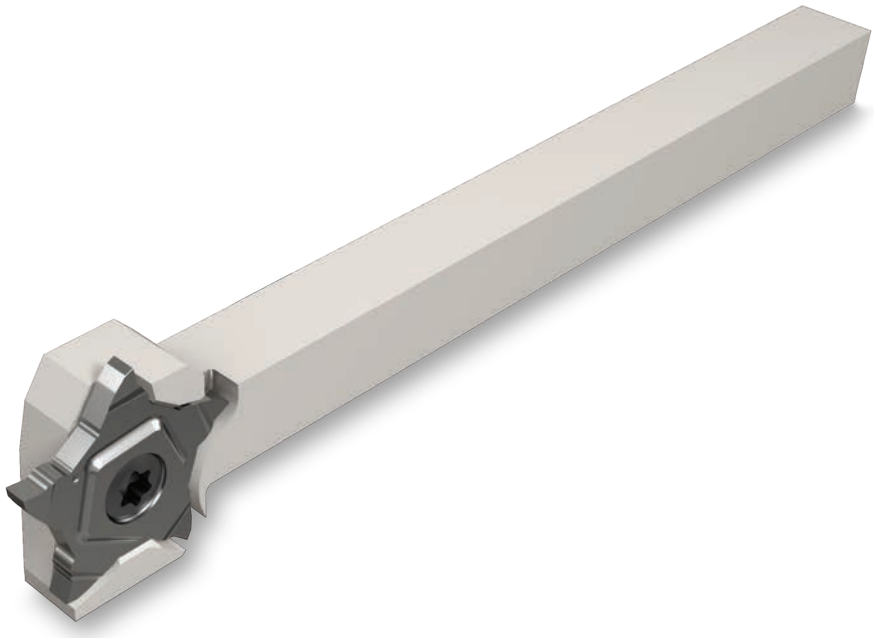
R — Right pocket



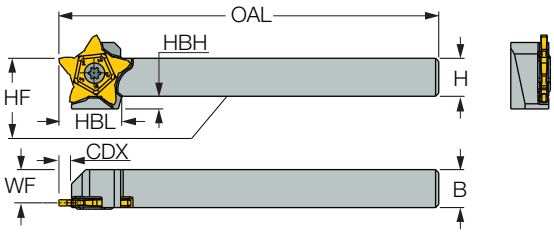
L — Left pocket

Square Shank Tools for External Threading

These are simple tools suitable for all types of lathe machines and are not equipped with coolant channels. The coolant should be supplied from the turret.



Basic Dimensions of Square Shank Threading Tools



HF — Functional height

H — Shank height

B — Shank width

WF — Functional width

OAL — Overall length

HBL — Head bottom length

HBH — Head bottom height

CDX — Insert overhang

Main Advantage

Suitable for all types of lathe machines

Tools With High Pressure Coolant System for External Threading

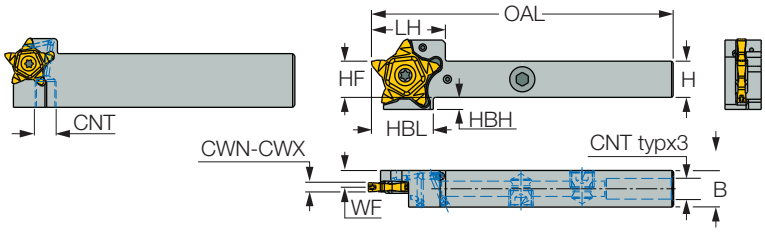


Threading square shank tools are designed to carry the PENTA inserts and feature coolant channels for the use of high-pressure coolant. 5 corner indexing can be performed by only a partial opening of the clamping screw, so the indexing action is short and easy and no setup operation is required.
These tools are suitable for all types of lathe machines.

Maximum coolant in cutting area

NOTE: High Pressure Coolant is described in chapter 2.13

Basic Dimensions of Threading Tools With High Pressure Coolant System



OAL — Overall length

LH — Head length

HF — Functional height

HBL — Head bottom length

HBH — Head bottom height

H — Shank height

B — Shank width

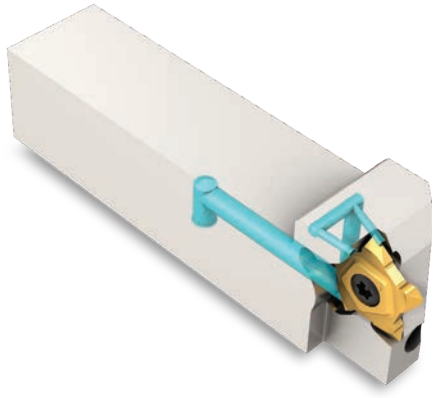
WF — Functional width

CNT — Coolant entry threading size

Main Advantages

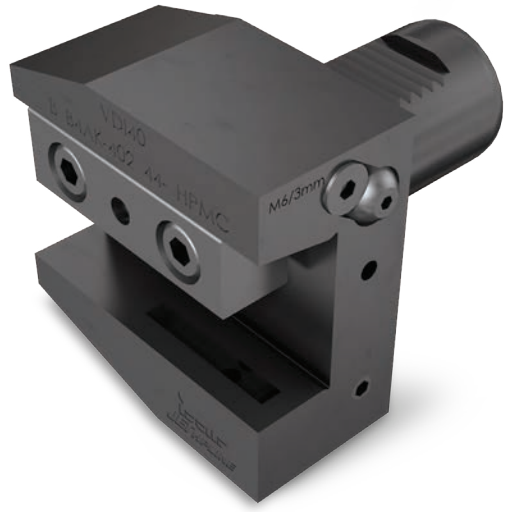
- Suitable for all types of lathe machines
- Internal coolant
- Reduces cutting time
- Provides longer tool life of cutting edge
- Enables better chip evacuation

Tools With Bottom Fed High Pressure Coolant Systems for External Threading

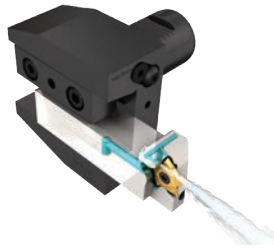
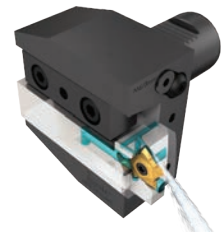


NOTE: The shank lengths of the tools with bottom fed high pressure coolant systems are shorter than the lengths of equivalent standard tools - adjusted to the VDI Toolholders

Tools with bottom fed high pressure coolant systems belong to the Multi-Connection **JHP-MC** line and are suitable for mounting on **VDI DIN69880** Toolholders.



The tools include a bottom coolant inlet hole and the **VDI JHP-MC** Toolholders feature a long coolant outlet slot that enables adjustment of the tool's overhang.

Max. tool overhang	Min. tool overhang
	

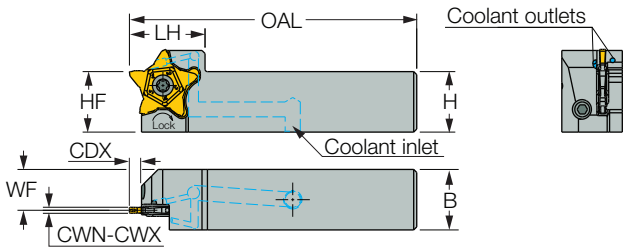
VDI DIN69880 is the most popular quick change adaptation system for CNC turning machines with disc-type turrets. This standard holder adaptation serves mainly stationary turning tools.

VDI DIN69880 Characteristics

- Easy and fast setup
- High stiffness, thanks to straight shank and flange face contact
- Rigid design due to a serrated clamping system
- High accuracy and center height repeatability
- Compact and light design
- Efficient coolant supply internally through the tool and externally through the flange

Multi-Connection **JHP-MC** Line for **VDI** Toolholders with a bottom fed coolant system ensures maximum coolant in the cutting area

Basic Dimensions of Threading Tools With a Bottom Fed High Pressure Coolant System



OAL — Overall length

LH — Head length

HF — Functional height

H — Shank height

B — Shank width

WF — Functional width

CDX — Insert overhang

Main Advantages

- Reduces cutting time
- Provides longer tool life of cutting edge
- Very effective cooling down of the cutting edge, reducing sensitivity to heat fluctuations
- Enables better chip evacuation

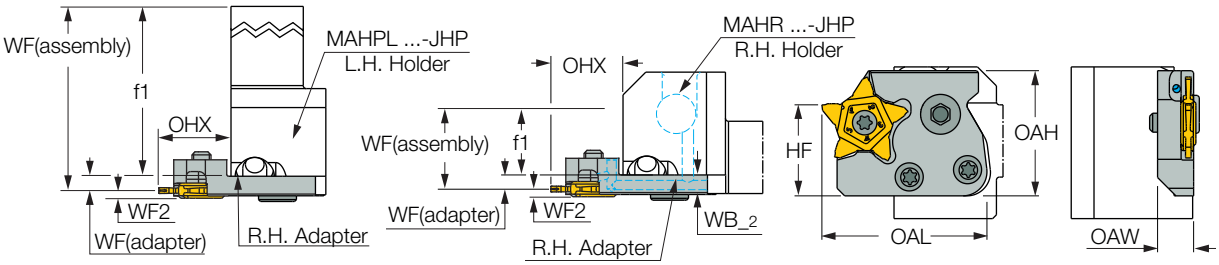
Interchangeable Adapters for External Threading

Interchangeable Adapters With Internal Coolant Channels	Interchangeable Adapters Without Internal Coolant Channels
	

Interchangeable adapters can carry PENTA inserts with 5 threading corners for the production of external threading and can be mounted on different holders. These adapters are available with internal channels for high pressure coolant or without internal coolant channels. There are many types of holders that are suitable to carry these adapters when the holders differ in their adaptation and designation. These tools are suitable for various interchangeable adapters for external threading, external grooving, external parting and external turning.

Interchangeable adapters - an economical and diverse solution

Basic Dimensions for Interchangeable Adapters



WF (assembly)=WF (R.H. holder)+WF (R.H adapter)
WF (assembly)=WF (L.H. holder)+WF2 (R.H. adapter)

OAW — Overall width

OAH — Overall height

OAL — Overall length

HF — Functional height

WF — Functional width

WB — Body width

Main Advantages

- One holder can carry various interchangeable adapters
- Available with internal channels for high pressure coolant
- Economical solution
- Reduces cutting time
- Provides longer tool life of cutting edge
- Very effective cooling down of the cutting edge, reducing sensitivity to heat fluctuations
- Enables better chip evacuation

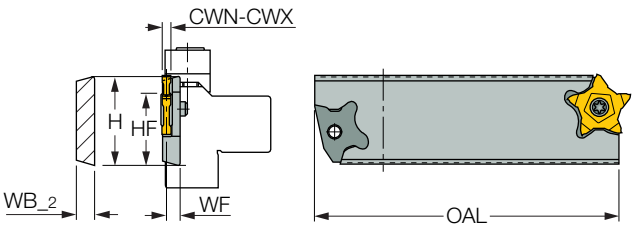
BLADE for External Threading

The **PENTACUT** family includes a blade for large overhang applications. **PENTACUT** blades are double-ended and suitable for machines that can use standard blocks for blades.
The blades offer a preferred solution for external threading production between the walls in narrow grooves. If the blade's insert pocket is damaged, the other side of blade may still be used.





Basic Dimensions of the Blade



OAL — Overall length

HF — Functional height

H — Blade height

WF — Functional width

WB-2 — Blade width

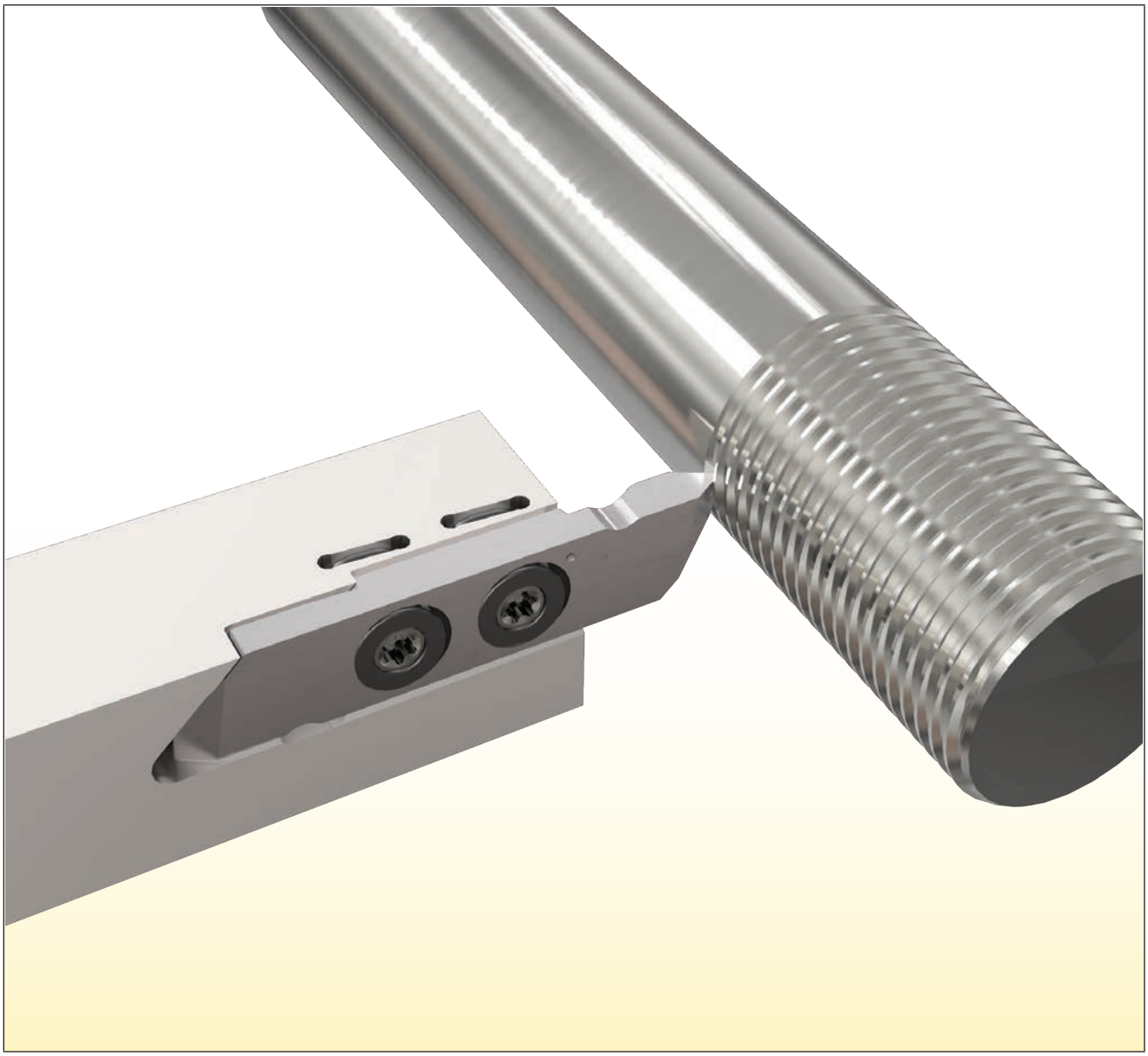
Main Advantages

- Suitable for all types of lathe machines
- Suitable for large overhang applications
- Suitable for work next to shoulder
- Suitable for threading production between the walls in narrow grooves
- Economical double-ended blade solution
- Rigid clamping system
- Easy and fast insert mounting and cutting edge indexing
- No setup needed after each insert indexing

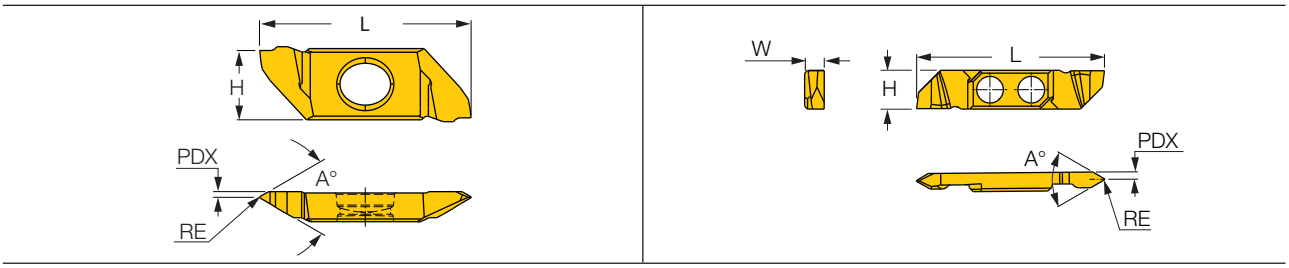
SWISSCUT System for Swiss-Type Lathe Inserts for External Threading

The **SWISSCUT** line is designed for Swiss-type lathes controlled by CNC and for Swiss-type automatics (known also as screw-type machines). The unique **SWISSCUT** line is characterized by ergonomic insert clamping and simple handling. This system is an important element for the high precision Swiss-type machine industry. The insert included in this line has two cutting edges and all ground. The **SWISSCUT** line includes two types of blades - the difference between them is the insert protrusion from the tool. The **SWISSCUT** line offers a solution for partial profiles and full profiles and is suitable for the production of external threading.

SWISSCUT - A User-Friendly System for Swiss-Type Lathes



Basic Dimensions of SWISSCUT Inserts



L — Insert length

H — Insert height

W — Insert width

A — Angle of cutting edge

PDX — The distance between the insert and the crest radius

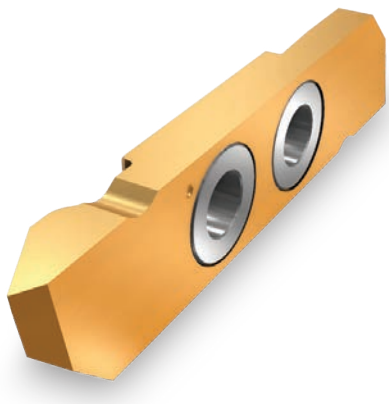
RE — Corner radius

Main Advantages

- Designed for Swiss-type lathes
- Suitable for work next to shoulder
- Suitable for threading production between the walls in narrow grooves
- Easy and fast insert mounting and cutting edge indexing
- No setup needed after each insert indexing
- Easy handling of insert
- Precise geometry and excellent surface finish

Notes

- Standard inserts are intended for symmetrical thread profiles
- Without a chipformer



Description of SWISSCUT Inserts According to the Template Below

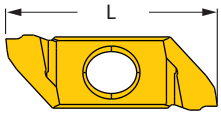
Partial Profile	SCIL	22	-	MT	R	007	IC1008
	1	2		3	4	5	6

1 Insert Clamp Direction

SCIR — Right-hand

SCIL — Left-hand

2 Insert length (mm)



3 Angle of cutting edge (A)

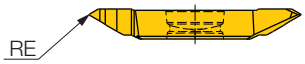
MT — 60°

4 Placement of cutting edge

R — Right-side

L — Left-side

5 Corner radius (RE)



6 Grade

IC1008



Full Profile

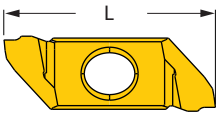
SCIR	22	-	MT	R	-	0.5	ISO	IC1008
1	2		3	4		5	6	7

1 Insert Clamp Direction

SCIR — Right-hand

SCIL — Left-hand

2 Insert length (mm)



3 Angle of cutting edge (A)

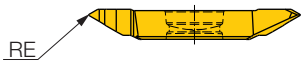
MT — 60°

4 Placement of cutting edge

R — Right-side

L — Left-side

5 Corner radius (RE)



6 Threading standard

ISO — ISO Metric

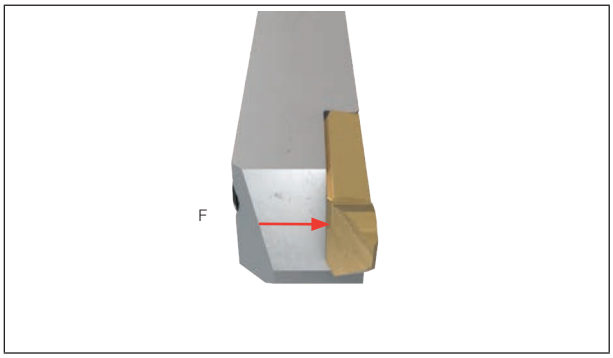
7 Grade

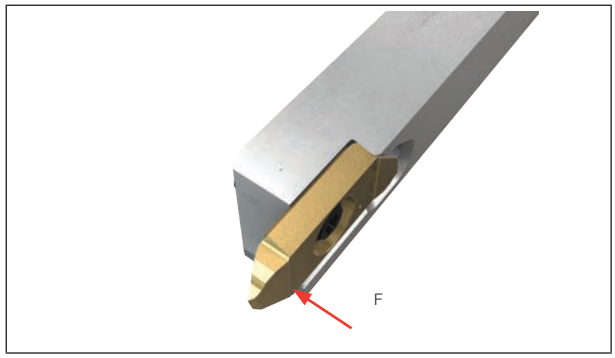
IC1008



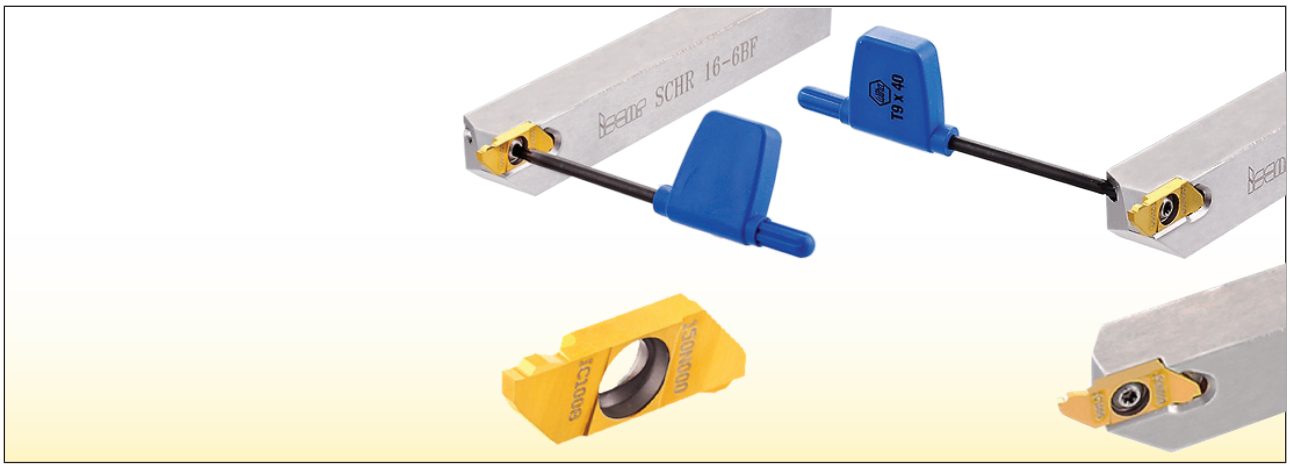
SWISSCUT System for Swiss-Type Lathe Tools for External Threading

The compact **SWISSCUT** toolholder provides easy and accurate indexing of the insert.
The very stable, tangentially clamped insert can be indexed without removing the screw and without removing the toolholder from the machine turret. In addition, clamping and releasing the insert can be accomplished from either side of the toolholder. Bottom and rear prisms provide high stability and precision when turning in alternating directions or where relatively high loads are applied.





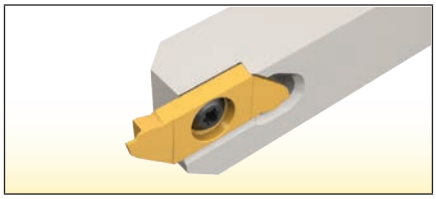
The back clamping option of the **SWISSCUT** enables the user to clamp the insert in the holder from the opposite side of the insert.
This B-Type (back) clamping style is enabled by using an insert with thread bushing.
The insert is clamped by a screw that pulls the insert into the pocket by thread bushing.
An O-ring mounted on the screw prevents the screw from falling out of the pocket while the insert is being replaced. The same tool and insert can be used in both clamping directions. The clamping design uses a special screw that can be accessed and operated from both sides of the tool.



The **SWISSCUT** system is a part of **ISCAR**'s tools for Swiss-type machines and small lathes.

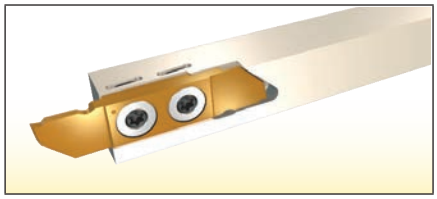
- The unique rigid tool design with small insert overhang provides excellent economical results especially for finishing and precision machining of small parts.
- The **SWISSCUT** family provides a good solution for practically any miniature part application.

SWISSCUT Tools for External Threading



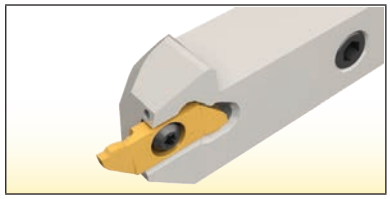
SCHR/L-22BF

Square Shank Tools
with Back and Front Clamping
for Swiss-type and
Automatic Machines



SCHR/L-41BF

Square Shank Tools
with Back and Front Clamping
for Swiss-Type and
Automatic Machines



SCHR/L-22BF-JHP

Tools with High Pressure
Coolant Channels for Swiss-
Type and Automatic Machines

Description of SWISSCUT Tools for External Threading

SCHL	08	10	-	22	-	BF	-	□
1	2	3		4		5		6

1 Hand of tool

SCHR — Right-side

SCHL — Left-side

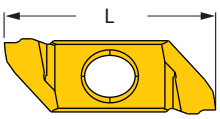
2 Shank height



3 Shank width



4 Insert length (mm)



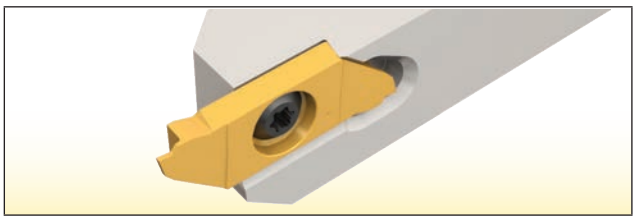
5 Clamping side

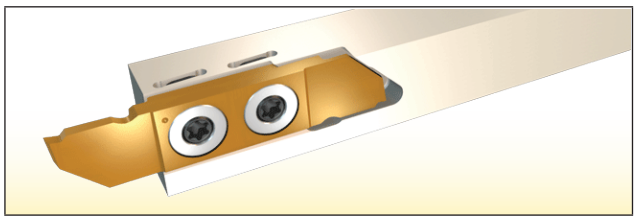
BF — Possibility for back and front clamping

6 JHP

With high pressure coolant channels

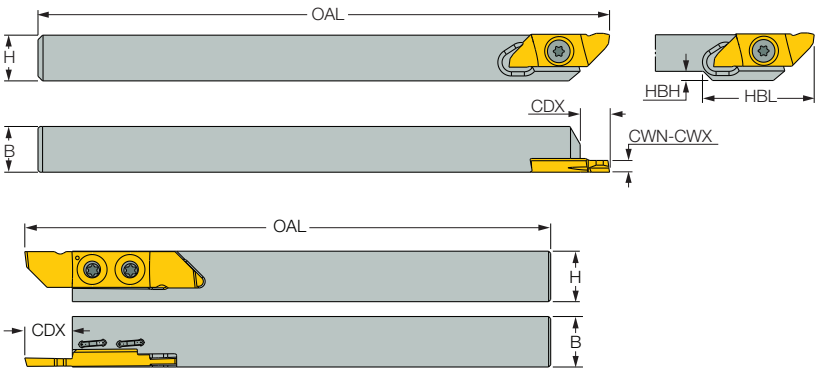
Square Shank Tools for External Threading





These square shank tools with back and front clamping are designed for Swiss-type lathes and also can be used on all types of lathe machines. They are not fitted with coolant channels.

Basic Dimensions of Square Shank Tools



HF — Functional height

H — Shank height

B — Shank width

OAL — Overall length

HBL — Head bottom length

HBH — Bottom height

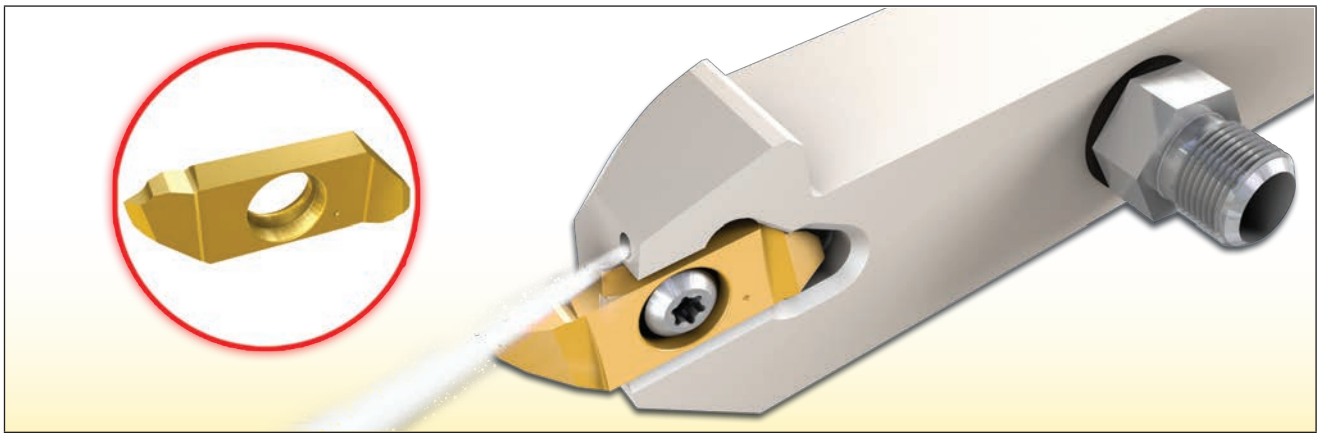
CDX — Insert overhang

Main Advantages

- Suitable for all types of lathe machines
- No need to remove a clamping screw for replace insert

Tools With High Pressure Coolant System for External Threading

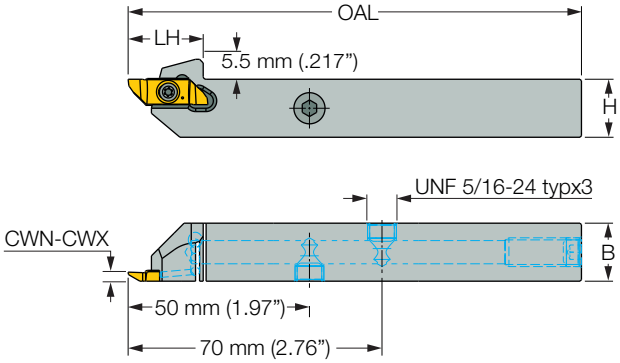
These threading square shank tools are designed to carry SCIR/SCIL inserts and feature coolant channels designed also for the use of high-pressure coolant. The high pressure coolant channels (JHP) are pinpointed directly to the cutting edge. Many modern
Swiss-type machines are equipped with high pressure pumps and these tools will enable better performance on these machines. These tools are suitable for all types of lathe machines.



NOTE: High Pressure Coolant is described in chapter 2.13

Ensure maximum coolant in the cutting area

Basic Dimensions of Threading Tools With High Pressure Coolant System



OAL — Overall length

LH — Head length

H — Shank height

B — Shank width

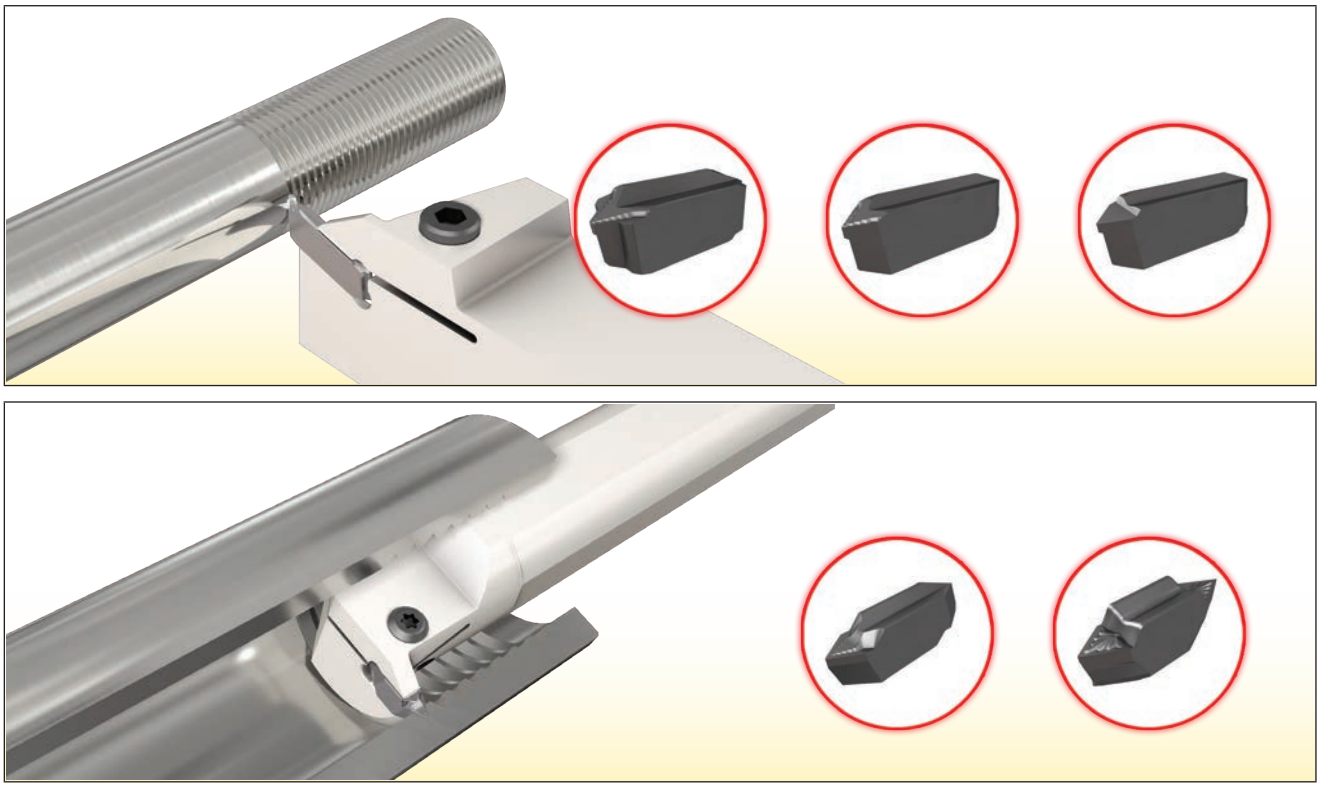
Main Advantages

- Suitable for all types of lathe machines
- Internal coolant
- Reduces cutting time
- Provides longer tool life of cutting edge
- Enables better chip evacuation

CUT-GRIP Inserts for External and Internal Threading

The **CUT-GRIP** line includes double-ended inserts for the production of external threading and internal threading.

CUT-GRIP is a stable and very rigid system



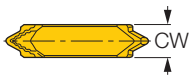
CUT-GRIP Line for External Threading
The TIP insert offers a solution for machining external threading. This is a peripheral ground insert available with a pressed chipformer and with a flat top rake (without chipformer).

TIP Double-Ended Peripheral Ground Insert With a Pressed Chipformer
Provides superior chip control and excellent performance when working with a large variety of workpiece materials. These types of inserts are available for partial profiles and full profiles in the most popular threading standards.

Description of the TIP insert with a Pressed Chipformer According to the Template Below

Partial Profile	TIP	4	MT	-	0.20	IC908
		1	2		3	4

1 Insert width (CW)

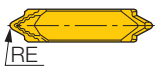


2 Angle of cutting edge (A)

MT — 60°

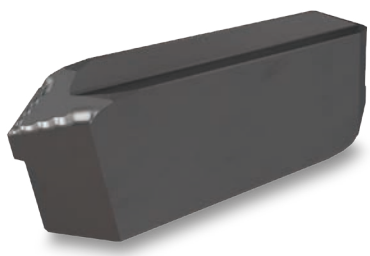
WT — 55°

3 Corner radius (RE)



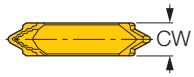
4 Grade

IC08, IC908



Full Profile	TIP		4	P	3.5	-	ISO		IC908
			1		2		3		4

1 Width of cutting edge (CW)



2 Pitch

Value by number:

0.5 - 2.0 mm

14 - 28 TPI

3 Threading standard

ISO — ISO Metric

UN — American UN

W — Whitworth

BSW — British BSPT

NPT — National pipe threading

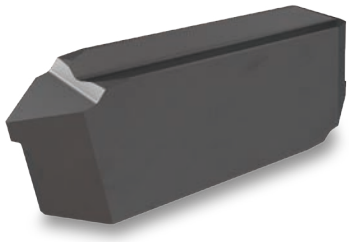
4 Grade

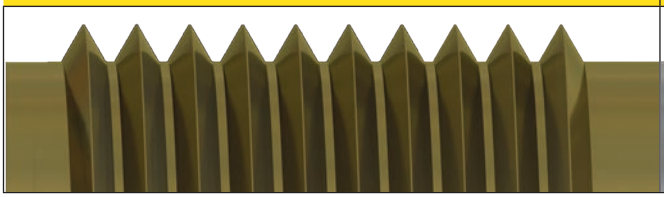
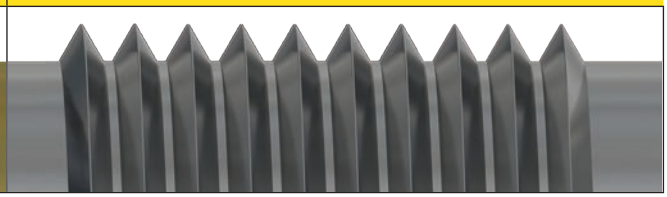
IC08, IC908



TIP Double-Ended Peripheral Ground Insert With a Flat Top Rake (Without Chipformer)

Designed for threading on short chipping materials such as brass and cast iron. The use of the flat top rake inserts on these materials results in improved surface quality and less chatter, compared to inserts with a chipformer. As a result, cutting speeds can be increased. The following picture shows the excellent surface quality obtained by using a TIP.... A-Type insert on a brass workpiece. These types of inserts are available for partial profile.

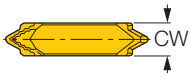


Brass	Cast Iron
	

Description of TIP With a Flat Top Rake (Without Chipformer) According to the Template Below

TIP		2	-	A	MT	-	0.05		IC908
		1			2		3		4

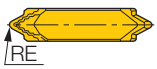
1 Width of cutting edge (CW)



2 Angle of cutting edge (A)

MT — 60°

3 Corner radius (RE)



4 Grade

IC908

CUT-GRIP Line for Internal Threading

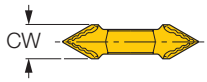
GEPI and TIPI inserts offer solutions for machining internal threading. They are peripheral ground inserts with a pressed chipformer. Both types of inserts are available for partial profiles with 55° and 60° angle of cutting edge.

- GEPI inserts are suitable for minimum bore diameter of 12.5 mm (0.492 inches).
- TIPI inserts are suitable for minimum bore diameter of 20 mm (0.787 inches).

Description of GEPI Inserts According to the Template Below

GEPI	2.5	-	MT	0.05	IC908
	1		2	3	4

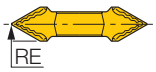
1 Width of cutting edge (CW)



2 Angle of cutting edge (A)

MT —60°, **WT** —55°

3 Corner radius (RE)



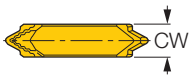
4 Grade

IC08, IC908

Description of TIPI Inserts According to the Template Below

TIPI	3.4	WT	-	0.10	IC908
	1	2		3	4

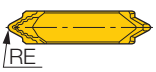
1 Width of cutting edge (CW)



2 Angle of cutting edge (A)

MT —60°, **WT** —55°

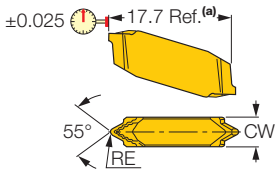
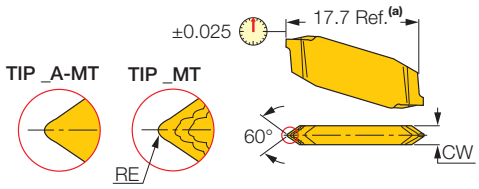
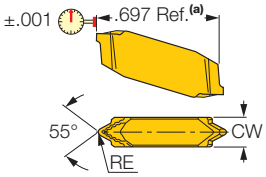
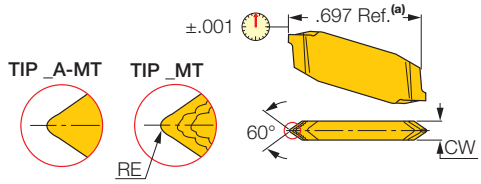
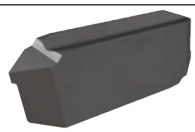
3 Corner radius (RE)

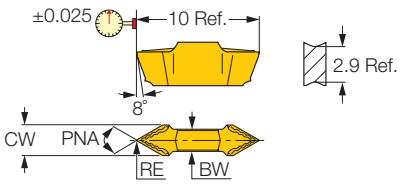
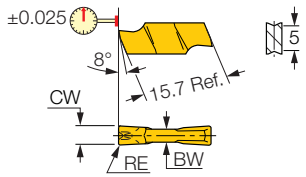
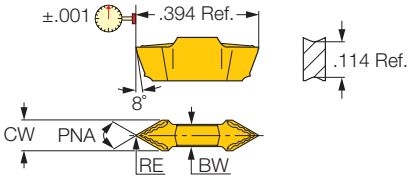
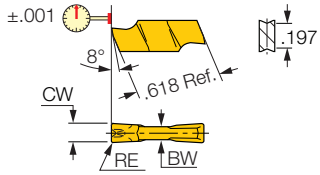
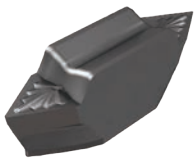
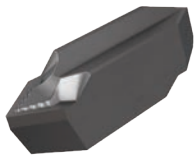


4 Grade

IC08, IC908

Basic Dimensions of CUT-GRIP Inserts Inserts

	TIP With Pressed Chipformer	TIP With a Flat Top Rake (Without Chipformer)
METRIC		
INCH		
		

	GEPI	TIPI
METRIC		
INCH		
		

L — Insert length

CW — Insert width

A — Angle of cutting edge

RE — Corner radius

Main Advantages

- Suitable for work next to shoulder
- Suitable for threading production between the walls in narrow grooves
- Easy and fast insert mounting and cutting edge indexing
- No setup needed after each insert indexing
- Easy handling of inserts
- Proven and reliable solution

Note

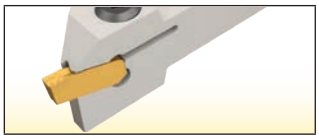
- Standard inserts are intended for symmetrical thread profiles

CUT-GRIP Tools for External and Internal Threading

The **CUT-GRIP** family includes 14 types of tools for the production of external threading and 2 types of tools for the production of internal threading. All tools belong to the **CUT-GRIP** family and are suitable for mounting on all types of **CUT-GRIP** inserts.

CUT-GRIP is a stable and very rigid system

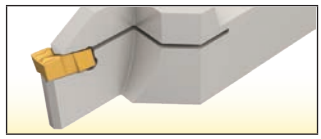
CUT-GRIP Tools for External Threading



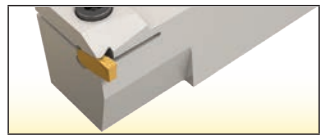
GHMR/L
Square Shank Tools



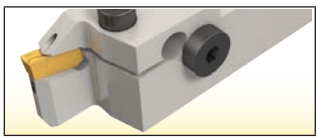
GHDR/L
(Short Pocket)
Square Shank Tools



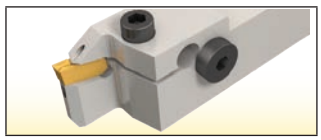
GHGR/L
Square Shank Tools



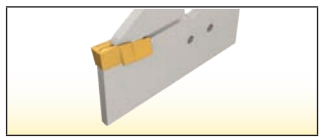
GHMPR/L
Perpendicular Square Shank Tools



GHDR/L-JHP
(Short Pocket) Tools with High Pressure Coolant System



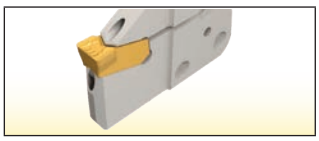
GHDR/L-JHP-MC
(Short Pocket) Tools with Bottom Fed High Pressure Coolant System



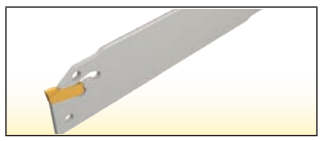
CGHN-S
Interchangeable Adapters without Internal Coolant Channels



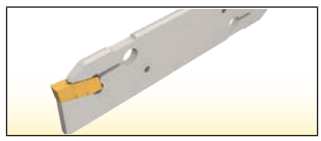
CGPAD
Interchangeable Adapters without Internal Coolant Channels



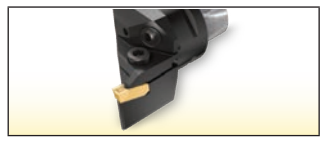
CGPAD-JHP
Interchangeable Adapters with Internal channels for High Pressure Coolant



CGHN-DG
Double-Ended Blades with Self-Clamped Inserts



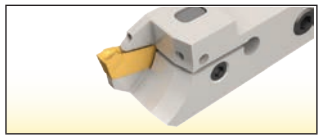
CGHN-D
Double-Ended Blades



C#-GHDR/L
Tools with CAMFIX Shanks for Polygonal Taper Interface

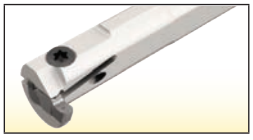


GHSR/L
Tools for Swiss-Type Lathes. Top Lock without Internal Coolant Channels



GHSR/L-JHP-SL
Tools for Swiss-Type Lathes. Side Lock with Internal Coolant Channels

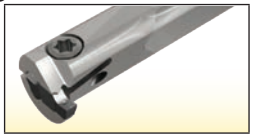
CUT-GRIP Tools for Internal Threading



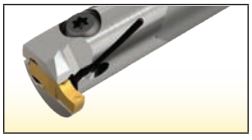
GEHIR/L
Internal Machining Bars with Coolant Holes for GEPI...inserts



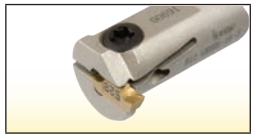
GEHIR/L-SC
Internal Machining Solid Carbide Bars with Coolant Holes for GEPI...inserts



GHIR/L
Internal Machining Bars with Coolant Holes for TIPI...inserts

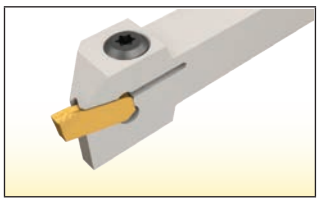
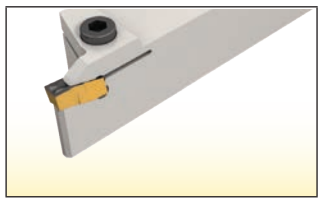
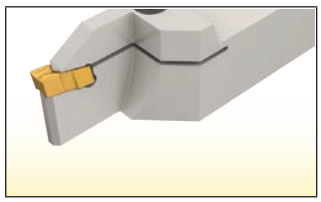
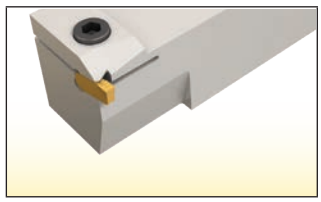


GHIR/L-SC
Internal Machining Solid Carbide Bars with Coolant Holes for TIPI...inserts



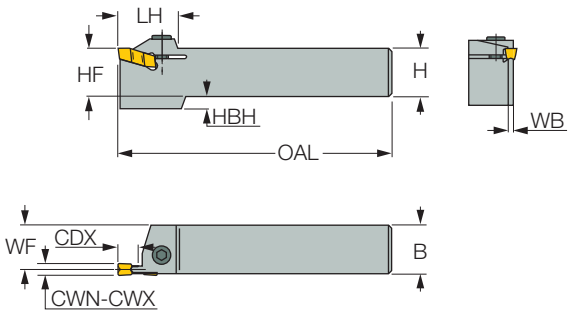
E-GEHIR / E-GHIR
Interchangeable Heads for GEPI...inserts

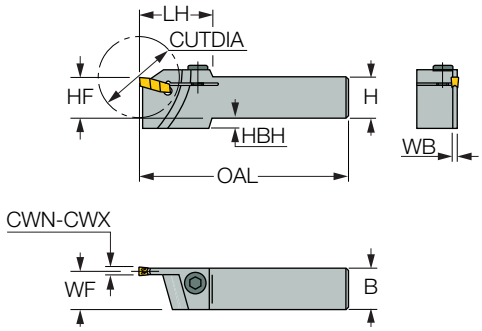
Square Shank Tools for External Threading

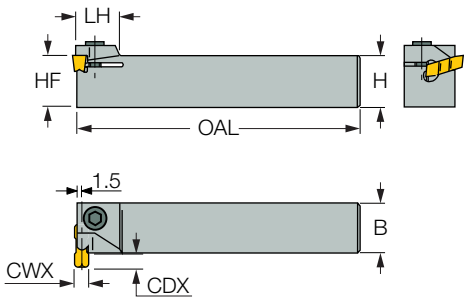





These simple tools are suitable for all types of lathe machines and come without coolant channels. The coolant should be supplied from the turret. There are 4 types of square shank tools available, with the difference between each being the possible depth of cut.

Basic Dimensions of Square Shank Threading Tools:







HBH — Head bottom height

HF — Functional height

H — Shank height

B — Shank width

WF — Functional width

WB — Seat width OAL - overall length

LH — Head length

CDX — Insert overhang

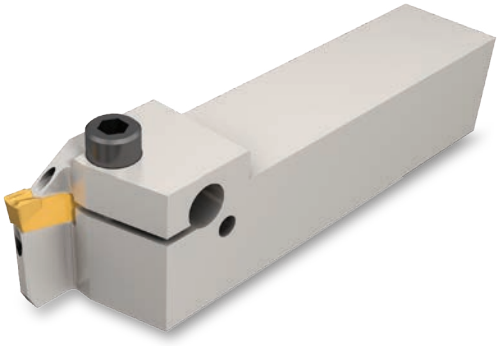
CUTDIA — Minimum diameter of work piece

Main Advantages

- Suitable for all types of lathe machines

Tools With High Pressure Coolant System for External Threading

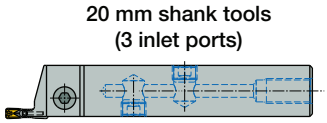
Threading square shank tools designed to carry the **CUT-GRIP** inserts and featuring coolant channels designed also for the use of high-pressure coolant. These tools are suitable for all types of lathe machines.

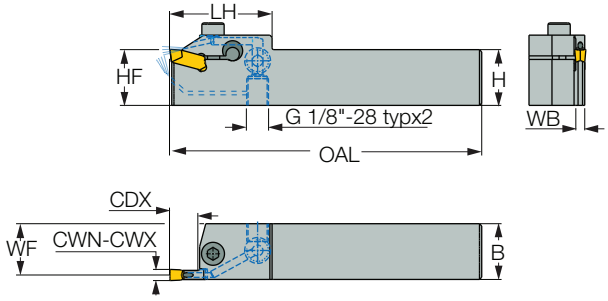


NOTE: High Pressure Coolant is described in chapter 2.13

Ensure maximum coolant in cutting area

Basic Dimensions of Threading Tools With High Pressure Coolant System





OAL — Overall length

LH — Head length

HF — Functional height

H — Shank height

B — Shank width

WF — Functional width

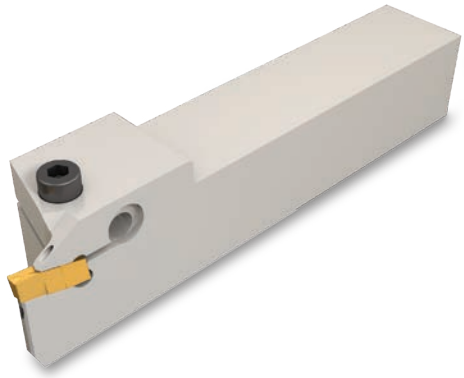
WB — Seat width

CDX — Insert overhang

Main Advantages

- Suitable for all types of lathe machines
- Internal coolant
- Reduces cutting time
- Provides longer tool life of cutting edge
- Provides excellent chip breaking results on all materials
- Enables better chip evacuation

Tools With Bottom Fed High Pressure Coolant Systems for External Threading

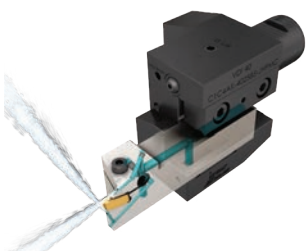
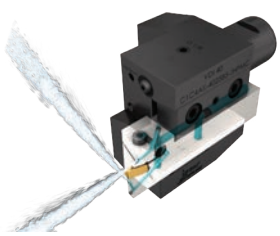


NOTE: The shank lengths of the tools with bottom fed high pressure coolant systems are shorter than the lengths of equivalent standard tools - adjusted to the VDI Toolholders

Tools with bottom fed high pressure coolant systems belong to the multi-connection **JHP-MC** line and are suitable for mounting on **VDI DIN69880** Toolholders.



The tools include a bottom coolant inlet hole and the **VDI JHP-MC** Toolholders feature a long coolant outlet slot that enables adjustment of the tool's overhang.

Max. tool overhang	Min. tool overhang
	

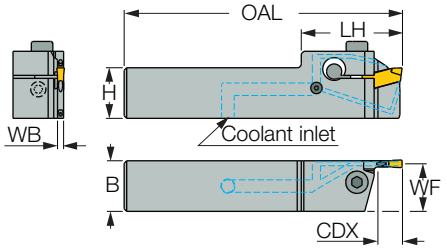
VDI DIN69880 is the most popular quick change adaptation system for CNC turning machines with disc-type turrets. This standard holder adaptation serves mainly stationary turning tools.

VDI DIN69880 Characteristics

- Easy and fast setup
- High stiffness, thanks to straight shank and flange face contact
- Rigid design due to a serrated clamping system
- High accuracy and center height repeatability
- Compact and light design
- Efficient coolant supply internally through the tool and externally through the flange

Multi-Connection **JHP-MC** Line for **VDI** Toolholders with a bottom fed coolant system ensure maximum coolant in the cutting area

Basic dimensions of threading tools with high pressure coolant system



OAL — Overall length

LH — Head length

H — Shank height

B — Shank width

WB — Seat width

WF — Functional width

CDX — Insert overhang

Main Advantages

- Reduces cutting time
- Provides longer tool life of cutting edge
- Very effective cooling down of the cutting edge, reducing sensitivity to heat fluctuations
- Enables better chip evacuation

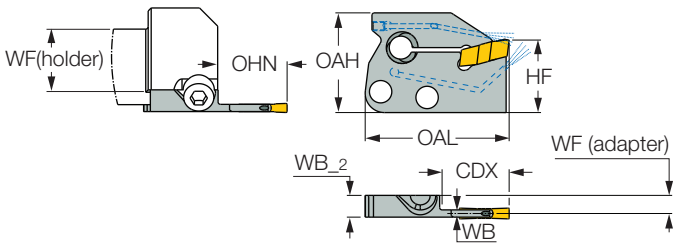
Interchangeable Adapters for External Threading

Single-Ended Interchangeable Adapters Without Internal Coolant Channels	Single-Ended Interchangeable Adapters With Internal Channels for High Pressure Coolant
	

Interchangeable adapters can carry **CUT-GRIP** inserts with 2 threading corners for the production of external threading mounted on different holders. These adapters are available with internal channels for high pressure coolant or without internal coolant channels. There are many types of holders that are suitable to carry these adapters when the holders differ in their adaptation and designation. These tools are suitable for various interchangeable adapters for external threading, external grooving, external parting and external turning.

Interchangeable adapters - economical and diverse solution

Basic Dimensions of Interchangeable Adapters With Internal Coolant Channels



OAH — Overall height

OAL — Overall length

HF — Functional height

WF — Functional width

WB — Seat width

WB-2 — Body width

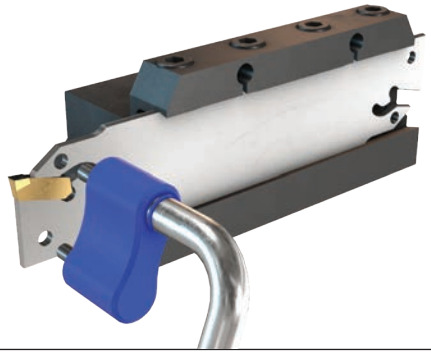
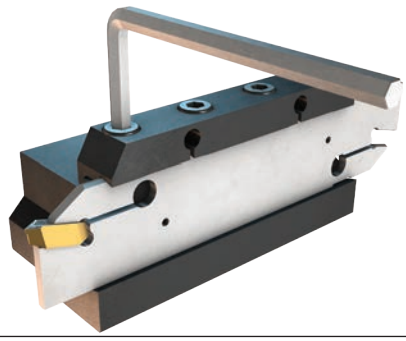
CDX — Insert overhang

OHN Minimum overhang

Main Advantages

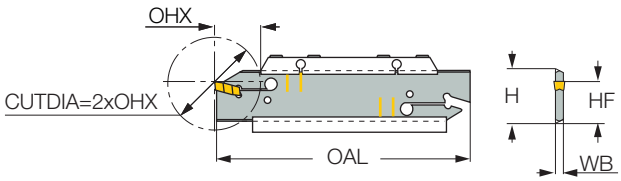
- One holder can carry various interchangeable adapters
- Available with internal channels for high pressure coolant
- Economical solution
- Reduces cutting time
- Provides longer tool life of cutting edge
- Very effective cooling down of the cutting edge, reducing sensitivity to heat fluctuations
- Enables better chip evacuation

BLADE for External Threading

Self-Clamped	Screw-Clamped
	

The **CUT-GRIP** family includes blades for large overhang applications.
CUT-GRIP blades are double-ended and suitable for machines that can use standard blocks for blades. These blades can offer a preferred solution for external threading production between the walls in narrow grooves. If the blade's insert pocket is damaged, the other side of blade may still be used.

Basic Dimensions of Blade



OAL — Overall length

HF — Functional height

H — Blade height

OHX — Maximum overhang

WB — Blade width

Main Advantages

- Suitable for all types of lathe machines
- Suitable for large overhang applications
- Suitable for work next to shoulder
- Suitable for threading production between the walls in narrow grooves
- Economical solution - double-ended
- Rigid clamping system
- Easy and fast insert mounting and cutting edge indexing
- No setup needed after each insert indexing

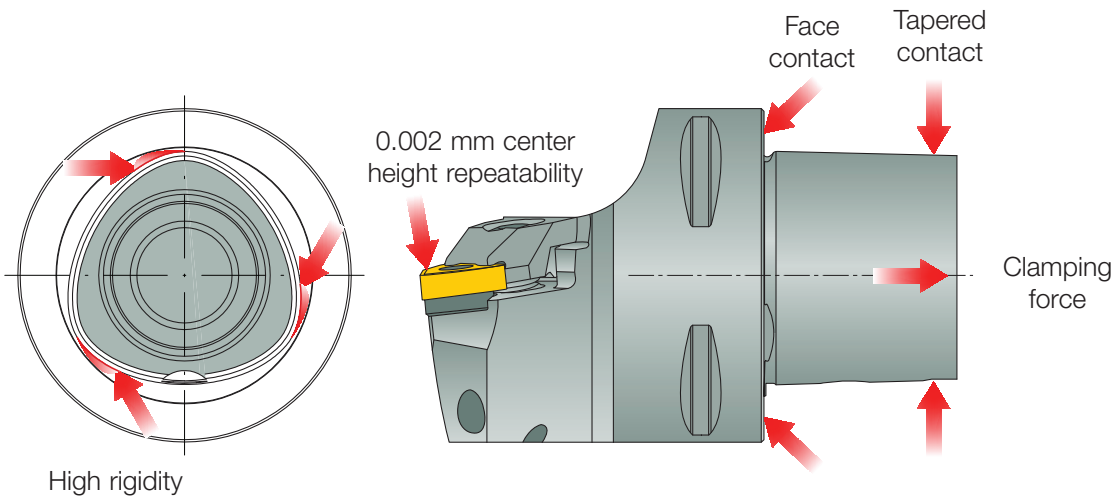
Tools With CAMFIX Shanks for Polygonal Taper Interface Solution for External Threading



External threading tools with **CAMFIX** shanks for polygonal taper interface (ISO 26623-1 standard) enable quick change and reduce setup time - most important for mass production industries. These threading tools feature coolant channels for efficient flushing of heat and chips from the cutting edges.

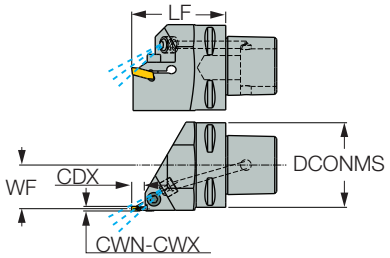
CAMFIX Features for Turning Applications

Polygonal design-self centering



The **CAMFIX** system features high accuracy, excellent rigidity against bending forces, stability and high torque transfer.
This is achieved due to the polygonal cone and face contact.

Basic Dimensions of Threading Tools With CAMFIX Shanks for Polygonal Taper Interface



LF — Functional length

DCONMS — Connection diameter of machine side

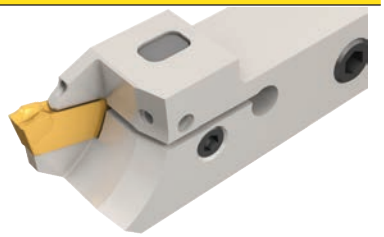
WF — Functional width

CDX — Cutting depth maximum

Main Advantages

- Reduces cutting time
- Provides longer tool life of cutting edge
- Very effective cooling down of the cutting edge, reducing sensitivity to heat fluctuations
- Enables better chip evacuation

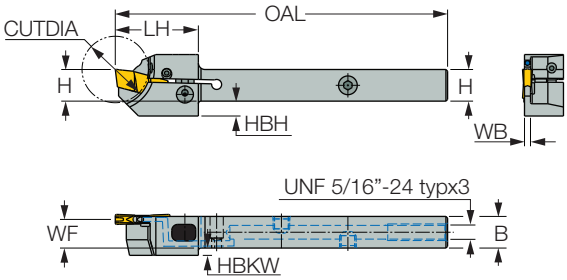
Tools for Swiss-Type Lathes Solution for External Threading

Top Lock Without Internal Coolant Channels	Side Lock With Internal Coolant Channels
	

The **CUT-GRIP** family includes tools designed especially for Swiss-type lathes.
These tools are available with internal channels for high pressure coolant or without internal coolant channels. The clamping system of the insert into the tool can be
from the top and from the side.

NOTE: High Pressure Coolant is described in chapter 2.13

Basic Dimensions of Tools for Swiss-Type Lathes



OAL — Overall length

LH — Head length

HBH — Head bottom height

H — Shank height

B — Shank width

WF — Functional width

WB — Seat width

HBKW — Head back width

CUTDIA — Maximum diameter of work piece

Main Advantages

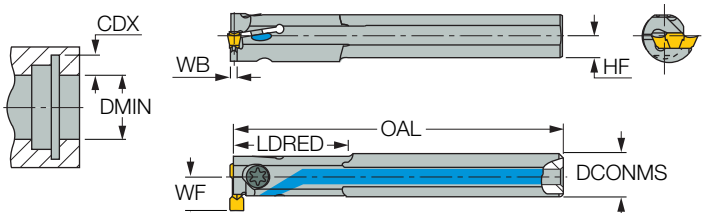
- Designed for Swiss-type lathes
- Available with internal coolant channels
- Available with side lock system
- Suitable for work next to shoulder
- Suitable for threading production between the walls in narrow grooves
- Easy and fast insert mounting and cutting edge indexing
- No setup needed after each insert indexing
- Easy handling of insert

Threading Bars Solution for Internal Threading

Related Tools for GEPI ... Inserts		Related Tools for TIPI ... Inserts	
			
GEHIR/L Internal Machining Bars with Coolant Holes for GEPI...inserts	**GEHIR/L-SC** Internal Machining Solid Carbide Bars with Coolant Holes for GEPI...inserts	**GHIR/L** Internal Machining Bars with Coolant Holes for TIPI...inserts	**GHIR/L-SC** Internal Machining Solid Carbide Bars with Coolant Holes for TIPI...inserts

These are simple tools suitable for all types of lathe machines, available with and without coolant channels. There are 2 types of boring bars for GEPI inserts and 2 types of boring bars for TIPI inserts. The bars (in the **CUT-GRIP** family) can be produced from steel or solid carbide. The solid carbide boring bars expand the current boring overhang range and provide improved performance due to their high rigidity feature.

Basic Dimensions of Boring Bars



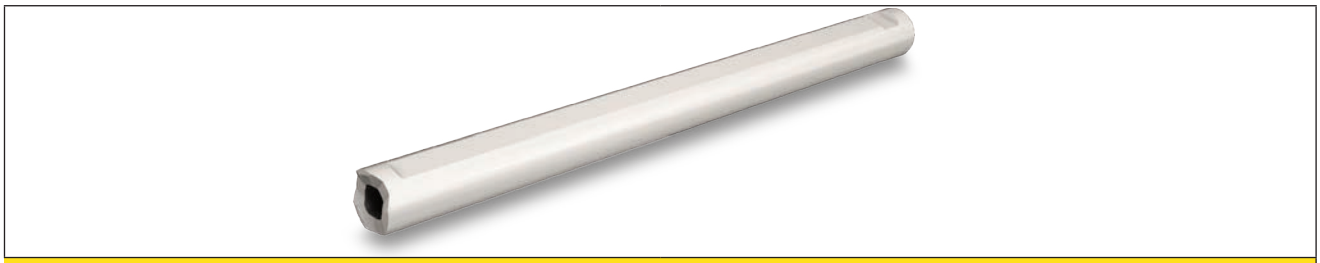
OAL — Overall length
WF — Functional width
WB — Seat width
DCONMS — Connection diameter machine size
HF — Functional height
LDRED — Body diameter length
CND — Coolant entry diameter
CDX — Cutting depth maximum
DMIN — Minimum bore diameter

Main Advantages

- Available with internal coolant channels
- Suitable for work next to shoulder
- Easy and fast insert mounting and cutting edge indexing
- No setup needed after each insert indexing
- Easy handling of insert
- Suitable for all types of lathe machines

Interchangeable Heads Solution for Internal Threading

Interchangeable heads can carry GEPI inserts and are mounted on solid carbide shanks. These heads are suitable for the production of internal threads with high overhang. Solid carbide shanks are used for economical boring with various interchangeable heads for internal threading, internal grooving, and internal turning. The solid carbide boring bar expands the current boring overhang range and provides improved performance due to their high rigidity feature.

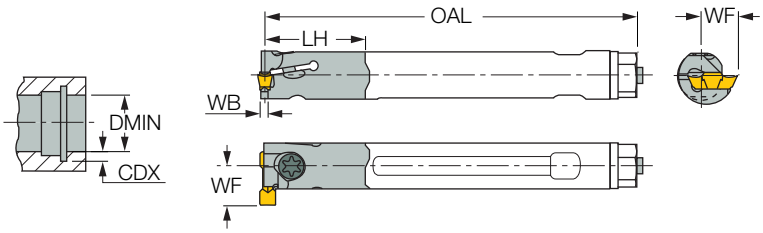


Internal Threading





Basic Dimensions of Interchangeable Heads



OAL – overall length

LH – head length

WF – functional width

WB – seat width

CDX – cutting depth maximum

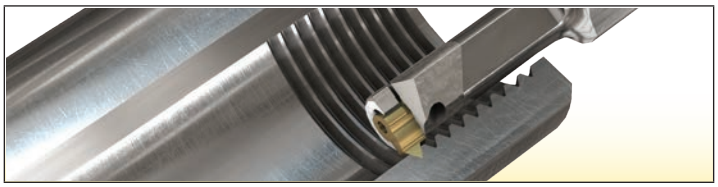
DMIN – minimum bore diameter

Main Advantages:

- One shank can carry various interchangeable heads
- Recommended for internal threading with high overhang
- Economical solution

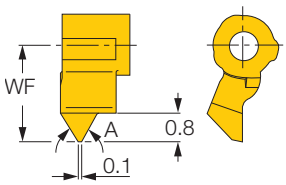
MINICHAM Inserts for Internal Threading

The **MINICHAM** line includes single-sided mini indexable inserts for internal threading. This line is available for partial profile and can produce internal threads in minimum bore diameter of 4.0 mm (0.157 inches). The inserts in this line are peripheral ground with a pressed deflector for chip evacuation. The clamping concept of the insert into the holder is based on self-clamping (without clamping screw).



Indexable solution for internal threading in minimum bore diameter of 4.0 mm (0.157 inches)

Basic Dimensions of MINICHAM Inserts





WF —Functional length, A —Angle of cutting edge

Main Advantages

- Suitable for work next to shoulder
- Suitable for threading production between the walls in narrow grooves
- Economical solution relative to solid products
- Easy and fast insert mounting
- No setup needed after each insert indexing
- Easy handling of very small inserts
- No spare parts

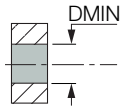
Notes

- Standard inserts are intended for symmetrical thread profiles
- No chipformer

MINICHAM Insert Description According to the Template Below

UMGR	4.0	-	A60	IC508
	1		2	3

1 Minimum bore diameter (mm)



2 Angle of cutting edge (A)

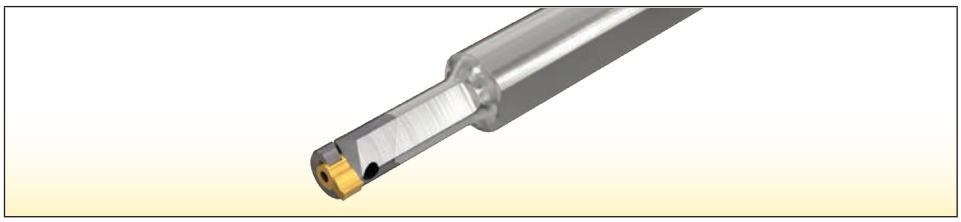
A55 - 55°, A60 - 60°

3 Grade

IC508

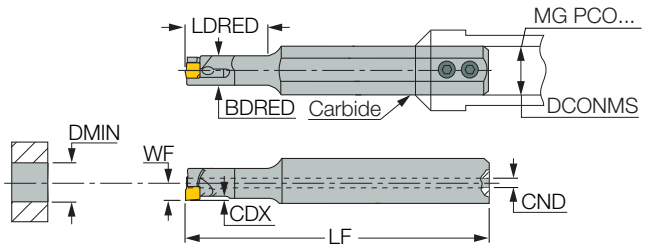
MINICHAM Threading Bars for Internal Threading

The **MINICHAM** line includes solid carbide bars with coolant channels for producing internal threading at 4 mm minimum bore diameter. The solid carbide boring bars expand the current boring overhang range and provide improved performance relative to steel bars due to their high rigidity feature. The concept is based on a self-clamping miniature insert mounted on a 6mm diameter solid carbide bar that fits into **ISCAR**'s PASSPORT holders MG PCO-... -6-8. The mini bars for right-hand machining are supplied with shank extensions of 10mm or 20mm.



Bars with unique self-clamping system

Basic Dimensions of Boring Bars



LF — Functional length

WF — Functional width

LDRED — Body diameter length

BDRED — Reduced body diameter

CND — Coolant entry diameter

CDX — Cutting depth maximum

DMIN — Minimum bore diameter

DCONMS — Connection diameter of machine side

Main Advantages

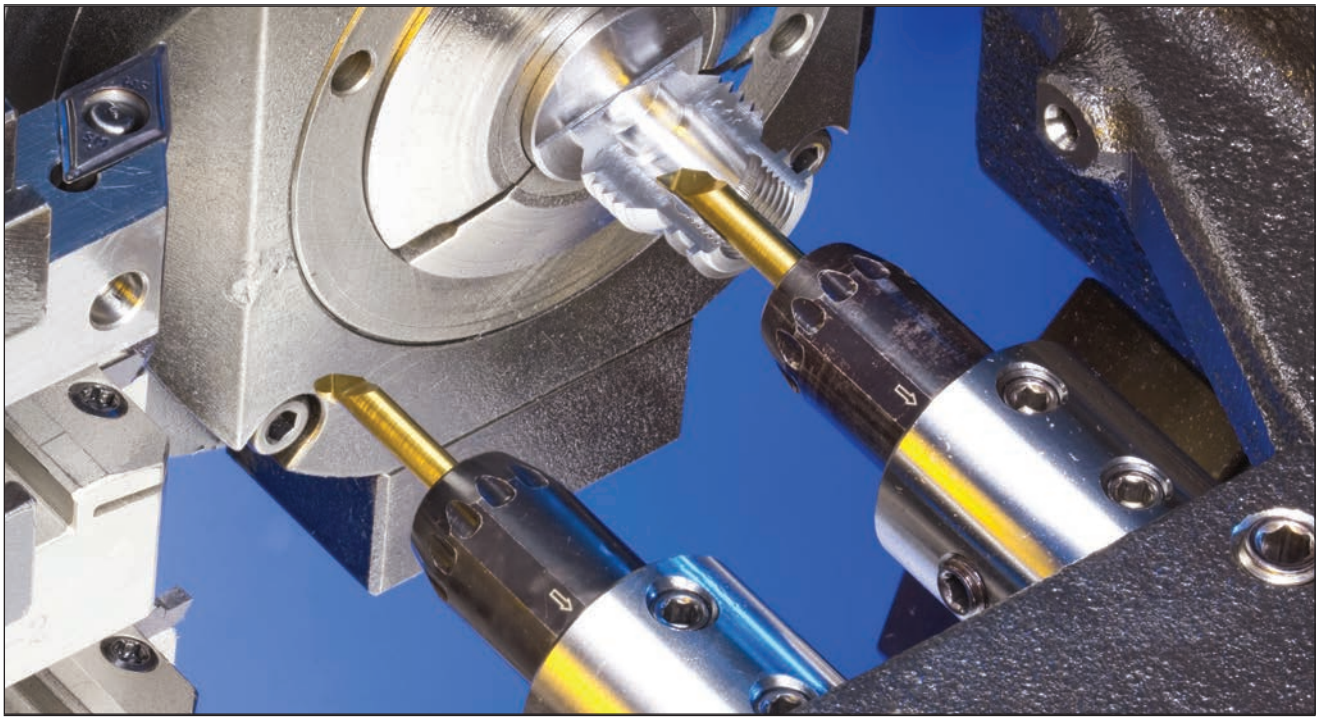
- Available with internal coolant channels
- Suitable for work next to shoulder
- Easy and fast insert mounting
- No setup needed after each insert indexing
- Easy handling of insert
- Suitable for all types of lathe machines
- No spare parts

PICCOCUT Inserts for Internal Threading

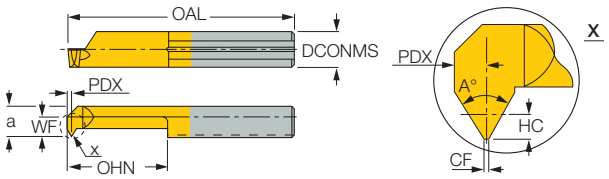
PICCO is an all ground solid carbide tool with a chipformer and an internal coolant channel. A ground chipformer provides excellent chip forming and improved tool life, enabling short controlled chips and facilitating continuous non-stop machining. The chipformer reduces the cutting force, resulting in lower plastic deformation on the cutting edge and extending tool life. The **PICCOCUT** line offers a solution for internal threading and is suitable for minimum bore diameter of 2.4 mm (0.094 inch). PICCO inserts are available for partial profiles and full profiles according to ISO standard.



Solid tools for internal threading in minimum bore diameter of 2.4 mm (0.094 inch)



Basic Dimensions of PICCOCUT Inserts



OAL — Overall length

DCONMS — Connection diameter

PDX — Distance between the insert and the crest area

a — Front length

WF — Functional length

OHN — Overhang distance

A — Angle of cutting edge

HC — Actual threading height

CF — Central flat

Main Advantages

- Suitable for work next to shoulder
- Suitable for threading between the walls in narrow grooves
- Easy and fast insert mounting
- High repeatability - no setup needed after each tool indexing
- Easy handling
- High rigidity (one piece)
- Less tolerance accumulation relative to indexable solution

Notes

- Cannot produce unsymmetrical threading profiles for standards tools only
- Expensive solution relative to indexable products

PICCOCUT Insert Description

PICCO	R	005.0407	-	15	N
	1	2		3	4

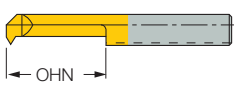
1 Hand of Tool

R Right-hand

L Left-hand

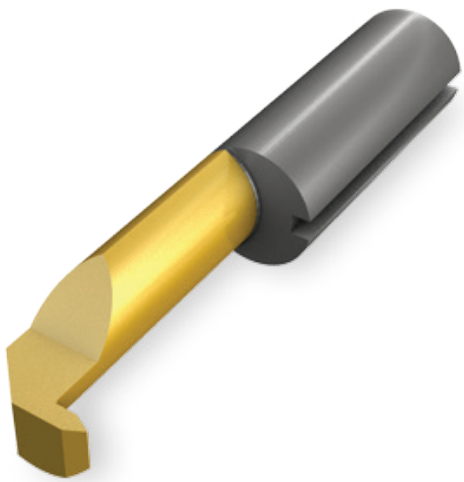
2 Identification number

3 Overhang distance (OHN)



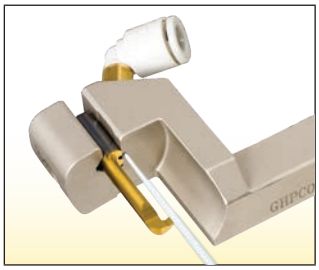
4 PICCO-JETCUT

Inserts with Internal Coolant Channels



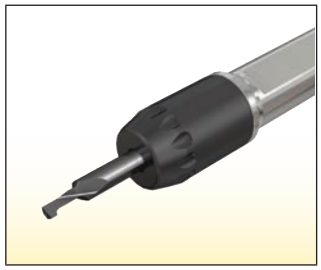
PICCOCUT Holders for Internal Threading

The **PICCOCUT** family includes 3 types of holders for internal threading.



GHPCOR

Perpendicular Square-Shank Tools for Use on Cross Slide Units of Swiss-Type and Automatic Machines



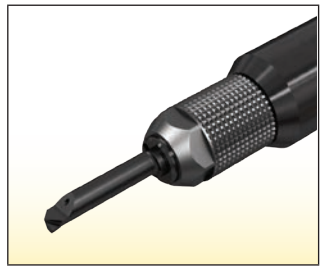
PICCO ACE

Holders for PICCOCUT Inserts Featuring Extremely High Clamping Repeatability



PICCO/MG PCO (Holder)

Holders for PICCO Inserts and Small Diameter Boring Bars



PICCO ACE-N

Holders for PICCO-JETCUT Inserts with Internal Coolant Channels

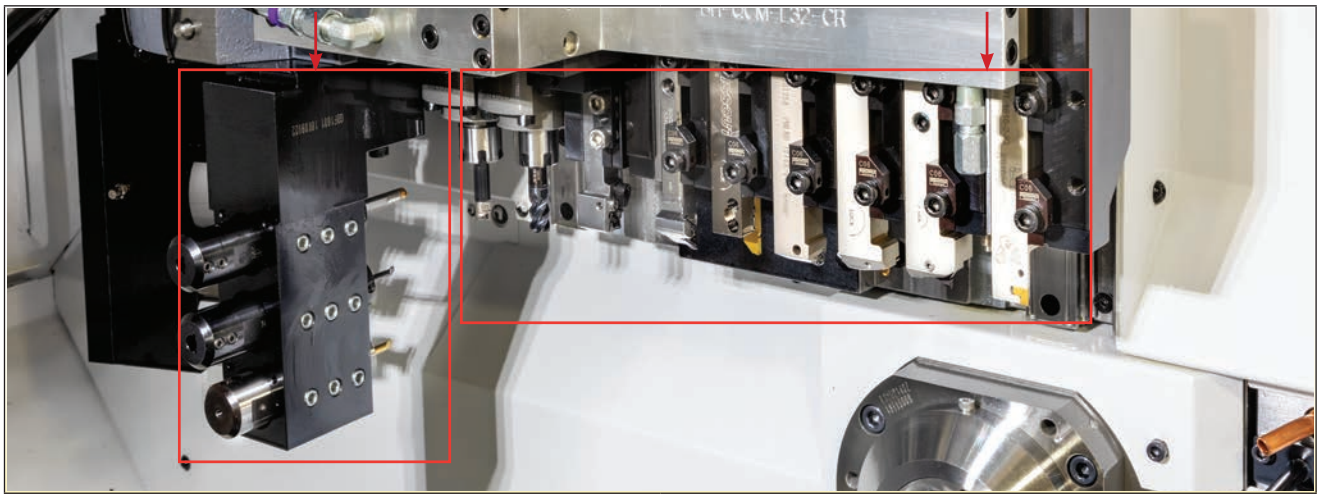


Perpendicular Holder for Swiss-Type Lathes
Solution for Internal Threading



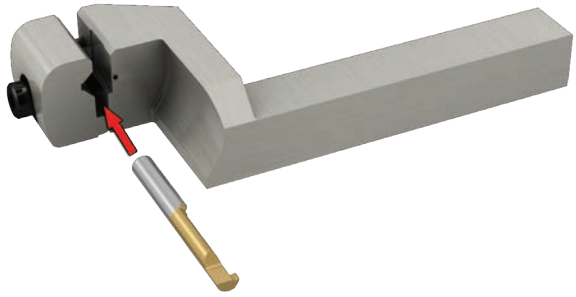
ISCAR designed perpendicular holders for PICCO-CUT inserts used on Swiss-type machines. Unlike the round shank toolholders (PICCO/MG PCO), which could be mounted only on the end units, **ISCAR** designed perpendicular square-shank tools to be used on cross slide units.

End Unit | Cross Slide Unit

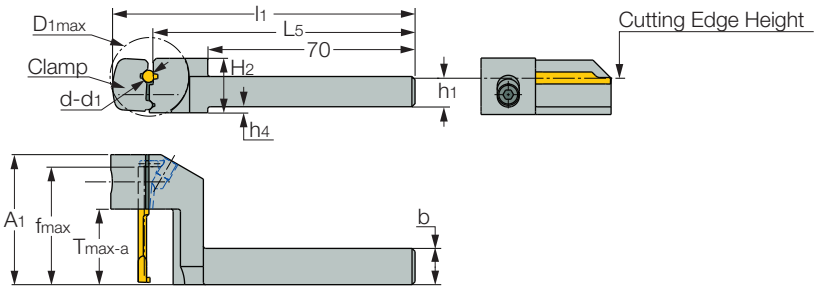


Each toolholder has been designed to fit several PICCO insert shank diameters. The toolholder features an internal coolant hole directed to the machining area. This reduces temperature and wear, and improves chip evacuation. The supplied coolant fitting allows for a maximum coolant pressure of 10 bar. If a higher coolant pressure is required, a suitable fitting/pipe should be used. Very rigid clamping ensures stable and efficient threading machining.

On **ISCAR** tools, it is possible to mount the insert into the pocket from the frontal side and from the top side. This is a major advantage on machines where it is not possible to index the insert from the front and the tool must be removed from the machine (note: standard round tools such as drills and taps can also be clamped).

Indexing From the Top	Indexing From the Front
	

Basic Dimensions of Perpendicular Holders



OAL — Overall length

OAH — Overall height

OAW — Overall width

OHX — Maximum overhang

HBH — Offset height of bottom head

H — Shank height

B — Shank width

L5 — Body length

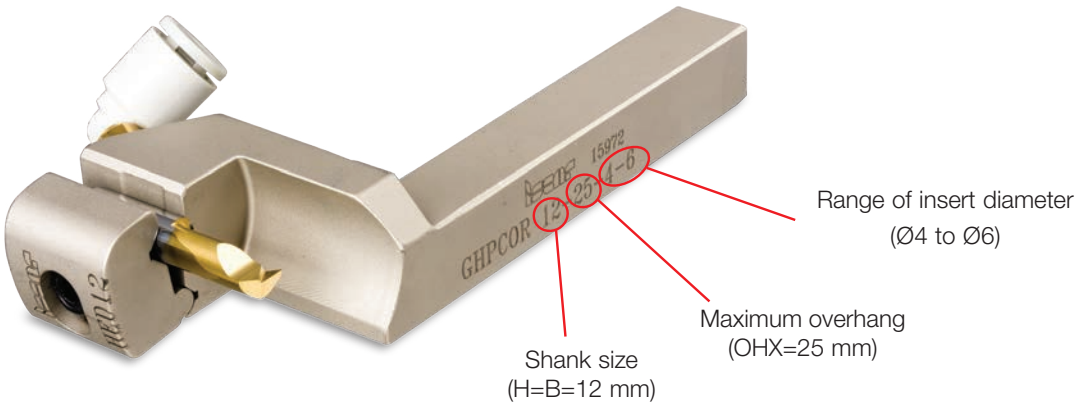
D1max — Maximum diameter limit of axial groove

f max — Maximum insert to shank reference

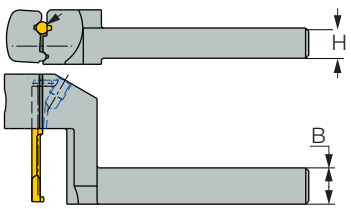
DCONNWS
DCONXWS — Insert diameter

Description of Perpendicular Holders

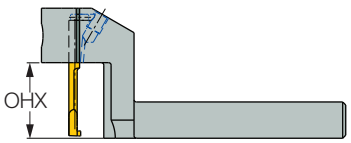
GHPCOR	12	-	25	-	4-6
	1		2		3



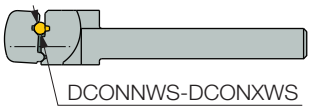
1 Shank size



2 Maximum overhang



3 Range of insert diameter



Main Advantages

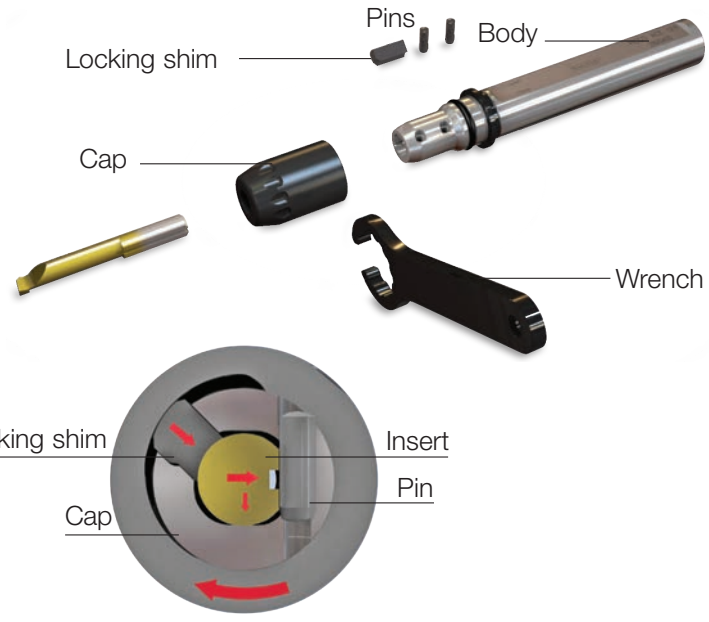
- Internal coolant
- Reduces cutting time
- Provides longer tool life of cutting edge
- Provides excellent chip breaking results on all materials
- Enables better chip evacuation
- Quick and user-friendly indexing mechanism
- Insert can also be mounted from the top

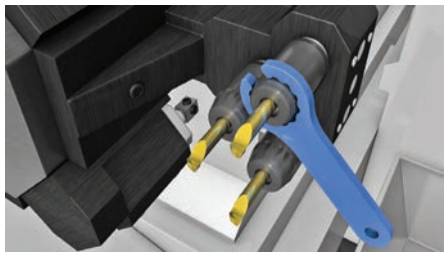
High Precision Holder for Swiss-Type Lathes
Solution for Internal Threading

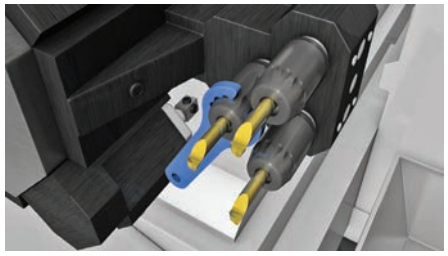
The growing demands for high accuracy and flexibility in clamping orientation have led **ISCAR** to develop an advanced line of PICCO holders. The **PICCOACE** features a unique clamping system which sets new standards for three highly important properties: accuracy, rigidity and clamping orientation flexibility. The **PICCOACE** holders are available with coolant channels and provide a solution for internal threading. The large variety of Swiss-type machines has increased the demand for multi-orientation clamping. Most of the available tools in the market provide a single clamping orientation, whereas **ISCAR**'s **PICCOACE** offers a solution suitable for all Swiss-type machines, which enables the operator to mount/dismount the insert from any desired orientation. **PICCOACE**'s clamping method saves precious time when replacing an insert. Superb rigidity is achieved due to the advanced clamping mechanism, which locates the insert in a specific position that ensures optimal contact points. The clamping system assures extremely high clamping repeatability of 0.005 mm.

How does it work? The **PICCOACE** consists of two main parts: a body and an eccentric cap. When the cap is turned (using the wrench), the excentre moves a special locking shim that presses on the insert and locks it into a precise position.

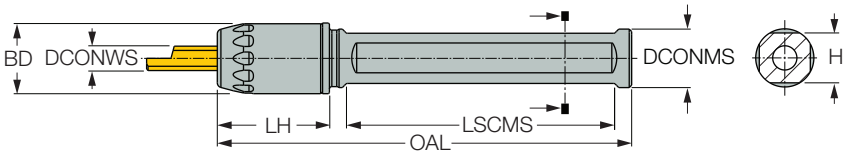








Basic Dimensions of Perpendicular Holders



OAL — Overall length

LH — Length

LSCMS — Clamping length machine side

DCONMS — Connection diameter machine size

DCONWS — Connection diameter insert size

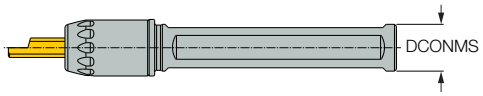
BD — Body diameter

H — Shank height

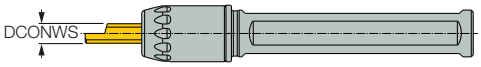
Description of Perpendicular Holders

PICCO ACE	16	-	5
	1		2

1 Connection diameter machine size



2 Connection diameter insert size

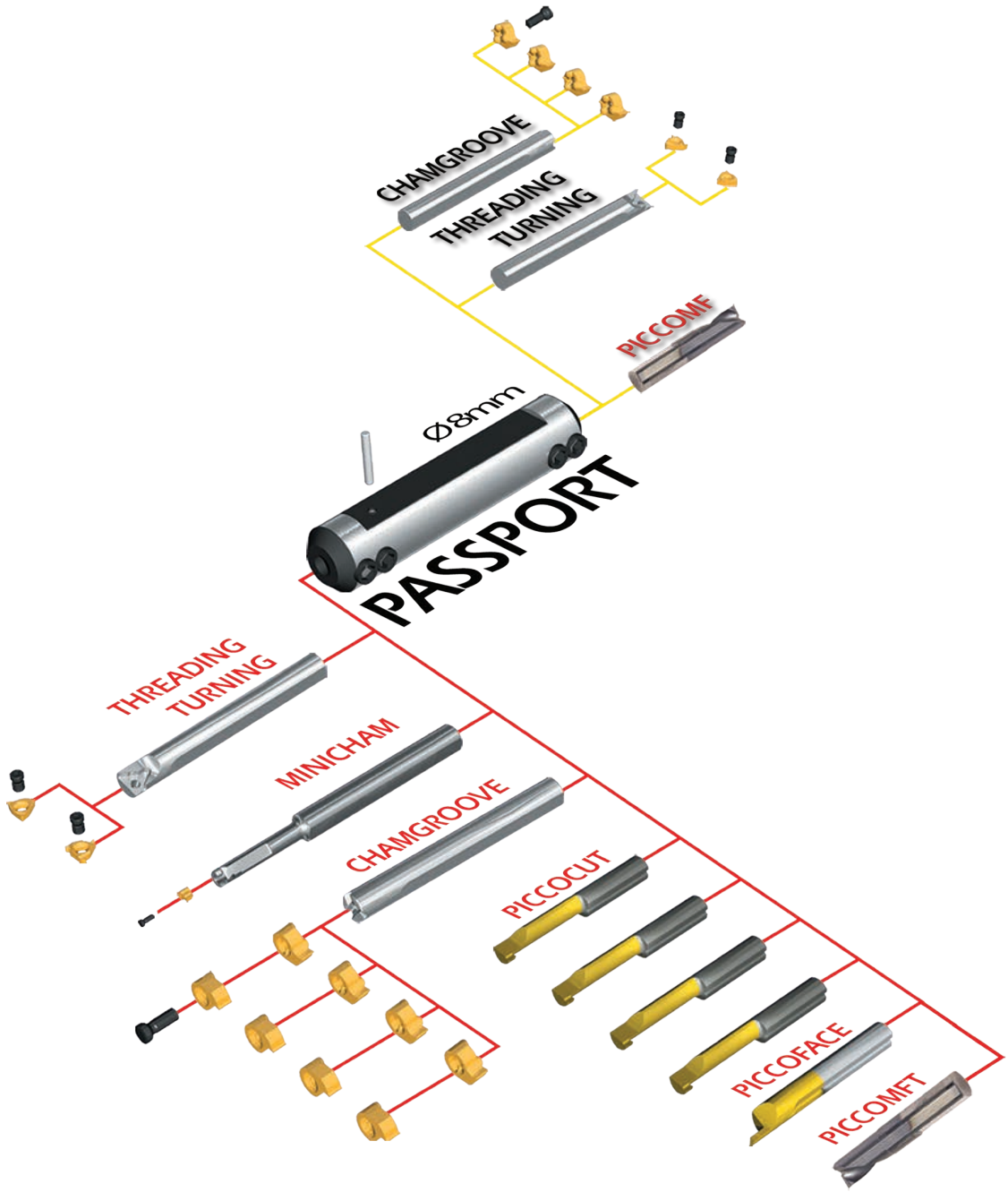


Main Advantages

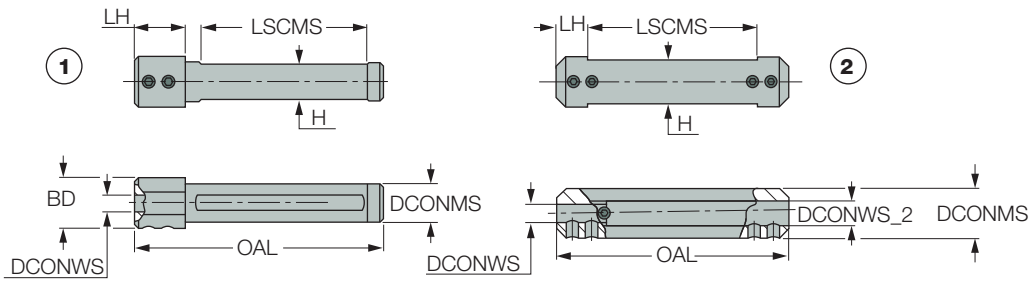
- Internal coolant
- Reduces cutting time
- Provides longer tool life of cutting edge
- Quick and user-friendly indexing mechanism

Multi-use Holder Solution for Internal Threading

A multi-use holder is a single bushing toolholder that can hold a full set of carbide shank boring bars capable of grooving, turning, threading, profiling and recessing. The carbide shanks provide excellent rigidity and a high length-to-diameter (L/D) ratio. This allows the boring bar overhang to be adjusted to the best rigidity for each job. The new bushing holders incorporate special stoppers, useful in many applications with **ISCAR**'s **CHAMGROOVE** system and PICCO bars. Utilizing the stoppers eliminates resetting the tool after every indexing. This versatile system replaces many expensive boring bars needed to perform the variety of applications, which are now possible with this single bushing holder. These holders are available with coolant channels.



Basic Dimensions of Perpendicular Holders



OAL — Overall length

LH — Head length

LSCMS — Clamping length machine side

DCONMS — Connection diameter machine size

DCONWS — Connection diameter insert size

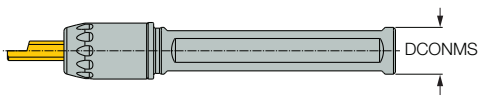
BD — Body diameter

H — Shank height

Description of Perpendicular Holders

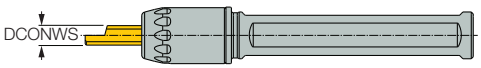
PICCO	20	-	4	-	5
	1		2		3

1 Connection diameter machine size



2 Min. connection diameter insert size

3 Max. connection diameter insert size



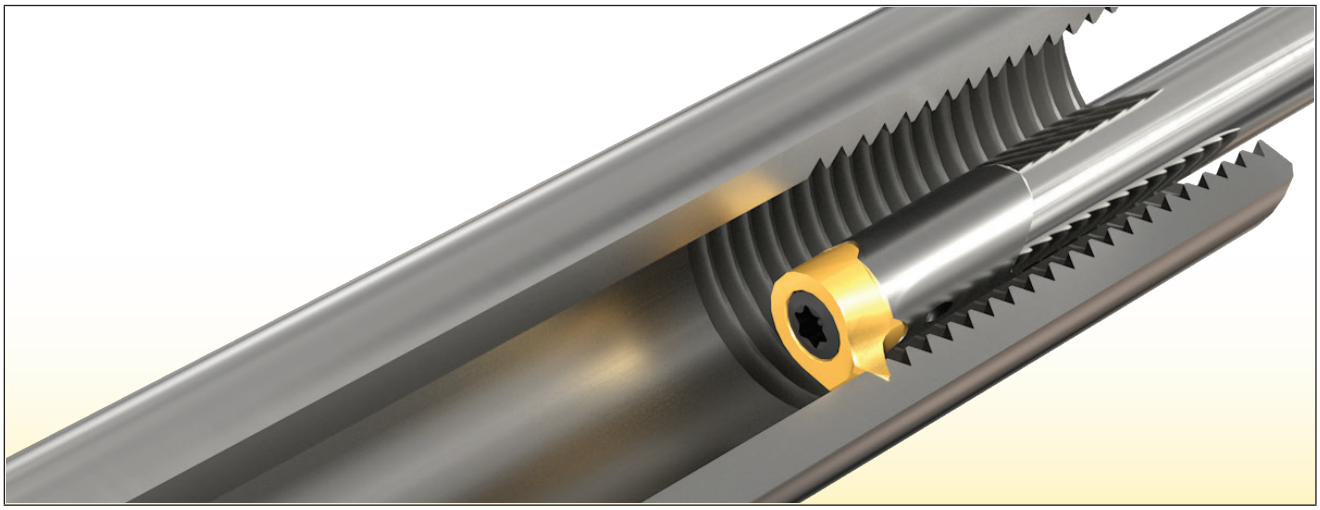
Main Advantages

- Internal coolant
- Reduces cutting time
- Provides longer tool life of cutting edge
- Provides excellent chip breaking results on all materials
- Enables better chip evacuation
- Quick and user-friendly indexing mechanism

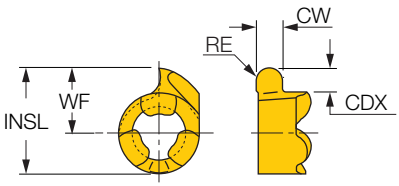
CHAMGROOVE Inserts for Internal Threading

The **CHAMGROOVE** line includes one sided peripheral ground inserts with pressed deflector.
The placement of the insert is determined by 3 protrusions on the tool and clamped with a screw.
The **CHAMGROOVE** line provides a solution for partial profiles and is suitable for internal threading in minimum bore diameter of 8 mm (0.315 inch).

Stable and rigid indexable system for internal threading in minimum bore diameter of 8 mm (0.315 inch).



Basic Dimensions of CHAMGROOVE Inserts



L — Insert length

WF — Functional length

A — Angle of cutting edge

RE — Corner radius

PDPT — Profile depth



Main Advantages

- Suitable for work next to shoulder
- Suitable for threading production between the walls in narrow grooves
- Economical solution relative to solid products
- Easy and fast insert mounting
- No setup needed after each insert indexing
- Easy handling of small inserts

Notes

- Standard inserts are intended for symmetrical thread profiles
- No chipformer

CHAMGROOVE Insert Description According to the Template Below

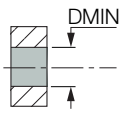
GIQR	8	-	MT	-	0.05		IC528
1	2		3		4		5

1 Hand of Tool

GIQR — Right-hand

GIQL — Left-hand

2 Minimum bore diameter (mm)

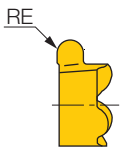


3 Angle of cutting edge (A)

WT — 55°

MT — 60°

4 Corner radius (RE)



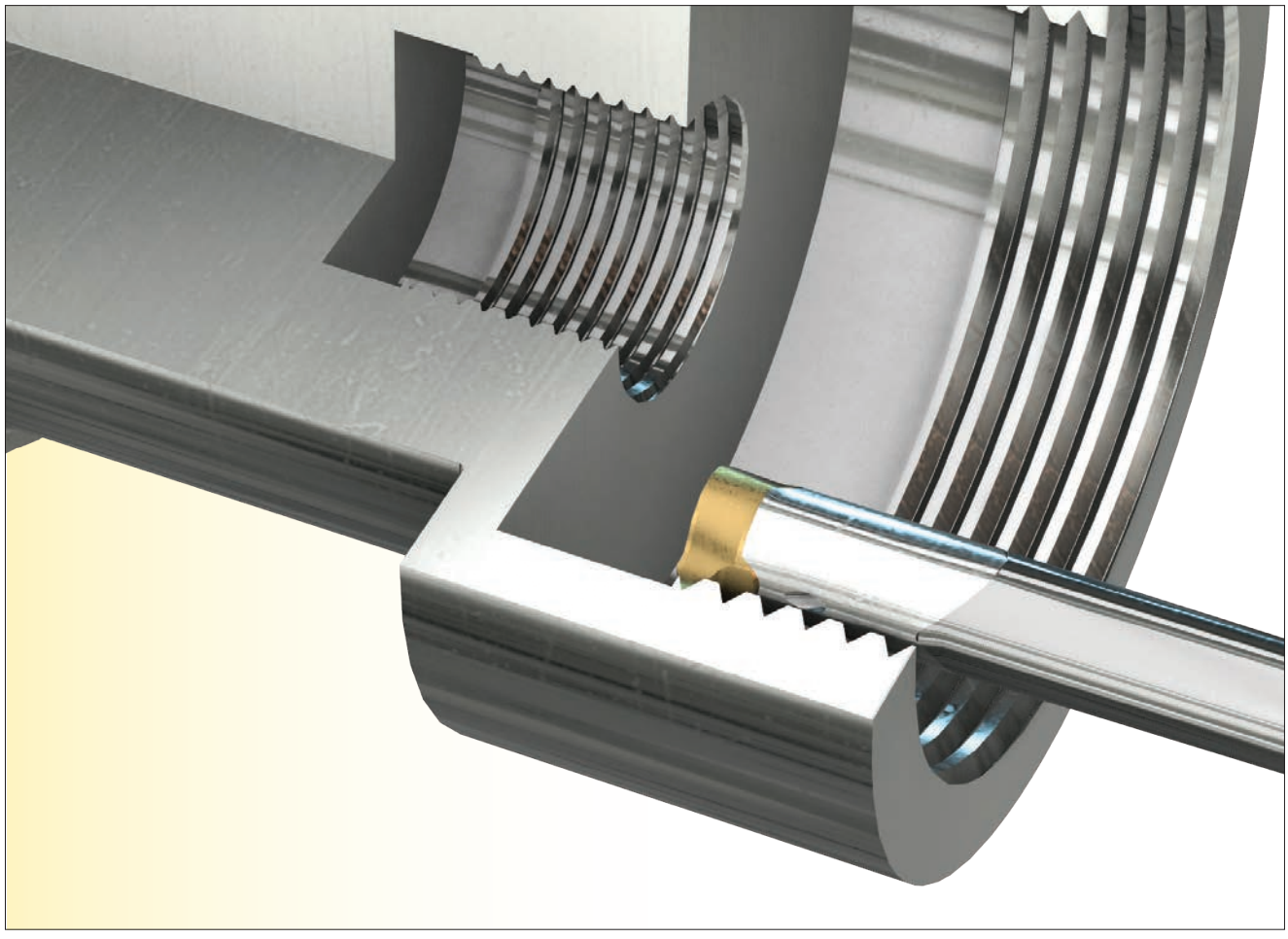
5 Grade

IC528

CHAMGROOVE Threading Bars for Internal Threading

Steel Bar With Coolant Channels	Solid Carbide Bar With and Without Coolant Channels
	

The **CHAMGROOVE** family includes two types of bars for internal threading. The bars can be produced from steel or solid carbide. The solid carbide boring bars expand the current boring overhang range and provide improved performance due to their high rigidity feature. All steel bars include coolant channels and solid carbide bars are available with and without coolant channels.

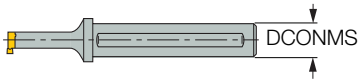


Description of CHAMGROOVE Bars for Internal threading

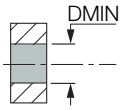
Steel Bar With Coolant Channels

MG	12	-	08	C	23
	1		2	3	4

1 Connection diameter machine size



2 Minimum bore diameter

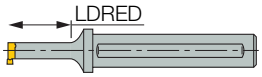


3 Coolant channels

C — Include coolant channels

☐ — Without coolant channels

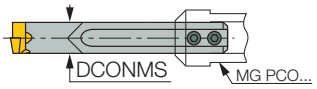
4 Body diameter length



Solid Carbide Bar With and Without Coolant Channels

MGCH	06	☐	-	L100
	1	2		3

5 Connection diameter machine size

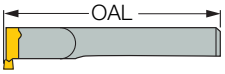


6 Coolant channels

C Include coolant channels

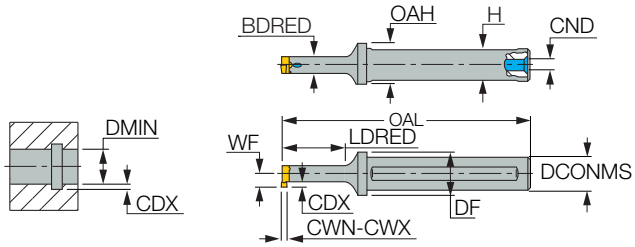
☐ Without coolant channels

7 Overall length

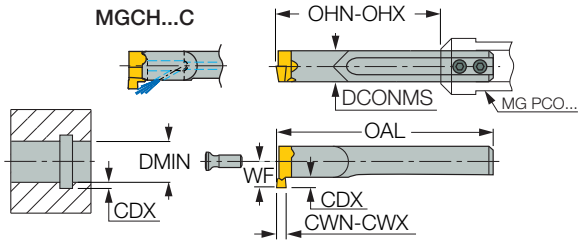


Basic dimensions of threading bars

Steel Bar



Solid Carbide Bar



OAL — Overall length

LDRED — Body diameter length

BDRED — Reduced body diameter

CDX — Cutting depth maximum

OAH — Overall height

DF — Flange diameter

H — Shank height

DCONMS — Connection diameter machine size

WF — Functional width

CND — Coolant entry diameter

DMIN — Minimum bore diameter

Main Advantages

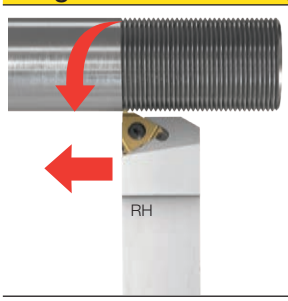
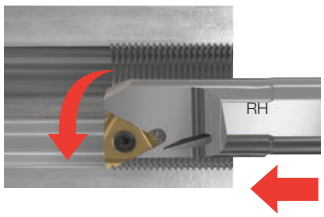
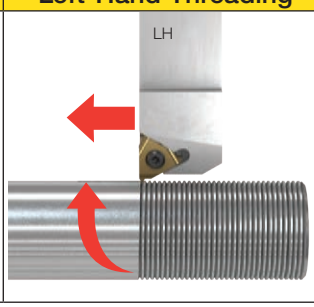
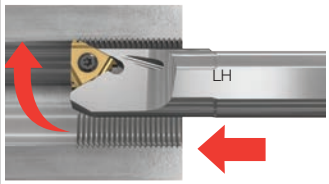
- Available with internal coolant channels
- Suitable for work next to shoulder
- Easy and fast insert mounting
- No setup needed after each insert indexing
- Easy handling of insert
- Suitable for all types of lathe machines

Thread Turning Methods

There are several methods for thread machining by turning operations. The workpiece can rotate clockwise or counterclockwise and the cutting tool is fed toward or away from the chuck.

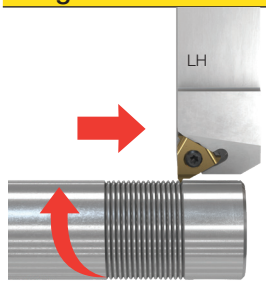
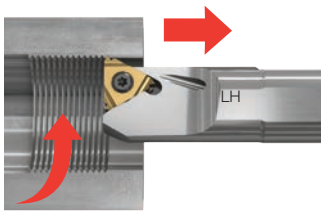
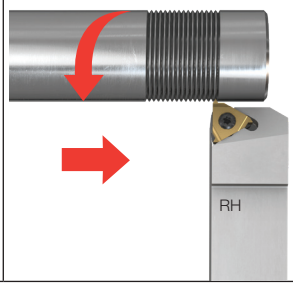
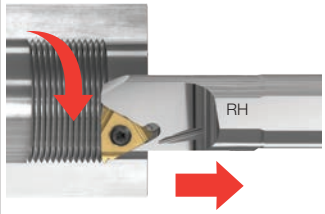
The most common and recommended methods for external and internal, right-hand and left-hand threading is shown in the sketch below.

Recommended Thread Turning Methods

External Right-Hand Threading	Internal Right-Hand Threading	External Left-Hand Threading	Internal Left-Hand Threading
			

The alternative methods for external and internal, right-hand and left-hand threading shown in the drawing below are not recommended. By using the alternative method, the tool is less stable during thread machining, which can cause vibration, poor surface finish and decrease tool life.

AlternativeThread Turning Methods*

External Right-Hand Threading	Internal Right-Hand Threading	External Left-Hand Threading	Internal Left-Hand Threading
			

* Change to negative anvil see anvil selection guide for assistance

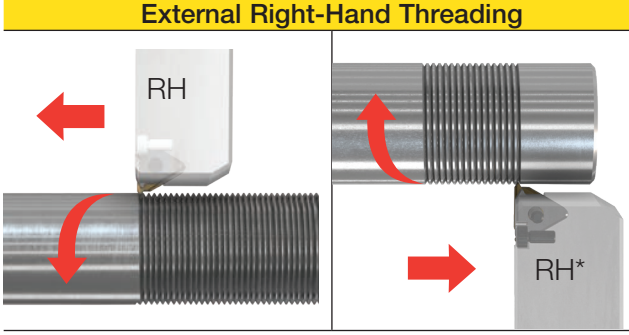
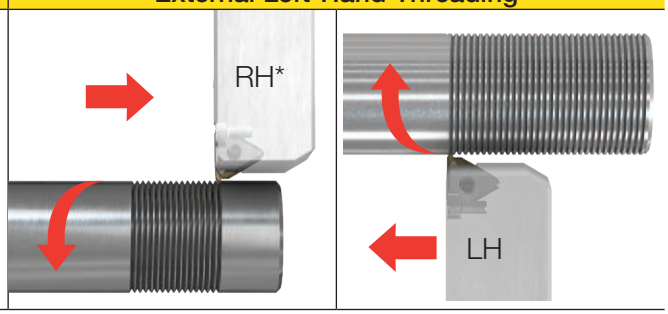
The threading tool is adjusted according to the production method. The cutting tools differ in the direction in which they are recommended to work.

LH Left- Hand Tool	RH Right-Hand Tool
	

Right-hand tools are recommended to work from right to left and left-hand tools are recommended to work from left to right, so that the sides of the pocket prevent movement of the insert during the turning operation.

The tool can be positioned upside down to allow easier chip evacuation.

Thread Turning Methods

External Right-Hand Threading	External Left-Hand Threading
	

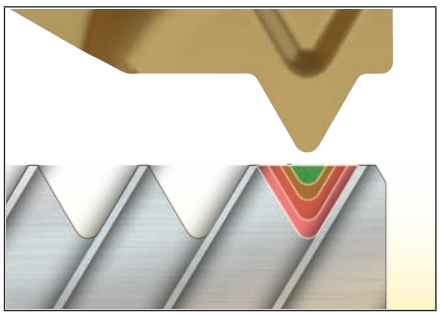
*Change to negative anvil see anvil selection guide for assistance

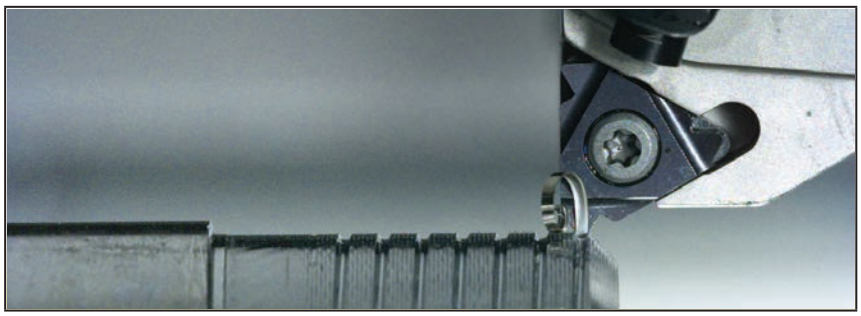
Infeed Methods - Entering the Cutter Into the Workpiece

There are several infeed methods of entering the cutter into the workpiece. Each method defines the position of the cutter relative to the cutting thread profile.
The chosen method will affect chip form, chip evacuation direction, cutting edge wear, tool life, and threading surface quality. Choosing the correct method for entering the cutter into the workpiece depends on equipment type, workpiece material, cutter geometry, and threading pitch.

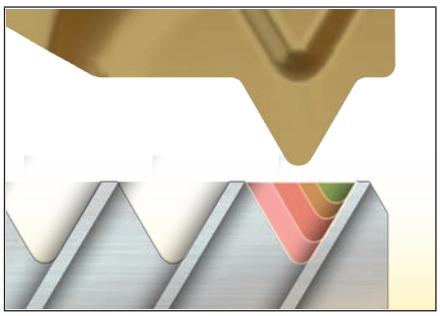
Possible infeed methods of entering the cutter into the workpiece include:

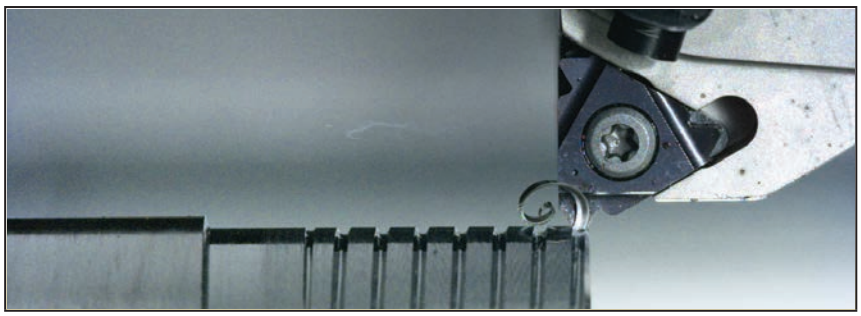
Radial Infeed



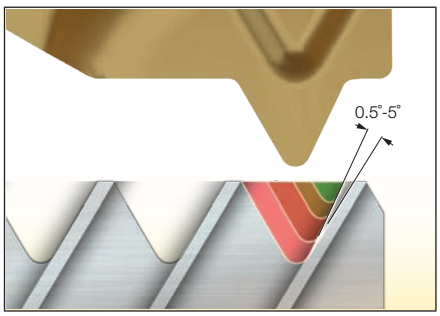


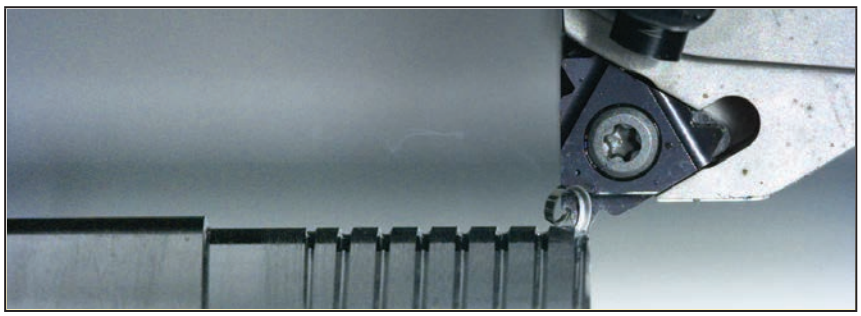
Flank Infeed



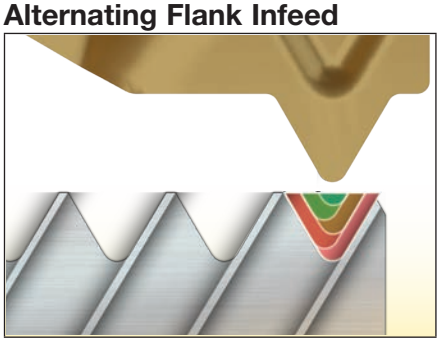


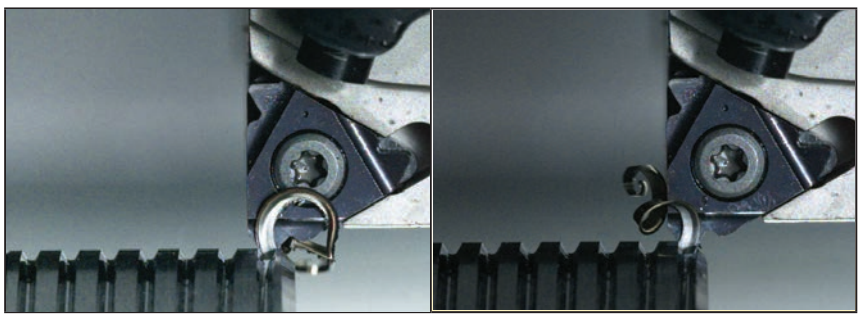
Modified Flank Infeed





Alternating Flank Infeed





Radial Infeed

With radial infeed, the thread is machined simultaneously and symmetrically with two flanks. In this processing method, the chip tends to bend on either side of the cutting edge against each other, as a result of the chip winding process, and the removal of the chip becomes more difficult. This method creates large forces on the cutting edge and warming of cutting edges which causes short tool life and limits the possible depth of cut. Cutter wear is uniform on both sides of the cutting edge.
Radial infeed is acceptable in the production of fine pitch threading or finish passes, to ensure threading profile accuracy.

Flank Infeed

With the flank infeed method, the cutting edge moves parallel to one of the sides of the threading profile. The threading is produced mainly by one side of the cutting edge. The chips are cut off with one cutting edge of the cutter, which improves chip evacuation relative to the radial method, and therefore the cutting depth per each pass can be bigger. Using the flank method provides better heat dissipation, which improves tool life but causes uneven wear of the cutter's cutting edges. As cutting is done mainly with one cutting edge, friction is created between the cutting edge and the side of the threading profile, which causes poor surface quality and possible vibration.

Modified Flank Infeed (Recommended)

Modified flank infeed is very similar to the flank infeed method, but the angle between the cutting edge to the side of the threading profile can be between 0.5° to 5°.

In this method, all the advantages of flank infeed are retained while the disadvantages caused from friction between the cutting edge and the side of the threading profile are prevented. Modified flank infeed is the recommended method for all thread turning operations and is suitable for all insert types.

Alternating Flank Infeed

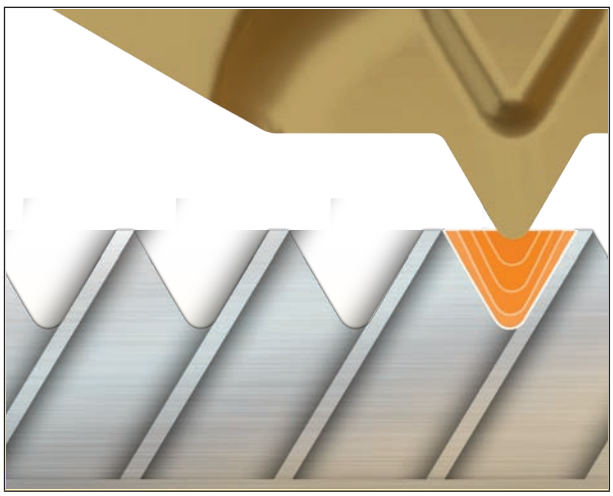
In this method, cutting edges work alternately, i.e. each time the cut is performed by another side of the cutting edge. This method can significantly increase tool life due to two cutting edges taking part in the threading production. Constant changing of the chip evacuation direction can result in poor surface quality. This method is usually used for very large pitches and for threading forms such as Acme and Trapeze.

Depth per Pass and Number of Passes

In order to produce threads, the cutting tool needs to make several numbers of cuts along the workpiece surface. The parameters of depth per pass and number of passes have a very important role in threading production. These parameters have a direct effect on cutting edge wear, tool life, threading surface quality, and threading production stability.
The two methods most common in determining the depth per pass and the number of passes are constant chip area by decreasing depth per pass or constant depth per pass. The choice of method does not depend on the selected infeed methods (radial infeed, flank infeed, modified flank infeed, alternating flank infeed), which are described in chapter 2.12.
The depth per pass and number of passes parameters depend on the type of equipment, tool overhang, machine stability, workpiece material, cutter geometry and the threading depth required.

Constant Chip Area by Decreasing Depth per Pass (Recommended)

This is the most common method and is generally recommended, as in most cases it ensures high productivity. The principle of this method is that the initial cutting depth at the first pass is the largest, and then gradually decreases at each pass to ensure material removal within a constant chip area. The calculation of passes is designed so that the last pass, which is destined to be a finish pass, will be 0.05 - 0.1 mm (0.0019 - 0.0039 inches). Using this method ensures constant loads on cutting edge and uniform wear, which increases tool life.



Formula for Calculation of Depth per Pass

$$\Delta a_{p(i)} = \frac{a_p}{\sqrt{n_a - 1}} \times \sqrt{C}$$

When:

$\Delta a_{p(i)}$ — Depth of cut i pass (i = 1...n_a)

i — Pass

a_p — Total depth of cut

n_a — Number of passes

C — Constant value:
For 1st pass: C=0.3; For 2nd pass: C=1; For 3rd pass and higher: C = i – 1

Example
Pitch - 1.25 mm
Total depth of cut: a_p=0.78 mm
Number of passes: n_a = 6

- Calculation depth of cut for 1st pass:
  For 1st pass: C=0.3

$$\Delta a_{p(1)} = \frac{0.78}{\sqrt{6-1}} \times \sqrt{0.3} = 0.19$$

  Depth of cut for 1st pass: 0.19 mm

- Calculation depth of cut for 2nd pass:
  For 2nd pass: C=1

$$\Delta a_{p(2)} = \frac{0.78}{\sqrt{6-1}} \times \sqrt{1} = 0.35$$

  Depth of cut for 2nd pass: 0.35-0.19=0.16 mm

- Calculation depth of cut for 3rd pass:
  For 3rd pass: C=3-1=2

$$\Delta a_{p(3)} = \frac{0.78}{\sqrt{6-1}} \times \sqrt{2} = 0.49$$

  Depth of cut for 3rd pass: 0.49-0.35=0.14 mm

- Calculation depth of cut for 4th pass:
  For 4th pass: C=4-1=3

$$\Delta a_{p(4)} = \frac{0.78}{\sqrt{6-1}} \times \sqrt{3} = 0.6$$

  Depth of cut for 4th pass: 0.6-0.49=0.11 mm

- Calculation depth of cut for 5th pass:
  For 5th pass: C=5-1=4

$$\Delta a_{p(5)} = \frac{0.78}{\sqrt{6-1}} \times \sqrt{4} = 0.7$$

  Depth of cut for 5th pass: 0.7-0.6=0.1 mm

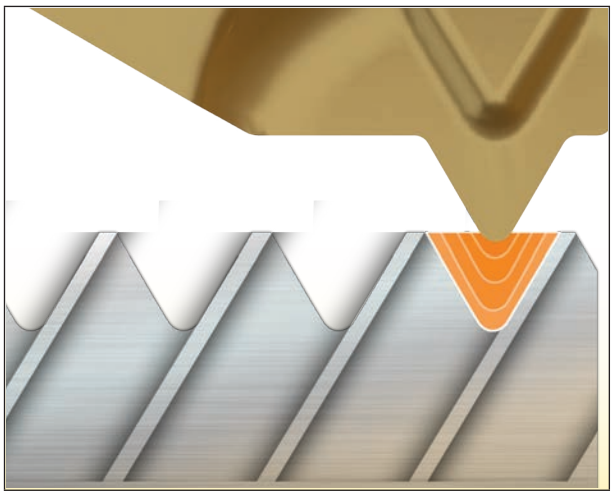
- Calculation depth of cut for 6th pass:
  For 6th pass: C=6-1=5

$$\Delta a_{p(6)} = \frac{0.78}{\sqrt{6-1}} \times \sqrt{5} = 0.78$$

  Depth of cut for 6th pass: 0.78-0.7=0.08 mm

Constant Depth per Pass

This method defines constant depth per pass (except for the last pass), regardless of the number of passes. The last pass for the finish operation is recommended to be
0.05 - 0.1 mm (0.0019 - 0.0039 inches). This method is less productive than the previous method, as it causes a larger number of passes and is usually used in cases of problems with chip control. The chip thickness is constant on each pass, but the chip area on subsequent passes is larger, respectively, and the load on the tool and material removal rate increase on each pass. For example, when cutting a 60-degree threading with a constant depth of 0.25 mm per pass, the second pass removes three times more metal than the first. And with each passing pass, the value of metal removed increases exponentially.



Number of Passes

The optimal number of passes should be checked in each specific case in order to achieve maximum effectiveness but, in any case, any pass should not be less than 0.05 mm.
ISCAR's consultants will be glad to identify the best solution according to the customer's threading requirements and production process.

High Pressure Coolant

The high pressure coolant feature has been in existence for a long time in the metal removal world, taking a bigger role in today's machining.

ISCAR was one of the first cutting tool companies to respond to market needs by designing and producing tools for ultra high and high pressure coolant flow.
High pressure coolant was initially implemented mainly for difficult-to-machine materials such as titanium, Inconel and other heat resistant alloys.

Later it was found that tool life, productivity and chip control can be improved when machining stainless and alloyed steel.

Jet high pressure (JHP) tools are particularly important in the aviation, aerospace and medical industries.

The usage of high pressure coolant is growing as manufacturers are looking for ways to reduce cutting time, improve machining process reliability and achieve longer tool life.
ISCAR's JHP tools provide all of these advantages.

How Does it Work?

The stream velocity of the coolant emitted from the pump increases as the coolant holes become smaller.

When it emerges out of the tool through the nozzle, the velocity is very high, exerting considerable force on the chips, lowering their temperature and protecting the cutting edge from thermal shock.

High temperature alloys produce a very high temperature as they are being cut.
By effectively removing the heat, the chips become less ductile and easier to break.

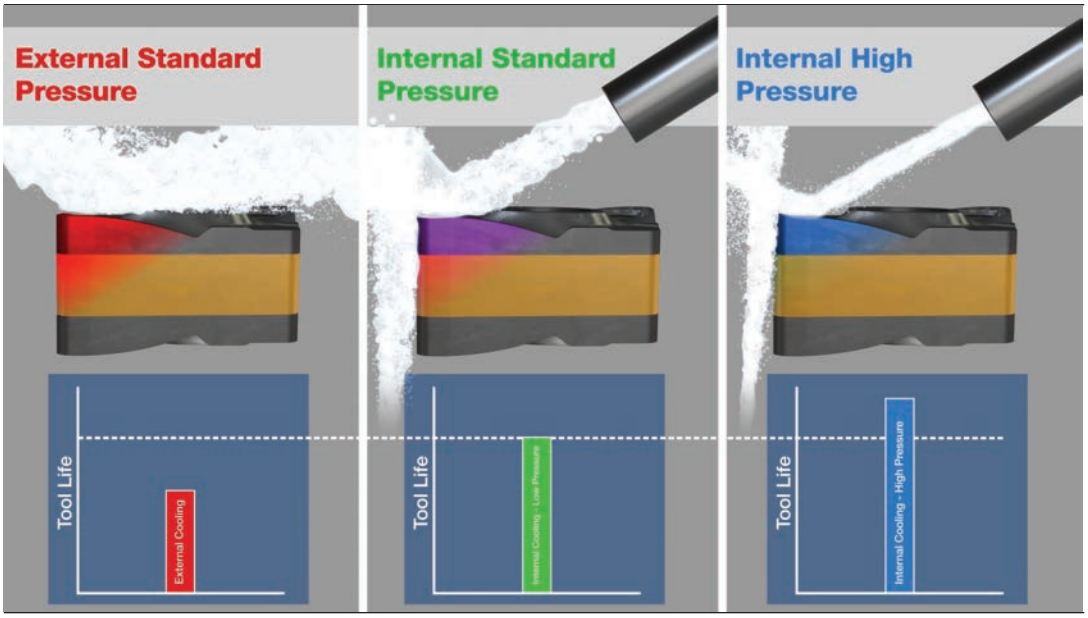
Shorter chips are easily managed - they do not tangle around the workpiece or machine parts, so there is no need to stop the process frequently.

Usually in conventional cooling the chip prevents the coolant from reaching the insert rake face in the cutting zone. The coolant stream of the JHP tools is directed precisely between the insert rake face and the flowing chip. This results in longer tool life and a much more reliable process.

The coolant channels of the JHP tools feature outlets very close to the cutting edges, with the following advantages:

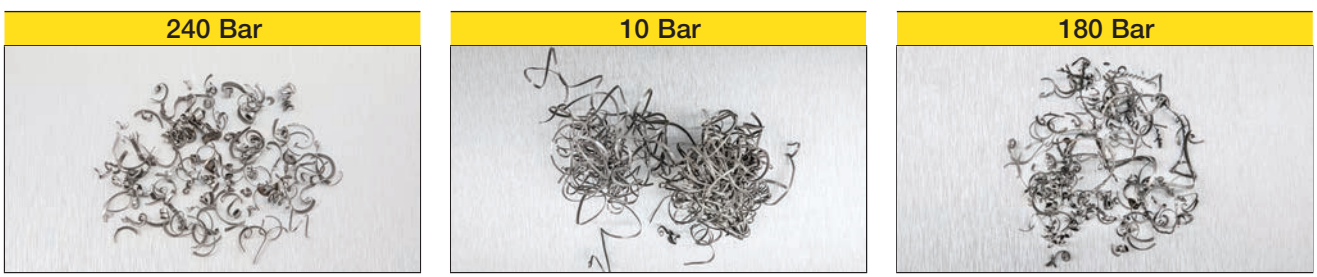
- Shorter machining time - cutting speed may be increased by up to 200% when machining titanium and heat resistant alloys
- Longer tool life - tool life increases by up to 100% not only on titanium and heat resistant alloys, but also on stainless and alloy steels
- Improved chip control - even on the most ductile and problematic materials, small chips can be obtained
- Very effective cooling down of the cutting edge, reducing sensitivity to heat fluctuations
- Safer and more stable process JHP tools provide advantageous performance also when conventional pressure is applied

Note: The through-tool coolant provides improved tool life, chip control and productivity advantages when high pressure coolant is induced. In addition, the 10-15 bar standard pressure provides better performance when compared to external cooling results.



General Information

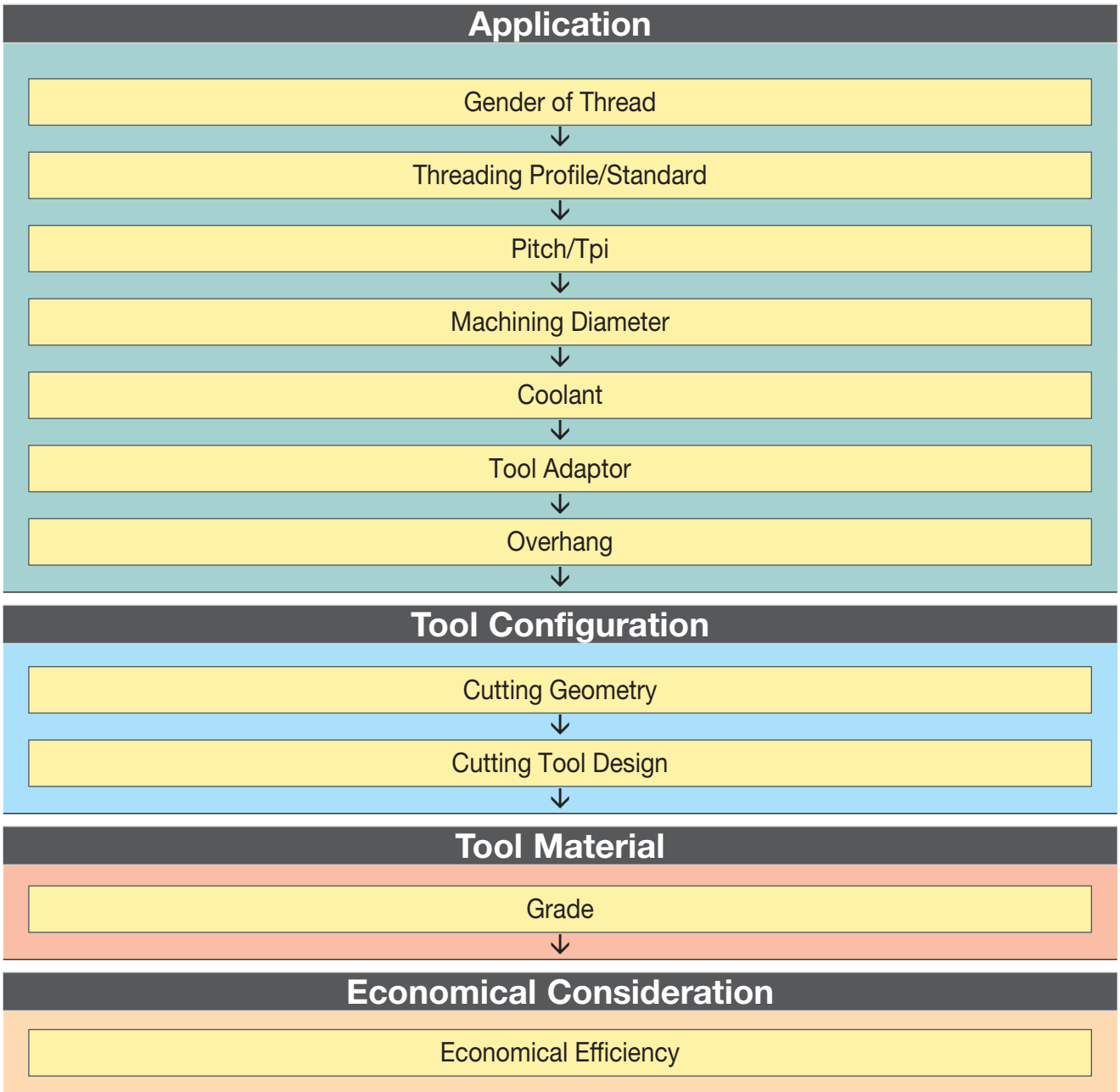
- Up to 30 bar; low pressure (LP), may provide tool life improvement and usually will not have an effect on chip control
- 30 - 120 bar; high pressure (HP), the most commonly used pressure range used with JHP tools. Increases tool life, increase in cutting speeds, improved chip control
- 120 - 400 bar - ultra high pressure (UHP), requires special tool design to take advantage of the extra pressure. Minor increase in tool life compared to HP range.
  Ultra high pressure coolant is usually implemented for machining titanium and heat resistant alloys when there is a need for very small chips and higher machining rates.
  ISCAR provides hundreds of special tools featuring ultra high pressure coolant capability for various customers and applications.
- **Pressure vs. Flow**
  Each JHP tool is designed to work at a certain flow rate, depending on the pressure. Flow rates for each tool are listed in **ISCAR**'s Complete Machining Solutions catalogs and E-CAT, **ISCAR**'s online electronic catalog.
  The user should verify that the pump can supply the required flow in order to achieve optimal results. The pump data sheet will usually list the maximum flow rate for each pressure range.
- **Chips and Pressure**
  The coolant flow will start to break the chips at a certain pressure, depending on the specific tool and the workpiece material. If the chips are not breaking, the pressure should be increased until chip control is achieved. Above this pressure, as it is increased the chips become smaller and smaller.
  It is possible to control the size of the chips by modifying the pressure in order to achieve the desired chip size.



Quick and Easy way to Select a Correct Solution

Cost per unit for a part that is machined by the tool is a significant issue and the tool's indirect influence on reducing cost per unit can be considerable.

Although a small part of the manufacturing process, the tool can represent the single obstacle to a machine tool running faster and cutting machining time. For better productivity and lower cost per part, the most efficient tool needs to be selected and used. Applying the following analysis Application -Tool Configuration- Tool Material - Economical Consideration is recommended for optimal tool selection:



Points to Consider

Application	
Gender of Thread	• Is external or internal threading required?
Threading Profile/Standard	• Is full profile or partial profile required? • What is the threading profile? (square, triangular, trapezoidal or other)? • What is the threading standard?
Pitch/TPI	• What is the threading pitch/TPI?
Machining Diameter	• What is the machining diameter?
Operation Stability	• Does the threading machine have good or bad stability?
Coolant	• What type of coolant is available (external coolant, internal coolant, possibility for high pressure coolant)?
Tool Adaptor	• What type of tool adaptor is available?
Overhang	• What is the overhang of the required tool forthreading? (This question usually refers to internal threading)
Tool Configuration	
Cutting Geometry	• What top rake geometry is recommended for threading?
Cutting Tool Design	• What is the preferred orientation of the insert into the tool?
Tool Material	
Grade	• Which cutting tool grade is most suitable for threading?
Economical Consideration	
Economical Efficiency	• What are the number of cutting edges on the insert?

Points to Consider - ISCAR Recommendations

Application	
Gender of Thread	• Is external or internal threading required?

ISCAR product families offer solutions for both external and internal threading according to most standards. Dividing **ISCAR** families per gender of thread is shown in table below.

Family/Line	External Threading	Internal Threading
ISCAR Threading Laydown Line	V	V
PENTACUT	V	
SWISSCUT	V	
CUT-GRIP	V	V
PICCOCUT		V
MINICHAM		V
CHAMGROOVE		V

Application	
Threading Profile/Standard	• Is full profile or partial profile required? • What is the threading profile (square, triangular, trapezoidal or other)? • What is the threading standard?

Depending on the answers to the questions in this section, it is possible to check which of the families meet the threading profile/standard requirements.

Threading Family for Partial Profile

Family		Standard	
		Partial Profile - 55°	Partial Profile - 60°
CUT-GRIP		V	V
PENTACUT		V	V
SWISSCUT			V
ISCAR Threading Laydown Line	B-Type	V	V
	M-Type	V	V
	G-Type	V	V
	U-Type	V	V

Threading Family for Full Profile per Threading Standard

Family/Subfamily		Threading Standard									
		ISO	UN	NPT	Whitworth	NPTF	BSPT	STACME	ACME	API RD	API
CUT-GRIP		V	V	V	V		V				
PENTACUT		V	V	V	V		V				
SWISSCUT		V									
ISCAR Threading Laydown Line	B-Type	V	V	V	V		V				
	M-Type	V	V	V	V		V				
	G-Type	V	V	V	V	V	V	V	V	V	V
	U-Type	V		V					V		
	Multi-Tooth	V	V	V	V					V	

Family/Subfamily		Threading Standard								
		TR	PG	SAGE	ABUT	UNJ	MJ	BUT	EL	RND
ISCAR Threading Laydown Line	G-Type	V	V	V	V	V	V	V	V	V
	U-Type	V		V	V					

Application

Pitch/TPI	• What is the threading pitch/TPI?

Depending on the tables below, it is possible to check which families can produce a requested pitch/TPI.

Partial Profile 55° Solution for External Threading

Family/Pitch (mm)		…	2.75	…	4	…	4.5	…	5	…	6	…	7	…	8
CUT-GRIP											◄——►				
PENTACUT															
SWISSCUT															
ISCAR Threading Laydown Line	B-Type														◄►
	M-Type														◄►
	G-Type				◄——►				◄——————►						◄►
	U-Type		◄——————————►												

Family/Pitch TPI		8	…	14	…	16	…	48	…	54
CUT-GRIP		◄——————————————————————————————►								
PENTACUT				◄——————————————————►						
SWISSCUT										
ISCAR Threading Laydown Line	B-Type	◄——————————————————————————————►								
	M-Type	◄——————————————————————————————►								
	G-Type	◄——————————————————————————————►								
	U-Type									

Partial Profile 60° Solution for External Threading

Family/Pitch (mm)		…	0.3	…	0.45	…	0.5	…	1.5	…	1.7	…	1.75	…	3
CUT-GRIP					◄——————————————————►										
PENTACUT							◄——————————————►								
SWISSCUT			◄——————————————————————————►												
ISCAR Threading Laydown Line	B-Type						◄——————————————————►								
	M-Type						◄——————————————————►								
	G-Type						◄——————————————————►								

Family/Pitch (mm)		3	…	3.5	…	5	…	5.1	…	5.5	…	6	…	9
CUT-GRIP		◄——————————————►												
PENTACUT														
SWISSCUT														
ISCAR Threading Laydown Line	B-Type	◄►												
	M-Type	◄——————————►												
	G-Type	◄——————————►								◄——————►				
	U-Type									◄——————————►				

Full Profile Solution for External Threading

Family/Pitch (mm)		0.3	0.35	0.4	0.45	0.5	0.6	0.7	0.75	0.8
CUT-GRIP						ISO			ISO	ISO
PENTACUT						ISO			ISO	ISO
SWISSCUT		ISO		ISO		ISO			ISO	
ISCAR Threading Laydown Line	**B-Type**									ISO
	M-Type								ISO	
	G-Type		ISO	ISO	ISO	ISO	ISO	ISO	ISO	ISO
	Multi-Tooth								ISO	

Family/Pitch (mm)		1	1.25	1.5	1.75	2	2.5	3	3.5	4
CUT-GRIP		ISO	ISO	ISO	ISO	ISO	ISO	ISO	ISO	ISO
PENTACUT		ISO	ISO	ISO	ISO	ISO				
SWISSCUT		ISO		ISO						
ISCAR Threading Laydown Line	**B-Type**	ISO	ISO	ISO	ISO			ISO		
	M-Type	ISO	ISO	ISO	ISO	ISO	ISO	ISO	ISO	ISO
	G-Type	ISO MJ	ISO MJ	ISO MJ TR	ISO	ISO MJ TR SAGE	ISO	ISO TR SAGE	ISO	ISO TR SAGE
	Multi-Tooth	ISO		ISO		ISO		ISO		

Family/Pitch (mm)		4.5	5	5.5	6	7	8	9	10
CUT-GRIP			ISO						
ISCAR Threading Laydown Line	**G-Type**	ISO	ISO TR	ISO	ISO TR	TR			
	U-Type		SAGE	ISO	ISO TR SAGE	TR	ISO TR	TR	TR

Full Profile Solution for External Threading

Family/TPI		3	3.5	4	4.5	5	6	7	8
CUT-GRIP									UN NPT
ISCAR Threading Laydown Line	B-Type								UN NPT
	M-Type								UN NPT
	G-Type	STACME		UN Whitworth STACME API RND	UN Whitworth	UN Whitworth STACME API BUT EL	UN Whitworth STACME ABUT EL RND	UN Whitworth	UN Whitworth NPT STACME UNJ ABUT API RD RND
	U-Type	Whitworth ABUT	Whitworth	Whitworth ABUT	Whitworth				
	Multi-Tooth								UN NPT

Family/TPI		9	10	11	11.5	12	13	14	16
CUT-GRIP			UN Whitworth	UN Whitworth BSPT	NPT	UN Whitworth	UN	UN Whitworth NPT BSPT	UN Whitworth
PENTACUT								UN Whitworth NPT BSPT	UN
ISCAR Threading Laydown Line	B-Type	UN	UN Whitworth	UN Whitworth BSPT	NPT	UN	UN	UN Whitworth NPT BSPT	UN Whitworth
	M-Type			UN Whitworth BSPT	NPT	UN	UN	UN Whitworth NPT BSPT	UN Whitworth
	G-Type	UN Whitworth	UN Whitworth STACME UNJ ABUT API RD RND	UN Whitworth BSPT UNJ	UN NPT NPTF	UN Whitworth STACME UNJ ABUT	UN UNJ	UN Whitworth NPT NPTF BSPT STACME UNJ	UN Whitworth STACME UNJ PG ABUT
	Multi-Tooth				NPT	UN		UN Whitworth	UN

Full Profile Solution for External Threading

Family/TPI		18	19	20	22	24	26	27	28
CUT-GRIP		UN Whitworth NPT	Whitworth BSPT	UN Whitworth		UN Whitworth	UN Whitworth	NPT	UN Whitworth BSPT
PENTACUT		UN NPT	Whitworth BSPT	UN		UN			Whitworth
ISCAR Threading Laydown Line	B-Type	UN NPT	Whitworth	UN		UN			
	M-Type	UN NPT	Whitworth	UN		UN			
	G-Type	UN Whitworth NPT NPTF UNJ PG	Whitworth BSPT	UN Whitworth UNJ PG ABUT	Whitworth	UN Whitworth UNJ	UN Whitworth	UN NPT NPTF	UN BSPT UNJ

Family/TPI		32	36	40	44	48	56	72
CUT-GRIP		UN						
ISCAR Threading Laydown Line	G-Type	UN Whitworth UNJ	UN Whitworth UNJ	UN Whitworth UNJ	UN UNJ	UN UNJ	UN	UN

Partial Profile 55° Solution for Internal Threading

Family/TPI		…	4	…	4.5	…	5	…	5.5	…	7	…	8	…	9	…	11
CUT-GRIP							◄	———	———	———	———	———	———	———	———	———	►
PICCOCUT																	
MINICHAM																	
CHAMGROOVE																	◄►
ISCAR Threading Laydown Line	B-Type												◄	———	———	———	►
	M-Type												◄	———	———	———	►
	G-Type		◄	———	►		◄	———	———	———	►		◄	———	———	———	►
	U-Type								◄	———	———	———	———	———	►		◄►

Family/TPI		11	…	14	…	15	…	16	…	18	…	48	…	50	…	54
CUT-GRIP		◄	———	———	———	———	———	———	———	———	———	———	———	———	———	►
PICCOCUT								◄	———	———	———	►				
MINICHAM										◄	———	►				
CHAMGROOVE		◄	———	———	———	———	———	———	———	———	———	———	———	►		
ISCAR Threading Laydown Line	B-Type	◄	———	———	———	———	———	———	———	———	———	►				
	M-Type	◄	———	———	———	———	———	———	———	———	———	►				
	G-Type	◄	———	———	———	———	———	———	———	———	———	►				
	U-Type	◄	———	►												

Partial Profile 60° Solution for Internal Threading

Family/Pitch (mm)		…	0.5	…	0.9	…	1.25	…	1.75	…	2	…	2.3	…	3
CUT-GRIP					◄	─	─	─	─	─	─	─	─	─	►
PICCOCUT			◄	─	─	─	─	─	►						
MINICHAM			◄	─	─	─	►								
CHAMGROOVE			◄	─	─	─	─	─	─	─	─	─	►		
ISCAR Threading Laydown Line	B-Type		◄	─	─	─	─	─	─	─	─	─	─	─	►
	M-Type		◄	─	─	─	─	─	─	─	─	─	─	─	►
	G-Type		◄	─	─	─	─	─	─	─	─	─	─	─	►
	U-Type								◄	─	─	─	►		

Family/Pitch (mm)		3	…	3.5	…	5	…	5.1	…	5.5	…	6	…	9
CUT-GRIP		◄	─	─	─	─	─	►						
PICCOCUT														
MINICHAM														
CHAMGROOVE														
ISCAR Threading Laydown Line	B-Type	◄	►											
	M-Type	◄	─	─	─	─	►							
	G-Type	◄	─	─	─	─	►			◄	─	►		
	U-Type									◄	─	─	─	►

Full Profile Solution for Internal Threading

Family/Pitch (mm)		0.35	0.4	0.45	0.5	0.6	0.7	0.75	0.8	1	1.25	1.5	1.75	2	2.5
PICCOCUT					ISO			ISO		ISO	ISO	ISO			
ISCAR Threading Laydown Line	B-Type							ISO	ISO	ISO MJ	ISO	ISO MJ	ISO	ISO	
	M-Type									ISO	ISO	ISO	ISO	ISO	ISO
	G-Type	ISO	ISO	ISO	ISO	ISO	ISO	ISO	ISO	ISO MJ	ISO MJ	ISO MJ TR	ISO	ISO MJ TR SAGE	ISO
	U-Type													ISO TR	
	Multi-Tooth									ISO		ISO		ISO	

Family/Pitch (mm)		3	3.5	4	4.5	5	5.5	6	7	8	9	10	16	18	20
ISCAR Threading Laydown Line	B-Type	ISO													
	M-Type	ISO													
	G-Type	ISO TR SAGE	ISO	ISO TR SAGE	ISO	ISO TR	ISO	ISO TR	TR						
	U-Type						ISO	ISO TR	TR	TR	TR	TR	PG	PG	PG
	Multi-Tooth	ISO													

Full Profile Solution for Internal Threading With ISCAR Threading Laydown Line

Family/TPI	3	4	4.5	5	6	7	8	9
B-Type							UN NPT	
M-Type					RND		UN NPT RND	
G-Type	STACME	UN Whitworth STACME ACME API RND	UN Whitworth	UN Whitworth STACME ACME API BUT EL	UN Whitworth STACME ACME ABUT EL RND	UN Whitworth	UN Whitworth NPT STACME ACME UNJ ABUT API RD RND	UN Whitworth
U-Type	STACME ACME ABUT	UN ACME ABUT	UN					
Multi-Tooth							UN NPT API RD	

Family/TPI	10	11	11.5	12	13	14	16	18
B-Type	UN Whitworth	Whitworth BSPT	NPT	UN		UN Whitworth NPT BSPT UNJ	UN Whitworth UNJ	UN Whitworth NPT NPTF UNJ
M-Type		Whitworth BSPT	NPT	UN		UN Whitworth NPT BSPT	UN Whitworth	UN
G-Type	UN Whitworth STACME ACME ABUT API RD RND	UN Whitworth BSPT	UN NPT NPTF	UN Whitworth STACME ACME UNJ ABUT	UN	UN Whitworth NPT NPTF BSPT STACME ACME UNJ	UN Whitworth STACME ACME UNJ ABUT	UN Whitworth NPT NPTF UNJ
U-Type		UN		UN Whitworth	UN			
Multi-Tooth	API RD	Whitworth	NPT	UN		Whitworth	UN	

Family/TPI	19	20	22	24	26	27	28	32
B-Type	Whitworth BSPT	UN Whitworth UNJ		UN Whitworth UNJ			UN Whitworth UNJ	UN UNJ
M-Type	Whitworth	UN Whitworth						
G-Type	Whitworth BSPT	UN Whitworth UNJ ABUT	Whitworth	UN Whitworth UNJ	Whitworth	UN NPT NPTF	UN Whitworth BSPT UNJ	UN Whitworth UNJ

Family/TPI	36	40	44	48	64
G-Type	UN Whitworth	Whitworth			UN

Application

Machining Diameter	• What is the machining diameter?

The tables below define the recommended maximum possible workpiece diameters for external threading, and the recommended minimum possible bore workpiece diameter for internal threading based on **ISCAR**'s threading families.

External Threading

Family/Application	Up to Ø20 mm	Up to Ø50 mm	Up to Ø250 mm	Unlimited
CUT-GRIP	●	●	○	●
PENTACUT	V	V	●	○
SWISSCUT	V	●	○	○
ISCAR Threading Laydown Line	V	●	V	V

V - Recommended (1st choice); • - Suitable (2nd choice); o - Can be selected (optional)

Internal Threading

Family/Application		From Ø2.4 mm	From Ø4 mm	From Ø7 mm	From Ø8 mm	From Ø12.5 mm	From Ø20 mm
CUT-GRIP	**GEPI Line**	---	---	---	---	○	V
	TIPI Line	---	---	---	---	---	V
PICCOCUT		V	V	V	V	V	V
MINICHAM		---	●	○	○	○	○
CHAMGROOVE		---	---	---	●	V	●
ISCAR Threading Laydown Line		---	---	○	○	V	V

V - Recommended (1st choice); • - Suitable (2nd choice); o - Can be selected (optional)

Application

Operation Stability	• Does the threading machine have good or bad stability?

The possibility of increasing tool life, especially when the threading process is unstable, can be expedited by positioning and clamping the insert into the pocket of the holder. **ISCAR**'s recommendation for interrupted machining, expected vibrations, etc., is to use a more rigid clamping system. For external threading, you can use the table below, whereas for internal threading, contact an **ISCAR** consultant.

External Threading

Family/Application	Unstable Applications
CUT-GRIP	
PENTACUT	
ISCAR Threading Laydown Line	
SWISSCUT	
Family/Application	Stable Applications

Application	
Coolant	• What type of coolant is available (external coolant, internal coolant, possibility for high pressure coolant)?
↓	
Tool Adaptor	• What type of tool adaptor is available?

ISCAR receommends always using coolant when threading, but this also depends on the type of machine that's available. **ISCAR**'s recommendation for coolant priority is shown in table below.

High Pressure Coolant	Internal Coolant	External Coolant
Recommended (1st choice)	Suitable (2nd choice)	Can be selected (optional)

Tool adaptation selection, like coolant selection, depends on the type of machine that's available. **ISCAR** provides a wide range of tools with different adaptations and with different cooling methods in accordance with the threading family/line, as shown in the table below.

External Threading Holders

	CUT-GRIP	PENTACUT	SWISSCUT	ISCAR Threading Laydown Line
Square Shank Tools without Coolant Channels	V	V	V	V
Square Shank Tools with Coolant Channels				V
Square Shank Tools with High Pressure Coolant System	V	V	V	V
Square Shank Tools with Bottom Fed High Pressure Coolant System	V	V		V
Drophead Square Shank Tools without Coolant Channels				V
Tools with CAMFIX shanks for polygonal taper interface with Coolant Channels	V			V
Interchangeable Adaptors with Internal Channels for High Pressure Coolant				
Interchangeable Adaptors with Internal Coolant Channels	V	V		
Interchangeable Adaptors without Internal Coolant Channels	V	V		
Blade	V	V		

Internal Threading Holders

	CUT-GRIP	PICCOCUT	MINICHAM	CHAMGROOVE	ISCAR Threading Laydown Line
Threading Bars without Coolant Channels	V			V	V
Threading Bars with Coolant Channels	V		V	V	V
Tools with CAMFIX shanks for polygonal taper interface with Coolant Channels	V				V
Interchangeable Heads with Internal Coolant Channels					V
Interchangeable Heads without Internal Coolant Channels					V
Perpendicular Holder		V			
High Precision Holder with Coolant Channels		V			
Multi-use Holder		V			

Application

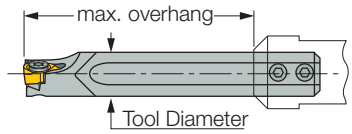
Overhang	• What is the overhang of the required tool for threading? (This question usually refers to internal theads)

The threading tools can be produced from steel or solid carbide. When threading with high overhang, a highly rigid tool system is required to maintain stable production.

If overhang is 4 X tool diameter, **ISCAR** recommends using solid carbide tools to improve performance due to their high rigidity features.

Every **ISCAR** threading family for internal threading includes steel and solid carbide tools and AVC threading heads for Anti Vibration holders Wisperline.

Tool Material	Overhang
Steel Tool	Up to 3 x Tool diameter
Solid Carbide Tool	4 - 7 x Tool Diameter



Tool Configuration

Cutting Geometry	• What top rake geometry is the recommended for threading?

Chip control is very important during threading production in order to prevent the chips from curling on the tool, which necessitates stopping the machine to clean the chips from the cutting area. In addition, non-breaking chips cause poor surface quality of the workpiece in its cutting area. In view of the above, **ISCAR**'s recommendation in most cases is to select inserts with a chipformer to form the chips into shapes that will break them into small segments or, to select inserts with a deflector whose purpose is to direct the chips outside the cutting area. For brittle materials such as cast iron or for short depth cutting, it is possible to use inserts with a flat top area. The tables below show the top rake insert geometry for each threading family.

Available Top Rake Geometry for Production of Internal Threading

Family/Top Insert Area		Deflector	Chipformer
CUT-GRIP			V
PICCOCUT		V	
MINICHAM		V	
CHAMGROOVE		V	
ISCAR Threading Laydown Line	B-Type		V
	M-Type		V
	G-Type	V	
	U-Type		V
	Multi-Tooth	V	

Available Top Rake Geometry for Production of External Threading

Family/Top Insert Area		Flat	Deflector	Chipformer
CUT-GRIP		V		V
PENTACUT				V
SWISSCUT		V		
ISCAR Threading Laydown Line	B-Type			V
	M-Type			V
	G-Type		V	
	U-Type			V
	Multi-Tooth		V	

Tool Configuration

Cutting Tool Design	• What is the preferred orientation of the insert into the tool?

What is more effective - tangential clamping or laydown clamping? This can often lead the user to hesitate when selecting the right cutting tool when there are threading cutters with laydown inserts and tangentially clamped inserts.

In general, laydown clamping is recommended in threading production on large diameters (Ø200 mm and above) and/or when using ductile materials as this solution allows the chips to flow (to be evacuated) without interference, easily and efficiently. In other cases, tangential clamping is recommended.

In either event, the question of using the cutters with tangential or laydown clamping inserts should be resolved specifically. The **ISCAR** application specialists will be glad to advise you of the best choice.

Tool Material

Grade	• Which cutting tool grade is most suitable for threading?

Selecting a grade is strongly connected with the cutting geometry of a tool and other factors. The following tables show the correct choice: they visualize a grade position in the field of application in accordance with standard ISO 513 and characterize the grade properties compared with other grades.

The tables provide summary data about grade application in coordinates of classification numbers from standard ISO 513 and availability of each grade per threading family.

There are main and complementary grades. The main grades are more popular in machining a considered class of engineering materials, but in specific cases the complementary grades can be effective as well. In situations when a product produced from a main grade is not available, a complementary grade provides an acceptable alternative.

		Material					
		Steel	Stainless Steel	Cast Iron	Nonferrous	High Temp. Allows	Hardened Steel
		Material Field					
Grade (Tough ↑ Hard ↓)	IC28	P30 - P50	M30 - M40		N10 - N30	S20 - S25	
	IC228	P25 - P50(2)	M30 - M40(2)	K20 - K50	N20 - N40	S25 - S30	
	IC528	P25 - P45	M30 - M40			S15 - S30	
	IC928	P20 - P50					
	IC50M	P20 - P30					
	IC250	P15 - P35(2)	M20 - M40				
	IC08		M10 - M30		N10 - N25(1)	S10 - S30	
	IC508	P20 - P40	M20 - M30	K20 - K30	N10 - N30	S10 - S40	H10 - H20
	IC808	P15 - P30(1)	M20 - M30	K20 - K30(2)		S10 - S25(2)	H20 - H30(2)
	IC908	P15 - P30(1)	M20 - M30(2)	K20 - K30(2)		S10 - S25(2)	H20 - H30(2)
	IC806					S15 - S25(1)	
	IC1007	P10 - P30(2)	M05 - M20(1)	K20 - K40(1)		S05 - S20(2)	H05 - H15(1)
	IC1008	P20 - P50	M20 - M40	K15 - K40	N05 - N25	S15 - S25	H20 - H30

(1) Recommended; (2) Suitable

Threading Family for Partial Profile per Available Grades			
Family		Available Grades	
		Partial Profile - 55°	Partial Profile - 60°
CUT-GRIP		IC08, IC908	IC08, IC908
PENTACUT		IC908	IC908
SWISSCUT			IC1008
ISCAR Threading Laydown Line	B-Type	IC908	IC08, IC908
	M-Type	IC50M, IC250, IC808, IC908, IC1007	IC50M, IC250, IC508, IC808, IC908, IC1007
	G-Type	IC228, IC50M, IC250, IC508, IC908, IC1007	IC228, IC50M, IC250, IC08, IC508, IC908, IC1007
	U-Type	IC50M, IC250	IC50M, IC250, IC908
PICCOCUT		IC228, IC908	IC228, IC908
MINICHAM		IC508	IC508
CHAMGROOVE		IC528	IC528

Threading Family for Full Profile per Available Grades								
Family		Available Grades - Threading Standard						
ISCAR Threading Laydown Line		BUT (Oil Threading Profile - Buttres Casing)	RND (DIN 405 - Fire Fighting and Food Industry Pipe Coupling)	API (Oil Threading Profile)	EL (Extreme Line Oil Threading)	UNJ	MJ	PG
	G-Type	IC50M, IC250, IC908	IC228, IC50M, IC250, IC508, IC908	IC50M, IC250, IC908	IC250, IC908	IC50M, IC250, IC08, IC508, IC908, IC806, IC1007	IC250, IC908 IC806	IC08, IC908

Threading Family for Full Profile per Available Grades				
Family		Available Grades - Threading Standard		
		ISO	UN (UN, UNC, UNF, UNEF)	Whitworth (BSW, BSF, BSP)
CUT-GRIP		IC08, IC908	IC08, IC808, IC908	IC08, IC908
PENTACUT		IC908	IC908	IC908
SWISSCUT		IC1008		
ISCAR threading Laydown Line	B-Type	IC908	IC908	IC908
	M-Type	IC50M, IC250, IC508, IC808, IC908, IC1007	IC50M, IC250, IC808, IC908, IC1007	IC50M, IC250, IC508, IC808, IC908, IC1007
	G-Type	IC228, IC50M, IC250, IC08, IC508, IC908, IC1007, IC928	IC228, IC50M, IC250, IC08, IC508, IC908, IC1007	IC228, IC50M, IC250, IC508, IC908, IC1007
	U-Type	IC228, IC50M, IC250, IC908		IC50M, IC250, IC908
	Multi-Tooth	IC228, IC250, IC950, IC908, IC1007	IC50M, IC908	IC908
PICCOCUT		IC908		

Threading Family for Full Profile per Available Grades					
		Available Grades - Threading Standard			
Family		NPT (National Pipe Threading)	NPTF (National Pipe Threading)	BSPT (British Standard Pipe)	API RD (Oil Threading Round Profile)
CUT-GRIP		IC08, IC908		IC08, IC908	
PENTACUT		IC908		IC908	
ISCAR Threading Laydown Line	**B-Type**	IC908		IC908	
	M-Type	IC50M, IC250, IC808, IC908, IC1007		IC808, IC908, IC1007	
	G-Type	IC228, IC50M, IC250, IC508, IC908, IC1007	IC50M, IC250, IC908	IC50M, IC250, IC508, IC908, IC1007	IC50M, IC250, IC508, IC908
	Multi-Tooth	IC908			IC908

Threading Family for Full Profile per Available Grades						
		Available Grades - Threading Standard				
Family		STACME (STUB ACME)	ACME	SAGE (Sagengenwinde)	ABUT (American Butress)	TR (Trapeze Shaped DIN103)
ISCAR Threading Laydown Line	**G-Type**	IC228, IC50M, IC250, IC908	IC250, IC908	IC250, IC908	IC50M, IC250, IC08, IC908	IC228, IC50M, IC250, IC508, IC908, IC1007
	U-Type		IC250, IC908	IC250, IC908	IC50M, IC250, IC908	IC228, IC50M, IC250, IC908

Economical Consideration

Economical Efficiency	• What are the number of cutting edges on the insert?

The parameter for a number of cutting edges is an economic consideration.
The more cutting edges on an insert, the lower the cost per insert cutting edge.

Example for a Quick and Easy way to Select a Correct Solution

Requirements:

- M100x1.75 according to ISO Standard
- External threads
- Partial profile
- AISI 316 stainless steel bar
  The threading machine has good stability, available high-pressure coolant, and square shank tool adaptation

Application	
Gender of Thread	• Is external or internal threading required?

Family/Line	External Threading
ISCAR Threading Laydown Line	V
PENTACUT	V
SWISSCUT	V
CUT-GRIP	V

Conclusion: **ISCAR** Threading Laydown Line, **PENTACUT**, **SWISSCUT**, and **CUT-GRIP** can produce external threading. Only these families are relevant.

Application	
Threading Profile/Standard	• Is full profile or partial profile required? • What is the threading profile? (square, triangular, trapezoidal or other)? • What is the threading standard?

Requested partial profile of threading M100x1.75 - triangular threading form with angle 60°

Family		Standard Partial Profile - 60°
CUT-GRIP		V
PENTACUT		V
SWISSCUT		V
ISCAR Threading Laydown Line	B-Type	V
	M-Type	V
	G-Type	V
	U-Type	V

Conclusion: **CUT-GRIP**, **PENTACUT**, **SWISSCUT** and **ISCAR** Threading Laydown Line (B-Type, M-Type, G-Type and U-Type) can produce triangular threading with a 60° angle.

Application

Pitch/TPI	• What is the threading pitch/TPI?

According to the table below, it is possible to check which families can produce a requested pitch of 1.75 mm.

Family/Pitch (mm)		…	0.3	…	0.45	…	0.5	…	1.5	…	1.7	…	1.75	…	3
CUT-GRIP					◄	———	———	———	———	———	———	———	———	———	►
PENTACUT							◄	———	———	———	———	———	———	►	
SWISSCUT			◄	———	———	———	———	———	———	———	———	►			
ISCAR Threading Laydown Line	B-Type						◄	———	———	———	———	———	———	———	►
	M-Type						◄	———	———	———	———	———	———	———	►
	G-Type						◄	———	———	———	———	———	———	———	►

Conclusion: **CUT-GRIP** Thread Family , **PENTACUT** Thread Family and **ISCAR** Threading Laydown Line (B-Type, M-Type and G-Type) can produce the requested threading.
Only these families will be examined.

Application

Machining Diameter	• What is the machining diameter?

Bar diameter is 100 mm. The table below shows the recommended threading families for production of the requested threading.

Family/Application	Up to Ø250 mm	Note
CUT-GRIP	°	Optionally
PENTACUT	•	Suitable (2nd choice)
ISCAR Threading Laydown Line	V	Recommended (1st choice)

ISCAR's recommendation depends on the machining diameter.

Conclusion: **ISCAR**'s recommended threading family in order of priority;

1st choice - **ISCAR** Threading Laydown Line

2nd choice - **PENTACUT** Thread Family

3rd choice - **CUT-GRIP** Thread Family

Application	
Operation Stability	• Does the threading machine have good or bad stability?

Family/Application	Unstable Applications
CUT-GRIP	↕
PENTACUT	
ISCAR Threading Laydown Line	
Family/Application	Stable Applications

Conclusion: According to **ISCAR**'s recommendations, the threading families order of priority has not changed from the previous section.

Application	
Coolant	• What type of coolant is available (external coolant, internal coolant, possibility for high pressure coolant)?
↓	
Tool Adaptor	• What type of tool adaptor is available?

High Pressure Coolant	Internal Coolant	External Coolant
Recommended (1st choice)	Suitable (2nd choice)	Can be selected (optional)

	CUT-GRIP	PENTACUT	ISCAR Threading Laydown Line
Square Shank Tools with High Pressure Coolant System	V	V	V

Conclusion: According to **ISCAR**'s recommendations, the threading families order of priority has not changed from the previous section.

Tool Configuration	
Overhang	• Which cutting geometry is recommended for machining requested threading?

Family/Top Insert Area		Flat	Deflector	Chip Breaker
CUT-GRIP		V		V
PENTACUT				V
ISCAR Threading Laydown Line	**B-Type**			V
	M-Type			V
	G-Type		V	

Conclusion: **ISCAR**'s recommended threading family in order of priority;

1st choice - **ISCAR** Threading Laydown Line, B-Type or M-Type insert

2nd choice - **PENTACUT** Thread Family or **ISCAR** Threading Laydown Line, G-Type insert

3rd choice - **CUT-GRIP** Thread Family

Tool Material

Grade	• Which cutting tool grade is most suitable for threading?

Grade		Material: Steel	Stainless Steel	Cast Iron	Nonferrous	High Temp. Allows	Hardened Steel
		Material Field					
Tough ↑ Hard	IC28	P30 - P50	M30 - M40		N10 - N30	S20 - S25	
	IC228	P25 - P50(2)	M30 - M40(2)	K20 - K50	N20 - N40	S25 - S30	
	IC528	P25 - P45	M30 - M40			S15 - S30	
	IC928	P20 - P50					
	IC50M	P20 - P30					
	IC250	P15 - P35(2)	M20 - M40				
	IC08		M10 - M30		N10 - N25(1)	S10 - S30	
	IC508	P20 - P40	M20 - M30	K20 - K30	N10 - N30	S10 - S40	H10 - H20
	IC808	P15 - P30(1)	M20 - M30	K20 - K30(2)		S10 - S25(2)	H20 - H30(2)
	IC908	P15 - P30(1)	M20 - M30(2)	K20 - K30(2)		S10 - S25(2)	H20 - H30(2)
	IC806					S15 - S25(1)	
	IC1007	P10 - P30(2)	M05 - M20(1)	K20 - K40(1)		S05 - S20(2)	H05 - H15(1)
	IC1008	P20 - P50	M20 - M40	K15 - K40	N05 - N25	S15 - S25	H20 - H30

(1) Recommended; (2) Suitable

Family		Available Grades: Partial Profile - 60°
CUT-GRIP		IC08, IC908
PENTACUT		IC908
ISCAR Threading Laydown Line	**B-Type**	IC08, IC908
	M-Type	IC50M, IC250, IC508, IC808, IC908, IC1007
	G-Type	IC228, IC50M, IC250, IC08, IC508, IC908, IC1007

Conclusion: **ISCAR**'s recommended threading family in order of priority;

1st choice - **ISCAR** Threading Laydown Line, M-Type insert

2nd choice - **PENTACUT** Thread Family, **ISCAR** Threading Laydown Line, B-Type or G-Type insert

3rd choice **CUT-GRIP** Thread Family

Economical Consideration

Economical Efficiency	• What are the number of cutting edges on the insert?

- **ISCAR** Threading Laydown Line inserts have 3 cutting edges.
- **PENTACUT** inserts have 5 cutting edges
- **CUT-GRIP** inserts have 2 cutting edges

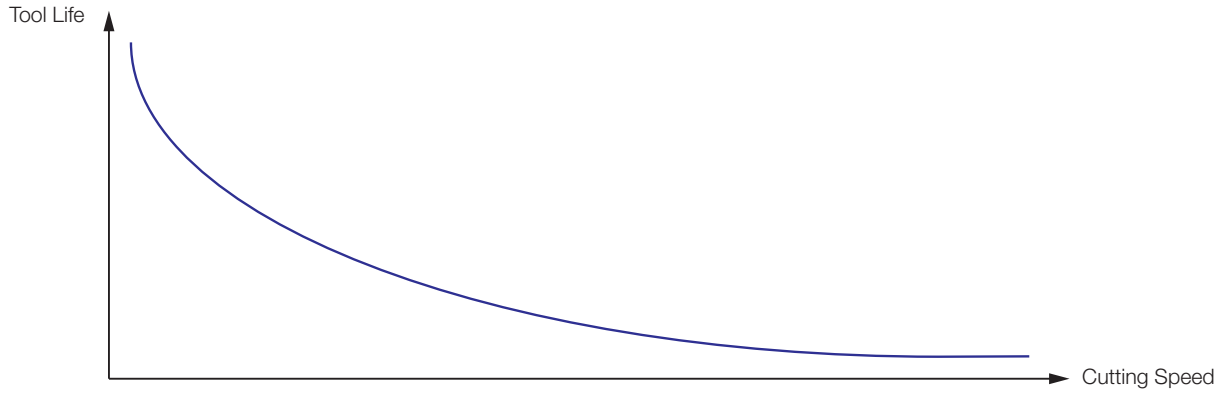
Conclusion: The decision to choose any of the selected tools is not only based on the technical parameters of the tool, but also on other important factors such as stock availability, cost, terms and conditions of deliver, etc.

Cutting Conditions

The key cutting parameters in threading are cutting speed (V_c) and feed per revolution (f). If feed per revolution (f) is a constant value equal to the threading pitch, then the cutting speed (V_c) is affected by various factors.

It should be noted that a harder carbide grade has higher wear resistance and enables higher cutting speed, and a tougher carbide grade with its better impact strength is intended for lower speed but enables higher feed.

There is also a relationship between insert tool life and cutting speed, which roughly be described in accordance with the chart below.



This graph represents the most reasonable cutting speeds.
The velocities at the high and low ranges do not necessary exhibit the same relationship.

The machinability factor should be taken into consideration as machinability of each engineering material is different, and even the same material can be substantially different in its machinability (for example, machining threading in a tool steel will be with different cutting conditions for annealed, pre-hardened and hardened). Therefore, a specific force needed to remove a unit of a chip section, and load acting on an insert, differ too.

The threading tool body is also important. A durable design of the body, position of the insert into the tool, and a reliable insert clamping method ensure machining under high cutting data.

Other limitations such as unstable machining conditions and large overhang, improper workpiece clamping, machine axis backlash, workpiece with a thin wall, and varied hardness of workpieces, can lead to decreasing the cutting speed.

Machine tool and tool holding also represent a constraint. Poor machine conditions and non rigid toolholders create an additional barrier for increased cutting data.

The mentioned arguments are very general and no doubt everyone who is involved in metal cutting is familiar with them. They are good illustration of complex dependence or the cutting data on different attributes. How to go from the generalities to the particulars and specify the starting cutting data?

The following cutting recommendations have been developed by **ISCAR** specialists and accordingly apply to **ISCAR** products.

Feed (F)

Feed per revolution (F) always is a constant value that equal to the threading pitch.

For example:

- In order to produce threading with a 2 mm pitch, the feed will be 2 mm/rev (mm per revolution).
- In order to produce threading with 14 TPI, the feed will be 1.8 mm/rev (mm per revolution). In this case, the definition of the value of the feed per revolution (F) is required to convert a value of TPI to pitch in mm, i.e.

$$\frac{25.4}{14\ TPI} \approx 1.8\ mm$$

Usable Formulas

1 inch = 25.4 mm

$$\frac{25.4}{T.P.I} = \text{Pitch (mm)}$$

Cutting Speed (V_c)

The starting cutting speed can be defined as the following formula:

$$Vc = Ks \times Vo$$

When:

V_c — starting cutting speed

Ks — stability factor

Vo — basic cutting speed

Stability Factor (Ks) is defined by the below estimate of threading operation stability:

For normal stability: Ks=1

For unstable operations such as: high overhang, poor clamping and etc.: Ks=0.7

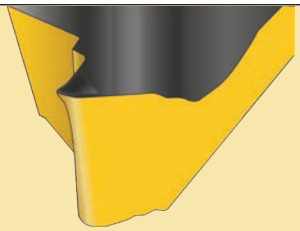
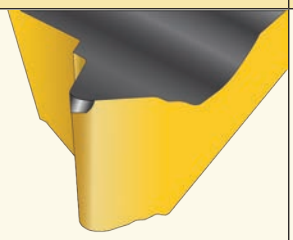
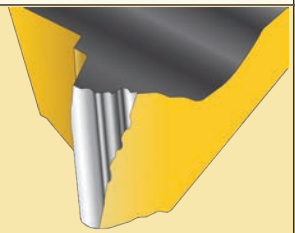
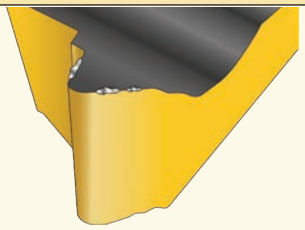
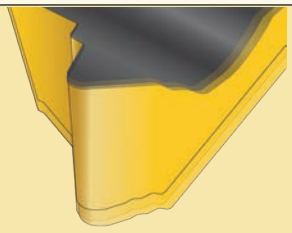
- Basic cutting speed (Vo) is determined in the table below, according to carbide grade and workpiece material.

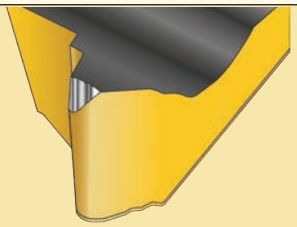
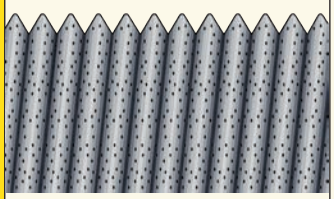
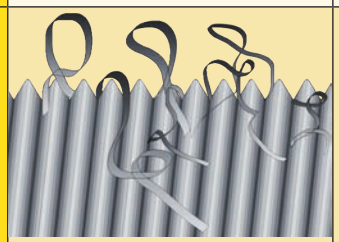
Machining Data for Threading

ISO	Material		Condition	Tensile Strength [N/mm²]	Hardness HB	Material No.
P	Non-alloy steel and cast steel, free cutting steel	< 0.25 %C	Annealed	420	125	1
		>= 0.25 %C	Annealed	650	190	2
		< 0.55 %C	Quenched and tempered	850	250	3
		>= 0.55 %C	Annealed	750	220	4
			Quenched and tempered	1000	300	5
	Low alloy steel and cast steel (less than 5% of alloying elements)		Annealed	600	200	6
			Quenched and tempered	930	275	7
				1000	300	8
				1200	350	9
	High alloyed steel, cast steel, and tool steel		Annealed	680	200	10
			Quenched and tempered	1100	325	11
	Stainless steel and cast steel		Ferritic/martensitic	680	200	12
			Martensitic	820	240	13
M	Stainless steel		Austenitic	600	180	14
K	Grey cast iron (GG)		Ferritic/pearlitic		180	15
			Pearlitic		260	16
	Nodular cast iron (GGG)		Ferritic		160	17
			Pearlitic		250	18
	Malleable cast iron		Ferritic		130	19
			Pearlitic		230	20
N	Aluminum- wrought alloy		Not cureable		60	21
			Cured		100	22
	Aluminum-cast, alloyed	<=12% Si	Not cureable		75	23
			Cured		90	24
		>12% Si	High temperature		130	25
	Copper alloys	>1% Pb	Free cutting		110	26
			Brass		90	27
			Electrolitic copper		100	28
	Non-metallic		Duroplastics, fiber plastics			29
			Hard rubber			30
S	High temp. alloys	Fe based	Annealed		200	31
			Cured		280	32
		Ni or Co based	Annealed		250	33
			Cured		350	34
			Cast		320	35
	Titanium Ti alloys			Rm 400		36
			Alpha+beta alloys cured	Rm 1050		37
H	Hardened steel		Hardened		55 HRC	38
			Hardened		60 HRC	39
	Chilled cast iron		Cast		400	40
	Cast iron		Hardened		55 HRC	41

Coated							
IC228		IC908		IC808		IC1007	
Cutting Speed							
m/min	SFM	m/min	SFM	m/min	SFM	m/min	SFM
60-100	200-330	115-190	380-620	125-205	410-670	135-230	440-750
60-95	200-310	110-180	360-590	120-195	390-640	130-220	430-720
50-90	160-300	100-175	330-570	105-185	340-610	120-210	390-690
45-85	150-280	90-165	300-540	95-175	310-570	110-200	360-660
45-85	150-280	90-165	300-540	95-175	310-570	110-200	360-660
50-95	160-310	100-180	330-590	105-195	340-640	120-215	390-710
40-75	130-250	75-140	250-460	80-150	260-490	90-170	300-560
35-70	110-230	70-135	230-440	75-145	250-480	85-160	280-520
35-70	110-230	70-135	230-440	75-145	250-480	85-160	280-520
40-65	130-210	80-120	260-390	85-130	280-430	95-145	310-480
25-50	80-160	50-100	160-330	55-105	180-340	60-120	200-390
35-70	110-230	70-130	230-430	75-140	250-460	85-155	280-510
45-60	150-200	85-110	280-360	90-120	300-390	100-130	330-430
45-75	150-250	90-140	300-460	95-150	310-490	110-170	360-560
65-85	210-280	125-160	410-520	135-170	440-560	150-190	490-620
45-65	150-210	90-120	300-390	95-130	310-430	110-145	360-480
35-70	110-230	70-130	230-430	75-140	250-460	85-155	280-510
30-60	100-200	60-115	200-380	65-125	210-410	70-140	230-460
30-35	100-110	60-70	200-230	65-75	210-250	70-85	230-280
30-75	100-250	60-145	200-480	65-155	210-510	70-175	230-570
50-195	160-640	100-365	330-1200	105-390	340-1280	120-440	390-1440
40-115	130-380	80-220	260-720	85-235	280-770	95-265	310-870
105-215	340-710	200-400	660-1310	215-430	710-1410	240-480	790-1570
105-150	340-490	200-280	660-920	215-300	710-980	240-335	790-1100
105-150	340-490	200-280	660-920	215-300	710-980	240-335	790-1100
40-135	130-440	80-255	260-840	85-275	280-900	95-305	310-1000
40-135	130-440	80-255	260-840	85-275	280-900	95-305	310-1000
40-130	130-440	80-255	260-840	85-275	280-900	95-305	310-1000
40-130	130-430	80-250	260-820	85-265	280-870	95-300	310-980
40-130	130-430	80-250	260-820	85-265	280-870	95-300	310-980
25-30	80-100	45-60	150-200	50-65	160-210	55-70	180-230
15-25	50-80	35-50	110-160	35-55	110-180	40-60	130-200
10-15	30-50	20-30	70-100	20-30	70-100	25-35	80-110
5-10	20-30	15-25	50-80	15-25	50-80	18-30	60-100
5-10	20-30	15-25	50-80	15-25	50-80	18-30	60-100
75-90	250-300	140-170	460-560	150-180	490-590	170-205	560-670
25-35	80-110	50-70	160-230	55-75	180-250	60-85	200-280
25-30	80-100	45-60	150-200	50-65	160-210	55-70	180-230
25-30	80-100	45-60	150-200	50-65	160-210	55-70	180-230
25-30	80-100	45-60	150-200	50-65	160-210	55-70	180-230
25-30	80-100	45-60	150-200	50-65	160-210	55-70	180-230

Troubleshooting

		Cause	Solution
Plastic Deformation		• Excessive heat in cutting zone • Wrong carbide grade • Inadequate coolant supply • Depth of cut too large • Cutting speed too high • Nose radius too small	• Reduce RPM / Reduce depth of cut / Check turned dia. • Use coated grade / Use harder grade • Apply coolant • Reduce depth of cut / Increase no. of passes • Reduce cutting speed • If possible use insert with larger radius
Premature Wear		• Cutting speed too high • Infeed depth too small • Highly abrasive material • Inadequate coolant supply • Wrong inclination anvil • Wrong turned dia. prior to threading • Insert is above center line	• Reduce RPM • Modify flank infeed / Increase depth of cut • Use coated grade • Apply coolant • Reselect anvil • Check turned dia. • Check center height
Insert Breakage		• Wrong turned dia. prior to threading • Wrong grade • Poor chip control • Incorrect center height	• Check turned dia. • Use tougher grade • Change to M-Type / B-Type inserts and use modified flank infeed • Check center height
Build Up Edge		• Cutting edge too cold • Wrong grade • Inadequate coolant supply • Incorrect cutting speed	• Increase RPM / Increase depth of cut • Use coated grade • Apply coolant • Increase cutting speed
Vibration		• Incorrect workpiece clamping • Incorrect tool setup • Incorrect cutting speed • Incorrect center height	• Use soft jaws • Check tool overhang / Use anti-vibration bars • Increase cutting speed • Check center height

		Cause	Solution
Incorrect Thread Profile		• Unsuitable threading profile • Incorrect center height • Incorrect pitch in the program	• Adjust to correct tool, anvil, and insert • Adjust center height • Change the program
Broken Nose During 1st Pass		• Cutting edge too cold • Depth of cut too large • Wrong grade • Wrong turned dia. prior to threading • Incorrect center height • Infeed depth too shallow • Wrong inclination anvil • Tool overhang tool long	• Reduce RPM • Reduce depth of cut/Increase number of infeed passes • Use tougher grade • Check turned dia. • Adjust center height • Change depth of cut • Reselect anvil • Reduce tool overhang / Use Anti-vibration bar
Poor Surface Finish		• Wrong cutting speed • Excessive heat in cutting zone • Poor chip control • Inadequate coolant supply • Wrong inclination anvil • Tool overhang too long • Incorrect center height	• Increase/reduce RPM • Reduce depth of cut • Modify flank infeed • Apply coolant • Reselect anvil • Reduce tool overhang • Check center height
Poor Chip Control		• Excessive heat in cutting zone • Wrong grade • Inadequate coolant supply • Wrong turned dia. prior to threading • Incorrect method of infeed	• Reduce RPM /change depth of cut /check turned dia. • Use coated grade / check turned dia./use M/B-Type inserts • Apply coolant • Check turned dia. • Modified flank infeed 3-5°

Special Request Form Thread Turning

Project Information

Customer _____ Industry _____ Country _____

Customer Goal (Productivity, Economy, etc.):

Proposal for: ☐ Finish Insert ☐ Rough Insert ☐ Holder ☐ Machining Concept

ISCAR Representative: Email: _____ Tel: _____

Competitors: _____ Target Price: _____ Annual Consumption: _____

Threading

Designation _____ Pitch _____ Standard _____ Tolerance Clas _____

Major Dia. _____ Minor Dia. _____ Pitch Dia. _____ Number of Starts _____

Threading Depth _____ ☐ Through Hole ☐ Blind Hole

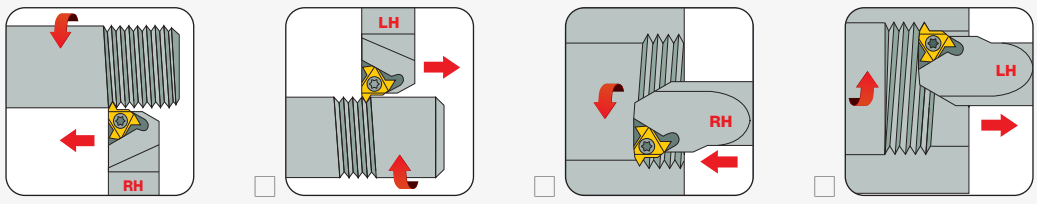
Special Form _____

For non-standard profiles, detailed information must be supplied (drawing, dimensions & tolerances)

Application

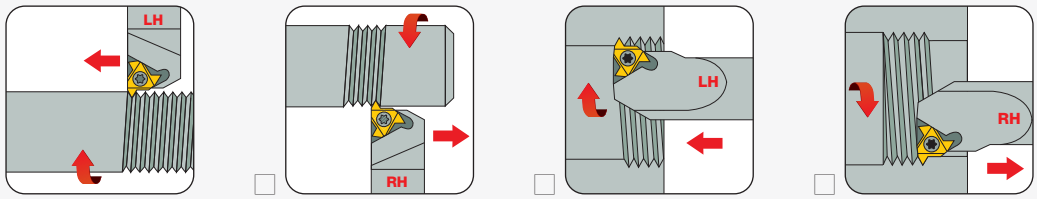
Part _____ Material _____ Hardness _____

RH
Right-hand Threading



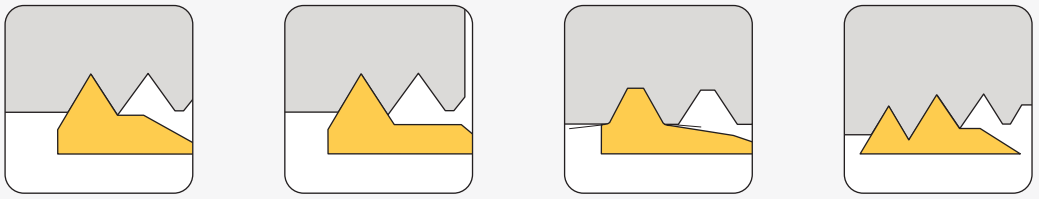
☐ ☐ ☐ ☐

LH
Left-hand Threading



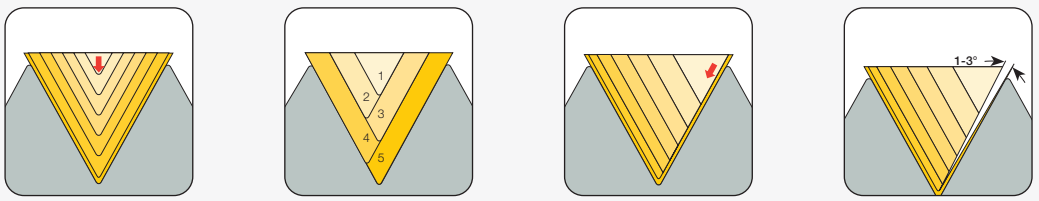
☐ ☐ ☐ ☐

Insert Profile:



☐ Full ☐ Partial ☐ Semi-Partial ☐ Multi-Point

Infeed:



☐ Radial ☐ Incremental ☐ Flank ☐ Modified Flank

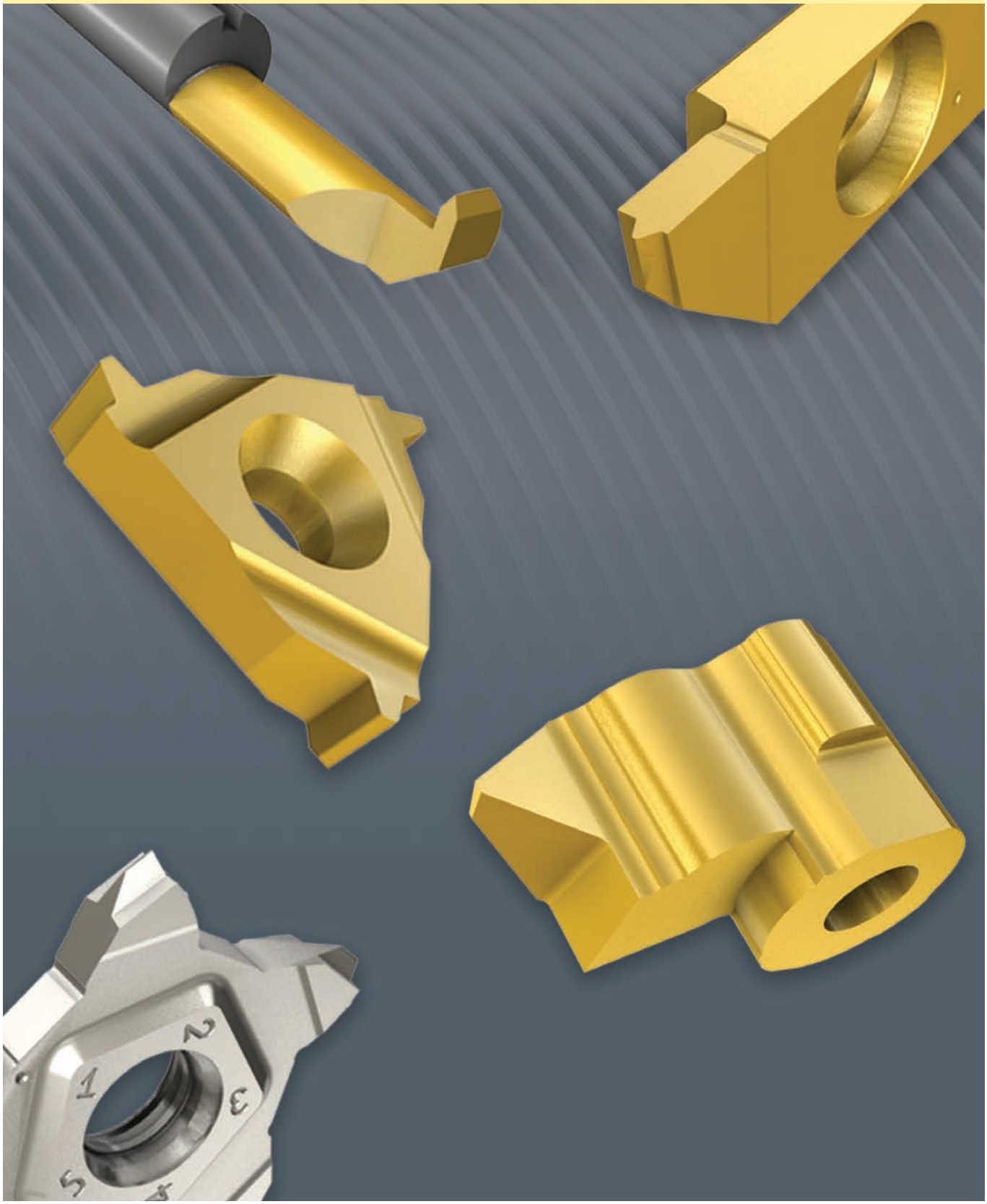
Attachments ☐ Drawing ☐ Model ☐ Sketch ☐ Photo

Machine Model _____ Shank Type/Size _____

Coolant: ☐ Internal ☐ External ☐ None Type: _____

Remarks: _____

THREAD TURNING INSERT



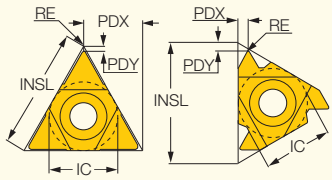
Thread Turning Inserts

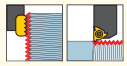
Partial Profle 55° (Whitworth)

ISCARTHREAD

ER/L-55°
External Laydown Threading Inserts with a 55 ° Partial Profile for General Industry

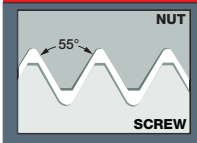






External right-hand shown

M E T R I C



Designation	Dimensions IC	TPN(2)	TPX(3)	TPIX(4)	TPIN(5)	INSL	RE	PDY	PDX	Tough ↔ Hard IC228	IC50M	IC250	IC808	IC908	IC1007
11ER A 55	6.35	0.500	1.500	48.00	16.00	11.00	0.05	0.8	0.9			•		•	
16ER/L A 55	9.52	0.500	1.500	48.00	16.00	16.49	0.05	0.8	0.9		•			•	
16ER/L AG 55	9.52	0.500	3.000	48.00	8.00	16.49	0.07	1.2	1.7	•		•		•	•
16ERB AG 55 (1)	9.52	0.500	3.000	48.00	8.00	16.49	0.07	1.2	1.7					•	
16ERM AG 55 (1)	9.52	0.500	3.000	48.00	8.00	16.49	0.07	1.2	1.7		•	•	•	•	•
16ER/L G 55	9.52	1.750	3.000	14.00	8.00	16.49	0.20	1.2	1.7			•		•	
16ERB G 55 (1)	9.52	1.750	3.000	14.00	8.00	16.49	0.23	1.2	1.7					•	
16ERM G 55 (1)	9.52	1.750	3.000	14.00	8.00	16.49	0.23	1.2	1.7			•	•	•	•
22ER/L N 55	12.70	3.500	5.000	7.00	5.00	22.00	0.42	1.7	2.5			•		•	
22UEIRL U 55	12.70	5.500	8.000	4.50	3.25	22.00	0.60	0.9	11.0		•	•			
27ER Q 55	15.88	5.500	6.000	4.50	4.00	27.50	0.60	2.0	2.9			•		•	
27UEIRL U 55	15.88	6.500	9.000	4.00	2.75	27.50	0.81	1.2	13.7			•			

I N C H

Designation	Dimensions IC	TPN (mm)(2)	TPX (mm)(3)	TPIX(4)	TPIN(5)	INSL	RE	PDY	PDX	Tough ↔ Hard IC228	IC50M	IC250	IC808	IC908	IC1007
11ER A 55	.250	.500	1.500	48.00	16.00	.433	.0020	.03	.04			•		•	
16EL A 55	.375	.500	1.500	48.00	16.00	.649	.0020	.03	.04		•				
16ER A 55	.375	.500	1.500	48.00	16.00	.649	.0024	.03	.04		•			•	
16EL AG 55	.375	.500	3.000	48.00	8.00	.649	.0027	.05	.07			•		•	
16ER AG 55	.375	.500	3.000	48.00	8.00	.649	.0027	.05	.07	•		•		•	•
16ERB AG 55 (1)	.375	.500	3.000	48.00	8.00	.649	.0027	.05	.07					•	
16ERM AG 55 (1)	.375	.500	3.000	48.00	8.00	.649	.0027	.05	.07		•	•	•	•	•
16EL G 55	.375	1.750	3.000	14.00	8.00	.649	.0079	.05	.07			•			
16ER G 55	.375	1.750	3.000	14.00	8.00	.649	.0091	.05	.07			•		•	
16ERB G 55 (1)	.375	1.750	3.000	14.00	8.00	.649	.0091	.05	.07					•	
16ERM G 55 (1)	.375	1.750	3.000	14.00	8.00	.649	.0091	.05	.07			•	•	•	•
22EL N 55	.500	3.500	5.000	7.00	5.00	.866	.0165	.07	.10			•			
22ER N 55	.500	3.500	5.000	7.00	5.00	.866	.0189	.07	.10			•		•	
22UEIRL U 55	.500	5.500	8.000	4.50	3.25	.866	.0236	.04	.43		•	•			
27ER Q 55	.625	5.500	6.000	4.50	4.00	1.083	.0236	.08	.11			•		•	
27UEIRL U 55	.625	6.500	9.000	4.00	2.75	1.083	.0319	.05	.54			•			

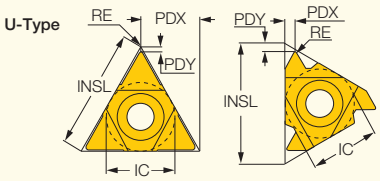
- For insert identification system, see pages 33-34 • Anvils for Laydown Inserts, see pages 36-43
- For threading between walls use GRIP-type inserts TIP-WT, GEPI-WT, TIPI-WT
- For detailed cutting data, see pages 146-149
- For recommended number of passes see pages: 119-121

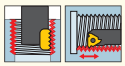
(1) With pressed chipformer (2) Thread pitch minimum (mm) (3) Thread pitch maximum (mm) (4) Threads per inch maximum (5) Threads per inch minimum

ISCARTHREAD

IR/L-55°
Internal Laydown Threading Inserts with a 55° Partial Profile for General Industry

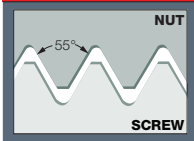






Internal left-hand shown

M E T R I C



Designation	Dimensions IC	TPN(2)	TPX(3)	TPIX(4)	TPIN(5)	INSL	RE	PDY	PDX	Tough ↔ Hard IC228	IC928	IC50M	IC250	IC508	IC808	IC908	IC1007
06IR/L A 55	4.00	0.500	1.250	48.00	20.00	6.88	0.05	0.5	0.6	●							
08IR/L A 55	5.00	0.500	1.500	48.00	16.00	8.24	0.05	0.6	0.7	●	●					●	
08UIRL U 55	5.00	1.750	2.000	14.00	11.00	8.24	0.10	0.9	4.0	●							
11IR/L A 55	6.35	0.500	1.500	48.00	16.00	11.00	0.05	0.8	0.9	●			●			●	●
16IR A 55	9.52	0.500	1.500	48.00	16.00	16.49	0.05	0.8	0.9			●				●	
16IR/L AG 55	9.52	0.500	3.000	48.00	8.00	16.49	0.07	1.2	1.7				●			●	
16IRB AG 55 (1)	9.52	0.500	3.000	48.00	8.00	16.49	0.07	1.2	1.7							●	
16IRM AG 55 (1)	9.52	0.500	3.000	48.00	8.00	16.49	0.05	1.2	1.7				●		●	●	●
16IR/L G 55	9.52	1.750	3.000	14.00	8.00	16.49	0.20	1.2	1.7				●	●		●	
16IRB G 55 (1)	9.52	1.750	3.000	14.00	8.00	16.49	0.23	1.2	1.7							●	
16IRM G 55 (1)	9.52	1.750	3.000	14.00	8.00	16.49	0.20	1.2	1.7				●		●	●	●
22IR N 55	12.70	3.500	5.000	7.00	5.00	22.00	0.42	1.7	2.5			●	●			●	
27IR Q 55	15.88	5.500	6.000	4.00	4.00	27.50	0.60	2.0	2.9							●	

I N C H

Designation	Dimensions IC	TPN (mm)(2)	TPX (mm)(3)	TPIX(4)	TPIN(5)	INSL	RE	PDY	PDX	Tough ↔ Hard IC228	IC928	IC50M	IC250	IC508	IC808	IC908	IC1007
06IR/L A 55	.157	.500	1.250	48.00	20.00	.271	.0020	.02	.02	●							
08IL A 55	.197	.500	1.500	48.00	16.00	.324	.0020	.02	.03	●							
08IR A 55	.197	.500	1.500	48.00	16.00	.324	.0020	.02	.03	●	●					●	
08UIRL U 55	.197	1.750	2.000	14.00	11.00	.324	.0039	.04	.16	●							
11IL A 55	.250	.500	1.500	48.00	16.00	.433	.0020	.03	.04				●			●	
11IR A 55	.250	.500	1.500	48.00	16.00	.433	.0020	.03	.04	●			●			●	●
16IR A 55	.375	.500	1.500	48.00	16.00	.649	.0020	.03	.04			●				●	
16IL AG 55	.375	.500	3.000	48.00	8.00	.649	.0027	.05	.07							●	
16IR AG 55	.375	.500	3.000	48.00	8.00	.649	.0027	.05	.07				●			●	
16IRB AG 55 (1)	.375	.500	3.000	48.00	8.00	.649	.0027	.05	.07							●	
16IRM AG 55 (1)	.375	.500	3.000	48.00	8.00	.649	.0020	.05	.07				●		●	●	●
16IL G 55	.375	1.750	3.000	14.00	8.00	.649	.0079	.05	.07							●	
16IR G 55	.375	1.750	3.000	14.00	8.00	.649	.0091	.05	.07				●	●		●	
16IRB G 55 (1)	.375	1.750	3.000	14.00	8.00	.649	.0091	.05	.07							●	
16IRM G 55 (1)	.375	1.750	3.000	14.00	8.00	.649	.0079	.05	.07				●		●	●	●
22IR N 55	.500	3.500	5.000	7.00	5.00	.866	.0165	.07	.10			●	●			●	
27IR Q 55	.625	5.500	6.000	4.00	4.00	1.083	.0236	.08	.11							●	

- For insert identification system, see pages 33-34 • For threading between walls use GRIP-type inserts TIP-WT, GEPI-WT, TIPI-WT.
- For detailed cutting data, see pages 146-149
- For recommended number of passes see pages: 119-121
- Anvils for Laydown Inserts, see pages 36-43

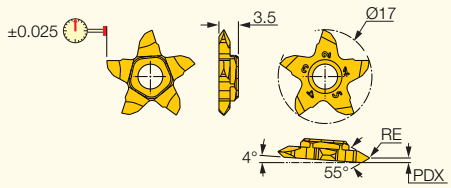
(1) With pressed chipformer (2) Thread pitch minimum (mm) (3) Thread pitch maximum (mm) (4) Threads per inch maximum (5) Threads per inch minimum

PENTACUT THREADING LINE

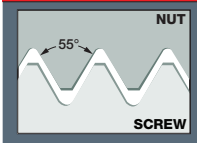
PENTA 17-WT-RS/LS

Precision Ground Pentagonal External Threading Inserts with a 55° Partial Profile for General Industry





M E T R I C



Designation	Dimensions TPIX[1]	TPIN[2]	RE	PDX	IC1008
PENTA 17-WTL003LS	72.00	16.00	0.03	0.80	●
PENTA 17-WTR003RS	72.00	16.00	0.03	0.80	●
PENTA 17-WTL008LS	31.00	8.00	0.08	1.40	●
PENTA 17-WTR008RS	31.00	8.00	0.08	1.40	●

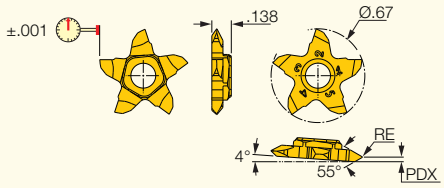
(1) Threads per inch maximum
(2) Threads per inch minimum

PENTACUT THREADING LINE

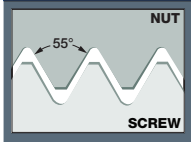
PENTA 17-WT-RS/LS

Precision Ground Pentagonal External Threading Inserts with a 55° Partial Profile for General Industry





I N C H



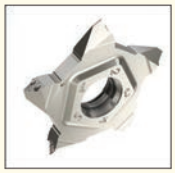
Designation	Dimensions TPIX[1]	TPIN[2]	RE	PDX	IC1008
PENTA 17-WTL003LS	72.00	16.00	.0012	.0315	●
PENTA 17-WTR003RS	72.00	16.00	.0012	.0315	●
PENTA 17-WTL008LS	31.00	8.00	.0031	.0551	●
PENTA 17-WTR008RS	31.00	8.00	.0031	.0551	●

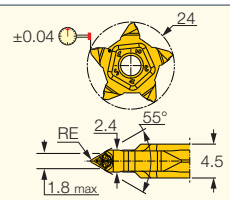
(1) Threads per inch maximum
(2) Threads per inch minimum

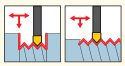
PENTACUT THREADING LINE

PENTA 24-WT

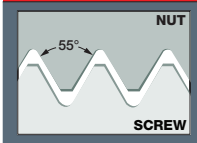
Precision Ground Pentagonal
External Threading Inserts
with a Whitworth 55°
Partial Profile







M E T R I C



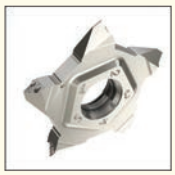
Designation	Dimensions TPIX(2)	TPIN(3)	RE	IC908
PENTA 24A-WT-0.15 (1)	24.00	8.00	0.15	●
PENTA 24A-WT-0.05 (1)	80.00	8.00	0.05	●

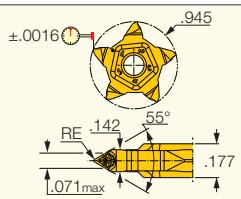
• TPIN=6.4/D(inch) D-nominal thread diameter (inch)
(1) Flat rake (without a chipformer)
(2) Threads per inch maximum
(3) Threads per inch minimum

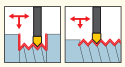
PENTACUT THREADING LINE

PENTA 24-WT

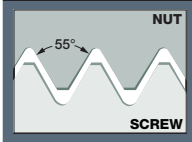
Precision Ground Pentagonal
External Threading Inserts
with a Whitworth 55°
Partial Profile







I N C H



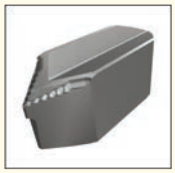
Designation	Dimensions TPIX(2)	TPIN(3)	RE	IC908
PENTA 24A-WT-0.15 (1)	24.00	8.00	.0059	●
PENTA 24A-WT-0.05 (1)	80.00	8.00	.0020	●

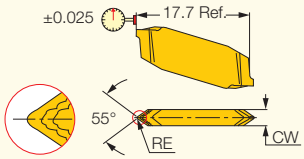
• TPIN=6.4/D(inch) D-nominal thread diameter (inch)
(1) Flat rake (without a chipformer)
(2) Threads per inch maximum
(3) Threads per inch minimum

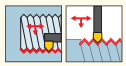
ISCARTHREAD

CUTGRIP

TIP-WT
Precision Ground Double-Ended Threading Inserts with a 55° Partial Profile and a Chipformer



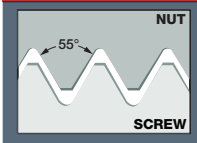




TIP inserts are 1.6 mm longer than GIP in the same pocket

M E T R I C

Designation	Dimensions CW	RE	RETOL(2)	TPIX(3)	TPIN(4)	Tough ↔ Hard IC08	IC908
TIP 2WT-0.05 (1)	2.40	0.05	0.030	54.00	12.00	●	●
TIP 4WT-0.15 (1)	4.00	0.15	0.030	19.00	7.00	●	●
TIP 5WT-0.25 (1)	5.50	0.25	0.030	12.00	6.00		●



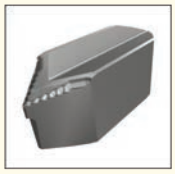
- Toolholder seat needs to be modified according to insert profile to ensure clearance • Pitch max 0.187xD

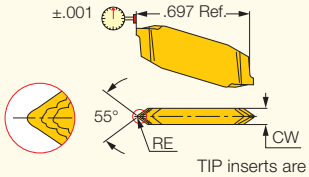
(1) TPIN(thread per inch minimum) = D/6.4 • D-Diameter of thread (inch)
(2) Corner radius tolerance (+/-)
(3) Threads per inch maximum
(4) Threads per inch minimum

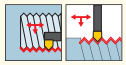
ISCARTHREAD

CUTGRIP

TIP-WT
Precision Ground Double-Ended Threading Inserts with a 55° Partial Profile and a Chipformer



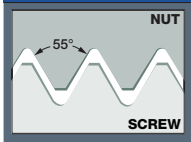




TIP inserts are .063" longer than GIP in the same pocket

I N C H

Designation	Dimensions CW	RE	RETOL(2)	TPIX(3)	TPIN(4)	Tough ↔ Hard IC08	IC908
TIP 2WT-0.05 (1)	.094	.002	.0012	54.00	12.00	●	●
TIP 4WT-0.15 (1)	.157	.006	.0012	19.00	7.00	●	●
TIP 5WT-0.25 (1)	.217	.010	.0012	12.00	6.00		●



- Toolholder seat needs to be modified according to insert profile to ensure clearance • Pitch max 0.187xD

(1) TPIN(thread per inch minimum) = D/6.4 • D-Diameter of thread (inch)
(2) Corner radius tolerance (+/-)
(3) Threads per inch maximum
(4) Threads per inch minimum

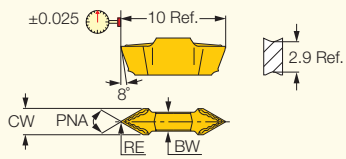
ISCARTHREAD

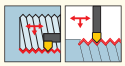
CUTGRIP

GEPI-WT

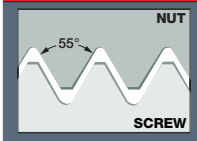
Precision Ground Double-Ended Threading Inserts with a 55° Partial Profile and a Chipformer for 11.5 mm Bore Diameter







M E T R I C



Designation	Dimensions									Tough ↔ Hard	
	CW	RE	RETOL[1]	PNA	BW	TPN[2]	TPX[3]	TPIN[4]	TPIX[5]	IC08	IC908
GEPI 2.5-WT0.05	2.50	0.05	0.030	55	1.80	0.470	2.540	10.00	54.00	●	●

- Toolholder seat needs to be modified according to insert profile to ensure clearance
- Pitch max 0.167xD, TPI min D/6.0

(1) Corner radius tolerance (+/-)
(2) Thread pitch minimum (mm)
(3) Thread pitch maximum (mm)
(4) Threads per inch minimum
(5) Threads per inch maximum

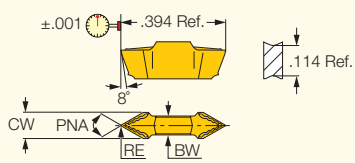
ISCARTHREAD

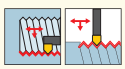
CUTGRIP

GEPI-WT

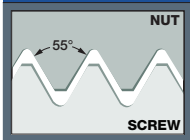
Precision Ground Double-Ended Threading Inserts with a 55° Partial Profile and a Chipformer for .453" Bore Diameter







I N C H



Designation	Dimensions									Tough ↔ Hard	
	CW	RE	RETOL[1]	PNA	BW	TPN (mm)[2]	TPX (mm)[3]	TPIN[4]	TPIX[5]	IC08	IC908
GEPI 2.5-WT0.05	.098	.002	.0012	55	.071	.470	2.540	10.00	54.00	●	●

- Toolholder seat needs to be modified according to insert profile to ensure clearance
- Pitch max 0.167xD, TPI min D/6.0

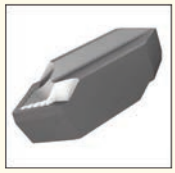
(1) Corner radius tolerance (+/-)
(2) Thread pitch minimum (mm)
(3) Thread pitch maximum (mm)
(4) Threads per inch minimum
(5) Threads per inch maximum

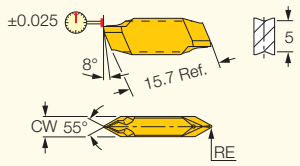
ISCARTHREAD

CUTGRIP

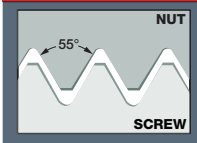
TIPI-WT

Double-Ended Internal Threading Inserts with a 55° Partial Profile and a Chipformer for 20 mm Min. Bore Diameter





M E T R I C



Designation	Dimensions CW	RE	RETOL(1)	TPN(2)	TPIX(3)	TPIN(4)	Tough ↔ Hard IC08	IC908
TIPI 3.4WT-0.10	3.40	0.10	0.030	0.950	27.00	8.00	●	●
TIPI 5.4WT-0.20	5.40	0.20	0.030	1.670	15.00	5.00		●

• Toolholder seat needs to be modified according to insert profile to ensure clearance • Pitch max 0.187xD, TPI min D/5.25 D=Diameter of thread (pitch max<=CW)

(1) Corner radius tolerance (+/-)

(2) Thread pitch minimum (mm)

(3) Threads per inch maximum

(4) Threads per inch minimum

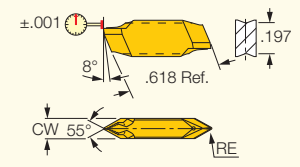
ISCARTHREAD

CUTGRIP

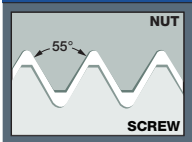
TIPI-WT

Double-Ended Internal Threading Inserts with a 55° Partial Profile and a Chipformer for .787" Min. Bore Diameter





I N C H



Designation	Dimensions CW	RE	RETOL(1)	TPN (mm)(2)	TPIX(3)	TPIN(4)	Tough ↔ Hard IC08	IC908
TIPI 3.4WT-0.10	.134	.004	.0012	.950	27.00	8.00	●	●
TIPI 5.4WT-0.20	.213	.008	.0012	1.670	15.00	5.00		●

• Toolholder seat needs to be modified according to insert profile to ensure clearance • Pitch max 0.187xD, TPI min D/5.25 D=Diameter of thread (pitch max<=CW)

(1) Corner radius tolerance (+/-)

(2) Thread pitch minimum (mm)

(3) Threads per inch maximum

(4) Threads per inch minimum

For tools, see pages: AVC-GAIR/L (273)

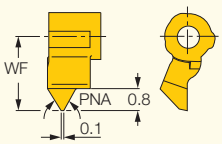
ISCARTHREAD

MINICHAM

UMGR-A55

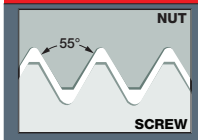
Mini Indexable Inserts with Whitworth Partial Profile for Threading in 5.2 mm and Larger Holes





Right-hand shown

M E T R I C



Designation	Dimensions							IC508
	WF	PNA	TPIX[1]	TPIN[2]	TPN[3]	TPX[4]	DMIN	
UMGR 4.0-A55	2.70	55	40.00	24.00	0.500	1.400	5.20	•

(1) Threads per inch maximum
(2) Threads per inch minimum
(3) Thread pitch minimum (mm)
(4) Thread pitch maximum (mm)

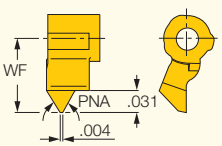
ISCARTHREAD

MINICHAM

UMGR-A55

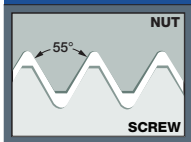
Mini Indexable Inserts with Whitworth Partial Profile for Threading in .205" and Larger Holes





Right-hand shown

I N C H



Designation	Dimensions							IC508
	WF	PNA	TPIX[1]	TPIN[2]	TPN (mm)[3]	TPX (mm)[4]	DMIN	
UMGR 4.0-A55	.106	55	40.00	24.00	.500	1.400	.205	•

(1) Threads per inch maximum
(2) Threads per inch minimum
(3) Thread pitch minimum (mm)
(4) Thread pitch maximum (mm)

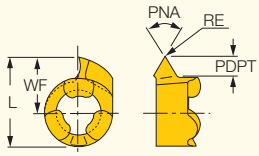
Spare Parts

Designation	
UMGR-A55	UMGK MAGASINE

ISCARTHREAD CHAMGROOVE

GIQR/L-WT
Internal Inserts with Whitworth Partial Profile for Threading in 8 mm and Larger Holes





Left-hand shown

M E T R I C

Designation	Dimensions L	RE	PNA	PDPT(1)	WF	DMIN	TPN(2)	TPIN(3)	TPIX(4)	IC528
GIQR/L 8-WT-0.05	7.78	0.05	55	1.50	4.80	8.00	0.000	16.00	50.00	●
GIQR/L 11-WT-0.05	10.68	0.05	55	2.00	6.70	11.00	0.000	11.00	50.00	●

I N C H

Designation	Dimensions L	RE	PNA	PDPT(1)	WF	DMIN	TPN (mm)(2)	TPIN(3)	TPIX(4)	IC528
GIQR/L 8-WT-0.05	.306	.002	55	.059	.189	.315	.000	16.00	50.00	●
GIQR/L 11-WT-0.05	.420	.002	55	.079	.264	.433	.000	11.00	50.00	●

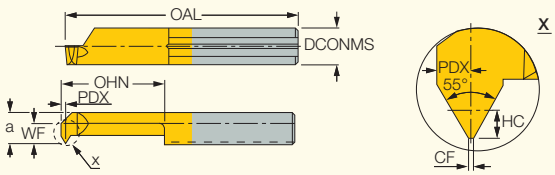
- Can be used for thread milling by circular interpolation • TPI min D/5.9 • D-diameter of thread (pitch max<=W)
- For cutting speed recommendations, see pages 146-149

(1) Cutting depth maximum
(2) Thread pitch minimum (mm)
(3) Threads per inch minimum
(4) Threads per inch maximum

ISCARTHREAD PICCOCUT

PICCO-55°-Thread
Inserts for 55° Internal Threading Profile





Right-hand shown

M E T R I C

Designation	Dimensions DCONMS	TPIX(1)	TPIN(2)	HC	CF	PDX	WF	a	OHN(3)	OAL	DMIN	IC228
PICCO R 005.5548-15	5.00	48.00	24.00	0.40	0.06	0.5	1.90	4.40	15.0	30.00	4.80	●
PICCO R 006.5548-15	6.00	48.00	24.00	0.40	0.06	0.5	2.30	5.30	15.0	30.00	6.00	●
PICCO R 006.5524-15	6.00	24.00	16.00	0.81	0.12	0.8	2.30	5.30	15.0	30.00	6.00	●
PICCO R 007.5524-15	7.00	24.00	16.00	0.81	0.12	0.8	2.80	6.30	15.0	30.00	7.00	●

I N C H

Designation	Dimensions DCONMS	TPIX(1)	TPIN(2)	HC	CF	PDX	WF	a	OHN(3)	OAL	DMIN	IC228
PICCO R 005.5548-15	.197	48.00	24.00	.016	.002	.02	.075	.173	.591	1.181	.189	●
PICCO R 006.5548-15	.236	48.00	24.00	.016	.002	.02	.091	.209	.591	1.181	.236	●
PICCO R 006.5524-15	.236	24.00	16.00	.032	.005	.03	.091	.209	.591	1.181	.236	●
PICCO R 007.5524-15	.276	24.00	16.00	.032	.005	.03	.110	.248	.591	1.181	.276	●

- All mini-bars have sharp corners • For detailed cutting data, see pages 146-149

(1) Threads per inch maximum
(2) Threads per inch minimum
(3) Minimum overhang

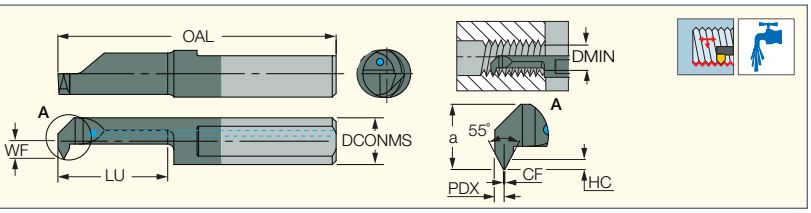
JETCUT

ISCARTHREAD

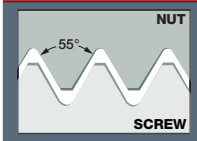
PICCO-55°-N
(55° Threading)

Inserts with Internal Coolant Channel for 55° Internal Threading Profile





M E T R I C



Designation	Dimensions											IC908
	DCONMS	TPIX[1]	TPIN[2]	HC	CF	PDX	WF	a	LU	OAL	DMIN	
PICCO R 006.5524-15N	6.05	24.00	16.00	0.81	0.12	0.8	2.30	5.30	14.0	36.00	6.00	●
PICCO R 007.5524-15N	7.05	24.00	16.00	0.81	0.12	0.8	2.80	6.30	14.0	36.00	7.00	●

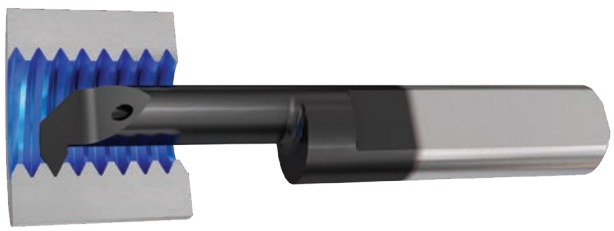
I N C H

Designation	Dimensions											IC908
	DCONMS	TPIX[1]	TPIN[2]	HC	CF	PDX	WF	a	LU	OAL	DMIN	
PICCO R 006.5524-15N	.238	24.00	16.00	.032	.005	.03	.091	.209	.551	1.417	.236	●
PICCO R 007.5524-15N	.278	24.00	16.00	.032	.005	.03	.110	.248	.551	1.417	.276	●

• All mini-bars have sharp corners • Solid tools are suitable for PICCO-N / PICCO ACE-N type holders only • For detailed cutting data, see pages 146-149

(1) Threads per inch maximum

(2) Threads per inch minimum

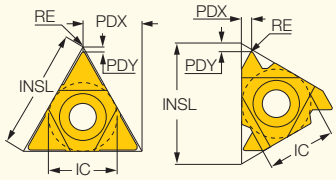


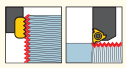
Partial Profle 60°

ISCARTHREAD

ER/L-60°
External Laydown Threading Inserts with a 60° Partial Profile for General Industries

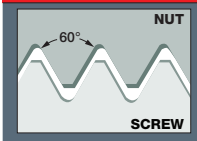






External right-hand shown

M E T R I C



Designation	Dimensions IC	TPN(2)	TPX(3)	TPIX(4)	TPIN(5)	INSL	RE	PDY	PDX	Tough ↔ Hard IC228	IC50M	IC250	IC08	IC508	IC808	IC908	IC1007
11ER/L A 60	6.35	0.500	1.500	48.00	16.00	11.00	0.05	0.8	0.9							●	
16ER/L A 60	9.52	0.500	1.500	48.00	16.00	16.49	0.06	0.8	0.9	●	●	●	●			●	●
16ERB A 60 (1)	9.52	0.500	1.500	48.00	16.00	16.49	0.06	0.8	0.8				●			●	
16ERM A 60 (1)	9.52	0.500	1.500	48.00	16.00	16.49	0.05	0.8	0.9		●	●			●	●	●
16ER/L AG 60	9.52	0.500	3.000	48.00	8.00	16.49	0.06	1.2	1.7	●	●	●	●	●		●	●
16ERB AG 60 (1)	9.52	0.500	3.000	48.00	8.00	16.49	0.06	1.2	1.7							●	
16ERM AG 60 (1)	9.52	0.500	3.000	48.00	8.00	16.49	0.06	1.2	1.7		●	●		●	●	●	●
16ER/L G 60	9.52	1.750	3.000	14.00	8.00	16.49	0.22	1.2	1.7	●		●				●	●
16ERB G 60 (1)	9.52	1.750	3.000	14.00	8.00	16.49	0.22	1.2	1.7							●	
16ERM G 60 (1)	9.52	1.750	3.000	14.00	8.00	16.49	0.17	1.2	1.7		●	●			●	●	●
22ER/L N 60	12.70	3.500	5.000	7.00	5.00	22.00	0.42	1.7	2.5	●	●	●				●	●
22ERM N 60 (1)	12.70	3.500	5.000	7.00	5.00	22.00	0.32	1.7	2.5		●	●			●	●	●
22UEIRL U 60	12.70	5.500	8.000	4.50	3.25	22.00	0.28	0.6	0.6			●				●	
27ER/L Q 60	15.88	5.500	6.000	4.50	4.00	27.50	0.63	2.0	3.0	●	●	●				●	
27UEIRL U 60	15.88	6.500	9.000	4.00	2.75	27.50	0.28	1.0	13.7		●	●					

I N C H

Designation	Dimensions IC	TPN (mm)(2)	TPX (mm)(3)	TPIX(4)	TPIN(5)	INSL	RE	PDY	PDX	Tough ↔ Hard IC228	IC50M	IC250	IC08	IC508	IC808	IC908	IC1007
11EL A 60	.250	.500	1.500	48.00	16.00	.433	.0020	.03	.04							●	
11ER A 60	.250	.500	1.500	48.00	16.00	.433	.0024	.03	.04							●	
16EL A 60	.375	.500	1.500	48.00	16.00	.649	.0024	.03	.04		●					●	
16ER A 60	.375	.500	1.500	48.00	16.00	.649	.0024	.03	.04	●		●	●			●	●
16ERB A 60 (1)	.375	.500	1.500	48.00	16.00	.649	.0024	.03	.03				●			●	
16ERM A 60 (1)	.375	.500	1.500	48.00	16.00	.649	.0020	.03	.04		●	●			●	●	●
16EL AG 60	.375	.500	3.000	48.00	8.00	.649	.0024	.05	.07		●	●				●	
16ER AG 60	.375	.500	3.000	48.00	8.00	.649	.0024	.05	.07	●	●	●	●	●		●	●
16ERB AG 60 (1)	.375	.500	3.000	48.00	8.00	.649	.0024	.05	.07							●	
16ERM AG 60 (1)	.375	.500	3.000	48.00	8.00	.649	.0024	.05	.07		●	●		●	●	●	●
16EL G 60	.375	1.750	3.000	14.00	8.00	.649	.0087	.05	.07			●				●	
16ER G 60	.375	1.750	3.000	14.00	8.00	.649	.0087	.05	.07	●		●				●	●
16ERB G 60 (1)	.375	1.750	3.000	14.00	8.00	.649	.0087	.05	.07							●	
16ERM G 60 (1)	.375	1.750	3.000	14.00	8.00	.649	.0067	.05	.07		●	●			●	●	●
22EL N 60	.500	3.500	5.000	7.00	5.00	.866	.0165	.07	.10		●					●	
22ER N 60	.500	3.500	5.000	7.00	5.00	.866	.0165	.07	.10	●	●	●				●	●
22ERM N 60 (1)	.500	3.500	5.000	7.00	5.00	.866	.0126	.07	.10		●	●			●	●	●
22UEIRL U 60	.500	5.500	8.000	4.50	3.25	.866	.0110	.02	.02			●				●	
27EL Q 60	.625	5.500	6.000	4.50	4.00	1.083	.0248	.08	.12	●							
27ER Q 60	.625	5.500	6.000	4.50	4.00	1.083	.0248	.08	.12		●	●				●	
27UEIRL U 60	.625	6.500	9.000	4.00	2.75	1.083	.0110	.04	.54		●	●					

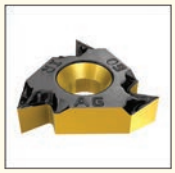
- For Insert Identification System, see pages 33-34 • For threading between walls use GRIP-type inserts SCIR/L B/F -MTR/L, TIP-MT, GEPI-MT, TIPI-MT.
- For technical information and detailed cutting data, see pages 146-149
- For recommended number of passes see pages: 119-121
- Anvils for Laydown Inserts, see pages 36-43

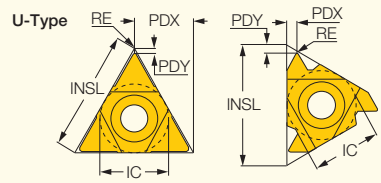
(1) With pressed chipformer
(2) Thread pitch minimum (mm)
(3) Thread pitch maximum (mm)
(4) Threads per inch maximum
(5) Threads per inch minimum

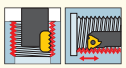
ISCARTHREAD

IR/L-60°

Internal Laydown Threading Inserts with a 60° Partial Profile for General Industry

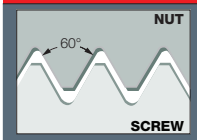






Internal left-hand shown

M E T R I C



Designation	Dimensions IC	TPN[2]	TPX[3]	TPIX[4]	TPIN[5]	INSL	RE	PDY	PDX	Tough ↔ Hard IC28	IC228	IC50M	IC250	IC08	IC508	IC808	IC908	IC1007
06IR/L A 60	4.00	0.500	1.250	48.00	20.00	6.88	0.04	0.6	0.6	●	●							
06IRM A 60 (1)	4.00	0.500	1.250	48.00	20.00	6.88	0.05	0.5	0.6		●							
08IR/L A 60	5.00	0.500	1.500	48.00	16.00	8.24	0.04	0.6	0.7	●	●						●	●
08IRM A 60 (1)	5.00	0.500	1.500	48.00	16.00	8.24	0.05	0.6	0.7		●					●	●	●
08UIRL U 60	5.00	1.750	2.000	14.00	11.00	8.24	0.10	0.8	4.0		●							
11IR/L A 60	6.35	0.500	1.500	48.00	16.00	11.00	0.04	0.8	0.9		●	●	●	●			●	●
11IRM A 60 (1)	6.35	0.500	1.500	48.00	16.00	11.00	0.05	0.7	0.9				●			●	●	●
16IR/L A 60	9.52	0.500	1.500	48.00	16.00	16.49	0.04	0.8	0.8		●	●	●				●	●
16IRB A 60 (1)	9.52	0.500	1.500	48.00	16.00	16.49	0.04	0.8	0.8								●	
16IRM A 60 (1)	9.52	0.500	1.500	48.00	16.00	16.49	0.05	0.8	0.9				●			●	●	●
16IR/L AG 60	9.52	0.500	3.000	48.00	8.00	16.49	0.04	1.2	1.7		●	●	●		●		●	●
16IRB AG 60 (1)	9.52	0.500	3.000	48.00	8.00	16.49	0.03	1.2	1.7								●	
16IRM AG 60 (1)	9.52	0.500	3.000	48.00	8.00	16.49	0.05	1.2	1.7			●	●			●	●	●
16IR/L G 60	9.52	1.750	3.000	14.00	8.00	16.49	0.13	1.2	1.7		●	●	●				●	●
16IRB G 60 (1)	9.52	1.750	3.000	14.00	8.00	16.49	0.13	1.2	1.7								●	
16IRM G 60 (1)	9.52	1.750	3.000	14.00	8.00	16.49	0.10	1.2	1.7			●	●			●	●	●
22IR/L N 60	12.70	3.500	5.000	7.00	5.00	22.00	0.22	1.7	2.5				●				●	●
22IRM N 60 (1)	12.70	3.500	5.000	7.00	5.00	22.00	0.19	1.7	2.5			●	●			●	●	●
27IR/L Q 60	15.88	5.500	6.000	4.50	4.00	27.50	0.31	2.1	3.1			●	●				●	

I N C H

Designation	Dimensions IC	TPN (mm)[2]	TPX (mm)[3]	TPIX[4]	TPIN[5]	INSL	RE	PDY	PDX	Tough ↔ Hard IC28	IC228	IC50M	IC250	IC08	IC508	IC808	IC908	IC1007
06IL A 60	.157	.500	1.250	48.00	20.00	.271	.0016	.02	.02		●							
06IR A 60	.157	.500	1.250	48.00	20.00	.271	.0016	.02	.02	●	●							
06IRM A 60 (1)	.157	.500	1.250	48.00	20.00	.271	.0020	.02	.02		●							
08IL A 60	.197	.500	1.500	48.00	16.00	.324	.0016	.02	.03		●							
08IR A 60	.197	.500	1.500	48.00	16.00	.324	.0016	.02	.03	●	●						●	●
08IRM A 60 (1)	.197	.500	1.500	48.00	16.00	.324	.0020	.02	.03		●					●	●	●
08UIRL U 60	.197	1.750	2.000	14.00	11.00	.324	.0039	.03	.16		●							
11IL A 60	.250	.500	1.500	48.00	16.00	.433	.0016	.03	.04			●					●	
11IR A 60	.250	.500	.500	48.00	16.00	.433	.0016	.03	.04		●	●	●	●			●	●
11IRM A 60 (1)	.250	.500	1.500	48.00	16.00	.433	.0020	.03	.04				●			●	●	●
16IL A 60	.375	.500	1.500	48.00	16.00	.649	.0016	.03	.03								●	
16IR A 60	.375	.500	1.500	48.00	16.00	.649	.0016	.03	.04		●	●	●				●	●
16IRB A 60 (1)	.375	.500	1.500	48.00	16.00	.649	.0016	.03	.03								●	
16IRM A 60 (1)	.375	.500	1.500	48.00	16.00	.649	.0020	.03	.04				●			●	●	●
16IL AG 60	.375	.500	3.000	48.00	8.00	.649	.0016	.05	.07				●				●	●
16IR AG 60	.375	.500	3.000	48.00	8.00	.649	.0016	.05	.07		●	●	●		●		●	●
16IRB AG 60 (1)	.375	.500	3.000	48.00	8.00	.649	.0012	.05	.07								●	
16IRM AG 60 (1)	.375	.500	3.000	48.00	8.00	.649	.0020	.05	.07			●	●			●	●	●
16IL G 60	.375	1.750	3.000	14.00	8.00	.649	.0051	.05	.07								●	
16IR G 60	.375	1.750	3.000	14.00	8.00	.649	.0051	.05	.07		●	●	●				●	●
16IRB G 60 (1)	.375	1.750	3.000	14.00	8.00	.649	.0051	.05	.07								●	
16IRM G 60 (1)	.375	1.750	3.000	14.00	8.00	.649	.0039	.05	.07			●	●			●	●	●
22IL N 60	.500	3.500	5.000	7.00	5.00	.866	.0087	.07	.10								●	
22IR N 60	.500	3.500	5.000	7.00	5.00	.866	.0087	.07	.10				●				●	●
22IRM N 60 (1)	.500	3.500	5.000	7.00	5.00	.866	.0075	.07	.10			●	●			●	●	●
27IL Q 60	.625	5.500	6.000	4.50	4.00	1.083	.0122	.08	.12			●						
27IR Q 60	.625	5.500	6.000	4.50	4.00	1.083	.0122	.07	.11				●				●	

• For Insert Identification System, see pages 33-34 • For technical information and detailed cutting data, see pages 146-149
• Anvils for Laydown Inserts, see pages 36-43 • For recommended number of passes see pages: 119-121

(1) With a pressed chipformer
(2) Thread pitch minimum (mm)
(3) Thread pitch maximum (mm)
(4) Threads per inch maximum
(5) Threads per inch minimum

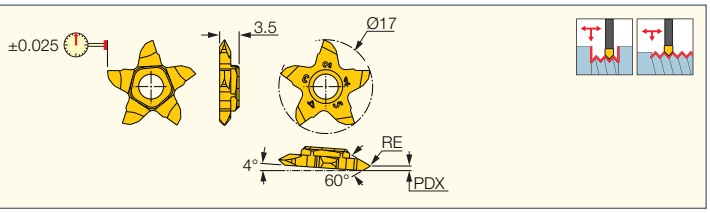
Member IMC Group

PENTACUT THREADING LINE

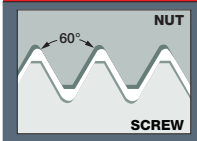
PENTA 17-MT-RS/LS

Precision Ground Pentagonal External Threading Inserts with a 60° Partial Profile for General Industry





M E T R I C



Designation	Dimensions TPIN[1]	TPIX[2]	TPN[3]	TPX[4]	RE	PDX	IC1008
PENTA 17-MTL008LS	8.00	36.00	0.700	3.000	0.08	1.40	●
PENTA 17-MTR008RS	8.00	36.00	0.700	3.000	0.08	1.40	●
PENTA 17-MTL003LS	17.00	80.00	0.300	1.500	0.03	0.80	●
PENTA 17-MTR003RS	17.00	80.00	0.300	1.500	0.03	0.80	●

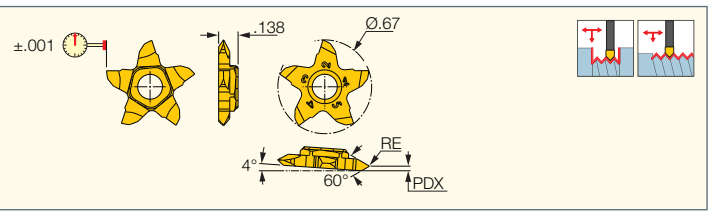
[1] Threads per inch minimum
[2] Threads per inch maximum
[3] Thread pitch minimum (mm)
[4] Thread pitch maximum (mm)

PENTACUT THREADING LINE

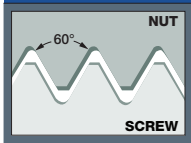
PENTA 17-MT-RS/LS

Precision Ground Pentagonal External Threading Inserts with a 60° Partial Profile for General Industry





I N C H



Designation	Dimensions TPIN[1]	TPIX[2]	TPN (mm)[3]	TPX (mm)[4]	RE	PDX	IC1008
PENTA 17-MTL008LS	8.00	36.00	.700	3.000	.0031	.0551	●
PENTA 17-MTR008RS	8.00	36.00	.700	3.000	.0031	.0551	●
PENTA 17-MTL003LS	17.00	80.00	.300	1.500	.0012	.0315	●
PENTA 17-MTR003RS	17.00	80.00	.300	1.500	.0012	.0315	●

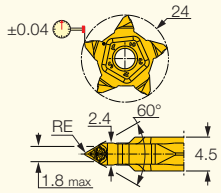
[1] Threads per inch minimum
[2] Threads per inch maximum
[3] Thread pitch minimum (mm)
[4] Thread pitch maximum (mm)

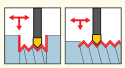
PENTACUT THREADING LINE

PENTA 24-MT

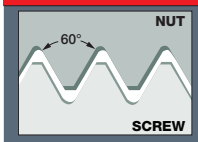
Precision Ground Pentagonal External Threading Inserts with a 60° Partial Profile for General Industry







M E T R I C



Designation	Dimensions TPN[2]	TPX[3]	RE	IC908
PENTA 24A-MT-0.05 [1]	0.250	3.000	0.05	●
PENTA 24-MT-0.05	0.250	3.500	0.05	●
PENTA 24A-MT-0.15	0.800	3.000	0.15	●

- TPX=0.175xD

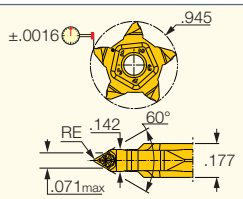
[1] Flat rake (without a chipformer)
[2] Thread pitch minimum (mm)
[3] Thread pitch maximum (mm)

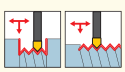
PENTACUT THREADING LINE

PENTA 24-MT

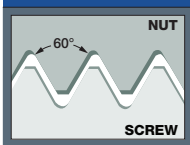
Precision Ground Pentagonal External Threading Inserts with a 60° Partial Profile for General Industry







I N C H



Designation	Dimensions TPN (mm)[2]	TPX (mm)[3]	RE	IC908
PENTA 24A-MT-0.05 [1]	.250	3.000	.0020	●
PENTA 24-MT-0.05	.250	3.500	.0020	●
PENTA 24A-MT-0.15	.800	3.000	.0059	●

- TPX=0.175xD

[1] Flat rake (without a chipformer)
[2] Thread pitch minimum (mm)
[3] Thread pitch maximum (mm)

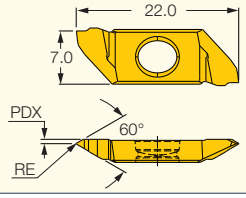
ISCARTHREAD

SWISSCUT INNOVAL LINE

SCIR/L-22-MTR/MTL

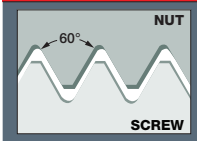
Threading Inserts with
a 60° Partial Profile





Left-hand shown

M E T R I C



Designation	Dimensions RE	PDX	TPN[1]	TPX[2]	TPIX[3]	TPIN[4]	Tough ↔ Hard IC1008	IC07	IC1007
SCIL 22-MTL003	0.03	0.4	0.300	0.900	83.00	28.00	●	●	●
SCIR 22-MTR003	0.03	0.4	0.300	0.900	83.00	28.00	●	●	●
SCIL 22-MTR/L007	0.07	0.5	0.700	1.100	36.00	23.00	●	●	●
SCIR 22-MTR/L007	0.07	0.5	0.700	1.100	36.00	23.00	●	●	●
SCIL 22-MTL010	0.10	0.8	0.900	1.700	28.00	15.00	●	●	●
SCIR 22-MTR010	0.10	0.8	0.900	1.700	28.00	15.00	●	●	●

- For detailed cutting data, see pages 146-149

[1] Thread pitch minimum (mm)
[2] Thread pitch maximum (mm)
[3] Threads per inch maximum
[4] Threads per inch minimum

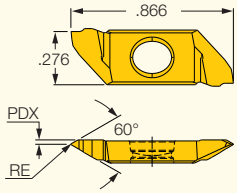
ISCARTHREAD

SWISSCUT INNOVAL LINE

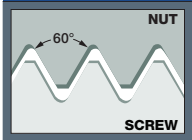
SCIR/L-22-MTR/MTL

Threading Inserts with
a 60° Partial Profile





I N C H



Designation	Dimensions RE	PDX	TPN (mm)[1]	TPX (mm)[2]	TPIX[3]	TPIN[4]	Tough ↔ Hard IC1008	IC07	IC1007
SCIL 22-MTL003	.0012	.02	.300	.900	83.00	28.00	●	●	●
SCIR 22-MTR003	.0012	.02	.300	.900	83.00	28.00	●	●	●
SCIL 22-MTL007	.0027	.02	.700	1.100	36.00	23.00	●	●	●
SCIL 22-MTR007	.0027	.02	.700	1.100	36.00	23.00	●		
SCIR 22-MTL007	.0027	.02	.700	1.100	36.00	23.00	●		
SCIR 22-MTR007	.0027	.02	.700	1.100	36.00	23.00	●	●	●
SCIL 22-MTL010	.0039	.03	.900	1.700	28.00	15.00	●	●	●
SCIR 22-MTR010	.0039	.03	.900	1.700	28.00	15.00	●	●	●

- For detailed cutting data, see pages 146-149

[1] Thread pitch minimum (mm)
[2] Thread pitch maximum (mm)
[3] Threads per inch maximum
[4] Threads per inch minimum

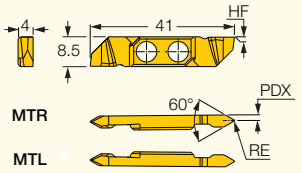
SWISSCUT EXTRA LONG

ISCARTHREAD

SCIR/L-41-MTR/MTL

Threading Inserts with
a 60° Partial Profile





M E T R I C

Designation	Dimensions RE	PDX	TPN(1)	TPX(2)	TPIN(3)	TPIX(4)	HF(5)	IC1008
SCIL 41-MTL006	0.06	0.90	0.400	1.500	17.00	64.00	0.2	●
SCIR 41-MTR006	0.06	0.90	0.400	1.500	17.00	64.00	0.2	●
SCIL 41-MTL020	0.20	1.60	1.500	2.500	10.00	17.00	0.2	●
SCIR 41-MTR020	0.20	1.60	1.500	2.500	10.00	17.00	0.2	●

• For detailed cutting data, see pages 146-149

(1) Thread pitch minimum (mm)
(2) Thread pitch maximum (mm)
(3) Threads per inch minimum
(4) Threads per inch maximum
(5) Cutting edge below center

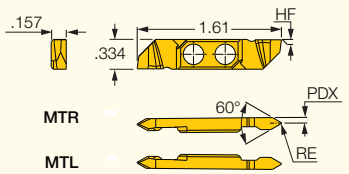
SWISSCUT EXTRA LONG

ISCARTHREAD

SCIR/L-41-MTR/MTL

Threading Inserts with
a 60° Partial Profile





I N C H

Designation	Dimensions RE	PDX	TPN (mm)(1)	TPX (mm)(2)	TPIN(3)	TPIX(4)	HF(5)	IC1008
SCIL 41-MTL006	.0024	.0354	.400	1.500	17.00	64.00	.008	●
SCIR 41-MTR006	.0024	.0354	.400	1.500	17.00	64.00	.008	●
SCIL 41-MTL020	.0079	.0630	1.500	2.500	10.00	17.00	.008	●
SCIR 41-MTR020	.0079	.0630	1.500	2.500	10.00	17.00	.008	●

• For detailed cutting data, see pages 146-149

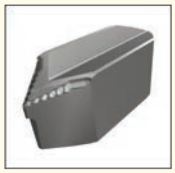
(1) Thread pitch minimum (mm)
(2) Thread pitch maximum (mm)
(3) Threads per inch minimum
(4) Threads per inch maximum
(5) Cutting edge below center

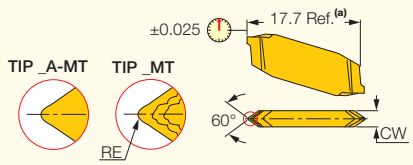
ISCARTHREAD

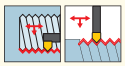
CUTGRIP

TIP-MT

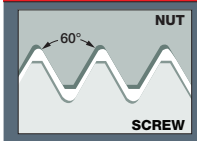
Precision Ground Double-Ended Threading Inserts with a 60° Partial Profile and Chipformer







M E T R I C



Designation	Dimensions CW	RE	RETOL(2)	TPN(3)	TPIX(4)	TPIN(5)	TPX(6)	Tough ↔ Hard IC08	IC908
TIP 2A-MT-0.05 (1)	2.40	0.05	0.030	0.450	56.00	12.00	2.120		●
TIP 2MT-0.05	2.40	0.05	0.030	0.450	56.00	12.00	2.120	●	●
TIP 2MT-0.14	2.40	0.14	0.030	1.110	23.00	12.00	2.120	●	●
TIP 4A-MT-0.15 (1)	4.00	0.15	0.030	1.270	20.00	7.00	3.630		●
TIP 4MT-0.15	4.00	0.15	0.030	1.270	20.00	7.00	3.630		●
TIP 4MT-0.20	4.00	0.20	0.030	1.600	16.00	7.00	3.630	●	●
TIP 5MT-0.25	5.50	0.25	0.030	1.950	13.00	5.00	5.100	●	●

• (a) TIP inserts are 1.6 mm longer than GIP in the same pocket • Toolholder seat needs to be modified according to insert profile to ensure clearance

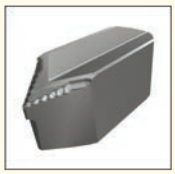
(1) Without chipformer (flat rake)
(2) Corner radius tolerance (+/-)
(3) Thread pitch minimum (mm)
(4) Threads per inch maximum
(5) Threads per inch minimum
(6) Thread pitch maximum (mm)

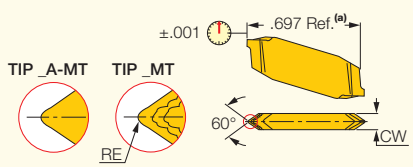
ISCARTHREAD

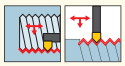
CUTGRIP

TIP-MT

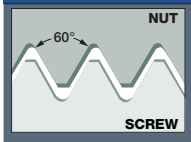
Precision Ground Double-Ended Threading Inserts with a 60° Partial Profile and Chipformer







I N C H



Designation	Dimensions CW	RE	RETOL(2)	TPN (mm)(3)	TPIX(4)	TPIN(5)	TPX (mm)(6)	Tough ↔ Hard IC08	IC908
TIP 2A-MT-0.05 (1)	.094	.002	.0012	.450	56.00	12.00	2.120		●
TIP 2MT-0.05	.094	.002	.0012	.450	56.00	12.00	2.120	●	●
TIP 2MT-0.14	.094	.006	.0012	1.110	23.00	12.00	2.120	●	●
TIP 4A-MT-0.15 (1)	.157	.006	.0012	1.270	20.00	7.00	3.630		●
TIP 4MT-0.15	.157	.006	.0012	1.270	20.00	7.00	3.630		●
TIP 4MT-0.20	.157	.008	.0012	1.600	16.00	7.00	3.630	●	●
TIP 5MT-0.25	.217	.010	.0012	1.950	13.00	5.00	5.100	●	●

• (a) TIP inserts are .063" longer than GIP in the same pocket • Toolholder seat needs to be modified according to insert profile to ensure clearance

(1) Without chipformer (flat rake)
(2) Corner radius tolerance (+/-)
(3) Thread pitch minimum (mm)
(4) Threads per inch maximum
(5) Threads per inch minimum
(6) Thread pitch maximum (mm)

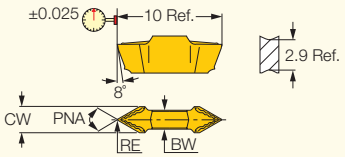
ISCARTHREAD

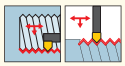
CUTGRIP

GEPI-MT

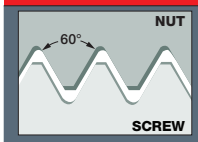
Precision Ground Internal Double-Ended Threading Inserts with a 60° Partial Profile for General Applications







M E T R I C



Designation	Dimensions									Tough ↔ Hard	
	CW	RE	RETOL(1)	PNA	BW	TPN(2)	TPX(3)	TPIN(4)	TPIX(5)	IC08	IC908
GEPI 2.5-MT0.05	2.50	0.05	0.030	60	1.80	0.910	2.540	10.00	28.00	●	●

- Toolholder seat needs to be modified according to insert profile to ensure clearance
- Pitch max 0.187xD, TPI min D/5.35
- D=Diameter of thread (pitch max<=CW)

(1) Corner radius tolerance (+/-)
(2) Thread pitch minimum (mm)
(3) Thread pitch maximum (mm)
(4) Threads per inch minimum
(5) Threads per inch maximum

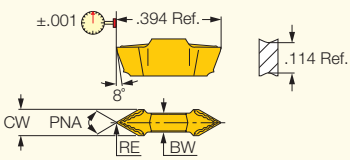
ISCARTHREAD

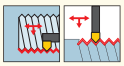
CUTGRIP

GEPI-MT

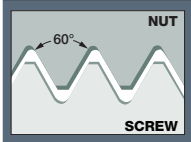
Precision Ground Internal Double-Ended Threading Inserts with a 60° Partial Profile for General Applications







I N C H



Designation	Dimensions									Tough ↔ Hard	
	CW	RE	RETOL(1)	PNA	BW	TPN (mm)(2)	TPX (mm)(3)	TPIN(4)	TPIX(5)	IC08	IC908
GEPI 2.5-MT0.05	.098	.002	.0012	60	.071	.910	2.540	10.00	28.00	●	●

- Toolholder seat needs to be modified according to insert profile to ensure clearance
- Pitch max 0.187xD, TPI min D/5.35
- D=Diameter of thread (pitch max<=CW)

(1) Corner radius tolerance (+/-)
(2) Thread pitch minimum (mm)
(3) Thread pitch maximum (mm)
(4) Threads per inch minimum
(5) Threads per inch maximum

For tools, see pages: AVC-GEAIR/L (272)

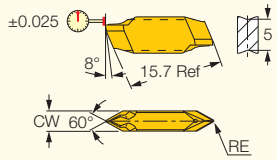
ISCARTHREAD

CUTGRIP

TIPI-MT

Precision Ground Double-Ended Internal Threading Inserts with 60° Partial Profile and Chipformer for 20 mm Min. Bore Dia.





M E T R I C

Designation	Dimensions CW	RE	RETOL(1)	TPN(2)	TPIX(3)	TPIN(4)	TPX(5)	Tough ↔ Hard IC08	IC908
TIPI 3.4MT-0.10	3.40	0.10	0.030	1.800	14.00	8.00	3.180	●	●
TIPI 5.4MT-0.20	5.40	0.20	0.030	3.190	8.00	5.00	5.100	●	●

- Toolholder seat needs to be modified according to insert profile to ensure clearance. • Pitch max 0.205xD, TPI min D/4.8
- D=Diameter of thread (pitch max<=CW) • TIPI inserts are 1.6 mm longer than GIPI in the same pocket

(1) Corner radius tolerance (+/-)
(2) Thread pitch minimum (mm)
(3) Threads per inch maximum
(4) Threads per inch minimum
(5) Thread pitch maximum (mm)

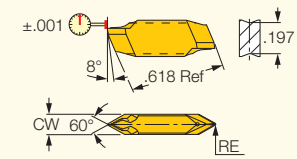
ISCARTHREAD

CUTGRIP

TIPI-MT

Precision Ground Double-Ended Internal Threading Inserts with 60° Partial Profile and Chipformer for.787" Min. Bore Dia.





I N C H

Designation	Dimensions CW	RE	RETOL(1)	TPN (mm)(2)	TPIX(3)	TPIN(4)	TPX (mm)(5)	Tough ↔ Hard IC08	IC908
TIPI 3.4MT-0.10	.134	.004	.0012	1.800	14.00	8.00	3.180	●	●
TIPI 5.4MT-0.20	.213	.008	.0012	3.190	8.00	5.00	5.100	●	●

- Toolholder seat needs to be modified according to insert profile to ensure clearance. • Pitch max 0.205xD, TPI min D/4.8
- D=Diameter of thread (pitch max<=CW) • TIPI inserts are .063" longer than GIPI in the same pocket

(1) Corner radius tolerance (+/-)
(2) Thread pitch minimum (mm)
(3) Threads per inch maximum
(4) Threads per inch minimum
(5) Thread pitch maximum (mm)

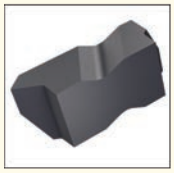
For tools, see pages: AVC-GAIR/L (273)

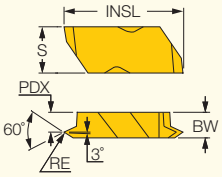
NOTCH GRIP
GROOVE-TURN LINE

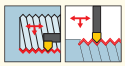
ISCAR THREAD

60° PARTIAL PROFILE THREADING FLTF

Double-Ended, Precision
Flat Top Threading Inserts

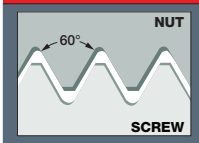






Right-hand shown

M E T R I C



Designation	Dimensions											IC908
	INSL	S	BW	PDX	RE	TPIX[1]	TPIN[2]	TPIX_ DF2[3]	TPIN_ DF2[4]	TPN_DF2	TPX_DF2	
FLTF-2R/L	12.95	5.56	3.81	2.80	0.00	24.00	12.00	44.00	14.00	0.600	1.750	●
FLTF-3R/L	22.60	8.74	4.95	3.60	0.00	24.00	9.00	44.00	10.00	2.500	1.750	●
FLTF-4R/L	28.45	11.51	6.48	5.10	0.00	24.00	9.00	44.00	10.00	2.500	1.750	●

I N C H

Designation	Dimensions							IC908
	TPI[1]	RE	HA	PDX	BW	S	INSL	
FLTC-3R/L7E	7.0	.0169	.108	.1063	.195	.344	.890	●
FLTC-3R/L8E	8.0	.0150	.094	.1063	.195	.344	.890	●
FLTC-3R/L9E	9.0	.0130	.084	.1063	.195	.344	.890	●
FLTC-3R/L10E	10.0	.0118	.076	.1063	.195	.344	.890	●
FLTC-3R/L11E	11.0	.0110	.069	.1063	.195	.344	.890	●
FLTC-3R/L12E	12.0	.0098	.051	.1496	.195	.344	.890	●
FLTC-3R/L14E	14.0	.0091	.054	.1496	.195	.344	.890	●
FLTC-3R/L16E	16.0	.0079	.046	.1496	.195	.344	.890	●
FLTC-3R/L18E	18.0	.0071	.041	.1496	.195	.344	.890	●
FLTC-3R/L20E	20.0	.0059	.037	.1496	.195	.344	.890	●
FLTC-3R/L24E	24.0	.0051	.031	.1496	.195	.344	.890	●
FLTC-3R/L28E	28.0	.0031	.023	.1496	.195	.344	.890	●
FLTC-3R/L32E	32.0	.0031	.021	.1496	.195	.344	.890	●

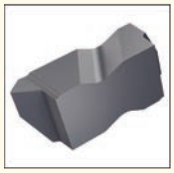
• DMIN according to related boring bar
(1) TPI int. min.
(2) TPI int. max.
(3) TPI ext. min.
(4) TPI ext. max.

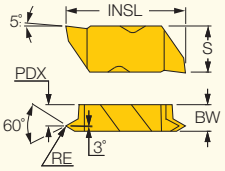
NOTCH-GRIP
GROOVE-TURN LINE

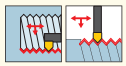
ISCARTHREAD

60° PARTIAL PROFILE THREADING FLTK

Double-Ended, Precision Positive Rake Threading Inserts

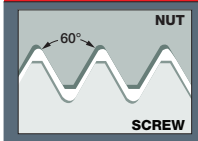






Right-hand shown

M E T R I C



Designation	Dimensions										IC908
	INSL	S	BW	PDX	RE	TPIX[1]	TPIN[2]	TPIX_DF2[3]	TPIN_DF2[4]	TTP	
FLTK-2R/L	12.95	5.56	3.81	2.80	0.00	24.00	12.00	44.00	14.00	BOTH	•
FLTK-3R/L	22.60	8.74	4.95	3.60	0.00	24.00	9.00	44.00	10.00	BOTH	•
FLTK-4R/L	28.45	11.51	6.48	5.10	0.00	24.00	9.00	44.00	10.00	BOTH	•

I N C H

Designation	Dimensions							IC908
	TPI[1]	RE	HA	PDX	BW	S	INSL	
FLTC-3R/L7I	7.0	.0091	.092	.1063	.195	.344	.890	•
FLTC-3R/L8I	8.0	.0071	.081	.1063	.195	.344	.890	•
FLTC-3R/L9I	9.0	.0059	.072	.1063	.195	.344	.890	•
FLTC-3R/L10I	10.0	.0051	.065	.1063	.195	.344	.890	•
FLTC-3R/L11I	11.0	.0051	.059	.1063	.195	.344	.890	•
FLTC-3R/L12I	12.0	.0039	.048	.1496	.195	.344	.890	•
FLTC-3R/L14I	14.0	.0031	.044	.1480	.195	.344	.890	•
FLTC-3R/L16I	16.0	.0031	.040	.1480	.195	.344	.890	•
FLTC-3R/L18I	18.0	.0031	.036	.1480	.195	.344	.890	•
FLTC-3R/L20I	20.0	.0031	.031	.1480	.195	.344	.890	•
FLTC-3R/L24I	24.0	.0031	.026	.1480	.195	.344	.890	•
FLTC-3R/L28I	28.0	.0031	.023	.1480	.195	.344	.890	•

• DMIN according to related boring bar

(1) TPI int. min.

(2) TPI int. max.

(3) TPI ext. min.

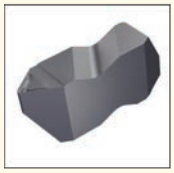
(4) TPI ext. max.

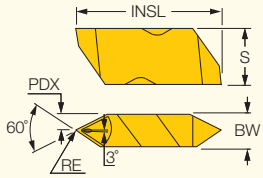
NOTCHGRIP GROOVE-TURN LINE

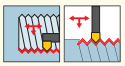
ISCARTHREAD

60° PARTIAL PROFILE THREADING FLT-CB

Double-Ended Precision Threading Inserts with Chipbreakers

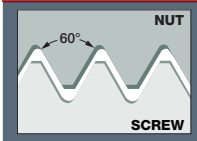






Right-hand shown

M E T R I C



Designation	Dimensions INSL	S	BW	PDX	RE	TPIX(1)	TPIN(2)	TPIX_DF2(3)	TPIN_DF2(4)	IC908
FLT-3R/L-CB	22.60	8.74	4.95	2.50	0.00	12.00	8.00	20.00	8.00	•
FLT-3R/L-FCB	22.60	8.74	4.95	2.50	0.00	20.00	7.00	36.00	8.00	•
FLT-3R/L-HCB	22.60	8.74	4.95	2.50	0.00	12.00	5.00	20.00	6.00	•
FLT-3R/LC-HCB	22.60	8.74	4.95	2.50	0.00	6.00	5.00	11.00	6.00	•
FLT-4R/L-HCB	28.45	11.51	6.48	3.30	0.00	12.00	4.00	20.00	4.00	•

I N C H

Designation	Dimensions TPIN(1)	TPIX(2)	TPIN_DF2(3)	TPIX_DF2(4)	RE	PDX	BW	S	INSL	IC908
FLT-4R/L-HCB	4.00	12.00	4.00	20.00	.0065	.1299	.255	.453	1.120	•
FLT-3R/LC-HCB	5.00	6.00	6.00	11.00	.0135	.0984	.195	.344	.890	•
FLT-3R/L-HCB	5.00	12.00	6.00	20.00	.0065	.0984	.195	.344	.890	•
FLT-3R/L-FCB	7.00	20.00	8.00	36.00	.0040	.0984	.195	.344	.890	•
FLT-3R/L-CB	8.00	12.00	8.00	20.00	.0065	.0984	.195	.344	.890	•

• DMIN according to related boring bar
(1) TPI int. min.
(2) TPI int. max.
(3) TPI ext. min.
(4) TPI ext. max.

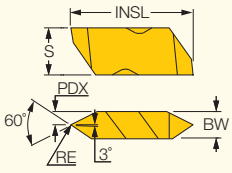
NOTCHGRIP GROOVE-TURN LINE

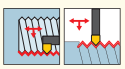
ISCARTHREAD

60° PARTIAL PROFILE THREADING FLT

Double-Ended, Precision Flat Top Threading Inserts

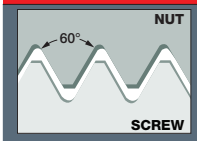






Right-hand shown

M E T R I C



Designation	Dimensions INSL	S	BW	PDX	RE	TPIX(1)	TPIN(2)	TPIX_DF2(3)	TPIN_DF2(4)	IC908
FLT-2R/L	12.95	5.56	3.81	1.90	0.00	20.00	7.00	36.00	8.00	•
FLT-3R/L	22.60	8.74	4.95	2.50	0.00	12.00	5.00	20.00	6.00	•
FLT-3010R/L	22.60	8.74	4.95	2.50	0.00	12.00	5.00	18.00	6.00	•
FLT-4R/L	28.45	11.51	6.48	3.30	0.00	12.00	4.00	20.00	4.00	•

I N C H

Designation	Dimensions TPIN(1)	TPIX(2)	TPIN_DF2(3)	TPIX_DF2(4)	RE	PDX	BW	S	INSL	IC908
FLT-4R/L	4.00	12.00	4.00	20.00	.0065	.1299	.255	.453	1.120	•
FLT-3R/L	5.00	12.00	6.00	20.00	.0040	.0984	.195	.344	.890	•
FLT-3010R/L	5.00	12.00	6.00	18.00	.0100	.0984	.195	.344	.890	•
FLT-2R/L	7.00	20.00	8.00	36.00	.0040	.0748	.150	.219	.514	•

• DMIN according to related boring bar
(1) TPI int. min.
(2) TPI int. max.
(3) TPI ext. min.
(4) TPI ext. max.

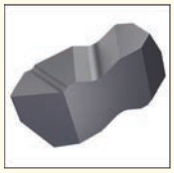
Member IMC Group

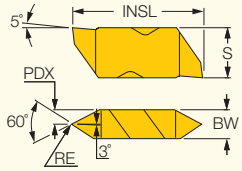
NOTCH GRIP
GROOVE-TURN LINE

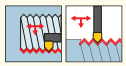
ISCARTHREAD

60° PARTIAL PROFILE THREADING FLTP

Double-Ended, Precision Positive Rake Threading Inserts

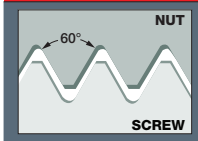






Right-hand shown

M E T R I C



Designation	Dimensions INSL	S	BW	PDX	RE	TPIX(1)	TPIN(2)	TPIX_DF2(3)	TPIN_DF2(4)	IC908
FLTP-2R/L	12.95	5.56	3.80	1.90	0.00	20.00	7.00	36.00	8.00	●
FLTP-3R/L	22.60	8.74	5.00	2.50	0.00	12.00	5.00	20.00	6.00	●
FLTP-4R/L	28.45	11.51	6.50	3.30	0.00	12.00	4.00	20.00	4.00	●

I N C H

Designation	Dimensions TPIN(1)	TPIX(2)	TPIN_DF2(3)	TPIX_DF2(4)	RE	PDX	BW	S	INSL	IC908
FLTP-4R/L	4.00	12.00	4.00	20.00	.0065	.1299	.256	.453	1.120	●
FLTP-3R/L	5.00	12.00	6.00	20.00	.0065	.0984	.197	.344	.890	●
FLTP-2R/L	7.00	20.00	8.00	36.00	.0040	.0748	.150	.219	.514	●

- DMIN according to related boring bar

(1) TPI int. min.
(2) TPI int. max.
(3) TPI ext. min.
(4) TPI ext. max.

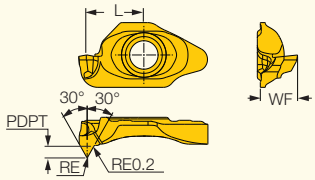
ISCARTHREAD

MIN CUT
MINI FACE LINE

MITR 8-MT

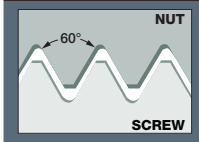
Internal ISO Metric Threading Inserts for Partial Profile







M E T R I C



Designation	Dimensions PDPT(1)	RE	L	WF	DMIN(2)	TPN(3)	TPX(4)	IC908
MITR 8-MT2-0.1	1.17	0.10	5.75	3.80	10.00	1.500	2.000	●
MITR 8-MT1-0.05	1.23	0.05	5.75	3.80	10.00	0.750	1.250	●

I N C H

Designation	Dimensions PDPT(1)	RE	L	WF	DMIN(2)	TPN (mm)(3)	TPX (mm)(4)	IC908
MITR 8-MT2-0.1	.046	.0039	.226	.150	.394	1.500	2.000	●
MITR 8-MT1-0.05	.048	.0020	.226	.150	.394	.750	1.250	●

(1) Cutting depth maximum
(2) Minimum diameter
(3) Thread pitch minimum (mm)
(4) Thread pitch maximum (mm)

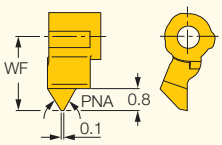
ISCARTHREAD

MINICHAM

UMGR-A60

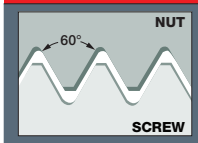
Mini Indexable Inserts with a 60° Partial Profile for Threading in 5.2 mm and Larger Holes





Right-hand shown

M E T R I C



Designation	Dimensions PNA	WF	DMIN	TPN[1]	TPX[2]	TPIN[3]	TPIX[4]	IC508
UMGR 4.0-A60	60	2.70	5.20	0.600	1.250	20.00	40.00	•

- For detailed cutting data, see pages 146-149.

(1) Thread pitch minimum (mm)
(2) Thread pitch maximum (mm)
(3) Threads per inch minimum
(4) Threads per inch maximum

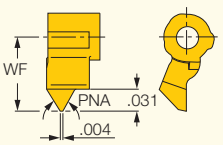
ISCARTHREAD

MINICHAM

UMGR-A60

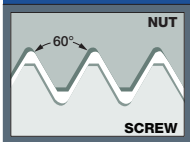
Mini Indexable Inserts with a 60° Partial Profile for Threading in .205" and Larger Holes





Right-hand shown

I N C H



Designation	Dimensions PNA	WF	DMIN	TPN (mm)[1]	TPX (mm)[2]	TPIN[3]	TPIX[4]	IC508
UMGR 4.0-A60	60	.106	.205	.600	1.250	20.00	40.00	•

- For detailed cutting data, see pages 146-149.

(1) Thread pitch minimum (mm)
(2) Thread pitch maximum (mm)
(3) Threads per inch minimum
(4) Threads per inch maximum

Spare Parts

Designation	
UMGR-A60	UMGK MAGASINE

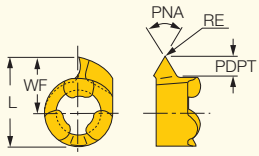
ISCARTHREAD

CHAMGROOVE

GIQR/L-MT

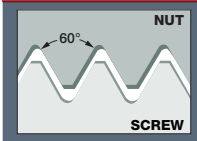
Internal Threading Inserts with a 60° Partial Profile for Threading in 8 mm and Larger Holes





Left-hand shown

M E T R I C



Designation	Dimensions L	RE	PNA	PDPT(1)	WF	DMIN(2)	TPN(3)	TPX(4)	TPIN(5)	TPIX(6)	IC528
GIQR/L 8-MT-0.05	7.78	0.05	60.0	1.50	4.80	8.00	0.500	1.590	16.00	50.00	●
GIQR/L 11-MT-0.05	10.68	0.05	60.0	2.00	6.70	11.00	0.500	2.300	11.00	50.00	●

I N C H

Designation	Dimensions L	RE	PNA	PDPT(1)	WF	DMIN(2)	TPN (mm)(3)	TPX (mm)(4)	TPIN(5)	TPIX(6)	IC528
GIQR/L 8-MT-0.05	.306	.002	60.0	.059	.189	.315	.500	1.590	16.00	50.00	●
GIQR/L 11-MT-0.05	.420	.002	60.0	.079	.264	.433	.500	2.300	11.00	50.00	●

• Can be used for thread milling by circular interpolation • Pitch max 0.19xD • D-diameter of thread • For cutting speed recommendations, see pages 146-149

(1) Cutting depth maximum

(2) Minimum diameter

(3) Thread pitch minimum (mm)

(4) Thread pitch maximum (mm)

(5) Threads per inch minimum

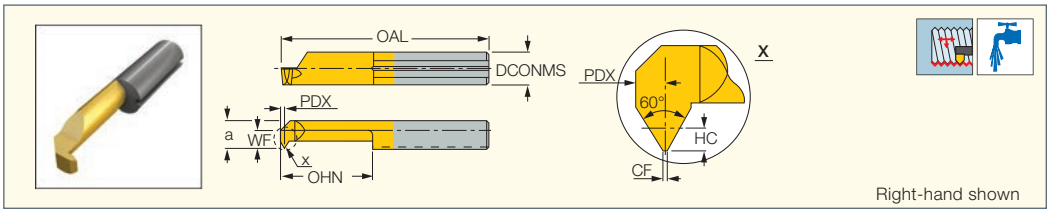
(6) Threads per inch maximum

ISCARTHREAD

PICCOCUT

PICCO R/L-60°-Thread

Inserts with a 60° Internal Thread Profile for 2.4 mm Min. Bore Diameter



M E T R I C

Designation	Dimensions													Tough ↔ Hard	
	DCONMS	HC	CF	PDX	WF	a	OHN(1)	OAL	DMIN	TPN(2)	TPX(3)	TPIN(4)	TPIX(5)	IC228	IC908
PICCO R 003.0105-8	4.00	0.27	0.04	0.3	0.30	2.30	8.0	22.00	2.40	0.500	0.700	36.00	48.00		●
PICCO R 004.0105-10	4.00	0.27	0.09	0.4	1.00	3.00	10.0	24.00	3.20	0.500	0.750	36.00	48.00		●
PICCO R/L 004.0205-15	4.00	0.27	0.06	0.4	1.50	3.50	15.0	30.00	4.00	0.500	0.750	36.00	48.00	●	
PICCO R/L 005.0205-15	5.00	0.27	0.06	0.4	1.90	4.40	15.0	30.00	5.00	0.500	0.750	36.00	48.00	●	
PICCO R/L 005.0407-15	5.00	0.40	0.09	0.5	1.90	4.40	15.0	30.00	5.00	0.750	1.000	24.00	36.00	●	●
PICCO R 005.0407-20	5.00	0.40	0.09	0.5	1.90	4.40	20.0	35.00	5.00	0.750	1.000	24.00	36.00		●
PICCO R/L 005.0510-15	5.00	0.55	0.12	0.6	1.90	4.40	15.0	30.00	4.80	1.000	1.250	20.00	24.00	●	
PICCO R 005.0510-20	5.00	0.55	0.12	0.6	1.90	4.40	20.0	35.00	4.80	1.000	1.250	20.00	24.00		●
PICCO R/L 006.0510-15	6.00	0.55	0.12	0.6	2.30	5.30	15.0	30.00	6.00	1.000	1.250	20.00	24.00	●	
PICCO R 006.0510-22	6.00	0.55	0.12	0.6	2.30	5.30	22.0	37.00	6.00	1.000	1.250	20.00	24.00		●
PICCO R/L 006.0612-15	6.00	0.68	0.15	0.7	2.30	5.30	15.0	30.00	6.00	1.250	1.500	16.00	20.00	●	
PICCO R 006.0612-22	6.00	0.68	0.15	0.7	2.30	5.30	22.0	37.00	6.00	1.250	1.500	16.00	20.00		●
PICCO R/L 006.0815-15	6.00	0.81	0.18	0.8	2.30	5.30	15.0	30.00	6.00	1.500	1.750	14.00	16.00	●	
PICCO R 006.0815-22	6.00	0.81	0.18	0.8	2.30	5.30	22.0	37.00	6.00	1.500	1.750	14.00	16.00		●
PICCO R/L 007.0815-15	7.00	0.81	0.18	0.8	2.70	6.30	15.0	30.00	7.00	1.500	1.750	14.00	16.00	●	

I N C H

Designation	Dimensions													Tough ↔ Hard	
	DCONMS	HC	CF	PDX	WF	a	OHN(1)	OAL	DMIN	TPN (mm)(2)	TPX (mm)(3)	TPIN(4)	TPIX(5)	IC228	IC908
PICCO R 003.0105-8	.157	.011	.002	.01	.012	.091	.315	.866	.094	.500	.700	36.00	48.00		●
PICCO R 004.0105-10	.157	.011	.004	.02	.039	.118	.394	.945	.126	.500	.750	36.00	48.00		●
PICCO R/L 004.0205-15	.157	.011	.002	.02	.059	.138	.591	1.181	.157	.500	.750	36.00	48.00	●	
PICCO R/L 005.0205-15	.197	.011	.002	.02	.075	.173	.591	1.181	.197	.500	.750	36.00	48.00	●	
PICCO L 005.0407-15	.197	.016	.004	.02	.075	.173	.591	1.181	.197	.750	1.000	24.00	36.00	●	
PICCO R 005.0407-15	.197	.016	.004	.02	.075	.173	.591	1.181	.197	.750	1.000	24.00	36.00	●	●
PICCO R 005.0407-20	.197	.016	.004	.02	.075	.173	.787	1.378	.197	.750	1.000	24.00	36.00		●
PICCO R/L 005.0510-15	.197	.022	.005	.02	.075	.173	.591	1.181	.189	1.000	1.250	20.00	24.00	●	
PICCO R 005.0510-20	.197	.022	.005	.02	.075	.173	.787	1.378	.189	1.000	1.250	20.00	24.00		●
PICCO R/L 006.0510-15	.236	.022	.005	.02	.091	.209	.591	1.181	.236	1.000	1.250	20.00	24.00	●	
PICCO R 006.0510-22	.236	.022	.005	.02	.091	.209	.866	1.457	.236	1.000	1.250	20.00	24.00		●
PICCO R/L 006.0612-15	.236	.027	.006	.03	.091	.209	.591	1.181	.236	1.250	1.500	16.00	20.00	●	
PICCO R 006.0612-22	.236	.027	.006	.03	.091	.209	.866	1.457	.236	1.250	1.500	16.00	20.00		●
PICCO R/L 006.0815-15	.236	.032	.007	.03	.091	.209	.591	1.181	.236	1.500	1.750	14.00	16.00	●	
PICCO R 006.0815-22	.236	.032	.007	.03	.091	.209	.866	1.457	.236	1.500	1.750	14.00	16.00		●
PICCO R/L 007.0815-15	.276	.032	.007	.03	.106	.248	.591	1.181	.276	1.500	1.750	14.00	16.00	●	

• For detailed cutting data, see pages 146-149

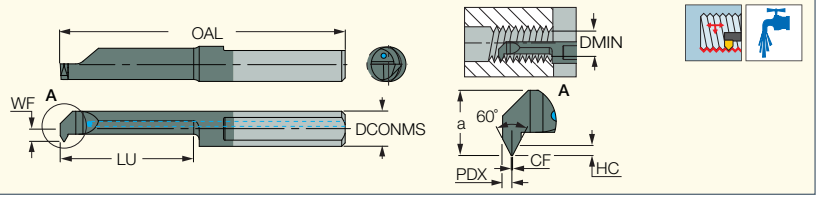
(1) Minimum overhang
(2) Thread pitch minimum (mm)
(3) Thread pitch maximum (mm)
(4) Threads per inch minimum
(5) Threads per inch maximum

ISCARTHREAD

PICCOCUT

PICCO R/L60°-N (60° Threading)
Inserts with a 60° Internal Thread Profile and Internal Coolant Channel for 2.4 mm Min. Bore Diameter





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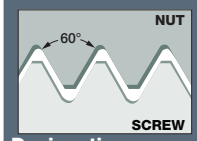

Designation	Dimensions DCONMS	HC	CF	PDX	WF	a	LU	OAL	DMIN	TPN(1)	TPX(2)	TPIN(3)	TPIX(4)	IC908
PICCO R 003.0105-8N	4.05	0.27	0.04	0.3	0.30	2.30	7.0	31.00	2.40	0.500	0.700	36.00	48.00	●
PICCO R 004.0105-10N	4.05	0.27	0.09	0.4	1.00	3.00	9.0	31.00	3.20	0.500	0.750	36.00	48.00	●
PICCO R 004.0205-15N	4.05	0.27	0.06	0.4	1.50	3.50	14.0	36.00	4.00	0.500	0.750	36.00	48.00	●
PICCO R 005.0205-15N	5.05	0.27	0.06	0.4	1.90	4.40	14.0	36.00	5.00	0.500	0.750	36.00	48.00	●
PICCO R 005.0407-15N	5.05	0.40	0.09	0.5	1.90	4.40	14.0	36.00	5.00	0.750	1.000	24.00	36.00	●
PICCO R/L 005.0510-15N	5.05	0.55	0.12	0.6	1.90	4.40	14.0	36.00	4.80	1.000	1.250	20.00	24.00	●
PICCO R 005.0510-20N	5.05	0.55	0.12	0.6	1.90	4.40	19.0	41.00	4.80	1.000	1.250	20.00	24.00	●
PICCO R 006.0510-15N	6.05	0.55	0.12	0.6	2.30	5.30	14.0	36.00	6.00	1.000	1.250	20.00	24.00	●
PICCO R 006.0510-22N	6.05	0.55	0.12	0.6	2.30	5.30	21.0	43.00	6.00	1.000	1.250	20.00	24.00	●
PICCO R 006.0612-15N	6.05	0.68	0.15	0.7	2.30	5.30	14.0	36.00	6.00	1.250	1.500	16.00	20.00	●
PICCO R 006.0815-15N	6.05	0.81	0.18	0.8	2.30	5.30	14.0	36.00	6.00	1.500	1.750	14.00	16.00	●
PICCO R/L 007.0815-15N	7.05	0.81	0.18	0.8	2.70	6.30	14.0	36.00	7.00	1.500	1.750	14.00	16.00	●

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Designation	Dimensions DCONMS	HC	CF	PDX	WF	a	LU	OAL	DMIN	TPN (mm)(1)	TPX (mm)(2)	TPIN(3)	TPIX(4)	IC908
PICCO R 003.0105-8N	.159	.011	.002	.01	.012	.091	.276	1.220	.094	.500	.700	36.00	48.00	●
PICCO R 004.0105-10N	.159	.011	.004	.02	.039	.118	.354	1.220	.126	.500	.750	36.00	48.00	●
PICCO R 004.0205-15N	.159	.011	.002	.02	.059	.138	.551	1.417	.157	.500	.750	36.00	48.00	●
PICCO R 005.0205-15N	.199	.011	.002	.02	.075	.173	.551	1.417	.197	.500	.750	36.00	48.00	●
PICCO R 005.0407-15N	.199	.016	.004	.02	.075	.173	.551	1.417	.197	.750	1.000	24.00	36.00	●
PICCO R/L 005.0510-15N	.199	.022	.005	.02	.075	.173	.551	1.417	.189	1.000	1.250	20.00	24.00	●
PICCO R 005.0510-20N	.199	.022	.005	.02	.075	.173	.748	1.614	.189	1.000	1.250	20.00	24.00	●
PICCO R 006.0510-15N	.238	.022	.005	.02	.091	.209	.551	1.417	.236	1.000	1.250	20.00	24.00	●
PICCO R 006.0510-22N	.238	.022	.005	.02	.091	.209	.827	1.693	.236	1.000	1.250	20.00	24.00	●
PICCO R 006.0612-15N	.238	.027	.006	.03	.091	.209	.551	1.417	.236	1.250	1.500	16.00	20.00	●
PICCO R 006.0815-15N	.238	.032	.007	.03	.091	.209	.551	1.417	.236	1.500	1.750	14.00	16.00	●
PICCO R/L 007.0815-15N	.278	.032	.007	.03	.106	.248	.551	1.417	.276	1.500	1.750	14.00	16.00	●

• Solid tools are suitable for PICCO-N / PICCO ACE-N type holders only • For detailed cutting data, see pages 146-149

(1) Thread pitch minimum (mm)
(2) Thread pitch maximum (mm)
(3) Threads per inch minimum
(4) Threads per inch maximum

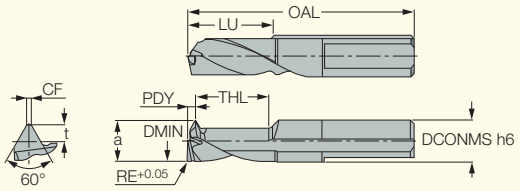


MULTIFUNCTION TOOLS

PICCO-MFT

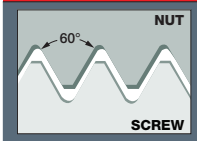
Solid Carbide Tools for Drilling, Facing, Int. and Ext. Turning and Threading on Swiss and Small CNC Machines





Right-hand shown

M E T R I C



Designation	Dimensions DCONMS	DMIN	LU	TPN(2)	TPX(3)	t	a	CF	THL	OAL	PDY	RE	IC908
PICCO R/L-MFT60 6-4 L08	6.00	4.00	8.0	0.500	0.750	0.46	3.90	0.06	7.3	30.00	1.3	0.10	●
PICCO R-MFT60 6-4 L12	6.00	4.00	12.0	0.500	0.750	0.46	3.90	0.06	11.6	34.00	1.2	0.20	●
PICCO R/L-MFT60 6-5 L10	6.00	5.00	10.0	0.500	1.000	0.61	4.90	0.06	9.0	32.00	1.4	0.10	●
PICCO R/L-MFT60 6-5 L15 (1)	6.00	5.00	15.0	0.500	1.000	0.61	4.90	0.06	14.4	37.00	1.4	0.30	●
PICCO R/L-MFT60 6-6 L18 (1)	6.00	6.00	18.0	0.500	1.000	0.61	5.90	0.06	17.3	43.00	1.4	0.30	●
PICCO R-MFT60 6-6 L12	6.00	6.00	12.0	0.500	1.000	0.61	5.90	0.06	11.0	34.00	1.4	0.10	●
PICCO R/L-MFT60 8-7 L14	8.00	7.00	14.0	0.750	1.250	0.76	6.90	0.09	13.0	41.00	1.5	0.10	●
PICCO R-MFT60 8-7 L21	8.00	7.00	21.0	0.750	1.250	0.76	6.90	0.09	20.0	55.00	1.5	0.30	●
PICCO R/L-MFT60 8-8 L16	8.00	8.00	16.0	0.900	1.500	0.92	7.90	0.11	15.0	43.00	1.5	0.10	●
PICCO R/L-MFT60 8-8 L24 (1)	8.00	8.00	24.0	0.900	1.500	0.92	7.90	0.11	23.0	57.00	1.5	0.30	●

I N C H

Designation	Dimensions DCONMS	DMIN	LU	TPN (mm)(2)	TPX (mm)(3)	t	a	CF	THL	OAL	PDY	RE	IC908
PICCO R/L-MFT60 6-4 L08	.236	.157	.315	.500	.750	.018	.154	.002	.287	1.181	.05	.0039	●
PICCO R-MFT60 6-4 L12	.236	.157	.472	.500	.750	.018	.154	.002	.457	1.339	.05	.0079	●
PICCO R/L-MFT60 6-5 L10	.236	.197	.394	.500	1.000	.024	.193	.002	.354	1.260	.06	.0039	●
PICCO R/L-MFT60 6-5 L15 (1)	.236	.197	.591	.500	1.000	.024	.193	.002	.567	1.457	.06	.0118	●
PICCO R/L-MFT60 6-6 L18 (1)	.236	.236	.709	.500	1.000	.024	.232	.002	.681	1.693	.06	.0118	●
PICCO R-MFT60 6-6 L12	.236	.236	.472	.500	1.000	.024	.232	.002	.433	1.339	.06	.0039	●
PICCO R/L-MFT60 8-7 L14	.315	.276	.551	.750	1.250	.030	.272	.004	.512	1.614	.06	.0039	●
PICCO R-MFT60 8-7 L21	.315	.276	.827	.750	1.250	.030	.272	.004	.787	2.165	.06	.0118	●
PICCO R/L-MFT60 8-8 L16	.315	.315	.630	.900	1.500	.036	.311	.004	.591	1.693	.06	.0039	●
PICCO L-MFT60 8-8 L24 (1)	.315	.315	.945	.900	1.500	.036	.311	.004	.906	2.244	.06	.0118	●
PICCO R-MFT60 8-8 L24	.315	.315	.945	.900	1.500	.036	.311	.004	.906	2.008	.06	.0118	●

• Applications: Drilling; face turning; internal chamfering; internal turning/boring; internal profiling; external chamfering; external turning; internal and external 60° threading (right- and left-hand)

(1) Available on request

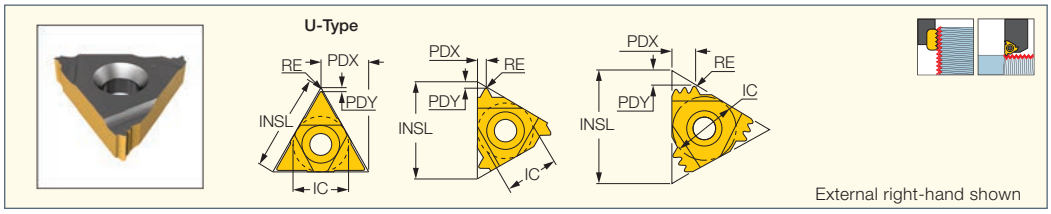
(2) Thread pitch minimum (mm)

(3) Thread pitch maximum (mm)

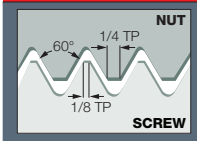
Full Profile ISO

ISCARTHREAD

ER/L-ISO
External ISO Metric
(DIN13 12-1986 class: 6g)
Laydown Threading Inserts
for General Industry



M E T R I C



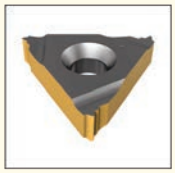
Designation	IC	TP[3]	RE	INSL	PDY	PDX	CICT[4]	IC228	IC50M	IC250	IC08	IC508	IC808	IC908	IC1007
	Dimensions							Tough ↔ Hard							
11ER/L 0.35 ISO	6.35	0.350	0.04	11.00	0.8	0.4	1							●	
11ER 0.40 ISO	6.35	0.400	0.04	11.00	0.7	0.4	1							●	
11ER 0.45 ISO	6.35	0.450	0.05	11.00	0.7	0.4	1	●							
11ER/L 0.50 ISO	6.35	0.500	0.06	11.00	0.6	0.6	1			●				●	
11ER 0.60 ISO	6.35	0.600	0.07	11.00	0.6	0.6	1							●	
11ER 0.70 ISO	6.35	0.700	0.11	11.00	0.6	0.6	1							●	
11ER/L 0.75 ISO	6.35	0.750	0.08	11.00	0.6	0.6	1							●	
11ER 0.80 ISO	6.35	0.800	0.12	11.00	0.6	0.6	1							●	
11ER/L 1.00 ISO	6.35	1.000	0.13	11.00	0.7	0.7	1			●				●	
11ER 1.25 ISO	6.35	1.250	0.16	11.00	0.8	0.9	1							●	
11ER/L 1.50 ISO	6.35	1.500	0.19	11.00	0.8	0.9	1			●				●	
11ER 1.75 ISO	6.35	1.750	0.22	11.00	1.1	0.8	1			●					
16ER/L 0.35 ISO	9.52	0.350	0.04	16.49	0.6	0.4	1							●	
16ER/L 0.40 ISO	9.52	0.400	0.05	16.49	0.7	0.4	1							●	
16ER 0.45 ISO	9.52	0.450	0.05	16.49	0.6	0.4	1							●	
16ER/L 0.50 ISO	9.52	0.500	0.06	16.49	0.6	0.6	1			●	●			●	●
16ERM 0.50 ISO	9.52	0.500	0.06	16.49	0.6	0.6	1							●	
16ER 0.60 ISO	9.52	0.600	0.10	16.49	0.6	0.6	1							●	
16ER/L 0.70 ISO	9.52	0.700	0.11	16.49	0.6	0.6	1			●				●	●
16ER/L 0.75 ISO	9.52	0.750	0.11	16.49	0.6	0.6	1			●	●			●	●
16ER 0.75 ISO 3M [1]	9.52	0.750	0.07	16.49	1.4	1.9	3							●	
16ERM 0.75 ISO [2]	9.52	0.750	0.08	16.49	0.6	0.6	1						●	●	●
16ER/L 0.80 ISO	9.52	0.800	0.12	16.49	0.6	0.6	1			●				●	●
16ERB 0.80 ISO [2]	9.52	0.800	0.12	16.49	0.7	0.7	1							●	
16ER/L 1.00 ISO	9.52	1.000	0.13	16.49	0.7	0.7	1	●	●	●	●			●	●
16ER 1.00 ISO 3M [1]	9.52	1.000	0.07	16.49	1.7	2.5	3							●	
16ERB 1.00 ISO [2]	9.52	1.000	0.13	16.49	0.7	0.7	1							●	
16ERM 1.00 ISO [2]	9.52	1.000	0.11	16.49	0.7	0.7	1		●	●		●	●	●	●
16ER/L 1.25 ISO	9.52	1.250	0.16	16.49	0.8	0.9	1			●	●			●	●
16ERB 1.25 ISO [2]	9.52	1.250	0.16	16.49	0.8	0.9	1							●	
16ERM 1.25 ISO [2]	9.52	1.250	0.14	16.49	0.8	0.9	1			●			●	●	●
16ER/L 1.50 ISO	9.52	1.500	0.19	16.49	0.9	1.2	1	●	●	●	●			●	●
16ER 1.50 ISO 2M [1]	9.52	1.500	0.18	16.49	1.5	2.3	2							●	
16ERB 1.50 ISO [2]	9.52	1.500	0.19	16.49	0.8	1.0	1							●	
16ERM 1.50 ISO [2]	9.52	1.500	0.19	16.49	0.8	1.0	1		●	●		●	●	●	●
16ER/L 1.75 ISO	9.52	1.750	0.22	16.49	0.9	1.2	1	●		●	●			●	●
16ERB 1.75 ISO [2]	9.52	1.750	0.22	16.49	0.9	1.2	1							●	
16ERM 1.75 ISO [2]	9.52	1.750	0.20	16.49	0.9	1.2	1			●			●	●	●
16ER/L 2.00 ISO	9.52	2.000	0.25	16.49	1.0	1.3	1	●	●	●	●			●	●
16ER 2.00 ISO 2M [1]	9.52	2.000	0.09	16.49	1.8	2.9	2							●	
16ERB 2.00 ISO [2]	9.52	2.000	0.25	16.49	0.9	1.2	1							●	
16ERM 2.00 ISO [2]	9.52	2.000	0.24	16.49	1.0	1.3	1			●		●	●	●	●
16ER/L 2.50 ISO	9.52	2.500	0.32	16.49	1.1	1.5	1		●	●				●	●
16ERB 2.50 ISO	9.52	2.500	0.32	16.49	1.1	1.5	1							●	
16ERM 2.50 ISO [2]	9.52	2.500	0.30	16.49	1.1	1.5	1			●			●	●	●
16ER/L 3.00 ISO	9.52	3.000	0.38	16.49	1.2	1.6	1	●	●	●		●		●	●
16ERB 3.00 ISO [2]	9.52	3.000	0.38	16.49	1.2	1.6	1							●	

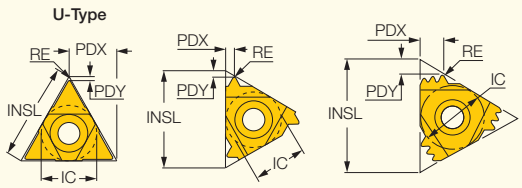
- For Insert Identification System, see pages 33-34
- For threading between walls use GRIP-type inserts TIP-ISO class: 6g
- For technical information and detailed cutting data, see pages 146-149
- For recommended number of passes for see pages 119-121
- Anvils for Laydown Inserts, see pages 36-43

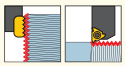
[1] Multi-tooth
[2] With pressed chipformer
[3] Thread pitch
[4] Number of teeth per corner

ISCARTHREAD

(continued)
ER/L-ISO
External ISO Metric
(DIN13 12-1986 class: 6g)
Laydown Threading Inserts
for General Industry

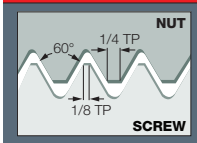






External right-hand shown

M E T R I C



Designation	Dimensions IC	TP[3]	RE	INSL	PDY	PDX	CICT[4]	Tough ↔ Hard IC228	IC50M	IC250	IC08	IC508	IC808	IC908	IC1007
16ERM 3.00 ISO [2]	9.52	3.000	0.38	16.49	1.2	1.6	1		●	●		●	●	●	●
22ER 1.50 ISO 3M [1]	12.70	1.500	0.07	22.00	2.3	3.7	3			●				●	
22ER 2.00 ISO 2M [1]	12.70	2.000	0.25	22.00	2.0	3.0	2							●	
22ER 2.00 ISO 3M [1]	12.70	2.000	0.25	22.00	3.1	5.0	3			●				●	
22ER/L 3.50 ISO	12.70	3.500	0.46	22.00	1.6	2.3	1	●		●				●	
22ERM 3.50 ISO [2]	12.70	3.500	0.48	22.00	1.6	2.3	1						●	●	
22ER/L 4.00 ISO	12.70	4.000	0.52	22.00	1.6	2.3	1		●	●				●	●
22ERM 4.00 ISO [2]	12.70	4.000	0.52	22.00	1.6	2.3	1						●	●	
22ER 4.50 ISO	12.70	4.500	0.58	22.00	1.6	2.3	1			●				●	
22ER/L 5.00 ISO	12.70	5.000	0.66	22.00	1.7	2.5	1			●				●	
22UERL 5.50 ISO	12.70	5.500	0.70	22.00	2.3	11.0	1			●					
22ER/L 6.00 ISO	12.70	6.000	0.78	22.00	2.0	2.7	1			●					
22UERL 6.00 ISO	12.70	6.000	0.78	22.00	2.6	11.0	1	●		●					
27ER 3.00 ISO 2M [1]	15.88	3.000	0.38	27.50	2.9	4.6	2							●	
27ER 5.50 ISO	15.88	5.500	0.71	27.50	2.0	2.9	1							●	
27ER/L 6.00 ISO	15.88	6.000	0.78	27.50	2.0	2.9	1	●		●				●	
27UERL 8.00 ISO	15.88	8.000	1.08	27.50	2.4	13.7	1							●	

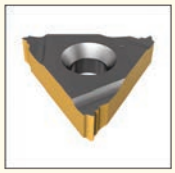
- For Insert Identification System, see pages 33-34 • For threading between walls use GRIP-type inserts TIP-ISO class: 6g
- For technical information and detailed cutting data, see pages 146-149 • For recommended number of passes for see pages 119-121
- Anvils for Laydown Inserts, see pages 36-43

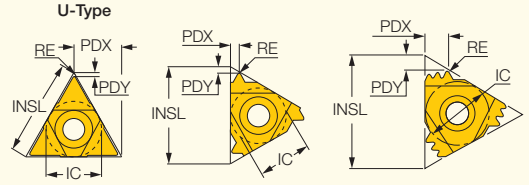
[1] Multi-tooth
[2] With pressed chipformer
[3] Thread pitch
[4] Number of teeth per corner

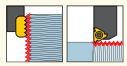
ISCARTHREAD

ER/L-ISO

External ISO Metric
(DIN13 12-1986 class: 6g)
Laydown Threading Inserts
for General Industry

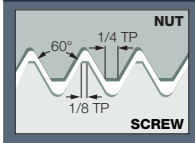






External right-hand shown

I N C H



Designation	Dimensions IC	TP mm[3]	RE	INSL	PDY	PDX	CICT[4]	Tough ↔ Hard IC228	IC50M	IC250	IC08	IC508	IC808	IC908	IC1007
11EL 0.35 ISO	.250	.350	.0016	.433	.03	.02	1							●	
11ER 0.35 ISO	.250	.350	.0016	.433	.02	.02	1							●	
11ER 0.40 ISO	.250	.400	.0016	.433	.03	.02	1							●	
11ER 0.45 ISO	.250	.450	.0020	.433	.03	.02	1	●							
11EL 0.50 ISO	.250	.500	.0024	.433	.02	.02	1							●	
11ER 0.50 ISO	.250	.500	.0024	.433	.02	.02	1			●				●	
11ER 0.60 ISO	.250	.600	.0027	.433	.02	.02	1							●	
11ER 0.70 ISO	.250	.700	.0043	.433	.02	.02	1							●	
11EL 0.75 ISO	.250	.750	.0031	.433	.02	.02	1							●	
11ER 0.75 ISO	.250	.750	.0043	.433	.02	.02	1							●	
11ER 0.80 ISO	.250	.800	.0047	.433	.02	.02	1							●	
11EL 1.00 ISO	.250	1.000	.0051	.433	.03	.03	1			●					
11ER 1.00 ISO	.250	1.000	.0051	.433	.03	.03	1							●	
11ER 1.25 ISO	.250	1.250	.0063	.433	.03	.04	1							●	
11EL 1.50 ISO	.250	1.500	.0075	.433	.03	.04	1							●	
11ER 1.50 ISO	.250	1.500	.0075	.433	.04	.03	1			●				●	
11ER 1.75 ISO	.250	1.750	.0087	.433	.04	.03	1			●					
16ER/L 0.35 ISO	.375	.350	.0016	.649	.02	.02	1							●	
16EL 0.40 ISO	.375	.400	.0020	.649	.03	.02	1							●	
16ER 0.40 ISO	.375	.400	.0020	.649	.02	.02	1							●	
16ER 0.45 ISO	.375	.450	.0020	.649	.02	.02	1							●	
16EL 0.50 ISO	.375	.500	.0024	.649	.02	.02	1							●	
16ER 0.50 ISO	.375	.500	.0024	.649	.02	.02	1			●	●			●	●
16ERM 0.50 ISO	.375	.500	.0024	.649	.02	.02	1							●	
16ER 0.60 ISO	.375	.600	.0039	.649	.02	.02	1							●	
16EL 0.70 ISO	.375	.700	.0043	.649	.02	.02	1							●	
16ER 0.70 ISO	.375	.700	.0043	.649	.02	.02	1			●				●	●
16EL 0.75 ISO	.375	.750	.0043	.649	.02	.02	1							●	
16ER 0.75 ISO	.375	.750	.0043	.649	.02	.02	1			●	●			●	●
16ER 0.75 ISO 3M [1]	.375	.750	.0027	.649	.06	.07	3							●	
16ERM 0.75 ISO [2]	.375	.750	.0031	.649	.02	.02	1						●	●	●
16EL 0.80 ISO	.375	.800	.0047	.649	.02	.02	1			●					
16ER 0.80 ISO	.375	.800	.0047	.649	.02	.02	1			●				●	●
16ERB 0.80 ISO [2]	.375	.800	.0047	.649	.03	.03	1							●	
16EL 1.00 ISO	.375	1.000	.0051	.649	.03	.03	1			●	●			●	
16ER 1.00 ISO	.375	1.000	.0051	.649	.03	.03	1	●	●	●	●			●	●
16ER 1.00 ISO 3M [1]	.375	1.000	.0027	.649	.07	.10	3							●	
16ERB 1.00 ISO [2]	.375	1.000	.0051	.649	.03	.03	1							●	
16ERM 1.00 ISO [2]	.375	1.000	.0043	.649	.03	.03	1		●	●		●	●	●	●
16EL 1.25 ISO	.375	1.250	.0063	.649	.03	.04	1			●	●			●	
16ER 1.25 ISO	.375	1.250	.0063	.649	.03	.04	1			●	●			●	●
16ERB 1.25 ISO [2]	.375	1.250	.0063	.649	.03	.04	1							●	
16ERM 1.25 ISO [2]	.375	1.250	.0055	.649	.03	.04	1			●			●	●	●
16EL 1.50 ISO	.375	1.500	.0075	.649	.04	.05	1			●	●			●	●
16ER 1.50 ISO	.375	1.500	.0075	.649	.04	.05	1	●	●	●	●			●	●
16ER 1.50 ISO 2M [1]	.375	1.500	.0071	.649	.06	.09	2							●	
16ERB 1.50 ISO [2]	.375	1.500	.0075	.649	.03	.04	1							●	

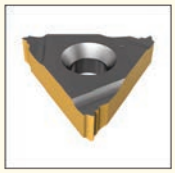
- For Insert Identification System, see pages 33-34 • For threading between walls use GRIP-type inserts TIP-ISO class: 6g
- For technical information and detailed cutting data, see pages 146-149 • For recommended number of passes for see pages 119-121
- Anvils for Laydown Inserts, see pages 36-43

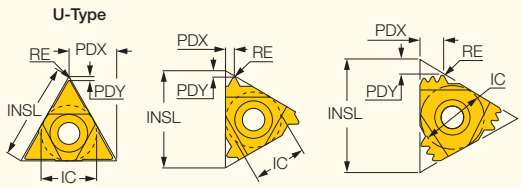
[1] Multi-tooth
[2] With pressed chipformer
[3] Thread pitch
[4] Number of teeth per corner

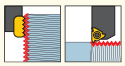
For tools, see pages: C#-SER/L (264) • MTET Single Point (431) • SER-D (265) • SER/L (262) • SER/L-JHP-MC (265)

ISCARTHREAD

ER/L-ISO
External ISO Metric
(DIN13 12-1986 class: 6g)
Laydown Threading Inserts
for General Industry

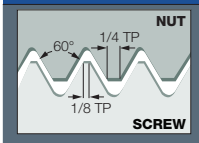






External right-hand shown

I N C H



Designation	Dimensions IC	TP mm[3]	RE	INSL	PDY	PDX	CICT[4]	Tough ↔ Hard IC228	IC50M	IC250	IC08	IC508	IC808	IC908	IC1007
16ERM 1.50 ISO [2]	.375	1.500	.0075	.649	.03	.04	1		●	●		●	●	●	●
16EL 1.75 ISO	.375	1.750	.0087	.649	.04	.05	1							●	
16ER 1.75 ISO	.375	1.750	.0087	.649	.04	.05	1	●		●	●			●	●
16ERB 1.75 ISO [2]	.375	1.750	.0087	.649	.04	.05	1							●	
16ERM 1.75 ISO [2]	.375	1.750	.0079	.649	.04	.05	1			●			●	●	●
16EL 2.00 ISO	.375	2.000	.0098	.649	.04	.05	1	●		●				●	
16ER 2.00 ISO	.375	2.000	.0098	.649	.04	.05	1	●	●	●	●			●	●
16ER 2.00 ISO 2M [1]	.375	2.000	.0035	.649	.07	.11	2							●	
16ERB 2.00 ISO [2]	.375	2.000	.0098	.649	.04	.05	1							●	
16ERM 2.00 ISO [2]	.375	2.000	.0094	.649	.04	.05	1			●		●	●	●	●
16EL 2.50 ISO	.375	2.500	.0126	.649	.04	.06	1							●	
16ER 2.50 ISO	.375	2.500	.0126	.649	.04	.06	1		●	●				●	●
16ERB 2.50 ISO	.375	2.500	.0126	.649	.04	.06	1							●	
16ERM 2.50 ISO [2]	.375	2.500	.0118	.649	.04	.06	1			●			●	●	●
16EL 3.00 ISO	.375	3.000	.0150	.649	.05	.06	1							●	
16ER 3.00 ISO	.375	3.000	.0150	.649	.05	.06	1	●	●	●		●		●	●
16ERB 3.00 ISO [2]	.375	3.000	.0150	.649	.05	.06	1							●	
16ERM 3.00 ISO [2]	.375	3.000	.0150	.649	.05	.06	1		●	●		●	●	●	●
22ER 1.50 ISO 3M [1]	.500	1.500	.0027	.866	.09	.15	3			●				●	
22ER 2.00 ISO 2M [1]	.500	2.000	.0098	.866	.08	.12	2							●	
22ER 2.00 ISO 3M [1]	.500	2.000	.0098	.866	.12	.20	3			●				●	
22EL 3.50 ISO	.500	3.500	.0181	.866	.06	.09	1	●		●					
22ER 3.50 ISO	.500	3.500	.0181	.866	.06	.09	1			●				●	
22ERM 3.50 ISO [2]	.500	3.500	.0189	.866	.06	.09	1						●	●	
22EL 4.00 ISO	.500	4.000	.0205	.866	.06	.09	1			●				●	
22ER 4.00 ISO	.500	4.000	.0205	.866	.06	.09	1		●	●				●	●
22ERM 4.00 ISO [2]	.500	4.000	.0205	.866	.06	.09	1						●	●	
22ER 4.50 ISO	.500	4.500	.0228	.866	.06	.09	1			●				●	
22EL 5.00 ISO	.500	5.000	.0260	.866	.07	.10	1			●					
22ER 5.00 ISO	.500	5.000	.0260	.866	.07	.10	1			●				●	
22ER 6.00 ISO	.500	6.000	.0311	.866	.07	.11	1			●					
22UERL 5.50 ISO	.500	5.500	.0276	.866	.09	.43	1			●					
22EL 6.00 ISO	.500	6.000	.0307	.866	.08	.11	1			●					
22UERL 6.00 ISO	.500	6.000	.0307	.866	.10	.43	1	●		●					
27ER 3.00 ISO 2M [1]	.625	3.000	.0150	1.083	.11	.18	2							●	
27ER 5.50 ISO	.625	5.500	.0279	1.083	.08	.11	1							●	
27EL 6.00 ISO	.625	6.000	.0307	1.083	.08	.11	1							●	
27ER 6.00 ISO	.625	6.000	.0307	1.083	.08	.11	1	●		●				●	
27UERL 8.00 ISO	.625	8.000	.0425	1.083	.09	.54	1							●	

- For Insert Identification System, see pages 33-34 • For threading between walls use GRIP-type inserts TIP-ISO class: 6g
- For technical information and detailed cutting data, see pages 146-149 • For recommended number of passes for see pages 119-121
- Anvils for Laydown Inserts, see pages 36-43

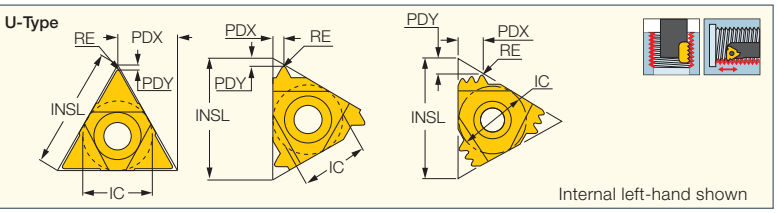
(1) Multi-tooth
(2) With pressed chipformer
(3) Thread pitch
(4) Number of teeth per corner

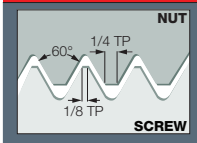
For tools, see pages: C#-SER/L (264) • MTET Single Point (431) • SER-D (265) • SER/L (262) • SER/L-JHP-MC (265)

ISCARTHREAD

IR/L-ISO
Internal ISO Metric (DIN13 12-1986 class 6H)
Laydown Threading Inserts for General Industry







Designation	IC	TP[3]	RE	INSL	PDY	PDX	CICT[4]	IC28	IC228	IC928	IC50M	IC250	IC08	IC508	IC808	IC908	IC1007
	Dimensions							Tough ↔ Hard									
06IR/L 0.50 ISO	4.00	0.500	0.04	6.88	0.9	0.4	1		•	•						•	
06IR/L 0.75 ISO	4.00	0.750	0.05	6.88	0.6	0.5	1		•	•						•	
06IR/L 1.00 ISO	4.00	1.000	0.05	6.88	0.6	0.6	1		•	•						•	
06IR/L 1.25 ISO	4.00	1.250	0.07	6.88	0.6	0.6	1		•	•						•	
08IR/L 0.50 ISO	5.00	0.500	0.04	8.24	0.6	0.5	1		•	•						•	
08IR 0.75 ISO	5.00	0.750	0.05	8.24	0.6	0.5	1		•	•						•	
08IR/L 1.00 ISO	5.00	1.000	0.05	8.24	0.6	0.6	1		•	•						•	
08IR/L 1.25 ISO	5.00	1.250	0.07	8.24	0.7	0.7	1		•	•						•	
08IR/L 1.50 ISO	5.00	1.500	0.09	8.24	0.7	0.7	1	•	•	•						•	
08IR/L 1.75 ISO	5.00	1.750	0.10	8.24	0.6	0.8	1		•	•						•	
08UIRL 2.00 ISO	5.00	2.000	0.12	8.24	0.9	4.0	1		•								
11IR/L 0.35 ISO	6.35	0.350	0.02	11.00	0.8	0.3	1						•			•	
11IR 0.40 ISO	6.35	0.400	0.02	11.00	0.8	0.4	1									•	
11IR/L 0.50 ISO	6.35	0.500	0.04	11.00	0.8	0.6	1					•	•			•	
11IRB 0.50 ISO	6.35	0.500	0.04	11.00	0.8	0.6	1									•	
11IRM 0.50 ISO	6.35	0.500	0.04	11.00	0.8	0.6	1									•	
11IR 0.70 ISO	6.35	0.700	0.04	11.00	0.6	0.6	1									•	
11IR/L 0.75 ISO	6.35	0.750	0.05	11.00	0.6	0.6	1									•	
11IRB 0.75 ISO	6.35	0.750	0.05	11.00	0.6	0.6	1									•	
11IRM 0.75 ISO	6.35	0.750	0.05	11.00	0.6	0.6	1									•	
11IR 0.80 ISO	6.35	0.800	0.04	11.00	0.6	0.6	1									•	
11IRB 0.80 ISO	6.35	0.800	0.04	11.00	0.6	0.6	1									•	
11IR/L 1.00 ISO	6.35	1.000	0.07	11.00	0.6	0.7	1		•		•	•	•			•	•
11IRB 1.00 ISO	6.35	1.000	0.07	11.00	0.6	0.6	1									•	
11IRM 1.00 ISO [1]	6.35	1.000	0.05	11.00	0.6	0.7	1								•	•	•
11IR/L 1.25 ISO	6.35	1.250	0.09	11.00	0.9	0.8	1									•	
11IRB 1.25 ISO	6.35	1.250	0.09	11.00	0.8	0.9	1									•	
11IR/L 1.50 ISO	6.35	1.500	0.11	11.00	0.8	0.9	1		•		•	•	•			•	•
11IRB 1.50 ISO	6.35	1.500	0.11	11.00	0.8	1.0	1									•	
11IRM 1.50 ISO [1]	6.35	1.500	0.08	11.00	0.8	1.0	1					•				•	•
11IR/L 1.75 ISO	6.35	1.750	0.13	11.00	0.8	1.0	1				•					•	
11IRB 1.75 ISO	6.35	1.750	0.13	11.00	0.8	1.0	1									•	
11IRM 1.75 ISO	6.35	1.750	0.13	11.00	0.8	1.0	1									•	
11IR/L 2.00 ISO	6.35	2.000	0.14	11.00	0.8	0.9	1		•			•		•		•	•
11IRM 2.00 ISO	6.35	2.000	0.14	11.00	0.8	0.9	1									•	
16IR 0.35 ISO	9.52	0.350	0.02	16.49	0.6	0.3	1									•	
16IR/L 0.40 ISO	9.52	0.400	0.02	16.49	0.8	0.4	1									•	
16IL 0.45 ISO	9.52	0.450	0.02	16.49	0.8	0.4	1									•	
16IR/L 0.50 ISO	9.52	0.500	0.04	16.49	0.8	0.6	1					•	•			•	
16IR 0.60 ISO	9.52	0.600	0.03	16.49	0.6	0.6	1									•	
16IR 0.70 ISO	9.52	0.700	0.04	16.49	0.6	0.6	1					•				•	
16IR/L 0.75 ISO	9.52	0.750	0.05	16.49	0.6	0.6	1									•	
16IR/L 0.80 ISO	9.52	0.800	0.04	16.49	0.6	0.6	1				•	•					
16IR/L 1.00 ISO	9.52	1.000	0.07	16.49	0.7	0.8	1				•	•	•			•	•
16IR 1.00 ISO 3M [2]	9.52	1.000	0.07	16.49	1.6	2.5	3									•	
16IRB 1.00 ISO [1]	9.52	1.000	0.07	16.49	0.7	0.8	1									•	
16IRM 1.00 ISO [1]	9.52	1.000	0.05	16.49	0.6	0.7	1				•	•		•	•	•	•
16IR/L 1.25 ISO	9.52	1.250	0.07	16.49	0.8	0.9	1				•	•	•			•	
16IRB 1.25 ISO [1]	9.52	1.250	0.09	16.49	0.7	0.8	1									•	

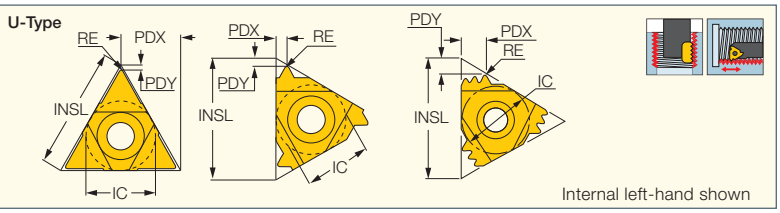
- For Insert Identification System, see pages 33-34 • Tolerance: Class 6H. • For technical information and detailed cutting data, see pages 146-149
- For recommended number of passes for see pages 119-121
- Anvils for Laydown Inserts, see pages 36-43

[1] With pressed chipformer
[2] Multi-tooth
[3] Thread pitch
[4] Number of teeth per corner

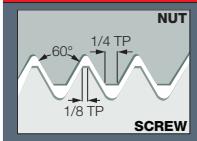
ISCARTHREAD

(continued)
IR/L-ISO
Internal ISO Metric (DIN13 12-1986 class 6H)
Laydown Threading Inserts for General Industry





M E T R I C



Designation	Dimensions IC	TP[3]	RE	INSL	PDY	PDX	CICT[4]	Tough ↔ Hard IC28	IC228	IC928	IC50M	IC250	IC08	IC508	IC808	IC908	IC1007
16IRM 1.25 ISO [1]	9.52	1.250	0.06	16.49	0.8	0.9	1					•				•	•
16IR/L 1.50 ISO	9.52	1.500	0.11	16.49	1.0	1.2	1		•		•	•	•			•	•
16IR 1.50 ISO 2M [2]	9.52	1.500	0.09	16.49	1.5	2.3	2									•	
16IRB 1.50 ISO [1]	9.52	1.500	0.11	16.49	1.0	1.2	1									•	
16IRM 1.50 ISO [1]	9.52	1.500	0.08	16.49	0.8	1.0	1				•	•		•	•	•	•
16IR/L 1.75 ISO	9.52	1.750	0.13	16.49	0.9	1.2	1					•	•			•	
16IRB 1.75 ISO [1]	9.52	1.750	0.13	16.49	0.9	1.2	1									•	
16IRM 1.75 ISO [1]	9.52	1.750	0.10	16.49	0.9	1.2	1					•			•	•	•
16IR/L 2.00 ISO	9.52	2.000	0.14	16.49	1.0	1.2	1		•			•		•		•	•
16IR 2.00 ISO 2M [2]	9.52	2.000	0.09	16.49	1.7	2.7	2									•	
16IRB 2.00 ISO [1]	9.52	2.000	0.14	16.49	1.0	1.2	1									•	
16IRM 2.00 ISO [1]	9.52	2.000	0.11	16.49	1.0	1.3	1					•		•	•	•	•
16IR/L 2.50 ISO	9.52	2.500	0.18	16.49	1.2	1.5	1		•			•				•	•
16IRB 2.50 ISO	9.52	2.500	0.18	16.49	1.2	1.5	1									•	
16IRM 2.50 ISO [1]	9.52	2.500	0.14	16.49	1.1	1.5	1					•			•	•	•
16IR/L 3.00 ISO	9.52	3.000	0.21	16.49	1.1	1.5	1		•			•				•	•
16IRB 3.00 ISO [1]	9.52	3.000	0.22	16.49	1.1	1.5	1									•	
16IRM 3.00 ISO [1]	9.52	3.000	0.17	16.49	1.1	1.5	1					•		•	•	•	•
22IR 1.50 ISO 3M [2]	12.70	1.500	0.07	22.00	2.3	3.7	3					•				•	
22IR 2.00 ISO 2M [2]	12.70	2.000	0.09	22.00	2.3	3.0	2									•	
22IR 2.00 ISO 3M [2]	12.70	2.000	0.07	22.00	3.2	5.0	3									•	
22IL 3.00 ISO	12.70	3.000	0.17	22.00	1.1	1.5	1		•								
22IR/L 3.50 ISO	12.70	3.500	0.23	22.00	1.6	2.3	1					•				•	•
22IR/L 4.00 ISO	12.70	4.000	0.27	22.00	1.6	2.3	1				•	•				•	
22IR/L 4.50 ISO	12.70	4.500	0.31	22.00	1.6	2.3	1					•				•	
22IR/L 5.00 ISO	12.70	5.000	0.33	22.00	1.7	2.5	1				•	•				•	
22IR 6.00 ISO	12.70	6.000	0.40	22.00	1.8	2.5	1									•	
22UIRL 5.50 ISO	12.70	5.500	0.35	22.00	2.4	11.0	1					•					
22UIRL 6.00 ISO	12.70	6.000	0.39	22.00	2.1	11.0	1					•					
27IR 3.00 ISO 2M [2]	15.88	3.000	0.18	27.50	2.9	4.6	2									•	
27IR 5.50 ISO	15.88	5.500	0.36	27.50	1.9	2.5	1					•				•	
27IR 6.00 ISO	15.88	6.000	0.40	27.50	1.9	2.5	1					•				•	
27UIRL 8.00 ISO	15.88	8.000	0.50	27.50	1.9	11.0	1									•	

- For Insert Identification System, see pages 33-34 • Tolerance: Class 6H. • For technical information and detailed cutting data, see pages 146-149
- For recommended number of passes for see pages 119-121
- Anvils for Laydown Inserts, see pages 36-43

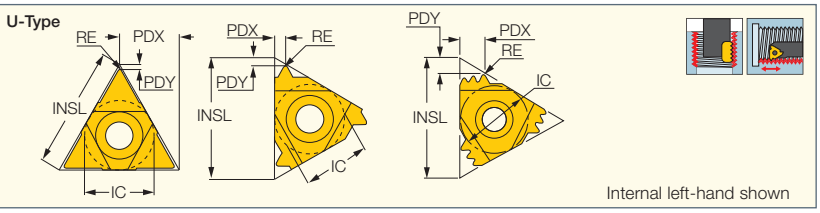
[1] With pressed chipformer
[2] Multi-tooth
[3] Thread pitch
[4] Number of teeth per corner

ISCARTHREAD

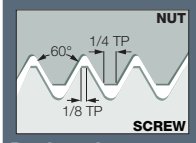
IR/L-ISO

Internal ISO Metric (DIN13 12-1986 class 6H)
Laydown Threading Inserts for General Industry





I N C H



Designation	Dimensions IC	TP mm[3]	RE	INSL	PDY	PDX	CICT[4]	Tough ↔ Hard IC28	IC228	IC928	IC50M	IC250	IC08	IC508	IC808	IC908	IC1007
06IL 0.50 ISO	.157	.500	.0016	.271	.04	.02	1		●								
06IR 0.50 ISO	.157	.500	.0016	.271	.04	.02	1		●	●						●	
06IL 0.75 ISO	.157	.750	.0020	.271	.02	.02	1		●								
06IR 0.75 ISO	.157	.750	.0020	.271	.02	.02	1		●	●						●	
06IL 1.00 ISO	.157	1.000	.0020	.271	.02	.02	1		●								
06IR 1.00 ISO	.157	1.000	.0020	.271	.02	.02	1		●	●						●	
06IL 1.25 ISO	.157	1.250	.0027	.271	.02	.02	1		●								
06IR 1.25 ISO	.157	1.250	.0027	.271	.02	.02	1		●	●						●	
08IL 0.50 ISO	.197	.500	.0016	.324	.02	.02	1		●								
08IR 0.50 ISO	.197	.500	.0016	.324	.02	.02	1		●	●						●	
08IR 0.75 ISO	.197	.750	.0020	.324	.02	.02	1		●	●						●	
08IL 1.00 ISO	.197	1.000	.0020	.324	.02	.02	1		●								
08IR 1.00 ISO	.197	1.000	.0020	.324	.02	.02	1		●	●						●	
08IL 1.25 ISO	.197	1.250	.0027	.324	.03	.03	1		●								
08IR 1.25 ISO	.197	1.250	.0027	.324	.03	.03	1		●	●						●	
08IL 1.50 ISO	.197	1.500	.0035	.324	.03	.03	1		●								
08IR 1.50 ISO	.197	1.500	.0035	.324	.03	.03	1	●	●	●						●	
08IL 1.75 ISO	.197	1.750	.0039	.324	.02	.03	1		●								
08IR 1.75 ISO	.197	1.750	.0039	.324	.02	.03	1		●	●						●	
08UIRL 2.00 ISO	.197	2.000	.0047	.324	.04	.16	1		●								
11IL 0.35 ISO	.250	.350	.0008	.433	.03	.01	1						●				
11IR 0.35 ISO	.250	.350	.0008	.433	.03	.01	1									●	
11IR 0.40 ISO	.250	.400	.0008	.433	.03	.02	1									●	
11IL 0.50 ISO	.250	.500	.0016	.433	.03	.02	1									●	
11IR 0.50 ISO	.250	.500	.0016	.433	.03	.02	1					●	●			●	
11IRB 0.50 ISO	.250	.500	.0016	.433	.03	.02	1									●	
11IRM 0.50 ISO	.250	.500	.0016	.433	.03	.02	1									●	
11IR 0.70 ISO	.250	.700	.0016	.433	.02	.02	1									●	
11IR/L 0.75 ISO	.250	.750	.0020	.433	.02	.02	1									●	
11IRB 0.75 ISO	.250	.750	.0020	.433	.02	.02	1									●	
11IRM 0.75 ISO	.250	.750	.0020	.433	.02	.02	1									●	
11IR 0.80 ISO	.250	.800	.0016	.433	.02	.02	1									●	
11IRB 0.80 ISO	.250	.800	.0016	.433	.02	.02	1									●	
11IL 1.00 ISO	.250	1.000	.0027	.433	.02	.03	1									●	
11IR 1.00 ISO	.250	1.000	.0027	.433	.02	.03	1		●		●	●	●			●	●
11IRB 1.00 ISO	.250	1.000	.0027	.433	.02	.02	1									●	
11IRM 1.00 ISO [1]	.250	1.000	.0020	.433	.02	.03	1								●	●	●
11IL 1.25 ISO	.250	1.250	.0035	.433	.04	.03	1									●	
11IR 1.25 ISO	.250	1.250	.0035	.433	.03	.03	1									●	
11IRB 1.25 ISO	.250	1.250	.0035	.433	.03	.04	1									●	
11IL 1.50 ISO	.250	1.500	.0043	.433	.03	.04	1					●				●	
11IR 1.50 ISO	.250	1.500	.0043	.433	.03	.04	1		●		●	●	●			●	●
11IRB 1.50 ISO	.250	1.500	.0043	.433	.03	.04	1									●	
11IRM 1.50 ISO [1]	.250	1.500	.0031	.433	.03	.04	1					●				●	●
11IL 1.75 ISO	.250	1.750	.0051	.433	.03	.04	1				●					●	
11IR 1.75 ISO	.250	1.750	.0051	.433	.03	.04	1									●	
11IRB 1.75 ISO	.250	1.750	.0051	.433	.03	.04	1									●	
11IRM 1.75 ISO	.250	1.750	.0051	.433	.03	.04	1									●	

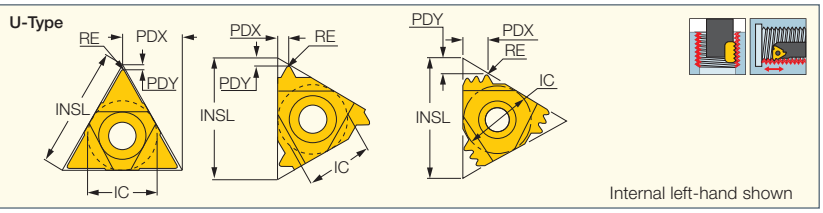
- For Insert Identification System, see pages 33-34 • Tolerance: Class 6H. • For technical information and detailed cutting data, see pages 146-149
- For recommended number of passes for see pages 119-121
- Anvils for Laydown Inserts, see pages 36-43

(1) With pressed chipformer
(2) Multi-tooth
(3) Thread pitch
(4) Number of teeth per corner

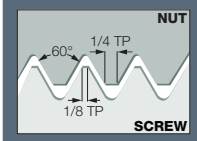
ISCARTHREAD

(continued)
IR/L-ISO
Internal ISO Metric (DIN13 12-1986 class 6H)
Laydown Threading Inserts for General Industry





I N C H



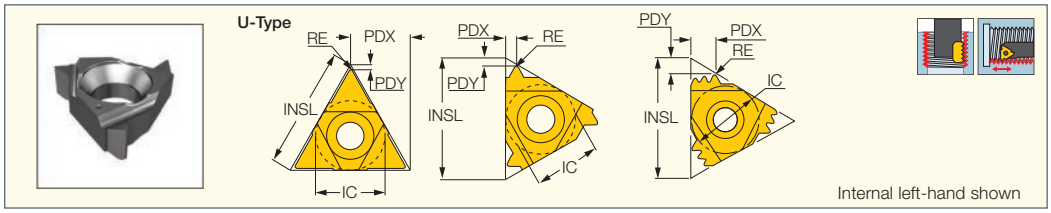
Designation	Dimensions IC	TP mm[3]	RE	INSL	PDY	PDX	CICT[4]	Tough ↔ Hard IC28	IC228	IC928	IC50M	IC250	IC08	IC508	IC808	IC908	IC1007
11IL 2.00 ISO	.250	2.000	.0055	.433	.03	.04	1									•	
11IR 2.00 ISO	.250	2.000	.0055	.433	.03	.04	1		•			•		•		•	•
11IRM 2.00 ISO	.250	2.000	.0055	.433	.03	.04	1									•	
16IR 0.35 ISO	.375	.350	.0008	.649	.02	.01	1									•	
16IR/L 0.40 ISO	.375	.400	.0008	.649	.03	.02	1									•	
16IL 0.45 ISO	.375	.450	.0008	.649	.03	.02	1									•	
16IL 0.50 ISO	.375	.500	.0016	.649	.03	.02	1									•	
16IR 0.50 ISO	.375	.500	.0016	.649	.03	.02	1					•	•			•	
16IR 0.60 ISO	.375	.600	.0012	.649	.02	.02	1									•	
16IR 0.70 ISO	.375	.700	.0016	.649	.02	.02	1					•				•	
16IR/L 0.75 ISO	.375	.750	.0020	.649	.02	.02	1									•	
16IL 0.80 ISO	.375	.800	.0016	.649	.02	.02	1				•						
16IR 0.80 ISO	.375	.800	.0016	.649	.02	.02	1					•					
16IL 1.00 ISO	.375	1.000	.0027	.649	.03	.03	1									•	
16IR 1.00 ISO	.375	1.000	.0027	.649	.03	.03	1				•	•	•			•	•
16IR 1.00 ISO 3M [2]	.375	1.000	.0027	.649	.06	.10	3									•	
16IRB 1.00 ISO [1]	.375	1.000	.0027	.649	.03	.03	1									•	
16IRM 1.00 ISO [1]	.375	1.000	.0020	.649	.02	.03	1				•	•		•	•	•	•
16IL 1.25 ISO	.375	1.250	.0027	.649	.03	.04	1				•		•			•	
16IR 1.25 ISO	.375	1.250	.0035	.649	.03	.04	1					•	•			•	
16IRB 1.25 ISO [1]	.375	1.250	.0035	.649	.03	.03	1									•	
16IRM 1.25 ISO [1]	.375	1.250	.0024	.649	.03	.04	1					•				•	•
16IL 1.50 ISO	.375	1.500	.0043	.649	.04	.05	1				•	•				•	•
16IR 1.50 ISO	.375	1.500	.0043	.649	.04	.05	1		•		•	•	•			•	•
16IR 1.50 ISO 2M [2]	.375	1.500	.0035	.649	.06	.09	2									•	
16IRB 1.50 ISO [1]	.375	1.500	.0043	.649	.04	.05	1									•	
16IRM 1.50 ISO [1]	.375	1.500	.0031	.649	.03	.04	1				•	•		•	•	•	•
16IL 1.75 ISO	.375	1.750	.0051	.649	.04	.05	1									•	
16IR 1.75 ISO	.375	1.750	.0051	.649	.04	.05	1					•	•			•	
16IRB 1.75 ISO [1]	.375	1.750	.0051	.649	.04	.05	1									•	
16IRM 1.75 ISO [1]	.375	1.750	.0039	.649	.04	.05	1					•			•	•	•
16IL 2.00 ISO	.375	2.000	.0055	.649	.04	.05	1					•				•	
16IR 2.00 ISO	.375	2.000	.0055	.649	.04	.05	1		•			•		•		•	•
16IR 2.00 ISO 2M [2]	.375	2.000	.0035	.649	.07	.11	2									•	
16IRB 2.00 ISO [1]	.375	2.000	.0055	.649	.04	.05	1									•	
16IRM 2.00 ISO [1]	.375	2.000	.0043	.649	.04	.05	1					•		•	•	•	•
16IL 2.50 ISO	.375	2.500	.0071	.649	.05	.06	1									•	
16IR 2.50 ISO	.375	2.500	.0071	.649	.05	.06	1		•			•				•	•
16IRB 2.50 ISO	.375	2.500	.0071	.649	.05	.06	1									•	
16IRM 2.50 ISO [1]	.375	2.500	.0055	.649	.04	.06	1					•			•	•	•
16IL 3.00 ISO	.375	3.000	.0083	.649	.04	.06	1									•	
16IR 3.00 ISO	.375	3.000	.0083	.649	.04	.06	1		•			•				•	•
16IRB 3.00 ISO [1]	.375	3.000	.0087	.649	.04	.06	1									•	
16IRM 3.00 ISO [1]	.375	3.000	.0067	.649	.04	.06	1					•		•	•	•	•
22IR 1.50 ISO 3M [2]	.500	1.500	.0027	.866	.09	.15	3					•				•	
22IR 2.00 ISO 2M [2]	.500	2.000	.0035	.866	.09	.12	2									•	
22IR 2.00 ISO 3M [2]	.500	2.000	.0027	.866	.13	.20	3									•	
22IL 3.00 ISO	.500	3.000	.0067	.866	.04	.06	1		•								

- For Insert Identification System, see pages 33-34 • Tolerance: Class 6H. • For technical information and detailed cutting data, see pages 146-149
- For recommended number of passes for see pages 119-121
- Anvils for Laydown Inserts, see pages 36-43

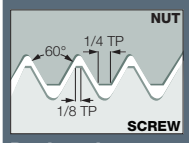
(1) With pressed chipformer
(2) Multi-tooth
(3) Thread pitch
(4) Number of teeth per corner

ISCARTHREAD

(continued)
IR/L-ISO
Internal ISO Metric (DIN13 12-1986 class 6H)
Laydown Threading Inserts for General Industry



I N C H



Designation	Dimensions IC	TP mm[3]	RE	INSL	PDY	PDX	CICT[4]	Tough ↔ Hard IC28	IC228	IC928	IC50M	IC250	IC08	IC508	IC808	IC908	IC1007
22IL 3.50 ISO	.500	3.500	.0091	.866	.06	.09	1					●					
22IR 3.50 ISO	.500	3.500	.0091	.866	.06	.09	1					●				●	●
22IL 4.00 ISO	.500	4.000	.0106	.866	.06	.09	1									●	
22IR 4.00 ISO	.500	4.000	.0106	.866	.06	.09	1				●	●				●	
22IL 4.50 ISO	.500	4.500	.0122	.866	.06	.09	1					●					
22IR 4.50 ISO	.500	4.500	.0122	.866	.06	.09	1					●				●	
22IL 5.00 ISO	.500	5.000	.0130	.866	.07	.10	1				●					●	
22IR 5.00 ISO	.500	5.000	.0130	.866	.07	.10	1					●				●	
22IR 6.00 ISO	.500	6.000	.0157	.866	.07	.10	1									●	
22UIRL 5.50 ISO	.500	5.500	.0138	.866	.09	.43	1					●					
22UIRL 6.00 ISO	.500	6.000	.0154	.866	.08	.43	1					●					
27IR 3.00 ISO 2M [2]	.625	3.000	.0071	1.083	.11	.18	2									●	
27IR 5.50 ISO	.625	5.500	.0142	1.083	.07	.10	1					●				●	
27IR 6.00 ISO	.625	6.000	.0157	1.083	.07	.10	1					●				●	
27UIRL 8.00 ISO	.625	8.000	.0197	1.083	.07	.43	1									●	

- For Insert Identification System, see pages 33-34 • Tolerance: Class 6H. • For technical information and detailed cutting data, see pages 146-149
- For recommended number of passes for see pages 119-121
- Anvils for Laydown Inserts, see pages 36-43

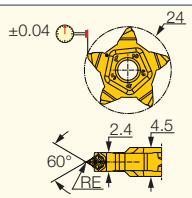
[1] With pressed chipformer
[2] Multi-tooth
[3] Thread pitch
[4] Number of teeth per corner

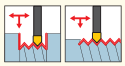
PENTACUT THREADING LINE

PENTA 24-ISO

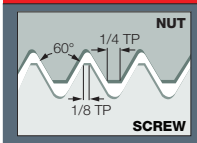
Precision Ground ISO Metric
Full Profile Pentagonal
External Threading Inserts
with a Chipformer







M E T R I C



Designation	Dimensions TP[1]	RE	IC908
PENTA 24-0.5-ISO	0.500	0.08	•
PENTA 24-0.75-ISO	0.750	0.11	•
PENTA 24-0.8-ISO	0.800	0.12	•
PENTA 24-1.0-ISO	1.000	0.14	•
PENTA 24-1.25-ISO	1.250	0.18	•
PENTA 24-1.5-ISO	1.500	0.22	•
PENTA 24-1.75-ISO	1.750	0.25	•
PENTA 24-2.0-ISO	2.000	0.28	•

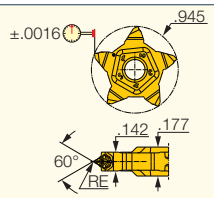
• DMIN(mm)=5.435xTP
(1) Thread pitch

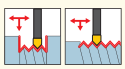
PENTACUT THREADING LINE

PENTA 24-ISO

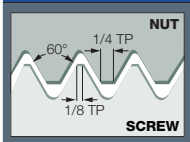
Precision Ground ISO Metric
Full Profile Pentagonal
External Threading Inserts
with a Chipformer







I N C H



Designation	Dimensions TP mm[1]	RE	IC908
PENTA 24-0.5-ISO	.500	.0031	•
PENTA 24-0.75-ISO	.750	.0043	•
PENTA 24-0.8-ISO	.800	.0047	•
PENTA 24-1.0-ISO	1.000	.0055	•
PENTA 24-1.25-ISO	1.250	.0071	•
PENTA 24-1.5-ISO	1.500	.0087	•
PENTA 24-1.75-ISO	1.750	.0098	•
PENTA 24-2.0-ISO	2.000	.0110	•

• DMIN(mm)=5.435xTP
(1) Thread pitch

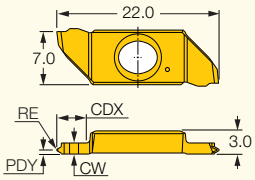
ISCARTHREAD

SWISSCUT INNOVAL LINE

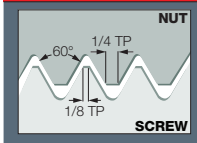
SCIR-22-MTR-ISO

Precision Ground ISO Metric
Full Profile Threading Inserts





M E T R I C



Designation	Dimensions TP[1]	CW	CDX[2]	RE	PDY	IC1008
SCIR 22-MTR-0.3ISO	0.300	1.00	3.00	0.03	0.2	●
SCIR 22-MTR-0.4ISO	0.400	1.00	3.00	0.04	0.2	●
SCIR 22-MTR-0.5ISO	0.500	1.00	3.00	0.06	0.3	●
SCIR 22-MTR-0.75ISO	0.750	1.00	3.00	0.10	0.4	●
SCIR 22-MTR-1.0ISO	1.000	1.50	4.00	0.14	0.6	●
SCIR 22-MTR-1.5ISO	1.500	2.00	4.00	0.20	0.8	●

(1) Thread pitch
(2) Cutting depth maximum

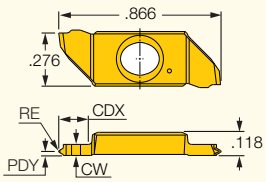
ISCARTHREAD

SWISSCUT INNOVAL LINE

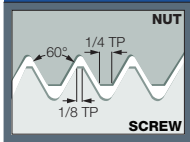
SCIR-22-MTR-ISO

Precision Ground ISO Metric
Full Profile Threading Inserts





I N C H



Designation	Dimensions TP mm[1]	CW	CDX[2]	RE	PDY	IC1008
SCIR 22-MTR-0.3ISO	.300	.039	.118	.0012	.01	●
SCIR 22-MTR-0.4ISO	.400	.039	.118	.0016	.01	●
SCIR 22-MTR-0.5ISO	.500	.039	.118	.0024	.01	●
SCIR 22-MTR-0.75ISO	.750	.039	.118	.0039	.02	●
SCIR 22-MTR-1.0ISO	1.000	.059	.157	.0055	.02	●
SCIR 22-MTR-1.5ISO	1.500	.079	.157	.0079	.03	●

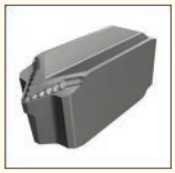
(1) Thread pitch
(2) Cutting depth maximum

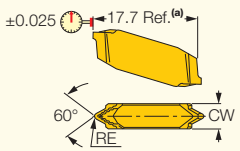
ISCARTHREAD

CUTGRIP

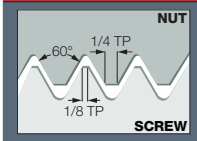
TIP-P-ISO

Precision Ground ISO Metric Full Profile Double-Ended External Threading Inserts with a Chipformer





M E T R I C



Designation	Dimensions TP[1]	CW	RE	RETOL[2]	Tough ↔ Hard IC08	IC908
TIP 2P0.5-ISO	0.500	2.40	0.08	0.030	•	•
TIP 2P0.75-ISO	0.750	2.40	0.11	0.030	•	•
TIP 2P0.8-ISO	0.800	2.40	0.12	0.030	•	•
TIP 2P1.0-ISO	1.000	2.40	0.14	0.030	•	•
TIP 2P1.25-ISO	1.250	2.40	0.18	0.030	•	•
TIP 2P1.5-ISO	1.500	2.40	0.22	0.030	•	•
TIP 2P1.75-ISO	1.750	2.40	0.25	0.030	•	•
TIP 4P2.0-ISO	2.000	4.00	0.28	0.030	•	•
TIP 4P2.5-ISO	2.500	4.00	0.35	0.050	•	•
TIP 4P3.0-ISO	3.000	4.00	0.42	0.050		•
TIP 4P3.5-ISO	3.500	4.00	0.48	0.050		•
TIP 5P4.0-ISO	4.000	5.50	0.55	0.050		•
TIP 5P5.0-ISO	5.000	5.50	0.68	0.050		•

• (a) TIP inserts are 1.6 mm longer than GIP in the same pocket • Toolholder seat needs to be modified according to insert profile to ensure clearance

(1) Thread pitch

(2) Corner radius tolerance (+/-)

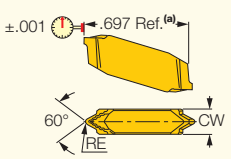
ISCARTHREAD

CUTGRIP

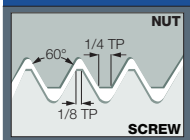
TIP-P-ISO

Precision Ground ISO Metric Full Profile Double-Ended External Threading Inserts with a Chipformer





I N C H



Designation	Dimensions TP mm[1]	CW	RE	RETOL[2]	Tough ↔ Hard IC08	IC908
TIP 2P0.5-ISO	.500	.094	.0031	.0012	•	•
TIP 2P0.75-ISO	.750	.094	.0043	.0012	•	•
TIP 2P0.8-ISO	.800	.094	.0047	.0012	•	•
TIP 2P1.0-ISO	1.000	.094	.0055	.0012	•	•
TIP 2P1.25-ISO	1.250	.094	.0071	.0012	•	•
TIP 2P1.5-ISO	1.500	.094	.0087	.0012	•	•
TIP 2P1.75-ISO	1.750	.094	.0098	.0012	•	•
TIP 4P2.0-ISO	2.000	.157	.0110	.0012	•	•
TIP 4P2.5-ISO	2.500	.157	.0138	.0020	•	•
TIP 4P3.0-ISO	3.000	.157	.0165	.0020		•
TIP 4P3.5-ISO	3.500	.157	.0189	.0020		•
TIP 5P4.0-ISO	4.000	.217	.0216	.0020		•
TIP 5P5.0-ISO	5.000	.217	.0268	.0020		•

• (a) TIP inserts are .063" longer than GIP in the same pocket • Toolholder seat needs to be modified according to insert profile to ensure clearance

(1) Thread pitch

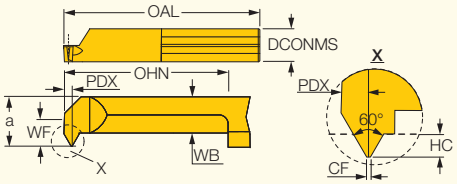
(2) Corner radius tolerance (+/-)

PICCOCUT

PICCO ISO Full Profile

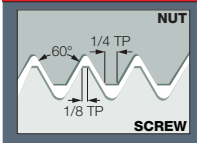
Inserts for ISO Standard
Full Profile Thread





Right-hand shown

M E T R I C



Designation	Dimensions TP[1]	DCONMS	WF	a	OAL	OHN[2]	WB	PDX	HC	CF	DMIN	IC908
PICCO R/L 105.0510-15	1.000	5.00	1.90	4.40	30.00	15.0	3.30	0.6	0.54	0.12	4.80	●
PICCO R/L 106.0612-15	1.250	6.00	2.30	5.30	30.00	15.0	3.40	0.7	0.67	0.15	6.00	●
PICCO R/L 106.0815-15	1.500	6.00	2.30	5.30	30.00	15.0	3.40	0.8	0.81	0.18	6.00	●
PICCO R/L 107.0815-15	1.500	7.00	2.80	6.30	30.00	15.0	3.80	0.8	0.81	0.18	7.00	●

I N C H

Designation	Dimensions TP mm[1]	DCONMS	WF	a	OAL	OHN[2]	WB	PDX	HC	CF	DMIN	IC908
PICCO R/L 105.0510-15	1.000	.197	.075	.173	1.181	.591	.130	.02	.021	.005	.189	●
PICCO R/L 106.0612-15	1.250	.236	.091	.209	1.181	.591	.134	.03	.026	.006	.236	●
PICCO R/L 106.0815-15	1.500	.236	.091	.209	1.181	.591	.134	.03	.032	.007	.236	●
PICCO R/L 107.0815-15	1.500	.276	.110	.248	1.181	.591	.150	.03	.032	.007	.276	●

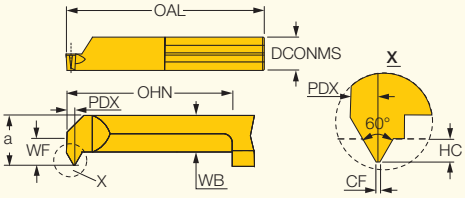
[1] Thread pitch
[2] Minimum overhang

PICCOCUT

PICCO ISO Full Profile Fine

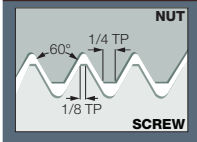
Inserts for ISO Fine Pitch
Full Profile Thread





Right-hand shown

M E T R I C



Designation	Dimensions TP[1]	DCONMS	WF	a	OAL	OHN[2]	WB	PDX	HC	CF	DMIN	IC908
PICCO R/L 104.0205-15	0.500	5.00	1.50	3.50	30.00	15.0	2.40	0.4	0.27	0.06	4.00	●
PICCO R/L 105.0205-15	0.500	5.00	1.90	4.40	30.00	15.0	3.30	0.4	0.27	0.06	5.00	●
PICCO R/L 105.0407-15	0.750	5.00	1.90	4.40	30.00	15.0	3.30	0.5	0.40	0.09	5.00	●
PICCO R/L 106.0510-15	1.000	6.00	2.30	5.30	30.00	15.0	3.40	0.6	0.54	0.12	6.00	●

I N C H

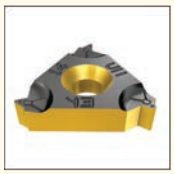
Designation	Dimensions TP mm[1]	DCONMS	WF	a	OAL	OHN[2]	WB	PDX	HC	CF	DMIN	IC908
PICCO R/L 104.0205-15	.500	.197	.059	.138	1.181	.591	.094	.02	.011	.002	.157	●
PICCO R/L 105.0205-15	.500	.197	.075	.173	1.181	.591	.130	.02	.011	.002	.197	●
PICCO R/L 105.0407-15	.750	.197	.075	.173	1.181	.591	.130	.02	.016	.004	.197	●
PICCO R/L 106.0510-15	1.000	.236	.091	.209	1.181	.591	.134	.02	.021	.005	.236	●

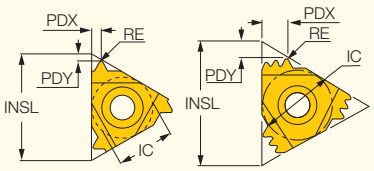
[1] Thread pitch
[2] Minimum overhang

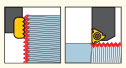
Full Profile UN

ISCARTHREAD

ER/L-UN
External American UN Full Profile (UN, UNC, UNF, UNEF) Laydown Threading Inserts for General Industry

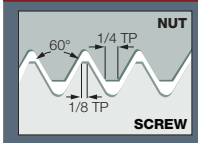






External right-hand shown

M E T R I C



Designation	Dimensions IC	TPI[3]	RE	INSL	PDY	PDX	CICT[4]	Tough ↔ Hard IC228	IC50M	IC250	IC08	IC508	IC808	IC908	IC1007
11ER 44 UN	6.35	44.0	0.05	11.00	0.6	0.6	1							●	
11ER 32 UN	6.35	32.0	0.10	11.00	0.6	0.6	1							●	
11ER 28 UN	6.35	28.0	0.10	11.00	0.6	0.7	1							●	
11ER 24 UN	6.35	24.0	0.12	11.00	0.7	0.8	1							●	
11ER/L 20 UN	6.35	20.0	0.15	11.00	0.8	0.9	1							●	
11ER 18 UN	6.35	18.0	0.17	11.00	0.8	1.0	1							●	
11ER 16 UN	6.35	16.0	0.18	11.00	0.9	1.1	1		●	●				●	
16ER 72 UN	9.52	72.0	0.04	16.49	0.8	0.4	1							●	
16ER 56 UN	9.52	56.0	0.06	16.49	0.7	0.4	1							●	
16ER 48 UN	9.52	48.0	0.05	16.49	0.6	0.6	1							●	
16ER 40 UN	9.52	40.0	0.06	16.49	0.6	0.6	1					●		●	
16ER/L 36 UN	9.52	36.0	0.07	16.49	0.6	0.6	1							●	
16ER/L 32 UN	9.52	32.0	0.10	16.49	0.6	0.6	1			●				●	●
16ER/L 28 UN	9.52	28.0	0.11	16.49	0.6	0.7	1			●				●	●
16ER 27 UN	9.52	27.0	0.10	16.49	0.7	0.8	1		●						
16ER/L 24 UN	9.52	24.0	0.13	16.49	0.7	0.8	1			●				●	●
16ERB 24 UN [1]	9.52	24.0	0.13	16.49	0.7	0.8	1							●	
16ERM 24 UN [1]	9.52	24.0	0.11	16.49	0.7	0.8	1			●				●	●
16ER/L 20 UN	9.52	20.0	0.16	16.49	0.9	0.8	1			●	●			●	●
16ERB 20 UN [1]	9.52	20.0	0.16	16.49	0.8	0.9	1							●	
16ERM 20 UN [1]	9.52	20.0	0.14	16.49	0.8	0.9	1			●			●	●	●
16ER/L 18 UN	9.52	18.0	0.17	16.49	0.7	0.8	1		●	●				●	●
16ERB 18 UN [1]	9.52	18.0	0.18	16.49	0.7	0.8	1							●	
16ERM 18 UN [1]	9.52	18.0	0.15	16.49	0.8	1.0	1			●			●	●	●
16ER/L 16 UN	9.52	16.0	0.20	16.49	1.0	1.2	1	●		●				●	●
16ER 16 UN 2M [2]	9.52	16.0	0.09	16.49	1.5	2.3	2							●	
16ERB 16 UN [1]	9.52	16.0	0.20	16.49	1.0	1.2	1							●	
16ERM 16 UN [1]	9.52	16.0	0.19	16.49	0.9	1.1	1			●			●	●	●
16ER/L 14 UN	9.52	14.0	0.22	16.49	1.0	1.2	1			●		●		●	●
16ER 14 UN 2M [2]	9.52	14.0	0.09	16.49	1.6	2.6	2							●	
16ERB 14 UN [1]	9.52	14.0	0.23	16.49	1.0	1.2	1							●	
16ERM 14 UN [1]	9.52	14.0	0.22	16.49	1.0	1.2	1			●			●	●	●
16ER/L 13 UN	9.52	13.0	0.24	16.49	1.0	1.2	1			●				●	
16ERB 13 UN [1]	9.52	13.0	0.25	16.49	0.9	1.2	1							●	
16ERM 13 UN [1]	9.52	13.0	0.24	16.49	1.0	1.3	1							●	
16ER/L 12 UN	9.52	12.0	0.27	16.49	1.1	1.2	1			●	●			●	●
16ER 12 UN 2M [2]	9.52	12.0	0.27	16.49	2.2	3.4	2							●	
16ERB 12 UN [1]	9.52	12.0	0.27	16.49	0.9	1.2	1							●	
16ERM 12 UN [1]	9.52	12.0	0.25	16.49	1.1	1.4	1		●	●			●	●	●
16ER 11.5 UN	9.52	11.5	0.27	16.49	1.2	1.5	1							●	
16ER/L 11 UN	9.52	11.0	0.28	16.49	1.1	1.5	1			●				●	
16ERB 11 UN [1]	9.52	11.0	0.29	16.49	1.1	1.5	1							●	
16ER/L 10 UN	9.52	10.0	0.32	16.49	1.1	1.5	1			●				●	●
16ERB 10 UN [1]	9.52	10.0	0.32	16.49	1.1	1.5	1							●	
16ER 9 UN	9.52	9.0	0.35	16.49	1.3	1.6	1							●	
16ERB 9 UN [1]	9.52	9.0	0.35	16.49	1.3	1.6	1							●	
16ER/L 8 UN	9.52	8.0	0.40	16.49	1.2	1.6	1			●				●	●
16ERB 8 UN [1]	9.52	8.0	0.40	16.49	1.2	1.6	1							●	
16ERM 8 UN [1]	9.52	8.0	0.41	16.49	1.2	1.6	1			●				●	

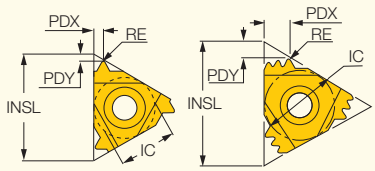
- For Insert Identification System, see pages 33-34 • Tolerance: Class 2A • For threading between walls use GRIP-type insert TIP-UN
- For technical information and detailed cutting data, see pages 146-149 • For recommended number of passes for see pages 119-121
- Anvils for Laydown Inserts, see pages 36-43

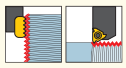
[1] With pressed chipformer. [2] Multi-tooth [3] Threads per inch [4] Number of teeth per corner

ISCARTHREAD

(continued)
ER/L-UN
External American UN Full Profile (UN, UNC, UNF, UNEF) Laydown Threading Inserts for General Industry

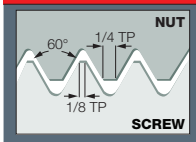






External right-hand shown

M E T R I C



Designation	Dimensions IC	TPI[3]	RE	INSL	PDY	PDX	CICT[4]	Tough ↔ Hard IC228	IC50M	IC250	IC08	IC508	IC808	IC908	IC1007
22ER 12 UN 2M [2]	12.70	12.0	0.27	22.00	2.2	3.4	2							●	
22ER 12 UN 3M [2]	12.70	12.0	0.27	22.00	3.2	5.2	3		●					●	
22ER 7 UN	12.70	7.0	0.47	22.00	1.6	2.3	1							●	
22ER 6 UN	12.70	6.0	0.56	22.00	1.6	2.3	1							●	
22ER 5 UN	12.70	5.0	0.67	22.00	1.7	2.5	1		●	●				●	
27ER 8 UN 2M [2]	15.88	8.0	0.41	27.50	3.1	4.9	2							●	
27ER 4.5 UN	15.88	4.5	0.75	27.50	1.9	2.7	1							●	
27ER 4 UN	15.88	4.0	0.85	27.50	0.7	0.8	1		●	●				●	

- For Insert Identification System, see pages 33-34 • Tolerance: Class 2A • For threading between walls use GRIP-type insert TIP-UN
- For technical information and detailed cutting data, see pages 146-149 • For recommended number of passes for see pages 119-121
- Anvils for Laydown Inserts, see pages 36-43

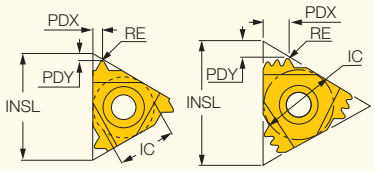
[1] With pressed chipformer. [2] Multi-tooth [3] Threads per inch [4] Number of teeth per corner

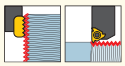
ISCARTHREAD

ER/L-UN

External American UN Full Profile (UN, UNC, UNF, UNEF) Laydown Threading Inserts for General Industry

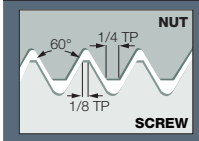






External right-hand shown

I N C H



Designation	Dimensions							Tough ↔ Hard							
	IC	TPI[3]	RE	INSL	PDY	PDX	CICT[4]	IC228	IC50M	IC250	IC08	IC508	IC808	IC908	IC1007
11ER 44 UN	.250	44.0	.0020	.433	.02	.02	1							●	
11ER 32 UN	.250	32.0	.0039	.433	.02	.02	1							●	
11ER 28 UN	.250	28.0	.0039	.433	.02	.03	1							●	
11ER 24 UN	.250	24.0	.0047	.433	.03	.03	1							●	
11ER/L 20 UN	.250	20.0	.0059	.433	.03	.04	1							●	
11ER 18 UN	.250	18.0	.0067	.433	.03	.04	1							●	
11ER 16 UN	.250	16.0	.0071	.433	.04	.04	1		●	●				●	
16ER 72 UN	.375	72.0	.0016	.649	.03	.02	1							●	
16ER 56 UN	.375	56.0	.0024	.649	.03	.02	1							●	
16ER 48 UN	.375	48.0	.0020	.649	.02	.02	1							●	
16ER 40 UN	.375	40.0	.0024	.649	.02	.02	1					●		●	
16EL 36 UN	.375	36.0	.0027	.649	.02	.02	1							●	
16ER 36 UN	.375	36.0	.0031	.649	.02	.02	1							●	
16EL 32 UN	.375	32.0	.0039	.649	.02	.02	1							●	
16ER 32 UN	.375	32.0	.0039	.649	.02	.02	1			●				●	●
16EL 28 UN	.375	28.0	.0043	.649	.02	.03	1							●	
16ER 28 UN	.375	28.0	.0043	.649	.02	.03	1			●				●	●
16ER 27 UN	.375	27.0	.0039	.649	.03	.03	1		●						
16EL 24 UN	.375	24.0	.0051	.649	.03	.03	1							●	
16ER 24 UN	.375	24.0	.0051	.649	.03	.03	1			●				●	●
16ERB 24 UN [1]	.375	24.0	.0051	.649	.03	.03	1							●	
16ERM 24 UN [1]	.375	24.0	.0043	.649	.03	.03	1			●				●	●
16EL 20 UN	.375	20.0	.0063	.649	.04	.03	1				●			●	
16ER 20 UN	.375	20.0	.0063	.649	.03	.04	1			●	●			●	●
16ERB 20 UN [1]	.375	20.0	.0063	.649	.03	.04	1							●	
16ERM 20 UN [1]	.375	20.0	.0055	.649	.03	.04	1			●			●	●	●
16EL 18 UN	.375	18.0	.0067	.649	.03	.03	1							●	
16ER 18 UN	.375	18.0	.0067	.649	.03	.03	1		●	●				●	●
16ERB 18 UN [1]	.375	18.0	.0071	.649	.03	.03	1							●	
16ERM 18 UN [1]	.375	18.0	.0059	.649	.03	.04	1			●			●	●	●
16EL 16 UN	.375	16.0	.0079	.649	.04	.05	1							●	
16ER 16 UN	.375	16.0	.0079	.649	.04	.05	1	●		●				●	●
16ER 16 UN 2M [2]	.375	16.0	.0035	.649	.06	.09	2							●	
16ERB 16 UN [1]	.375	16.0	.0079	.649	.04	.05	1							●	
16ERM 16 UN [1]	.375	16.0	.0075	.649	.04	.04	1			●			●	●	●
16EL 14 UN	.375	14.0	.0087	.649	.04	.05	1			●		●			
16ER 14 UN	.375	14.0	.0091	.649	.04	.05	1			●				●	●
16ER 14 UN 2M [2]	.375	14.0	.0035	.649	.06	.10	2							●	
16ERB 14 UN [1]	.375	14.0	.0091	.649	.04	.05	1							●	
16ERM 14 UN [1]	.375	14.0	.0087	.649	.04	.05	1			●			●	●	●
16EL 13 UN	.375	13.0	.0094	.649	.04	.05	1							●	
16ER 13 UN	.375	13.0	.0094	.649	.04	.05	1			●				●	
16ERB 13 UN [1]	.375	13.0	.0098	.649	.04	.05	1							●	
16ERM 13 UN [1]	.375	13.0	.0094	.649	.04	.05	1							●	
16EL 12 UN	.375	12.0	.0106	.649	.04	.05	1			●				●	
16ER 12 UN	.375	12.0	.0106	.649	.04	.05	1			●	●			●	●
16ER 12 UN 2M [2]	.375	12.0	.0106	.649	.09	.13	2							●	

- For Insert Identification System, see pages 33-34 • Tolerance: Class 2A • For threading between walls use GRIP-type insert TIP-UN
- For technical information and detailed cutting data, see pages 146-149 • For recommended number of passes for see pages 119-121
- Anvils for Laydown Inserts, see pages 36-43

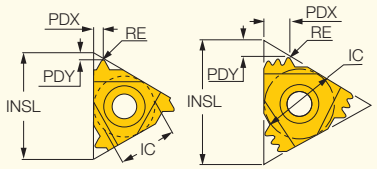
[1] With pressed chipformer.
[2] Multi-tooth
[3] Threads per inch
[4] Number of teeth per corner

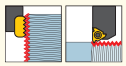
For tools, see pages: C#-SER/L (264) • MTET Single Point (431) • SER-D (265) • SER/L (262) • SER/L-JHP-MC (265)

ISCARTHREAD

(continued)
ER/L-UN
External American UN Full Profile (UN, UNC, UNF, UNEF) Laydown Threading Inserts for General Industry

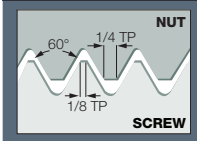






External right-hand shown

I N C H



Designation	Dimensions IC	TPI[3]	RE	INSL	PDY	PDX	CICT[4]	Tough ↔ Hard IC228	IC50M	IC250	IC08	IC508	IC808	IC908	IC1007
16ERB 12 UN [1]	.375	12.0	.0106	.649	.04	.05	1							●	
16ERM 12 UN [1]	.375	12.0	.0098	.649	.04	.06	1		●	●			●	●	●
16ER 11.5 UN	.375	11.5	.0106	.649	.05	.06	1							●	
16EL 11 UN	.375	11.0	.0110	.649	.04	.06	1							●	
16ER 11 UN	.375	11.0	.0114	.649	.04	.06	1			●				●	
16ERB 11 UN [1]	.375	11.0	.0114	.649	.04	.06	1							●	
16EL 10 UN	.375	10.0	.0126	.649	.04	.06	1							●	
16ER 10 UN	.375	10.0	.0126	.649	.04	.06	1			●				●	●
16ERB 10 UN [1]	.375	10.0	.0126	.649	.04	.06	1							●	
16ERM 10 UN	.375	10.0	.0126	.649	.04	.06	1							●	
16ER 9 UN	.375	9.0	.0138	.649	.05	.06	1							●	
16ERB 9 UN [1]	.375	9.0	.0138	.649	.05	.06	1							●	
16EL 8 UN	.375	8.0	.0157	.649	.05	.06	1							●	
16ER 8 UN	.375	8.0	.0157	.649	.05	.06	1			●				●	●
16ERB 8 UN [1]	.375	8.0	.0157	.649	.05	.06	1							●	
16ERM 8 UN [1]	.375	8.0	.0161	.649	.05	.06	1			●				●	
22ER 12 UN 2M [2]	.500	12.0	.0106	.866	.09	.13	2							●	
22ER 12 UN 3M [2]	.500	12.0	.0106	.866	.13	.20	3		●					●	
22ER 7 UN	.500	7.0	.0185	.866	.06	.09	1							●	
22ER 6 UN	.500	6.0	.0220	.866	.06	.09	1							●	
22ER 5 UN	.500	5.0	.0264	.866	.07	.10	1		●	●				●	
27ER 8 UN 2M [2]	.625	8.0	.0161	1.083	.12	.19	2							●	
27ER 4.5 UN	.625	4.5	.0295	1.083	.07	.11	1							●	
27ER 4 UN	.625	4.0	.0335	1.083	.03	.03	1		●	●				●	

- For Insert Identification System, see pages 33-34 • Tolerance: Class 2A • For threading between walls use GRIP-type insert TIP-UN
- For technical information and detailed cutting data, see pages 146-149 • For recommended number of passes for see pages 119-121
- Anvils for Laydown Inserts, see pages 36-43

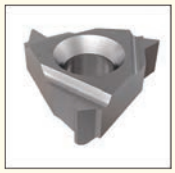
[1] With pressed chipformer.
[2] Multi-tooth
[3] Threads per inch
[4] Number of teeth per corner

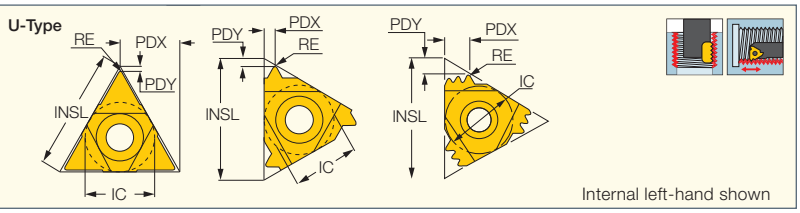
For tools, see pages: C#-SER/L (264) • MTET Single Point (431) • SER-D (265) • SER/L (262) • SER/L-JHP-MC (265)

ISCARTHREAD

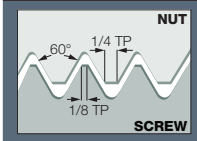
IR/L-UN

Internal American UN Full Profile (UN, UNC, UNF, UNEF) Laydown Threading Inserts for General Industry





M E T R I C



Designation	Dimensions IC	TPI[4]	RE	INSL	PDY	PDX	CICT[5]	Tough ↔ Hard IC228	IC928	IC50M	IC250	IC08	IC508	IC808	IC908	IC1007
06IR 32 UN	4.00	32.0	0.04	6.88	0.8	0.5	1	•								
06IR/L 24 UN	4.00	24.0	0.05	6.88	0.7	0.6	1	•								
06IR 20 UN	4.00	20.0	0.09	6.88	0.6	0.6	1	•								
06IR/L 18 UN	4.00	18.0	0.07	6.88	0.6	0.7	1	•								
08IR 32 UN	5.00	32.0	0.04	8.24	0.6	0.5	1	•								
08IR/L 28 UN	5.00	28.0	0.04	8.24	0.6	0.6	1	•								
08IR/L 24 UN	5.00	24.0	0.05	8.24	0.6	0.6	1	•								
08IR/L 20 UN	5.00	20.0	0.08	8.24	0.7	0.7	1	•								
08IR 18 UN	5.00	18.0	0.08	8.24	0.8	0.7	1	•								
08IR 16 UN	5.00	16.0	0.09	8.24	0.6	0.7	1	•								
08IR 14 UN	5.00	14.0	0.10	8.24	0.6	0.8	1	•							•	
08UIRL 13 UN	5.00	13.0	0.10	8.24	1.0	4.0	1								•	
08UIRL 12 UN	5.00	12.0	0.10	8.24	0.9	4.0	1		•							
08UIRL 11 UN	5.00	11.0	0.10	8.24	0.9	4.0	1	•								
11IR/L 32 UN	6.35	32.0	0.04	11.00	0.6	0.6	1								•	
11IRB 32 UN	6.35	32.0	0.04	11.00	0.6	0.6	1								•	
11IR/L 28 UN	6.35	28.0	0.04	11.00	0.6	0.7	1								•	
11IRB 28 UN	6.35	28.0	0.05	11.00	0.6	0.6	1								•	
11IR/L 24 UN	6.35	24.0	0.07	11.00	0.8	0.8	1								•	
11IRB 24 UN	6.35	24.0	0.07	11.00	0.6	0.6	1								•	
11IR/L 20 UN	6.35	20.0	0.09	11.00	0.8	0.9	1								•	
11IRB 20 UN	6.35	20.0	0.09	11.00	0.8	0.9	1								•	
11IR/L 18 UN	6.35	18.0	0.10	11.00	0.9	1.0	1				•				•	•
11IRB 18 UN	6.35	18.0	0.10	11.00	0.9	0.9	1								•	
11IR/L 16 UN	6.35	16.0	0.11	11.00	0.9	1.0	1								•	•
11IRB 16 UN	6.35	16.0	0.11	11.00	0.9	0.9	1								•	
11IR/L 14 UN	6.35	14.0	0.10	11.00	0.9	1.1	1			•					•	
11IRB 14 UN	6.35	14.0	0.13	11.00	0.9	0.9	1								•	
11IR 12 UN	6.35	12.0	0.12	11.00	0.9	1.1	1				•				•	
11IRB 12 UN	6.35	12.0	0.13	11.00	0.9	0.9	1								•	
11IR 11 UN	6.35	11.0	0.14	11.00	0.8	0.9	1				•				•	
16IR 32 UN	9.52	32.0	0.04	16.49	0.6	0.6	1				•				•	
16IR/L 28 UN	9.52	28.0	0.04	16.49	0.6	0.7	1								•	
16IR 24 UN	9.52	24.0	0.07	16.49	0.7	0.8	1								•	
16IRB 24 UN [1]	9.52	24.0	0.07	16.49	0.7	0.8	1								•	
16IR/L 20 UN	9.52	20.0	0.06	16.49	0.8	0.9	1				•	•			•	•
16IRB 20 UN [1]	9.52	20.0	0.09	16.49	0.8	0.8	1								•	
16IRM 20 UN [1]	9.52	20.0	0.06	16.49	0.8	0.9	1								•	•
16IR/L 18 UN	9.52	18.0	0.08	16.49	0.7	0.8	1				•				•	
16IRB 18 UN [1]	9.52	18.0	0.08	16.49	0.7	0.8	1								•	
16IRM 18 UN [1]	9.52	18.0	0.08	16.49	0.8	1.0	1							•	•	
16IR/L 16 UN	9.52	16.0	0.11	16.49	1.0	1.1	1				•				•	
16IR 16 UN-2M [2]	9.52	16.0	0.09	16.49	1.5	2.3	2						•		•	
16IRB 16 UN [3]	9.52	16.0	0.11	16.49	0.9	1.1	1								•	
16IRM 16 UN [1]	9.52	16.0	0.09	16.49	0.9	1.1	1				•				•	•
16IR/L 14 UN	9.52	14.0	0.13	16.49	0.9	1.1	1								•	
16IRB 14 UN [1]	9.52	14.0	0.13	16.49	0.9	1.1	1								•	

- For Insert Identification System, see pages 33-34 • Tolerance: class 2B,ANSI B1, 3M-1986. • For technical information and detailed cutting data, see pages 146-149
- For recommended number of passes for see pages 119-121
- Anvils for Laydown Inserts, see pages 36-43

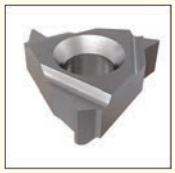
[1] With pressed chipformer
[2] Multi-tooth
[3] With pressed chipformer.
[4] Threads per inch
[5] Number of teeth per corner

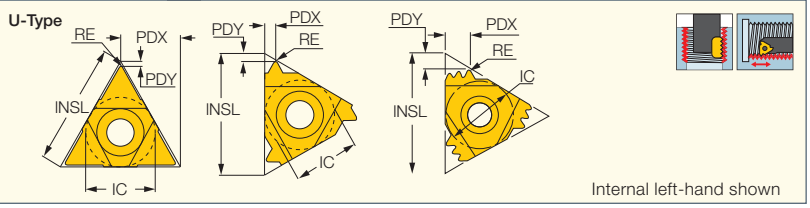
ISCARTHREAD

(continued)

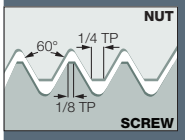
IR/L-UN

Internal American UN Full Profile (UN, UNC, UNF, UNEF) Laydown Threading Inserts for General Industry





M E T R I C



Designation	Dimensions IC	TPI[4]	RE	INSL	PDY	PDX	CICT[5]	Tough ↔ Hard IC228	IC928	IC50M	IC250	IC08	IC508	IC808	IC908	IC1007
16IRM 14 UN [1]	9.52	14.0	0.11	16.49	0.9	1.2	1				●			●	●	●
16IR/L 12 UN	9.52	12.0	0.13	16.49	1.0	1.1	1				●	●			●	●
16IRB 12 UN [1]	9.52	12.0	0.13	16.49	1.0	1.1	1								●	
16IRM 12 UN [1]	9.52	12.0	0.12	16.49	1.1	1.4	1				●			●	●	●
16IR 11.5 UN	9.52	11.5	0.14	16.49	1.0	1.1	1								●	
16IR 11 UN	9.52	11.0	0.14	16.49	1.0	1.1	1								●	
16IR/L 10 UN	9.52	10.0	0.15	16.49	1.1	1.5	1				●				●	
16IRB 10 UN [1]	9.52	10.0	0.15	16.49	1.1	1.5	1								●	
16IR 9 UN	9.52	9.0	0.17	16.49	1.2	1.7	1								●	
16IR/L 8 UN	9.52	8.0	0.23	16.49	1.1	1.5	1				●				●	●
16IRB 8 UN [1]	9.52	8.0	0.23	16.49	1.1	1.5	1								●	
16IRM 8 UN [1]	9.52	8.0	0.20	16.49	1.1	1.5	1				●			●	●	●
22IR 16 UN 3M [2]	12.70	16.0	0.07	22.00	2.5	4.0	3								●	
22IR 12 UN 2M [2]	12.70	12.0	0.09	22.00	2.3	3.4	2								●	
22IR 12 UN 3M [2]	12.70	12.0	0.13	22.00	3.2	5.2	3								●	
22IR/L 7 UN	12.70	7.0	0.22	22.00	1.6	2.3	1	●							●	
22IR 6 UN	12.70	6.0	0.26	22.00	1.6	2.3	1								●	
22IR 5 UN	12.70	5.0	0.32	22.00	1.6	2.3	1				●				●	
27IR 8 UN 2M [2]	15.88	8.0	0.19	27.50	3.1	4.9	2								●	
27IR 4.5 UN	15.88	4.5	0.36	27.50	1.7	2.4	1				●					
27IR 4 UN	15.88	4.0	0.43	27.50	1.9	2.5	1								●	

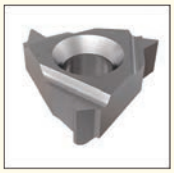
- For Insert Identification System, see pages 33-34 • Tolerance: class 2B,ANSI B1, 3M-1986. • For technical information and detailed cutting data, see pages 146-149
- For recommended number of passes for see pages 119-121
- Anvils for Laydown Inserts, see pages 36-43

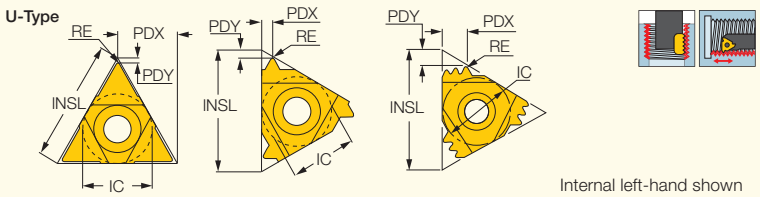
[1] With pressed chipformer
[2] Multi-tooth
[3] With pressed chipformer.
[4] Threads per inch
[5] Number of teeth per corner

ISCARTHREAD

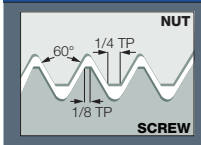
IR/L-UN

Internal American UN Full Profile (UN, UNC, UNF, UNEF) Laydown Threading Inserts for General Industry





I N C H



Designation	Dimensions IC	TPI[4]	RE	INSL	PDY	PDX	CICT[5]	Tough ↔ Hard IC228	IC928	IC50M	IC250	IC08	IC508	IC808	IC908	IC1007
06IR 32 UN	.157	32.0	.0016	.271	.03	.02	1	•								
06IL 24 UN	.157	24.0	.0020	.271	.03	.02	1	•								
06IR 24 UN	.157	24.0	.0031	.271	.02	.02	1	•								
06IR 20 UN	.157	20.0	.0035	.271	.02	.02	1	•								
06IL 18 UN	.157	18.0	.0027	.271	.02	.03	1	•								
06IR 18 UN	.157	18.0	.0039	.271	.02	.03	1	•								
08IR 32 UN	.197	32.0	.0016	.324	.02	.02	1	•								
08IL 28 UN	.197	28.0	.0016	.324	.02	.02	1	•								
08IR 28 UN	.197	28.0	.0020	.324	.02	.02	1	•								
08IL 24 UN	.197	24.0	.0020	.324	.02	.02	1	•								
08IR 24 UN	.197	24.0	.0029	.324	.03	.03	1	•								
08IR/L 20 UN	.197	20.0	.0031	.324	.03	.03	1	•								
08IR 18 UN	.197	18.0	.0031	.324	.03	.03	1	•								
08IR 16 UN	.197	16.0	.0035	.324	.02	.03	1	•								
08IR 14 UN	.197	14.0	.0039	.324	.02	.03	1	•							•	
08UIRL 13 UN	.197	13.0	.0039	.324	.04	.16	1								•	
08UIRL 12 UN	.197	12.0	.0039	.324	.04	.16	1		•							
08UIRL 11 UN	.197	11.0	.0039	.324	.04	.16	1	•								
11IL 32 UN	.250	32.0	.0016	.433	.02	.02	1								•	
11IR 32 UN	.250	32.0	.0019	.433	.02	.02	1								•	
11IRB 32 UN	.250	32.0	.0017	.433	.02	.02	1								•	
11IL 28 UN	.250	28.0	.0016	.433	.02	.03	1								•	
11IR 28 UN	.250	28.0	.0019	.433	.02	.02	1								•	
11IRB 28 UN	.250	28.0	.0019	.433	.02	.02	1								•	
11IR/L 24 UN	.250	24.0	.0029	.433	.03	.03	1								•	
11IRB 24 UN	.250	24.0	.0029	.433	.02	.02	1								•	
11IR/L 20 UN	.250	20.0	.0035	.433	.03	.04	1								•	
11IRB 20 UN	.250	20.0	.0035	.433	.03	.04	1								•	
11IL 18 UN	.250	18.0	.0039	.433	.04	.04	1								•	
11IR 18 UN	.250	18.0	.0027	.433	.03	.04	1				•				•	•
11IRB 18 UN	.250	18.0	.0039	.433	.04	.04	1								•	
11IL 16 UN	.250	16.0	.0044	.433	.04	.04	1								•	
11IR 16 UN	.250	16.0	.0044	.433	.04	.04	1								•	•
11IRB 16 UN	.250	16.0	.0044	.433	.04	.04	1								•	
11IL 14 UN	.250	14.0	.0039	.433	.04	.04	1								•	
11IR 14 UN	.250	14.0	.0051	.433	.04	.04	1			•					•	
11IRB 14 UN	.250	14.0	.0050	.433	.04	.04	1								•	
11IR 12 UN	.250	12.0	.0047	.433	.04	.04	1				•				•	
11IRB 12 UN	.250	12.0	.0051	.433	.04	.04	1								•	
11IR 11 UN	.250	11.0	.0055	.433	.03	.04	1				•				•	
16IR 32 UN	.375	32.0	.0016	.649	.02	.02	1				•				•	
16IL 28 UN	.375	28.0	.0016	.649	.02	.03	1								•	
16IR 28 UN	.375	28.0	.0020	.649	.02	.02	1								•	
16IR 24 UN	.375	24.0	.0029	.649	.03	.03	1								•	
16IRB 24 UN [1]	.375	24.0	.0028	.649	.03	.03	1								•	
16IL 20 UN	.375	20.0	.0024	.649	.03	.04	1				•				•	
16IR 20 UN	.375	20.0	.0036	.649	.03	.04	1					•			•	•

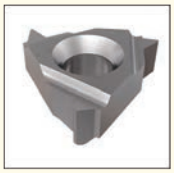
- For Insert Identification System, see pages 33-34 • Tolerance: class 2B,ANSI B1, 3M-1986. • For technical information and detailed cutting data, see pages 146-149
- For recommended number of passes for see pages 119-121
- Anvils for Laydown Inserts, see pages 36-43

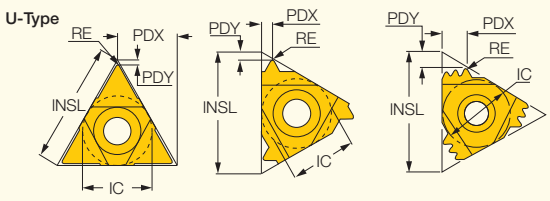
(1) With pressed chipformer
(2) Multi-tooth
(3) With pressed chipformer.
(4) Threads per inch
(5) Number of teeth per corner

For tools, see pages: AVC-D-SIR/L (271) • MGSIR/L (271) • MTET Single Point (431) • SIR/L (266)

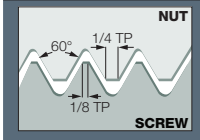
ISCARTHREAD

(continued)
IR/L-UN
Internal American UN Full Profile (UN, UNC, UNF, UNEF) Laydown Threading Inserts for General Industry





I N C H



Designation	Dimensions IC	TPI[4]	RE	INSL	PDY	PDX	CICT[5]	Tough ↔ Hard IC228	IC928	IC50M	IC250	IC08	IC508	IC808	IC908	IC1007
16IRB 20 UN [1]	.375	20.0	.0035	.649	.03	.03	1								●	
16IRM 20 UN [1]	.375	20.0	.0024	.649	.03	.04	1								●	●
16IL 18 UN	.375	18.0	.0031	.649	.03	.03	1								●	
16IR 18 UN	.375	18.0	.0031	.649	.03	.03	1				●				●	
16IRB 18 UN [1]	.375	18.0	.0031	.649	.03	.03	1								●	
16IRM 18 UN [1]	.375	18.0	.0031	.649	.03	.04	1							●	●	
16IL 16 UN	.375	16.0	.0044	.649	.04	.05	1								●	
16IR 16 UN	.375	16.0	.0044	.649	.04	.05	1				●				●	
16IR 16 UN 2M [2]	.375	16.0	.0035	.649	.06	.09	2						●		●	
16IRB 16 UN [3]	.375	16.0	.0043	.649	.04	.05	1								●	
16IRM 16 UN [1]	.375	16.0	.0035	.649	.04	.04	1				●				●	●
16IR/L 14 UN	.375	14.0	.0051	.649	.04	.05	1								●	
16IRB 14 UN [1]	.375	14.0	.0051	.649	.04	.05	1								●	
16IRM 14 UN [1]	.375	14.0	.0043	.649	.04	.05	1				●			●	●	●
16IL 12 UN	.375	12.0	.0051	.649	.04	.04	1								●	
16IR 12 UN	.375	12.0	.0051	.649	.04	.04	1				●	●			●	●
16IRB 12 UN [1]	.375	12.0	.0052	.649	.04	.05	1								●	
16IRM 12 UN [1]	.375	12.0	.0047	.649	.04	.06	1				●			●	●	●
16IR 11.5 UN	.375	11.5	.0055	.649	.04	.04	1								●	
16IR 11 UN	.375	11.0	.0055	.649	.04	.04	1								●	
16IL 10 UN	.375	10.0	.0059	.649	.04	.06	1								●	
16IR 10 UN	.375	10.0	.0059	.649	.04	.06	1				●				●	
16IRB 10 UN [1]	.375	10.0	.0059	.649	.04	.06	1								●	
16IR 9 UN	.375	9.0	.0067	.649	.05	.07	1								●	
16IL 8 UN	.375	8.0	.0089	.649	.04	.06	1								●	
16IR 8 UN	.375	8.0	.0089	.649	.04	.06	1				●				●	●
16IRB 8 UN [1]	.375	8.0	.0091	.649	.04	.06	1								●	
16IRM 8 UN [1]	.375	8.0	.0079	.649	.04	.06	1				●			●	●	●
22IR 16 UN 3M [2]	.500	16.0	.0028	.866	.10	.16	3								●	
22IR 12 UN 2M [2]	.500	12.0	.0035	.866	.09	.13	2								●	
22IR 12 UN 3M [2]	.500	12.0	.0051	.866	.13	.20	3								●	
22IL 7 UN	.500	7.0	.0087	.866	.06	.09	1								●	
22IR 7 UN	.500	7.0	.0087	.866	.06	.09	1	●							●	
22IR 6 UN	.500	6.0	.0102	.866	.06	.09	1								●	
22IR 5 UN	.500	5.0	.0126	.866	.06	.09	1				●				●	
27IR 8 UN 2M [2]	.625	8.0	.0075	1.083	.12	.19	2								●	
27IR 4.5 UN	.625	4.5	.0142	1.083	.07	.09	1				●					
27IR 4 UN	.625	4.0	.0169	1.083	.07	.10	1								●	

- For Insert Identification System, see pages 33-34 • Tolerance: class 2B,ANSI B1, 3M-1986. • For technical information and detailed cutting data, see pages 146-149
- For recommended number of passes for see pages 119-121
- Anvils for Laydown Inserts, see pages 36-43

[1] With pressed chipformer
[2] Multi-tooth
[3] With pressed chipformer.
[4] Threads per inch
[5] Number of teeth per corner

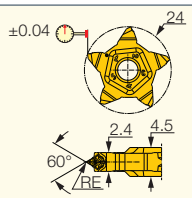
For tools, see pages: AVC-D-SIR/L (271) • MGSIR/L (271) • MTET Single Point (431) • SIR/L (266)

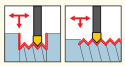
PENTACUT THREADING LINE

PENTA 24-UN

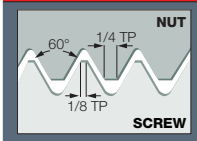
American UN (UNC, UNF, UNEF) Precision Ground Full Profile Pentagonal External Inserts with a Chipformer







M E T R I C



Designation	Dimensions TPI(1)	RE	IC908
PENTA 24-24-UN	24.0	0.13	●
PENTA 24-20-UN	20.0	0.16	●
PENTA 24-18-UN	18.0	0.18	●
PENTA 24-16-UN	16.0	0.21	●
PENTA 24-14-UN	14.0	0.23	●

• DMIN(inch)=5.435/TPI • Tolerance: Class 2A

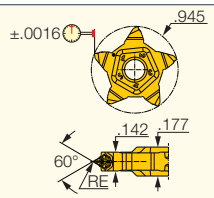
(1) Threads per inch

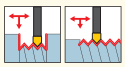
PENTACUT THREADING LINE

PENTA 24-UN

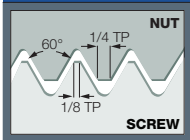
American UN (UNC, UNF, UNEF) Precision Ground Full Profile Pentagonal External Inserts with a Chipformer







I N C H



Designation	Dimensions TPI(1)	RE	IC908
PENTA 24-24-UN	24.0	.0051	●
PENTA 24-20-UN	20.0	.0063	●
PENTA 24-18-UN	18.0	.0071	●
PENTA 24-16-UN	16.0	.0083	●
PENTA 24-14-UN	14.0	.0091	●

• DMIN(inch)=5.435/TPI • Tolerance: Class 2A

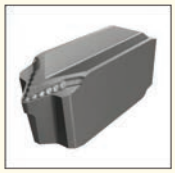
(1) Threads per inch

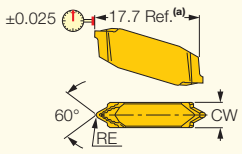
ISCARTHREAD

CUTGRIP

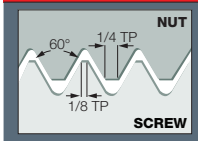
TIP-P-UN

American UN (UNC,UNF,UNEF)
Precision Ground External Double-Ended Full Profile Threading
Inserts with a Chipformer





M E T R I C



Designation	Dimensions CW	RE	RETOL(1)	TPI(2)	Tough ↔ Hard IC08	IC808	IC908
TIP 2P32-UN	2.40	0.10	0.030	32.0	•		•
TIP 2P28-UN	2.40	0.11	0.030	28.0	•		•
TIP 2P24-UN	2.40	0.13	0.030	24.0	•		•
TIP 2P20-UN	2.40	0.16	0.030	20.0	•		•
TIP 2P18-UN	2.40	0.18	0.030	18.0	•		•
TIP 2P16-UN	2.40	0.20	0.030	16.0	•		•
TIP 2P14-UN	2.40	0.23	0.030	14.0	•		•
TIP 2P13-UN	2.40	0.25	0.030	13.0	•		•
TIP 2P12-UN	2.40	0.27	0.030	12.0	•		•
TIP 4P11-UN	4.00	0.30	0.030	11.0			•
TIP 4P10-UN	4.00	0.33	0.050	10.0		•	•
TIP 4P08-UN	4.00	0.41	0.050	8.0			•

• (a) TIP inserts are 1.6 mm longer than GIP in the same pocket • Toolholder seat needs to be modified according to insert profile to ensure clearance

(1) Corner radius tolerance (+/-)

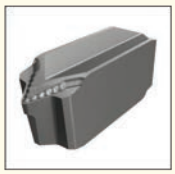
(2) Threads per inch

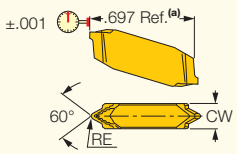
ISCARTHREAD

CUTGRIP

TIP-P-UN

American UN (UNC,UNF,UNEF)
Precision Ground External Double-Ended Full Profile Threading
Inserts with a Chipformer





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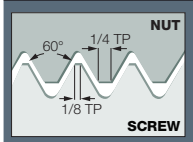


Designation	Dimensions CW	RE	RETOL(1)	TPI(2)	Tough ↔ Hard IC08	IC808	IC908
TIP 2P32-UN	.094	.0039	.0012	32.0	•		•
TIP 2P28-UN	.094	.0043	.0012	28.0	•		•
TIP 2P24-UN	.094	.0051	.0012	24.0	•		•
TIP 2P20-UN	.094	.0063	.0012	20.0	•		•
TIP 2P18-UN	.094	.0071	.0012	18.0	•		•
TIP 2P16-UN	.094	.0079	.0012	16.0	•		•
TIP 2P14-UN	.094	.0091	.0012	14.0	•		•
TIP 2P13-UN	.094	.0098	.0012	13.0	•		•
TIP 2P12-UN	.094	.0106	.0012	12.0	•		•
TIP 4P11-UN	.157	.0118	.0012	11.0			•
TIP 4P10-UN	.157	.0130	.0020	10.0		•	•
TIP 4P08-UN	.157	.0161	.0020	8.0			•

• (a) TIP inserts are .063" longer than GIP in the same pocket • Toolholder seat needs to be modified according to insert profile to ensure clearance

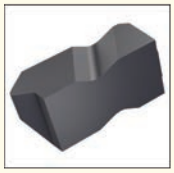
(1) Corner radius tolerance (+/-)

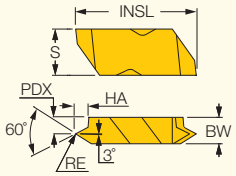
(2) Threads per inch

NOTCH GRIP
GROOVE-TURN LINE
ISCAR THREAD

UN THREADING FLTC-E

Double-Ended, Precision, Flat Top Full Profile Threading Inserts,

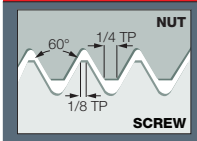






Right-hand shown

M E T R I C



Designation	Dimensions INSL	S	BW	PDX	HA	RE	TPI[1]	IC908
FLTC-3R/L7E	22.60	8.74	4.95	2.70	2.74	0.43	7.0	•
FLTC-3R/L8E	22.60	8.74	4.95	2.70	2.39	0.38	8.0	•
FLTC-3R/L9E	22.60	8.74	4.95	2.70	2.13	0.33	9.0	•
FLTC-3R/L10E	22.60	8.74	4.95	2.70	1.93	0.30	10.0	•
FLTC-3R/L11E	22.60	8.74	4.95	2.70	1.75	0.28	11.0	•
FLTC-3R/L12E	22.60	8.74	4.95	3.80	1.30	0.25	12.0	•
FLTC-3R/L14E	22.60	8.74	4.95	3.80	1.37	0.23	14.0	•
FLTC-3R/L16E	22.60	8.74	4.95	3.80	1.17	0.20	16.0	•
FLTC-3R/L18E	22.60	8.74	4.95	3.80	1.04	0.18	18.0	•
FLTC-3R/L20E	22.60	8.74	4.95	3.80	0.94	0.15	20.0	•
FLTC-3R/L24E	22.60	8.74	4.95	3.80	0.79	0.13	24.0	•
FLTC-3R/L28E	22.60	8.74	4.95	3.80	0.58	0.08	28.0	•
FLTC-3R/L32E	22.60	8.74	4.95	3.80	0.53	0.08	32.0	•

I N C H

Designation	Dimensions TPI[1]	RE	HA	PDX	BW	S	INSL	IC908
FLTC-3R/L7E	7.0	.0169	.108	.1063	.195	.344	.890	•
FLTC-3R/L8E	8.0	.0150	.094	.1063	.195	.344	.890	•
FLTC-3R/L9E	9.0	.0130	.084	.1063	.195	.344	.890	•
FLTC-3R/L10E	10.0	.0118	.076	.1063	.195	.344	.890	•
FLTC-3R/L11E	11.0	.0110	.069	.1063	.195	.344	.890	•
FLTC-3R/L12E	12.0	.0098	.051	.1496	.195	.344	.890	•
FLTC-3R/L14E	14.0	.0091	.054	.1496	.195	.344	.890	•
FLTC-3R/L16E	16.0	.0079	.046	.1496	.195	.344	.890	•
FLTC-3R/L18E	18.0	.0071	.041	.1496	.195	.344	.890	•
FLTC-3R/L20E	20.0	.0059	.037	.1496	.195	.344	.890	•
FLTC-3R/L24E	24.0	.0051	.031	.1496	.195	.344	.890	•
FLTC-3R/L28E	28.0	.0031	.023	.1496	.195	.344	.890	•
FLTC-3R/L32E	32.0	.0031	.021	.1496	.195	.344	.890	•

(1) Threads per inch

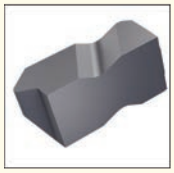
• E- external

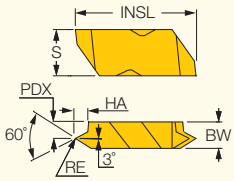
NOTCH GRIP
GROOVE-TURN LINE

ISCARTHREAD

UN THREADING FLTC-I

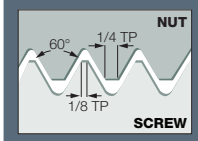
Double-Ended, Precision, Flat Top Full Profile Threading Inserts





Right-hand shown

M E T R I C



Designation	Dimensions INSL	S	BW	PDX	HA	RE	TPI[1]	IC908
FLTC-3R/L10I	22.60	8.74	4.95	2.70	1.65	0.13	10.0	●
FLTC-3R/L11I	22.60	8.74	4.95	2.70	1.50	0.13	11.0	●
FLTC-3R/L12I	22.60	8.74	4.95	3.80	1.22	0.10	12.0	●
FLTC-3R/L14I	22.60	8.74	4.95	3.76	1.12	0.08	14.0	●
FLTC-3R/L16I	22.60	8.74	4.95	3.76	1.02	0.08	16.0	●
FLTC-3R/L18I	22.60	8.74	4.95	3.76	0.91	0.08	18.0	●
FLTC-3R/L20I	22.60	8.74	4.95	3.76	0.79	0.08	20.0	●
FLTC-3R/L24I	22.60	8.74	4.95	3.76	0.66	0.08	24.0	●
FLTC-3R/L28I	22.60	8.74	4.95	3.76	0.58	0.08	28.0	●
FLTC-3R/L7I	22.60	8.74	4.95	2.70	2.34	0.23	7.0	●
FLTC-3R/L8I	22.60	8.74	4.95	2.70	2.06	0.18	8.0	●
FLTC-3R/L9I	22.60	8.74	4.95	2.70	1.83	0.15	9.0	●

I N C H

Designation	Dimensions TPI[1]	RE	HA	PDX	BW	S	INSL	IC908
FLTC-3R/L7I	7.0	.0091	.092	.1063	.195	.344	.890	●
FLTC-3R/L8I	8.0	.0071	.081	.1063	.195	.344	.890	●
FLTC-3R/L9I	9.0	.0059	.072	.1063	.195	.344	.890	●
FLTC-3R/L10I	10.0	.0051	.065	.1063	.195	.344	.890	●
FLTC-3R/L11I	11.0	.0051	.059	.1063	.195	.344	.890	●
FLTC-3R/L12I	12.0	.0039	.048	.1496	.195	.344	.890	●
FLTC-3R/L14I	14.0	.0031	.044	.1480	.195	.344	.890	●
FLTC-3R/L16I	16.0	.0031	.040	.1480	.195	.344	.890	●
FLTC-3R/L18I	18.0	.0031	.036	.1480	.195	.344	.890	●
FLTC-3R/L20I	20.0	.0031	.031	.1480	.195	.344	.890	●
FLTC-3R/L24I	24.0	.0031	.026	.1480	.195	.344	.890	●
FLTC-3R/L28I	28.0	.0031	.023	.1480	.195	.344	.890	●

[1] Threads per inch

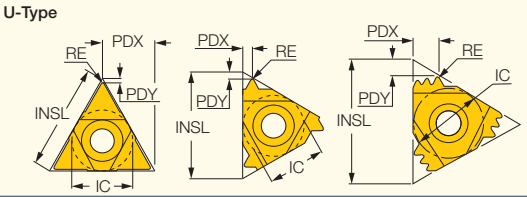
- I- Internal

Full Profile W (Whutworth BSW, BSF, BSP)

ISCARTHREAD

ER/L-W
External Whitworth (BSW, BSF, BSP) B.S.84-1956 DIN 259 Medium Class Full Profile Laydown Threading Inserts





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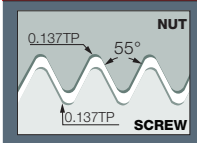


Designation	IC	TPI[3]	RE	INSL	PDY	PDX	CICT[4]	Tough ↔ Hard: IC228	IC50M	IC250	IC08	IC508	IC808	IC908	IC1007
11ER/L 19 W	6.35	19.0	0.15	11.00	0.8	1.0	1							•	
11ER 14 W	6.35	14.0	0.21	11.00	0.9	1.1	1							•	
16ER 32 W	9.52	32.0	0.09	16.49	0.6	0.6	1		•						
16ER 28 W	9.52	28.0	0.11	16.49	0.6	0.7	1			•				•	•
16ER 26 W	9.52	26.0	0.12	16.49	0.7	0.7	1							•	
16ER 24 W	9.52	24.0	0.14	16.49	0.7	0.8	1							•	
16ER 22 W	9.52	22.0	0.13	16.49	0.8	0.9	1							•	
16ER 20 W	9.52	20.0	0.16	16.49	0.7	0.8	1							•	
16ER/L 19 W	9.52	19.0	0.17	16.49	0.7	0.8	1	•		•				•	•
16ERB 19 W [1]	9.52	19.0	0.17	16.49	0.7	0.8	1							•	
16ERM 19 W [1]	9.52	19.0	0.16	16.49	0.8	1.0	1		•	•			•	•	•
16ER/L 18 W	9.52	18.0	0.17	16.49	0.9	1.2	1		•					•	
16ER 16 W	9.52	16.0	0.20	16.49	0.9	1.2	1							•	
16ERB 16 W [1]	9.52	16.0	0.20	16.49	0.9	1.2	1							•	
16ERM 16 W [1]	9.52	16.0	0.20	16.49	0.9	1.1	1			•			•	•	
16ER/L 14 W	9.52	14.0	0.23	16.49	1.0	1.2	1	•		•				•	
16ER 14 W 2M [2]	9.52	14.0	0.21	16.49	1.7	2.7	2							•	
16ERB 14 W [1]	9.52	14.0	0.23	16.49	1.0	1.2	1							•	
16ERM 14 W [1]	9.52	14.0	0.24	16.49	1.0	1.2	1		•	•			•	•	•
16ER/L 12 W	9.52	12.0	0.27	16.49	1.2	1.4	1							•	
16ER/L 11 W	9.52	11.0	0.29	16.49	1.1	1.5	1	•	•	•	•	•		•	•
16ERB 11 W [1]	9.52	11.0	0.29	16.49	1.1	1.5	1							•	
16ERM 11 W [1]	9.52	11.0	0.27	16.49	1.1	1.5	1			•		•	•	•	•
16ER 10 W	9.52	10.0	0.32	16.49	1.1	1.5	1			•				•	
16ERB 10 W [1]	9.52	10.0	0.32	16.49	1.1	1.5	1							•	
16ER 9 W	9.52	9.0	0.34	16.49	1.2	1.7	1			•					
16ER/L 8 W	9.52	8.0	0.39	16.49	1.2	1.5	1							•	
22ER 14 W 3M [2]	12.70	14.0	0.21	22.00	2.8	4.5	3							•	
22ER 11 W 2M [2]	12.70	11.0	0.09	22.00	2.2	3.4	2							•	
22ER 7 W	12.70	7.0	0.45	22.00	1.6	2.3	1							•	
22ER 6 W	12.70	6.0	0.52	22.00	1.6	2.3	1							•	
22ER 5 W	12.70	5.0	0.65	22.00	1.7	2.4	1			•					
27ER 4 W	15.88	4.0	0.85	27.50	2.0	2.9	1							•	
27UEIRL 3.5 W	15.88	3.5	0.95	27.50	2.1	13.7	1							•	

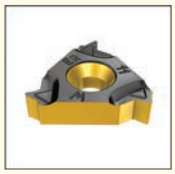
- For Insert Identification System, see pages 33-34 • For threading between walls use GRIP-type insert TIP-BSW • Tolerance: medium class
- For technical information and detailed cutting data, see pages 146-149 • For recommended number of passes for see pages 119-121
- Anvils for Laydown Inserts, see pages 36-43

(1) With pressed chipformer
(2) Multi-tooth
(3) Threads per inch
(4) Number of teeth per corner

ISCARTHREAD

ER/L-W

External Whitworth (BSW, BSF, BSP) B.S.84-1956 DIN 259 Medium Class Full Profile Laydown Threading Inserts



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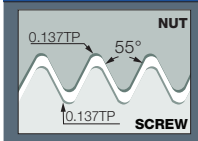


Designation	Dimensions IC	TPI[3]	RE	INSL	PDY	PDX	CICT[4]	Tough ↔ Hard IC228	IC50M	IC250	IC08	IC508	IC808	IC908	IC1007
11ER/L 19 W	.250	19.0	.0059	.433	.03	.04	1							●	
11ER 14 W	.250	14.0	.0083	.433	.04	.04	1							●	
16ER 32 W	.375	32.0	.0035	.649	.02	.02	1		●						
16ER 28 W	.375	28.0	.0043	.649	.02	.03	1			●				●	●
16ER 26 W	.375	26.0	.0047	.649	.03	.03	1							●	
16ER 24 W	.375	24.0	.0055	.649	.03	.03	1							●	
16ER 22 W	.375	22.0	.0051	.649	.03	.04	1							●	
16ER 20 W	.375	20.0	.0063	.649	.03	.03	1							●	
16EL 19 W	.375	19.0	.0067	.649	.03	.03	1							●	
16ER 19 W	.375	19.0	.0067	.649	.03	.03	1	●		●				●	●
16ERB 19 W [1]	.375	19.0	.0067	.649	.03	.03	1							●	
16ERM 19 W [1]	.375	19.0	.0063	.649	.03	.04	1		●	●			●	●	●
16EL 18 W	.375	18.0	.0067	.649	.04	.05	1							●	
16ER 18 W	.375	18.0	.0067	.649	.04	.05	1		●					●	
16ER 16 W	.375	16.0	.0079	.649	.04	.05	1							●	
16ERB 16 W [1]	.375	16.0	.0079	.649	.04	.05	1							●	
16ERM 16 W [1]	.375	16.0	.0079	.649	.04	.04	1			●			●	●	
16EL 14 W	.375	14.0	.0091	.649	.04	.05	1							●	
16ER 14 W	.375	14.0	.0091	.649	.04	.05	1	●		●				●	
16ER 14 W 2M [2]	.375	14.0	.0083	.649	.07	.11	2							●	
16ERB 14 W [1]	.375	14.0	.0091	.649	.04	.05	1							●	
16ERM 14 W [1]	.375	14.0	.0094	.649	.04	.05	1		●	●			●	●	●
16ER/L 12 W	.375	12.0	.0106	.649	.05	.06	1							●	
16EL 11 W	.375	11.0	.0114	.649	.04	.06	1			●				●	
16ER 11 W	.375	11.0	.0114	.649	.04	.06	1	●	●	●	●	●		●	●
16ERB 11 W [1]	.375	11.0	.0114	.649	.04	.06	1							●	
16ERM 11 W [1]	.375	11.0	.0106	.649	.04	.06	1			●		●	●	●	●
16ER 10 W	.375	10.0	.0126	.649	.04	.06	1			●				●	
16ERB 10 W [1]	.375	10.0	.0126	.649	.04	.06	1							●	
16ER 9 W	.375	9.0	.0134	.649	.05	.07	1			●					
16EL 8 W	.375	8.0	.0154	.649	.05	.06	1							●	
16ER 8 W	.375	8.0	.0161	.649	.05	.06	1							●	
22ER 14 W 3M [2]	.500	14.0	.0083	.866	.11	.18	3							●	
22ER 11 W 2M [2]	.500	11.0	.0035	.866	.09	.13	2							●	
22ER 7 W	.500	7.0	.0177	.866	.06	.09	1							●	
22ER 6 W	.500	6.0	.0205	.866	.06	.09	1							●	
22ER 5 W	.500	5.0	.0256	.866	.07	.09	1			●					
27ER 4 W	.625	4.0	.0335	1.083	.08	.11	1							●	
27UEIRL 3.5 W	.625	3.5	.0374	1.083	.08	.54	1							●	

- For Insert Identification System, see pages 33-34 • For threading between walls use GRIP-type insert TIP-BSW • Tolerance: medium class
- For technical information and detailed cutting data, see pages 146-149 • For recommended number of passes for see pages 119-121
- Anvils for Laydown Inserts, see pages 36-43

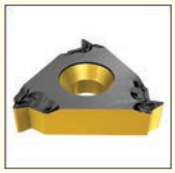
[1] With pressed chipformer
[2] Multi-tooth
[3] Threads per inch
[4] Number of teeth per corner

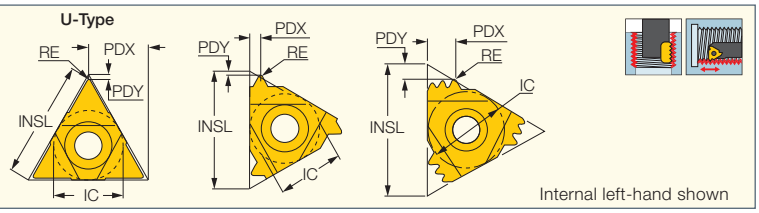
For tools, see pages: C#-SER/L (264) • MTET Single Point (431) • SER-D (265) • SER/L (262) • SER/L-JHP-MC (265)

ISCARTHREAD

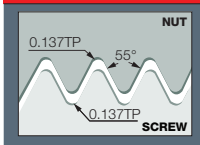
IR/L-W

Internal Whitworth (BSW, BSF, BSP) B.S.84-1956 DIN 259 Medium Class Full Profile Laydown Threading Inserts





M E T R I C



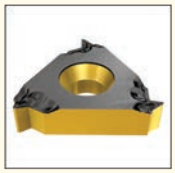
Designation	Dimensions							Tough ↔ Hard								
	IC	TPI[3]	RE	INSL	PDY	PDX	CICT[4]	IC228	IC928	IC50M	IC250	IC08	IC508	IC808	IC908	IC1007
06IR 26 W	4.00	26.0	0.10	6.88	0.7	0.6	1	•								
08IR 28 W	5.00	28.0	0.11	8.24	0.5	0.6	1	•								
08IR 19 W	5.00	19.0	0.15	8.24	0.6	0.6	1	•	•						•	
08IR 18 W	5.00	18.0	0.16	8.24	0.6	0.7	1	•								
08IR 16 W	5.00	16.0	0.18	8.24	0.6	0.7	1	•								
11IR 36 W	6.35	36.0	0.07	11.00	0.6	0.6	1					•				
11IR 28 W	6.35	28.0	0.10	11.00	0.6	0.7	1				•					
11IRB 28 W	6.35	28.0	0.10	11.00	0.6	0.6	1								•	
11IR 26 W	6.35	26.0	0.10	11.00	0.7	0.7	1	•								
11IR/L 24 W	6.35	24.0	0.11	11.00	0.7	0.8	1								•	
11IRB 24 W	6.35	24.0	0.11	11.00	0.6	0.6	1								•	
11IR 20 W	6.35	20.0	0.14	11.00	0.8	0.9	1				•				•	
11IRB 20 W	6.35	20.0	0.14	11.00	0.8	0.9	1								•	
11IR 19 W	6.35	19.0	0.15	11.00	0.8	1.0	1				•				•	•
11IRB 19 W	6.35	19.0	0.17	11.00	0.7	0.9	1								•	
11IR/L 18 W	6.35	18.0	0.16	11.00	0.8	1.0	1								•	
11IRB 18 W	6.35	18.0	0.18	11.00	0.9	0.9	1								•	
11IR 16 W	6.35	16.0	0.18	11.00	0.9	1.1	1								•	
11IRB 16 W	6.35	16.0	0.18	11.00	0.8	0.9	1								•	
11IR/L 14 W	6.35	14.0	0.23	11.00	0.9	1.1	1	•			•	•			•	•
11IRB 14 W	6.35	14.0	0.23	11.00	0.9	1.0	1								•	
16IR 32 W	9.52	32.0	0.09	16.49	0.6	0.6	1			•						
16IR 28 W	9.52	28.0	0.09	16.49	0.6	0.7	1				•					
16IR 26 W	9.52	26.0	0.12	16.49	0.8	0.8	1								•	
16IR 24 W	9.52	24.0	0.11	16.49	0.7	0.8	1								•	
16IR 22 W	9.52	22.0	0.13	16.49	0.8	0.9	1								•	
16IR/L 20 W	9.52	20.0	0.14	16.49	0.8	0.9	1				•				•	
16IRM 20 W [1]	9.52	20.0	0.14	16.49	0.8	0.9	1								•	
16IR 19 W	9.52	19.0	0.17	16.49	0.7	0.8	1				•				•	
16IRB 19 W [1]	9.52	19.0	0.17	16.49	0.7	0.8	1								•	
16IRM 19 W [1]	9.52	19.0	0.15	16.49	0.8	1.0	1				•					
16IR/L 18 W	9.52	18.0	0.18	16.49	0.8	0.8	1								•	
16IR 16 W	9.52	16.0	0.20	16.49	1.0	1.0	1								•	
16IRB 16 W [1]	9.52	16.0	0.20	16.49	1.0	1.2	1								•	
16IRM 16 W [1]	9.52	16.0	0.18	16.49	0.9	1.1	1								•	
16IR/L 14 W	9.52	14.0	0.23	16.49	1.0	1.2	1	•			•	•			•	•
16IR 14 W 2M [2]	9.52	14.0	0.19	16.49	1.7	2.6	2								•	•
16IRB 14 W [1]	9.52	14.0	0.23	16.49	1.0	1.2	1								•	
16IRM 14 W [1]	9.52	14.0	0.21	16.49	1.0	1.2	1				•			•	•	•
16IR 12 W	9.52	12.0	0.27	16.49	1.2	1.5	1								•	
16IR/L 11 W	9.52	11.0	0.29	16.49	1.1	1.5	1	•		•	•	•			•	•
16IRB 11 W [1]	9.52	11.0	0.28	16.49	1.1	1.5	1								•	
16IRM 11 W [1]	9.52	11.0	0.27	16.49	1.1	1.5	1				•		•	•	•	•
16IR 10 W	9.52	10.0	0.32	16.49	1.1	1.1	1								•	
16IRB 10 W [1]	9.52	10.0	0.31	16.49	1.1	1.5	1								•	
16IR 9 W	9.52	9.0	0.34	16.49	1.2	1.7	1				•					
16IR/L 8 W	9.52	8.0	0.41	16.49	1.1	1.1	1			•					•	
22IR 14 W 3M [2]	12.70	14.0	0.21	22.00	2.8	4.5	3								•	
22IR 11 W 2M [2]	12.70	11.0	0.09	22.00	2.3	3.4	2								•	
22IR 7 W	12.70	7.0	0.45	22.00	1.6	2.3	1								•	
22IR 6 W	12.70	6.0	0.52	22.00	1.6	2.3	1				•					
22IR 5 W	12.70	5.0	0.65	22.00	1.7	2.4	1				•					
27IR 4.5 W	15.88	4.5	0.73	27.50	1.8	2.6	1				•					
27IR 4 W	15.88	4.0	0.82	27.50	2.0	2.9	1								•	

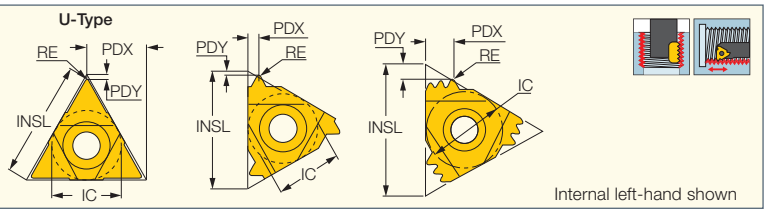
• For Insert Identification System, see pages 33-34 • Tolerance: medium class • For technical information and detailed cutting data, see pages 146-149
• For recommended number of passes for see pages 119-121 • Anvils for Laydown Inserts, see pages 36-43
[1] With pressed chipformer [2] Multi-tooth [3] Threads per inch [4] Number of teeth per corner

ISCARTHREAD

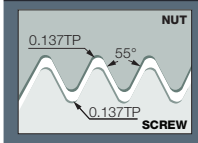
IR/L-W

Internal Whitworth (BSW, BSF, BSP) B.S.84-1956 DIN 259 Medium Class Full Profile Laydown Threading Inserts





I N C H



Designation	Dimensions IC	TPI[3]	RE	INSL	PDY	PDX	CICT[4]	Tough ↔ Hard IC228	IC928	IC50M	IC250	IC08	IC508	IC808	IC908	IC1007
06IR 26 W	.157	26.0	.0039	.271	.03	.02	1	●								
08IR 28 W	.197	28.0	.0043	.324	.02	.02	1	●								
08IR 19 W	.197	19.0	.0059	.324	.02	.02	1	●	●						●	
08IR 18 W	.197	18.0	.0063	.324	.02	.03	1	●								
08IR 16 W	.197	16.0	.0071	.324	.02	.03	1	●								
11IR 36 W	.250	36.0	.0027	.433	.02	.02	1					●				
11IR 28 W	.250	28.0	.0039	.433	.02	.03	1				●					
11IRB 28 W	.250	28.0	.0039	.433	.02	.02	1								●	
11IR 26 W	.250	26.0	.0039	.433	.03	.03	1	●								
11IR/L 24 W	.250	24.0	.0043	.433	.03	.03	1								●	
11IRB 24 W	.250	24.0	.0043	.433	.02	.02	1								●	
11IR 20 W	.250	20.0	.0055	.433	.03	.04	1				●				●	
11IRB 20 W	.250	20.0	.0055	.433	.03	.04	1								●	
11IR 19 W	.250	19.0	.0059	.433	.03	.04	1				●				●	●
11IRB 19 W	.250	19.0	.0067	.433	.03	.04	1								●	
11IL 18 W	.250	18.0	.0063	.433	.03	.04	1								●	
11IR 18 W	.250	18.0	.0071	.433	.03	.04	1								●	
11IRB 18 W	.250	18.0	.0071	.433	.04	.04	1								●	
11IR 16 W	.250	16.0	.0071	.433	.04	.04	1								●	
11IRB 16 W	.250	16.0	.0071	.433	.03	.04	1								●	
11IL 14 W	.250	14.0	.0091	.433	.04	.04	1								●	
11IR 14 W	.250	14.0	.0091	.433	.04	.04	1	●			●	●			●	●
11IRB 14 W	.250	14.0	.0091	.433	.04	.04	1								●	
16IR 32 W	.375	32.0	.0035	.649	.02	.02	1			●						
16IR 28 W	.375	28.0	.0035	.649	.02	.03	1				●					
16IR 26 W	.375	26.0	.0047	.649	.03	.03	1								●	
16IR 24 W	.375	24.0	.0043	.649	.03	.03	1								●	
16IR 22 W	.375	22.0	.0051	.649	.03	.04	1								●	
16IL 20 W	.375	20.0	.0055	.649	.03	.04	1				●				●	
16IR 20 W	.375	20.0	.0055	.649	.03	.03	1				●				●	
16IRM 20 W [1]	.375	20.0	.0055	.649	.03	.04	1								●	
16IR 19 W	.375	19.0	.0067	.649	.03	.03	1				●				●	
16IRB 19 W [1]	.375	19.0	.0067	.649	.03	.03	1								●	
16IRM 19 W [1]	.375	19.0	.0059	.649	.03	.04	1				●					
16IR/L 18 W	.375	18.0	.0071	.649	.03	.03	1								●	
16IR 16 W	.375	16.0	.0079	.649	.04	.04	1								●	
16IRB 16 W [1]	.375	16.0	.0079	.649	.04	.05	1								●	
16IRM 16 W [1]	.375	16.0	.0071	.649	.04	.04	1								●	
16IL 14 W	.375	14.0	.0091	.649	.04	.05	1								●	
16IR 14 W	.375	14.0	.0091	.649	.04	.05	1	●			●	●			●	●
16IR 14 W 2M [2]	.375	14.0	.0075	.649	.07	.10	2								●	●
16IRB 14 W [1]	.375	14.0	.0091	.649	.04	.05	1								●	
16IRM 14 W [1]	.375	14.0	.0083	.649	.04	.05	1				●			●	●	●
16IR 12 W	.375	12.0	.0106	.649	.05	.06	1								●	
16IL 11 W	.375	11.0	.0114	.649	.04	.06	1								●	
16IR 11 W	.375	11.0	.0114	.649	.04	.06	1	●		●	●	●			●	●
16IRB 11 W [1]	.375	11.0	.0110	.649	.04	.06	1								●	
16IRM 11 W [1]	.375	11.0	.0106	.649	.04	.06	1				●		●	●	●	●

- For Insert Identification System, see pages 33-34 • Tolerance: medium class • For technical information and detailed cutting data, see pages 146-149
- For recommended number of passes for see pages 119-121
- Anvils for Laydown Inserts, see pages 36-43

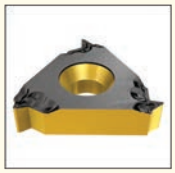
[1] With pressed chipformer
[2] Multi-tooth
[3] Threads per inch
[4] Number of teeth per corner

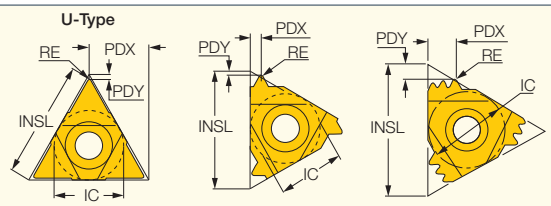
For tools, see pages: AVC-D-SIR/L (271) • MGSIR/L (271) • MTET Single Point (431) • SIR/L (266)

ISCARTHREAD

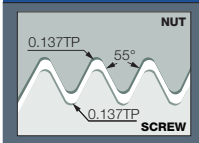
IR/L-W

Internal Whitworth (BSW, BSF, BSP) B.S.84-1956 DIN 259 Medium Class Full Profile Laydown Threading Inserts





I N C H



Designation	Dimensions							Tough ↔ Hard								
	IC	TPI[3]	RE	INSL	PDY	PDX	CICT[4]	IC228	IC928	IC50M	IC250	IC08	IC508	IC808	IC908	IC1007
16IR 10 W	.375	10.0	.0126	.649	.04	.04	1								●	
16IRB 10 W [1]	.375	10.0	.0122	.649	.04	.06	1								●	
16IR 9 W	.375	9.0	.0134	.649	.05	.07	1				●					
16IL 8 W	.375	8.0	.0161	.649	.04	.04	1			●					●	
16IR 8 W	.375	8.0	.0161	.649	.04	.04	1								●	
22IR 14 W 3M [2]	.500	14.0	.0083	.866	.11	.18	3								●	
22IR 11 W 2M [2]	.500	11.0	.0035	.866	.09	.13	2								●	
22IR 7 W	.500	7.0	.0177	.866	.06	.09	1								●	
22IR 6 W	.500	6.0	.0205	.866	.06	.09	1				●					
22IR 5 W	.500	5.0	.0256	.866	.07	.09	1				●					
27IR 4.5 W	.625	4.5	.0287	1.083	.07	.10	1				●					
27IR 4 W	.625	4.0	.0323	1.083	.08	.11	1								●	

- For Insert Identification System, see pages 33-34 • Tolerance: medium class • For technical information and detailed cutting data, see pages 146-149
- For recommended number of passes for see pages 119-121
- Anvils for Laydown Inserts, see pages 36-43

(1) With pressed chipformer
(2) Multi-tooth
(3) Threads per inch
(4) Number of teeth per corner

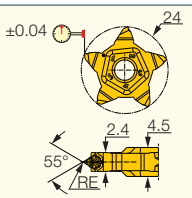
For tools, see pages: AVC-D-SIR/L (271) • MGSIR/L (271) • MTET Single Point (431) • SIR/L (266)

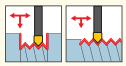
PENTACUT THREADING LINE

PENTA 24-W

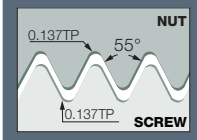
Whitworth (BSW, BSF, BSP)
B.S.84-1956 DIN 259 Pentagonal
Full Profile External Threading
Inserts with a Chipformer







M E T R I C



Designation	Dimensions TPI[1]	RE	IC908
PENTA 24-28-W	28.0	0.09	●
PENTA 24-19-W	19.0	0.15	●
PENTA 24-14-W	14.0	0.21	●

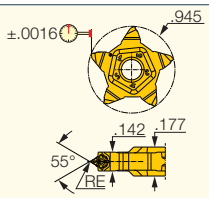
• DMIN(inch)=5.435/TPI
(1) Threads per inch

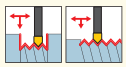
PENTACUT THREADING LINE

PENTA 24-W

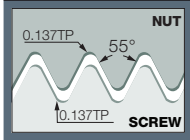
Whitworth (BSW, BSF, BSP)
B.S.84-1956 DIN 259 Pentagonal
Full Profile External Threading
Inserts with a Chipformer







I N C H



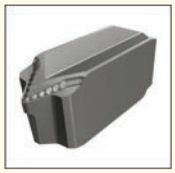
Designation	Dimensions TPI[1]	RE	IC908
PENTA 24-28-W	28.0	.0035	●
PENTA 24-19-W	19.0	.0059	●
PENTA 24-14-W	14.0	.0083	●

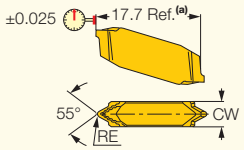
• DMIN(inch)=5.435/TPI
(1) Threads per inch

ISCARTHREAD

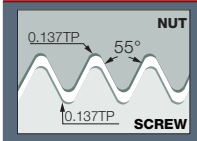
TIP-P-BSW

American (BSW, BSF, BSP) Precision Ground External Double-Ended Full Profile Threading Inserts with a Chipformer





M E T R I C



Designation	Dimensions CW	RE	TPI(1)	Tough ↔ Hard IC08	IC908
TIP 2P28-BSW	2.40	0.11	28.0	●	●
TIP 2P26-BSW	2.40	0.12	26.0	●	●
TIP 2P24-BSW	2.40	0.12	24.0	●	●
TIP 2P20-BSW	2.40	0.16	20.0	●	●
TIP 2P19-BSW	2.40	0.16	19.0	●	●
TIP 2P18-BSW	2.40	0.17	18.0	●	●
TIP 2P16-BSW	2.40	0.19	16.0	●	●
TIP 2P14-BSW	2.40	0.22	14.0	●	●
TIP 4P12-BSW	4.00	0.25	12.0		●
TIP 4P11-BSW	4.00	0.28	11.0	●	●
TIP 4P10-BSW	4.00	0.31	10.0		●

• (a) TIP inserts are 1.6 mm longer than GIP in the same pocket • Toolholder seat needs to be modified according to insert profile to ensure clearance

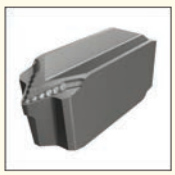
(1) Threads per inch

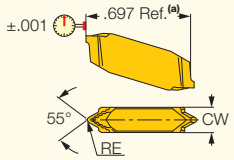
ISCARTHREAD

CUTGRIP

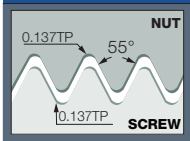
TIP-P-BSW

American (BSW, BSF, BSP) Precision Ground External Double-Ended Full Profile Threading Inserts with a Chipformer





I N C H



Designation	Dimensions CW	RE	TPI(1)	Tough ↔ Hard IC08	IC908
TIP 2P28-BSW	.094	.0043	28.0	●	●
TIP 2P26-BSW	.094	.0047	26.0	●	●
TIP 2P24-BSW	.094	.0047	24.0	●	●
TIP 2P20-BSW	.094	.0063	20.0	●	●
TIP 2P19-BSW	.094	.0063	19.0	●	●
TIP 2P18-BSW	.094	.0067	18.0	●	●
TIP 2P16-BSW	.094	.0075	16.0	●	●
TIP 2P14-BSW	.094	.0087	14.0	●	●
TIP 4P12-BSW	.157	.0098	12.0		●
TIP 4P11-BSW	.157	.0110	11.0	●	●
TIP 4P10-BSW	.157	.0122	10.0		●

• (a) TIP inserts are .063" longer than GIP in the same pocket • Toolholder seat needs to be modified according to insert profile to ensure clearance

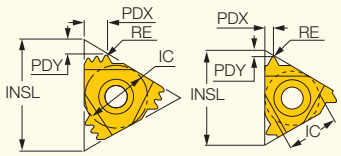
(1) Threads per inch

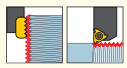
NPT

ISCARTHREAD

ER/L-NPT
External NPT (National Pipe Threads) Full Profile Laydown Threading Inserts for Steam, Gas and Water Pipes

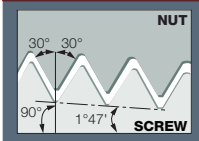






External right-hand shown

M E T R I C



Designation	Dimensions IC	TPI[3]	RE	INSL	PDY	PDX	CICT[4]	Tough ↔ Hard IC228	IC50M	IC250	IC808	IC908	IC1007
16ER 27 NPT	9.52	27.0	0.04	16.49	0.7	0.8	1					●	
16ER 18 NPT	9.52	18.0	0.06	16.49	0.9	1.1	1	●				●	●
16ERB 18 NPT [1]	9.52	18.0	0.06	16.49	0.9	1.1	1					●	
16ERM 18 NPT [1]	9.52	18.0	0.05	16.49	0.8	1.0	1				●	●	●
16ER/L 14 NPT	9.52	14.0	0.07	16.49	0.9	1.2	1	●				●	●
16ERB 14 NPT [1]	9.52	14.0	0.07	16.49	0.9	1.2	1					●	
16ERM 14 NPT [1]	9.52	14.0	0.05	16.49	0.9	1.2	1		●	●	●	●	●
16ER/L 11.5 NPT	9.52	11.5	0.09	16.49	1.1	1.5	1		●	●		●	●
16ERB 11.5 NPT [1]	9.52	11.5	0.09	16.49	1.1	1.5	1					●	
16ERM 11.5 NPT [1]	9.52	11.5	0.09	16.49	1.1	1.5	1			●	●	●	●
16ER 8 NPT	9.52	8.0	0.11	16.49	1.4	1.6	1		●			●	
16ERB 8 NPT [1]	9.52	8.0	0.11	16.49	1.4	1.7	1					●	
16ERM 8 NPT [1]	9.52	8.0	0.12	16.49	1.3	1.8	1			●	●	●	●
22ER 11.5 NPT 2M [2]	12.70	11.5	0.09	22.00	2.3	3.5	2					●	
27ER 11.5 NPT 3M [2]	15.88	11.5	0.09	27.50	3.3	5.5	3					●	
27ER 8 NPT 2M [2]	15.88	8.0	0.09	27.50	3.3	5.0	2					●	

I N C H

Designation	Dimensions IC	TPI[3]	RE	INSL	PDY	PDX	CICT[4]	Tough ↔ Hard IC228	IC50M	IC250	IC808	IC908	IC1007
16ER 27 NPT	.375	27.0	.0016	.649	.03	.03	1					●	
16ER 18 NPT	.375	18.0	.0024	.649	.04	.04	1	●				●	●
16ERB 18 NPT [1]	.375	18.0	.0024	.649	.04	.04	1					●	
16ERM 18 NPT [1]	.375	18.0	.0020	.649	.03	.04	1				●	●	●
16EL 14 NPT	.375	14.0	.0027	.649	.04	.05	1					●	
16ER 14 NPT	.375	14.0	.0027	.649	.04	.05	1	●				●	●
16ERB 14 NPT [1]	.375	14.0	.0027	.649	.04	.05	1					●	
16ERM 14 NPT [1]	.375	14.0	.0020	.649	.04	.05	1		●	●	●	●	●
16EL 11.5 NPT	.375	11.5	.0035	.649	.04	.06	1					●	
16ER 11.5 NPT	.375	11.5	.0035	.649	.04	.06	1		●	●		●	●
16ERB 11.5 NPT [1]	.375	11.5	.0035	.649	.04	.06	1					●	
16ERM 11.5 NPT [1]	.375	11.5	.0040	.649	.04	.06	1			●	●	●	●
16ER 8 NPT	.375	8.0	.0043	.649	.06	.06	1		●			●	
16ERB 8 NPT [1]	.375	8.0	.0043	.649	.06	.07	1					●	
16ERM 8 NPT [1]	.375	8.0	.0050	.649	.05	.07	1			●	●	●	●
22ER 11.5 NPT 2M [2]	.500	11.5	.0040	.866	.09	.14	2					●	
27ER 11.5 NPT 3M [2]	.625	11.5	.0040	1.083	.13	.22	3					●	
27ER 8 NPT 2M [2]	.625	8.0	.0035	1.083	.13	.20	2					●	

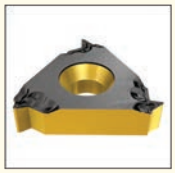
- For Insert Identification System, see pages 33-34 • For threading between walls use GRIP-type insert TIP-NPT. • National Pipe Threads ANSI/ASME B1.20.1-1983
- For technical information and detailed cutting data, see pages 146-149 • For recommended number of passes for multi-tooth inserts see pages 119-121
- Anvils for Laydown Inserts, see pages 36-43

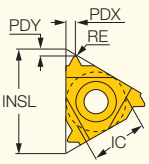
[1] With pressed chipformer
[2] Multi-tooth
[3] Threads per inch
[4] Number of teeth per corner

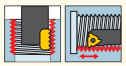
ISCARTHREAD

IR/L-NPT

Internal NPT (National Pipe Threads) Full Profile Laydown Threading Inserts for Steam, Gas and Water Pipes

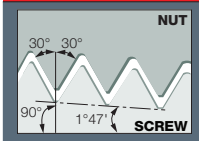






Internal left-hand shown

M E T R I C



Designation	Dimensions IC	TPI[3]	RE	INSL	PDY	PDX	CICT[4]	Tough ↔ Hard IC228	IC250	IC508	IC808	IC908	IC1007
06IR 27 NPT	4.00	27.0	0.04	6.88	0.6	0.6	1	●					
08IR 18 NPT	5.00	18.0	0.06	8.24	0.6	0.8	1	●				●	
11IR/L 18 NPT	6.35	18.0	0.06	11.00	0.8	1.0	1		●			●	
11IRB 18 NPT	6.35	18.0	0.06	11.00	0.8	1.0	1					●	
11IR/L 14 NPT	6.35	14.0	0.07	11.00	0.8	1.0	1		●			●	●
16IR 27 NPT	9.52	27.0	0.04	16.49	0.7	0.8	1					●	
16IR 18 NPT	9.52	18.0	0.06	16.49	0.8	1.0	1					●	
16IRM 14 NPT (1)	9.52	14.0	0.05	16.49	0.9	1.2	1		●		●	●	●
16IRB 14 NPT (1)	9.52	14.0	0.07	16.49	0.9	1.2	1					●	
16IR/L 14 NPT	9.52	14.0	0.07	16.49	0.9	1.2	1	●	●			●	●
16IRM 11.5 NPT (1)	9.52	11.5	0.09	16.49	1.1	1.5	1			●	●	●	●
16IRB 11.5 NPT (1)	9.52	11.5	0.09	16.49	1.1	1.5	1					●	
16IR/L 11.5 NPT	9.52	11.5	0.09	16.49	1.1	1.5	1					●	●
16IRM 8 NPT (1)	9.52	8.0	0.12	16.49	1.3	1.8	1				●	●	●
16IRB 8 NPT (1)	9.52	8.0	0.11	16.49	1.2	1.7	1					●	
16IR/L 8 NPT	9.52	8.0	0.11	16.49	1.3	1.8	1					●	
22IR 11.5 NPT 2M (2)	12.70	11.5	0.09	22.00	2.3	3.5	2					●	
27IR 11.5 NPT 3M (2)	15.88	11.5	0.09	27.50	3.3	5.5	3					●	
27IR 8 NPT 2M (2)	15.88	8.0	0.12	27.50	3.1	5.0	2					●	

I N C H

Designation	Dimensions IC	TPI[3]	RE	INSL	PDY	PDX	CICT[4]	Tough ↔ Hard IC228	IC250	IC508	IC808	IC908	IC1007
06IR 27 NPT	.157	27.0	.0016	.271	.02	.02	1	●					
08IR 18 NPT	.197	18.0	.0024	.324	.02	.03	1	●				●	
11IL 18 NPT	.250	18.0	.0024	.433	.03	.04	1					●	
11IR 18 NPT	.250	18.0	.0024	.433	.03	.04	1		●			●	
11IRB 18 NPT	.250	18.0	.0024	.433	.03	.04	1					●	
11IL 14 NPT	.250	14.0	.0027	.433	.03	.04	1		●				
11IR 14 NPT	.250	14.0	.0027	.433	.03	.04	1					●	●
16IR 27 NPT	.375	27.0	.0016	.649	.03	.03	1					●	
16IR 18 NPT	.375	18.0	.0024	.649	.03	.04	1					●	
16IRM 14 NPT (1)	.375	14.0	.0020	.649	.04	.05	1		●		●	●	●
16IRB 14 NPT (1)	.375	14.0	.0027	.649	.04	.05	1					●	
16IL 14 NPT	.375	14.0	.0027	.649	.04	.05	1					●	
16IR 14 NPT	.375	14.0	.0027	.649	.04	.05	1	●	●			●	●
16IRM 11.5 NPT (1)	.375	11.5	.0035	.649	.04	.06	1			●	●	●	●
16IRB 11.5 NPT (1)	.375	11.5	.0035	.649	.04	.06	1					●	
16IL 11.5 NPT	.375	11.5	.0035	.649	.04	.06	1					●	
16IR 11.5 NPT	.375	11.5	.0035	.649	.04	.06	1					●	●
16IRM 8 NPT (1)	.375	8.0	.0047	.649	.05	.07	1				●	●	●
16IRB 8 NPT (1)	.375	8.0	.0043	.649	.05	.07	1					●	
16IL 8 NPT	.375	8.0	.0043	.649	.05	.07	1					●	
16IR 8 NPT	.375	8.0	.0043	.649	.05	.07	1					●	
22IR 11.5 NPT 2M (2)	.500	11.5	.0035	.866	.09	.14	2					●	
27IR 11.5 NPT 3M (2)	.625	11.5	.0035	1.083	.13	.22	3					●	
27IR 8 NPT 2M (2)	.625	8.0	.0047	1.083	.12	.20	2					●	

- For Insert Identification System, see pages 33-34 • National Pipe Threads ANSI/ASME B1.20.1-1983.
- For technical information and detailed cutting data, see pages 146-149
- For recommended number of passes for see pages 119-121 • Anvils for Laydown Inserts, see pages 36-43

(1) With pressed chipformer
(2) Multi-tooth
(3) Threads per inch
(4) Number of teeth per corner

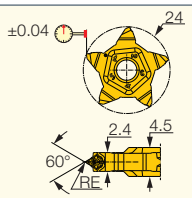
Member IMC Group

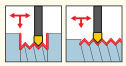
PENTACUT THREADING LINE

PENTA 24-NPT

NPT (National Pipe Threads)
Precision Ground Pentagonal
External Full Profile Threading
Inserts with a Chipformer

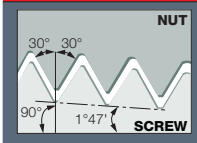






M E T R I C

Designation	Dimensions TPI[1]	RE	IC908
PENTA 24-18-NPT	18.0	0.07	●
PENTA 24-14-NPT	14.0	0.09	●



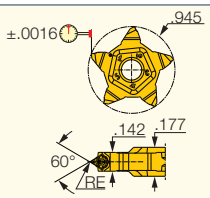
(1) Threads per inch

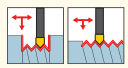
PENTACUT THREADING LINE

PENTA 24-NPT

NPT (National Pipe Threads)
Precision Ground Pentagonal
External Full Profile Threading
Inserts with a Chipformer

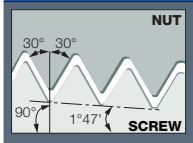






I N C H

Designation	Dimensions TPI[1]	RE	IC908
PENTA 24-18-NPT	18.0	.0027	●
PENTA 24-14-NPT	14.0	.0035	●



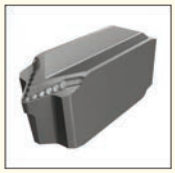
(1) Threads per inch

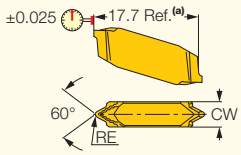
ISCARTHREAD

CUTGRIP

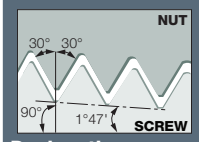
TIP-P-NPT

NPT (National Pipe Threads)
Precision Ground Double-Ended
External Full Profile Threading
Inserts with a Chipformer





M E T R I C



Designation	Dimensions CW	RE	RETOL(1)	TPI(2)	Tough ↔ Hard IC08	IC908
TIP 2P27-NPT	2.40	0.05	0.030	27.0	●	●
TIP 2P18-NPT	2.40	0.07	0.030	18.0	●	●
TIP 2P14-NPT	2.40	0.09	0.030	14.0		●
TIP 4P11.5-NPT	4.00	0.10	0.030	11.5	●	●
TIP 4P8-NPT	4.00	0.13	0.030	8.0	●	●

• (a) TIP inserts are 1.6 mm longer than GIP in the same pocket • Toolholder seat needs to be modified according to insert profile to ensure clearance

(1) Corner radius tolerance (+/-)

(2) Threads per inch

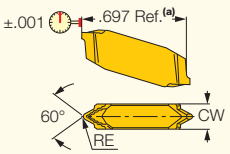
ISCARTHREAD

CUTGRIP

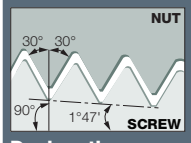
TIP-P-NPT

NPT (National Pipe Threads)
Precision Ground Double-Ended
External Full Profile Threading
Inserts with a Chipformer





I N C H



Designation	Dimensions CW	RE	RETOL(1)	TPI(2)	Tough ↔ Hard IC08	IC908
TIP 2P27-NPT	.094	.002	.0012	27.0	●	●
TIP 2P18-NPT	.094	.003	.0012	18.0	●	●
TIP 2P14-NPT	.094	.004	.0012	14.0		●
TIP 4P11.5-NPT	.157	.004	.0012	11.5	●	●
TIP 4P8-NPT	.157	.005	.0012	8.0	●	●

• (a) TIP inserts are .063" longer than GIP in the same pocket • Toolholder seat needs to be modified according to insert profile to ensure clearance

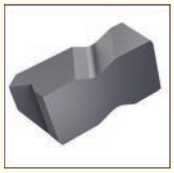
(1) Corner radius tolerance (+/-)

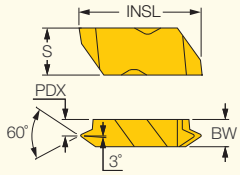
(2) Threads per inch

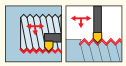
NOTCH GRIP
GROOVE-TURN LINE
ISCARTHREAD

NPT THREADING FLDC-V-75

Double-Ended Precision Flat Top Threading Inserts

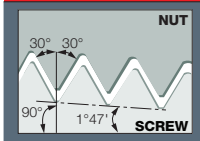






Right-hand shown

M E T R I C



Designation	Dimensions INSL	S	BW	PDX	IPF	TPI(1)	IC908
FLDC-3-8VR/L75	22.60	8.74	4.95	2.50	3/4	8.0	•
FLDC-3-115VR/L75	22.60	8.74	4.95	3.70	3/4	11.5	•
FLDC-3-14VR/L-75	22.60	8.74	4.95	3.80	3/4	14.0	•
FLDC-3-18VR/L-75	22.60	8.74	4.95	3.90	3/4	18.0	•
FLDC-3-27VR/L-75	22.60	8.74	4.95	4.10	3/4	27.0	•

I N C H

Designation	Dimensions TPI(1)	IPF	PDX	BW	S	INSL	IC908
FLDC-3-8VR/L75	8.0	3/4	.0984	.195	.344	.890	•
FLDC-3-115VR/L75	11.5	3/4	.1457	.195	.344	.890	•
FLDC-3-14VR/L-75	14.0	3/4	.1496	.195	.344	.890	•
FLDC-3-18VR/L-75	18.0	3/4	.1535	.195	.344	.890	•
FLDC-3-27VR/L-75	27.0	3/4	.1614	.195	.344	.890	•

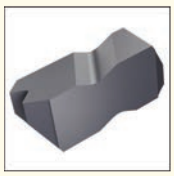
• DMIN according to related boring bar

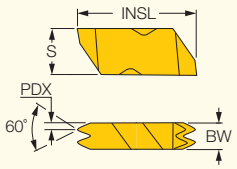
(1) Threads per inch

NOTCH GRIP
GROOVE-TURN LINE
ISCARTHREAD

NPT THREADING FLDC-NPT-E

Double-Ended, Precision, Flat Top Multi-Tooth Threading Inserts

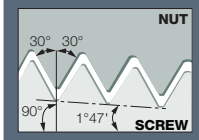






Right-hand shown

M E T R I C



Designation	Dimensions INSL	S	BW	PDX	IPF	TPI(1)	IC908
FLDC-3-8NPT 2E	22.60	8.74	6.35	1.50	3/4	8.0	•
FLDC-3-11.5NPT-2E	22.60	8.74	6.35	1.20	3/4	11.5	•

I N C H

Designation	Dimensions TPI(1)	IPF	PDX	BW	S	INSL	IC908
FLDC-3-8NPT 2E	8.0	3/4	.0590	.250	.344	.890	•
FLDC-3-11.5NPT-2E	11.5	3/4	.0472	.250	.344	.890	•

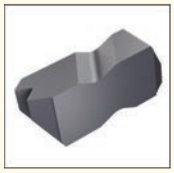
(1) Threads per inch

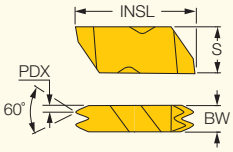
NOTCH GRIP
GROOVE-TURN LINE

ISCAR THREAD

NPT THREADING FLDC-NPT-I

Double-Ended, Precision, Flat Top Multi-Tooth Threading Inserts







M E T R I C

Designation	Dimensions INSL	S	BW	PDX	IPF	TPI(1)	IC908
FLDC-3-11.5NPT-2I	22.60	8.74	6.35	1.20	3/4	11.5	●
FLDC-3-8NPT 2I	22.60	8.74	6.35	1.50	3/4	8.0	●

I N C H

Designation	Dimensions TPI(1)	IPF	PDX	BW	S	INSL	IC908
FLDC-3-8NPT 2I	8.0	3/4	.0590	.250	.344	.890	●
FLDC-3-11.5NPT-2I	11.5	3/4	.0472	.250	.344	.890	●

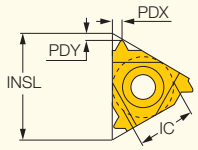
(1) Threads per inch

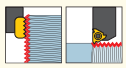
Full Profile NPTF

ISCARTHREAD

ER-NPTF
External NPTF (National Pipe Threads) Full Profile Laydown Threading Inserts for Steam, Gas and Water Pipes

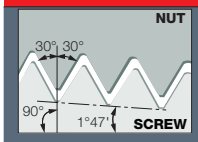






External right-hand shown

M E T R I C



Designation	Dimensions IC	TPI(1)	INSL	PDY	PDX	Tough ↔ Hard IC250	IC908
11ER 14 NPTF	6.35	14.0	11.00	0.8	1.0		•
16ER 27 NPTF	9.52	27.0	16.49	0.7	0.8		•
16ER 18 NPTF	9.52	18.0	16.49	0.8	0.9		•
16ER 14 NPTF	9.52	14.0	16.49	0.9	1.1	•	•
16ER 11.5 NPTF	9.52	11.5	16.49	1.1	1.5		•

I N C H

Designation	Dimensions IC	TPI(1)	INSL	PDY	PDX	Tough ↔ Hard IC250	IC908
11ER 14 NPTF	.250	14.0	.433	.03	.04		•
16ER 27 NPTF	.375	27.0	.649	.03	.03		•
16ER 18 NPTF	.375	18.0	.649	.03	.04		•
16ER 14 NPTF	.375	14.0	.649	.04	.05	•	•
16ER 11.5 NPTF	.375	11.5	.649	.04	.06		•

- For Insert Identification System, see pages 33-34 • (National Pipe Threads-Dry Seal) ANSI/ASME B1.20.1-1976 full profile
- For technical information and detailed cutting data, see pages 146-149 • Anvils for Laydown Inserts, see pages 36-43
- For recommended number of passes see pages: 119-121

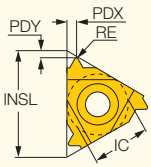
(1) Threads per inch

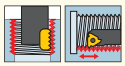
ISCARTHREAD

IR/L-NPTF

Internal NPTF (National Pipe Threads) Full Profile Laydown Threading Inserts for Steam, Gas and Water Pipes

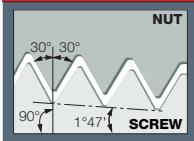






Internal left-hand shown

M E T R I C



Designation	Dimensions IC	TPI(1)	RE	INSL	PDY	PDX	Tough ↔ Hard IC228	IC250	IC908
06IR 27 NPTF	4.00	27.0	0.04	6.88	0.7	0.6	●		
08IR 27 NPTF	5.00	27.0	0.04	8.24	0.6	0.6	●		
08IR 18 NPTF	5.00	18.0	0.04	8.24	0.6	0.8	●		
11IR 18 NPTF	6.35	18.0	0.04	11.00	0.8	1.0			●
11IRB 18 NPTF	6.35	18.0	0.04	11.00	0.8	0.9			●
11IR 14 NPTF	6.35	14.0	0.04	16.49	0.8	1.1			●
16IR 18 NPTF	9.52	18.0	0.06	16.49	0.8	1.0			●
16IR/L 14 NPTF	9.52	14.0	0.07	16.49	0.9	1.2			●
16IR 11.5 NPTF	9.52	11.5	0.04	16.49	1.1	1.5		●	●

I N C H

Designation	Dimensions IC	TPI(1)	RE	INSL	PDY	PDX	Tough ↔ Hard IC228	IC250	IC908
06IR 27 NPTF	.157	27.0	.0016	.271	.03	.02	●		
08IR 27 NPTF	.197	27.0	.0016	.324	.02	.02	●		
08IR 18 NPTF	.197	18.0	.0016	.324	.02	.03	●		
11IR 18 NPTF	.250	18.0	.0016	.433	.03	.04			●
11IRB 18 NPTF	.250	18.0	.0016	.433	.03	.04			●
11IR 14 NPTF	.250	14.0	.0016	.649	.03	.04			●
16IR 18 NPTF	.375	18.0	.0024	.649	.03	.04			●
16IL 14 NPTF	.375	14.0	.0027	.649	.04	.05			●
16IR 14 NPTF	.375	14.0	.0016	.649	.04	.05			●
16IR 11.5 NPTF	.375	11.5	.0016	.649	.04	.06		●	●

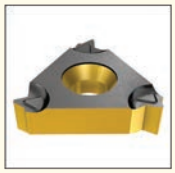
- For Insert Identification System, see pages 33-34 • (National Pipe Threads-Dry seal) ANSI/ASME B1.20.1-1976
- For technical information and detailed cutting data, see pages 146-149• Anvils for Laydown Inserts, see pages 36-43
- For recommended number of passes see pages: 119-121

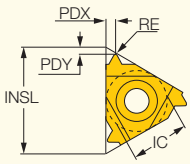
(1) Threads per inch

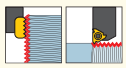
BSPT British Standard Pipe

ISCARTHREAD

ER/L-BSPT
External BSPT (British Standard Pipe) B.S.21-1957 Full Profile Laydown Threading Inserts

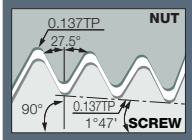






External right-hand shown

M E T R I C



Designation	Dimensions IC	INSL	TPI[2]	RE	PDY	PDX	Tough ↔ Hard IC250	IC808	IC908	IC1007
16ER 28 BSPT	9.52	16.49	28.0	0.11	0.6	0.6			●	
16ER/L 19 BSPT	9.52	16.49	19.0	0.16	0.7	0.8			●	●
16ER/L 14 BSPT	9.52	16.49	14.0	0.23	1.0	1.1	●		●	●
16ERB 14 BSPT [1]	9.52	16.49	14.0	0.23	1.0	1.1			●	
16ERM 14 BSPT [1]	9.52	16.49	14.0	0.24	1.0	1.2		●	●	●
16ER/L 11 BSPT	9.52	16.49	11.0	0.29	1.1	1.5	●		●	
16ERB 11 BSPT [1]	9.52	16.49	11.0	0.29	1.1	1.5			●	
16ERM 11 BSPT [1]	9.52	16.49	11.0	0.31	1.1	1.5			●	●

I N C H

Designation	Dimensions IC	INSL	TPI[2]	RE	PDY	PDX	Tough ↔ Hard IC250	IC808	IC908	IC1007
16ER 28 BSPT	.375	.649	28.0	.0043	.02	.02			●	
16EL 19 BSPT	.375	.649	19.0	.0063	.03	.03			●	
16ER 19 BSPT	.375	.649	19.0	.0063	.03	.03			●	●
16EL 14 BSPT	.375	.649	14.0	.0091	.04	.05			●	
16ER 14 BSPT	.375	.649	14.0	.0091	.04	.05	●		●	●
16ERB 14 BSPT [1]	.375	.649	14.0	.0091	.04	.05			●	
16ERM 14 BSPT [1]	.375	.649	14.0	.0094	.04	.05		●	●	●
16EL 11 BSPT	.375	.649	11.0	.0114	.04	.06			●	
16ER 11 BSPT	.375	.649	11.0	.0114	.04	.06	●		●	
16ERB 11 BSPT [1]	.375	.649	11.0	.0114	.04	.06			●	
16ERM 11 BSPT [1]	.375	.649	11.0	.0122	.04	.06			●	●

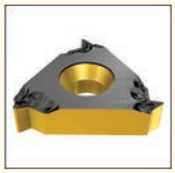
- For Insert Identification System, see pages 33-34 • For threading between walls use insert TIP-BSPT
- For technical information and detailed cutting data, see pages 146-149 • Anvils for Laydown Inserts, see pages 36-43
- For recommended number of passes see pages: 119-121

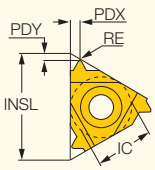
[1] With pressed chipformer
[2] Threads per inch

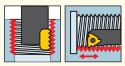
ISCARTHREAD

IR/L-BSPT

Internal BSPT (British Standard Pipe) B.S.21-1957 Full Profile Laydown Threading Inserts

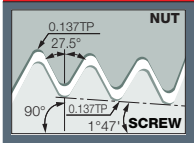






Internal left-hand shown

M E T R I C



Designation	Dimensions IC	INSL	TPI[2]	RE	PDY	PDX	Tough ↔ Hard IC228	IC250	IC808	IC908	IC1007
06IR 28 BSPT	4.00	6.88	28.0	0.11	0.7	0.6	●				
08IR 28 BSPT	5.00	8.24	28.0	0.11	0.6	0.6	●				
08IR 19 BSPT	5.00	8.24	19.0	0.16	0.6	0.7	●				
11IR 19 BSPT	6.35	11.00	19.0	0.16	0.8	0.9				●	●
11IRB 19 BSPT	6.35	11.00	19.0	0.16	0.8	0.9				●	
11IR/L 14 BSPT	6.35	11.00	14.0	0.23	0.9	1.0				●	
16IR 28 BSPT	9.52	16.49	28.0	0.11	0.6	0.6				●	
16IR 19 BSPT	9.52	16.49	19.0	0.16	0.8	0.9		●			
16IRB 14 BSPT [1]	9.52	16.49	14.0	0.23	1.0	1.1				●	
16IRM 14 BSPT [1]	9.52	16.49	14.0	0.21	1.0	1.2			●	●	●
16IR/L 14 BSPT	9.52	16.49	14.0	0.21	1.0	1.2				●	
16IRM 11 BSPT [1]	9.52	16.49	11.0	0.28	1.1	1.5			●	●	●
16IRB 11 BSPT [1]	9.52	16.49	11.0	0.29	1.1	1.5				●	
16IR/L 11 BSPT	9.52	16.49	11.0	0.29	1.1	1.5	●			●	

I N C H

Designation	Dimensions IC	INSL	TPI[2]	RE	PDY	PDX	Tough ↔ Hard IC228	IC250	IC808	IC908	IC1007
06IR 28 BSPT	.157	.271	28.0	.0043	.03	.02	●				
08IR 28 BSPT	.197	.324	28.0	.0043	.02	.02	●				
08IR 19 BSPT	.197	.324	19.0	.0063	.02	.03	●				
11IR 19 BSPT	.250	.433	19.0	.0063	.03	.04				●	●
11IRB 19 BSPT	.250	.433	19.0	.0063	.03	.04				●	
11IR/L 14 BSPT	.250	.433	14.0	.0091	.04	.04				●	
16IR 28 BSPT	.375	.649	28.0	.0043	.02	.02				●	
16IR 19 BSPT	.375	.649	19.0	.0063	.03	.04		●			
16IRB 14 BSPT [1]	.375	.649	14.0	.0091	.04	.05				●	
16IRM 14 BSPT [1]	.375	.649	14.0	.0083	.04	.05			●	●	●
16IL 14 BSPT	.375	.649	14.0	.0083	.04	.05				●	
16IR 14 BSPT	.375	.649	14.0	.0091	.04	.05				●	
16IRM 11 BSPT [1]	.375	.649	11.0	.0110	.04	.06			●	●	●
16IRB 11 BSPT [1]	.375	.649	11.0	.0114	.04	.06				●	
16IL 11 BSPT	.375	.649	11.0	.0114	.04	.06				●	
16IR 11 BSPT	.375	.649	11.0	.0114	.04	.06	●			●	

• For Insert Identification System, see pages 33-34 • For technical information and detailed cutting data, see pages 146-149 • Anvils for Laydown Inserts, see pages 36-43
• For recommended number of passes see pages: 119-121

[1] With pressed chipformer

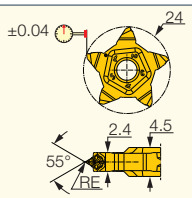
[2] Threads per inch

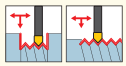
PENTACUT THREADING LINE

PENTA 24-BSPT

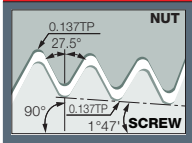
BSPT (British Standard Pipe)
Precision Ground External
Pentagonal Full Profile Threading
Inserts with a Chipformer







M E T R I C



Designation	Dimensions TPI[1]	RE	IC908
PENTA 24-19-BSPT	19.0	0.16	●
PENTA 24-14-BSPT	14.0	0.22	●

- DMIN(inch)=5.435/TPI

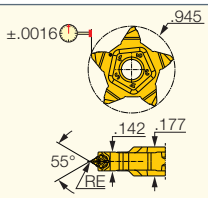
(1) Threads per inch

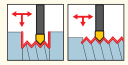
PENTACUT THREADING LINE

PENTA 24-BSPT

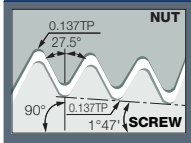
BSPT (British Standard Pipe)
Precision Ground External
Pentagonal Full Profile Threading
Inserts with a Chipformer







I N C H



Designation	Dimensions TPI[1]	RE	IC908
PENTA 24-19-BSPT	19.0	.0063	●
PENTA 24-14-BSPT	14.0	.0087	●

- DMIN(inch)=5.435/TPI

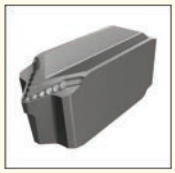
(1) Threads per inch

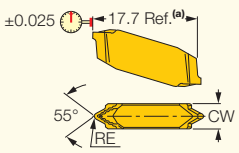
ISCARTHREAD

CUTGRIP

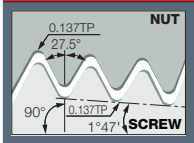
TIP-P-BSPT

Precision Ground BSPT (British Standard Pipe) External Double-Ended Full Profile Threading Inserts with a Chipformer





M E T R I C



Designation	Dimensions CW	RE	RETOL(1)	TPI(2)	Tough ↔ Hard IC08	IC908
TIP 2P28-BSPT	2.40	0.11	0.030	28.0	●	●
TIP 2P19-BSPT	2.40	0.16	0.030	19.0	●	●
TIP 2P14-BSPT	2.40	0.22	0.030	14.0	●	●
TIP 4P11-BSPT	4.00	0.28	0.030	11.0	●	●

• (a) TIP inserts are 1.6 mm longer than GIP in the same pocket • Toolholder seat needs to be modified according to insert profile to ensure clearance

(1) Corner radius tolerance (+/-)

(2) Threads per inch

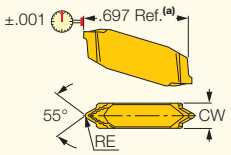
ISCARTHREAD

CUTGRIP

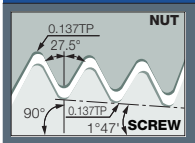
TIP-P-BSPT

Precision Ground BSPT (British Standard Pipe) External Double-Ended Full Profile Threading Inserts with a Chipformer





I N C H



Designation	Dimensions CW	RE	RETOL(1)	TPI(2)	Tough ↔ Hard IC08	IC908
TIP 2P28-BSPT	.094	.004	.0012	28.0	●	●
TIP 2P19-BSPT	.094	.006	.0012	19.0	●	●
TIP 2P14-BSPT	.094	.009	.0012	14.0	●	●
TIP 4P11-BSPT	.157	.011	.0012	11.0	●	●

• (a) TIP inserts are .063" longer than GIP in the same pocket • Toolholder seat needs to be modified according to insert profile to ensure clearance

(1) Corner radius tolerance (+/-)

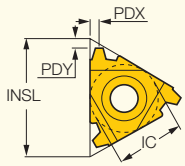
(2) Threads per inch

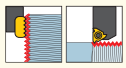
STACME

ISCARTHREAD

ER/L-STACME
External STUB ACME Laydown Threading Inserts with a Shallow ACME Profile for Control Valves

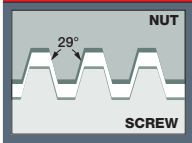






External right-hand shown

M E T R I C



Designation	Dimensions IC	INSL	TPI(1)	PDY	PDX	Tough ↔ Hard IC50M	IC250	IC908
16ER/L 16 STACME	9.52	16.49	16.0	1.0	1.0		●	●
16ER/L 12 STACME	9.52	16.49	12.0	1.2	1.2			●
16ER/L 10 STACME	9.52	16.49	10.0	1.3	1.3	●		●
16ER/L 8 STACME	9.52	16.49	8.0	1.5	1.5	●	●	●
16ER/L 6 STACME	9.52	16.49	6.0	1.8	1.8		●	●
22ER/L 5 STACME	12.70	22.00	5.0	2.0	2.3	●		●
27ER/L 4 STACME	15.88	27.50	4.0	2.3	2.4	●		●
27ER/L 3 STACME	15.88	27.50	3.0	2.8	2.9		●	●

I N C H

Designation	Dimensions IC	INSL	TPI(1)	PDY	PDX	Tough ↔ Hard IC50M	IC250	IC908
11ER 16 ACME	.250	.433	16.0	.04	.04			●
16ER 16 ACME	.375	.649	16.0	.04	.04			●
16ER 12 ACME	.375	.649	12.0	.04	.04			●
16ER 10 ACME	.375	.649	10.0	.05	.05		●	●
16ER/L 8 ACME	.375	.649	8.0	.05	.06			●
22EL 6 ACME	.500	.866	6.0	.07	.08			●
22ER 6 ACME	.500	.866	6.0	.07	.08	●		●
22ER/L 5 ACME	.500	.866	5.0	.08	.09			●
22ER/L 4 ACME	.500	.866	4.0	.08	.09			●
22UERL 4 ACME	.500	.866	4.0	.09	.43	●		●
27EL 4 ACME	.625	1.083	4.0	.09	.11			●
27ER 4 ACME	.625	1.083	4.0	.09	.10		●	●
27UERL 3 ACME	.625	1.083	3.0	.11	.54			●

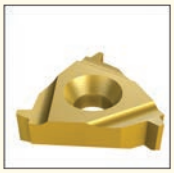
- For Insert Identification System, see pages 33-34 • STUB ACME ASME/ANSI B1.8-1988 Class 2G • For technical information and detailed cutting data, see pages 146-149
- Anvils for Laydown Inserts, see pages 36-43
- For recommended number of passes see pages: 119-121

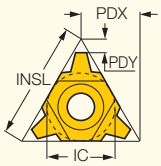
(1) Threads per inch

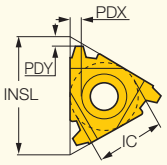
ISCARTHREAD

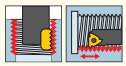
IR/L-STACME

Internal STUB ACME Laydown Threading Inserts with a Shallow ACME Profile for Control Valves



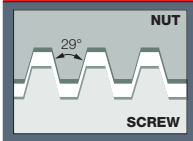






Internal left-hand shown

M E T R I C

 Designation	Dimensions IC	INSL	TPI(1)	PDY	PDX	Tough ↔ Hard IC50M	IC250	IC908
16IR/L 16 STACME	9.52	16.49	16.0	1.0	1.0	●		
16IR 12 STACME	9.52	16.49	12.0	1.2	1.2			●
16IR 10 STACME	9.52	16.49	10.0	1.2	1.2	●		●
16IR 8 STACME	9.52	16.49	8.0	1.5	1.5	●		●
16IR 6 STACME	9.52	16.49	6.0	1.6	1.7		●	●
22IR/L 5 STACME	12.70	22.00	5.0	2.0	2.3	●		
22UIR 3 STACME	12.70	22.00	3.0	3.3	11.0		●	
27IR/L 4 STACME	15.88	27.50	4.0	2.3	2.4	●		●
27IR/L 3 STACME	15.88	27.50	3.0	2.8	2.9		●	

I N C H

Designation	Dimensions IC	INSL	TPI(1)	PDY	PDX	Tough ↔ Hard IC50M	IC250	IC908
16IR/L 16 STACME	.375	.649	16.0	.04	.04	●		
16IR 12 STACME	.375	.649	12.0	.05	.05			●
16IR 10 STACME	.375	.649	10.0	.05	.05	●		●
16IR 8 STACME	.375	.649	8.0	.06	.06	●		●
16IR 6 STACME	.375	.649	6.0	.06	.07		●	●
22IR/L 5 STACME	.500	.866	5.0	.08	.09	●		
22UIR 3 STACME	.500	.866	3.0	.13	.43		●	
27IL 4 STACME	.625	1.083	4.0	.09	.09	●		
27IR 4 STACME	.625	1.083	4.0	.09	.09			●
27IR/L 3 STACME	.625	1.083	3.0	.11	.11		●	

- For Insert Identification System, see pages 33-34 • Tolerance: Class 2G. • For technical information and detailed cutting data, see pages 146-149
- Anvils for Laydown Inserts, see pages 36-43
- For recommended number of passes see pages: 119-121

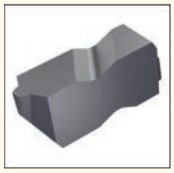
(1) Threads per inch

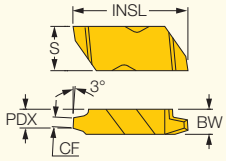
NOTCH-GRIP
GROOVE-TURN LINE

ISCARTHREAD

STUB ACME THREADING
FLAS-PT-I

Double-Ended Precisi Flat Top
on Internal Threading Inserts

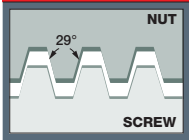






Right-hand shown

M E T R I C



Designation	Dimensions INSL	S	BW	PDX	CF	TPI[1]	IC908
FLAS-3L10-PT-I	22.60	8.74	4.95	3.80	0.94	10.0	●
FLAS-3L12-PT-I	22.60	8.74	4.95	3.80	0.83	12.0	●
FLAS-3L14-PT-I	22.60	8.74	4.95	3.80	0.70	14.0	●
FLAS-3L16-PT-I	22.60	8.74	4.95	3.80	0.60	16.0	●
FLAS-3L4-PT-I	22.60	8.74	4.95	3.80	2.55	4.0	●
FLAS-3L5-PT-I	22.60	8.74	4.95	3.80	2.01	5.0	●
FLAS-3L6-PT-I	22.60	8.74	4.95	3.80	1.66	6.0	●
FLAS-3L8-PT-I	22.60	8.74	4.95	3.80	1.21	8.0	●
FLAS-4L3-PT-I	28.45	11.51	6.48	5.10	3.44	3.0	●
FLAS-6L2-PT-I	28.45	11.51	9.73	7.20	5.23	2.0	●

I N C H

Designation	Dimensions TPI[1]	CF	PDX	BW	S	INSL	IC908
FLAS-6L2-PT-I	2.0	.206	.2835	.383	.453	1.120	●
FLAS-4L3-PT-I	3.0	.135	.2008	.255	.453	1.120	●
FLAS-3L4-PT-I	4.0	.100	.1496	.195	.344	.890	●
FLAS-3L5-PT-I	5.0	.079	.1496	.195	.344	.890	●
FLAS-3L6-PT-I	6.0	.065	.1496	.195	.344	.890	●
FLAS-3L8-PT-I	8.0	.048	.1496	.195	.344	.890	●
FLAS-3L10-PT-I	10.0	.037	.1496	.195	.344	.890	●
FLAS-3L12-PT-I	12.0	.033	.1496	.195	.344	.890	●
FLAS-3L14-PT-I	14.0	.028	.1496	.195	.344	.890	●
FLAS-3L16-PT-I	16.0	.024	.1496	.195	.344	.890	●

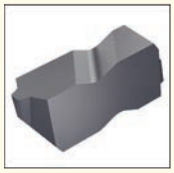
[1] Threads per inch

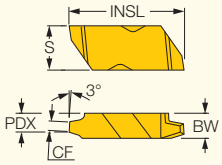
NOTCH GRIP
GROOVE-TURN LINE

ISCAR THREAD

STUB ACME THREADING
FLAS-PT-E

Double-Ended Precision Flat Top External Threading Inserts

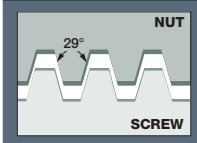






Right-hand shown

M E T R I C



Designation	Dimensions INSL	S	BW	PDX	CF	TPI[1]	IC908
FLAS-3R4-PT-E	22.60	8.74	4.95	3.80	2.55	4.0	●
FLAS-3R5-PT-E	22.60	8.74	4.95	3.80	2.01	5.0	●
FLAS-3R6-PT-E	22.60	8.74	4.95	3.80	1.66	6.0	●
FLAS-3R8-PT-E	22.60	8.74	4.95	3.80	1.21	8.0	●
FLAS-3R10-PT-E	22.60	8.74	4.95	3.80	0.94	10.0	●
FLAS-3R12-PT-E	22.60	8.74	4.95	3.80	0.83	12.0	●
FLAS-3R14-PT-E	22.60	8.74	4.95	3.80	0.70	14.0	●
FLAS-3R16-PT-E	22.60	8.74	4.95	3.80	0.60	16.0	●
FLAS-4R3-PT-E	28.45	11.51	6.48	5.10	3.44	3.0	●
FLAS-6R2-PT-E	28.45	11.51	9.73	7.20	5.23	2.0	●

I N C H

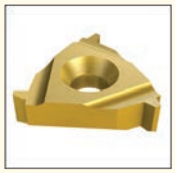
Designation	Dimensions TPI[1]	CF	PDX	BW	S	INSL	IC908
FLAS-3R4-PT-E	4.0	.100	.1496	.195	.344	.890	●
FLAS-3R5-PT-E	5.0	.079	.1496	.195	.344	.890	●
FLAS-3R6-PT-E	6.0	.065	.1496	.195	.344	.890	●
FLAS-3R8-PT-E	8.0	.048	.1496	.195	.344	.890	●
FLAS-3R10-PT-E	10.0	.037	.1496	.195	.344	.890	●
FLAS-3R12-PT-E	12.0	.033	.1496	.195	.344	.890	●
FLAS-3R14-PT-E	14.0	.028	.1496	.195	.344	.890	●
FLAS-3R16-PT-E	16.0	.024	.1496	.195	.344	.890	●
FLAS-4R3-PT-E	3.0	.136	.2008	.255	.453	1.120	●
FLAS-6R2-PT-E	2.0	.206	.2835	.383	.453	1.120	●

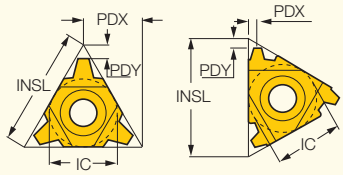
[1] Threads per inch

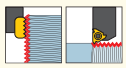
ACME

ISCARTHREAD

ER/L-ACME
External ACME Profile
Laydown Threading Inserts
for Feed Screws

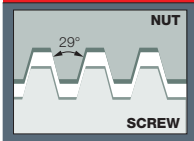






External right-hand shown

M E T R I C



Designation	Dimensions IC	INSL	TPI(1)	PDY	PDX	Tough ↔ Hard IC50M	IC250	IC908
11ER 16 ACME	6.35	11.00	16.0	0.9	1.0			●
16ER 16 ACME	9.52	16.49	16.0	1.0	1.0			●
16ER 12 ACME	9.52	16.49	12.0	1.0	1.0			●
16ER 10 ACME	9.52	16.49	10.0	1.4	1.3		●	●
16ER/L 8 ACME	9.52	16.49	8.0	1.3	1.5			●
22ER/L 6 ACME	12.70	22.00	6.0	1.8	2.1	●		●
22ER/L 5 ACME	12.70	22.00	5.0	2.0	2.4			●
22ER/L 4 ACME	12.70	22.00	4.0	2.1	2.3			●
22UERL 4 ACME	12.70	22.00	4.0	2.3	11.0	●		●
27ER/L 4 ACME	15.88	27.50	4.0	2.3	2.7		●	●
27UERL 3 ACME	15.88	27.50	3.0	2.8	13.7			●

I N C H

Designation	Dimensions IC	INSL	TPI(1)	PDY	PDX	Tough ↔ Hard IC50M	IC250	IC08	IC508	IC908
16IL 16 ACME	.375	.649	16.0	.04	.04	●				
16IR 16 ACME	.375	.649	16.0	.04	.04	●	●			
16IL 14 ACME	.375	.649	14.0	.04	.05	●				
16IL 12 ACME	.375	.649	12.0	.04	.05	●				
16IR 12 ACME	.375	.649	12.0	.04	.05					●
16IL 10 ACME	.375	.649	10.0	.05	.05	●				
16IR 10 ACME	.375	.649	10.0	.05	.06		●			
16IL 8 ACME	.375	.649	8.0	.06	.06					●
16IR 8 ACME	.375	.649	8.0	.05	.06		●			●
22IL 6 ACME	.500	.866	6.0	.07	.08	●				
22IR 6 ACME	.500	.866	6.0	.07	.08	●	●			●
22IL 5 ACME	.500	.866	5.0	.08	.08	●			●	●
22IR 5 ACME	.500	.866	5.0	.08	.08					●
22IR 4 ACME	.500	.866	4.0	.08	.08					●
22UIRL 4 ACME	.500	.866	4.0	.09	.43			●		
27IL 4 ACME	.625	1.083	4.0	.09	.10					●
27IR 4 ACME	.625	1.083	4.0	.09	.10		●			●
27UIRL 3 ACME	.625	1.083	3.0	.11	.54					●

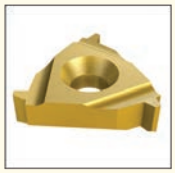
- For Insert Identification System, see pages 33-34 • ACME ASME/ANSI B1.5-1988 Class 3G • For technical information and detailed cutting data, see pages 146-149
- Anvils for Laydown Inserts, see pages 36-43
- For recommended number of passes see pages: 119-121

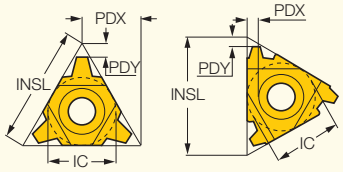
(1) Threads per inch

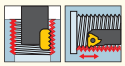
ISCARTHREAD

IR/L-ACME

Internal ACME Profile
Laydown Threading Inserts
for Feed Screws

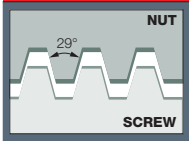






Internal left-hand shown

M E T R I C



Designation	Dimensions IC	INSL	TPI[1]	PDY	PDX	Tough ↔ Hard IC50M	IC250	IC08	IC508	IC908
16IR/L 16 ACME	9.52	16.49	16.0	0.9	1.0	●	●			
16IL 14 ACME	9.52	16.49	14.0	1.0	1.2	●				
16IR/L 12 ACME	9.52	16.49	12.0	1.1	1.2	●				●
16IR/L 10 ACME	9.52	16.49	10.0	1.3	1.3	●	●			
16IR/L 8 ACME	9.52	16.49	8.0	1.5	1.5		●			●
22IR/L 6 ACME	12.70	22.00	6.0	1.9	2.1	●	●			●
22IR/L 5 ACME	12.70	22.00	5.0	2.0	2.1	●			●	●
22IR 4 ACME	12.70	22.00	4.0	2.1	2.1					●
22UIRL 4 ACME	12.70	22.00	4.0	2.3	11.0			●		
27IR/L 4 ACME	15.88	27.50	4.0	2.3	2.6		●			●
27UIRL 3 ACME	15.88	27.50	3.0	2.8	13.7					●

I N C H

Designation	Dimensions IC	INSL	TPI[1]	PDY	PDX	Tough ↔ Hard IC50M	IC250	IC08	IC508	IC908
16IL 16 ACME	.375	.649	16.0	.04	.04	●				
16IR 16 ACME	.375	.649	16.0	.04	.04	●	●			
16IL 14 ACME	.375	.649	14.0	.04	.05	●				
16IL 12 ACME	.375	.649	12.0	.04	.05	●				
16IR 12 ACME	.375	.649	12.0	.04	.05					●
16IL 10 ACME	.375	.649	10.0	.05	.05	●				
16IR 10 ACME	.375	.649	10.0	.05	.06		●			
16IL 8 ACME	.375	.649	8.0	.06	.06					●
16IR 8 ACME	.375	.649	8.0	.05	.06		●			●
22IL 6 ACME	.500	.866	6.0	.07	.08	●				
22IR 6 ACME	.500	.866	6.0	.07	.08	●	●			●
22IL 5 ACME	.500	.866	5.0	.08	.08	●			●	●
22IR 5 ACME	.500	.866	5.0	.08	.08					●
22IR 4 ACME	.500	.866	4.0	.08	.08					●
22UIRL 4 ACME	.500	.866	4.0	.09	.43			●		
27IL 4 ACME	.625	1.083	4.0	.09	.10					●
27IR 4 ACME	.625	1.083	4.0	.09	.10		●			●
27UIRL 3 ACME	.625	1.083	3.0	.11	.54					●

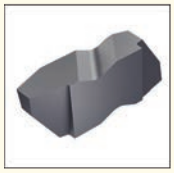
- For Insert Identification System, see pages 33-34 • ACME ASME/ANSI B1.5-1988 Class 3G • For technical information and detailed cutting data, see pages 146-149
- Anvils for Laydown Inserts, see pages 36-43
- For recommended number of passes see pages: 119-121

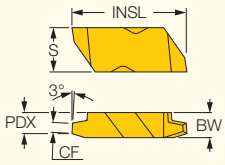
(1) Threads per inch

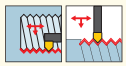
ISCARTHREAD

ACME THREADING FLA

Double-Ended Precision Flat
Top Threading Inserts

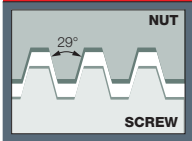






Right-hand shown

M E T R I C



Designation	Dimensions INSL	S	BW	PDX	CF	TPI(1)	IC908
FLA-3R/L4	22.60	8.74	4.95	3.40	2.22	4.0	●
FLA-3R/L5	22.60	8.74	4.95	3.80	1.75	5.0	●
FLA-3R/L6	22.60	8.74	4.95	3.80	1.44	6.0	●
FLA-3R/L8	22.60	8.74	4.95	3.80	1.04	8.0	●
FLA-3R/L10	22.60	8.74	4.95	3.80	0.81	10.0	●
FLA-3R/L12	22.60	8.74	4.95	3.80	0.72	12.0	●
FLA-3R/L14	22.60	8.74	4.95	3.80	0.61	14.0	●
FLA-3R/L16	22.60	8.74	4.95	3.80	0.52	16.0	●
FLA-4R/L4	28.45	11.51	6.48	5.10	2.22	4.0	●
FLA-4R/L5	28.45	11.51	6.48	5.10	1.75	5.0	●
FLA-4R/L6	28.45	11.51	6.48	5.10	1.44	6.0	●
FLA-4R/L8	28.45	11.51	6.48	5.10	1.04	8.0	●
FLA-6R/L2	28.45	11.51	9.73	7.20	4.58	2.0	●
FLA-6R/L2.5	28.45	11.51	9.73	7.20	3.63	2.5	●
FLA-6R/L3	28.45	11.51	9.73	7.20	3.01	3.0	●

I N C H

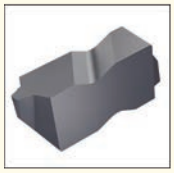
Designation	Dimensions TPI(1)	CF	PDX	BW	S	INSL	IC908
FLA-6R/L2	2.0	.180	.2835	.383	.453	1.120	●
FLA-6R/L2.5	2.5	.143	.2835	.383	.453	1.120	●
FLA-6R/L3	3.0	.118	.2835	.383	.453	1.120	●
FLA-3R/L4	4.0	.087	.1339	.195	.344	.890	●
FLA-4R/L4	4.0	.087	.2008	.255	.453	1.120	●
FLA-3R/L5	5.0	.069	.1496	.195	.344	.890	●
FLA-4R/L5	5.0	.069	.2008	.255	.453	1.120	●
FLA-3R/L6	6.0	.057	.1496	.195	.344	.890	●
FLA-4R/L6	6.0	.057	.2008	.255	.453	1.120	●
FLA-3R/L8	8.0	.041	.1496	.195	.344	.890	●
FLA-4R/L8	8.0	.041	.2008	.255	.453	1.120	●
FLA-3R/L10	10.0	.032	.1496	.195	.344	.890	●
FLA-3R/L12	12.0	.028	.1496	.195	.344	.890	●
FLA-3R/L14	14.0	.024	.1496	.195	.344	.890	●
FLA-3R/L16	16.0	.020	.1496	.195	.344	.890	●

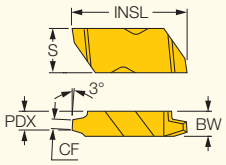
• DMIN according to related boring bar
(1) Threads per inch

NOTCH GRIP
GROOVE-TURN LINE

ISCAR THREAD

ACME THREADING
FLA-PT-E
Double-Ended Precision Flat Top External Threading Inserts

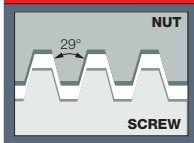






Right-hand shown

M E T R I C



Designation	Dimensions INSL	S	BW	PDX	CF	TPI[1]	IC908
FLA-3R4-PT-E	28.45	8.74	4.95	3.40	2.22	4.0	●
FLA-3R5-PT-E	28.45	8.74	4.95	3.80	1.75	5.0	●
FLA-3R6-PT-E	22.60	8.74	4.95	3.80	1.44	6.0	●
FLA-3R8-PT-E	28.45	8.74	4.95	3.80	1.04	8.0	●
FLA-3R10-PT-E	22.60	8.74	4.95	3.80	0.81	10.0	●
FLA-3R12-PT-E	22.60	8.74	4.95	3.80	0.72	12.0	●
FLA-3R14-PT-E	22.60	8.74	4.95	3.80	0.61	14.0	●
FLA-3R16-PT-E	22.60	8.74	4.95	3.80	0.52	16.0	●
FLA-4R4-PT-E	28.45	11.51	6.48	5.10	2.22	4.0	●
FLA-4R5-PT-E	22.60	11.51	6.48	5.10	1.75	5.0	●
FLA-4R6-PT-E	28.45	11.51	6.48	5.10	1.44	6.0	●
FLA-4R8-PT-E	22.60	11.51	6.48	5.10	1.04	8.0	●
FLA-6R2-PT-E	28.45	11.51	9.73	7.20	4.58	2.0	●
FLA-6R2.5-PT-E	28.45	11.51	9.73	7.20	3.63	2.5	●
FLA-6R3-PT-E	28.45	11.51	9.73	7.20	3.01	3.0	●

I N C H

Designation	Dimensions TPI[1]	CF	PDX	BW	S	INSL	IC908
FLA-3R4-PT-E	4.0	.087	.1339	.195	.344	.890	●
FLA-3R5-PT-E	5.0	.069	.1496	.195	.344	.890	●
FLA-3R6-PT-E	6.0	.057	.1496	.195	.344	.890	●
FLA-3R8-PT-E	8.0	.041	.1496	.195	.344	.890	●
FLA-3R10-PT-E	10.0	.032	.1496	.195	.344	.890	●
FLA-3R12-PT-E	12.0	.028	.1496	.195	.344	.890	●
FLA-3R14-PT-E	14.0	.024	.1496	.195	.344	.890	●
FLA-3R16-PT-E	16.0	.020	.1496	.195	.344	.890	●
FLA-4R4-PT-E	4.0	.087	.2008	.255	.453	1.120	●
FLA-4R5-PT-E	5.0	.069	.2008	.255	.453	1.120	●
FLA-4R6-PT-E	6.0	.057	.2008	.255	.453	1.120	●
FLA-4R8-PT-E	8.0	.041	.2008	.255	.453	1.120	●
FLA-6R2-T-E	2.0	.180	.2835	.383	.453	1.120	●
FLA-6R2.5-PT-E	2.5	.143	.2835	.383	.453	1.120	●
FLA-6R3-PT-E	3.0	.118	.2835	.383	.453	1.120	●

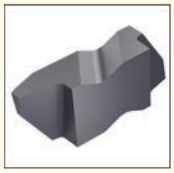
[1] Threads per inch

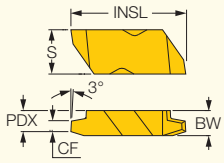
NOTCH-GRIP
GROOVE-TURN LINE

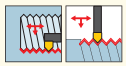
ISCARTHREAD

ACME THREADING FLAS

Double-Ended Precision Flat Top Threading Inserts

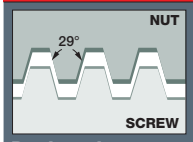






Right-hand shown

M E T R I C



Designation	Dimensions INSL	S	BW	PDX	CF	TPI(1)	IC908
FLAS-3L4	22.60	8.74	4.95	3.80	2.55	4.0	●
FLAS-3R/L5	22.60	8.74	4.95	3.80	2.01	5.0	●
FLAS-3R/L6	22.60	8.74	4.95	3.80	1.66	6.0	●
FLAS-3R/L8	22.60	8.74	4.95	3.80	1.21	8.0	●
FLAS-3R/L10	22.60	8.74	4.95	3.80	0.94	10.0	●
FLAS-3R/L12	22.60	8.74	4.95	3.80	0.83	12.0	●
FLAS-3R/L14	22.60	8.74	4.95	3.80	0.70	14.0	●
FLAS-3R/L16	22.60	8.74	4.95	3.80	0.60	16.0	●
FLAS-4R/L3	28.45	11.51	6.48	5.10	3.44	3.0	●
FLAS-6R/L2	28.45	11.51	9.73	7.20	5.23	2.0	●

I N C H

Designation	Dimensions TPI(1)	CF	PDX	BW	S	INSL	IC908
FLAS-6R/L2	2.0	.206	.2835	.383	.453	1.120	●
FLAS-4R/L3	3.0	.135	.2008	.255	.453	1.120	●
FLAS-3L4	4.0	.100	.1496	.195	.344	.890	●
FLAS-3R/L5	5.0	.079	.1496	.195	.344	.890	●
FLAS-3R/L6	6.0	.065	.1496	.195	.344	.890	●
FLAS-3R/L8	8.0	.048	.1496	.195	.344	.890	●
FLAS-3R/L10	10.0	.037	.1496	.195	.344	.890	●
FLAS-3R/L12	12.0	.033	.1496	.195	.344	.890	●
FLAS-3R/L14	14.0	.028	.1496	.195	.344	.890	●
FLAS-3R/L16	16.0	.024	.1496	.195	.344	.890	●

• DMIN according to related boring bar

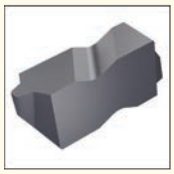
(1) Threads per inch

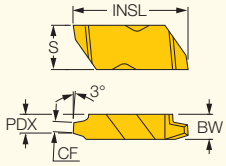
Partial Toping ACME

NOTCH GRIP GROOVE-TURN LINE

ISCAR THREAD

ACME THREADING
FLA-PT-I
Double-Ended Precision Flat Top Internal Threading Inserts

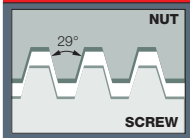






Right-hand shown

M E T R I C



Designation	Dimensions INSL	S	BW	PDX	CF	TPI[1]	IC908
FLA-3L16-PT-I	22.60	8.74	4.95	3.80	0.52	16.0	●
FLA-3L14-PT-I	22.60	8.74	4.95	3.80	0.61	14.0	●
FLA-3L12-PT-I	22.60	8.74	4.95	3.80	0.72	12.0	●
FLA-3L10-PT-I	22.60	8.74	4.95	3.80	0.81	10.0	●
FLA-3L8-PT-I	22.60	8.74	4.95	3.80	1.04	8.0	●
FLA-3L6-PT-I	22.60	8.74	4.95	3.80	1.44	6.0	●
FLA-3L5-PT-I	22.60	8.74	4.95	3.80	1.75	5.0	●
FLA-3L4-PT-I	22.60	8.74	4.95	3.40	2.22	4.0	●
FLA-4L8-PT-I	28.45	11.51	6.48	5.10	1.04	8.0	●
FLA-4L6-PT-I	28.45	11.51	6.48	5.10	1.44	6.0	●
FLA-4L5-PT-I	28.45	11.51	6.48	5.10	1.75	5.0	●
FLA-4L4-PT-I	28.45	11.51	6.48	5.10	2.22	4.0	●
FLA-6L3-PT-I	28.45	11.51	9.73	7.20	3.01	3.0	●
FLA-6L2.5-PT-I	28.45	11.51	9.73	7.20	3.63	2.5	●
FLA-6L2-PT-I	28.45	11.51	9.73	7.20	4.58	2.0	●

I N C H

Designation	Dimensions TPI[1]	CF	PDX	BW	S	INSL	IC908
FLA-3L16-PT-I	16.0	.020	.1496	.195	.344	.890	●
FLA-3L14-PT-I	14.0	.024	.1496	.195	.344	.890	●
FLA-3L12-PT-I	12.0	.028	.1496	.195	.344	.890	●
FLA-3L10-PT-I	10.0	.032	.1496	.195	.344	.890	●
FLA-3L8-PT-I	8.0	.041	.1496	.195	.344	.890	●
FLA-3L6-PT-I	6.0	.057	.1496	.195	.344	.890	●
FLA-3L5-PT-I	5.0	.069	.1496	.195	.344	.890	●
FLA-3L4-PT-I	4.0	.087	.1339	.195	.344	.890	●
FLA-4L8-PT-I	8.0	.041	.2008	.255	.453	1.120	●
FLA-4L6-PT-I	6.0	.057	.2008	.255	.453	1.120	●
FLA-4L5-PT-I	5.0	.069	.2008	.255	.453	1.120	●
FLA-4L4-PT-I	4.0	.087	.2008	.255	.453	1.120	●
FLA-6L3-PT-I	3.0	.118	.2835	.383	.453	1.120	●
FLA-6L2.5-PT-I	2.5	.143	.2835	.383	.453	1.120	●
FLA-6L2-PT-I	2.0	.180	.2835	.383	.453	1.120	●

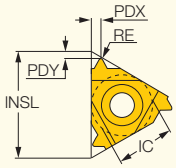
[1] Threads per inch

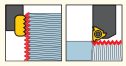
UNJ

ISCARTHREAD

ER/L-UNJ
External UNJ Profile Laydown Threading Inserts for the Aviation and Aerospace Industry

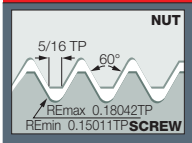






External right-hand shown

M E T R I C



Designation	Dimensions IC	TPI[1]	RE	INSL	PDY	PDX	Tough ↔ Hard IC50M	IC250	IC08	IC908	IC806	IC1007
11ER 28 UNJ	6.35	28.0	0.14	11.00	0.6	0.6				●		
11ER 24 UNJ	6.35	24.0	0.16	11.00	0.7	0.8				●		
11ER 20 UNJ	6.35	20.0	0.19	11.00	0.8	0.9				●		
16ER 40 UNJ	9.52	40.0	0.10	16.49	0.6	0.6				●		
16ER 32 UNJ	9.52	32.0	0.13	16.49	0.6	0.6				●	●	
16ER/L 28 UNJ	9.52	28.0	0.15	16.49	0.6	0.6				●	●	
16ER/L 24 UNJ	9.52	24.0	0.16	16.49	0.7	0.8		●		●	●	
16ER/L 20 UNJ	9.52	20.0	0.21	16.49	0.8	0.9				●	●	●
16ER/L 18 UNJ	9.52	18.0	0.23	16.49	0.7	0.8			●	●	●	●
16ER/L 16 UNJ	9.52	16.0	0.26	16.49	0.9	1.2	●			●	●	●
16ER/L 14 UNJ	9.52	14.0	0.30	16.49	1.1	1.2				●	●	
16ER 13 UNJ	9.52	13.0	0.29	16.49	1.1	1.3				●		
16ER/L 12 UNJ	9.52	12.0	0.35	16.49	1.1	1.2				●	●	
16ER 11 UNJ	9.52	11.0	0.32	16.49	1.1	1.5				●		
16ER 10 UNJ	9.52	10.0	0.38	16.49	1.1	1.5				●	●	
16ER/L 8 UNJ	9.52	8.0	0.48	16.49	1.2	1.6		●		●		

I N C H

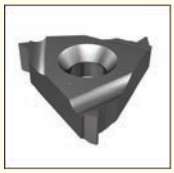
Designation	Dimensions IC	TPI[1]	RE	INSL	PDY	PDX	Tough ↔ Hard IC50M	IC250	IC08	IC908	IC806	IC1007
11ER 28 UNJ	.250	28.0	.0055	.433	.02	.02				●		
11ER 24 UNJ	.250	24.0	.0063	.433	.03	.03				●		
11ER 20 UNJ	.250	20.0	.0075	.433	.03	.04				●		
16ER 40 UNJ	.375	40.0	.0039	.649	.02	.02				●		
16ER 32 UNJ	.375	32.0	.0051	.649	.02	.02				●	●	
16EL 28 UNJ	.375	28.0	.0059	.649	.02	.02				●		
16ER 28 UNJ	.375	28.0	.0059	.649	.02	.02				●	●	
16EL 24 UNJ	.375	24.0	.0063	.649	.03	.03		●				
16ER 24 UNJ	.375	24.0	.0071	.649	.03	.03				●	●	
16EL 20 UNJ	.375	20.0	.0083	.649	.03	.04				●		
16ER 20 UNJ	.375	20.0	.0083	.649	.03	.04				●	●	●
16EL 18 UNJ	.375	18.0	.0091	.649	.03	.03			●			
16ER 18 UNJ	.375	18.0	.0091	.649	.03	.03				●	●	●
16EL 16 UNJ	.375	16.0	.0102	.649	.04	.05				●		
16ER 16 UNJ	.375	16.0	.0102	.649	.04	.05	●			●	●	●
16EL 14 UNJ	.375	14.0	.0118	.649	.04	.05				●		
16ER 14 UNJ	.375	14.0	.0118	.649	.04	.05				●	●	
16ER 13 UNJ	.375	13.0	.0114	.649	.04	.05				●		
16EL 12 UNJ	.375	12.0	.0138	.649	.04	.05				●		
16ER 12 UNJ	.375	12.0	.0138	.649	.04	.05				●	●	
16ER 11 UNJ	.375	11.0	.0126	.649	.04	.06				●		
16ER 10 UNJ	.375	10.0	.0150	.649	.04	.06				●	●	
16EL 8 UNJ	.375	8.0	.0189	.649	.05	.06		●				
16ER 8 UNJ	.375	8.0	.0189	.649	.05	.06				●		

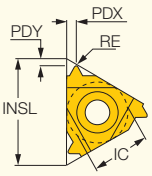
- UNJ MIL-S-8879C 9-1992 Class 3A • Only right-hand inserts are available in grade IC806 and IC1007 • Thread milling application available only for inserts size 06, 08, 11
- For Insert Identification System, see pages 33-34 • For technical information and detailed cutting data, see pages 146-149 • Anvils for Laydown Inserts, see pages 36-43
- For recommended number of passes see pages: 119-121

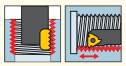
(1) Threads per inch

ISCARTHREAD

IR/L-UNJ
Internal UNJ Profile Laydown Threading Inserts for the Aviation and Aerospace Industry

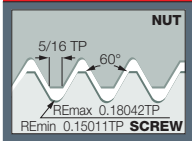






Internal left-hand shown

M E T R I C



Designation	Dimensions IC	TPI(1)	RE	INSL	PDY	PDX	Tough ↔ Hard IC228	IC50M	IC908	IC806
08IR 20 UNJ	5.00	20.0	0.07	8.24	0.7	0.7	●			
08IR 18 UNJ	5.00	18.0	0.08	8.24	0.7	0.7	●			
11IR 32 UNJ	6.35	32.0	0.04	11.00	0.6	0.6			●	
11IRB 32 UNJ	6.35	32.0	0.04	11.00	0.6	0.6			●	
11IR 28 UNJ	6.35	28.0	0.05	11.00	0.6	0.6			●	
11IRB 28 UNJ	6.35	28.0	0.05	11.00	0.6	0.6			●	
11IR 24 UNJ	6.35	24.0	0.05	11.00	0.7	0.8			●	
11IRB 24 UNJ	6.35	24.0	0.05	11.00	0.6	0.6			●	
11IR 20 UNJ	6.35	20.0	0.07	11.00	0.8	0.9			●	
11IRB 20 UNJ	6.35	20.0	0.07	11.00	0.8	0.9			●	
11IR 18 UNJ	6.35	18.0	0.08	11.00	0.8	0.9			●	●
11IRB 18 UNJ	6.35	18.0	0.08	11.00	0.9	1.0			●	
11IR 16 UNJ	6.35	16.0	0.09	11.00	0.8	0.9			●	●
11IRB 16 UNJ	6.35	16.0	0.09	11.00	0.8	0.9			●	
11IRB 14 UNJ	6.35	14.0	0.10	11.00	0.8	0.9			●	
16IR 24 UNJ	9.52	24.0	0.05	16.49	0.7	0.8		●		
16IR 20 UNJ	9.52	20.0	0.07	16.49	0.8	0.8			●	
16IR 18 UNJ	9.52	18.0	0.07	16.49	0.7	0.8			●	●
16IR/L 16 UNJ	9.52	16.0	0.09	16.49	1.0	1.2			●	●
16IR 14 UNJ	9.52	14.0	0.10	16.49	1.0	1.1			●	●
16IR/L 12 UNJ	9.52	12.0	0.12	16.49	1.1	1.0			●	●
16IR/L 8 UNJ	9.52	8.0	0.19	16.49	1.2	1.6			●	

I N C H

Designation	Dimensions IC	TPI(1)	RE	INSL	PDY	PDX	Tough ↔ Hard IC228	IC50M	IC908	IC806
08IR 20 UNJ	.197	20.0	.0027	.324	.03	.03	●			
08IR 18 UNJ	.197	18.0	.0030	.324	.03	.03	●			
11IR 32 UNJ	.250	32.0	.0016	.433	.02	.02			●	
11IRB 32 UNJ	.250	32.0	.0016	.433	.02	.02			●	
11IR 28 UNJ	.250	28.0	.0019	.433	.02	.02			●	
11IRB 28 UNJ	.250	28.0	.0019	.433	.02	.02			●	
11IR 24 UNJ	.250	24.0	.0020	.433	.03	.03			●	
11IRB 24 UNJ	.250	24.0	.0020	.433	.02	.02			●	
11IR 20 UNJ	.250	20.0	.0027	.433	.03	.04			●	
11IRB 20 UNJ	.250	20.0	.0027	.433	.03	.04			●	
11IR 18 UNJ	.250	18.0	.0030	.433	.03	.04			●	●
11IRB 18 UNJ	.250	18.0	.0031	.433	.04	.04			●	
11IR 16 UNJ	.250	16.0	.0034	.433	.03	.04			●	●
11IRB 16 UNJ	.250	16.0	.0034	.433	.03	.04			●	
11IRB 14 UNJ	.250	14.0	.0039	.433	.03	.04			●	
16IR 24 UNJ	.375	24.0	.0020	.649	.03	.03		●		
16IR 20 UNJ	.375	20.0	.0027	.649	.03	.03			●	
16IR 18 UNJ	.375	18.0	.0027	.649	.03	.03			●	●
16IL 16 UNJ	.375	16.0	.0034	.649	.04	.05			●	
16IR 16 UNJ	.375	16.0	.0034	.649	.04	.05			●	●
16IR 14 UNJ	.375	14.0	.0039	.649	.04	.04			●	●
16IL 12 UNJ	.375	12.0	.0047	.649	.04	.04			●	
16IR 12 UNJ	.375	12.0	.0047	.649	.04	.04			●	●
16IR/L 8 UNJ	.375	8.0	.0075	.649	.05	.06			●	

- Thread milling application available only for inserts size 06, 08, 11 • For Insert Identification System, see pages 33-34
- For technical information and detailed cutting data, see pages 146-149 • Anvils for Laydown Inserts, see pages 36-43
- For recommended number of passes see pages: 119-121

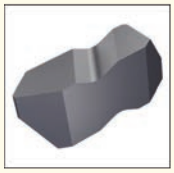
(1) Threads per inch

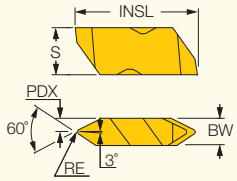
NOTCH GRIP GROOVE-TURN LINE

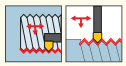
ISCARTHREAD

UNJ THREADING FLJ

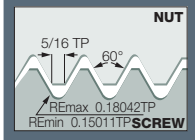
Double-Ended Precision Flat Top Threading Inserts







M E T R I C



Designation	Dimensions INSL	S	BW	PDX	RE	TPI(1)	IC908
FLJ-3010R/L16	22.60	8.74	4.95	2.49	0.24	16.0	•
FLJ-3014R/L12	22.60	8.74	4.95	2.49	0.32	12.0	•
FLJ-3020R/L8	22.60	8.74	4.95	2.49	0.48	8.0	•

I N C H

Designation	Dimensions TPI(1)	RE	PDX	BW	S	INSL	IC908
FLJ-3020R/L8	8.0	.0189	.0980	.195	.344	.890	•
FLJ-3014R/L12	12.0	.0126	.0980	.195	.344	.890	•
FLJ-3010R/L16	16.0	.0094	.0980	.195	.344	.890	•

• DMIN according to related boring bar

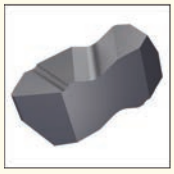
(1) Threads per inch

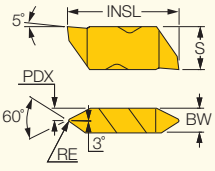
NOTCH GRIP GROOVE-TURN LINE

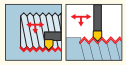
ISCARTHREAD

UNJ THREADING FLJP

Double-Ended, Precision Threading Inserts with a Positive Rake

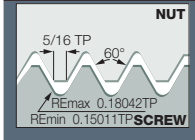






Right-hand shown

M E T R I C



Designation	Dimensions INSL	S	BW	PDX	RE	TPI(1)	IC908
FLJP-3010R/L16	22.60	8.74	4.95	2.50	0.24	16.0	•
FLJP-3014R/L12	22.60	8.74	4.95	2.50	0.32	12.0	•
FLJP-3020R/L8	22.60	8.74	4.95	2.50	0.48	8.0	•

I N C H

Designation	Dimensions TPI(1)	RE	PDX	BW	S	INSL	IC908
FLJP-3020R/L8	8.0	.0189	.0984	.195	.344	.890	•
FLJP-3014R/L12	12.0	.0126	.0984	.195	.344	.890	•
FLJP-3010R/L16	16.0	.0094	.0984	.195	.344	.890	•

• DMIN according to related boring bar

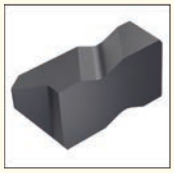
(1) Threads per inch

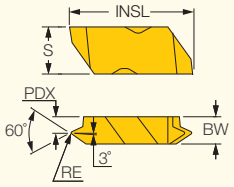
NOTCH GRIP
GROOVE-TURN LINE

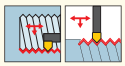
ISCAR THREAD

UNJ THREADING FLJF

Double-Ended, Precision
Flat Top Threading Inserts

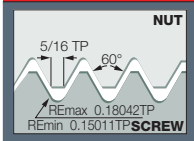






Right-hand shown

M E T R I C



Designation	Dimensions INSL	S	BW	PDX	RE	TPI(1)	IC908
FLJF-3005R/L32	22.60	8.74	4.95	3.60	0.12	32.0	●
FLJF-3006R/L28	22.60	8.74	4.95	3.60	0.14	28.0	●
FLJF-3007R/L24	22.60	8.74	4.95	3.60	0.16	24.0	●
FLJF-3008R/L20	22.60	8.74	4.95	3.60	0.19	20.0	●
FLJF-3009R/L18	22.60	8.74	4.95	3.60	0.21	18.0	●
FLJF-3010R/L16	22.60	8.74	4.95	3.60	0.24	16.0	●
FLJF-3012R/L14	22.60	8.74	4.95	3.58	0.27	14.0	●

I N C H

Designation	Dimensions TPI(1)	RE	PDX	BW	S	INSL	IC908
FLJF-3012R/L14	14.0	.0106	.1409	.195	.344	.890	●
FLJF-3010R/L16	16.0	.0094	.1417	.195	.344	.890	●
FLJF-3009R/L18	18.0	.0083	.1417	.195	.344	.890	●
FLJF-3008R/L20	20.0	.0075	.1417	.195	.344	.890	●
FLJF-3007R/L24	24.0	.0063	.1417	.195	.344	.890	●
FLJF-3006R/L28	28.0	.0055	.1417	.195	.344	.890	●
FLJF-3005R/L32	32.0	.0047	.1417	.195	.344	.890	●

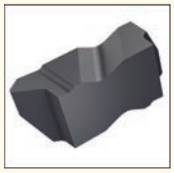
• DMIN according to related boring bar
(1) Threads per inch

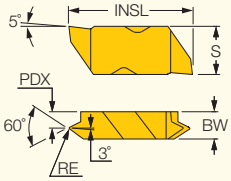
NOTCH-GRIP
GROOVE-TURN LINE

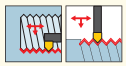
ISCARTHREAD

UNJ THREADING FLJK

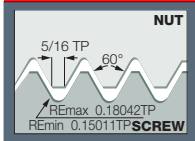
Double-Ended, Precision Threading Inserts, with a Positive Rake







Right-hand shown



M E T R I C

Designation	Dimensions INSL	S	BW	PDX	RE	TPI(1)	IC908
FLJK-3005R/L32	22.60	8.74	4.95	3.60	0.12	32.0	●
FLJK-3006R/L28	22.60	8.74	4.95	3.60	0.14	28.0	●
FLJK-3007R/L24	22.60	8.74	4.95	3.60	0.16	24.0	●
FLJK-3008R/L20	22.60	8.74	4.95	3.60	0.19	20.0	●
FLJK-3009R/L18	22.60	8.74	4.95	3.60	0.21	18.0	●
FLJK-3010R/L16	22.60	8.74	4.95	3.60	0.24	16.0	●
FLJK-3012R/L14	22.60	8.74	4.95	3.58	0.27	14.0	●

I N C H

Designation	Dimensions TPI(1)	RE	PDX	BW	S	INSL	IC908
FLJK-3012R/L14	14.0	.0106	.1409	.195	.344	.890	●
FLJK-3010R/L16	16.0	.0094	.1417	.195	.344	.890	●
FLJK-3009R/L18	18.0	.0083	.1417	.195	.344	.890	●
FLJK-3008R/L20	20.0	.0075	.1417	.195	.344	.890	●
FLJK-3007R/L24	24.0	.0063	.1417	.195	.344	.890	●
FLJK-3006R/L28	28.0	.0055	.1417	.195	.344	.890	●
FLJK-3005R/L32	32.0	.0047	.1417	.195	.344	.890	●

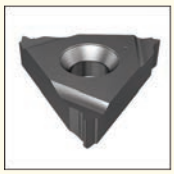
• DMIN according to related boring bar

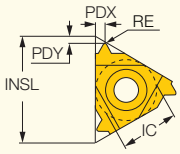
(1) Threads per inch

MJ

ISCARTHREAD

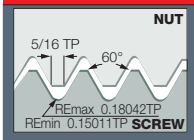
ER-MJ
External MJ ISO 5855 Metric Full Profile Laydown Threading Inserts for the Aviation and Aerospace Industry





External right-hand shown

M E T R I C



Designation	Dimensions IC	TP[1]	INSL	RE	PDY	PDX	Tough ↔ Hard IC250	IC908	IC806
16ER 1.00 MJ	9.52	1.000	16.49	0.17	0.7	0.8		●	●
16ER 1.25 MJ	9.52	1.250	16.49	0.21	0.8	0.8		●	●
16ER 1.50 MJ	9.52	1.500	16.49	0.25	0.9	1.1	●	●	●
16ER 2.00 MJ	9.52	2.000	16.49	0.33	1.0	1.1		●	●

I N C H

Designation	Dimensions IC	TP mm[1]	INSL	RE	PDY	PDX	Tough ↔ Hard IC250	IC908	IC806
16ER 1.00 MJ	.375	1.000	.649	.0067	.03	.03		●	●
16ER 1.25 MJ	.375	1.250	.649	.0083	.03	.03		●	●
16ER 1.50 MJ	.375	1.500	.649	.0098	.04	.05	●	●	●
16ER 2.00 MJ	.375	2.000	.649	.0130	.04	.05		●	●

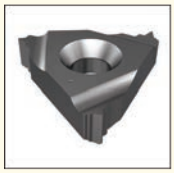
• For Insert Identification System, see pages 33-34 • For technical information and detailed cutting data, see pages 146-149 • Anvils for Laydown Inserts, see pages 36-43
• For recommended number of passes see pages: 119-121

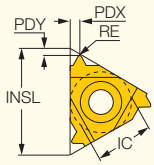
(1) Thread pitch

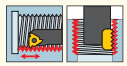
ISCARTHREAD

IR-MJ

Internal MJ ISO 5855 Metric Full Profile Laydown Threading Inserts for the Aviation and Aerospace Industry

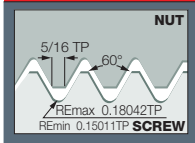






Internal left-hand shown

M E T R I C



Designation	Dimensions IC	TP[1]	INSL	RE	PDY	PDX	Tough ↔ Hard IC908	IC806
11IR 1.00 MJ	6.35	1.000	11.00	0.05	0.6	0.6	●	●
11IRB 1.00 MJ	6.35	1.000	11.00	0.05	0.6	0.6	●	
11IR 1.25 MJ	6.35	1.250	11.00	0.07	0.8	0.9	●	●
11IR 1.50 MJ	6.35	1.500	11.00	0.08	0.8	1.0	●	●
11IRB 1.50 MJ	6.35	1.500	11.00	0.08	0.8	0.9	●	
11IR 2.00 MJ	6.35	2.000	11.00	0.12	0.9	1.0	●	●
16IR 1.00 MJ	9.52	1.000	16.49	0.05	0.7	0.8	●	●
16IR 1.25 MJ	9.52	1.250	16.49	0.07	0.8	0.9	●	●
16IR 1.50 MJ	9.52	1.500	16.49	0.08	1.1	1.1	●	●

I N C H

Designation	Dimensions IC	TP mm[1]	INSL	RE	PDY	PDX	Tough ↔ Hard IC908	IC806
11IR 1.00 MJ	.250	1.000	.433	.0020	.02	.02	●	●
11IRB 1.00 MJ	.250	1.000	.433	.0020	.02	.02	●	
11IR 1.25 MJ	.250	1.250	.433	.0027	.03	.04	●	●
11IR 1.50 MJ	.250	1.500	.433	.0031	.03	.04	●	●
11IRB 1.50 MJ	.250	1.500	.433	.0031	.03	.04	●	
11IR 2.00 MJ	.250	2.000	.433	.0047	.04	.04	●	●
16IR 1.00 MJ	.375	1.000	.649	.0020	.03	.03	●	●
16IR 1.25 MJ	.375	1.250	.649	.0027	.03	.04	●	●
16IR 1.50 MJ	.375	1.500	.649	.0031	.04	.05	●	●

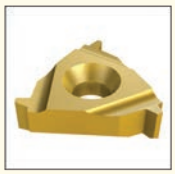
- Thread milling application available only for inserts size 06, 08, 11 • For Insert Identification System, see pages 33-34
- For technical information and detailed cutting data, see pages 146-149 • Anvils for Laydown Inserts, see pages 36-43
- For recommended number of passes see pages: 119-121

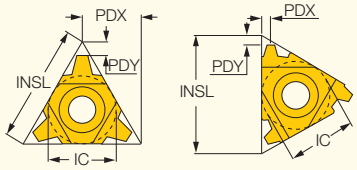
[1] Thread pitch

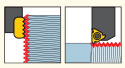
TR Trapez

ISCARTHREAD

ER/L-TR
External Trapeze Shaped
DIN 103 Laydown Threading
Inserts for Feed Screws

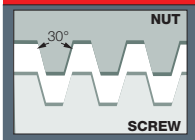






External right-hand shown

M E T R I C



Designation	Dimensions IC	TP[2]	INSL	PDY	PDX	Tough ↔ Hard IC228	IC50M	IC250	IC908	IC1007
16ER/L 1.5 TR	9.52	1.500	16.49	1.0	1.0			●	●	
16ER/L 2 TR	9.52	2.000	16.49	1.0	1.0			●	●	
16ER/L 3 TR	9.52	3.000	16.49	1.4	1.6	●		●	●	●
16ER 4 TR	9.52	4.000	16.49	1.8	1.9			●		
22ER/L 4 TR	12.70	4.000	22.00	1.8	1.9			●	●	
22ER/L 5 TR	12.70	5.000	22.00	2.0	2.4		●	●	●	
22ER/L 6 TR	12.70	6.000	22.00	2.0	2.4				●	
22UERL 6 TR	12.70	6.000	22.00	2.0	11.0		●	●	●	
22UERL 7 TR	12.70	7.000	22.00	2.3	11.0			●		
22UERL 8 TR	12.70	8.000	22.00	2.5	11.0			●		
27ER/L 6 TR	15.88	6.000	27.50	2.3	2.6			●	●	
27ER/L 7 TR	15.88	7.000	27.50	2.2	2.6			●	●	
27UERL 8 TR	15.88	8.000	27.50	2.5	13.7			●	●	
27UERL 9 TR	15.88	9.000	27.50	3.0	13.7			●	●	
27UERL 10 TR [1]	15.88	10.000	27.50	3.2	13.7			●	●	

I N C H

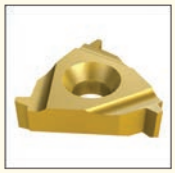
Designation	Dimensions IC	TP mm[2]	INSL	PDY	PDX	Tough ↔ Hard IC228	IC50M	IC250	IC908	IC1007
16EL 1.5 TR	.375	1.500	.649	.04	.04			●		
16ER 1.5 TR	.375	1.500	.649	.04	.04			●	●	
16EL 2 TR	.375	2.000	.649	.04	.04			●		
16ER 2 TR	.375	2.000	.649	.04	.04			●	●	
16EL 3 TR	.375	3.000	.649	.06	.06				●	
16ER 3 TR	.375	3.000	.649	.06	.06	●		●	●	●
16ER 4 TR	.375	4.000	.649	.07	.07			●		
22EL 4 TR	.500	4.000	.866	.07	.07				●	
22ER 4 TR	.500	4.000	.866	.07	.07			●	●	
22EL 5 TR	.500	5.000	.866	.08	.09			●	●	
22ER 5 TR	.500	5.000	.866	.08	.09		●	●	●	
22ER/L 6 TR	.500	6.000	.866	.08	.09				●	
22UERL 6 TR	.500	6.000	.866	.08	.43		●	●	●	
22UERL 7 TR	.500	7.000	.866	.09	.43			●		
22UERL 8 TR	.500	8.000	.866	.10	.43			●		
27EL 6 TR	.625	6.000	1.083	.09	.10				●	
27ER 6 TR	.625	6.000	1.083	.09	.10			●	●	
27EL 7 TR	.625	7.000	1.083	.09	.10			●		
27ER 7 TR	.625	7.000	1.083	.09	.10			●	●	
27UERL 8 TR	.625	8.000	1.083	.10	.11			●	●	
27UERL 9 TR	.625	9.000	1.083	.12	.54			●	●	
27UERL 10 TR [1]	.625	10.000	1.083	.13	.54			●	●	

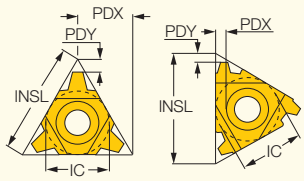
- For Insert Identification System, see pages 33-34 • DIN 103 04/1977,1502901/1977 Class 7e • For technical information and detailed cutting data, see pages 146-149
- Anvils for Laydown Inserts, see pages 36-43
- For recommended number of passes see pages: 119-121

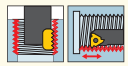
[1] One cutting edge only
[2] Thread pitch

ISCARTHREAD

IR/L-TR
Internal Trapeze Shaped DIN 103 Laydown Threading Inserts for Feed Screws

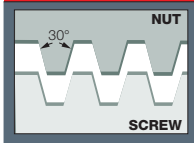






Internal left-hand shown

M E T R I C



Designation	Dimensions IC	TP[2]	INSL	PDY	PDX	Tough ↔ Hard IC228	IC50M	IC250	IC908
08IR 1.5 TR [1]	5.00	1.500	8.24	0.60	0.6	●			
08UIRL 2 TR	5.00	2.000	8.24	0.90	4.0	●			
16IR 1.5 TR	9.52	1.500	16.49	1.00	1.0			●	●
16IR/L 2 TR	9.52	2.000	16.49	1.00	1.3			●	●
16IR/L 3 TR	9.52	3.000	16.49	1.30	1.5	●			●
22IR/L 4 TR	12.70	4.000	22.00	1.90	2.0			●	●
22IR/L 5 TR	12.70	5.000	22.00	2.00	2.3			●	●
22IR/L 6 TR	12.70	6.000	22.00	2.00	2.3		●	●	●
22UIRL 6 TR	12.70	6.000	22.00	2.00	11.0			●	●
22UIRL 7 TR	12.70	7.000	22.00	2.30	11.0			●	
27IR/L 6 TR	15.88	6.000	27.50	2.30	2.7			●	●
27IR 7 TR	15.88	7.000	27.50	2.20	2.6			●	
27UIRL 8 TR	15.88	8.000	27.50	2.50	13.7	●		●	●
27UIRL 9 TR	15.88	9.000	27.50	3.00	13.7			●	●
27UIRL 10 TR [1]	15.88	10.000	27.50	3.20	2.5				●

I N C H

Designation	Dimensions IC	TP mm[2]	INSL	PDY	PDX	Tough ↔ Hard IC228	IC50M	IC250	IC908
08IR 1.5 TR [1]	.197	1.500	.324	.0236	.02	●			
08UIRL 2 TR	.197	2.000	.324	.0354	.16	●			
16IR 1.5 TR	.375	1.500	.649	.0394	.04			●	●
16IL 2 TR	.375	2.000	.649	.0394	.05			●	●
16IR 2 TR	.375	2.000	.649	.0394	.04			●	●
16IL 3 TR	.375	3.000	.649	.0512	.06				●
16IR 3 TR	.375	3.000	.649	.0512	.06	●			●
22IL 4 TR	.500	4.000	.866	.0748	.08				●
22IR 4 TR	.500	4.000	.866	.0748	.08			●	●
22IL 5 TR	.500	5.000	.866	.0787	.09				●
22IR 5 TR	.500	5.000	.866	.0787	.09			●	●
22IL 6 TR	.500	6.000	.866	.0787	.09				●
22IR 6 TR	.500	6.000	.866	.0787	.09		●	●	●
22UIRL 6 TR	.500	6.000	.866	.0787	.43			●	●
22UIRL 7 TR	.500	7.000	.866	.0906	.43			●	
27IL 6 TR	.625	6.000	1.083	.0906	.11				●
27IR 6 TR	.625	6.000	1.083	.0906	.10			●	●
27IR 7 TR	.625	7.000	1.083	.0866	.10			●	
27UIRL 8 TR	.625	8.000	1.083	.0984	.10	●		●	●
27UIRL 9 TR	.625	9.000	1.083	.1181	.54			●	●
27UIRL 10 TR [1]	.625	10.000	1.083	.1260	.10				●

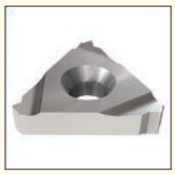
- For Insert Identification System, see pages 33-34 • Tolerance: Class 7H • For technical information and detailed cutting data, see pages 146-149
- Anvils for Laydown Inserts, see pages 36-43
- For recommended number of passes see pages: 119-121

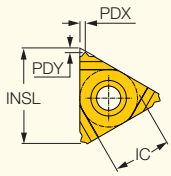
[1] A single threading corner
[2] Thread pitch

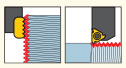
PG (Panzergewinde)

ISCARTHREAD

ER-PG
External Threading Inserts
for the Electrical Industry

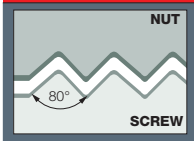






External right-hand shown

M E T R I C



Designation	Dimensions IC	TPI(1)	INSL	PDY	PDX	RE	IC908
16ER 16 PG	9.52	16.0	16.49	0.8	1.0	0.17	●
16ER 18 PG	9.52	18.0	16.49	0.8	0.9	0.15	●
16ER 20 PG	9.52	20.0	16.49	0.7	0.8	0.13	●

I N C H

Designation	Dimensions IC	TPI(1)	INSL	PDY	PDX	RE	IC908
16ER 16 PG	.375	16.0	.649	.03	.04	.0067	●
16ER 18 PG	.375	18.0	.649	.03	.04	.0059	●
16ER 20 PG	.375	20.0	.649	.03	.03	.0051	●

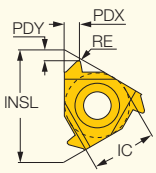
- For Insert Identification System, see pages 33-34 • Anvils for Laydown Inserts, see pages 36-43
- For recommended number of passes see pages: 119-121

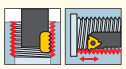
(1) Threads per inch

ISCARTHREAD

IR/L-PG
Internal Thread Profile Inserts
for the Electrical Industry

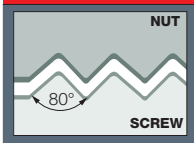






Internal left-hand shown

M E T R I C



Designation	Dimensions IC	TPI(1)	RE	INSL	PDY	PDX	IC908
11IR 18 PG	6.35	18.0	0.15	11.00	0.8	0.9	●
16IR 18 PG	9.52	18.0	0.15	16.49	0.8	0.9	●
16IR 16 PG	9.52	16.0	0.17	16.49	0.7	0.9	●

I N C H

Designation	Dimensions IC	TPI(1)	RE	INSL	PDY	PDX	IC908
11IR 18 PG	.250	18.0	.0059	.433	.03	.04	●
16IR 18 PG	.375	18.0	.0059	.649	.03	.04	●
16IR 16 PG	.375	16.0	.0067	.649	.03	.04	●

- For Insert Identification System, see pages 33-34 • Anvils for Laydown Inserts, see pages 36-43
- For recommended number of passes see pages: 119-121

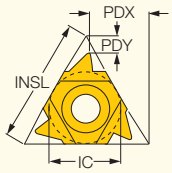
(1) Threads per inch

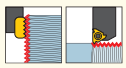
SAGE (Sagengenwide) Metric Buttress DIN 513

ISCARTHREAD

ER/L-SAGE
External Buttress Thread (DIN 513) for High Force in One Direction Applications

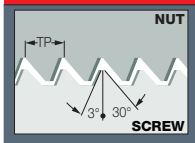






External right-hand shown

M E T R I C



Designation	Dimensions IC	INSL	TP(2)	PDY	PDX	Tough ↔ Hard IC250	IC908
16ER/L 2 SAGE	9.52	16.49	2.000	1.1	1.6		●
22ER 3 SAGE	12.70	22.00	3.000	1.5	2.4		●
22ER/L 4 SAGE	12.70	22.00	4.000	1.9	3.1	●	●
22UER 5 SAGE (1)	12.70	22.00	5.000	1.2	11.6		●
22UER/L 6 SAGE (1)	12.70	22.00	6.000	1.2	11.7		●

I N C H

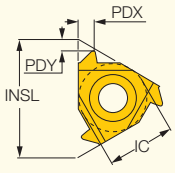
Designation	Dimensions IC	INSL	TP mm(1)	PDY	PDX	Tough ↔ Hard IC250	IC908
16ER/L 2 SAGE	.375	.649	2.000	.04	.06		●
22ER 3 SAGE	.500	.866	3.000	.06	.09		●
22EL 4 SAGE	.500	.866	4.000	.07	.12		●
22ER 4 SAGE	.500	.866	4.000	.07	.12	●	
22UER 5 SAGE	.500	.866	5.000	.05	.46		●
22UER/L 6 SAGE	.500	.866	6.000	.05	.46		●

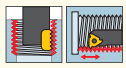
- For Insert Identification System, see pages 33-34 • For technical information and detailed cutting data, see pages 146-149 • Anvils for Laydown Inserts, see pages 36-43
- For recommended number of passes see pages: 119-121 (1) Requires special anvil (2) Thread pitch

ISCARTHREAD

IR/L-SAGE
Internal Sagengenwinde (DIN 513) Thread Application for High Force in One Direction

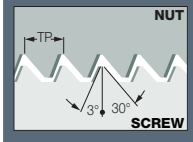






Internal left-hand shown

M E T R I C



Designation	Dimensions IC	TP(2)	INSL	PDY	PDX	IC908
16IR/L 2 SAGE	9.52	2.000	16.49	1.2	1.7	●
22IR 3 SAGE	12.70	3.000	22.00	1.9	2.9	●
22IR 4 SAGE	12.70	4.000	22.00	2.2	3.3	●
22UIR 5 SAGE	12.70	5.000	22.00	1.9	11.7	●
22UIR 6 SAGE (1)	12.70	6.000	22.00	2.1	11.9	●

I N C H

Designation	Dimensions IC	TP mm(2)	INSL	PDY	PDX	IC908
16IR/L 2 SAGE	.375	2.000	.649	.05	.07	●
22IR 3 SAGE	.500	3.000	.866	.07	.11	●
22IR 4 SAGE	.500	4.000	.866	.09	.13	●
22UIR 5 SAGE	.500	5.000	.866	.07	.46	●
22UIR 6 SAGE (1)	.500	6.000	.866	.08	.47	●

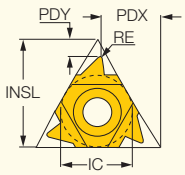
- For Insert Identification System, see pages 33-34 • For technical information and detailed cutting data, see pages 146-149 • Anvils for Laydown Inserts, see pages 36-43
- For recommended number of passes see pages: 119-121 (1) Requires special anvil (2) Thread pitch

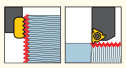
ABUT (American Buttress)

ISCARTHREAD

ER/L-ABUT
External American Buttress Laydown Threading Inserts for High Force Transmission in One Direction

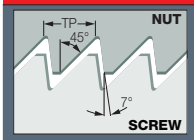






External right-hand shown

M E T R I C



Designation	Dimensions IC	TPI(1)	RE	INSL	PDY	PDX	Tough ↔ Hard IC250	IC908
16ER 20 ABUT	9.52	20.0	0.07	16.49	1.0	1.3		●
16ER/L 16 ABUT	9.52	16.0	0.09	16.49	1.1	1.5		●
16ER/L 12 ABUT	9.52	12.0	0.12	16.49	1.4	2.0		●
16ER/L 10 ABUT	9.52	10.0	0.15	16.49	1.5	2.3		●
22ER 8 ABUT	12.70	8.0	0.18	22.00	2.1	3.3	●	●
22ER 6 ABUT	12.70	6.0	0.25	22.00	2.1	3.4		●
22UER 4 ABUT	12.70	4.0	0.41	22.00	2.3	9.5	●	●
27UER/L 3 ABUT	15.88	3.0	0.56	27.50	3.1	11.7		●

I N C H

Designation	Dimensions IC	TPI(1)	RE	INSL	PDY	PDX	Tough ↔ Hard IC250	IC908
16ER 20 ABUT	.375	20.0	.0027	.649	.04	.05		●
16ER/L 16 ABUT	.375	16.0	.0035	.649	.04	.06		●
16ER/L 12 ABUT	.375	12.0	.0047	.649	.06	.08		●
16ER/L 10 ABUT	.375	10.0	.0059	.649	.06	.09		●
22ER 8 ABUT	.500	8.0	.0071	.866	.08	.13	●	●
22ER 6 ABUT	.500	6.0	.0098	.866	.08	.13		●
22UER 4 ABUT	.500	4.0	.0161	.866	.09	.37	●	●
27UEL 3 ABUT	.625	3.0	.0220	1.083	.12	.46		●
27UER 3 ABUT	.625	3.0	-	1.083	.12	.46		●

- For Insert Identification System, see pages 33-34 • ANSI B1.9-1973 Class 2 • For technical information and detailed cutting data, see pages 146-149
- Anvils for Laydown Inserts, see pages 36-43
- For recommended number of passes see pages: 119-121

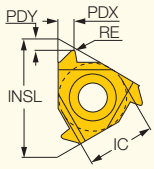
(1) Threads per inch

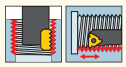
ISCARTHREAD

IR/L-ABUT

Internal American Buttress Laydown Threading Inserts for High Force Transmission in One Direction

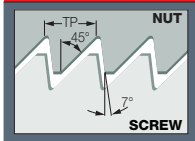






Internal left-hand shown

M E T R I C



Designation	Dimensions IC	TPI(1)	RE	INSL	PDY	PDX	Tough ↔ Hard IC50M	IC250	IC908
11IR 20 ABUT	6.35	20.0	0.07	11.00	1.0	1.3			●
11IR/L 16 ABUT	6.35	16.0	0.09	11.00	1.0	1.5		●	●
16IR 20 ABUT	9.52	20.0	0.07	16.49	1.0	1.3		●	●
16IR/L 16 ABUT	9.52	16.0	0.09	16.49	1.0	1.5			●
16IR/L 12 ABUT	9.52	12.0	0.12	16.49	1.4	2.0		●	●
16IR/L 10 ABUT	9.52	10.0	0.15	16.49	1.5	2.3			●
22IR 8 ABUT	12.70	8.0	0.18	22.00	2.2	3.3			●
22IR 6 ABUT	12.70	6.0	0.25	22.00	2.2	3.4			●
22UIR 4 ABUT	12.70	4.0	0.41	22.00	2.3	9.5	●	●	
27UIR 3 ABUT	15.88	3.0	0.60	27.50	3.1	11.7			●

I N C H

Designation	Dimensions IC	TPI(1)	RE	INSL	PDY	PDX	Tough ↔ Hard IC50M	IC250	IC908
11IR 20 ABUT	.250	20.0	.0027	.433	.04	.05			●
11IL 16 ABUT	.250	16.0	.0035	.433	.04	.06		●	
11IR 16 ABUT	.250	16.0	.0035	.433	.04	.06			●
16IR 20 ABUT	.375	20.0	.0027	.649	.04	.05		●	●
16IR/L 16 ABUT	.375	16.0	.0035	.649	.04	.06			●
16IL 12 ABUT	.375	12.0	.0047	.649	.06	.08			●
16IR 12 ABUT	.375	12.0	.0047	.649	.06	.08		●	●
16IR/L 10 ABUT	.375	10.0	.0059	.649	.06	.09			●
22IR 8 ABUT	.500	8.0	.0071	.866	.09	.13			●
22IR 6 ABUT	.500	6.0	.0098	.866	.09	.13			●
22UIR 4 ABUT	.500	4.0	.0161	.866	.09	.37	●	●	
27UIR 3 ABUT	.625	3.0	.0236	1.083	.12	.46			●

- For Insert Identification System, see pages 33-34 • ANSI B1.9-1973 Class 2 • For technical information and detailed cutting data, see pages 146-149
- Anvils for Laydown Inserts, see pages 36-43
- For recommended number of passes see pages: 119-121

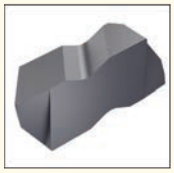
(1) Threads per inch

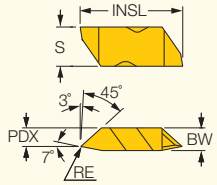
NOTCHGRIP GROOVE-TURN LINE

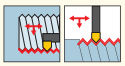
ISCARTHREAD

AMERICAN STANDARD BUTTRESS THREADING FLTB-A

Double-Ended Precision Flat Top Threading Inserts for 7° Lead

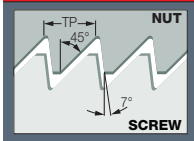






Right-hand shown

M E T R I C



Dimensions

Designation	INSL	S	BW	PDX	RE	TPIX(1)	TPIN(2)	IC908
FLTB-2R/LA	12.95	5.56	3.81	3.20	0.05	20.00	16.00	•
FLTB-3R/LA	22.60	8.74	4.95	4.20	0.13	16.00	8.00	•
FLTB-4R/LA	28.45	11.51	6.48	5.20	0.20	6.00	4.00	•

I N C H

Dimensions

Designation	TPIN(1)	TPIX(2)	RE	PDX	BW	S	INSL	IC908
FLTB-4R/LA	4.00	6.00	.0080	.2047	.255	.453	1.120	•
FLTB-3R/LA	8.00	16.00	.0050	.1654	.195	.344	.890	•
FLTB-2R/LA	16.00	20.00	.0020	.1260	.150	.219	.514	•

• DMIN according to related boring bar

(1) TPI min.

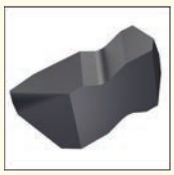
(2) TPI max.

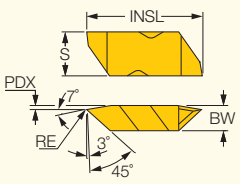
NOTCHGRIP GROOVE-TURN LINE

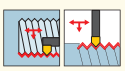
ISCARTHREAD

AMERICAN STANDARD BUTTRESS THREADING FLTB-B

Double-Ended Precision Flat Top Threading Inserts for 45° Lead

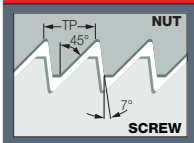






Left-hand shown

M E T R I C



Dimensions

Designation	INSL	S	BW	PDX	RE	TPIX(1)	TPIN(2)	IC908
FLTB-2R/LB	12.95	5.56	3.81	0.30	0.05	20.00	16.00	•
FLTB-3R/LB	22.60	8.74	4.95	0.30	0.13	16.00	8.00	•
FLTB-4R/LB	28.45	11.51	6.48	0.40	0.20	6.00	4.00	•

I N C H

Dimensions

Designation	TPIN(1)	TPIX(2)	RE	PDX	BW	S	INSL	IC908
FLTB-4R/LB	4.00	6.00	.0080	.0157	.255	.453	1.120	•
FLTB-3R/LB	8.00	16.00	.0050	.0118	.195	.344	.890	•
FLTB-2R/LB	16.00	20.00	.0020	.0118	.150	.219	.514	•

• DMIN according to related boring bar

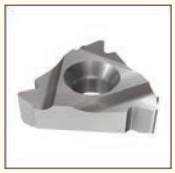
(1) TPI min.

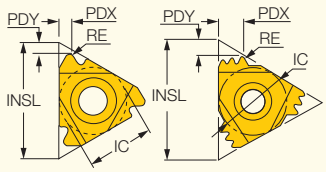
(2) TPI max.

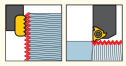
API RD (API ROUND)

ISCARTHREAD

ER/L-API RD
External API - Oil Thread Round
Profile Laydown Threading Inserts

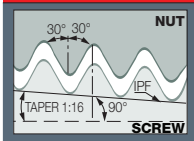






External right-hand shown

M E T R I C



Designation	Dimensions IC	TPI(2)	RE	INSL	IPF	PDY	PDX	CICT(3)	Tough ↔ Hard IC250	IC908
16ER 10 API RD	9.52	10.0	0.36	16.49	0.75	1.2	1.5	1	●	●
16ER/L 8 API RD	9.52	8.0	0.43	16.49	0.75	1.3	1.6	1	●	●
22ER 10 API RD 2M (1)	12.70	10.0	0.36	22.00	0.75	2.4	3.7	2		●
27ER 10 API RD 3M (1)	15.88	10.0	0.36	27.50	0.75	3.8	6.2	3		●
27ER 8 API RD 2M (1)	15.88	8.0	0.43	27.50	0.75	3.0	4.5	2		●

I N C H

Designation	Dimensions IC	TPI(2)	RE	INSL	IPF	PDY	PDX	CICT(3)	Tough ↔ Hard IC250	IC908
16ER 10 API RD	.375	10.0	.0142	.649	0.75	.05	.06	1	●	●
16EL 8 API RD	.375	8.0	.0169	.649	0.75	.05	.06	1		●
16ER 8 API RD	.375	8.0	.0169	.649	0.75	.05	.06	1	●	●
22ER 10 API RD 2M (1)	.500	10.0	.0142	.866	0.75	.09	.15	2		●
27ER 10 API RD 3M* (1)	.625	10.0	.0142	1.083	0.75	.15	.24	3		●
27ER 8 API RD 2M (1)	.625	8.0	.0169	1.083	0.75	.12	.18	2		●

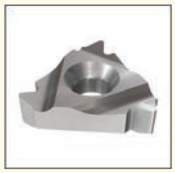
- For Insert Identification System, see pages 33-34 • API Spec 5B8-1996. • For technical information and detailed cutting data, see pages 146-149
- Anvils for Laydown Inserts, see pages 36-43
- For recommended number of passes see pages: 119-121

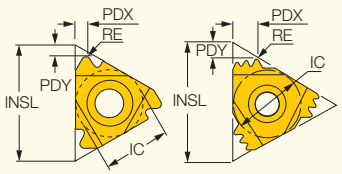
(1) Multi-tooth
(2) Threads per inch
(3) Number of teeth per corner

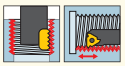
ISCAR THREAD

IR/L-API RD

Internal API - Oil Thread Round Profile Laydown Threading Inserts

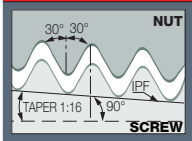






Internal left-hand shown

M E T R I C



Designation	Dimensions IC	TPI(2)	RE	INSL	IPF	PDY	PDX	CICT(3)	Tough ↔ Hard IC250	IC908
16IR/L 10 API RD	9.52	10.0	0.36	16.49	0.75	1.5	1.4	1	●	●
16IR/L 8 API RD	9.52	8.0	0.43	16.49	0.75	1.3	1.6	1	●	●
22IR 10 API RD 2M (1)	12.70	10.0	0.36	22.00	0.75	2.4	3.7	2		●
27IR 8 API RD 2M (1)	15.88	8.0	0.43	27.50	0.75	3.0	4.5	2		●

I N C H

Designation	Dimensions IC	TPI(2)	RE	INSL	IPF	PDY	PDX	CICT(3)	Tough ↔ Hard IC250	IC908
16IL 10 API RD	.375	10.0	.0142	.649	0.75	.06	.06	1		●
16IR 10 API RD	.375	10.0	.0142	.649	0.75	.05	.06	1	●	●
16IL 8 API RD	.375	8.0	.0169	.649	0.75	.05	.06	1	●	
16IR 8 API RD	.375	8.0	.0169	.649	0.75	.04	.06	1	●	●
22IR 10 API RD 2M (1)	.500	10.0	.0142	.866	0.75	.09	.15	2		●
27IR 8 API RD 2M (1)	.625	8.0	.0169	1.083	0.75	.12	.18	2		●

- For Insert Identification System, see pages 33-34 • API Spec 5B8-1996 • For technical information and detailed cutting data, see pages 146-149
- Anvils for Laydown Inserts, see pages 36-43
- For recommended number of passes see pages: 119-121

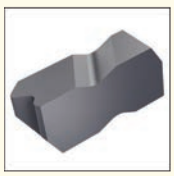
(1) Multi-tooth
(2) Threads per inch
(3) Number of teeth per corner

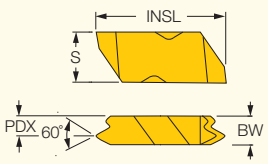
NOTCH GRIP
GROOVE-TURN LINE

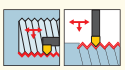
ISCAR THREAD

API ROUND THREADING
FLDC-RD-75

Double-Ended Precision Flat Top Threading Inserts

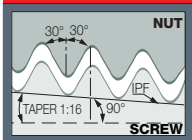






Right-hand shown

M E T R I C



Designation	Dimensions INSL	S	BW	PDX	IPF	TPI(1)	IC908
FLDC-3-8RDR/L75	22.60	8.74	3.18	5.00	3/4	8.0	●
FLDC-3-10RDR/L75	22.60	8.74	3.18	5.00	3/4	10.0	●

I N C H

Designation	Dimensions TPI(1)	IPF	PDX	BW	S	INSL	IC908
FLDC-3-8RDR/L75	8.0	3/4	.1969	.125	.344	.890	●
FLDC-3-10RDR/L75	10.0	3/4	.1969	.125	.344	.890	●

- DMIN according to related boring bar

(1) Threads per inch

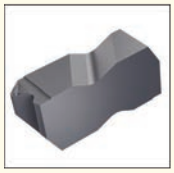
Member IMC Group

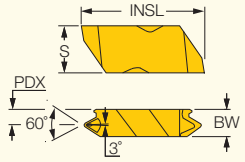
NOTCH-GRIP GROOVE-TURN LINE

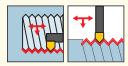
ISCARTHREAD

API ROUND THREADING
FLDC-RD-75-CB

Double-Ended, Precision Threading Inserts with a Chipbreaker

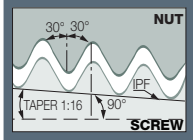






Right-hand shown

M E T R I C



Designation	Dimensions INSL	S	BW	PDX	IPF	TPI(1)	IC908
FLDC-3-8RDR/L75-CB	25.15	8.74	3.18	4.95	3/4	8.0	•

I N C H

Designation	Dimensions TPI(1)	IPF	PDX	BW	S	INSL	IC908
FLDC-3-8RDR/L75-CB	8.0	3/4	.1950	.125	.344	.990	•

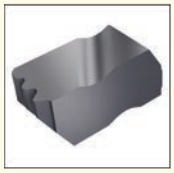
• DMIN according to related boring bar
(1) Threads per inch

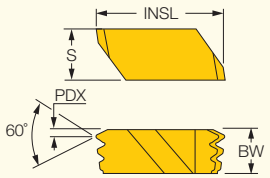
NOTCH-GRIP GROOVE-TURN LINE

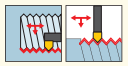
ISCARTHREAD

API ROUND THREADING
FLDC-RD-75M

Double-Ended, Precision, Flat Top Multi-Tooth Threading Inserts,

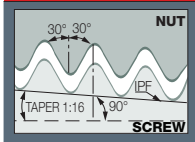






Left-hand shown

M E T R I C



Designation	Dimensions INSL	S	BW	PDX	IPF	TPI(1)	IC908
FLDC-6-10RDR75	28.45	11.51	9.73	3.40	3/4	10.0	•
FLDC-6-8RDR75	28.45	11.51	9.73	1.80	3/4	8.0	•

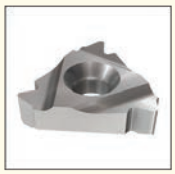
Designation	Dimensions TPI(1)	IPF	PDX	BW	S	INSL	IC908
FLDC-6-8RDR75	8.0	3/4	.0709	.383	.453	1.120	•
FLDC-6-10RDR75	10.0	3/4	.1339	.383	.453	1.120	•

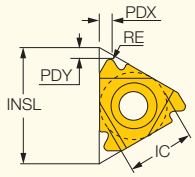
• DMIN according to related boring bar
(1) Threads per inch

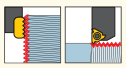
API

ISCARTHREAD

ER/L-API
External API - Oil Thread Profile
Laydown Threading Inserts

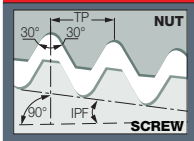






External right-hand shown

M E T R I C



Designation	Dimensions IC	RE	INSL	TPI[4]	IPF	PDX	PDY	Size[5]	Tough ↔ Hard IC250	IC908
22ER 5 API 403 [1]	12.70	0.49	22.00	5.0	3	1.8	2.5	2.375"-4.5"REG	●	●
27ER 4 API 382 [2]	15.88	0.96	27.50	4.0	2	2.1	2.8	NC23-NC50	●	●
27ER 4 API 383 [2]	15.88	0.96	27.50	4.0	3	2.1	2.8	NC56-NC77		●
27ER/L 4 API 502 [3]	15.88	0.64	27.50	4.0	2	2.0	3.0	6-5/8" REG	●	●
27ER 4 API 503 [3]	15.88	0.64	27.50	4.0	3	2.0	3.0	5-1/2,7-5/8,8-5/8REG		●

I N C H

Designation	Dimensions IC	RE	INSL	TPI[4]	IPF	PDX	PDY	Size[5]	Tough ↔ Hard IC250	IC908
22ER 5 API 403 [1]	.500	.0193	.866	5.0	3	.07	.10	2.375"-4.5"REG	●	●
27ER 4 API 382 [2]	.625	.0380	1.083	4.0	2	.08	.11	NC23-NC50	●	●
27ER 4 API 383 [2]	.625	.0380	1.083	4.0	3	.08	.11	NC56-NC77		●
27EL 4 API 502 [3]	.625	.0250	1.083	4.0	2	.08	.12	6-5/8" REG	●	
27ER 4 API 502 [3]	.625	.0250	1.083	4.0	2	.08	.12	6-5/8" REG	●	●
27ER 4 API 503 [3]	.625	.0250	1.083	4.0	3	.08	.12	5-1/2,7-5/8,8-5/8REG		●

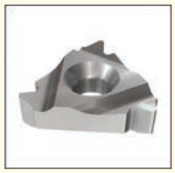
- For Insert Identification System, see pages 33-34
- For technical information and detailed cutting data, see pages 146-149
- Anvils for Laydown Inserts, see pages 36-43
- For recommended number of passes see pages: 119-121

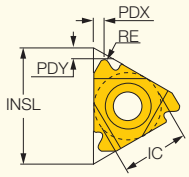
[1] V-0.040
[2] V-0.038R
[3] V-0.050
[4] Threads per inch
[5] Connection no. or size

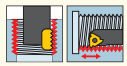
ISCARTHREAD

IR/L-API

Internal API - Oil Thread Profile
Laydown Threading Inserts

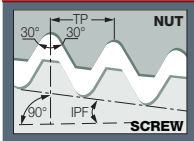






Internal left-hand shown

M E T R I C



Designation	Dimensions IC	INSL	TPI[4]	RE	PDY	PDX	Size[5]	Tough ↔ Hard IC250	IC908
22IR 5 API 403 [1]	12.70	22.00	5.0	0.51	1.8	2.5	2.375"-4.5"REG	●	●
27IR 4 API 382 [2]	15.88	27.50	4.0	0.96	2.1	2.8	NC23-NC50	●	●
27IR 4 API 383 [2]	15.88	27.50	4.0	0.96	2.1	2.8	NC56-NC77		●
27IR/L 4 API 502 [3]	15.88	27.50	4.0	0.64	2.0	3.0	6-5/8" REG	●	
27IR 4 API 503 [3]	15.88	27.50	4.0	0.64	2.0	3.0	5-1/2,7-5/8,8-5/8REG	●	

I N C H

Designation	Dimensions IC	INSL	TPI[1]	RE	PDY	PDX	Size[2]	Tough ↔ Hard IC250	IC908
22IR 5 API 403	.500	.866	5.0	.0200	.07	.10	2.375"-4.5"REG	●	●
27IR 4 API 382	.625	1.083	4.0	.0380	.08	.11	NC23-NC50	●	●
27IR 4 API 383	.625	1.083	4.0	.0380	.08	.11	NC56-NC77		●
27IR/L 4 API 502	.625	1.083	4.0	.0250	.08	.12	6-5/8" REG	●	
27IR 4 API 503	.625	1.083	4.0	.0250	.08	.12	5-1/2,7-5/8,8-5/8REG	●	

- For Insert Identification System, see pages 33-34 • 0.050, API Spec 74-1994 • For technical information and detailed cutting data, see pages 146-149
- Anvils for Laydown Inserts, see pages 36-43
- For recommended number of passes see pages: 119-121

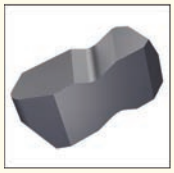
[1] V-0.040
[2] V-0.038R
[3] V-0.050
[4] Threads per inch
[5] Connection no. or size

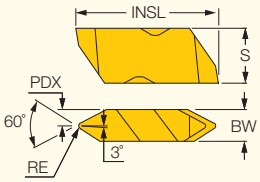
NOTCH GRIP
GROOVE-TURN LINE

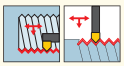
ISCAR THREAD

API PARTIAL PROFILE THREDING FLD

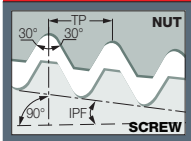
Double-Ended, Precision, Flat Top Partial Profile Threading Inserts







M E T R I C



Designation	Dimensions INSL	S	BW	PDX	RE	TPI[1]	IC908
FLD-3038R/L	22.60	8.74	4.95	2.08	0.84	4.0	•
FLD-3040R/L	22.60	8.74	4.95	2.08	0.38	5.0	•
FLD-4038R/L	28.45	11.51	6.48	3.25	0.84	4.0	•
FLD-4040R/L	28.45	11.51	6.48	3.25	0.38	5.0	•
FLD-4050R/L	28.45	11.51	6.48	3.25	0.51	4.0	•

I N C H

Designation	Dimensions TPI[1]	RE	PDX	BW	S	INSL	IC908
FLD-4050R/L	4.0	.0201	.1280	.255	.453	1.120	•
FLD-3038R/L	4.0	.0331	.0819	.195	.344	.890	•
FLD-4038R/L	4.0	.0331	.1280	.255	.453	1.120	•
FLD-3040R/L	5.0	.0150	.0819	.195	.344	.890	•
FLD-4040R/L	5.0	.0150	.1280	.255	.453	1.120	•

• DMIN according to related boring bar

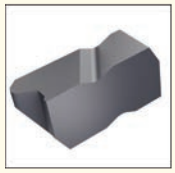
(1) Threads per inch

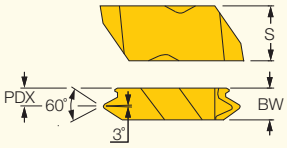
NOTCH-GRIP GROOVE-TURN LINE

ISCARTHREAD

API THREADING FLDC-E

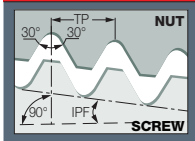
Double-Ended Precision Flat Top Threading Inserts





Right-hand shown

M E T R I C



Designation	Dimensions INSL	S	BW	PDX	IPF	TPI(1)	IC908
FLDC-3-530E	22.60	8.74	6.35	3.73	3	5.0	●
FLDC-4-425E	28.45	11.51	7.92	4.65	2	4.0	●
FLDC-4-428E	28.45	11.51	7.92	4.65	2	4.0	●
FLDC-4-435E	28.45	11.51	7.92	4.65	3	4.0	●
FLDC-4-438E	28.45	11.51	7.92	4.65	3	4.0	●

I N C H

Designation	Dimensions TPI(1)	IPF	PDX	BW	S	INSL	IC908
FLDC-4-425E	4.0	2	.1831	.312	.453	1.120	●
FLDC-4-428E	4.0	2	.1831	.312	.453	1.120	●
FLDC-4-435E	4.0	3	.1831	.312	.453	1.120	●
FLDC-4-438E	4.0	3	.1831	.312	.453	1.120	●
FLDC-3-530E	5.0	3	.1469	.250	.344	.890	●

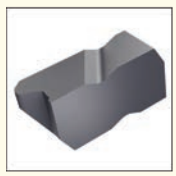
(1) Threads per inch

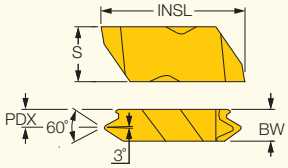
NOTCH-GRIP GROOVE-TURN LINE

ISCARTHREAD

API THREADING FLDC-I

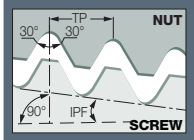
Double-Ended Precision Flat Top Threading Inserts





Right-hand shown

M E T R I C



Designation	Dimensions INSL	S	BW	PDX	IPF	TPI(1)	IC908
FLDC-3-530I	22.60	8.74	6.35	3.73	3	5.0	●
FLDC-4-425I	28.45	11.51	7.92	4.65	2	4.0	●
FLDC-4-428I	28.45	11.51	7.92	4.65	2	4.0	●
FLDC-4-435I	28.45	11.51	7.92	4.65	3	4.0	●
FLDC-4-438I	28.45	11.51	7.92	4.65	3	4.0	●

I N C H

Designation	Dimensions TPI(1)	IPF	PDX	BW	S	INSL	IC908
FLDC-4-425I	4.0	2	.1831	.312	.453	1.120	●
FLDC-4-428I	4.0	2	.1831	.312	.453	1.120	●
FLDC-4-435I	4.0	3	.1831	.312	.453	1.120	●
FLDC-4-438I	4.0	3	.1831	.312	.453	1.120	●
FLDC-3-530I	5.0	3	.1469	.250	.344	.890	●

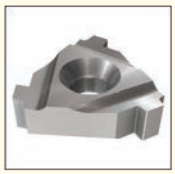
(1) Threads per inch

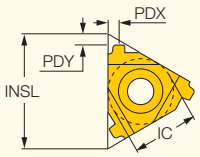
BUT (API BUTRESS CASING)

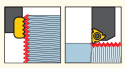
ISCARTHREAD

ER-BUT

External BUT - Oil Thread
Profile Laydown Threading
Inserts for Buttress Casing

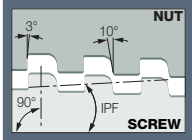






External right-hand shown

M E T R I C



Designation	Dimensions IC	TPI(1)	INSL	IPF	PDY	PDX	Size(2)	Tough ↔ Hard IC250	IC908
22ER 5 BUT 0.75	12.70	5.0	22.00	0.75	2.2	2.4	4-1/2" - 13-3/8"	●	●
22ER 5 BUT-1.00	12.70	5.0	22.00	1.0	2.3	2.4	16" - 20"	●	

I N C H

Designation	Dimensions IC	TPI(1)	INSL	IPF	PDY	PDX	Size(2)	Tough ↔ Hard IC250	IC908
22ER 5 BUT 0.75	.500	5.0	.866	0.75	.09	.09	4-1/2" - 13-3/8"	●	●
22ER 5 BUT-1.00	.500	5.0	.866	1.0	.09	.09	16" - 20"	●	

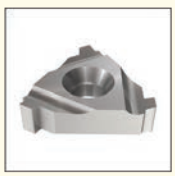
- For Insert Identification System, see pages 33-34 • API STD.5B • For technical information and detailed cutting data, see pages 146-149
- Anvils for Laydown Inserts, see pages 36-43
- For recommended number of passes see pages: 119-121

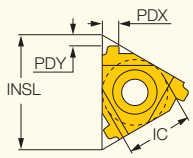
(1) Threads per inch
(2) Connection no. or size

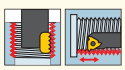
ISCARTHREAD

IR-BUT

Internal BUT - Oil Thread
Profile Laydown Threading
Inserts for Buttress Casing

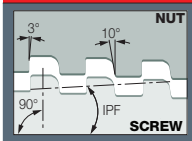






Internal left-hand shown

M E T R I C



Designation	Dimensions IC	TPI(1)	INSL	IPF	PDY	PDX	Size(2)	THFT	Tough ↔ Hard IC250	IC908
22IR 5 BUT 0.75	12.70	5.0	22.00	0.75	2.2	2.4	4-1/2" - 13-3/8"	BUT		●
22IR 5 BUT 1.00	12.70	5.0	22.00	1.00	2.3	2.4	16" - 20"	BUT	●	

I N C H

Designation	Dimensions IC	TPI(1)	INSL	IPF	PDY	PDX	Size(2)	THFT	Tough ↔ Hard IC250	IC908
22IR 5 BUT 0.75	.500	5.0	.866	0.75	.09	.09	4-1/2" - 13-3/8"	BUT		●
22IR 5 BUT 1.00	.500	5.0	.866	1.00	.09	.09	16" - 20"	BUT	●	

- For Insert Identification System, see pages 33-34 • API STD.5B • For technical information and detailed cutting data, see pages 146-149
- Anvils for Laydown Inserts, see pages 36-43
- For recommended number of passes see pages: 119-121

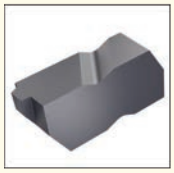
(1) Threads per inch
(2) Connection no. or size

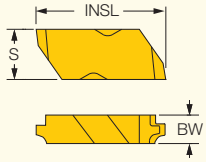
NOTCH GRIP GROOVE-TURN LINE

ISCAR THREAD

API BUTTRESS THREADING FLDC-B-E

Double-Ended Precision Flat Top Threading Inserts

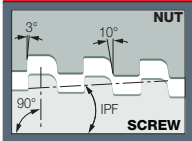






Right-hand shown

M E T R I C



Designation	Dimensions INSL	S	BW	IPF	TPI[1]	IC908
FLDC-3-5B1E	22.60	8.74	6.35	1	5.0	•
FLDC-3-5B75E	22.60	8.74	6.35	3/4	5.0	•
FLDC-4-5B1E	28.45	11.51	6.48	1	5.0	•
FLDC-4-5B75E	28.45	11.51	6.48	3/4	5.0	•

I N C H

Designation	Dimensions TPI[1]	IPF[2]	BW	S	INSL	IC908
FLDC-3-5B1E	5.0	1	.250	.344	.890	•
FLDC-4-5B1E	5.0	1	.255	.453	1.120	•
FLDC-3-5B75E	5.0	3/4	.250	.344	.890	•
FLDC-4-5B75E	5.0	3/4	.255	.453	1.120	•

[1] Threads per inch

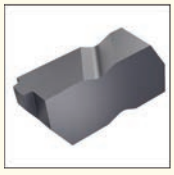
• E-External

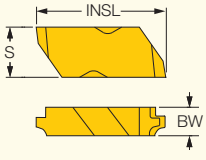
NOTCH GRIP GROOVE-TURN LINE

ISCAR THREAD

API BUTTRESS THREADING FLDC-B-I

Double-Ended Precision Flat Top Threading Inserts

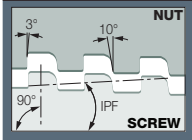






Right-hand shown

M E T R I C



Designation	Dimensions INSL	S	BW	IPF	TPI[1]	IC908
FLDC-3-5B75I	22.60	8.74	6.35	3/4	5.0	•
FLDC-3-5B1I	22.60	8.74	6.35	1	5.0	•
FLDC-4-5B75I	28.45	11.51	6.48	3/4	5.0	•
FLDC-4-5B1I	28.45	11.51	6.48	1	5.0	•

I N C H

Designation	Dimensions TPI[1]	IPF	BW	PDX	S	INSL	IC908
FLDC-3-5B1I	5.0	1	.250	.4024	.344	.890	•
FLDC-4-5B1I	5.0	1	.255	.6319	.453	1.120	•
FLDC-3-5B75I	5.0	3/4	.250	.4024	.344	.890	•
FLDC-4-5B75I	5.0	3/4	.255	.6319	.453	1.120	•

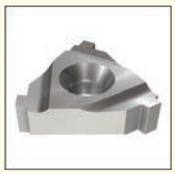
[1] Threads per inch

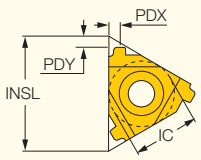
• I-Internal

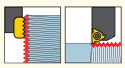
Extreme Line Casing

ISCARTHREAD

ER-EL
External EL - Extreme Line
Oil Thread Profile Laydown
Threading Inserts

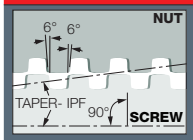






External right-hand shown

M E T R I C



Designation	IC	TPI(1)	INSL	IPF	PDY	PDX	Size(2)	Tough ↔ Hard IC250	IC908
	Dimensions								
22ER 6 EL 1.5	12.70	6.0	22.00	1.5	1.9	1.9	5" - 7-5/8"	●	●
22ER 5 EL 1.25	12.70	5.0	22.00	1.25	2.1	2.0	8-5/8" - 10-3/4"		●

I N C H

Designation	IC	TPI(1)	INSL	IPF	PDY	PDX	Size(2)	Tough ↔ Hard IC250	IC908
	Dimensions								
22ER 6 EL 1.5	.500	6.0	.866	1.5	.08	.07	5" - 7-5/8"	●	●
22ER 5 EL 1.25	.500	5.0	.866	1.25	.08	.08	8-5/8" - 10-3/4"		●

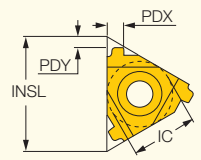
- For Insert Identification System, see pages 33-34 • ANSI B1.9.1973 Class 2
- Anvils for Laydown Inserts, see pages 36-43
- For recommended number of passes see pages: 119-121

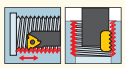
(1) Threads per inch
(2) Connection no. or size

ISCARTHREAD

IR-EL
Internal EL - Extreme Line
Oil Thread Profile Laydown
Threading Inserts

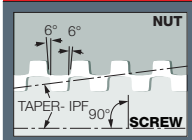






Internal left-hand shown

M E T R I C



Designation	IC	TPI(1)	INSL	IPF	PDY	PDX	Size(2)	IC908
	Dimensions							
22IR 6 EL 1.5	12.70	6.0	22.00	1.5	1.9	1.9	5" - 7-5/8"	●

I N C H

Designation	IC	TPI(1)	INSL	IPF	PDY	PDX	Size(2)	IC908
	Dimensions							
22IR 6 EL 1.5	.500	6.0	.866	1.5	.08	.08	5" - 7-5/8"	●

- For Insert Identification System, see pages 33-34 • ANSI B1.9.1973 Class 2
- Anvils for Laydown Inserts, see pages 36-43
- For recommended number of passes see pages: 119-121

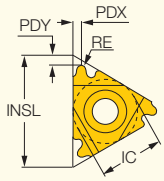
(1) Threads per inch
(2) Connection no. or size

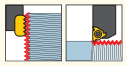
RND DIN 405 Round

ISCARTHREAD

ER/L-RND
External DIN 405 Round Laydown Threading Inserts for Fire Fighting and Food Industry Pipe Couplings

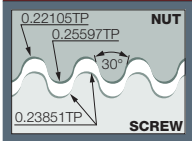






External right-hand shown

M E T R I C



Designation	Dimensions IC	TPI[2]	RE	INSL	PDY	PDX	Tough ↔ Hard IC228	IC250	IC508	IC908
16ER/L 10 RND	9.52	10.0	0.61	16.49	1.1	1.2		●		●
16ER/L 8 RND	9.52	8.0	0.76	16.49	1.4	1.3		●		●
16ERM 8 RND [1]	9.52	8.0	0.75	16.49	1.4	1.3				●
16ER/L 6 RND	9.52	6.0	1.01	16.49	1.5	1.7		●		●
16ERM 6 RND [1]	9.52	6.0	1.01	16.49	1.5	1.7			●	●
22ER 6 RND	12.70	6.0	1.01	22.00	1.5	1.7	●			●
22ER/L 4 RND	12.70	4.0	1.51	22.00	2.2	2.3		●		●
27ER 4 RND	15.88	4.0	1.51	27.50	2.2	2.3		●		

I N C H

Designation	Dimensions IC	TPI[2]	RE	INSL	PDY	PDX	Tough ↔ Hard IC228	IC250	IC508	IC908
16EL 10 RND	.375	10.0	.0240	.649	.04	.05				●
16ER 10 RND	.375	10.0	.0240	.649	.04	.05		●		●
16ER/L 8 RND	.375	8.0	.0299	.649	.06	.05		●		●
16ERM 8 RND [1]	.375	8.0	.0295	.649	.06	.05				●
16EL 6 RND	.375	6.0	.0398	.649	.06	.07		●		
16ER 6 RND	.375	6.0	.0398	.649	.06	.06		●		●
16ERM 6 RND [1]	.375	6.0	.0398	.649	.06	.07			●	●
22ER 6 RND	.500	6.0	.0398	.866	.06	.07	●			●
22EL 4 RND	.500	4.0	.0594	.866	.09	.09				●
22ER 4 RND	.500	4.0	.0594	.866	.09	.09		●		●
27ER 4 RND	.625	4.0	.0594	1.083	.09	.09		●		

- For Insert Identification System, see pages 33-34 • Tolerance: Class 7H • For technical information and detailed cutting data, see pages 146-149
- Anvils for Laydown Inserts, see pages 36-43
- For recommended number of passes see pages: 119-121

[1] With pressed chipformer
[2] Threads per inch

THREAD TURNING TOOLS

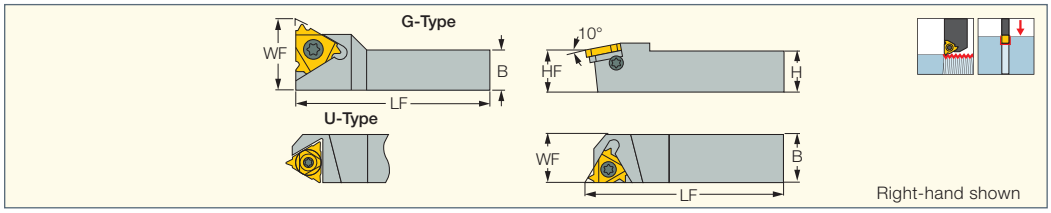


Thread Turning Tools

External Threading Toolholders

ISCARTHREAD

SER/L
External Threading Toolholders



M E T R I C						
Designation	**H**	**HF**	**B**	**LF**	**WF**	**Insert[2]**
SER 0808 H11 [1]	8.0	8.0	8.0	100.00	11.00	11 ER..
SER/L 1010 H11 [1]	10.0	10.0	10.0	100.00	11.00	11 ER/L..
SER/L 1212 F16	12.0	12.0	12.0	80.00	12.00	16 ER/L..
SER 1212 X16	12.0	12.0	12.0	120.00	12.00	16 ER/L..
SER/L 1616 H16	16.0	16.0	16.0	100.00	16.00	16 ER/L..
SER 1616 K16G	16.0	16.0	16.0	125.00	21.70	16 ER..
SER/L 2020-16-AD	20.0	20.0	20.0	67.00	20.00	16 ER/L..
SER/L 2020 K16	20.0	20.0	20.0	125.00	20.00	16 ER/L..
SER/L 2525 M16	25.0	25.0	25.0	150.00	25.00	16 ER/L..
SER/L 3232 P16	32.0	32.0	32.0	170.00	32.00	16 ER/L..
SER/L 2525 M22	25.0	25.0	25.0	150.00	25.00	22 ER/L..
SER/L 3232 P22	32.0	32.0	32.0	170.00	32.00	22 ER/L..
SER/L 2525 M22U	25.0	25.0	25.0	150.00	28.00	22 UER/L..
SER/L 3232 P22U	32.0	32.0	32.0	170.00	32.00	22 UER/L..
SER/L 4040 R22U	40.0	40.0	40.0	200.00	40.00	22 UER/L..
SER/L 2525 M27	25.0	25.0	25.0	150.00	25.00	27 ER/L..
SER/L 3232 P27	32.0	32.0	32.0	170.00	32.00	27 ER/L..
SER/L 2525 M27U	25.0	25.0	25.0	150.00	32.00	27 UER/L..
SER/L 3232 P27U	32.0	32.0	32.0	170.00	32.00	27 UER/L..
SER/L 4040 R27U	40.0	40.0	40.0	200.00	40.00	27 UER/L..
SER 4040 R27U	40.0	40.0	40.0	200.00	40.00	27 UER/L..

I N C H						
Designation	**H**	**HF**	**B**	**LF**	**WF**	**Insert[2]**
SER 0808 H11 [1]	8.0	8.0	8.0	100.00	11.00	11 ER..
SER/L 1010 H11 [1]	10.0	10.0	10.0	100.00	11.00	11 ER/L..
SER/L 1212 F16	12.0	12.0	12.0	80.00	12.00	16 ER/L..
SER 1212 X16	12.0	12.0	12.0	120.00	12.00	16 ER/L..
SER/L 1616 H16	16.0	16.0	16.0	100.00	16.00	16 ER/L..
SER 1616 K16G	16.0	16.0	16.0	125.00	21.70	16 ER..
SER/L 2020-16-AD	20.0	20.0	20.0	67.00	20.00	16 ER/L..
SER/L 2020 K16	20.0	20.0	20.0	125.00	20.00	16 ER/L..
SER/L 2525 M16	25.0	25.0	25.0	150.00	25.00	16 ER/L..
SER/L 3232 P16	32.0	32.0	32.0	170.00	32.00	16 ER/L..
SER/L 2525 M22	25.0	25.0	25.0	150.00	25.00	22 ER/L..
SER/L 3232 P22	32.0	32.0	32.0	170.00	32.00	22 ER/L..
SER 4040 R22	40.0	40.0	40.0	200.00	40.00	22 ER/L..
SER/L 2525 M22U	25.0	25.0	25.0	150.00	28.00	22 UER/L..
SER/L 3232 P22U	32.0	32.0	32.0	170.00	32.00	22 UER/L..
SEL 4040 R22U	40.0	40.0	40.0	200.00	40.00	22 UER/L..
SER/L 2525 M27	25.0	25.0	25.0	150.00	25.00	27 ER/L..
SER/L 3232 P27	32.0	32.0	32.0	170.00	32.00	27 ER/L..
SER 4040 R27	40.0	40.0	40.0	200.00	40.00	27 ER/L..
SER/L 2525 M27U	25.0	25.0	25.0	150.00	32.00	27 UER/L..
SER/L 3232 P27U	32.0	32.0	32.0	170.00	32.00	27 UER/L..
SER/L 4040 R27U	40.0	40.0	40.0	200.00	40.00	27 UER/L..

- All tools are made for 1.5 helix angle
- For multi-tooth inserts use anvils AE16M / AI16M; AE22M / AI22M; AE27M / AI27M
- For GTGA inserts, use anvil AE 16-0

[1] Toolholder without anvil
[2] Right-hand inserts (ER) for right-hand tools (SER)

SER/L

Spare Parts

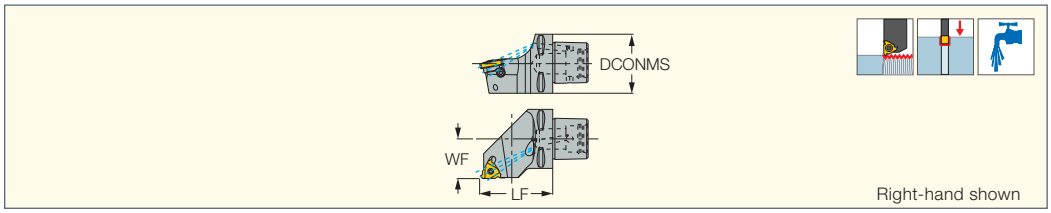
Designation						
SER 0808 H11	SR M2.6-L6.7-S11				T-8/5	
SER/L 1010 H11		SR M2.6-L6.7-S11				T-8/5
SEL 1212 F16		SR 5-40-L12.2-S16	SR 5-40-L6.8-A16		AI16	T-10/5
SER 1212 F16		SR 5-40-L12.2-S16	SR 5-40-L6.8-A16	AE16		T-10/5
SER 1212 X16		SR 5-40-L12.2-S16	SR 5-40-L6.8-A16	AE16		T-10/5
SEL 1616 H16		SR 5-40-L12.2-S16	SR 5-40-L6.8-A16		AI16	T-10/5
SER 1616 H16		SR 5-40-L12.2-S16	SR 5-40-L6.8-A16	AE16		T-10/5
SER 1616 K16G		SR 5-40-L12.2-S16	SR 5-40-L6.8-A16	AE16		T-10/5
SEL 2020-16-AD		SR 5-40-L12.2-S16	SR 5-40-L6.8-A16		AI16	T-10/5
SER 2020-16-AD		SR 5-40-L12.2-S16	SR 5-40-L6.8-A16	AE16		T-10/5
SEL 2020 K16		SR 5-40-L12.2-S16	SR 5-40-L6.8-A16		AI16	T-10/5
SER 2020 K16		SR 5-40-L12.2-S16	SR 5-40-L6.8-A16	AE16		T-10/5
SEL 2525 M16		SR 5-40-L12.2-S16	SR 5-40-L6.8-A16		AI16	T-10/5
SER 2525 M16		SR 5-40-L12.2-S16	SR 5-40-L6.8-A16	AE16		T-10/5
SEL 3232 P16		SR 5-40-L12.2-S16	SR 5-40-L6.8-A16		AI16	T-10/5
SER 3232 P16		SR 5-40-L12.2-S16	SR 5-40-L6.8-A16	AE16		T-10/5
SEL 2525 M22		SR 8-32-L15-S22	SR 8-32-L5.8-A22		AI22	T-20/5
SER 2525 M22		SR 8-32-L15-S22	SR 8-32-L5.8-A22	AE22		T-20/5
SEL 3232 P22		SR 8-32-L15-S22	SR 8-32-L5.8-A22		AI22	T-20/5
SER 3232 P22		SR 8-32-L15-S22	SR 8-32-L5.8-A22	AE22		T-20/5
SER 4040 R22		SR 8-32-L15-S22	SR 8-32-L5.8-A22	AE22		T-20/5
SEL 2525 M22U		SR 8-32-L15-S22	SR 8-32-L5.8-A22		AI22U	T-20/5
SER 2525 M22U		SR 8-32-L15-S22	SR 8-32-L5.8-A22	AE22U		T-20/5
SEL 3232 P22U		SR 8-32-L15-S22	SR 8-32-L5.8-A22		AI22U	T-20/5
SER 3232 P22U		SR 8-32-L15-S22	SR 8-32-L5.8-A22	AE22U		T-20/5
SEL 4040 R22U		SR 8-32-L15-S22	SR 8-32-L5.8-A22		AI22U	T-20/5
SEL 2525 M27		SR M5-L22-S40	SR M5-L5.8-A27		AI27	T-25/3
SER 2525 M27		SR M5-L22-S40	SR M5-L5.8-A27	AE27		T-25/3
SEL 3232 P27		SR M5-L22-S40	SR M5-L5.8-A27		AI27	T-25/3
SER 3232 P27		SR M5-L22-S40	SR M5-L5.8-A27	AE27		T-25/3
SER 4040 R27		SR M5-L22-S40	SR M5-L5.8-A27	AE27		T-25/3
SEL 2525 M27U		SR M5-L22-S40	SR M5-L5.8-A27		AI27U	T-25/3
SER 2525 M27U		SR M5-L22-S40	SR M5-L5.8-A27	AE27U		T-25/3
SEL 3232 P27U		SR M5-L22-S40	SR M5-L5.8-A27		AI27U	T-25/3
SER 3232 P27U		SR M5-L22-S40	SR M5-L5.8-A27	AE27U		T-25/3
SEL 4040 R27U		SR M5-L22-S40	SR M5-L5.8-A27		AI27U	K40
SER 4040 R27U	T-25/3	SR M5-L22-S40	SR M5-L5.8-A27	AE27U		T-25/3

ISCARTHREAD

CAMFIX

C#-SER/L

External Threading Tools with
CAMFIX Exchangeable Shanks



M E T R I C						
Designation	**DCONMS**	**WF**	**LF**	**Insert(1)**	**CP(2)**	**CDI**
C4 SEL-27050-16	40.00	27.00	50.00	16ER/L...	300	1
C4 SER-27050-16	40.00	27.00	50.00	16ER/L...	100	1
C5 SEL-35060-16	50.00	35.00	60.00	16ER/L...	100	1
C5 SER-35060-16	50.00	35.00	60.00	16ER/L...	100	1
C6 SER/L-45065-16	63.00	45.00	65.00	16ER/L...	300	1
C4 SER/L-27050-22	40.00	27.00	50.00	22ER/L...	300	1
C5 SER/L-35060-22	50.00	35.00	60.00	22ER/L...	300	1
C6 SER/L-45065-22	63.00	45.00	65.00	22ER/L...	300	1
C8 SER/L-55080-22	80.00	55.00	80.00	22ER/L...	300	1

I N C H						
Designation	**DCONMS**	**WF**	**LF**	**Insert(1)**	**CP(2)**	**CDI**
C4 SEL-27050-16	1.575	1.063	1.968	16ER	4350	0
C4 SER-27050-16	1.575	1.063	1.968	16ER	1450	0
C5 SEL-35060-16	1.968	1.378	2.362	16EL	1450	0
C5 SER-35060-16	1.968	1.378	2.362	16ER	1450	0
C6 SER/L-45065-16	2.480	1.772	2.559	16ER	4350	0
C4 SER/L-27050-22	1.575	1.063	1.968	22ER	4350	0
C5 SER/L-35060-22	1.968	1.378	2.362	22ER	4350	0
C6 SER/L-45065-22	2.480	1.772	2.559	22ER	4350	0
C8 SER/L-55080-22	3.150	2.165	3.150	22ER	4350	0

(1) Right-hand inserts for right-hand tools and vice versa

(2) Coolant pressure (Bar)

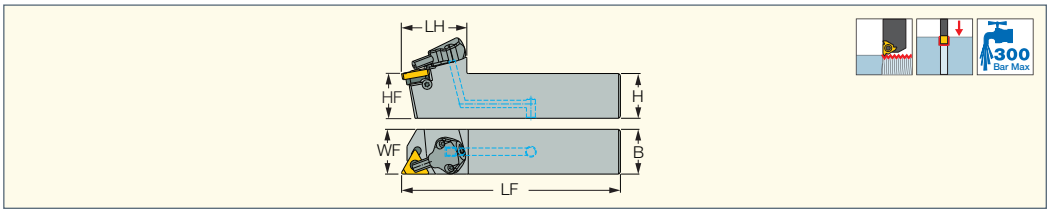
For inserts, see pages: ER-BUT (257) • ER-NPTF (220) • ER/L-55° (154) • ER/L-60° (164) • ER/L-ABUT (247) • ER/L-ACME (230) • ER/L-API (253) • ER/L-API RD (250) • ER/L-BSPT (222) • ER/L-ISO (182) • ER/L-NPT (214) • ER/L-RND (260) • ER/L-SAGE (246) • ER/L-STACME (226) • ER/L-TR (243) • ER/L-UN (243) • ER/L-UNJ (236) • ER/L-W (207)

Spare Parts

Designation					
C4 SEL-27050-16	AI16	SR 5-40-L6.8-A16	SR 5-40-L12.2-S16	T-10/5	
C4 SER-27050-16	AE16	SR 5-40-L6.8-A16	SR 5-40-L12.2-S16	T-10/5	EZ 83
C5 SEL-35060-16	AI16	SR 5-40-L6.8-A16	SR 5-40-L12.2-S16	T-10/5	EZ 104
C5 SER-35060-16	AE16	SR 5-40-L6.8-A16	SR 5-40-L12.2-S16	T-10/5	EZ 104
C6 SEL-45065-16	AI16	SR 5-40-L6.8-A16	SR 5-40-L12.2-S16	T-10/5	
C6 SER-45065-16	AE16	SR 5-40-L6.8-A16	SR 5-40-L12.2-S16	T-10/5	
C4 SEL-27050-22	AI22	SR 8-32-L5.8-A22	SR 8-32-L15-S22	T-20/5	
C4 SER-27050-22	AE22	SR 8-32-L5.8-A22	SR 8-32-L15-S22	T-20/5	
C5 SEL-35060-22	AI22	SR 8-32-L5.8-A22	SR 8-32-L15-S22	T-20/5	
C5 SER-35060-22	AE22	SR 8-32-L5.8-A22	SR 8-32-L15-S22	T-20/5	
C6 SEL-45065-22	AI22	SR 8-32-L5.8-A22	SR 8-32-L15-S22	T-20/5	
C6 SER-45065-22	AE22	SR 8-32-L5.8-A22	SR 8-32-L15-S22	T-20/5	
C8 SEL-55080-22	AI22	SR 8-32-L5.8-A22	SR 8-32-L15-S22	T-20/5	
C8 SER-55080-22	AE22	SR 8-32-L5.8-A22	SR 8-32-L15-S22	T-20/5	

ISCARTHREAD
JETCUT

SER/L-JHP-MC
External Threading Tools with
Bottom Inlet Coolant Channels



M E T R I C							
Designation	**H**	**HF**	**B**	**LF**	**LH**	**WF**	**Insert(1)**
SER/L 2020X16 JHP-MC	20.0	20.0	20.0	107.00	36.2	20.00	16 ER/L..
SER/L 2525X16 JHP-MC	25.0	25.0	25.0	122.00	36.2	25.00	16 ER/L..

I N C H							
Designation	**H**	**HF**	**B**	**LF**	**LH**	**WF**	**Insert(1)**
SER/L 2020X16 JHP-MC	20.0	20.0	20.0	107.00	36.2	20.00	16 ER/L..
SER/L 2525X16 JHP-MC	25.0	25.0	25.0	122.00	36.2	25.00	16 ER/L..

- All tools are made for 1.5 helix angle
- For multi-tooth inserts use anvils AE16M / AI16M; AE22M / AI22M; AE27M / AI27M
- For GTGA inserts, use anvil AE 16-0

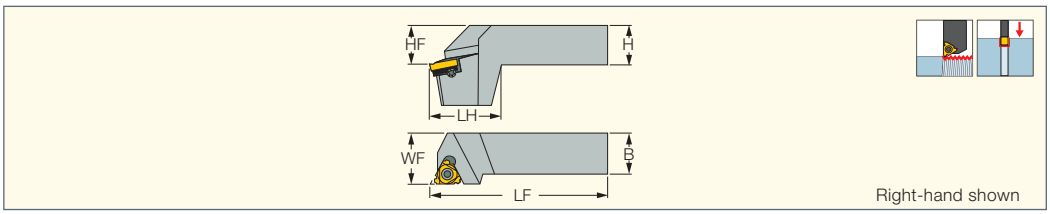
(1) Right-hand inserts (ER) for right-hand tools (SER)

Spare Parts

Designation						
SEL 2020X16 JHP-MC	SR 5-40-L12.2-S16	AI16	T-8/5	SR 5-40-L6.8-A16	T-10/5	CU-V-JHP
SER 2020X16 JHP-MC	SR 5-40-L12.2-S16	AE16	T-8/5	SR 5-40-L6.8-A16	T-10/5	CU-V-JHP
SEL 2525X16 JHP-MC	SR 5-40-L12.2-S16	AI16	T-8/5	SR 5-40-L6.8-A16	T-10/5	CU-V-JHP
SER 2525X16 JHP-MC	SR 5-40-L12.2-S16	AE16	T-8/5	SR 5-40-L6.8-A16	T-10/5	CU-V-JHP

ISCARTHREAD

SER-D
External Threading
Drophead Toolholders



M E T R I C							
Designation	**H**	**HF**	**B**	**LF**	**WF**	**LH**	**Insert**
SER 2525 M16D	25.0	25.0	25.0	150.00	32.00	38.0	16 ER..
SER 2525 M22D	25.0	25.0	25.0	150.00	32.00	38.0	22 ER..

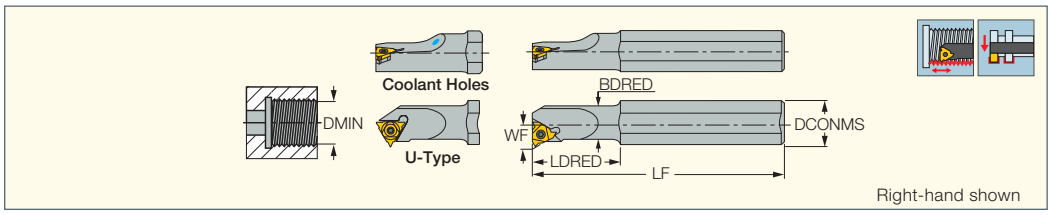
I N C H											
Designation	**H**	**HF**	**B**	**LF**	**WF**	**LH**	**Insert**				
SER 2525 M16D	25.0	25.0	25.0	150.00	32.00	38.0	16 ER..	SR 5-40-L12.2-S16	T-10/5	AE16	SR 5-40-L6.8-A16
SER 2525 M22D	25.0	25.0	25.0	150.00	32.00	38.0	22 ER..	SR 8-32-L15-S22	T-20/5	AE22	SR 8-32-L5.8-A22

- All toolholders are made for 1.5 helix angle.
- For GTGA inserts, use anvil AE 16-0

Internal Threading Toolholders

ISCARTHREAD

SIR/L
Internal Threading Bars



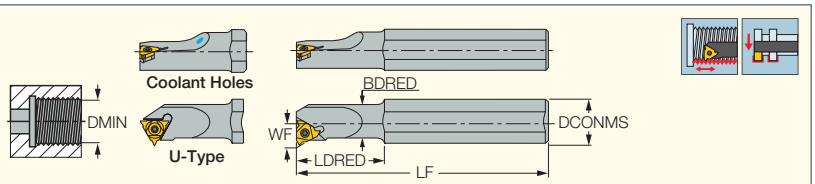
	M E T R I C								
Designation	**DMIN**	**DCONMS**	**BDRED**	**LF**	**LDRED**	**WF**	**CSP[4]**	**Shank m.[5]**	**Insert[6]**
SIR/L 0005 H06CB [1]	6.40	6.00	5.10	100.00	25.0	4.30	1	C	06 IR/IL..
SIR/L 0005 H06 [2]	6.40	12.00	5.10	100.00	12.0	4.30	0	S	06 IR/IL..
SIR 0005 H06-W [2]	6.40	12.00	5.10	100.00	12.0	4.30	0	S	06 IR/IL..
SIR/L 0007 K08CB [1]	9.00	8.00	6.60	125.00	30.0	5.30	1	C	08 IR/IL..
SIR 0008 K08UCB [1]	9.00	8.00	7.30	125.00	35.0	6.40	1	C	08 UIRL..
SIR/L 0007 K08 [2]	9.00	16.00	6.60	125.00	18.0	5.30	0	S	08 IR/IL..
SIR/L 0008 K08U [2]	9.00	16.00	7.30	125.00	21.0	6.60	0	S	08 UIRL..
SIR/L 0010 H11 [2]	12.00	10.00	10.00	100.00	-	7.40	0	S	11 IR/IL..
SIR/L 0010 M11CB [1]	12.00	10.00	10.00	150.00	-	7.40	1	C	11 IR/IL..
SIR 0010 H11B [2]	12.00	10.00	10.00	100.00	-	7.40	1	S	11 IR/IL..
SIR/L 0010 K11 [2]	12.00	16.00	10.00	125.00	25.0	6.50	0	S	11 IR/IL..
SIR/L 0010 K11B [2]	12.00	16.00	10.00	125.00	25.0	7.40	1	S	11 IR/IL..
SIR/L 0012 P11CB [1]	15.00	12.00	12.00	170.00	-	8.40	1	C	11 IR/IL..
SIR/L 0013 L11 [2]	15.00	16.00	13.00	140.00	32.0	8.90	0	S	11 IR/IL..
SIR/L 0013 M16 [2]	16.00	16.00	13.00	150.00	32.0	10.00	0	S	16 IR/L..
SIR/L 0013 M16B [2]	16.00	16.00	13.00	150.00	32.0	10.20	1	S	16 IR/L..
SIR 0016 R16CB [1]	19.00	16.00	16.00	200.00	-	11.70	1	C	16 IR/IL..
SIR/L 0016 P16 [2]	19.00	20.00	16.00	170.00	40.0	11.40	0	S	16 IR/L..
SIR/L 0016 P16B [2]	19.00	20.00	16.00	170.00	40.0	11.70	1	S	16 IR/L..
SIR/L 0020 P16	24.00	20.00	20.00	170.00	-	13.70	0	S	16 IR/L..
SIR/L 0020 P16B	24.00	20.00	20.00	170.00	-	13.70	1	S	16 IR/L..
SIR/L 0020 P22 [2]	24.00	20.00	20.00	170.00	-	15.60	0	S	22 IR/L..
SIR/L 0020-16-AD	24.00	20.00	20.00	80.00	-	13.70	0	S	16 IR/L..
SIR 0020 S16CB	24.00	20.00	20.00	250.00	-	13.70	1	C	16 IR/L..
SIR 0025 S16CB	28.00	25.00	25.00	250.00	-	16.20	1	C	16 IR/L..
SIR/L 0025 R16	29.00	25.00	25.00	200.00	-	16.30	0	S	16 IR/L..
SIR/L 0025 R16B	29.00	25.00	25.00	200.00	-	16.20	1	S	16 IR/L..
SIR/L 0025 R22	29.00	25.00	25.00	200.00	-	17.20	0	S	22 IR/L..
SIR/L 0025 R22B	29.00	25.00	25.00	200.00	-	18.10	1	S	22 IR/L..
SIR/L 0025-16-AD	29.00	25.00	25.00	100.00	-	16.30	0	S	16 IR/L..
SIR/L 0032 S16	36.00	32.00	32.00	250.00	-	19.70	0	S	16 IR/L..
SIR/L 0032 S22	38.00	32.00	32.00	250.00	-	21.50	0	S	22 IR/L..
SIR/L 0032 S22U	38.00	32.00	32.00	250.00	-	25.50	0	S	22 UIRL..
SIR/L 0032 S27	40.00	32.00	32.00	250.00	-	22.40	0	S	27 IR/L
SIR/L 0032 S27U [3]	40.00	32.00	32.00	250.00	-	24.70	0	S	27 UIRL..
SIR/L 0040 T16	44.00	40.00	40.00	300.00	-	23.70	0	S	16 IR/L..
SIR/L 0040 T22	46.00	40.00	40.00	300.00	-	25.80	0	S	22 IR/L..
SIR 0040 T22U	46.00	40.00	40.00	300.00	-	29.50	0	S	22 UIRL..
SIR/L 0040 T27	48.00	40.00	40.00	300.00	-	26.60	0	S	27 IR/L..
SIR 0040 T27U [3]	48.00	40.00	40.00	300.00	-	29.40	0	S	27 UIRL..
SIR/L 0050 U16	54.00	50.00	50.00	350.00	-	28.70	0	S	16 IR/L..
SIR/L 0050 U22	56.00	50.00	50.00	350.00	-	30.60	0	S	22 IR/L..
SIR/L 0050 U27	58.00	50.00	50.00	350.00	-	31.60	0	S	27 IR/L..
SIR/L 0050 U27U* [3]	58.00	50.00	50.00	350.00	-	34.30	0	S	27 UIRL..
SIR/L 0060 V27	68.00	60.00	60.00	400.00	-	36.60	0	S	27 IR/L..
SIR/L 0060 V27U [3]	68.00	60.00	60.00	400.00	-	39.30	0	S	27 UIRL..

- B-steel shank with coolant hole, CB-carbide shank with coolant hole
- All toolholders provide 1.5 helix angle, either via the pocket or the anvil supplied
- For GTGA inserts, use anvil AL 16-0

[1] Carbide shank without anvil
[2] Toolholder without anvil
[3] For ACME, STUB ACME, TRAPEZ (DIN 103) and ROUND (DIN 405) thread profiles check in user guide for anvil information
[4] 0 - Without coolant supply, 1 - With coolant supply
[5] C-carbide,S-steel
[6] Right-hand inserts (IR) for right-hand tools (SIR)

ISCARTHREAD

SIR/L
Internal Threading Bars



	I N C H								
Designation	DMIN	DCONMS	BDRED	LF	LDRED	WF	CSP[4]	Shank m.[5]	Insert[6]
SIR/L 0005 H06CB [1]	6.40	6.00	5.10	100.00	25.0	4.30	1	C	06 IR/IL..
SIR/L 0005 H06 [2]	6.40	12.00	5.10	100.00	12.0	4.30	0	S	06 IR/IL..
SIR 0005 H06-W [2]	6.40	12.00	5.10	100.00	12.0	4.30	0	S	06 IR/IL..
SIR/L 0007 K08CB [1]	9.00	8.00	6.60	125.00	30.0	5.30	1	C	08 IR/IL..
SIR 0008 K08UCB [1]	9.00	8.00	7.30	125.00	35.0	6.40	1	C	08 UIRL..
SIR/L 0007 K08 [2]	9.00	16.00	6.60	125.00	18.0	5.30	0	S	08 IR/IL..
SIR/L 0008 K08U [2]	9.00	16.00	7.30	125.00	21.0	6.60	0	S	08 UIRL..
SIR/L 0010 H11 [2]	12.00	10.00	10.00	100.00	-	7.40	0	S	11 IR/IL..
SIR/L 0010 M11CB [1]	12.00	10.00	10.00	150.00	-	7.40	1	C	11 IR/IL..
SIR 0010 H11B [2]	12.00	10.00	10.00	100.00	-	7.40	1	S	11 IR/IL..
SIR/L 0010 K11 [2]	12.00	16.00	10.00	125.00	25.0	6.50	0	S	11 IR/IL..
SIR/L 0010 K11B [2]	12.00	16.00	10.00	125.00	25.0	7.40	1	S	11 IR/IL..
SIR/L 0012 P11CB [1]	15.00	12.00	12.00	170.00	-	8.40	1	C	11 IR/IL..
SIL 0013 L11 [2]	15.00	16.00	13.00	140.00	32.0	8.90	0	S	11 IR/IL..
SIR 0013 L11 [2]	15.00	16.00	13.00	140.00	32.0	8.90	0	S	11 IR/L..
SIR/L 0013 M16 [2]	16.00	16.00	13.00	150.00	32.0	10.00	0	S	16 IR/L..
SIL 0013 M16B [2]	16.00	16.00	13.00	150.00	32.0	10.20	1	S	16 IR/L..
SIR 0013 M16B [2]	16.00	16.00	13.00	150.00	32.0	10.00	1	S	16 IR/L..
SIR 0016 R16CB [1]	19.00	16.00	16.00	200.00	-	11.70	1	C	16 IR/IL..
SIR/L 0016 P16 [2]	19.00	20.00	16.00	170.00	40.0	11.40	0	S	16 IR/L..
SIR/L 0016 P16B [2]	19.00	20.00	16.00	170.00	40.0	11.70	1	S	16 IR/L..
SIR/L 0020 P16	24.00	20.00	20.00	170.00	-	13.70	0	S	16 IR/L..
SIR/L 0020 P16B	24.00	20.00	20.00	170.00	-	13.70	1	S	16 IR/L..
SIR/L 0020 P22 [2]	24.00	20.00	20.00	170.00	-	15.60	0	S	22 IR/L..
SIR/L 0020-16-AD	24.00	20.00	20.00	80.00	-	13.70	0	S	16 IR/L..
SIR 0020 S16CB	24.00	20.00	20.00	250.00	-	13.70	1	C	16 IR/L..
SIR 0025 S16CB	28.00	25.00	25.00	250.00	-	16.20	1	C	16 IR/L..
SIR/L 0025 R16	29.00	25.00	25.00	200.00	-	16.30	0	S	16 IR/L..
SIL 0025 R16B	29.00	25.00	25.00	200.00	-	16.20	1	S	16 IR/L..
SIR/L 0025 R22	29.00	25.00	25.00	200.00	-	17.20	0	S	22 IR/L..
SIR/L 0025 R22B	29.00	25.00	25.00	200.00	-	18.10	1	S	22 IR/L..
SIL 0025-16-AD	29.00	25.00	25.00	100.00	-	16.30	0	S	16 IR/L..
SIR 0025 R16B	29.00	25.00	25.00	200.00	-	16.30	1	S	16 IR/L..
SIR 0025-16-AD	29.00	25.00	25.00	100.00	-	16.20	0	S	16 IR/L..
SIR/L 0032 S16	36.00	32.00	32.00	250.00	-	19.70	0	S	16 IR/L..
SIR/L 0032 S22	38.00	32.00	32.00	250.00	-	21.50	0	S	22 IR/L..
SIR/L 0032 S22U	38.00	32.00	32.00	250.00	-	25.50	0	S	22 UIRL..
SIL 0032 S27	40.00	32.00	32.00	250.00	-	22.40	0	S	27 IR/L
SIR/L 0032 S27U [3]	40.00	32.00	32.00	250.00	-	24.70	0	S	27 UIRL..
SIR 0032 S27	40.00	32.00	32.00	250.00	-	22.40	0	S	27 IR/L..
SIR/L 0040 T16	44.00	40.00	40.00	300.00	-	23.70	0	S	16 IR/L..
SIR/L 0040 T22	46.00	40.00	40.00	300.00	-	25.80	0	S	22 IR/L..
SIR 0040 T22U	46.00	40.00	40.00	300.00	-	29.50	0	S	22 UIRL..
SIR/L 0040 T27	48.00	40.00	40.00	300.00	-	26.60	0	S	27 IR/L..
SIR 0040 T27U [3]	48.00	40.00	40.00	300.00	-	29.40	0	S	27 UIRL..
SIR/L 0050 U16	54.00	50.00	50.00	350.00	-	28.70	0	S	16 IR/L..
SIR/L 0050 U22	56.00	50.00	50.00	350.00	-	30.60	0	S	22 IR/L..
SIR/L 0050 U27	58.00	50.00	50.00	350.00	-	31.60	0	S	27 IR/L..
SIR/L 0050 U27U* [3]	58.00	50.00	50.00	350.00	-	34.30	0	S	27 UIRL..
SIR/L 0060 V27	68.00	60.00	60.00	400.00	-	36.60	0	S	27 IR/L..
SIR/L 0060 V27U [3]	68.00	60.00	60.00	400.00	-	39.30	0	S	27 UIRL..

- B-steel shank with coolant hole, C-carbide shank without coolant hole, CB-carbide shank with coolant hole
- All toolholders are made for 1.5 helix angle
- For GTGA inserts, use anvil AL 16-0

[1] Toolholder without anvil
[2] Carbide shank without anvil
[3] For ACME, STUB ACME, TRAPEZ (DIN 103) and ROUND (DIN 405) thread profiles check in user guide for anvil information
[4] 0 - Without coolant supply, 1 - With coolant supply
[5] C-carbide,S-steel
[6] Right-hand inserts (IR) for right-hand tools (SIR)

Spare Parts

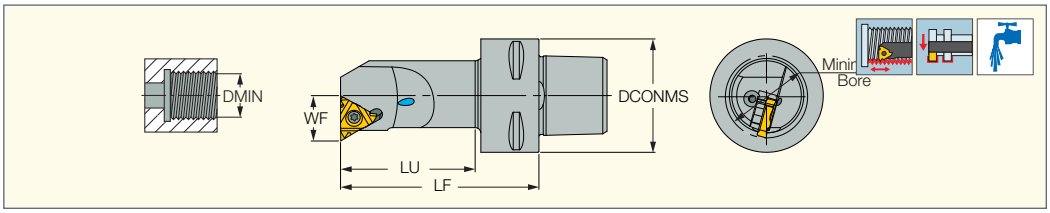
Designation						
SIR/L 0005 H06CB				SR 14-552	T-6/5	
SIR/L 0005 H06				SR 14-552	T-6/5	
SIR 0005 H06-W				SR 14-552	T-6/5	
SIR/L 0007 K08CB				SR 14-558	T-6/5	
SIR 0008 K08UCB				SR 14-558	T-6/5	
SIR/L 0007 K08				SR 14-558	T-6/5	
SIR/L 0008 K08U				SR 14-558	T-6/5	
SIR/L 0010 H11				SR M2.6-L6.7-S11	T-8/5	
SIR/L 0010 M11CB				SR M2.6-L6.7-S11	T-8/5	
SIR 0010 H11B				SR M2.6-L6.7-S11	T-8/5	
SIR/L 0010 K11				SR M2.6-L6.7-S11	T-8/5	
SIR/L 0010 K11B				SR M2.6-L6.7-S11	T-8/5	PL 16
SIR/L 0012 P11CB				SR M2.6-L6.7-S11	T-8/5	
SIR/L 0013 L11				SR M2.6-L6.7-S11	T-8/5	
SIR/L 0013 M16				SR 5-40-L9.7-S16S	T-10/5	
SIR/L 0013 M16B				SR 5-40-L9.7-S16S	T-10/5	PL 16
SIR 0016 R16CB				SR 5-40-L9.7-S16S	T-10/5	
SIR/L 0016 P16				SR 5-40-L9.7-S16S	T-10/5	
SIR/L 0016 P16B				SR 5-40-L9.7-S16S	T-10/5	PL 20
SIL 0020 P16		AE16	SR 5-40-L6.8-A16	SR 5-40-L12.2-S16	T-10/5	
SIL 0020 P16B		AE16	SR 5-40-L6.8-A16	SR 5-40-L12.2-S16	T-10/5	PL 20
SIR/L 0020 P22				SR 8-32-L12-S22S	T-20/5	
SIL 0020-16-AD		AE16	SR 5-40-L6.8-A16	SR 5-40-L12.2-S16	T-10/5	
SIR 0020 P16	AI16		SR 5-40-L6.8-A16	SR 5-40-L12.2-S16	T-10/5	
SIR 0020 P16B	AI16		SR 5-40-L6.8-A16	SR 5-40-L12.2-S16	T-10/5	PL 20
SIR 0020 S16CB	AI16		SR 5-40-L6.8-A16	SR 5-40-L12.2-S16	T-10/5	
SIR 0020-16-AD	AI16		SR 5-40-L6.8-A16	SR 5-40-L12.2-S16	T-10/5	
SIR 0025 S16CB	AI16		SR 5-40-L6.8-A16	SR 5-40-L12.2-S16	T-10/5	
SIL 0025 R16		AE16				
SIR/L 0025 R16			SR 5-40-L6.8-A16	SR 5-40-L12.2-S16	T-10/5	
SIL 0025 R16B		AE16				
SIR/L 0025 R16B			SR 5-40-L6.8-A16	SR 5-40-L12.2-S16	T-10/5	PL 25
SIL 0025 R22		AE22				
SIR/L 0025 R22			SR 8-32-L5.8-A22	SR 8-32-L15-S22	T-20/5	
SIL 0025 R22B		AE22				
SIR/L 0025 R22B			SR 8-32-L5.8-A22	SR 8-32-L15-S22	T-20/5	PL 25
SIL 0025-16-AD		AE16	SR 5-40-L6.8-A16	SR 5-40-L12.2-S16	T-10/5	
SIR 0025 R16	AI16					
SIR 0025 R16B	AI16					
SIR 0025 R22	AI22					
SIR 0025 R22B	AI22					
SIR 0025-16-AD	AI16		SR 5-40-L6.8-A16	SR 5-40-L12.2-S16	T-10/5	
SIL 0032 S16		AE16	SR 5-40-L6.8-A16	SR 5-40-L12.2-S16	T-10/5	
SIR 0032 S16	AI16		SR 5-40-L6.8-A16	SR 5-40-L12.2-S16	T-10/5	
SIL 0032 S22		AE22	SR 8-32-L5.8-A22	SR 8-32-L15-S22	T-20/5	
SIL 0032 S22U		AE22U	SR 8-32-L5.8-A22	SR 8-32-L15-S22	T-20/5	
SIR 0032 S22	AI22		SR 8-32-L5.8-A22	SR 8-32-L15-S22	T-20/5	
SIR 0032 S22U	AI22U		SR 8-32-L5.8-A22	SR 8-32-L15-S22	T-20/5	
SIL 0032 S27		AE27	SR M5-L5.8-A27	SR M5-L22-S40	T-25/3	
SIL 0032 S27U		AE27U	SR M5-L5.8-A27	SR M5-L22-S40	T-25/3	
SIR 0032 S27	AI27		SR M5-L5.8-A27	SR M5-L22-S40	T-25/3	
SIR 0032 S27U	AI27U		SR M5-L5.8-A27	SR M5-L22-S40	T-25/3	
SIL 0040 T16		AE16	SR 5-40-L6.8-A16	SR 5-40-L12.2-S16	T-10/5	
SIR 0040 T16	AI16		SR 5-40-L6.8-A16	SR 5-40-L12.2-S16	T-10/5	
SIL 0040 T22		AE22	SR 8-32-L5.8-A22	SR 8-32-L15-S22	T-20/5	
SIR 0040 T22	AI22		SR 8-32-L5.8-A22	SR 8-32-L15-S22	T-20/5	
SIR 0040 T22U	AI22U		SR 8-32-L5.8-A22	SR 8-32-L15-S22	T-20/5	
SIL 0040 T27		AE27	SR M5-L5.8-A27	SR M5-L22-S40	T-25/3	
SIR 0040 T27	AI27		SR M5-L5.8-A27	SR M5-L22-S40	T-25/3	
SIR 0040 T27U	AI27U		SR M5-L5.8-A27	SR M5-L22-S40	T-25/3	
SIL 0050 U16		AE16	SR 5-40-L6.8-A16	SR 5-40-L12.2-S16	T-10/5	
SIR 0050 U16	AI16		SR 5-40-L6.8-A16	SR 5-40-L12.2-S16	T-10/5	
SIL 0050 U22		AE22	SR 8-32-L5.8-A22	SR 8-32-L15-S22	T-20/5	
SIR 0050 U22	AI22		SR 8-32-L5.8-A22	SR 8-32-L15-S22	T-20/5	
SIL 0050 U27		AE27	SR M5-L5.8-A27	SR M5-L22-S40	T-25/3	
SIL 0050 U27U*		AE27U	SR M5-L5.8-A27	SR M5-L22-S40	T-25/3	
SIR 0050 U27	AI27		SR M5-L5.8-A27	SR M5-L22-S40	T-25/3	
SIR 0050 U27U	AI27U		SR M5-L5.8-A27	SR M5-L22-S40	T-25/3	
SIL 0060 V27		AE27	SR M5-L5.8-A27	SR M5-L22-S40	T-25/3	
SIL 0060 V27U		AE27U	SR M5-L5.8-A27	SR M5-L22-S40	T-25/3	
SIR 0060 V27	AI27		SR M5-L5.8-A27	SR M5-L22-S40	T-25/3	
SIR 0060 V27U	AI27U		SR M5-L5.8-A27	SR M5-L22-S40	T-25/3	

ISCARTHREAD

CAMFIX

C#-SIR/L

Internal Threading Bars with CAMFIX Exchangeable Shanks



M E T R I C

Designation	DCONMS	DMIN	WF	LU	LF	Insert	CP(1)	CDI
C4 SIR/L-12060-16	40	20.00	11.70	37.0	60.00	16 IR/L..	300	1
C4 SIR/L-14060-16	40	25.00	13.50	38.0	60.00	16 IR/L..	300	1
C4 SIR-15065-22	40	25.00	15.40	42.0	65.00	22 IR/L..	300	1
C4 SIL-17070-16	40	29.00	16.00	48.0	70.00	16 IR/L..	999	1
C4 SIL-19070-22	40	29.00	17.90	48.0	70.00	22 IR/L..	999	1
C4 SIR-17070-16	40	29.00	16.00	48.0	70.00	16 IR/L..	300	1
C4 SIR-19070-22	40	29.00	17.90	48.0	70.00	22 IR/L..	300	1
C4 SIR/L-22090-16	40	36.00	19.50	69.0	90.00	16 IR/L..	300	1
C4 SIR/L-22090-22	40	38.00	21.40	69.0	90.00	22 IR/L..	300	1
C4 SIR/L-27080-16	40	44.00	23.50	60.0	80.00	16 IR/L..	300	1
C4 SIR/L-27080-22	40	46.00	25.40	60.0	80.00	22 IR/L..	300	1
C5 SIR/L-12060-16	50	20.00	11.70	35.0	60.00	16 IR/L..	300	1
C5 SIR/L-14060-16	50	25.00	13.50	36.0	60.00	16 IR/L..	300	1
C5 SIR/L-15065-22	50	25.00	15.40	41.0	65.00	22 IR/L..	300	1
C5 SIR/L-17070-16	50	29.00	16.00	47.0	70.00	16 IR/L..	300	1
C5 SIR/L-19070-22	50	29.00	17.90	47.0	70.00	22 IR/L..	300	1
C5 SIR/L-22090-16	50	36.00	19.50	68.0	90.00	16 IR/L..	300	1
C5 SIR/L-22090-22	50	38.00	21.40	68.0	90.00	22 IR/L..	300	1
C5 SIR/L-27105-16	50	44.00	23.50	84.0	105.00	16 IR/L..	300	1
C5 SIR/L-27105-22	50	46.00	25.40	84.0	105.00	22 IR/L..	300	1
C6 SIR/L-14070-16	63	25.00	13.50	42.0	70.00	16 IR/L..	300	1
C6 SIR/L-17075-16	63	29.00	16.00	48.0	75.00	16 IR/L..	300	1
C6 SIR/L-19075-22	63	29.00	17.90	48.0	75.00	22 IR/L..	300	1
C6 SIR/L-22090-16	63	36.00	19.50	64.0	90.00	16 IR/L..	300	1
C6 SIR/L-22090-22	63	38.00	21.40	64.0	90.00	22 IR/L..	300	1
C6 SIR/L-27105-16	63	44.00	23.50	80.0	105.00	16 IR/L..	300	1
C6 SIL-27105-22	63	46.00	25.40	80.0	105.00	22 IR/L..	300	1
C6 SIR-27105-22	63	46.00	25.40	8.0	105.00	22 IR/L..	300	1

I N C H

Designation	DCONMS	DMIN	WF	LU	LF	Insert	CP(1)	CDI
C4 SIR/L-12060-16	40	.787	.461	1.457	2.362	16 IR/L..	4350	0
C4 SIR/L-14060-16	40	.984	.531	1.496	2.362	16 IR/L..	4350	0
C4 SIR-15065-22	40	.984	.606	1.654	2.559	22 IR/L..	4350	0
C4 SIL-17070-16	40	1.142	.630	1.890	2.756	16 IR/L..	999	0
C4 SIL-19070-22	40	1.142	.705	1.890	2.756	22 IR/L..	999	0
C4 SIR-17070-16	40	1.142	.630	1.890	2.756	16 IR/L..	4350	0
C4 SIR-19070-22	40	1.142	.705	1.890	2.756	22 IR/L..	4350	0
C4 SIR/L-22090-16	40	1.417	.768	2.717	3.543	16 IR/L..	4350	0
C4 SIR/L-22090-22	40	1.496	.843	2.717	3.543	22 IR/L..	4350	0
C4 SIR/L-27080-16	40	1.732	.925	2.362	3.150	16 IR/L..	4350	0
C4 SIR/L-27080-22	40	1.811	1.000	2.362	3.150	22 IR/L..	4350	0
C5 SIR/L-12060-16	50	.787	.461	1.378	2.362	16 IR/L..	4350	0
C5 SIR/L-14060-16	50	.984	.531	1.417	2.362	16 IR/L..	4350	0
C5 SIR/L-15065-22	50	.984	.606	1.614	2.559	22 IR/L..	4350	0
C5 SIR/L-17070-16	50	1.142	.630	1.850	2.756	16 IR/L..	4350	0
C5 SIR/L-19070-22	50	1.142	.705	1.850	2.756	22 IR/L..	4350	0
C5 SIR/L-22090-16	50	1.417	.768	2.677	3.543	16 IR/L..	4350	0
C5 SIR/L-22090-22	50	1.496	.843	2.677	3.543	22 IR/L..	4350	0
C5 SIR/L-27105-16	50	1.732	.925	3.307	4.134	16 IR/L..	4350	0
C5 SIR/L-27105-22	50	1.811	1.000	3.307	4.134	22 IR/L..	4350	0
C6 SIR/L-14070-16	63	.984	.531	1.654	2.756	16 IR/L..	4350	0
C6 SIR/L-17075-16	63	1.142	.630	1.890	2.953	16 IR/L..	4350	0
C6 SIR/L-19075-22	63	1.142	.705	1.890	2.953	22 IR/L..	4350	0
C6 SIR/L-22090-16	63	1.417	.768	2.520	3.543	16 IR/L..	4350	0
C6 SIR/L-22090-22	63	1.496	.843	2.520	3.543	22 IR/L..	4350	0
C6 SIR/L-27105-16	63	1.732	.925	3.150	4.134	16 IR/L..	4350	0
C6 SIL-27105-22	63	1.811	1.000	3.150	4.134	22 IR/L..	4350	0
C6 SIR-27105-22	63	1.811	1.000	.315	4.134	22 IR/L..	4350	0

(1) Coolant pressure (Bar)

For inserts, see pages: • IR-BUT (257) • IR-EL (259) • IR-MJ (242) • IR/L-55° (155) • IR/L-60° (165) • IR/L-ABUT (248) • IR/L-ACME (231) • IR/L-API (254) • IR/L-API RD (251) • IR/L-BSPT (223) • IR/L-ISO (186) • IR/L-NPT (215) • IR/L-NPTF (221) • IR/L-PG (245) • IR/L-SAGE (246) • IR/L-STACME (227) • IR/L-TR (244) • IR/L-UN (199) • IR/L-UNJ (237) • IR/L-W (209)

Member IMC Group

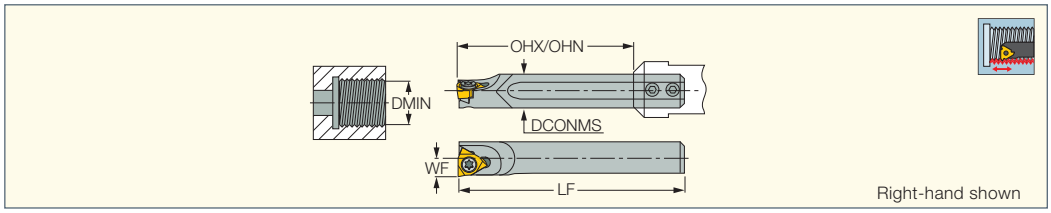
Spare Parts

Designation					
C4 SIL-12060-16		AE16	SR 5-40-L6.8-A16	SR 5-40-L12.2-S16	T-10/5
C4 SIR-12060-16	AI16		SR 5-40-L6.8-A16	SR 5-40-L12.2-S16	T-10/5
C4 SIL-14060-16		AE16	SR 5-40-L6.8-A16	SR 5-40-L12.2-S16	T-10/5
C4 SIR-14060-16	AI16		SR 5-40-L6.8-A16	SR 5-40-L12.2-S16	T-10/5
C4 SIR-15065-22	AI22		SR 8-32-L5.8-A22	SR 8-32-L15-S22	T-20/5
C4 SIL-17070-16		AE16	SR 5-40-L6.8-A16	SR 5-40-L12.2-S16	T-10/5
C4 SIL-19070-22		AE22	SR 8-32-L5.8-A22	SR 8-32-L15-S22	T-20/5
C4 SIR-17070-16	AI16		SR 5-40-L6.8-A16	SR 5-40-L12.2-S16	T-10/5
C4 SIR-19070-22	AI22		SR 8-32-L5.8-A22	SR 8-32-L15-S22	T-20/5
C4 SIL-22090-16		AE16	SR 5-40-L6.8-A16	SR 5-40-L12.2-S16	T-10/5
C4 SIR-22090-16	AI16		SR 5-40-L6.8-A16	SR 5-40-L12.2-S16	T-10/5
C4 SIL-22090-22		AE22	SR 8-32-L5.8-A22	SR 8-32-L15-S22	T-20/5
C4 SIR-22090-22	AI22		SR 8-32-L5.8-A22	SR 8-32-L15-S22	T-20/5
C4 SIL-27080-16		AE16	SR 5-40-L6.8-A16	SR 5-40-L12.2-S16	T-10/5
C4 SIR-27080-16	AI16		SR 5-40-L6.8-A16	SR 5-40-L12.2-S16	T-10/5
C4 SIL-27080-22		AE22	SR 8-32-L5.8-A22	SR 8-32-L15-S22	T-20/5
C4 SIR-27080-22	AI22		SR 8-32-L5.8-A22	SR 8-32-L15-S22	T-20/5
C5 SIL-12060-16		AE16	SR 5-40-L6.8-A16	SR 5-40-L12.2-S16	T-10/5
C5 SIR-12060-16	AI16		SR 5-40-L6.8-A16	SR 5-40-L12.2-S16	T-10/5
C5 SIL-14060-16		AE16	SR 5-40-L6.8-A16	SR 5-40-L12.2-S16	T-10/5
C5 SIL-15065-22		AE22	SR 8-32-L5.8-A22	SR 8-32-L15-S22	T-20/5
C5 SIR-14060-16	AI16		SR 5-40-L6.8-A16	SR 5-40-L12.2-S16	T-10/5
C5 SIR-15065-22	AI22		SR 8-32-L5.8-A22	SR 8-32-L15-S22	T-20/5
C5 SIL-17070-16		AE16	SR 5-40-L6.8-A16	SR 5-40-L12.2-S16	T-10/5
C5 SIL-19070-22		AE22	SR 8-32-L5.8-A22	SR 8-32-L15-S22	T-20/5
C5 SIR-17070-16	AI16		SR 5-40-L6.8-A16	SR 5-40-L12.2-S16	T-10/5
C5 SIR-19070-22	AI22		SR 8-32-L5.8-A22	SR 8-32-L15-S22	T-20/5
C5 SIL-22090-16		AE16	SR 5-40-L6.8-A16	SR 5-40-L12.2-S16	T-10/5
C5 SIR-22090-16	AI16		SR 5-40-L6.8-A16	SR 5-40-L12.2-S16	T-10/5
C5 SIL-22090-22		AE22	SR 8-32-L5.8-A22	SR 8-32-L15-S22	T-20/5
C5 SIR-22090-22	AI22		SR 8-32-L5.8-A22	SR 8-32-L15-S22	T-20/5
C5 SIL-27105-16		AE16	SR 5-40-L6.8-A16	SR 5-40-L12.2-S16	T-10/5
C5 SIR-27105-16	AI16		SR 5-40-L6.8-A16	SR 5-40-L12.2-S16	T-10/5
C5 SIL-27105-22		AE22	SR 8-32-L5.8-A22	SR 8-32-L15-S22	T-20/5
C5 SIR-27105-22	AI22		SR 8-32-L5.8-A22	SR 8-32-L15-S22	T-20/5
C6 SIL-14070-16		AE16	SR 5-40-L6.8-A16	SR 5-40-L12.2-S16	T-10/5
C6 SIR-14070-16	AI16		SR 5-40-L6.8-A16	SR 5-40-L12.2-S16	T-10/5
C6 SIL-17075-16		AE16	SR 5-40-L6.8-A16	SR 5-40-L12.2-S16	T-10/5
C6 SIL-19075-22		AE22	SR 8-32-L5.8-A22	SR 8-32-L15-S22	T-20/5
C6 SIR-17075-16	AI16		SR 5-40-L6.8-A16	SR 5-40-L12.2-S16	T-10/5
C6 SIR-19075-22	AI22		SR 8-32-L5.8-A22	SR 8-32-L15-S22	T-20/5
C6 SIL-22090-16		AE16	SR 5-40-L6.8-A16	SR 5-40-L12.2-S16	T-10/5
C6 SIR-22090-16	AI16		SR 5-40-L6.8-A16	SR 5-40-L12.2-S16	T-10/5
C6 SIL-22090-22		AE22	SR 8-32-L5.8-A22	SR 8-32-L15-S22	T-20/5
C6 SIR-22090-22	AI22		SR 8-32-L5.8-A22	SR 8-32-L15-S22	T-20/5
C6 SIL-27105-16		AE16	SR 5-40-L6.8-A16	SR 5-40-L12.2-S16	T-10/5
C6 SIR-27105-16	AI16		SR 5-40-L6.8-A16	SR 5-40-L12.2-S16	T-10/5
C6 SIL-27105-22		AE22	SR 8-32-L5.8-A22	SR 8-32-L15-S22	T-20/5
C6 SIR-27105-22	AI22		SR 8-32-L5.8-A22	SR 8-32-L15-S22	T-20/5

ISCARTHREAD

MGSIR/L

Solid Carbide Bars for Internal Turning and Threading



M E T R I C						
Designation	**DCONMS**	**LF**	**OHN(1)**	**OHX(2)**	**WF**	**DMIN**
MGSIR/L 06-06	6.00	59.00	16.0	42.0	3.90	7.00
MGSIR/L 08-06	8.00	72.00	20.0	56.0	5.00	9.20

I N C H								
Designation	**DCONMS**	**LF**	**OHN(1)**	**OHX(2)**	**WF**	**DMIN**		
MGSIR/L 06-06	.236	2.323	.63	1.654	.154	.276	SR 14-552	T-6/5
MGSIR/L 08-06	.315	2.835	.79	2.205	.197	.362	SR 14-552	T-6/5

- In order to maintain high machining reliability, we strongly recommend replacing the clamping screw every 10 insert indexes

(1) Minimum overhang in adjustment range

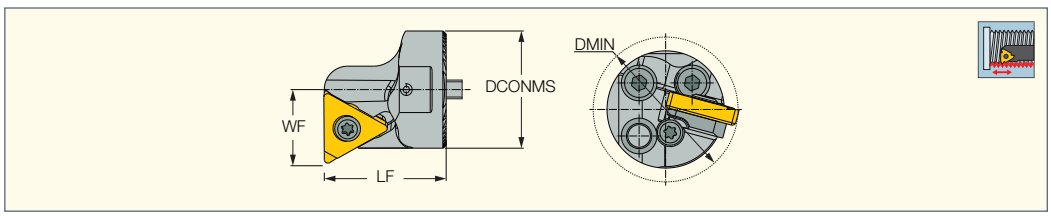
(2) Maximum overhang in adjustment range

FLASHTURN ECO LINE

WHISPERLINE ANTI-VIBRATION

AVC-D-SIR/L

Interchangeable Boring Heads for Threading Inserts



M E T R I C					
Designation	**WF**	**DCONMS**	**DMIN**	**LF**	**CSP(2)**
AVC-D25-SIR/L-16	16.20	25.00	29.00	26.00	1
AVC-D32-SIR/L-16	19.70	32.00	36.00	27.00	1
AVC-D40-SIR/L-16 (1)	23.70	40.00	44.00	30.00	1
AVC-D32-SIR/L-22	21.60	32.00	38.00	32.00	1
AVC-D40-SIR/L-22 (1)	25.60	40.00	46.00	38.00	1

I N C H					
Designation	**WF**	**DCONMS**	**DMIN**	**LF**	**CSP(2)**
AVC-D25-SIR/L-16	.638	.984	1.142	1.024	1
AVC-D32-SIR/L-16	.776	1.260	1.417	1.063	1
AVC-D40-SIR/L-16 (1)	.933	1.575	1.732	1.181	1
AVC-D32-SIR/L-22	.850	1.260	1.496	1.260	1
AVC-D40-SIR/L-22 (1)	1.008	1.575	1.811	1.496	1

(1) DMIN of 50 mm shank is DMIN of requested head + 10 mm • DMIN of 60 mm shanks is DMIN of requested head + 20 mm

(2) 0 - Without coolant supply, 1 - With coolant supply

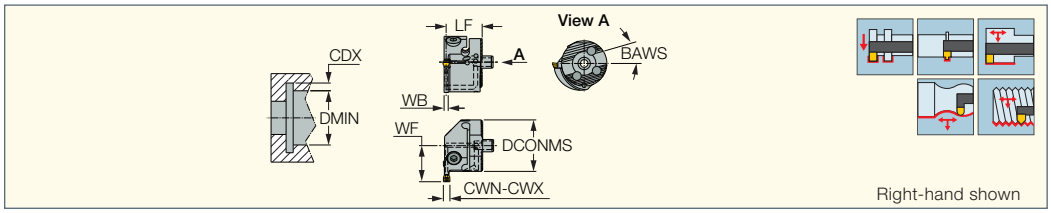
Spare Parts

Designation				
AVC-D25-SIL-16	AE16	SR 5-40-L12.2-S16	SR 5-40-L6.8-A16	T-10/5
AVC-D25-SIR-16	AI16	SR 5-40-L12.2-S16	SR 5-40-L6.8-A16	T-10/5
AVC-D32-SIL-16	AE16	SR 5-40-L12.2-S16	SR 5-40-L6.8-A16	T-10/5
AVC-D32-SIR-16	AI16	SR 5-40-L12.2-S16	SR 5-40-L6.8-A16	T-10/5
AVC-D40-SIL-16	AE16	SR 5-40-L12.2-S16	SR 5-40-L6.8-A16	T-10/5
AVC-D40-SIR-16	AI16	SR 5-40-L12.2-S16	SR 5-40-L6.8-A16	T-10/5
AVC-D32-SIL-22	AE22	SR 8-32-L15-S22	SR 8-32-L5.8-A22	T-20/5
AVC-D32-SIR-22	AI22	SR 8-32-L15-S22	SR 8-32-L5.8-A22	T-20/5
AVC-D40-SIL-22	AE22	SR 8-32-L15-S22	SR 8-32-L5.8-A22	T-20/5
AVC-D40-SIR-22	AI22	SR 8-32-L15-S22	SR 8-32-L5.8-A22	T-20/5

CUTGRIP

AVC-GEAIR/L

Internal Grooving Turning and Threading Adapters



M E T R I C										
Designation	**DMIN**	**CWN(1)**	**CWX(2)**	**DCONMS**	**CDX(3)**	**WF**	**LF**	**WB**	**BAWS**	**MIID(4)**
AVC-D16-GEAIR/L-2	21.00	1.90	2.40	16.00	3.00	12.00	14.50	1.60	45	GEPI 2.00-0.10
AVC-D16-GEAIR/L-3	21.00	2.40	2.70	16.00	3.00	12.00	14.50	2.00	45	GEPI 3.00-0.20
AVC-D20-GEAIR/L-2	26.00	1.90	2.40	20.00	3.00	14.70	13.50	1.60	15	GEPI 2.00-0.10
AVC-D20-GEAIR/L-3	26.00	2.40	3.18	20.00	3.00	14.70	13.50	2.00	15	GEPI 3.00-0.20
AVC-D25-GEAIR/L-2	31.00	1.90	2.40	25.00	4.00	17.50	17.50	1.60	15	GEPI 2.00-0.10
AVC-D25-GEAIR/L-3	31.00	2.40	3.18	25.00	4.00	17.50	17.50	2.00	15	GEPI 3.00-0.20

I N C H										
Designation	**DMIN**	**CWN(1)**	**CWX(2)**	**DCONMS**	**CDX(3)**	**WF**	**LF**	**WB**	**BAWS**	**MIID(4)**
AVC-D16-GEAIR/L-2	.827	.075	.094	.630	.118	.472	.571	.063	45	GEPI 2.00-0.10
AVC-D16-GEAIR/L-3	.827	.094	.106	.630	.118	.472	.571	.079	45	GEPI 3.00-0.20
AVC-D20-GEAIR/L-2	1.024	.075	.094	.787	.118	.579	.531	.063	15	GEPI 2.00-0.10
AVC-D20-GEAIR/L-3	1.024	.094	.125	.787	.118	.579	.531	.079	15	GEPI 3.00-0.20
AVC-D25-GEAIR/L-2	1.220	.075	.094	.984	.157	.689	.689	.063	15	GEPI 2.00-0.10
AVC-D25-GEAIR/L-3	1.220	.094	.125	.984	.157	.689	.689	.079	15	GEPI 3.00-0.20

- Using the adapters with CAMFIX holders is only possible in case the machine has an option for rotating the CAMFIX Axis.

(1) Minimum cutting width
(2) Maximum cutting width
(3) Cutting depth maximum
(4) Master insert identification

For inserts, see pages: • GEPI-MT (171) • GEPI-WT (159)

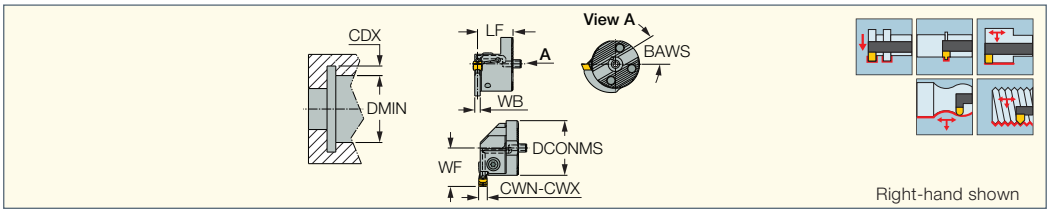
Spare Parts

Designation					
AVC-D16-GEAIR/L-2	SR 14-551				T-9/5
AVC-D16-GEAIR/L-3	SR 14-551				T-9/5
AVC-D20-GEAIR/L-2	SR 34-510		SW6-SD	BLD T15/M7	
AVC-D20-GEAIR/L-3	SR 34-510		SW6-SD	BLD T15/M7	
AVC-D25-GEAIR/L-2	SR M4X14 DIN912	HW 3.0			
AVC-D25-GEAIR/L-3	SR M4X14 DIN912	HW 3.0			

CUTGRIP

AVC-GAIR/L

Internal Grooving Turning and Threading Adapters



M E T R I C									
Designation	**DMIN**	**CWN(2)**	**CWX(3)**	**DCONMS**	**CDX(4)**	**WF**	**LF**	**WB**	**BAWS**
AVC-D32-GAIR/L-2	37.00	1.50	2.10	32.00	3.00	20.00	23.00	1.20	30
AVC-D32-GAIR/L-3	37.00	2.10	3.00	32.00	3.00	20.00	23.00	1.80	30
AVC-D32-GAIR/L-4	39.00	3.00	4.50	32.00	5.00	22.00	23.00	2.50	30
AVC-D32-GAIR/L-5	39.00	4.50	6.40	32.00	5.00	22.00	26.00	4.00	30
AVC-D40-GAIR/L-2 (1)	45.00	1.50	2.10	40.00	3.00	24.00	23.00	1.20	30
AVC-D40-GAIR/L-3 (1)	46.00	2.10	3.00	40.00	4.00	25.00	23.00	1.80	30
AVC-D40-GAIR/L-4	49.00	3.00	4.50	40.00	7.00	28.00	23.00	2.50	30
AVC-D40-GAIR/L-5	49.00	4.50	6.40	40.00	7.00	28.00	26.00	4.00	30

I N C H									
Designation	**DMIN**	**CWN(2)**	**CWX(3)**	**DCONMS**	**CDX(4)**	**WF**	**LF**	**WB**	**BAWS**
AVC-D32-GAIR/L-2	1.457	.059	.083	1.260	.118	.787	.906	.047	30
AVC-D32-GAIR/L-3	1.457	.083	.118	1.260	.118	.787	.906	.071	30
AVC-D32-GAIR/L-4	1.535	.118	.177	1.260	.197	.866	.906	.098	30
AVC-D32-GAIR/L-5	1.535	.177	.252	1.260	.197	.866	1.024	.157	30
AVC-D40-GAIR/L-2 (1)	1.772	.059	.083	1.575	.118	.945	.906	.047	30
AVC-D40-GAIR/L-3 (1)	1.811	.083	.118	1.575	.157	.984	.906	.071	30
AVC-D40-GAIR/L-4	1.929	.118	.177	1.575	.276	1.102	.906	.098	30
AVC-D40-GAIR/L-5	1.929	.177	.252	1.575	.276	1.102	1.024	.157	30

- When using TIPI inserts, toolholder seat needs to be modified according to insert profile to ensure clearance
- Using the adapters with CAMFIX holders is only possible in case the machine has an option for rotating the CAMFIX Axis.

(1) DMIN of 50 mm shank is DMIN of requested head + 10 mm • DMIN of 60 mm shanks is DMIN of requested head + 20 mm
(2) Minimum cutting width
(3) Maximum cutting width
(4) Cutting depth maximum

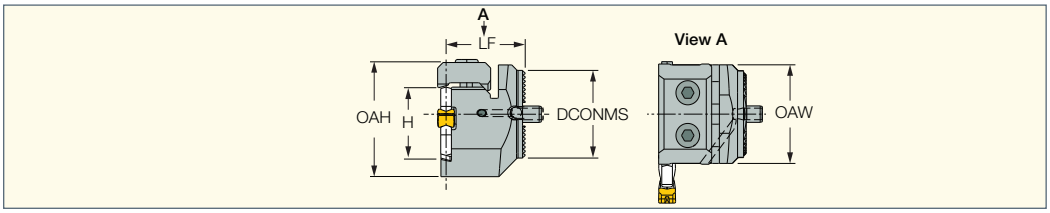
For inserts, see pages: TIPI-MT (172) • TIPI-WT (160)

Spare Parts

Designation			
AVC-GAIR/L	SR 76-1021	T-20/5	SR M3X3DIN913

CUTGRIP

AVC-GAIC
Adapters for Internal Grooving
Turning and Threading Blades



M E T R I C					
Designation	DCONMS	LF	H	OAH	OAW
AVC-D32-GAIC-50	32.00	29.50	26.0	41.70	36.00
AVC-D40-GAIC-50 (1)	40.00	29.50	26.0	41.70	36.00

I N C H					
Designation	DCONMS	LF	H	OAH	OAW
AVC-D32-GAIC-50	1.260	1.161	1.024	1.642	1.417
AVC-D40-GAIC-50 (1)	1.575	1.161	1.024	1.642	1.417

• For CGIN 26 blades
(1) When using 50 mm shank, DMIN=DMIN of CGIN blade + 10 mm • When using 60 mm shank, DMIN=DMIN of CGIN blade + 20 mm

Spare Parts

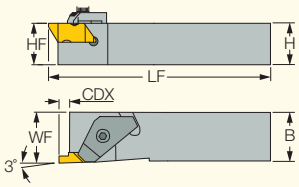
Designation						
AVC-GAIC	SR M3X8 DIN913	SR M5X20DIN912	HW 2.0	SR M4X8 DIN913	HW 4.0	HW 1.5

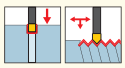
Tools for External Grooving and Threading Inserts

NOTCH GRIP
GROOVE-TURN LINE

ISCAR THREAD

FLASR/L
External Tools for Grooving and Threading for Swiss-type Machines





M E T R I C								
Designation	**SSC(1)**	**H**	**HF**	**B**	**CDX**	**WF**	**LF**	**Insert**
FLASR/L-1010M2	2.0	10.0	10.0	10.0	3.51	10.00	150.00	FL/IN_-2
FLASR/L-1212M2	2.0	12.0	12.0	12.0	3.51	12.00	150.00	FL/IN_-2
FLASR-1616M2	2.0	16.0	16.0	16.0	3.51	16.00	150.00	FL/IN_-2
FLASR/L-1616M3	3.0	16.0	16.0	16.0	5.31	16.00	125.00	FL/IN_-3

I N C H								
Designation	**SSC(1)**	**H**	**HF**	**B**	**CDX**	**WF**	**LF**	**Insert**
FLASR/L-062D	2.0	.375	.375	.375	.138	.380	6.000	FL/IN_-2
FLASR/L-082D	2.0	.500	.500	.500	.138	.500	6.000	FL/IN_-2
FLASR-102B	2.0	.625	.625	.625	.138	.630	4.500	FL/IN_-2
FLASR/L-103B	3.0	.625	.625	.625	.210	.630	4.500	FL/IN_-3

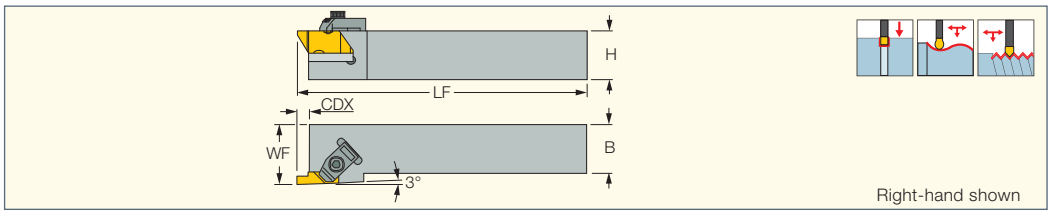
(1) Seat size code

For inserts, see pages: 60° PARTIAL PROFILE THREADING FLT (175) • 60° PARTIAL PROFILE THREADING FLT-CB (175)
• 60° PARTIAL PROFILE THREADING FLTF (173) • 60° PARTIAL PROFILE THREADING FLTK (174) • 60° PARTIAL PROFILE THREADING FLTP (176)
• ACME THREADING FLA (232) • ACME THREADING FLA-PT-E (233) • ACME THREADING FLAS (234) • AMERICAN STANDARD BUTTRESS THREADING FLTB-A (249)
• AMERICAN STANDARD BUTTRESS THREADING FLTB-B (249) • API PARTIAL PROFILE THREDING FLD (255) • API ROUND THREADING FLDC-RD-75 (251)
• API ROUND THREADING FLDC-RD-75-CB (252) • NPT THREADING FLDC-V-75 (218) • STUB ACME THREADING FLAS-PT-E (229) • UN THREADING FLTC-E (205)
• UNJ THREADING FLJ (238) • UNJ THREADING FLJF (239) • UNJ THREADING FLJK (240) • UNJ THREADING FLJP (238)

External Tools for Grooving and Threading for Swisstype Machines

NOTCH-GRIP GROOVE-TURN LINE

FLSR/L
Tools for External Grooving and Threading Inserts



M E T R I C						
Designation	SSC[1]	B	CDX	WF	LF	Insert
FLSR/L-2020M2	2.0	20.0	3.00	25.00	125.00	FL/IN_-2
FLSR/L-2020M3	3.0	20.0	5.00	25.00	125.00	FL/IN_-3
FLSR/L-2525M2	2.0	25.0	3.00	32.00	150.00	FL/IN_-2
FLSR/L-2525M3	3.0	25.0	5.00	32.00	150.00	FL/IN_-3

I N C H							
Designation	SSC[1]	H	B	CDX	WF	LF	Insert
FLSL-62	2.0	.375	.375	.140	.560	2.500	FL/IN_-2L
FLSR-62	2.0	.375	.375	.140	.560	2.500	FL/IN_-2R
FLSL-82V	2.0	.500	.500	.140	.750	3.500	FL/IN_-2L
FLSR-82V	2.0	.500	.500	.140	.750	3.500	FL/IN_-2R
FLSR-102B	2.0	.625	.625	.140	1.000	4.500	FL/IN_-2R
FLSL-122B	2.0	.750	.750	.140	1.000	4.500	FL/IN_-2L
FLSR-122B	2.0	.750	.750	.140	1.000	4.500	FL/IN_-2R
FLSL-162C	2.0	1.000	1.000	.140	1.250	5.000	FL/IN_-2L
FLSR-162C	2.0	1.000	1.000	.140	1.250	5.000	FL/IN_-2R
FLSL-123B	3.0	.750	.750	.210	1.000	4.500	FL/IN_-3L
FLSR-123B	3.0	.750	.750	.210	1.000	4.500	FL/IN_-3R
FLSL-163C	3.0	1.000	1.000	.210	1.250	5.000	FL/IN_-3L
FLSR-163C	3.0	1.000	1.000	.210	1.250	5.000	FL/IN_-3R
FLSL-163D	3.0	1.000	1.000	.210	1.250	6.000	FL/IN_-3L
FLSL-203D	3.0	1.250	1.250	.210	1.500	6.000	FL/IN_-3L
FLSR-203D	3.0	1.250	1.250	.210	1.500	6.000	FL/IN_-3R
FLSL-164D	4.0	1.000	1.000	.290	1.250	6.000	FL/IN_-4L
FLSR-164D	4.0	1.000	1.000	.290	1.250	6.000	FL/IN_-4R
FLSL-204D	4.0	1.250	1.250	.290	1.500	6.000	FL/IN_-4L
FLSR-204D	4.0	1.250	1.250	.290	1.500	6.000	FL/IN_-4R
FLSL-205D	5.0	1.250	1.250	.400	1.500	6.000	FL/IN_-5L
FLSR-205D	5.0	1.250	1.250	.400	1.500	6.000	FL/IN_-5R
FLSL-206D	6.0	1.250	1.250	.290	1.500	6.000	FL/IN_-6L
FLSR-206D	6.0	1.250	1.250	.290	1.500	6.000	FL/IN_-6R

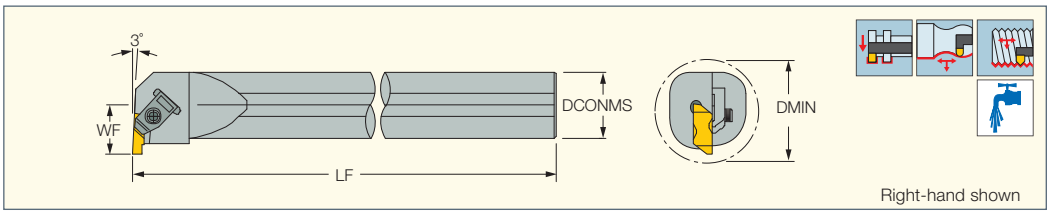
[1] Seat size code

For inserts, see pages: 60° PARTIAL PROFILE THREADING FLT (175) • 60° PARTIAL PROFILE THREADING FLT-CB (175) • 60° PARTIAL PROFILE THREADING FLTF (173) • 60° PARTIAL PROFILE THREADING FLTK (174) • 60° PARTIAL PROFILE THREADING FLTP (176) • ACME THREADING FLA (232) • ACME THREADING FLA-PT-E (233) • ACME THREADING FLAS (234) • AMERICAN STANDARD BUTTRESS THREADING FLTB-A (249) • AMERICAN STANDARD BUTTRESS THREADING FLTB-B (249) • API PARTIAL PROFILE THREDING FLD (255) • API ROUND THREADING FLDC-RD-75 (251) • API ROUND THREADING FLDC-RD-75-CB (252) • NPT THREADING FLDC-V-75 (218) • STUB ACME THREADING FLAS-PT-E (229) • UN THREADING FLTC-E (205) • UNJ THREADING FLJ (238) • UNJ THREADING FLJF (239) • UNJ THREADING FLJK (240) • UNJ THREADING FLJP (238)

Tools for Internal Grooving and Threading Inserts

NOTCH GRIP
GROOVE-TURN LINE
ISCAR THREAD

A-FLER/L
Internal Grooving and Threading
Bars with Coolant Channels



	INCH					
Designation	**SSC(1)**	**DCONMS**	**DMIN**	**WF**	**LF**	**Insert**
A16-FLER3	3.0	1.000	1.380	.690	12.000	FL/IN-3
A08-FLER/L2	2.0	.500	.730	.440	8.000	FL/IN-2
A16-FLEL3	3.0	1.000	1.375	.690	12.000	FL/IN-3
A10-FLER2	2.0	.625	1.000	.500	10.000	FL/IN-2
A20-FLER/L3	3.0	1.250	1.750	.880	14.000	FL/IN-3
A12-FLER/L2	2.0	.750	1.130	.560	10.000	FL/IN-2
A24-FLER/L3	3.0	1.500	2.000	1.000	14.000	FL/IN-3
A16-FLER/L2	2.0	1.000	1.375	.690	12.000	FL/IN-2
A28-FLER3	3.0	1.750	2.250	1.130	14.000	FL/IN-3
A32-FLER/L3	3.0	2.000	2.500	1.250	16.000	FL/IN-3
A28-FLER/L4	4.0	1.750	2.250	1.250	16.000	FL/IN-4
A32-FLER/L4	4.0	2.000	2.750	1.300	16.000	FL/IN-4
A32-FLER5	5.0	2.000	2.820	1.410	16.000	FL/IN-5
A32-FLER6	6.0	2.000	2.750	1.380	16.000	FL/IN-6

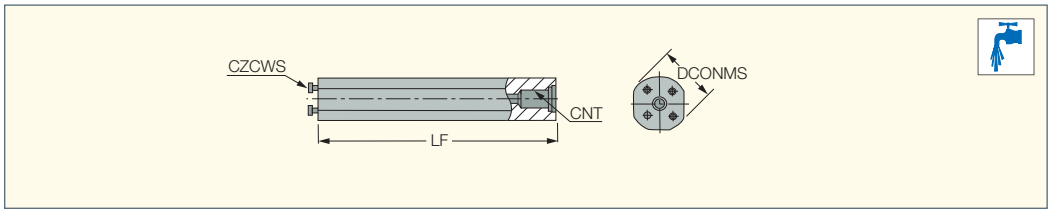
- Use left-hand inserts on right-hand tools and vice versa

(1) Seat size code

For inserts, see pages: 60° PARTIAL PROFILE THREADING FLT (175) • 60° PARTIAL PROFILE THREADING FLT-CB (175) • 60° PARTIAL PROFILE THREADING FLTF (173)
• 60° PARTIAL PROFILE THREADING FLTK (174) • 60° PARTIAL PROFILE THREADING FLTP (176) • ACME THREADING FLA (232) • ACME THREADING FLA-PT-I (236)
• ACME THREADING FLAS (234) • AMERICAN STANDARD BUTTRESS THREADING FLTB-A (249) • AMERICAN STANDARD BUTTRESS THREADING FLTB-B (249)
• API BUTTRESS THREADING FLDC-B-E (258) • API BUTTRESS THREADING FLDC-B-I (258) • API PARTIAL PROFILE THREDING FLD (255)
• API ROUND THREADING FLDC-RD-75 (251) • API ROUND THREADING FLDC-RD-75-CB (252) • API THREADING FLDC-E (257) • API THREADING FLDC-I (257)
• NPT THREADING FLDC-NPT-E (218) • NPT THREADING FLDC-NPT-I (219) • NPT THREADING FLDC-V-75 (218)
• STUB ACME THREADING FLAS-PT-I (228) • UN THREADING FLTC-I (206) • UNJ THREADING FLJ (238) • UNJ THREADING FLJF (239) • UNJ THREADING FLJK (240)
• UNJ THREADING FLJP (238)

Straight Shank

S-570
Steel Shanks with Through Coolant for HS-Type Interchangeable Heads



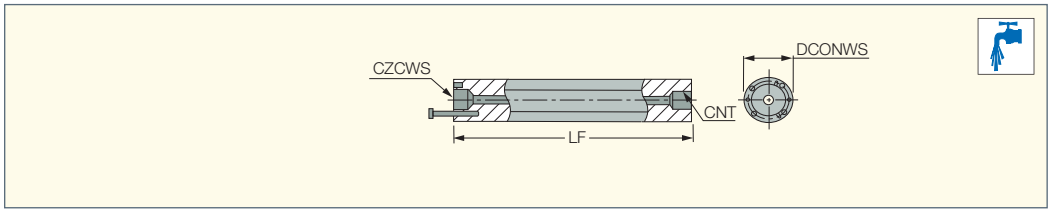
	I N C H			
Designation	**DCONMS**	**LF**	**CZCWS(1)**	**CNT**
S-570-10-16	.625	4.210	HS16	1/8 - 27NPT
S-570-12-20	.750	5.200	HS20	1/4 - 18NPT
S-570-16-25	1.000	7.200	HS25	1/4 - 18NPT
S-570-20-32	1.250	8.740	HS32	3/8 - 18NPT
S-570-24-40	1.500	10.750	HS40	1/2 - 14NPT
S-570-32-50	2.000	14.410	HS50	1/2 - 14NPT

(1) Connection size code workpiece side

For tools, see pages: HS-FLER (278)

Straight Shank

S-4400W
Steel Shanks with Through Coolant for H-Type Interchangeable Heads

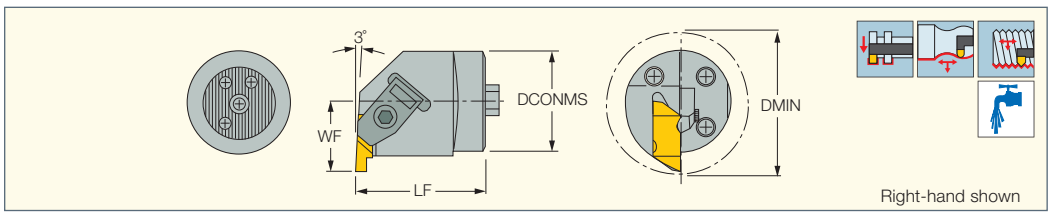


Designation	**DCONWS**	**LF**	**CZCWS(1)**	**CNT**
S-4416W	1.000	9.000	H16	1/4-18NPT
S-4424W	1.500	10.000	H24	3/8-18NPT
S-4428W	1.750	12.000	H28	3/8-18NPT
S-4432W	2.000	13.000	H32	3/8-18NPT
S-4440W	2.500	17.000	H40	3/8-18NPT

(1) Connection size code workpiece side

NOTCH-GRIP GROOVE-TURN LINE

HS-FLER
Grooving and Threading Interchangeable Heads (HS-Type)



	I N C H					
Designation	**SSC(1)**	**DCONMS**	**DMIN**	**WF**	**LF**	**Insert**
HS32-FLER3W	3.0	1.250	1.730	.870	1.340	FL/IN-3L
HS40-FLER3W	3.0	1.570	2.210	1.100	1.580	FL/IN-3L
HS50-FLER3W	3.0	1.970	2.760	1.380	1.650	FL/IN-3L
HS50-FLER4W	4.0	1.970	2.760	1.380	1.650	FL/IN-4L
HS60-FLER4W	4.0	2.360	3.480	1.740	1.750	FL/IN-4L

• Lefthand heads on request • Use left-hand inserts on right-hand tools and vice versa • Compatible with standard market adaptation

(1) Seat size code

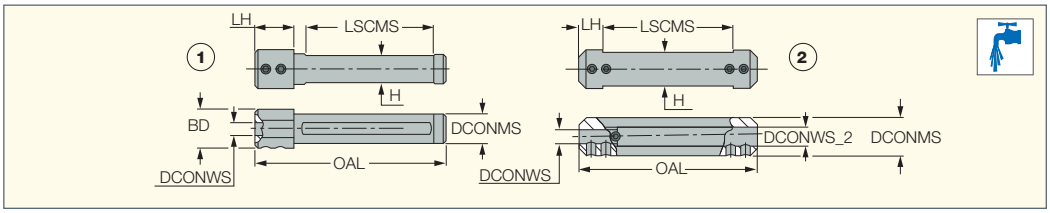
For inserts, see pages: 60° PARTIAL PROFILE THREADING FLT (175) • 60° PARTIAL PROFILE THREADING FLT-CB (175) • 60° PARTIAL PROFILE THREADING FLTF (173) • 60° PARTIAL PROFILE THREADING FLTK (174) • 60° PARTIAL PROFILE THREADING FLTP (176) • ACME THREADING FLA (232) • ACME THREADING FLA-PT-I (236) • ACME THREADING FLAS (234) • AMERICAN STANDARD BUTTRESS THREADING FLTB-A (249) • AMERICAN STANDARD BUTTRESS THREADING FLTB-B (249) • API BUTTRESS THREADING FLDC-B-E (258) • API BUTTRESS THREADING FLDC-B-I (258) • API PARTIAL PROFILE THREDING FLD (255) • API ROUND THREADING FLDC-RD-75 (251) • API ROUND THREADING FLDC-RD-75-CB (252) • API THREADING FLDC-E (257) • API THREADING FLDC-I (257) • NPT THREADING FLDC-NPT-E (218) • NPT THREADING FLDC-NPT-I (219) • NPT THREADING FLDC-V-75 (218) • STUB ACME THREADING FLAS-PT-I (228) • UN THREADING FLTC-I (206) • UNJ THREADING FLJ (238) • UNJ THREADING FLJF (239) • UNJ THREADING FLJK (240) • UNJ THREADING FLJP (238)

For holders, see pages: S-570 (278)

PICCOCUT Picco MG/PCO and ACE Holders

PICCOCUT

PICCO/MG PCO (holder)
Holders for PICCO Inserts and Small Diameter Boring Bars

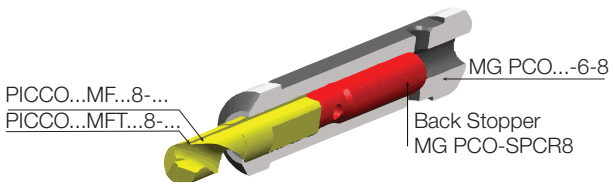


M E T R I C									
Designation	**DCONMS**	**DCONWS**	**DCONWS_2**	**OAL**	**LH**	**LSCMS**	**H**	**BD**	**Fig.**
PICCO 12-4-5	12.00	4.00	5.00	75.00	10.00	55.00	10.3	-	2
PICCO 16-4-5	16.00	4.00	5.00	75.00	10.00	55.00	14.0	-	2
PICCO 20-4-5	20.00	4.00	5.00	90.00	10.00	70.00	18.0	-	2
PICCO 22-4-5 (1)	22.00	4.00	5.00	90.00	10.00	70.00	20.0	-	2
PICCO 16-6-7	16.00	6.00	7.00	75.00	10.00	55.00	14.0	-	2
PICCO 20-6-7	20.00	6.00	7.00	90.00	10.00	70.00	18.0	-	2
PICCO 22-6-7 (1)	22.00	6.00	7.00	90.00	10.00	70.00	20.0	-	2
MG PCO-12-6	12.00	6.00	-	75.00	15.00	50.80	11.0	18.00	1
MG PCO-16-6-8	16.00	6.00	8.00	75.00	10.00	55.00	14.0	-	2
MG PCO-20-6-8	20.00	6.00	8.00	90.00	10.00	70.00	18.0	-	2
MG PCO-22-6-8 (1)	22.00	6.00	8.00	90.00	10.00	70.00	20.0	-	2
MG PCO-25-6-8	25.00	6.00	8.00	90.00	10.00	70.00	23.0	-	2
MG PCO-16-9	16.00	9.00	-	75.00	15.00	53.00	15.0	20.00	1

I N C H													
Designation	**DCONMS**	**DCONWS**	**DCONWS_2**	**OAL**	**LH**	**LSCMS**	**H**	**BD**	**Fig.**				
PICCO 12.7-4-5	.500	.157	.197	2.950	.394	2.170	.410	-	2	SR M5X4-PF	HW 2.5		
PICCO 15.9-4-5	.625	.157	.197	2.950	.394	2.170	.550	-	2	SR M5X6-PF	HW 2.5		
PICCO 19-4-5	.750	.157	.197	3.540	.394	2.760	.710	-	2	SR M5X6-PF	HW 2.5		
PICCO 25.4-4-5 (1)	1.000	.157	.197	3.543	.394	2.756	.921	-	2	SR M5X6-PF	HW 2.5		
PICCO 15.9-6-7	.625	.236	.276	2.950	.394	2.170	.550	-	2	SR M5X6-PF	HW 2.5		
PICCO 19-6-7	.750	.236	.276	3.540	.394	2.760	.710	-	2	SR M5X6-PF	HW 2.5		
PICCO 25.4-6-7 (1)	1.000	.236	.276	3.543	.394	2.756	.921	-	2	SR M5X6-PF	HW 2.5		
MG PCO-12.7-6	.500	.236	-	3.000	.590	2.090	.460	.709	1	SR M5X6-PF	HW 2.5		
MG PCO-15.9-6-8	.625	.236	.315	3.000	.390	2.170	.551	-	2	SR M5X6-PF	HW 2.5		MG PCO-SPCR8
MG PCO-19-6-8	.750	.236	.315	3.500	.390	2.760	.709	-	2	SR M5X6-PF	HW 2.5		MG PCO-SPCR8
MG PCO-25.4-6-8 (1)	1.000	.236	.315	3.543	.394	2.756	.921	-	2	SR M5X6-PF	HW 2.5		MG PCO-SPCR8
MG PCO-16-9	.630	.354	-	2.953	.591	2.087	.591	.787	1	SR M5X6-PF	HW 2.5	PL 16	

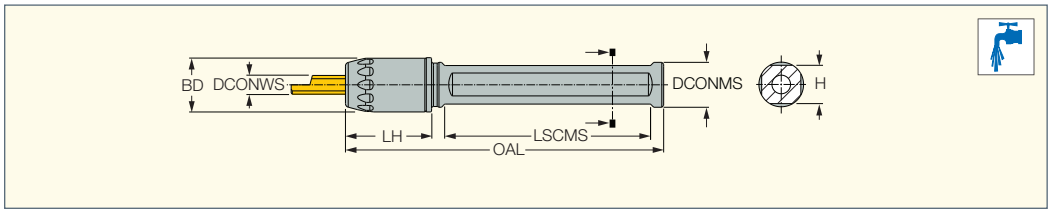
- Holders are suitable for right- and left-hand inserts, and boring bars

(1) Tools for Swiss-type CNC



PICCOACE

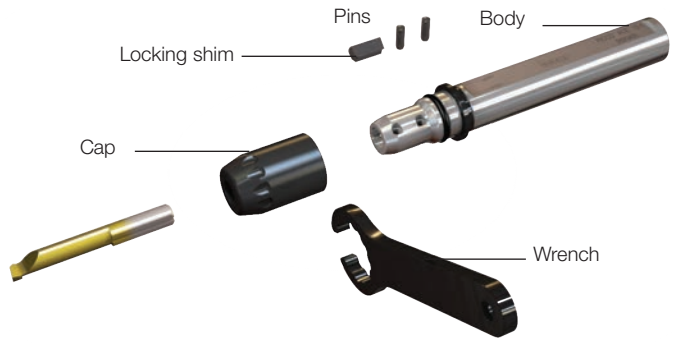
PICCO ACE
Holders for PICCOCUT Inserts

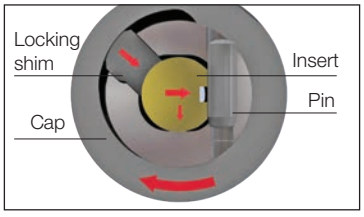


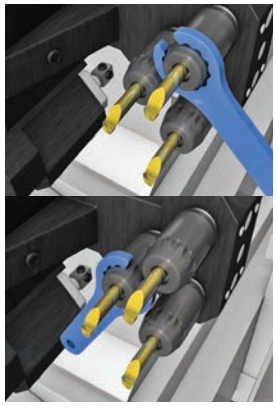
METRIC							
Designation	**DCONMS**	**DCONWS**	**BD**	**OAL**	**LH**	**LSCMS**	**H**
PICCO ACE 12-4	12.00	4.00	14.50	85.00	23.00	53.00	10.3
PICCO ACE 12-5	12.00	5.00	14.50	85.00	23.00	53.00	10.3
PICCO ACE 16-4	16.00	4.00	14.50	85.00	21.50	53.50	14.0
PICCO ACE 16-5	16.00	5.00	14.50	85.00	21.50	53.00	14.0
PICCO ACE 16-6	16.00	6.00	19.90	85.00	23.00	53.50	14.0
PICCO ACE 16-7	16.00	7.00	19.90	85.00	23.00	53.50	14.0
PICCO ACE 20-4	20.00	4.00	14.50	150.00	21.50	118.00	18.0
PICCO ACE 20-5	20.00	5.00	14.50	150.00	21.50	118.00	18.0
PICCO ACE 20-6	20.00	6.00	19.90	150.00	21.50	118.00	18.0
PICCO ACE 20-7	20.00	7.00	19.90	150.00	21.50	118.00	18.0
PICCO ACE 22-4	22.00	4.00	14.50	150.00	21.50	118.00	20.0
PICCO ACE 22-5	22.00	5.00	14.50	150.00	21.50	118.00	20.0
PICCO ACE 22-6	22.00	6.00	19.90	150.00	21.50	118.00	20.0
PICCO ACE 22-7	22.00	7.00	19.90	150.00	21.50	118.00	20.0
PICCO ACE 25-4	25.00	4.00	14.50	150.00	21.50	118.00	20.0
PICCO ACE 25-5	25.00	5.00	14.50	150.00	21.50	118.00	20.0
PICCO ACE 25-6	25.00	6.00	19.90	150.00	21.50	118.00	20.0
PICCO ACE 25-7	25.00	7.00	19.90	150.00	21.50	118.00	20.0

INCH									
Designation	**DCONMS**	**DCONWS**	**BD**	**OAL**	**LH**	**LSCMS**	**H**		
PICCO ACE 12-4	12.00	4.00	14.50	85.00	23.00	53.00	10.3	PL 16 M6-D5	WRENCH ACE 4-5
PICCO ACE 12-5	12.00	5.00	14.50	85.00	23.00	53.00	10.3	PL 16 M6-D5	WRENCH ACE 4-5
PICCO ACE 16-4	16.00	4.00	14.50	85.00	21.50	53.50	14.0	PL 16 M6-D5	WRENCH ACE 4-5
PICCO ACE 16-5	16.00	5.00	14.50	85.00	21.50	53.00	14.0	PL 16 M6-D5	WRENCH ACE 4-5
PICCO ACE 16-6	16.00	6.00	19.90	85.00	23.00	53.50	14.0	PL 16 M6-D5	WRENCH ACE 6-7
PICCO ACE 16-7	16.00	7.00	19.90	85.00	23.00	53.50	14.0	PL 16 M6-D5	WRENCH ACE 6-7
PICCO ACE 20-4	20.00	4.00	14.50	150.00	21.50	118.00	18.0	PL 16 M6-D5	WRENCH ACE 4-5
PICCO ACE 20-5	20.00	5.00	14.50	150.00	21.50	118.00	18.0	PL 16 M6-D5	WRENCH ACE 4-5
PICCO ACE 20-6	20.00	6.00	19.90	150.00	21.50	118.00	18.0	PL 16 M6-D5	WRENCH ACE 6-7
PICCO ACE 20-7	20.00	7.00	19.90	150.00	21.50	118.00	18.0	PL 16 M6-D5	WRENCH ACE 6-7
PICCO ACE 22-4	22.00	4.00	14.50	150.00	21.50	118.00	20.0	PL 16 M6-D5	WRENCH ACE 4-5
PICCO ACE 22-5	22.00	5.00	14.50	150.00	21.50	118.00	20.0	PL 16 M6-D5	WRENCH ACE 4-5
PICCO ACE 22-6	22.00	6.00	19.90	150.00	21.50	118.00	20.0	PL 16 M6-D5	WRENCH ACE 6-7
PICCO ACE 22-7	22.00	7.00	19.90	150.00	21.50	118.00	20.0	PL 16 M6-D5	WRENCH ACE 6-7
PICCO ACE 25-4	25.00	4.00	14.50	150.00	21.50	118.00	20.0	PL 16 M6-D5	WRENCH ACE 4-5
PICCO ACE 25-5	25.00	5.00	14.50	150.00	21.50	118.00	20.0	PL 16 M6-D5	WRENCH ACE 4-5
PICCO ACE 25-6	25.00	6.00	19.90	150.00	21.50	118.00	20.0	PL 16 M6-D5	WRENCH ACE 6-7
PICCO ACE 25-7	25.00	7.00	19.90	150.00	21.50	118.00	20.0	PL 16 M6-D5	WRENCH ACE 6-7

- Holders are suitable for right- and left-hand PICCO inserts



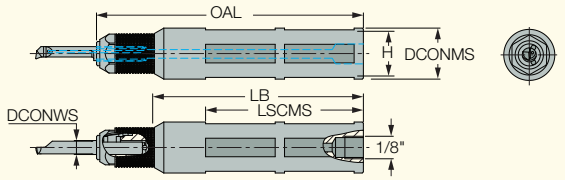




PICCOACE JETCUT

PICCO ACE-N

Holders for PICCO-JETCUT Inserts with Internal Coolant Channels



M E T R I C						
Designation	DCONMS	DCONWS	OAL	LSCMS	LB	H
PICCO ACE 16-4N	16.00	4.05	115.00	68.00	90.00	14.0
PICCO ACE 16-5N	16.00	5.05	115.00	68.00	90.00	14.0
PICCO ACE 16-6N	16.00	6.05	115.00	68.00	90.00	14.0
PICCO ACE 16-7N	16.00	7.05	115.00	68.00	90.00	14.0
PICCO ACE 20-4N	20.00	4.05	115.00	68.00	90.00	18.0
PICCO ACE 20-5N	20.00	5.05	115.00	68.00	90.00	18.0
PICCO ACE 20-6N	20.00	6.05	115.00	68.00	90.00	18.0
PICCO ACE 20-7N	20.00	7.05	115.00	68.00	90.00	18.0
PICCO ACE 22-4N	22.00	4.05	115.00	68.00	90.00	20.0
PICCO ACE 22-6N	22.00	6.05	115.00	68.00	90.00	20.0
PICCO ACE 25-4N	25.00	4.05	115.00	68.00	90.00	23.0
PICCO ACE 25-5N	25.00	5.05	115.00	68.00	90.00	23.0
PICCO ACE 25-6N	25.00	6.05	115.00	68.00	90.00	23.0
PICCO ACE 25-7N	25.00	7.05	115.00	68.00	90.00	23.0

I N C H						
Designation	DCONMS	DCONWS	OAL	LSCMS	LB	H
PICCO ACE 16-4N	16.00	4.05	115.00	68.00	90.00	14.0
PICCO ACE 16-5N	16.00	5.05	115.00	68.00	90.00	14.0
PICCO ACE 16-6N	16.00	6.05	115.00	68.00	90.00	14.0
PICCO ACE 16-7N	16.00	7.05	115.00	68.00	90.00	14.0
PICCO ACE 20-4N	20.00	4.05	115.00	68.00	90.00	18.0
PICCO ACE 20-5N	20.00	5.05	115.00	68.00	90.00	18.0
PICCO ACE 20-6N	20.00	6.05	115.00	68.00	90.00	18.0
PICCO ACE 20-7N	20.00	7.05	115.00	68.00	90.00	18.0
PICCO ACE 22-4N	22.00	4.05	115.00	68.00	90.00	20.0
PICCO ACE 22-6N	22.00	6.05	115.00	68.00	90.00	20.0
PICCO ACE 25-4N	25.00	4.05	115.00	68.00	90.00	23.0
PICCO ACE 25-5N	25.00	5.05	115.00	68.00	90.00	23.0
PICCO ACE 25-6N	25.00	6.05	115.00	68.00	90.00	23.0
PICCO ACE 25-7N	25.00	7.05	115.00	68.00	90.00	23.0

- Holders are suitable for right and left-hand PICCO...-N type solid tools only

M E T R I C

Spare Parts

Designation	
PICCO ACE 16-4N	PIN 2X10 DIN6325
PICCO ACE 16-5N	PIN 2X10 DIN6325
PICCO ACE 16-6N	ZAD 2X12 DIN 6325 m6
PICCO ACE 16-7N	ZAD 2X12 DIN 6325 m6
PICCO ACE 20-4N	PIN 2X10 DIN6325
PICCO ACE 20-5N	PIN 2X10 DIN6325
PICCO ACE 20-6N	ZAD 2X12 DIN 6325 m6
PICCO ACE 20-7N	ZAD 2X12 DIN 6325 m6
PICCO ACE 22-4N	PIN 2X10 DIN6325
PICCO ACE 22-6N	ZAD 2X12 DIN 6325 m6
PICCO ACE 25-4N	PIN 2X10 DIN6325
PICCO ACE 25-5N	PIN 2X10 DIN6325
PICCO ACE 25-6N	ZAD 2X12 DIN 6325 m6
PICCO ACE 25-7N	ZAD 2X12 DIN 6325 m6

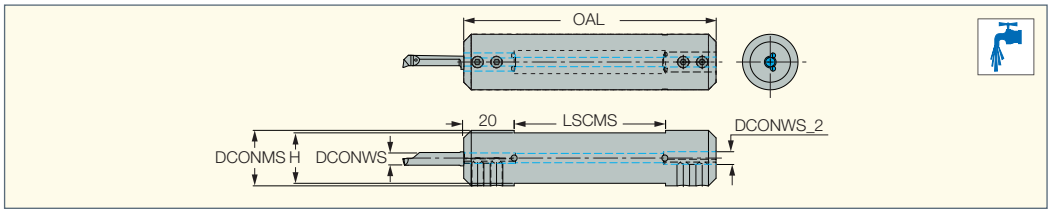
I N C H

Spare Parts

Designation			
PICCO ACE 16-4N	UM600H.K	UM600H.M4	PIN 2X10 DIN6325
PICCO ACE 16-5N	UM600H.K	UM600H.M5	PIN 2X10 DIN6325
PICCO ACE 16-6N	UM600H.K	UM600H.M6	ZAD 2X12 DIN 6325 m6
PICCO ACE 16-7N	UM600H.K	UM600H.M7	ZAD 2X12 DIN 6325 m6
PICCO ACE 20-4N	UM600H.K	UM600H.M4	PIN 2X10 DIN6325
PICCO ACE 20-5N	UM600H.K	UM600H.M5	PIN 2X10 DIN6325
PICCO ACE 20-6N	UM600H.K	UM600H.M6	ZAD 2X12 DIN 6325 m6
PICCO ACE 20-7N	UM600H.K	UM600H.M7	ZAD 2X12 DIN 6325 m6
PICCO ACE 22-4N	UM600H.K	UM600H.M4	PIN 2X10 DIN6325
PICCO ACE 22-6N	UM600H.K	UM600H.M6	ZAD 2X12 DIN 6325 m6
PICCO ACE 25-4N	UM600H.K	UM600H.M4	PIN 2X10 DIN6325
PICCO ACE 25-5N	UM600H.K	UM600H.M5	PIN 2X10 DIN6325
PICCO ACE 25-6N	UM600H.K	UM600H.M6	ZAD 2X12 DIN 6325 m6
PICCO ACE 25-7N	UM600H.K	UM600H.M7	ZAD 2X12 DIN 6325 m6

JETCUT PICCOCUT

PICCO-N (holder)
Holders for PICCO-JETCUT Inserts with Internal Coolant Channels



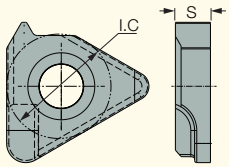
M E T R I C						
Designation	DCONMS	DCONWS	DCONWS_2	OAL	LSCMS	H
PICCO 16-4-5N	16.00	4.05	5.05	85.00	45.00	14.0
PICCO 20-4-5N	20.00	4.05	5.05	100.00	60.00	18.0
PICCO 22-4-5N	22.00	4.05	5.05	100.00	60.00	20.0
PICCO 16-6-7N	16.00	6.05	7.05	85.00	45.00	14.0
PICCO 16-6-8N	16.00	6.05	8.00	85.00	45.00	14.0
PICCO 20-6-7N	20.00	6.05	7.05	100.00	60.00	18.0
PICCO 20-6-8N	20.00	6.05	8.00	100.00	60.00	18.0
PICCO 22-6-7N	22.00	6.05	7.05	100.00	60.00	20.0

I N C H							
Designation	DCONMS	DCONWS	DCONWS_2	OAL	LSCMS	H	
PICCO 19-4-5N	.750	.159	.199	3.937	2.362	.677	SR M5X0.5X6 T10
PICCO 25.4-4-5N	1.000	.159	.199	4.134	2.559	.921	SR M5X0.5X10 T10
PICCO 16-6-8N	.630	.238	.315	3.346	1.772	.551	SR M5X0.5X6 T10
PICCO 19-6-7N	.750	.238	.278	3.937	2.362	.677	SR M5X0.5X6 T10
PICCO 20-6-8N	.787	.238	.315	3.937	2.362	.709	SR M5X0.5X8 T10
PICCO 25.4-6-7N	1.000	.238	.278	4.134	2.559	.921	SR M5X0.5X10 T10

- Holders are suitable for right- and left-hand inserts, and boring bars

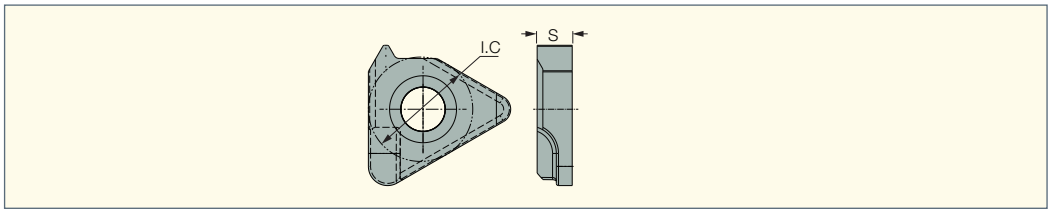
Anvils

Thread anvils EXT
Anvils For External Thread Inserts



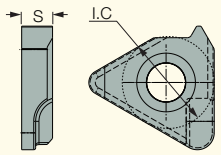
M E T R I C			
Designation	a°	IC	S
AE16 -0	0	9.52	3.20
AE16M -0	0	9.52	3.20
AE22 -0	0	12.70	4.00
AE22M -0	0	12.70	4.00
AE22U -0	0	12.70	4.00
AE27 -0	0	15.88	5.50
AE27M -0	0	15.88	5.50
AE27U -0	0	15.88	5.50
AE16 -0.5	-0.5	9.52	3.20
AE16M -0.5	-0.5	9.52	3.20
AE22 -0.5	-0.5	12.70	4.00
AE22M -0.5	-0.5	12.70	4.00
AE22U -0.5	-0.5	12.70	4.00
AE27 -0.5	-0.5	15.88	5.50
AE27U -0.5	-0.5	15.88	5.50
AE16 +0.5	0.5	9.52	3.20
AE16M +0.5	0.5	9.52	3.20
AE22 +0.5	0.5	12.70	4.00
AE22M +0.5	0.5	12.70	4.00
AE22U +0.5	0.5	12.70	4.00
AE27 +0.5	0.5	15.88	5.50
AE27M +0.5	0.5	15.88	5.50
AE27U +0.5	0.5	15.88	5.50
AE16 -1.5	-1.5	9.52	3.20
AE16M -1.5	-1.5	9.52	3.20
AE22 -1.5	-1.5	12.70	4.00
AE22U -1.5	-1.5	12.70	4.00
AE27 -1.5	-1.5	15.88	5.50
AE27U -1.5	-1.5	15.88	5.50
AE16M	1.5	9.52	3.20
AE22	1.5	12.70	4.00
AE22M	1.5	12.70	4.00
AE22U	1.5	12.70	4.00
AE27	1.5	15.88	5.50
AE27M	1.5	15.88	5.50
AE27U	1.5	15.88	5.50
AE16 +2.5	2.5	9.52	3.20
AE16M +2.5	2.5	9.52	3.20
AE22 +2.5	2.5	12.70	4.00
AE22M +2.5	2.5	12.70	4.00
AE22U +2.5	2.5	12.70	4.00
AE27 +2.5	2.5	15.88	5.50
AE27U +2.5	2.5	15.88	5.50
AE27U +2.5TR	2.5	15.88	5.50
AE16 +3.5	3.5	9.52	3.20
AE22 +3.5	3.5	12.70	4.00
AE22U +3.5	3.5	12.70	4.00
AE27 +3.5	3.5	15.88	5.50
AE27U +3.5	3.5	15.88	5.50
AE27U +3.5TR	3.5	15.88	5.50
AE16 +4.5	4.5	9.52	3.20
AE22 +4.5	4.5	12.70	4.00
AE22U +4.5	4.5	12.70	4.00
AE27 +4.5	4.5	15.88	5.50
AE27U +4.5	4.5	15.88	5.50
AE27U +4.5TR	4.5	15.88	5.50
AE16	1.5	9.52	3.20

Thread anvils EXT



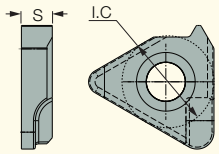
I N C H			
Designation	a°	IC	S
AE16 -0	0	.375	.126
AE16M -0	0	.375	.126
AE22 -0	0	.500	.157
AE22M -0	0	.500	.157
AE22U -0	0	.500	.157
AE27 -0	0	.625	.217
AE27M -0	0	.625	.217
AE27U -0	0	.625	.217
AE16 -0.5	-0.5	.375	.126
AE16M -0.5	-0.5	.375	.126
AE22 -0.5	-0.5	.500	.157
AE22M -0.5	-0.5	.500	.157
AE22U -0.5	-0.5	.500	.157
AE27 -0.5	-0.5	.625	.217
AE27U -0.5	-0.5	.625	.217
AE16 +0.5	0.5	.375	.126
AE16M +0.5	0.5	.375	.126
AE22 +0.5	0.5	.500	.157
AE22M +0.5	0.5	.500	.157
AE22U +0.5	0.5	.500	.157
AE27 +0.5	0.5	.625	.217
AE27M +0.5	0.5	.625	.217
AE27U +0.5	0.5	.625	.217
AE16 -1.5	-1.5	.375	.126
AE16M -1.5	-1.5	.375	.126
AE22 -1.5	-1.5	.500	.157
AE22U -1.5	-1.5	.500	.157
AE27 -1.5	-1.5	.625	.217
AE27U -1.5	-1.5	.625	.217
AE16M	1.5	.375	.126
AE22	1.5	.500	.157
AE22M	1.5	.500	.157
AE22U	1.5	.500	.157
AE27	1.5	.625	.217
AE27M	1.5	.625	.217
AE27U	1.5	.625	.217
AE16 +2.5	2.5	.375	.126
AE16M +2.5	2.5	.375	.126
AE22 +2.5	2.5	.500	.157
AE22M +2.5	2.5	.500	.157
AE22U +2.5	2.5	.500	.157
AE27 +2.5	2.5	.625	.217
AE27U +2.5	2.5	.625	.217
AE27U +2.5TR	2.5	.625	.217
AE16 +3.5	3.5	.375	.126
AE22 +3.5	3.5	.500	.157
AE22U +3.5	3.5	.500	.157
AE27 +3.5	3.5	.625	.217
AE27U +3.5	3.5	.625	.217
AE27U +3.5TR	3.5	.625	.217
AE16 +4.5	4.5	.375	.126
AE22 +4.5	4.5	.500	.157
AE22U +4.5	4.5	.500	.157
AE27 +4.5	4.5	.625	.217
AE27U +4.5	4.5	.625	.217
AE27U +4.5TR	4.5	.625	.217
AE16	999	.375	.126

Thread anvils INT
Anvils For Internal Thread Inserts



M E T R I C			
Designation	a°	IC	S
AI16 -0	0	9.52	3.20
AI16M-0	0	9.52	3.20
AI22-0	0	12.70	4.00
AI22M-0	0	12.70	4.00
AI22U-0	0	12.70	4.00
AI27-0	0	15.88	5.50
AI27M-0	0	15.88	5.50
AI27U-0	0	15.88	5.50
AI16 -0.50	-0.5	9.52	3.20
AI22 -0.5	-0.5	12.70	4.00
AI22U -0.5	-0.5	12.70	4.00
AI27 -0.5	-0.5	15.88	3.20
AI27U-0.50	-0.5	15.88	5.50
AI16 +0.5	0.5	9.52	3.20
AI16M+0.5	0.5	9.52	3.20
AI22 +0.50	0.5	12.70	4.00
AI22M+0.5	0.5	12.70	4.00
AI27 +0.5-P	0.5	15.88	5.50
AI27M+0.5	0.5	15.88	4.00
AI27U +0.50	0.5	15.88	5.50
AI16 -1.50	-1.5	9.52	3.20
AI22 -1.50	-1.5	12.70	4.00
AI22U -1.5	-1.5	12.70	4.00
AI27 -1.5	-1.5	15.88	5.50
AI27U -1.5	-1.5	15.88	5.50
AI16	1.5	9.52	3.20
AI16M	1.5	9.52	3.20
AI22	1.5	12.70	4.00
AI22M	1.5	12.70	4.00
AI22U	1.5	12.70	4.00
AI27	1.5	15.88	5.50
AI27M	1.5	15.88	5.50
AI27U	1.5	15.88	5.50
AI16 +2.5	2.5	9.52	3.20
AI16M+2.5	2.5	9.52	3.20
AI22 +2.5	2.5	12.70	4.00
AI22M+2.5	2.5	12.70	4.00
AI22U +2.50	2.5	12.70	4.00
AI27 +2.5	2.5	15.88	5.50
AI27U +2.5	2.5	15.88	5.50
AI27U +2.5TR	2.5	15.88	5.50
AI16 +3.5	3.5	9.52	3.20
AI22 +3.5	3.5	12.70	4.00
AI22U +3.5	3.5	12.70	4.00
AI27+35	3.5	15.88	5.50
AI27U +3.5	3.5	15.88	5.50
AI27U +3.5TR	3.5	15.88	5.50
AI16 +4.5	4.5	9.52	3.20
AI22 +4.5	4.5	12.70	4.00
AI22U +4.5	4.5	12.70	4.00
AI27 +4.5	4.5	15.88	5.50
AI27U +4.5	4.5	15.88	5.50
AI27U +4.5TR	4.5	15.88	5.50

Thread anvils INT



	I N C H		
Designation	a°	IC	S
AI16 -0	0	.375	.126
AI16M-0	0	.375	.126
AI22-0	0	.500	.157
AI22M-0	0	.500	.157
AI22U-0	0	.500	.157
AI27-0	0	.625	.217
AI27M-0	0	.625	.217
AI27U-0	0	.625	.217
AI16 -0.50	-0.5	.375	.126
AI22 -0.5	-0.5	.500	.157
AI22U -0.5	-0.5	.500	.157
AI27 -0.5	-0,5	.625	.126
AI27U-0.50	-0,5	.625	.217
AI16 +0.5	0.5	.375	.126
AI16M+0.5	0.5	.375	.126
AI22 +0.50	0.5	.500	.157
AI22M+0.5	0.5	.500	.157
AI27 +0.5-P	0,5	.625	.217
AI27M+0.5	0.5	.625	.157
AI27U +0.50	0,5	.625	.217
AI16 -1.50	-1.5	.375	.126
AI22 -1.50	-1.5	.500	.157
AI22U -1.5	-1,5	.500	.157
AI27 -1.5	-1,5	.625	.217
AI27U -1.5	-1,5	.625	.217
AI16	1.5	.375	.126
AI16M	1,5	.375	.126
AI22	1.5	.500	.157
AI22M	1,5	.500	.157
AI22U	1.5	.500	.157
AI27	1.5	.625	.217
AI27M	1,5	.625	.217
AI27U	1.5	.625	.217
AI16 +2.5	2.5	.375	.126
AI16M+2.5	2.5	.375	.126
AI22 +2.5	2.5	.500	.157
AI22M+2.5	2.5	.500	.157
AI22U +2.50	2,5	.500	.157
AI27 +2.5	2,5	.625	.217
AI27U +2.5	+2.5	.625	.217
AI27U +2.5TR	2.5	.625	.217
AI16 +3.5	3,5	.375	.126
AI22 +3.5	3.5	.500	.157
AI22U +3.5	3,5	.500	.157
AI27 +3.5	3,5	.625	.217
AI27U +3.5	3,5	.625	.217
AI27U +3.5TR	3.5	.625	.217
AI16 +4.5	4,5	.375	.126
AI22 +4.5	4,5	.500	.157
AI22U +4.5	4,5	.500	.157
AI27 +4.5	4,5	.625	.217
AI27U +4.5	4,5	.625	.217
AI27U +4.5TR	4.5	.625	.217

THREAD MILLING



Thread Milling

Today, thread milling is increasingly used to produce external and internal threads.
Some of the many advantages include:

- With thread mills, either right- or left-handed threads can be produced using the same tooling.
- No need to change the tool for production of different thread diameters - one tool is suitable for various thread milling diameters
- Thread length milling in one pass
- Machine load low
- Machining difficult to cut materials
- Thread milling next to the bottom of blind hole
- Bottom thread relief not required
- Excellent and controlled thread surface finish
- Indexability and repeatability when changing or replacing cutter
- No problems with removing and replacing a broken tool: it is possible to extract the broken tool without damaging the part
- Easy and efficient machining for thread milling in CNC milling machining centers
- Threading in asymmetric parts
- There is no limit to the size of the part where threading is required

ISCAR offers a wide range of cutter diameters for all types of threads.

The Principle of Thread Milling Production is Based on the Following:
The cutter is located parallel to the part axis along the required thread. The cutter rotates around itself and enters into the part radially or tangentially until reaching the required depth depending on the thread type. Simultaneously, rotary motion of the cutter around its axis moves spirally along the whole length of the requested thread. The cutter movement along the thread length while completing one round around the part is equal to the pitch of requested thread. In this way, the threading is done while completing 1-1.3 turns of the tool around the workpiece; 0.3 turn is necessary for a full plunge of the cutter to the thread depth (at start thread production) and overlap the plunge location of cutting (at end thread production).



ISCAR Product Families for Thread Milling

ISCAR offers a wide range of thread milling cutters that provide solutions for both external and internal threading according to most standards.

The Design of the **ISCAR** Cutter for Thread Milling Operations contain:

- Solid tools
- Asembled carrying indexable inserts
- Assembled with exchangeable cutting heads

The cutting area is suitable for multi-threads as well as one-thread. The thread profile is divided into full- and partial-profile tools. Similar to common milling tools, these thread milling cutters have a shell mill (with a central bore) and an endmill (with shank) design configurations. **ISCAR**'s products for thread milling operations can be divided into four main groups, each containing several families / lines:

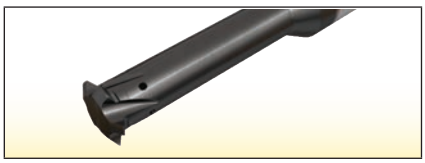
SOLIDTHREAD



MTEC, MTECB MTECZ, MTECQ

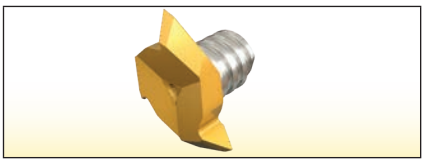


MTECS, MTECSH



MTECI-A60

MULTI-MASTER



MM TRD



MT-...-MM

T-SLOT

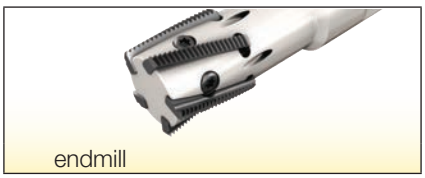


SD TRD

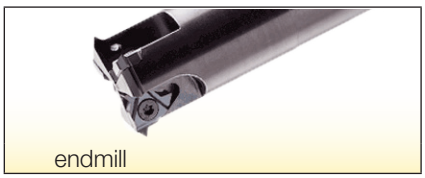
MILLTHREAD Indexable



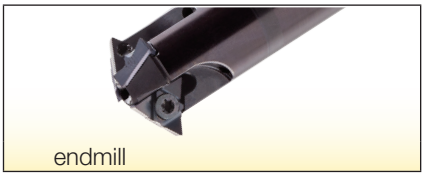
MTE



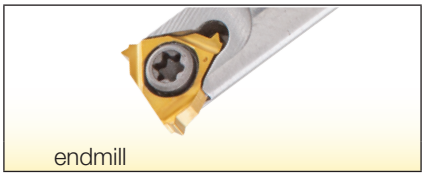
MTSRH



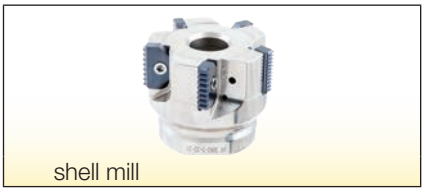
MTSR M.I. S.P



MTSR M.I. S.P.-U



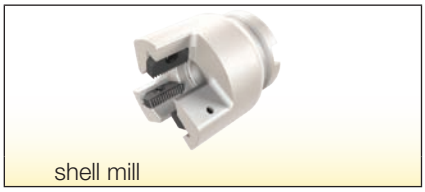
MTET



MTF-MULTI



MTSRH



MTFL

SOLIDTHREAD – Solid Carbide Endmills

ISCAR offers a line of solid carbide endmills for thread milling operations. These tools, with diameters from 0.72 mm to 20 mm by metric system or from 0.045 inch to 0.75 inch by imperial and United States customary systems and varied in form, are intended for machining all types of materials such as: steel, stainless steel, cast iron, etc.
The tools differ in cutting geometry, helix angle, number of flutes, length and grades.

ISCAR catalogs and leaflets contain detailed guidelines for using the solid carbide endmills in thread milling. Commonly, tool selection and cutting data depend on application requirements and workpiece material.

Cutting tool manufacturers, from small shops to world-known companies, produce solid carbide endmills of the same sizes that often seem like copies of each other.
However, despite a formal resemblance, there is a great difference in performance and tool life of the cutters. The reason lies in carbide grades, grinding technology and cutting geometry features.



SOLIDTHREAD – Designation Code Key

MTEC	B	10	10	D	24	1.0	ISO	IC908
	1	2	3	4	5	6	7	8

MTEC – Mill Thread Endmill Carbide

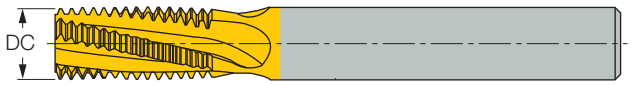
1 Endmill type

- ☐ — without coolant channel
- **B** — central coolant channel
- **Z** — coolant holes in flutes
- **Q** — central coolant hole and reduced neck diameter
- **S** — for small internal threads for general use
- **SH** — for small internal threads in hard materials
- **I** — Single-point design of cutting head

2 Shank diameter (DCONMS)



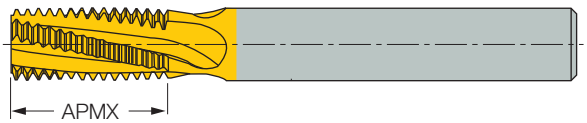
3 Cutting diameter (Dc)



4 No. of flutes

- **C** — 3 flutes
- **D** — 4 flutes
- **E** — 5 flutes
- **F** — 6 flutes

5 Length of thread (APMX)



6 Thread pitch

Value by number

- For metric threading in mm
- For inch threading in TPI

7 **Thread standard**

ISO — ISO Metric

UN — American UN

W — Whitworth

BSPT — British Standard Pipe Thread

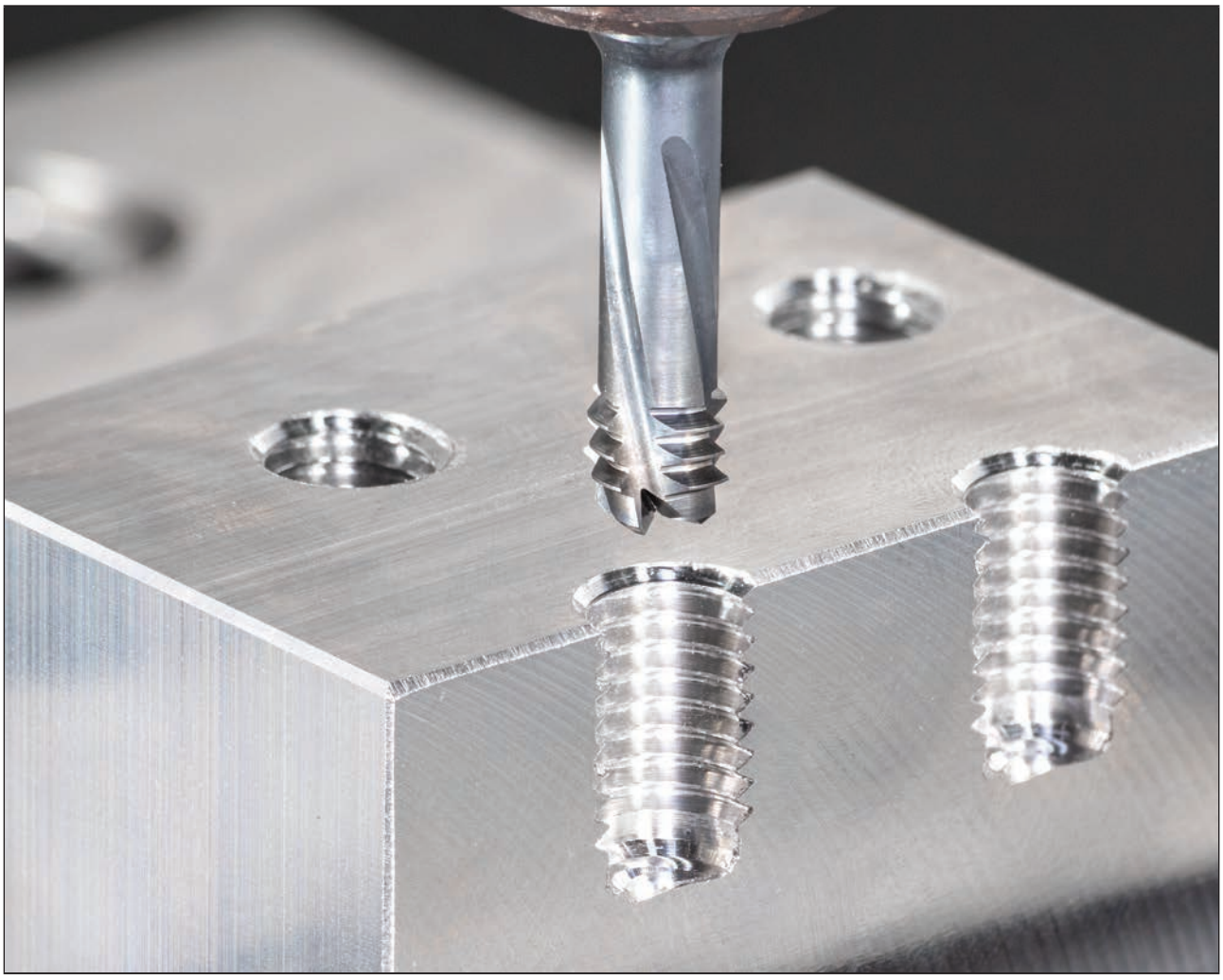
NPT — American National Pipe Thread

8 **Grade**

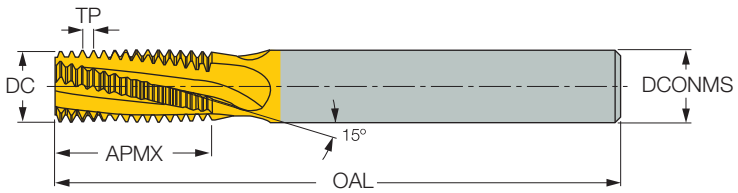
IC908, IC903, IC902

Main Advantages:

- In most of cases complete thread length by one axial pass
- Reduce cutting time due to large number of flutes relative to the endmill diameter
- Thread relief in the bottom of a blind hole is not required
- Same endmill used for right and left-hand thread
- Excellent surface finish
- Same endmill can be used for variety of materials



MTEC



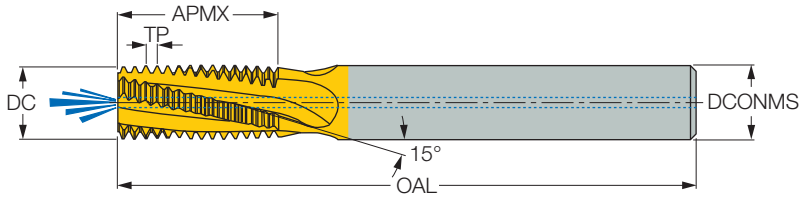
MTEC (Mill Thread Endmills Carbide) Family - solid carbide thread mills without coolant channels, usually suitable for internal and external thread milling. This family can be used in thread production of all types materials except gummy and sticky materials.

MTEC endmills are available with cutting diameters from 2.2 mm up to 20 mm
by metric system or from 0.087 inch to 0.75 inch by imperial and United States customary systems. This product line offers a solution for full profiles for most popular standards.





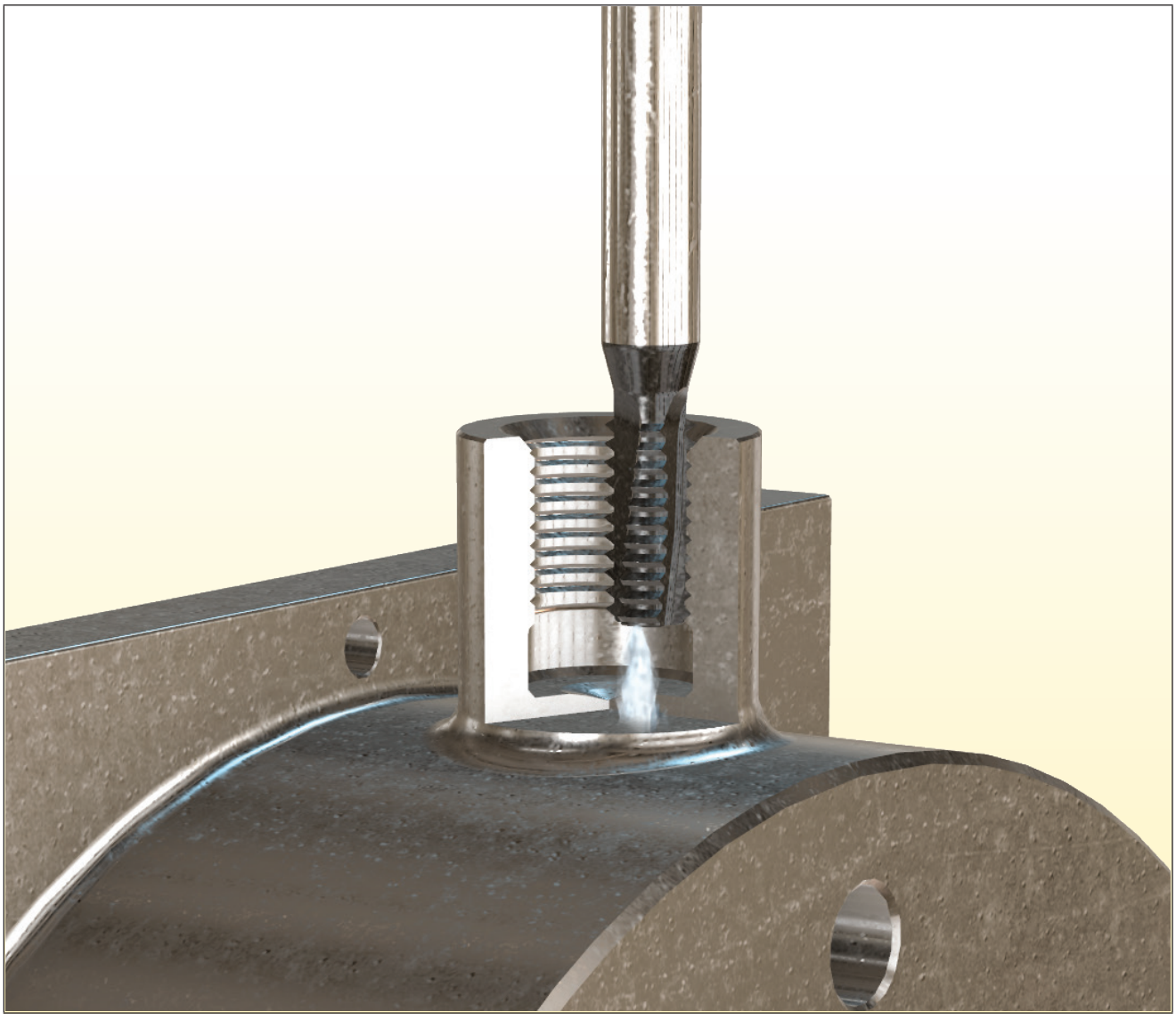
MTECB



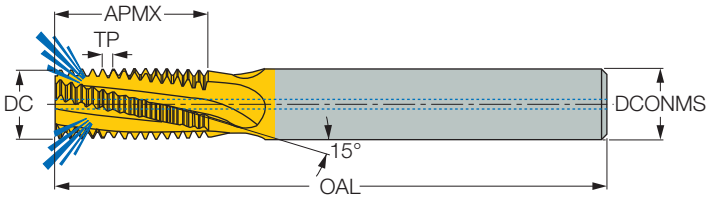
MTECB (Mill Thread Endmills Carbide Bore) Family - solid carbide thread mills with coolant hole, recommended for internal thread milling in blind holes and usually can also be used for production of external thread milling.

The coolant hole improve tool life in all thread milling applications. In blind holes where the chips of especially soft materials (stainless steel and high-temp alloys) tend to be re-cut and stick to the machined area, the coolant stream coming from the bottom in an upward direction flushes them out of the hole very efficiently.

MTECB endmills are available with cutting diameters from 3.1 mm up to 20 mm by metric system or from 0.181 inch to 0.75 inch by imperial and United States customary systems. This line offers a solution for full profiles for most popular standards.



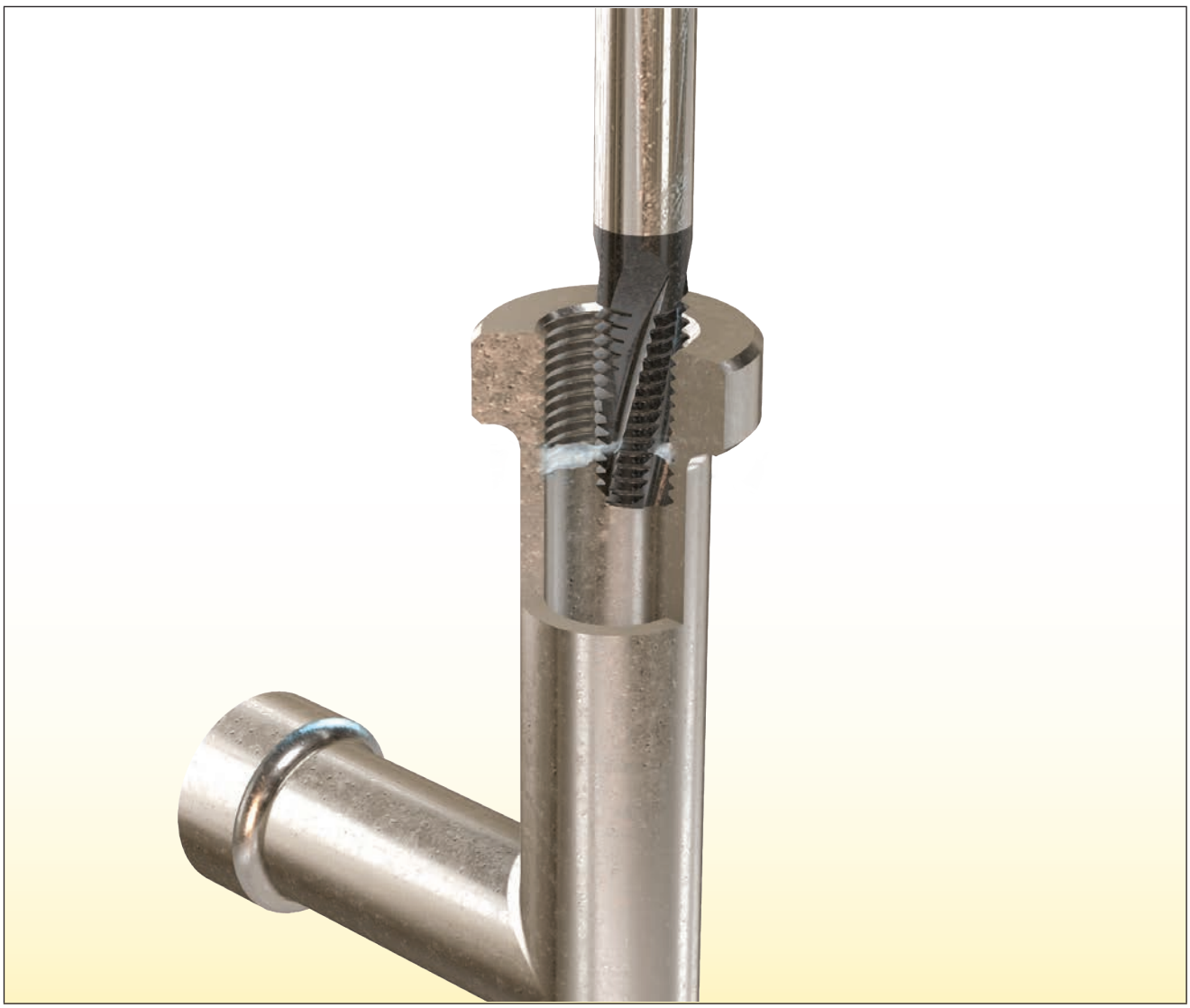
MTECZ



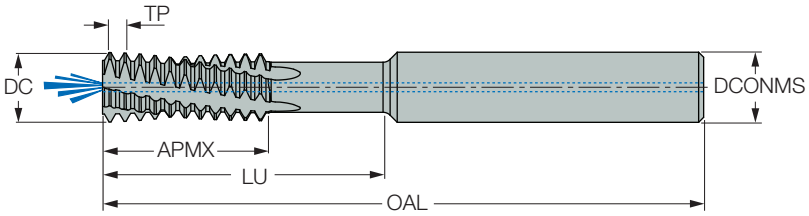
MTECZ (Mill Thread Endmills Carbide Z) - these are internal solid carbide thread mills with internal coolant holes directed to the cutting edges along the flutes. The endmills should be used on machines with coolant through the spindle, for applications of through hole, where the tools with frontal cooling holes (MTECB) are inefficient. MTECZ also can be used for production internal thread in blind holes and for external thread milling.

The coolant holes improve tool life in all thread milling applications. The coolant stream flushes the chips from the cutting very efficiently, particularly in soft materials (stainless steel and high-temp alloys) where the chips tend to be re-cut and stick to the machined area.

MTECZ endmills are available with cutting diameters from 4.6 mm up to 16 mm by metric system or from 0.264 inch to 0.63 inch by imperial and United States customary systems. This product line offers a solution for full profiles for most popular thread standards.



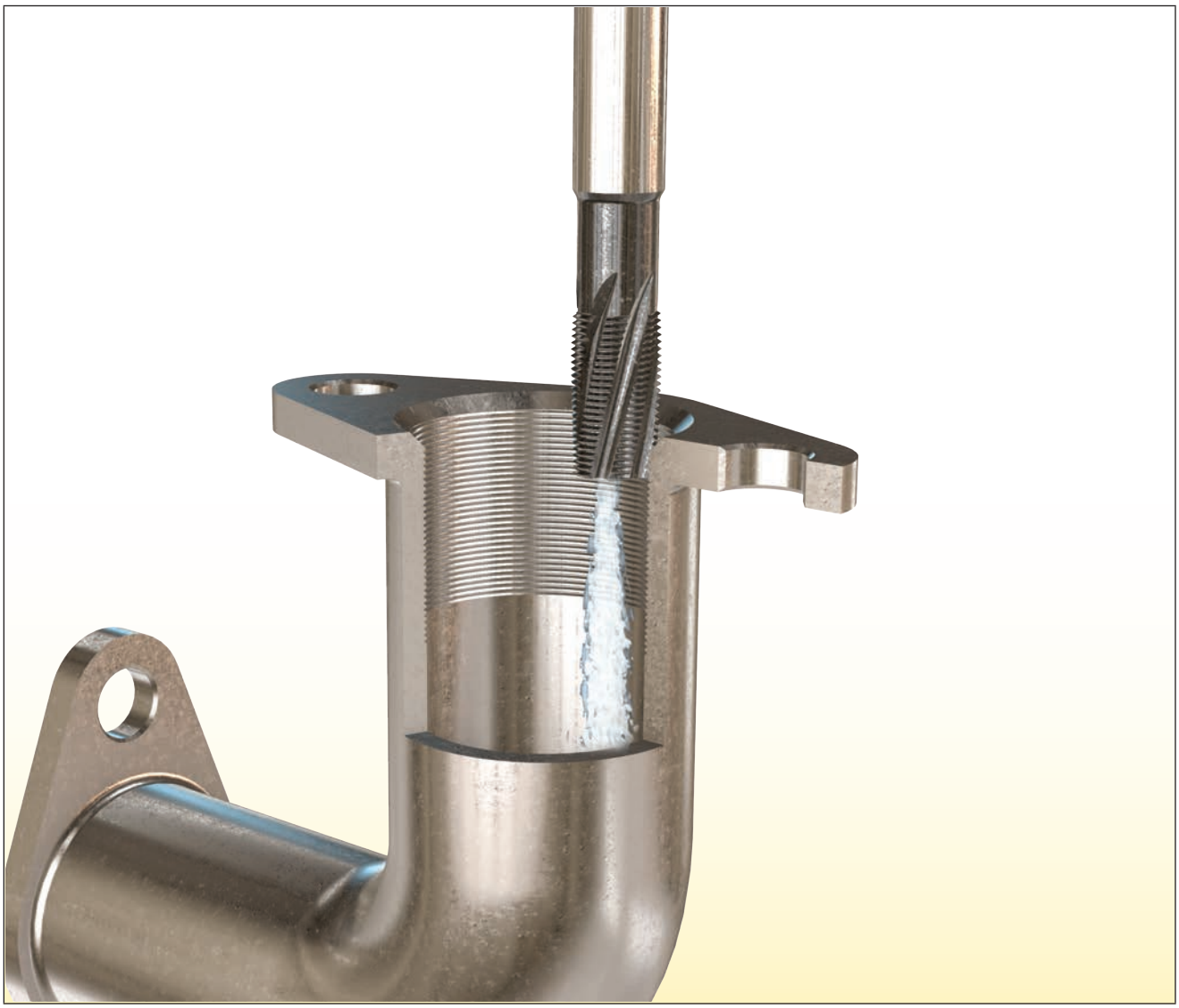
MTECQ



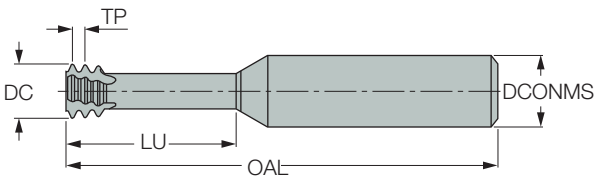
MTECQ (Mill Thread Endmills Carbide Q) Family - solid carbide thread mills with coolant hole and reduced neck diameter between the cutting zone and the shank, recommended for internal deep thread milling. This family can machine thread lengths up to 3.2 x DC (thread length = 3.2 x cutting diameter of endmill).

The coolant holes improve tool life in all thread milling applications. In blind holes where the chips of especially sticky materials (stainless steel and high-temp alloys) tend to be re-cut and stick to the machined area, the coolant stream coming from the bottom in an upward direction flushes them out of the hole very efficiently.

MTECQ endmills are available with cutting diameters from 12 mm up to 20 mm. This line offers a solution for full profiles for ISO standard.



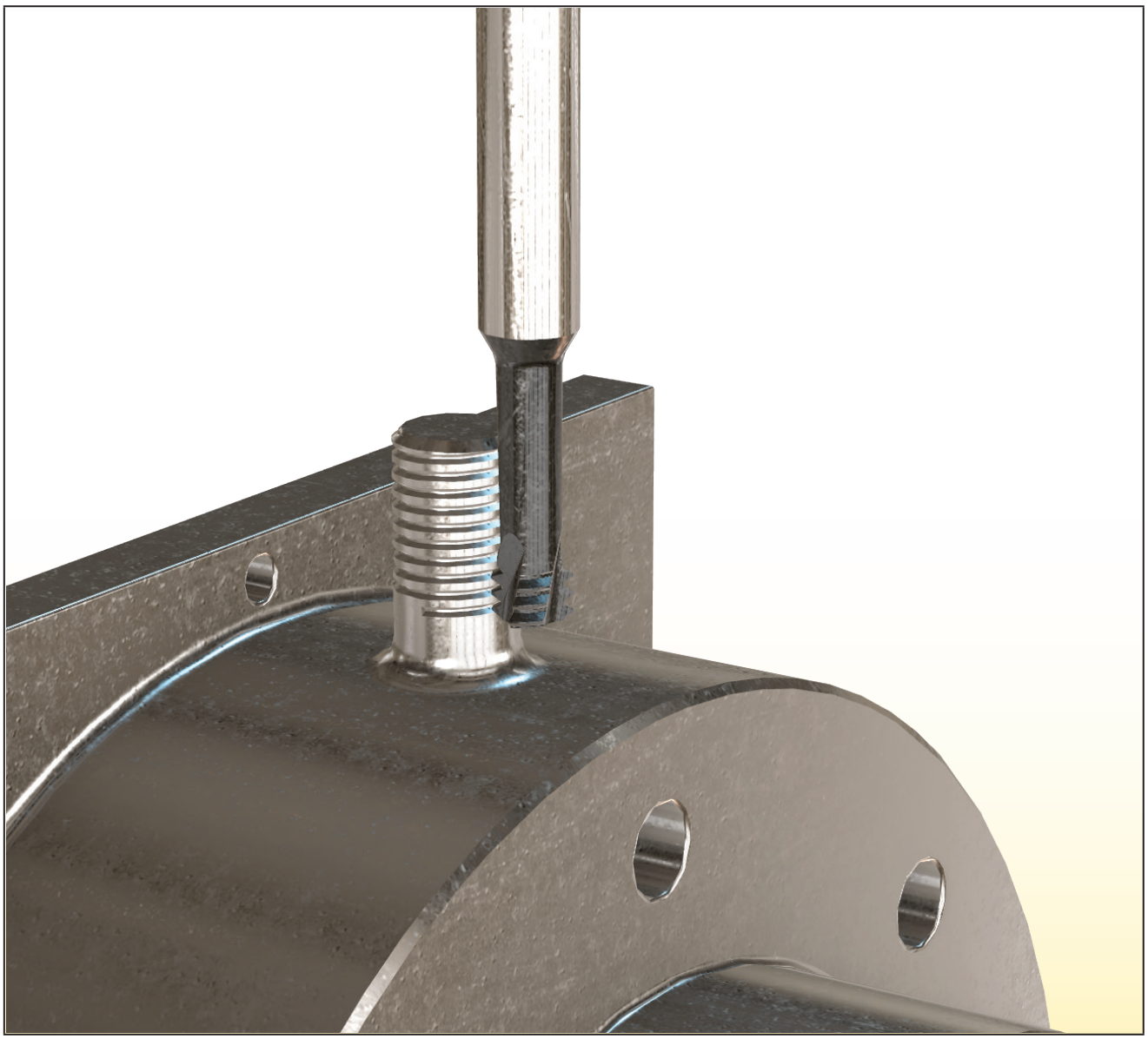
MTECS



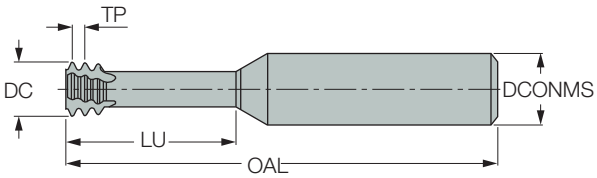
MTECS (Mill Thread Endmills Carbide Short) solid carbide thread mills for the production of small internal threads and also external for geometries BSP/BSF. These thread mills feature a short 3-tooth cutting zone with 3 flutes and a released neck between the cutting zone and the shank.

This unique tool design offers very precise profiles and a high performance.
The very short profile exerts a low force which minimizes tool bending. This facilitates parallel and high thread precision for the entire length.

MTECS endmills are available with cutting diameters from 0.72 mm up to 12 mm
by metric system or from 0.045 inch to 0.449 inch by imperial and United States customary systems.
This line offers a solution for full profiles for most popular standards.



MTECSH

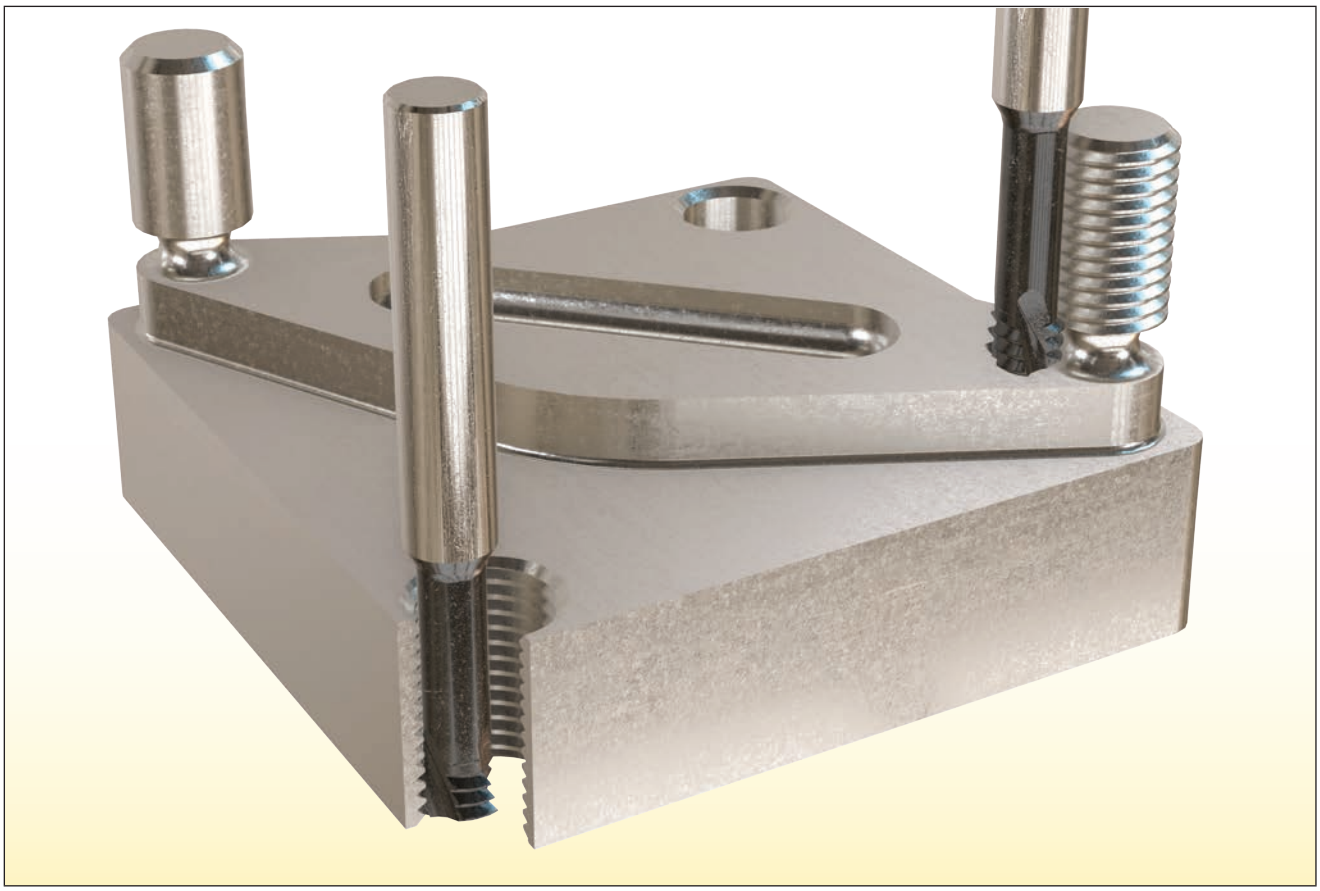


MTECSH (Mill Thread Endmills Carbide Short Hard Material) solid short left-hand cut (CNC code M04) carbide thread mills for the production of small internal threads in hard materials.
These thread mills feature a short 3-tooth cutting with 3 flutes and a released neck between the cutting zone and the shank.

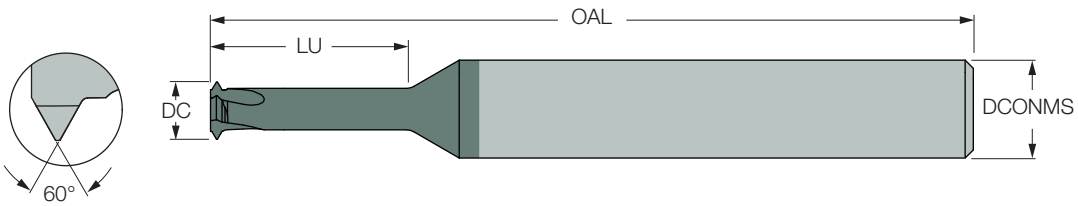
This family is suitable for machining hardened materials up to HRC 62. Apart from hardened steel, they can be used on titanium, nickel-based alloys and stainless steel at high speeds and medium feeds. The short cutting profile of the tool exerts low forces. The tools provide the possibility to machine materials with a higher tensile strength and hardness using relatively high cutting data. The tools are used for left-hand cutting, enabling climb milling, and can function well in blind holes. The same tool can be used for producing right-hand and left-hand threads.

This unique tool design offers very precise profiles and a high performance.
The cutting profile exerts a low force which minimizes tool bending. This facilitates parallel and high thread precision for the entire length.

MTECSH endmills are available with cutting diameters from 0.72 mm up to 12 mm by metric system or from 0.057 inch to 0.362 inch by imperial and United States customary systems. This line offers a solution for full profiles for most popular standards.



MTECI

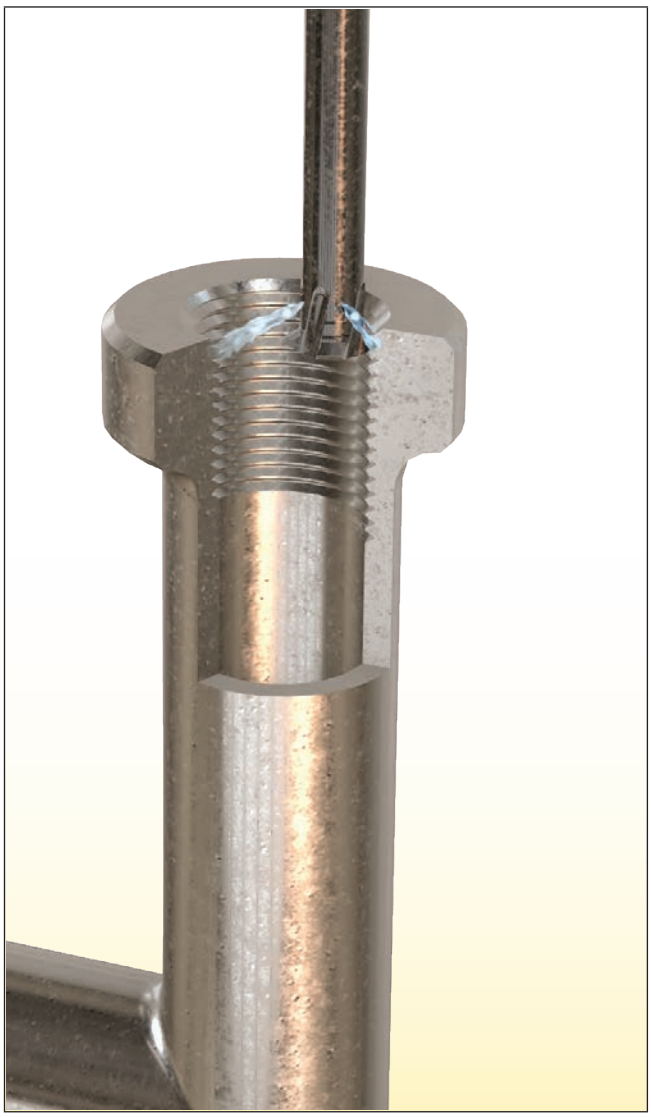


MTECI (Mill Thread Endmills Carbide I) solid carbide thread mills with coolant holes in the large diameters, for internal and external threads for the production of small internal threads. These thread mills feature a Single-Point cutting head design and a released neck between the cutting zone and the shank. This family can machine Thread lengths up to 5 x DC
(thread length = 5 x cutting diameter of endmill).

MTECI products are recommended for internal deep thread milling and can be used for external deep thread milling. This family can also machine threads near thin walls.

This unique tool design offers very precise profiles and a high performance.
The very short profile exerts a low force which minimizes tool bending.
This facilitates parallel and high thread precision for the entire length.

MTECI endmills are available with cutting diameters 0.72 mm up to 16 mm.
This line offers a solution for partial profile 60° and full profiles for ISO standards.



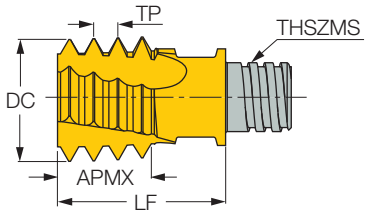


MULTI-MASTER Threading Heads

- **MULTI-MASTER** is a family of tools with shanks and interchangeable cutting heads for a variety of machining applications for thread milling.
- The **MULTI-MASTER** design approach is based on a thread profile system, centered by a short precise taper and face contact.
  A **MULTI-MASTER** head has a cutting part and a back connection with external thread and taper, which screws into a shank with the corresponding internal thread and a taper, until final securing when the back face of the head cutting part makes contact with the shank face.
- This principle of coupling ensures straight and rigid clamping of a wide range of interchangeable heads. **MULTI-MASTER** tools meet the requirements of high accuracy because the geometry is finished by precise grinding and the connection guarantees high concentricity within a very close limit. In addition, the tools are simple to operate because the heads are quickly replaced by easy rotation of an applied key. Moreover, they conform to strict repeatability requirements and replacement of the heads does not require additional adjustment.
- The basic concept of the **MULTI-MASTER** Family is that a shank can carry heads of different shapes and accuracy, allowing dramatic increase of tool versatility and fewer needs for special tools. Resharpening of cutting edges is no longer needed as a worn out cutting head is simply replaced. The **MULTI-MASTER** Family provides a range of possible tools by an unlimited combination of heads and shanks, which answers to any thread making requirement and reduces procurement costs.



MT-…-MM Interchangeable Heads



The MT-…-MM line contains solid carbide interchangeable heads with **MULTI-MASTER** connections for thread milling applications. Heads included in this line have several layers of teeth which shortens threading time. This line is available in three thread standards: ISO and UN for internal threads, and Whitworth for internal and external threads. MT-…-MM ISO and UN heads are suitable for machining full profile threads with different overhangs depending on the selected shank.



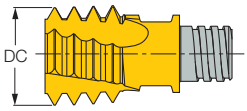


MT-...-MM – Designation Code Key

MT	10	D	6	1.5	ISO	-	MM	T05	IC908
	1	2	3	4	5			6	7

MT - **MULTI-MASTER** Thread Mill

1 Cutting diameter (Dc)



2 No. of flutes

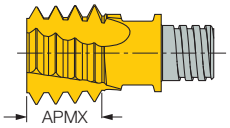
C — 3 flutes

D — 4 flutes

E — 5 flutes

F — 6 flutes

3 Length of thread (APMX)



4 Thread pitch

Value by number

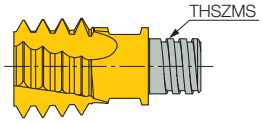
- For metric threading in mm
- For inch threading in TPI

5 Thread standard

ISO — ISO Metric UN - American UN

W — Whitworth

6 Connection size

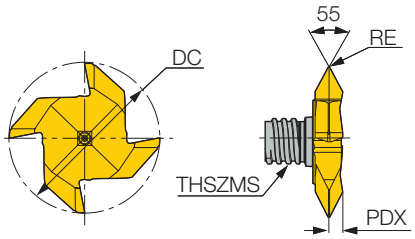


7 Grade

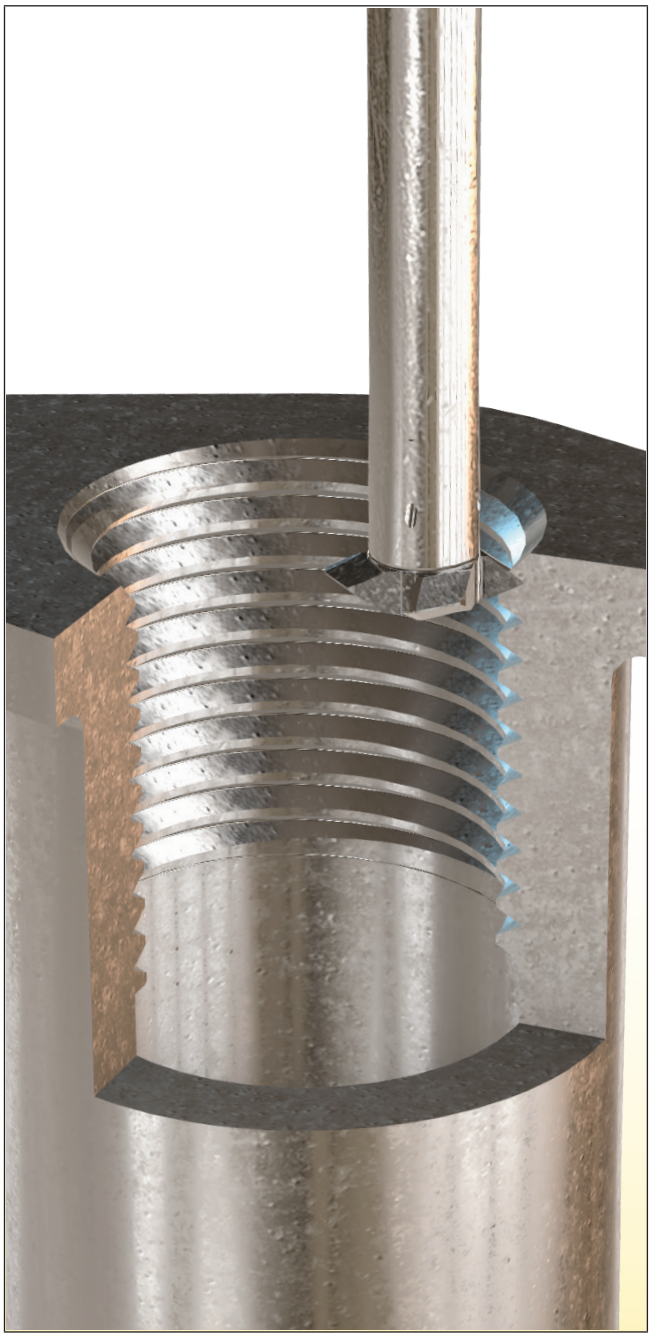
IC908



MM TRD



The MT TRD line contains solid carbide interchangeable heads with **MULTI-MASTER** connection for thread milling applications. Heads included in this line feature a Single-Point cutting head design. MT TRD heads are suitable for machining external and internal threads with different overhangs depending on the selected shank. This family can also machine threads near thin walls and offers a solution for partial profiles of 55° and 60°.



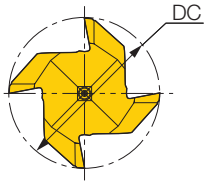


MM TRD – Designation Code Key

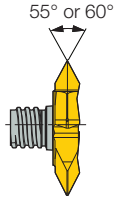
MM		TRD	16	-	M60	-	15P	3	T06		IC528
			1		2		3	4	5		6

MM - **MULTI-MASTER**
TRD – Thread Mill Diameter

1 Cutting diameter (DC)



2 Profile angle



W55 — 55°

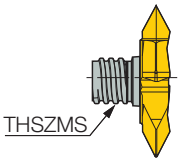
M60 — 60°

3 Thread pitch value by number

- For metric threading in mm
- For inch threading in TPI

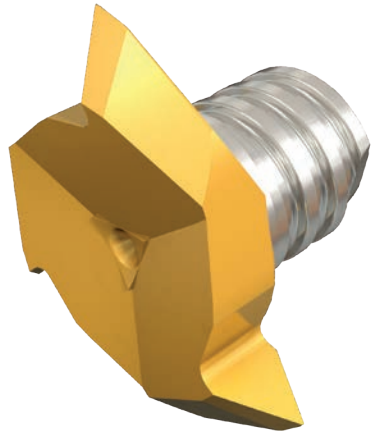
4 No. of flutes value by number

5 Connection size



6 Grade

IC528



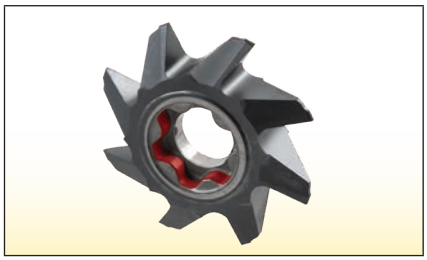
T-SLOT



The **T-SLOT** family includes interchangeable cutting heads for thread milling applications. The cutters consist of solid carbide heads and cylindrical steel or solid carbide shanks by means of a unique spline connection. Also available is an adapter with the SP spline connection on one side and **MULTI-MASTER** threaded connection on the other side, which enables using all standard **MULTI-MASTER** shanks.

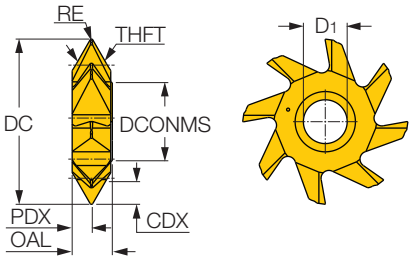
SD TRD Solid Carbide Head With MULTI-MASTER Shanks	SD TRD Solid Carbide Head With Cylindrical SD Shanks
	

The spline connection is used to transmit the torque in the best way. It ensures very durable assembly to withstand cutting forces during thread milling and bending forces caused by long reach overhang.



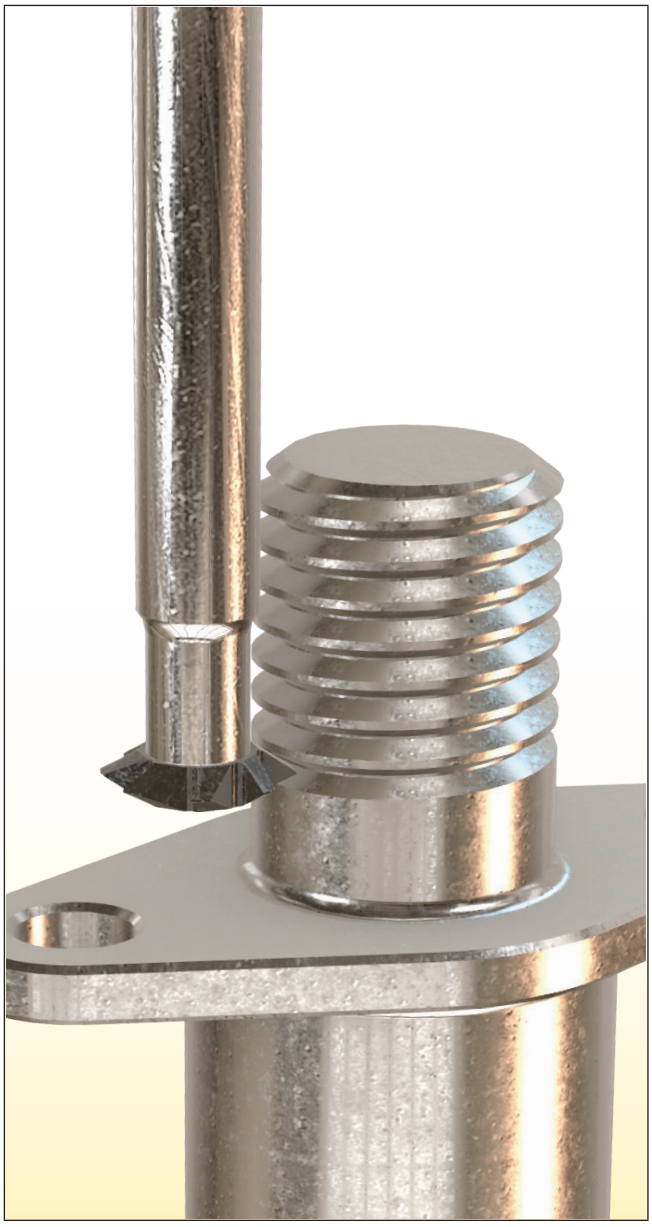


SD TRD



The SD TRD line contains solid carbide heads with 10 effective teeth for a 40 mm (1.563 inch) cutting head diameter and 8 effective teeth for a 32 mm (1.248 inch) cutting head diameter. This line enables a reduction in cutting time by increasing feed due to the large number of effective teeth. The cutter heads feature an internal spline mounted on a matching external spline on the shank, secured by a central screw. SD TRD heads are used for machining external and internal threads with different overhangs depending on the selected shank. This line offers a solution for partial profiles of 55° and 60°.

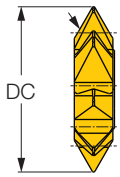


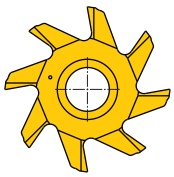


SD TRD – Designation Code Key

SD	TRD	32	-	M60	-	6P	-	SP15	IC908
		1		2		3		4	5

1 Cutting diameter (DC)

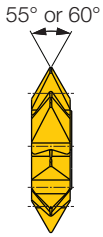




2 Profile angle

W55 — 55°

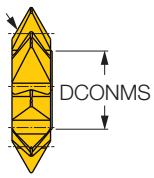
M60 — 60°

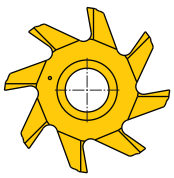


3 Thread pitch value by number

- For metric threading in mm
- For inch threading in TPI

4 Connection size





5 Grade

IC908



MILLTHREAD – Indexable Solution

The **MILLTHREAD** is an indexable solution for thread milling applications.
The main features of this indexable solution are cost effectiveness and functionality.

All advantages of indexable solution are known and proven themselves over time.

The **MILLTHREAD** family includes 5 lines of indexable cutters:

MTE, MTF, MTFLE, MTSRH, MTSRH (shell mill). Each line contains toolholders and indexable inserts. All toolholders have internal coolant, accurate pocket for insert position and a user-friendly clamping mechanism. **ISCAR** offers a wide range of inserts for the most popular thread standards, which can produce threads in different materials.
The **MILLTHREAD** family lines offer a solution for internal and external, right-hand and left-hand threading.



MTE and MTF – Endmill and Shell Mill for Indexable Inserts

Endmill (MTE) and shell mill (MTF) are tools for indexable inserts used for thread milling applications. These tools can mount various thread inserts with different profiles, meaning that one tool is suitable for production of a wide range of thread standards. The same tool can be used for production of external and internal (except the MTFLE which is dedicated for external applications), right-hand and left-hand threads. All tools in this line have internal coolant directed to the cutting area.



Endmill MTE Type

MTE endmills can be produced from steel or solid carbide.
The solid carbide shanks expand the current overhang range and provide improved performance due to their high rigidity feature.



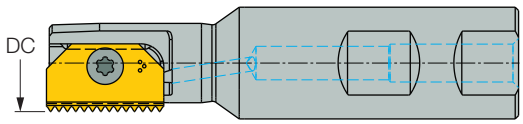


MTE – Designation Code Key:

MTE	D09.5	-	1	-	W	20	-	12
	1		2		3	4		5

MTE – endmills for indexable inserts

1 Cutting diameter (DC)



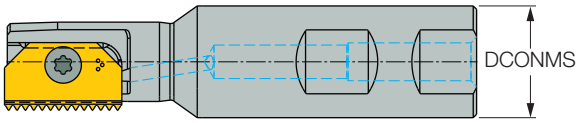
2 Number of flutes

3 Shank type

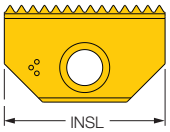
C — cylindrical shank

W — weldon shank

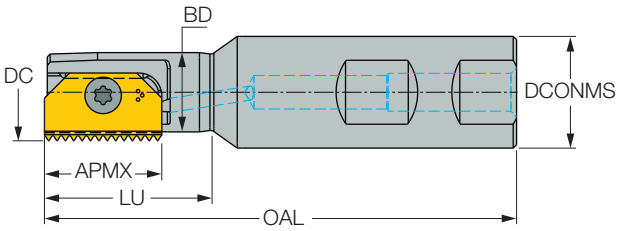
4 Shank diameter (DCONMS)



5 Insert size (INSL)



Basic Dimensions of MTE Tools:



DC — cutting diameter

APMX — maximum depth of cut

OAL — overall length

DCONMS — connection diameter machine size

LU — usable length

BD — body diameter

Shell Mill MTF Type

MTF shell mills are recommended for large thread diameters.
This type of tool is suitable for thread production with long overhang. The pockets for inserts are produced with high accuracy and uniformity, meaning there is no need to select or adjust inserts for thread milling operations. MTF tools are mounted on standard shell mill adapters.



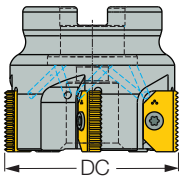


MTF – Designation Code Key:

MTF	D080	-	4	-	27	-	30
	1		2		3		4

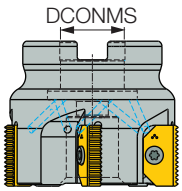
MTF – shell mills for indexable inserts

1 Cutting diameter (DC)

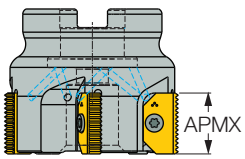


2 Number of flutes

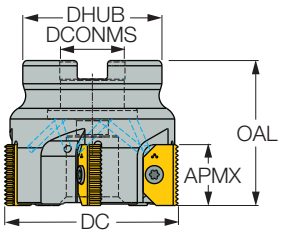
3 Connection diameter (DCONMS)



4 Depth of cut (APMX)



Basic Dimensions of MTE Tools:



DC — cutting diameter

APMX — maximum depth of cut

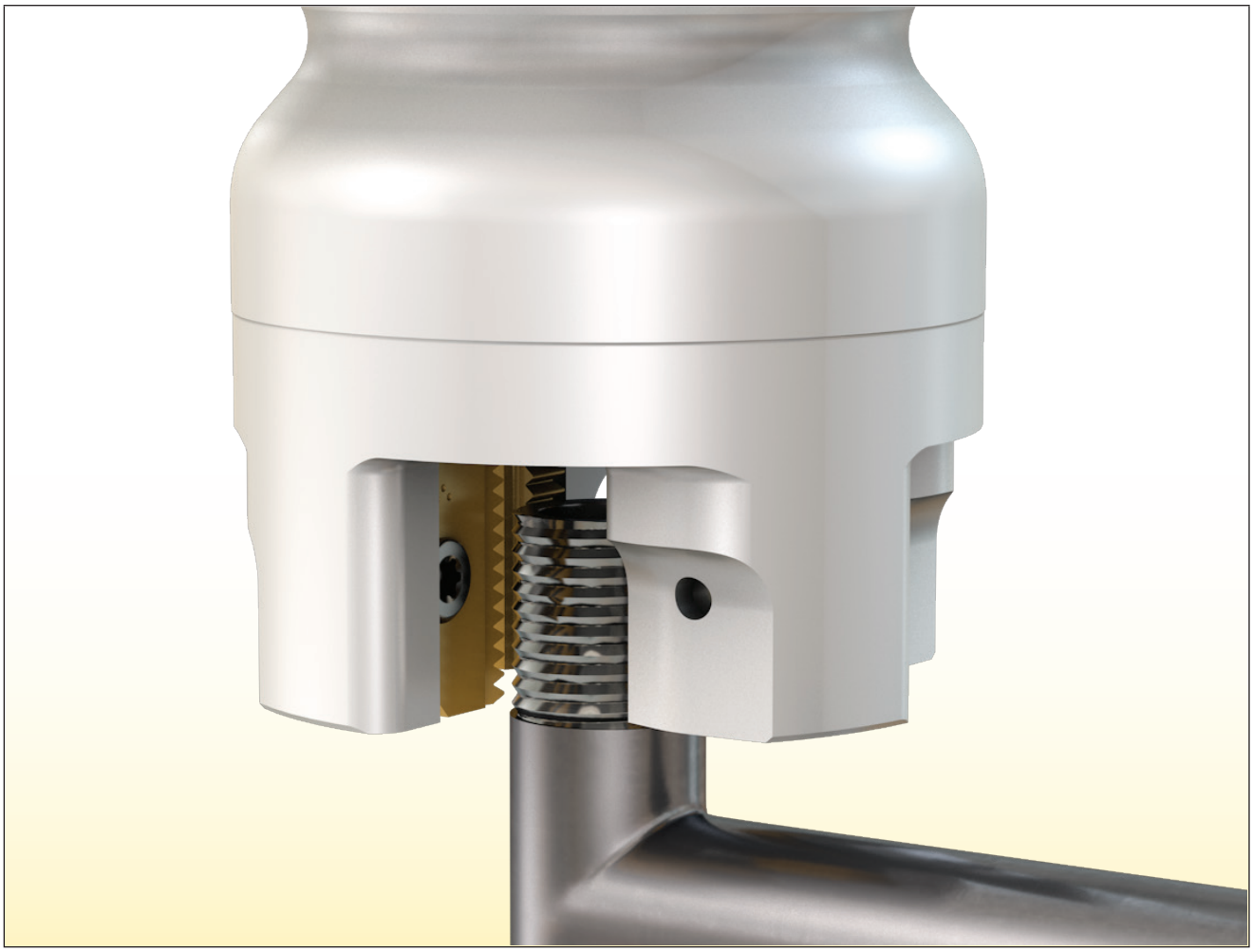
OAL — overall length

DCONMS — connection diameter machine size

DHUB — flange diameter

MTFLE– Shell Mill for Indexable Inserts

MTFLE is a multi-tooth shell mill toolholder with indexable inserts used for thread milling applications of external threads. These tools can mount various thread inserts with different profiles, meaning that one tool is suitable for production of a wide range of thread standards. The same tool can be used for producing right-hand and left-hand threads. All MTFLE tools have internal coolant directed to the cutting area. This type of tool is suitable for thread production with long overhang.
The pockets for inserts are produced with high accuracy and uniformity, meaning there is no need to select or adjust inserts for thread milling operations. MTFLE tools are mounted on standard shell mill adapters. The MTFLE tool design with a multi-tooth insert position enables a significant reduction in thread production time.

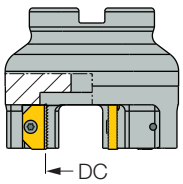


MTFLE – Designation Code Key:

MTFLE	D20	-	3	-	22	-	21
	1		2		3		4

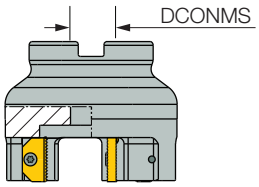
MTFLE - shell mills for indexable inserts for external threading

1 Cutting diameter (DC)

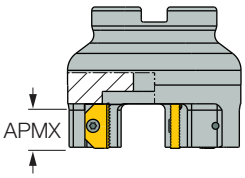


2 Number of flutes

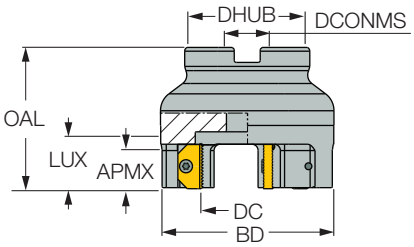
3 Connection diameter (DCONMS)



4 Depth of cut (APMX)



Basic Dimensions of MTE Tools:



DC — cutting diameter

APMX — maximum depth of cut

OAL — overall length

DCONMS — connection diameter machine size

DHUB — flange diameter

LUX — maximum usable length

MTSRH – Endmill and Shell Mill for Helical Indexable Inserts

Endmills and shell mills for helical indexable inserts (27-38 mm) are the ultimate solution for very fast and efficient thread milling. The helical inserts engage with the workpiece smoothly and, when compared with straight, negative axial tools, exert lower cutting forces and reduce vibration.

MTSRH tools are available with internal coolant channels directed to the cutting area.
These tools can be used for production of internal and external threading.
The tools carry up to 9 inserts depending on the tool diameter, which enables machining at very high feeds and produces a high-quality surface finish.

A simple and very convenient screw clamping mechanism makes insert indexing accurate and user-friendly. By using these thread milling tools, thread production time can be very short.

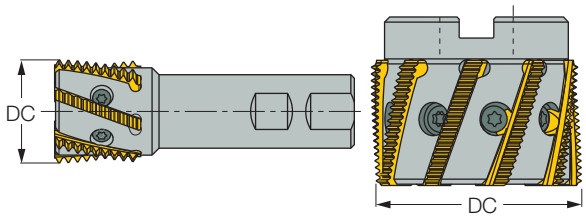


MTSRH – Designation Code Key:

MTSRH	45	-	6
	1		2

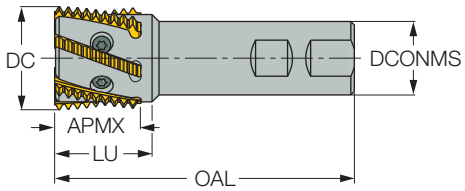
MTSRH – endmills and shell mills for helical indexable inserts

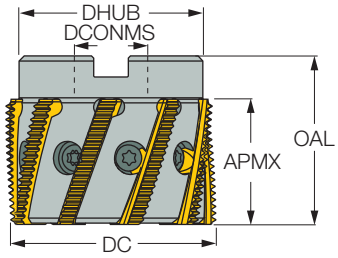
1 **Cutting diameter (DC)**



2 **Number of flutes**

Basic Dimensions of MTSRH Tools:





DC — cutting diameter

APMX — maximum depth of cut

OAL — overall length

DCONMS — connection diameter machine size

LU — usable length

DHUB — hub diameter



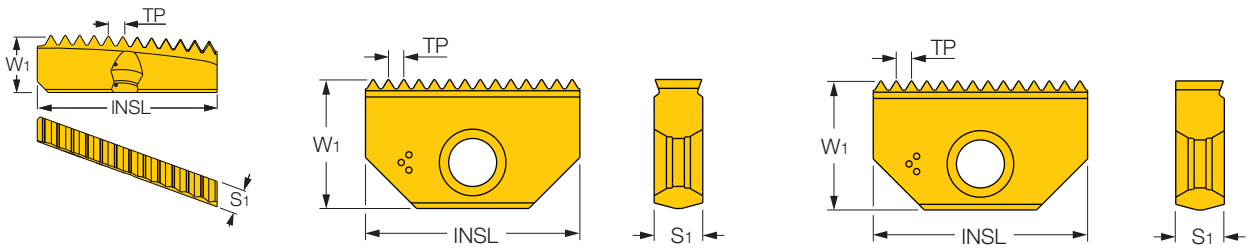
Indexable Inserts for Thread Milling

Indexable inserts for thread milling are available for production of internal and external, and right and left-hand full profile threads in most popular standards. These inserts have a deflector that provides excellent chip control and ground profiles to achieve high accuracy and surface quality. The thread milling inserts are made from grade IC908, which is a PVD TiAlN coated tough grade. They are suitable for milling stainless steel, high temperature alloys and other alloy steels. **ISCAR** offers three types of indexable thread milling inserts:

- MT LNHT – single-sided indexable thread milling inserts
- MT LNHU – double-sided indexable thread milling inserts
- MTH – helical indexable thread milling inserts. MTH-F inserts may also be used for high shoulder finish milling applications or for machining various specially tailored profiles

ISCAR can also provide special profile inserts on request

Basic Dimensions of Thread Milling Inserts:



MTH MT LNHU MT LNHT

W1 — insert width

TP — thread pitch

INSL — insert length

S1 — insert thickness

MT LNHT and MT LNHU – Designation Code Key:

MT	LNHU	21	04	I	1.5	ISO	IC908
	1	2	3	4	5	6	7

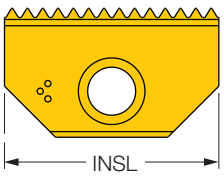
MT – **MILLTHREAD** family

1 Number of cutting edges

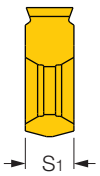
LNHT — single-sided

LNHU — double-sided

2 Insert length (INSL)



3 Insert thickness (S1)



4 Thread gender

I — internal thread

E — external thread

5 Pitch Value by number:

1.0 – 6.0 mm

4 - 32 TPI

6 Thread standard

ISO — ISO Metric

UN — American UN

W — Whitworth

BSPT — British BSPT

NPT — National pipe thread

NPTF — National pipe taper fuel

7 Grade

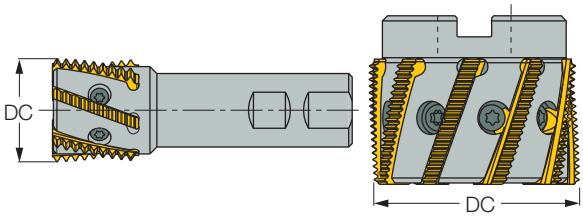
IC908

MTH – Designation Code Key:

MTH	45	I	1.5	ISO	IC908
	1	2	3	4	5

MTH – **MILLTHREAD**, helical indexable inserts

1 Tool cutting diameter (DC)



2 Thread gender

I — internal thread

E — external thread

3 Pitch Value by number:

1.0 – 6.0 mm

4 - 32 TPI

4 Thread standard

ISO — ISO Metric

UN — American UN

W — Whitworth

BSPT — British BSPT

NPT — National pipe thread

NPTF — National pipe taper fuel

5 Grade

IC908

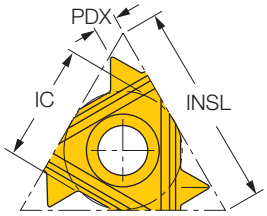
MT3 – Designation Code Key:

MT3	1155	D	IC908
1	2	3	4

MT3 11U55D IC908

1 MT3 - Triangular Mill Thread insert

2 Insert length (INSL)



INSL (mm)	IC (Inch)
06	5⁄32 "
08	3⁄16 "
11	1⁄4 "
16	3⁄8 "
22	1⁄2 "
27	5⁄8 "

3 Threading Standard

60 — Partial Profile 60°
55 — Partial Profile 55°

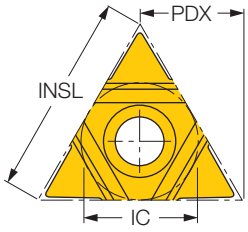
4 Grade IC908

MT3	11	U	55D	IC908
1	2	3	4	5

MT3 11U55D IC908

1 MT3 - Triangular Mill Thread insert

2 Insert length (INSL)



INSL (mm)	IC (Inch)
06	5⁄32 "
08	3⁄16 "
11	1⁄4 "
16	3⁄8 "
22	1⁄2 "
27	5⁄8 "

3 U-type thread milling inserts

4 Threading Standard

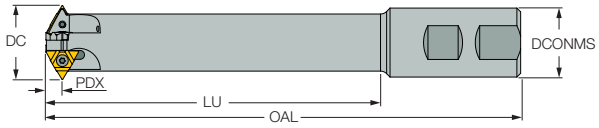
60 — Partial Profile 60°
55 — Partial Profile 55°

5 Grade IC908

MTSR	0023	M	11	U
1	2	3	4	5

1 MTSR Indexable

Multi-Insert Threading Endmills



2 Cutting diameter

3 Tool Length

M — 150 mm
R — 200 mm

4 Insert size

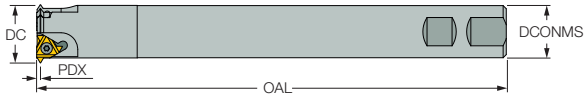
INSL (mm)	IC (Inch)
06	5⁄32 "
08	3⁄16 "
11	1⁄4 "
16	3⁄8 "
22	1⁄2 "
27	5⁄8 "

5 U-type thread milling inserts

MTSR	0023	Q	11
1	2	3	4

1 MTSR Indexable

Multi-Insert Threading Endmills



2 Cutting diameter

3 Tool Length

Q — 190 mm
R — 225 mm

4 Insert size

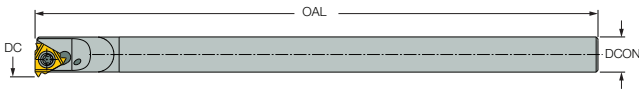
INSL (mm)	IC (Inch)
11	1⁄4 "
16	3⁄8 "

5 U-type thread milling inserts

MTET	D7.0	1	C	5	C	06
1	2	3	4	5	6	7

1 MTSR Single Point

Indexable Threading Endmills



2 Cutting diameter

3 Number of pockets

4 C cylindrical shank

5 DCONMS diameter

6 Shank material

C — Carbide

S — Steel

7 Insert size

INSL (mm)	IC (Inch)
06	5⁄32 "
08	3⁄16 "
11	1⁄4 "

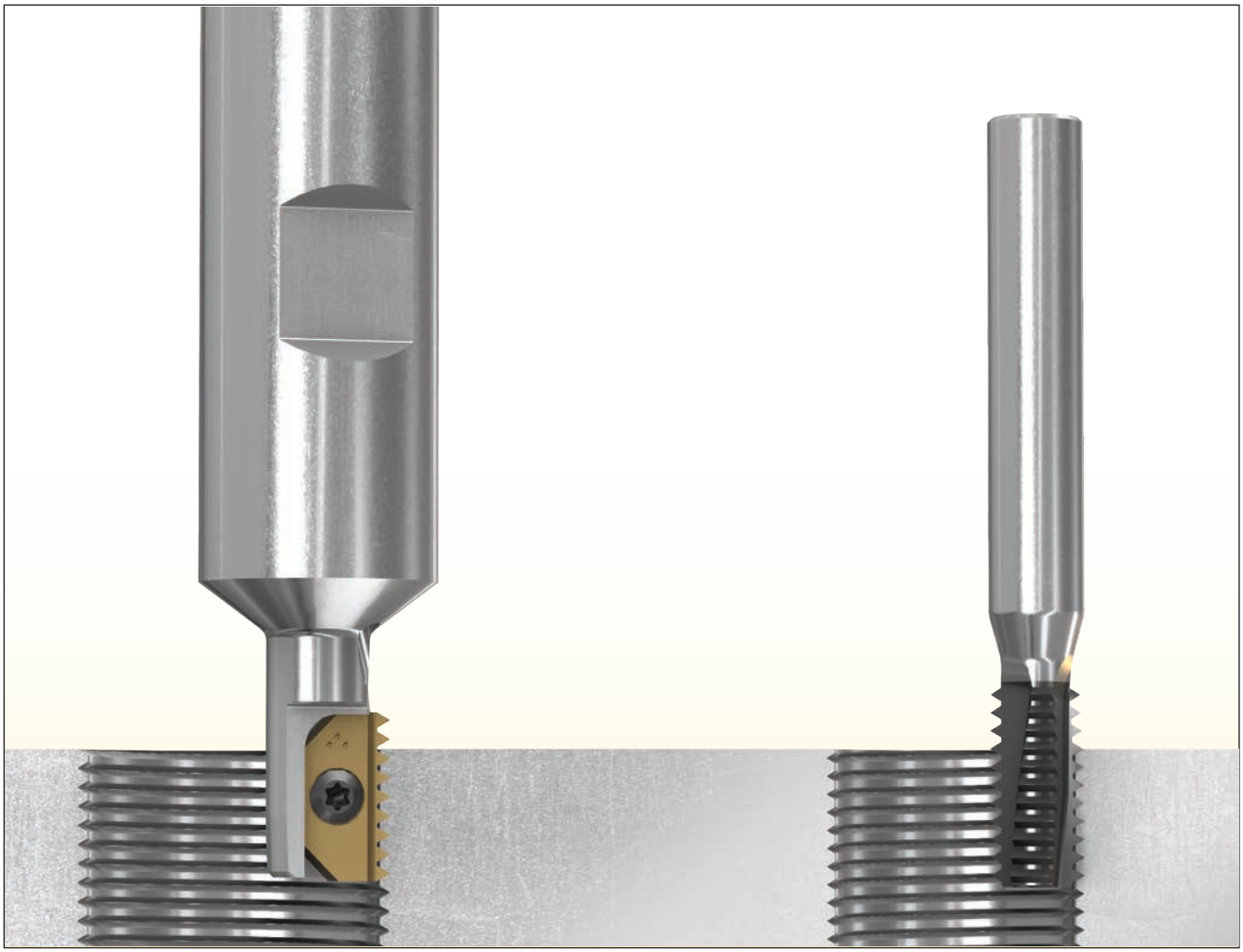
Indexable Thread Milling Tools vs. Solid Tools

The range of capabilities of thread milling tools can be increased significantly by using indexable inserts. The indexable inserts can be made of various alloys. Selection of a suitable insert depends on a variety of factors: cutting parameters, thread form, and the type of cutting material. Indexable inserts are characterized by the following advantages:

- Quick change of cutting edge - If the cutting edge is damaged or worn, it is not necessary to replace the whole tool but just the, indexable insert.
- Wide range of capabilities - By changing inserts, a variety of threads in various materials can be produced using one tool body only.
- Low cost – Using inserts can significantly reduce costs since the insert is cheaper than a solid tool.

Solid tools are advantageous when it comes to small tools. The main advantages of solid tools include:

- More productivity - The number of cutting edges that can be placed in solid tools for small and medium diameters is greater than the number of inserts that can be mounted in small and medium tools, which causes higher productivity.
- Internal threads in small diameters – Internal threading in small diameters (less than Ø9.5) is not possible with indexable inserts, but only with solid tools.



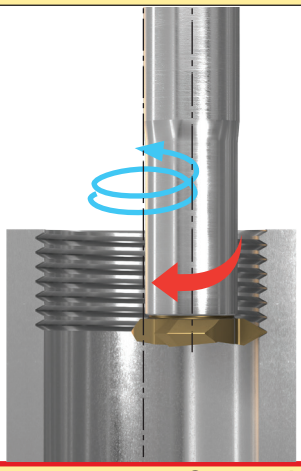
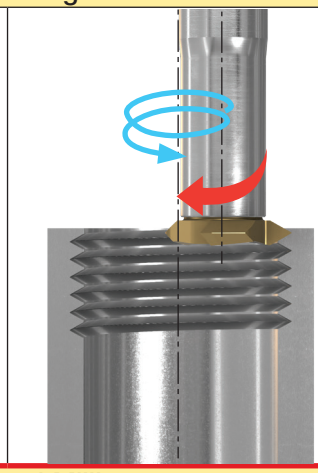
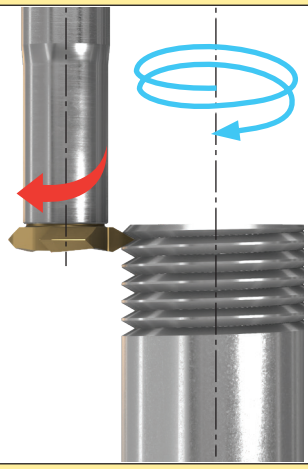
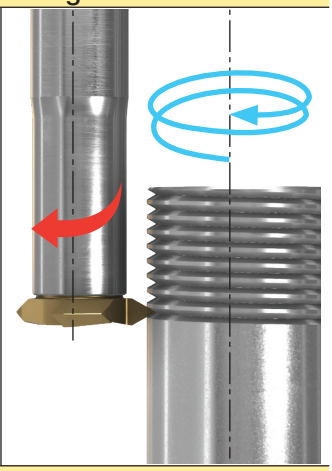
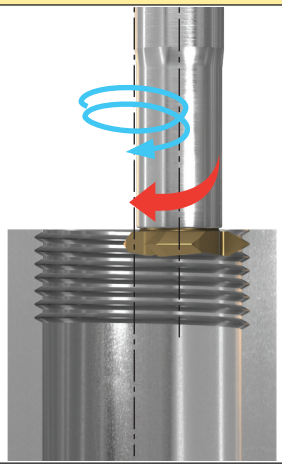
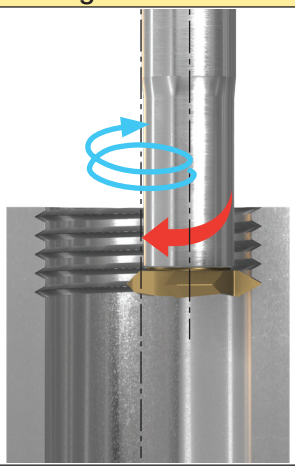
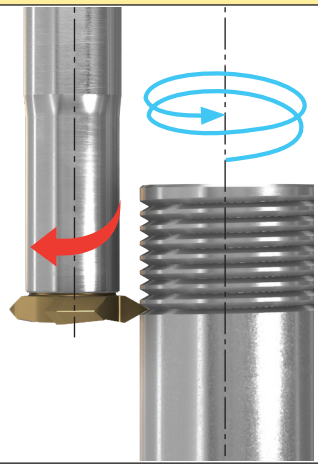
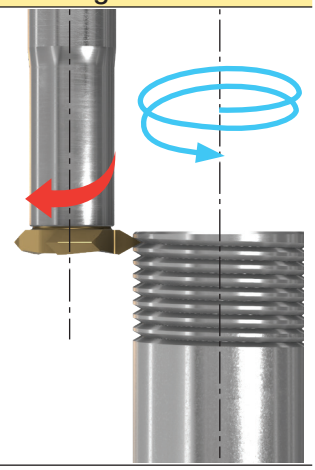
Straight vs. Helical Cutting Shape

The table below describes the differences between the use of tools with helical cutting edges and tools with straight cutting edges.

Straight Cutting Edges	Helical Cutting Edges
	
• Radial cutting forces act on a plane. • The same size inserts can fit to several cutter diameters. • Double-sided inserts - available inserts with two cutting edges	• Radial cutting forces are distributed along a helical curve. • Each insert size is dedicated to a specific cutter diameter. • Single-sided inserts - available inserts with one cutting edge only. • Reduces vibration

Thread Milling Methods

There are several methods used for thread milling operations. The cutter usually rotates clockwise, except in special cases where the tool rotates counterclockwise. The spiral movement of the cutter can be clockwise or counterclockwise, and the tool can produce a thread by top-down or bottom-up. The combination of these movements depends on the type of thread required to produce; left-hand or right-hand threads.

Internal		External	
Right-Hand Threading	Left-Hand Threading	Right-Hand Threading	Left-Hand Threading
Climb Milling *		Climb Milling	
			
Conventional Milling		Conventional Milling	
			

* First choice

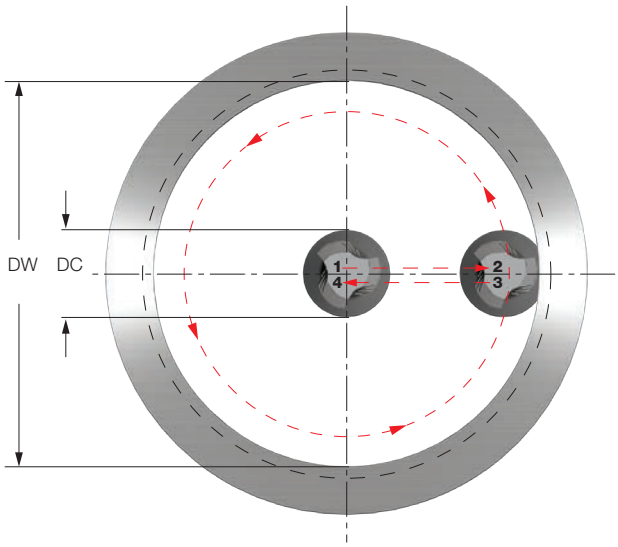
Entering the Workpiece

A sudden load is applied to the cutter when it enters the workpiece and as a result the cutter may be broken, or a mark will remain. If entering is smooth, then the load on the tool will increase gradually and the surface will remain “clean”. There are three ways to initially enter the workpiece: radial entering, tangential entering by arc, tangential entering by line.

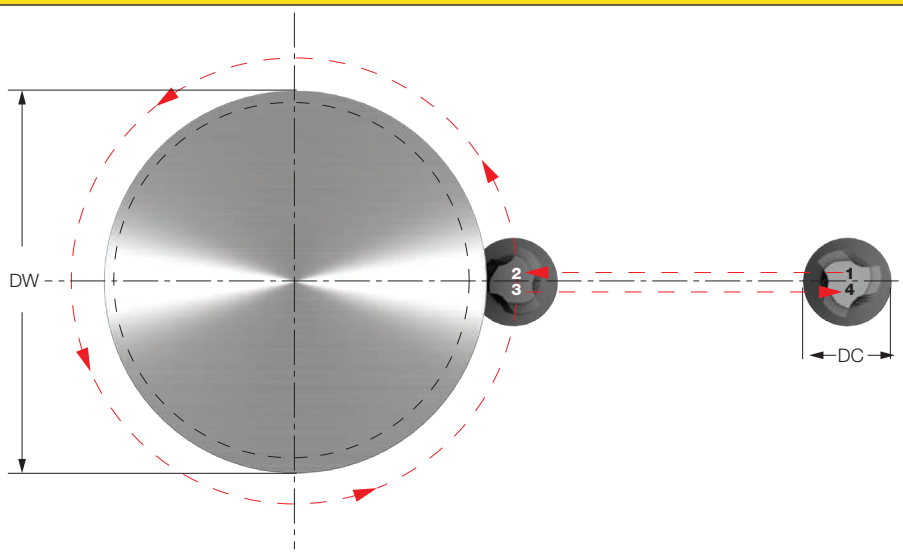
Radial Entering

The cutter enters the workpiece in a straight line to the center workpiece axis.
This is the simplest method, but also the least recommended, because the angle of the hugging is too large.

Internal Threading



External Threading



DW - Workpiece diameter

DC - Cutter Diameter

1-2: Straight line entry

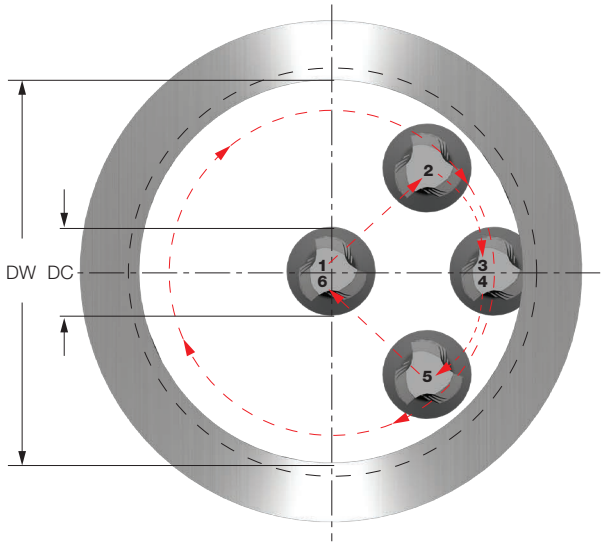
2-3: Helical movement during one full orbit (360°)

3-4: Straight line exit

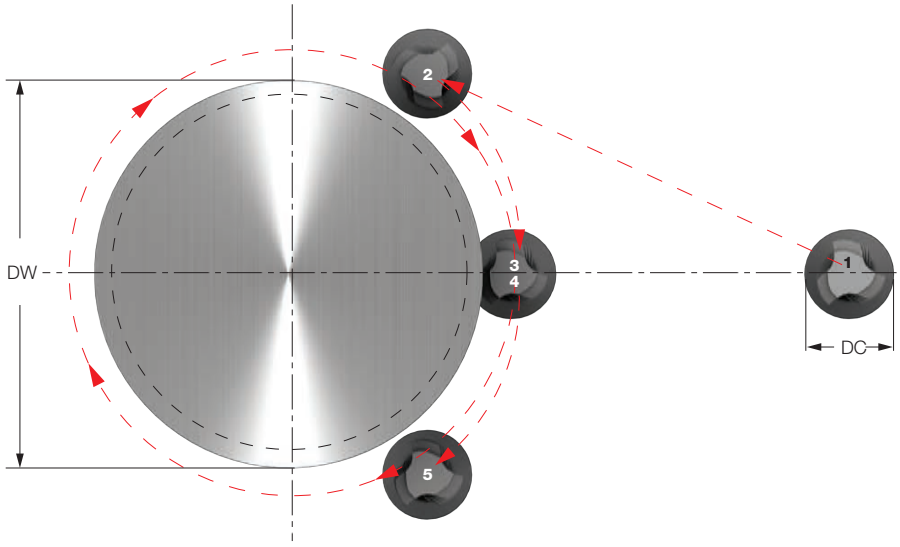
Tangential Entering by arc (Recommended)

The tool enters the material in an arc movement, and at the end of the thread the tool also extends in an arc movement from the material. This method is recommended because the cutter gradually enters the material and the load on the tool increases gradually.

Internal Threading



External Threading



DW - Workpiece diameter

DC - Cutter Diameter

1-2: Rapid approach

2-3: Tangential entry by arc

3-4: Helical movement during one full orbit (360°)

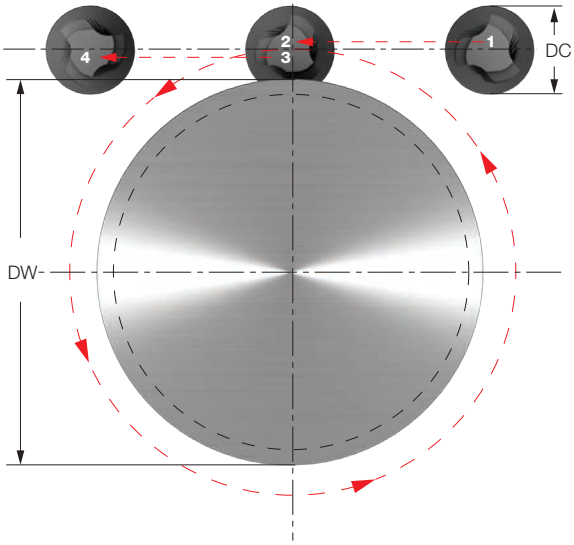
4-5: Tangential exit by arc

5-6: Rapid return

Tangential Entering by Line

This method is very simple, with all the advantages of the tangential entering by arc method, but is used only for external threading.

External Threading



DW - Workpiece diameter

DC - Cutter Diameter

1-2: Tangential line entry

2-3: Helical movement during one full orbit (360°)

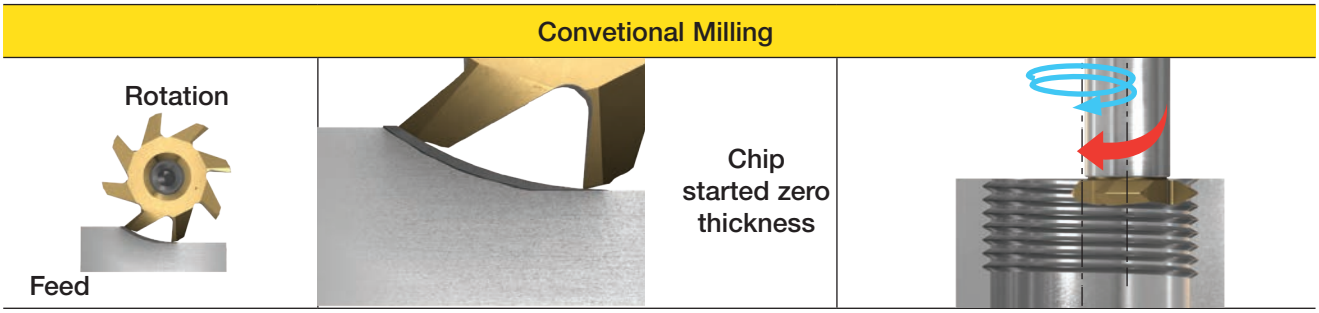
3-4: Tangential line exit

Climb Milling vs. Conventional Milling

There are two milling methods that also apply to thread milling: conventional milling (up milling) and climb milling (down milling). The difference between the two methods lies in the relationship of cutter rotational direction relative to the feeding direction.

Conventional Milling (Up Milling)

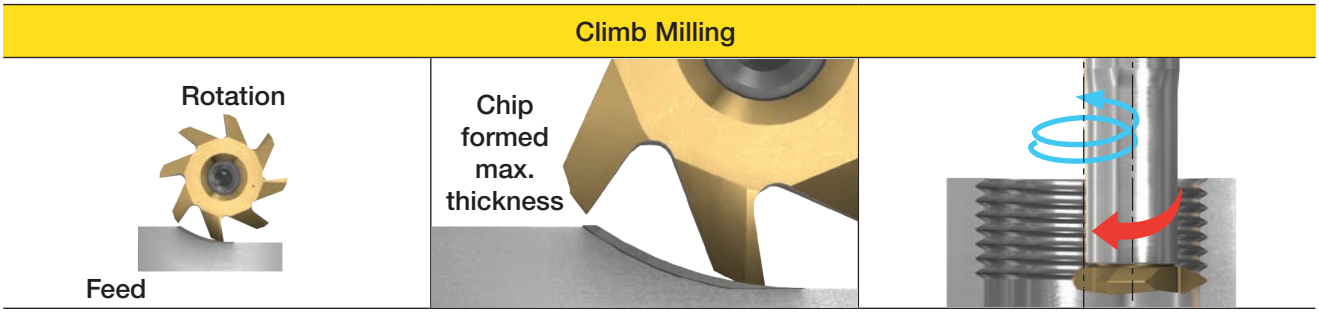
Cutter rotation direction is against feed direction. The thickness of a chip increases as the tooth of the cutter enters the material and reaches its maximal size when the same tooth of the cutter exits the material. This method causes heat to be generated in the cut area and a sudden heavy load on the cutter in initial contact of the tooth with the workpiece. As a result, wear is faster and tool life decreases significantly. Chips are carried upward by the tooth and fall in front of the cutter creating a flawed finish and re-cutting of chips.



Climb Milling (Down Milling)

Cutter direction is the same as feed direction.

Climb milling is a recommended method for all milling applications. The thickness of the chip starts from maximum and decreases, so heat is more likely to be transferred to the chip and not to the cutter. As a result, wear is slower and tool life increased. Chips are removed behind the cutter, which reduces the chance of re-cutting. In this way the machined surface stays clean and smooth.



When to Choose Conventional or Climb Milling?

Climb milling in most cases is the preferred way for machining threads due to a lower load on the cutter, longer tool life, and better surface finish.

During conventional milling, the cutter can dig into the workpiece and may cause the part to be machined out of the tolerance. However, there are cases in which conventional milling is the preferable way and even necessary. If the machine does not counteract backlash, then conventional milling is recommended. In addition, conventional milling is preferable for machining cast iron or hardened materials (as the cut begins under the surface of the material).

Selecting Endmill Outer Diameter for Best Effect

A thread milling endmill is designed with annular cutting edges without helix angles. Thread milling is performed when the axis of the cutter and the axis of thread direction are parallel to each other. An incompatibility in the direction of the cutting edges with the threading direction causes geometrical distortions during thread machining. The geometrical distortion of the thread profile increases as the thread pitch increases and the endmill diameter increases, which can be explained by an increase in the contact angle of the endmill with the workpiece. Therefore, if the endmill diameter is smaller, then the thread profile is more accurate.

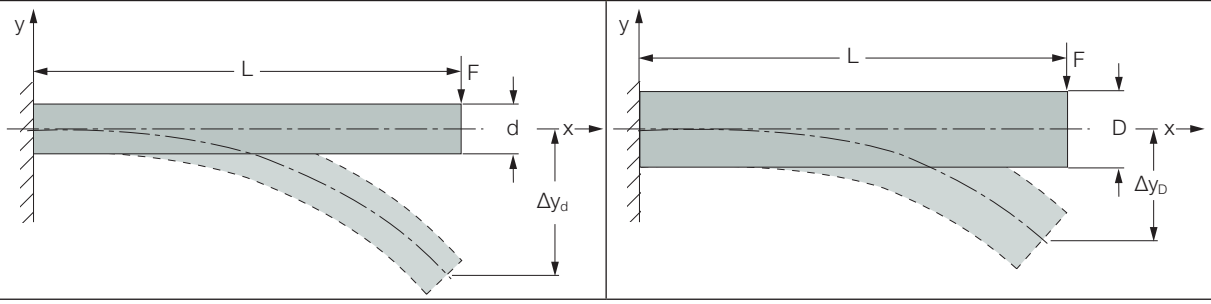
Small Tool Diameter	Large Tool Diameter
	

At the same time, a larger endmill diameter usually causes bending stiffness and this enables a more stable machining process such as: thread milling with high overhang, better resistance to vibrations, etc. A large tool diameter can significantly improve productivity as it allows machining with hard cutting conditions.

Accordingly, to improve the thread milling process it is necessary to increase the diameter of the tool while taking into consideration the restrictions of the thread profile accuracy.

d < D

Δyd > ΔyD



L- Tool overhang

F-Bending force

D;d=Tool diameters

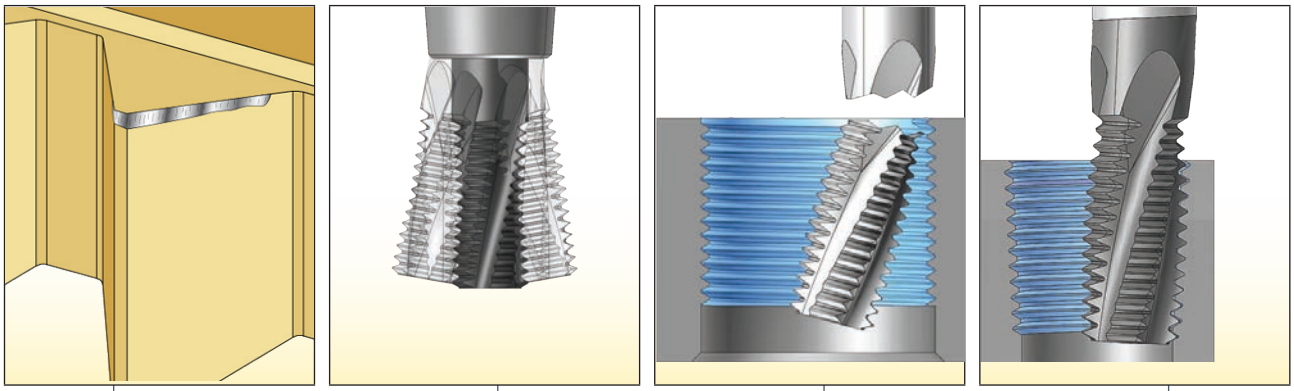
Δy=max. deflection in bending

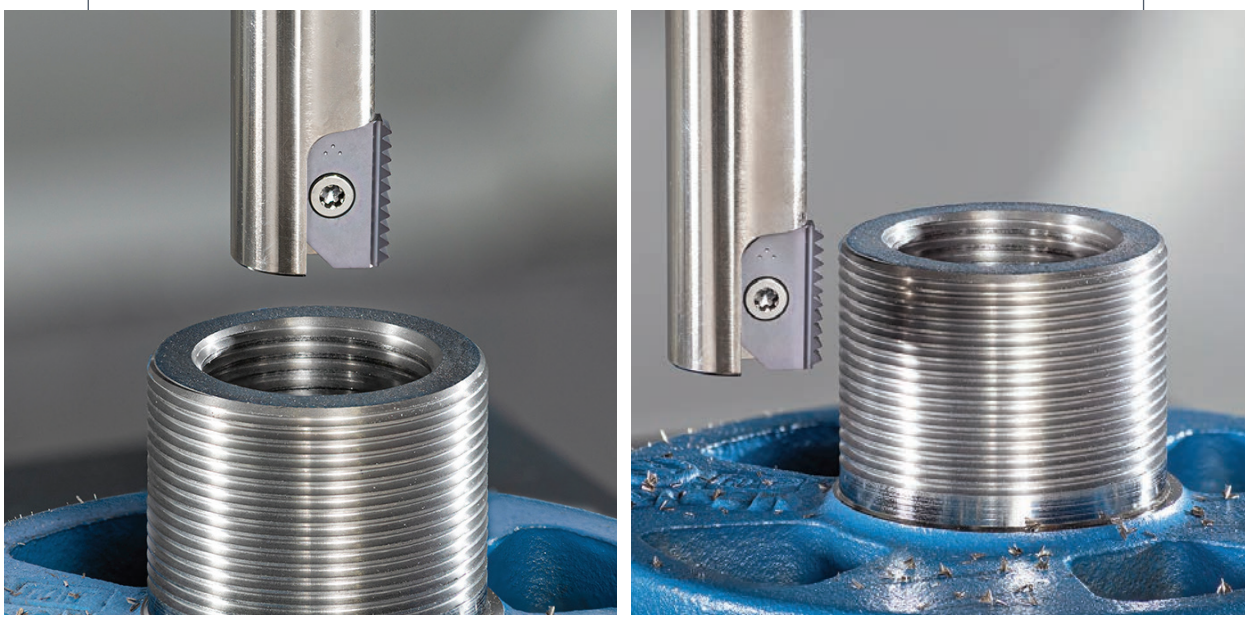
Based on the analysis performed of selecting initial outer diameter of the endmill, the following conclusions can be assumed:

- For internal thread milling, in most cases the initial endmill diameter is recommended to be up to 70% of the thread major diameter.
- For external thread milling, in most cases the initial endmill diameter can be over 70% of the thread major diameter.

Depth per Pass and Number of Radial Passes

The parameters of depth per pass and number of passes have a very important role in thread production. These parameters have a direct effect on cutting edge wear, tool life, thread surface quality, and thread production stability. The depth per pass and number of passes parameters depend on the type of equipment, tool overhang, machine stability, workpiece material, cutter geometry and the thread depth required.





Number of Radial Passes

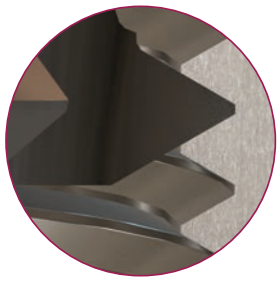
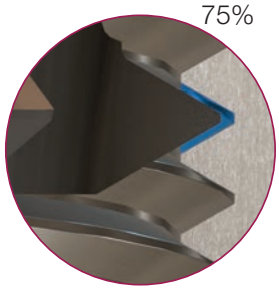
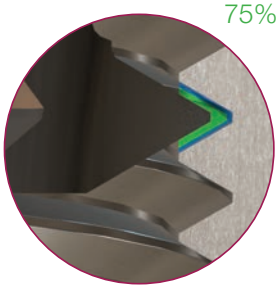
In order to produce a thread in some cases, one radial pass is sufficient, but in some cases a number of radial passes is required. The table below presents **ISCAR**'s recommendations for the number of radial passes depending on the material and lead.

ISO	Material		Condition	Tensile Strength [N/mm²]	Hardness HB	Material No.	Lead (mm) 0.25-1.00	1.25-1.50	1.75-2.00	2.50-6.00
							Number of Passes			
P	Non-alloy steel and cast steel, free cutting steel	< 0.25 %C	Annealed	420	125	1	1	1	2	3
		>= 0.25 %C	Annealed	650	190	2				
		< 0.55 %C	Quenched and tempered	850	250	3				
		>= 0.55 %C	Annealed	750	220	4				
			Quenched and tempered	1000	300	5				
	Low alloy steel and cast steel (less than 5% of alloying elements)		Annealed	600	200	6				
			Quenched and tempered	930	275	7				
				1000	300	8				
				1200	350	9				
	High alloyed steel, cast steel,and tool steel		Annealed	680	200	10				
			Quenched and tempered	1100	325	11				
	Stainless steel and cast steel		Ferritic/ martensitic	680	200	12				
			Martensitic	820	240	13				
M	Stainless steel		Austenitic, duplex	600	180	14	1	1	2	3
K	Grey cast iron (GG)		Ferritic/pearlitic		180	15	1	1	2	3
			Pearlitic		260	16				
	Nodular cast iron (GGG)		Ferritic		160	17				
			Pearlitic		250	18				
	Malleable cast iron		Ferritic		130	19				
			Pearlitic		230	20				
N	Aluminum- wrought alloy		Not hardenable		60	21	1	1	1	1
			Hardenable		100	22				
	Aluminum-cast, alloyed	<=12% Si	Not hardenable		75	23				
			Hardenable		90	24				
		>12% Si	High temperature		130	25	1	1	2	3
	Copper alloys	>1% Pb	Free cutting		110	26	1	1	1	1
			Brass		90	27				
			Electrolytic copper		100	28				
	Non metallic		Duroplastics, fiber plastics			29				
			Hard rubber			30				
S	High temperature alloys	Fe based	Annealed		200	31	2	2	2	3
			Hardened		280	32				
		Ni or Co based	Annealed		250	33				
			Hardened		350	34				
			Cast		320	35				
	Titanium alloys		Pure	Rm 400		36				
			Alpha+ beta alloys hardened	Rm 1050		37				
H	Hardened steel		Hardened		55 HRC	38				
			Hardened		60 HRC	39				
	Chilled cast iron		Cast		400	40	3	3	3	3
	Cast iron		Hardened		55 HRC	41	2	2	2	3

Rm - ultimate tensile strength, MPa

Depth Per Pass

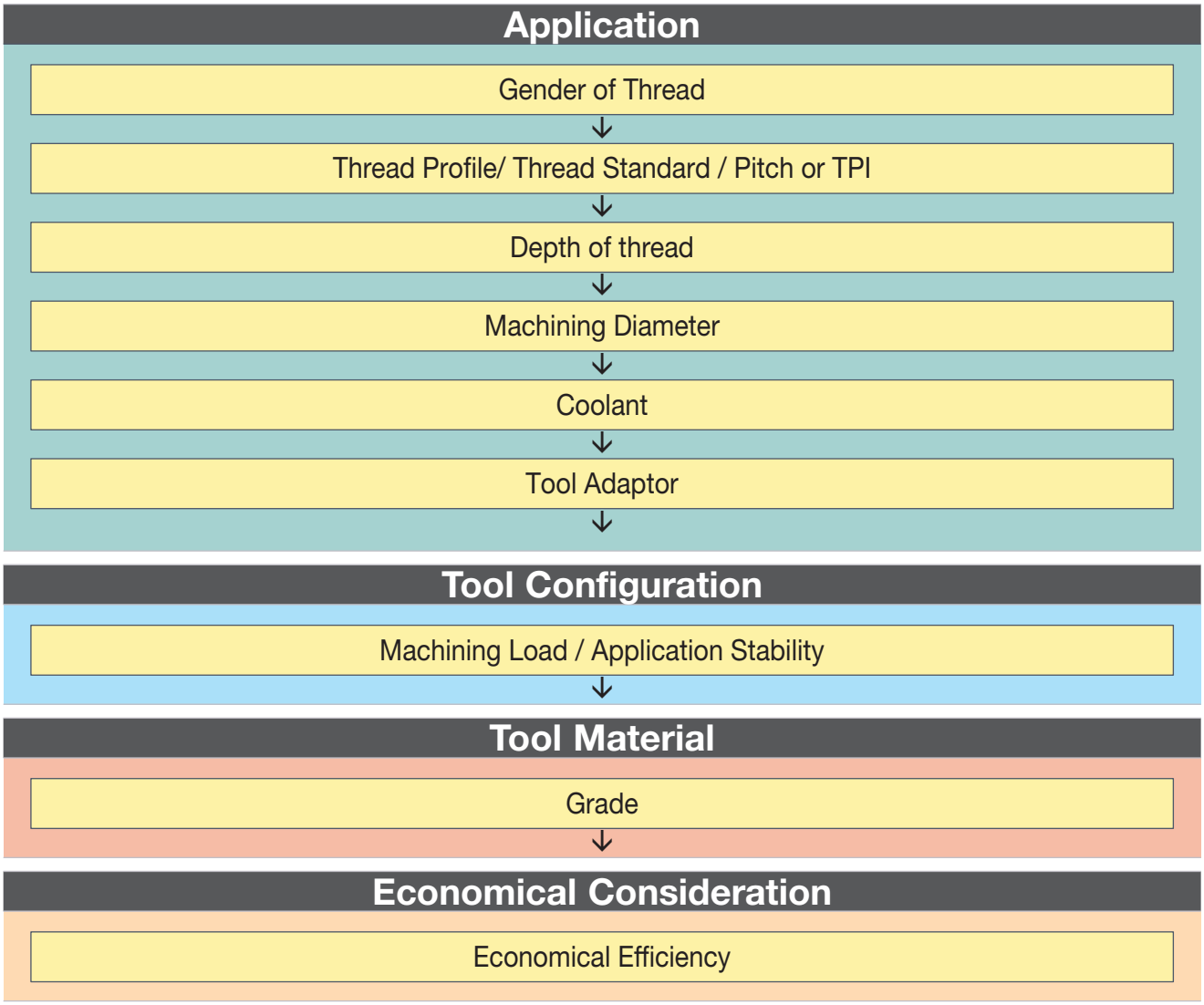
Based on the number of passes, the table below presents **ISCAR**'s recommendations for depth per pass, which is expressed as a percentage according to the total depth that is required to be removed.

	Number of Radial Passes		
	1 pass	2 passes	3 passes
Depth per pass			
	 100%	 75% 100%	 65% 75% 100%

How to Choose Correct Solution?

A major consideration in selecting the desired solution is the cost per unit for a part that is machined by the tool. In spite of the fact that the tooling cost share in cost per unit is minor, the tool's indirect influence on cost per unit reduction can be considerable. The tool, even though it is a small part of manufacturing process, can sometimes represent an obstacle to a machine tool running faster and cutting machining time. Therefore, tools with the highest efficiency should be used for better productivity and, as a result, lower cost per part.

Tool selection should be considered by applying this analysis:
Application -Tool Configuration – Tool Material – Economical Consideration.



Application	
Gender of Thread	• Is external or internal threading required?
↓	
Thread Profile/ Thread Standard / Pitch or TPI	• Is full profile or partial profile required? • What is the threading profile (square, triangular, trapezoidal or the other)? • What is the threading standard? • What is the threading pitch / TPI?
↓	
Depth of thread	• What is the depth of thread?
↓	
Machining Diameter	• What is the machining diameter?
↓	
Coolant	• What type of coolant is available (external / internal coolant)?
↓	
Tool Adaptor	• What type of tool adaptor is available?

Tool Configuration	
Machining Load / Application Stability	• Are there geometrical limitations in the part that requires small cutting forces, such as thin walls, high overhang?

Tool Material	
Grade	• Which cutting tool grade is most suitable for threading?

Economical Consideration	
Economical Efficiency	• Which tool should be used; indexable insert, indexable head or solid cutter? • What are the number of cutting edges?

Application

Gender of Thread	• Is external or internal threading required?

ISCAR product families offer solutions for both external and internal threading according to most standards. Dividing **ISCAR** families per gender of thread is shown in table below.

Thread Milling		Application		
		Internal Threading		
Family	Subfamily	Through Hole	Blind Hole	External Threading
SOLIDTHREAD	MTECS	V	•	o
	MTECSH	V	•	o
	MTEC	V	•	o
	MTECB	•	V	o
	MTECZ	V	V	V
	MTECQ	•	V	o
MULTI-MASTER	MT-…-MM	V	•	o
	MM TRD	V	•	o
T-SLOT	SD TRD	V	•	o
MILLTHREAD	MTE	V	•	o
	MTF	V	•	o
	MTFLE	---	---	V
	MTSRH endmill	V	•	o
	MTSRH shell mill	V	•	o
	MTSR M.I. S.P.(endmill)	V	V	•
	MTSR M.I. S.P.-U (endmill)	V	o	•
	MTET Single Point	V	V	o
	MTSR -U (shell mill)	V	o	•

Guide Lines	Sign
Recommended (1st choice)	V
Suitable (2nd choice)	•
Can be selected (optional)	o

Application

Thread Profile / Standard depend Pitch / TPI	• Is full profile or partial profile required? • What is the threading profile (square, triangular, trapezoidal or other)? • What is the threading standard? • What is the threading pitch / TPI?

Depending on the answers to the questions in this section, it is possible to check which of the families meet the thread profile / standard depend pitch / TPI requirements.

Available Standards - Full and Partial Profile - Solution for Internal Threading

Thread Milling		Pitch (mm)											
Family	Subfamily	0.25	0.30	0.35	0.40	0.45	0.50	0.60	0.70	0.75	0.80	1.00	1.25
SOLIDTHREAD	MTECS	ISO	ISO	ISO	ISO	ISO	ISO	ISO	ISO MJ	ISO	ISO MJ	ISO MJ	ISO MJ
	MTECSH			ISO	ISO	ISO	ISO	ISO	ISO		ISO	ISO	ISO
	MTEC						ISO		ISO	ISO	ISO	ISO	ISO
	MTECB						ISO		ISO	ISO	ISO	ISO	ISO
	MTECZ											ISO	ISO
	MTECQ											ISO	
	MTECI			Partial profile - 60°									
MULTI-MASTER	MT-…-MM						ISO			ISO		ISO	ISO
	MM TRD						Partial profile - 60°						
T-SLOT	SD TRD												
MILLTHREAD	MTE						ISO			ISO		ISO	ISO
	MTF											ISO	
	MTSRH endmill											ISO	
	MTSRH shell mill											ISO	
	MTSR M.I. S.P. (endmill)											Partial profile - 60°	
	MTET Single Point						ISO		ISO	ISO	ISO	ISO	ISO
	MTET Single Point						Partial profile - 60°						

Available Standards - Full and Partial Profile - Solution for Internal Threading

Thread Milling		Pitch (mm)										
Family	Subfamily	1.50	1.75	2.00	2.50	3.00	3.50	4.00	4.50	5.00	5.50	6.00
SOLIDTHREAD	MTECS	ISO	ISO MJ	ISO	ISO							
	MTECSH	ISO	ISO	ISO								
	MTEC	ISO	ISO	ISO	ISO	ISO						
	MTECB	ISO	ISO	ISO	ISO	ISO						
	MTECZ	ISO	ISO	ISO								
	MTECQ	ISO		ISO			ISO					
	MTECI	Partial profile - 60°		Partial profile - 60°								
MULTI-MASTER	MT-…-MM	ISO	ISO	ISO	ISO	ISO	ISO					
	MM TRD	Partial profile - 60°				Partial profile - 60°						
T-SLOT	SD TRD							Partial profile - 60°				
MILLTHREAD	MTE	ISO	ISO	ISO	ISO							
	MTF	ISO	ISO	ISO	ISO	ISO	ISO	ISO	ISO	ISO	ISO	ISO
	MTSRH endmill	ISO		ISO		ISO	ISO	ISO	ISO	ISO	ISO	ISO
	MTSRH shell mill	ISO		ISO		ISO	ISO	ISO	ISO	ISO	ISO	ISO
	MTSR M.I. S.P.(endmill)			Partial profile - 60°								
	MTSR M.I. S.P.-U(endmill)				Partial profile - 60°							
	MTET Single Point	ISO		ISO								
	MTET Single Point	Partial profile - 60°										

Available Standards - Full and Partial Profile - Solution for External Threading													
Thread Milling		Pitch (mm)											
Family	Subfamily	0.35	0.40	0.45	0.50	0.60	0.70	0.75	0.80	1.00	1.25	1.50	1.75
SOLIDTHREAD	MTEC									ISO	ISO	ISO	ISO
	MTECI	Partial profile - 60°											
MULTI-MASTER	MM TRD				Partial profile - 60°								
T-SLOT	SD TRD												
MILLTHREAD	MTE							ISO		ISO	ISO	ISO	ISO
	MTF									ISO		ISO	
	MTFLE									ISO		ISO	
	MTSRH endmill									ISO		ISO	
	MTSRH shell mill											ISO	
	MTET Single Poin	ISO	ISO	ISO	ISO	ISO	ISO	ISO	ISO	ISO	ISO	ISO	ISO
	MTET Single Poin				Partial profile - 60°								
	MTSR M.I. S.P(endmill)									Partial profile - 60°			

Available Standards - Full and Partial Profile - Solution for External Threading													
Thread Milling		Pitch (mm)											
Family	Subfamily	1.50	1.75	2.00	2.50	3.00	3.50	4.00	4.50	5.00	5.50	6.00	8.00
SOLIDTHREAD	MTEC	ISO	ISO	ISO									
	MTECI	Partial profile - 60°		Partial profile - 60°									
MULTI-MASTER	MM TRD	Partial profile - 60°				Partial profile - 60°							
T-SLOT	SD TRD							Partial profile - 60°					
MILLTHREAD	MTE	ISO	ISO	ISO	ISO	ISO	ISO	ISO		ISO			
	MTF	ISO		ISO	ISO	ISO	ISO	ISO		ISO			
	MTFLE	ISO		ISO	ISO	ISO							
	MTSRH endmill	ISO		ISO		ISO		ISO					
	MTSRH shell mill	ISO		ISO		ISO		ISO					
	MTET Single Point	ISO	ISO										
	MTET Single Point	Partial profile - 60°											
	MTSR M.I. S.P.(endmill)				ISO	ISO	ISO						
	MTSR M.I. S.P.-U (endmill)				Partial profile - 60°								
	MTSR -U (shell mill)					Partial profile - 60°							

Available Standards - Full and Partial Profile - Solution for Internal Threading											
Thread Milling		TPI									
Family	Subfamily	80	72	56	48	40	36	32	28	27	24
SOLIDTHREAD	MTECS	UN	UN	UN	UN	UN	UN	UN UNJ	UN Whitworth UNJ		UN UNJ
	MTECSH	UN		UN	UN	UN		UN	UN		UN
	MTEC							UN	UN Whitworth, BSPT	NPT NPTF	UN
	MTECB							UN	UN Whitworth	NPT	UN
	MTECZ								Whitworth	NPTF	
	MTECQ										
MULTI-MASTER	MT-…-MM							UN	UN		UN
	MM TRD										
T-SLOT	SD TRD										
MILLTHREAD	MTE							UN	UN	UN	UN Whitworth
	MTF										UN
	MTSRH endmill							UN			UN
	MTSRH shell mill							UN	UN		UN
	MTET Single Point				Partial profile - 60°						
	MTET Single Point						UN	UN	UN Whitworth NPT BSPT NPTF		UN
	MTSR M.I. S.P.(endmill)										Partial profile - 60°

Available Standards - Full and Partial Profile - Solution for Internal Threading											
Thread Milling		TPI									
Family	Subfamily	20	19	18	16	14	13	12	11.5	11	10
SOLIDTHREAD	MTECS	UN UNJ	Whitworth	UN UNJ	UN UNJ	UN Whitworth	UN UNJ			UN	
	MTECSH	UN		UN	UN	UN	UN			UN	
	MTEC	UN	Whitworth BSPT	UN NPT NPTF	UN	UN Whitworth BSPT NPT NPTF	UN	UN	NPT	UN Whitworth BSPT	UN
	MTECB	UN	Whitworth	UN NPT	UN	UN Whitworth NPT	UN			UN Whitworth	UN
	MTECZ	UN	Whitworth	UN NPTF	UN	Whitworth					UN
	MTECQ										
MULTI-MASTER	MT-...-MM	UN	Whitworth	UN	UN	UN Whitworth		UN		Whitworth	UN
	MM TRD					Partial profile - 55°					
T-SLOT	SD TRD										
MILLTHREAD	MTE	UN Whitworth	Whitworth BSPT	UN NPT NPTF NPS NPSF PG	UN Whitworth ABUT PG	UN Whitworth NPT NPTF BSPT NPS NPSF		UN ABUT ACME	NPT NPTF NPS NPSF	UN Whitworth BSPT	UN ABUT ACME
	MTF	UN Whitworth	Whitworth	UN PG	UN Whitworth ABUT PG	UN Whitworth NPT NPTF BSPT NPS NPSF		UN ABUT ACME	NPT NPTF NPS NPSF	Whitworth BSPT	UN ABUT ACME
	MTSRH endmill	UN		UN	UN	UN Whitworth		UN	NPT NPTF	Whitworth BSPT	UN
	MTSRH shell mill	UN		UN	UN	Whitworth		UN	NPT NPTF	Whitworth BSPT	
	MTSR M.I.S.P.-U (endmill)	Partial profile - 55°/Partial profile - 60°									
	MTSR M.I.S.P. (endmill)	Partial profile - 55°/Partial profile - 60°									
	MTET Single Point	UN	Whitworth BSPT	UN NPT NPTF	UN	UN Whitworth NPT BSPT NPTF	UN	UN		UN	
	MTET Single Point	Partial profile - 55°/Partial profile - 60°									

Available Standards - Full and Profile - Solution for External Threading										
Thread Milling		TPI								
Family	Subfamily	14	12	11.5	11	10	8	7	6	4
SOLIDTHREAD	MTECS	Whitworth								
	MTECSH									
	MTEC	Whitworth BSPT NPT NPTF		NPT	Whitworth BSPT		NPT			
	MTECB	Whitworth NPT			Whitworth					
	MTECZ	Whitworth								
	MTECQ									
MULTI-MASTER	MT-...-MM	Whitworth			Whitworth					
	MM TRD	Partial profile - 55°								
T-SLOT	SD TRD								Partial profile - 55°	
MILLTHREAD	MTE	UN Whitworth NPT NPTF BSPT NPS NPSF	UN ABUT	NPT NPTF NPS NPSF	Whitworth BSPT	UN ABUT	UN Whitworth NPT NPTF NPS NPSF ABUT		UN ABUT	ABUT
	MTF	UN Whitworth NPT NPTF BSPT NPS NPSF	UN ABUT	NPT NPTF NPS NPSF	Whitworth BSPT	UN ABUT	UN Whitworth NPT NPTF NPS NPSF ABUT		UN ABUT	ABUT
	MTFL	UN Whitworth NPT NPTF BSPT NPS NPSF	UN ABUT	NPT NPTF NPS NPSF	Whitworth BSPT	UN ABUT	ABUT			
	MTSRH endmill	UN Whitworth	UN	NPT NPTF	Whitworth BSPT	UN	UN NPT	UN		
	MTSRH shell mill	Whitworth	UN	NPT NPTF	Whitworth BSPT		UN NPT		UN	
	MTET Single Point	Whitworth								
	MTSR M.I. S.P.(endmill)	Partial profile - 60°/Partial profile - 55°						Partial 60		
	MTSR M.I. S.P.-U (endmill)				Partial profile - 55°	Partial profile - 60°/Partial profile - 55°				
	MTSR -U (shell mill)						Partial profile - 60°			
	MTSR -U (shell mill)								Partial profile - 55°	

Available Standards - Full and Partial Profile - Solution for External Threading									
Thread Milling		TPI							
Family	Subfamily	32	28	27	24	20	19	18	16
SOLIDTHREAD	MTECS		Whitworth				Whitworth		
	MTECSH								
	MTEC		Whitworth BSPT	NPT NPTF			Whitworth BSPT	NPT NPTF	
	MTECB		Whitworth	NPT			Whitworth	NPT	
	MTECZ		Whitworth	NPTF			Whitworth	NPTF	
	MTECQ								
MULTI-MASTER	MT-…-MM						Whitworth		
	MM TRD								
T-SLOT	SD TRD								
MILLTHREAD	MTE	UN	UN		UN Whitworth	UN Whitworth	Whitworth BSPT	UN NPT NPTF NPS NPSF PG	UN Whitworth ABUT PG
	MTF				UN	UN Whitworth	Whitworth	UN PG	UN Whitworth ABUT PG
	MTFL				UN	UN Whitworth	Whitworth	UN PG	UN Whitworth ABUT PG
	MTSRH endmill				UN	UN		UN	UN
	MTSRH shell mill				UN	UN		UN	UN
	MTSR M.I. S.P.				UN	UN	UN	UN	UN
	MTET Single Point	UN	UN	UN	UN	UN	UN	UN	UN

Available Standards - Full and Partial Profile - Solution for External Threading										
Thread Milling		TPI								
Family	Subfamily	14	12	11.5	11	10	8	7	6	4
SOLIDTHREAD	MTECS	Whitworth								
	MTECSH									
	MTEC	Whitworth BSPT NPT NPTF		NPT	Whitworth BSPT		NPT			
	MTECB	Whitworth NPT			Whitworth					
	MTECZ	Whitworth								
	MTECQ									
MULTI-MASTER	MT-…-MM	Whitworth			Whitworth					
	MM TRD	Partial profile - 55°								
T-SLOT	SD TRD						Partial profile - 60°/ Partial profile - 55°			
MILLTHREAD	MTE	UN Whitworth NPT NPTF BSPT NPS NPSF	UN ABUT	NPT NPTF NPS NPSF	Whitworth BSPT	UN ABUT	UN Whitworth NPT NPTF NPS NPSF ABUT		UN ABUT	ABUT
	MTF	UN Whitworth NPT NPTF BSPT NPS NPSF	UN ABUT	NPT NPTF NPS NPSF	Whitworth BSPT	UN ABUT	UN Whitworth NPT NPTF NPS NPSF ABUT		UN ABUT	ABUT
	MTFL	UN Whitworth NPT NPTF BSPT NPS NPSF	UN ABUT	NPT NPTF NPS NPSF	Whitworth BSPT	UN ABUT	ABUT			
	MTSRH endmill	UN Whitworth	UN	NPT NPTF	Whitworth BSPT	UN	UN NPT	UN		
	MTSRH shell mill	Whitworth	UN	NPT NPTF	Whitworth BSPT		UN NPT		UN	
	MTET Single Point	Whitworth								
	M.I. S.P. (endmill)	Partial profile - 55°/Partial profile - 60°						Partial profile - 60°		
	M.I. S.P.-U (endmill)	Partial profile - 55°				Partial profile - 60°/ Partial profile - 55°				
	MTSR -U (shell Mill)						Partial profile - 60°/ Partial profile - 55°			

Application

Depth of Thread	• What is the depth of thread?

The tables below define the possible maximum thread depth that can be produced with each thread milling family / line, according to thread standard.

Maximum Thread Depth - Full and Partial Profile - ISO Standard - Solution for Internal Threading

Thread Milling Family	Subfamily	Pitch (mm) 0.25	0.3	0.35	0.4	0.45	0.5	0.6	0.7	0.75	0.8	1	1.25
SOLIDTHREAD	MTECS	3	4	4.8	6	7.5	20	10.5	16.7	25	16	20	24
	MTECSH			4.8	6	7.5	9.5	7.5	12.5		16	20	24
	MTEC						10.3		7.4	10	9.2	16.5	19.4
	MTECB						10.3		7.4	24.4	9.2	24.5	19.4
	MTECZ											16.5	19.4
	MTECQ											21	
	MTECI			5.2	28	12.5	39						
MULTI-MASTER	MT-…-MM						200			200		250	
	MM TRD						200						
T-SLOT	SD TRD												
MILLTHREAD	MTE						182			182		206	182
	MTF											50	
	MTSRH endmill											130	
	MTSRH shell mill											52	
	MTET Single Point						63/100						

Maximum Thread Depth - Full and Partial Profile - ISO Standard - Solution for Internal Threading

Thread Milling Family	Subfamily	Pitch (mm) 1.5	1.75	2	2.5	3	3.5	4	4.5	5	5.5	6	8
SOLIDTHREAD	MTECS	31.5	26	50	43								
	MTECSH	23	26	35									
	MTEC	33.8	28.9	41	48.8	58.5							
	MTECB	33.8	28.9	39	48.8	58.5							
	MTECZ	33.8	28.9	27									
	MTECQ	18		34			28						
	MTECI	39	50										
MULTI-MASTER	MT-…-MM	250		250	250	250	250						
	MM TRD	200		250									
T-SLOT	SD TRD							150					
MILLTHREAD	MTE	263	206	263	206	263	263	263	263	263	210	210	
	MTF	65	50	65	50	65	65	65	65	65	65	65	
	MTSRH endmill	130		130		130	130	130	130	130	130	130	
	MTSRH shell mill	60		60		60	60	60	60	60	60	60	
	MTSR M.I. S.P.	190			225								
	MTET Single Point	100/150		150									
	MTSR M.I. S.P.-U				150			150/220	220				

Maximum Thread Depth - Full and Partial Profile - MJ Standard - Solution for Internal Threading

Thread Milling Family	Subfamily	Pitch (mm) 0.25	0.30	0.35	0.40	0.45	0.50	0.60	0.70	0.75	0.80	1.00	1.25
SOLIDTHREAD	MTECS								10		12.5	15	20
	MTECI			5.2			28				12.5	39	
MULTI-MASTER	MM TRD						200						
T-SLOT	SD TRD												

Maximum Thread Depth - Full and Partial Profile - MJ Standard - Solution for Internal Threading

Thread Milling		Pitch (mm)											
Family	Subfamily	1.50	1.75	2.00	2.50	3.00	3.50	4.00	4.50	5.00	5.50	6.00	8.00
SOLIDTHREAD	MTECS		30										
	MTECI	39			50								
MULTI-MASTER	MM TRD					250							
T-SLOT	SD TRD							150					

Maximum Thread Depth - Full and Partial Profile - ISO Standard - Solution for External Threading

Thread Milling		Pitch (mm)											
Family	Subfamily	0.25	0.30	0.35	0.40	0.45	0.50	0.60	0.70	0.75	0.80	1.00	1.25
SOLIDTHREAD	MTEC											16.5	16.9
	MTECI			5.2			28				12.5	39	
MULTI-MASTER	MT-…-MM						200			200		250	
	MM TRD						200						
T-SLOT	SD TRD												
MILLTHREAD	MTE									182		206	182
	MTF											50	
	MTFL											21	
	MTSRH endmill											110	
	MTSRH shell mill												
	MTET Single Point						63/100						

Maximum Thread Depth - Full and Partial Profile - ISO Standard - Solution for External Threading

Thread Milling		Pitch (mm)											
Family	Subfamily	1.50	1.75	2.00	2.50	3.00	3.50	4.00	4.50	5.00	5.50	6.00	8.00
SOLIDTHREAD	MTEC	20.3	20.1	21									
	MTECI	39		50									
MULTI-MASTER	MT-…-MM	250		250	250	250	250						
	MM TRD	200				250							
T-SLOT	SD TRD							150					
MILLTHREAD	MTE	263	182	263	206	263	263	263		210			
	MTF	65		65	50	65	50	65		65			
	MTFL	21		21	21	21							
	MTSRH endmill	130		130		130		130					
	MTSRH shell mill	60		60		52		52					
	MTET Single Point	100/190		190									
	MTSR M.I. S.P.(endmill)	190			225								
	MTSR M.I. S.P.-U (endmill)	150						150/220		220			

Maximum Thread Depth - Full and Partial Profile - UN Standard - Solution for Internal Threading

Thread Milling		TPI														
Family	Subfamily	80	72	56	48	40	36	32	28	27	24	20	19	18	16	14
SOLIDTHREAD	MTECS	8	6	6.6	5.2	12	9	15	19		24	25		35	30.2	25
	MTECSH	4		6.6	5.2	9.6		15	14.5		24	25		23	22	25
	MTEC							6.8	14.5		20	27.3		26.1	30	37.2
	MTECB							16	11.3		20.6	22.3		26.1	31	37.2
	MTECZ											22.3		26.1	16.7	
	MTECQ															
MULTI-MASTER	MT-…-MM							150	150		200	200		250	200	250
	MM TRD				200											
T-SLOT	SD TRD															
MILLTHREAD	MTE							182.3	182.3	182.3	206.3	263		263	263	263
	MTF										50	50		50	50	65
	MTFL															
	MTSRH endmill							110			110	130		130	130	110
	MTSRH shell mill											52		52	60	
	MTET Single Point				63/100/150								100/150			
	MTSR M.I. S.P.(endmill)										190					

Maximum Thread Depth - Full and Partial Profile - UN Standard - Solution for Internal Threading

Thread Milling		TPI													
Family	Subfamily	13	12	11.5	11	10	9	8	7	6	5	4.5	4	3.5	3
SOLIDTHREAD	MTECS	27.5			50										
	MTECSH	27.5			34.5										
	MTEC	22.5	41.3		28.9	34.3	38.1	42.9							
	MTECB	22.5			28.9	34.3		42.9							
	MTECZ					34.3									
	MTECQ														
MULTI-MASTER	MT-…-MM		250			250	250	250	250						
	MM TRD	200						250							
T-SLOT	SD TRD									150					
MILLTHREAD	MTE		263		182.3	263		263	206.3	263	263	210	210		
	MTF		65			65		50	50	65	50	65	65		
	MTFL														
	MTSRH endmill		130			110		130	110	130	130	130	130		
	MTSRH shell mill		60					60		60	52	60	60		
	MTSR M.I. S.P.(endmill)	190				225									
	MTSR M.I. S.P.-U (endmill)					150				150/220	220				

Maximum Thread Depth - Full and Partial Profile - UN Standard - Solution for External Threading

Thread Milling		TPI														
Family	Subfamily	80	72	56	48	40	36	32	28	27	24	20	19	18	16	14
SOLIDTHREAD	MTEC										16.4	21				
MULTI-MASTER	MM TRD				200											
T-SLOT	SD TRD															
MILLTHREAD	MTE							182.3	182.3		206.3	263		263	163	263
	MTF										50	50		50	65	65
	MTFLE										21	21		21	21	21
	MTSRH endmill										130	130		130	130	110
	MTSRH shell mill										50	50		50	50	
	MTET Single Point				63/100/150								100/150			
	MTSR M.I. S.P.(endmill)										190					

Maximum Thread Depth - Full and Partial Profile - UN Standard - Solution for External Threading

Thread Milling		TPI													
Family	Subfamily	13	12	11.5	11	10	9	8	7	6	5	4.5	4	3.5	3
MULTI-MASTER	MM TRD	200						250							
T-SLOT	SD TRD									150					
MILLTHREAD	MTE		263			263		263		263					
	MTF		65			65		65		65					
	MTFLE		21			21									
	MTSRH endmill		130			110		130	110	130					
	MTSRH shell mill		50					50		52					
	MTSR M.I. S.P.(endmill)	190				220									
	MTSR M.I. S.P.-U (endmill)					150				150/220	220				

Maximum Thread Depth - Full and Partial Profile - Whitworth Standard - Solution for Internal and External Threading

Thread Milling		TPI										
Family	Subfamily	28	24	20	19	16	14	...	11	8	6	...	3
SOLIDTHREAD	MTECS	19.5			30		37						
	MTEC	9.5			14		26.3		38.1				
	MTECB	14.1			16.7		26.3		47.3				
	MTECZ	14.1			16.7		26.3						
MULTI-MASTER	MT-...-MM				150		250		250				
	MM TRD						250						
T-SLOT	SD TRD										150		
MILLTHREAD	MTE		182.3	206.3	206.3	263	263		263	210			
	MTF			50	50	50	50		65	65			
	MTFLE			21	21	21	21		21				
	MTSRH endmill						130		130				
	MTSRH shell mill						52		60				
	MTET Single Point	150											
	MTSR M.I. S.P.(endmill)	140								169			
	MTSR M.I. S.P.-U (endmill)							155			88		

Maximum Thread Depth - Full and Partial Profile - UNJ Standard - Solution for Internal and External Threading

Thread Milling		TPI										
Family	Subfamily	48	...	32	28	27	24	20	19	18	16	14
SOLIDTHREAD	MTECS			10.5	16		20	28		20	24	
MULTI-MASTER	MM TRD	200										

Maximum Thread Depth - Full and Partial Profile - UNJ Standard - Solution for Internal and External Threading

Thread Milling		TPI									
Family	Subfamily	13	12	11	8	...	6	5	4	...	3
SOLIDTHREAD	MTECS	27.5									
MULTI-MASTER	MM TRD	200			250						
T-SLOT	SD TRD						150				

Maximum Thread Depth - Full and Partial Profile - BSPT Standard - Solution for Internal and External Threading

Thread Milling		TPI								
Family	Subfamily	28	19	14	...	11	10	6	...	3
SOLIDTHREAD	MTEC	9.5	14	19.1		28.9				
MULTI-MASTER	MM TRD			250						
T-SLOT	SD TRD							150		
MILLTHREAD	MTE		182.3	206.3		263				
	MTF			50		65				
	MTFLE			21		21				
	MTSRH endmill					130				
	MTSRH shell mill					60				

Maximum Thread Depth - Full and Partial Profile - NPT Standard - Solution for Internal and External Threading

Thread Milling		TPI																
Family	Subfamily	48	...	27	...	18	14	...	12	11.5	8	...	6	5	4	...	3
SOLIDTHREAD	MTEC			9.9		14.8	20.9			27.6	39.7						
	MTECB			10.8		16.2	22.7										
MULTI-MASTER	MM TRD	200									250						
T-SLOT	SD TRD												150				
MILLTHREAD	MTE					182.3	206.3			263	263						
	MTF						50			65	65						
	MTFLE						21			21							
	MTSRH endmill									130	130						
	MTSRH shell mill									60	60						

Maximum Thread Depth - Full and Partial Profile - NPTF Standard - Solution for Internal and External Threading

Thread Milling		TPI															
Family	Subfamily	48	...	27	...	18	14	...	12	11.5	8	...	6	5	4	...	3
SOLIDTHREAD	MTEC			9.9		14.8	20.9										
	MTECZ			10.8		16.2											
MULTI-MASTER	MM TRD	200									250						
T-SLOT	SD TRD												150				
MILLTHREAD	MTE					182.3	206.3			263	263						
	MTF						50			65	65						
	MTFLE						21			21							
	MTSRH endmill									130							
	MTSRH shell mill									52							

Maximum Thread Depth - Full and Partial Profile - NPS / NPSF Standard - Solution for Internal and External Threading

Thread Milling		TPI																
Family	Subfamily	48	...	18	...	14	...	12	11.5	11	8	...	6	5	4	...	3
MULTI-MASTER	MM TRD	200									250						
T-SLOT	SD TRD												150				
MILLTHREAD	MTE			182.3		206.3			263		263						
	MTF					50			65		65						
	MTFLE					21			21								

Maximum Thread Depth - Full and Partial Profile - ABUT Standard - Solution for Internal and External Threading

Thread Milling		TPI					
Family	Subfamily	16	12	10	8	6	4
MILLTHREAD	MTE	263	263	263	263	263	263
	MTF	50	50	50	50	50	65
	MTFLE	21	21	21	21		

Maximum Thread Depth - Full and Partial Profile - PG Standard - Solution for Internal and External Threading

Thread Milling		TPI	
Family	Subfamily	18	16
MILLTHREAD	MTE	206.3	263
	MTF	50	50
	MTFLE	21	21

Maximum Thread Depth - Full and Partial Profile - ACME Standard - Solution for Internal Threading

Thread Milling		TPI							
Family	Subfamily	12	10	8	6	5	4	3.5	3
MILLTHREAD	MTE	263	263	263	263	263	263	210	210
	MTF	50	50	50	50	50	65	65	65

Application

Machining Diameter	• What is the machining diameter?

The tables below define the range of cutter diameters available, according to the requested thread profile / standard and pitch / TPI.

Based on Chapter 3.11, **ISCAR**'s recommendations for cutter diameter selection are as follows:

- For internal thread milling, in most cases the initial tool diameter is recommended to be up to 70% of the thread major diameter.
- For external thread milling, in most cases the initial tool diameter can be over 70% of the thread major diameter.

Cutter Diameters - Partial Profile - 60° - Solution for Internal and External Threading

Thread Milling		Pitch (mm)											
Family	Subfamily	0.25	0.30	0.35	0.40	0.45	0.50	0.60	0.70	0.75	0.80	1.00	1.25
SOLIDTHREAD	MTECI			Ø1.9			Ø1.9 - Ø4.0	Ø3.2 - Ø8.0			Ø3.2 - Ø4.0	Ø8.0 - Ø12.0	
MULTI-MASTER	MM TRD						Ø15.7						
T-SLOT	SD TRD												
MILLTHREAD	MTET Single Point						Ø7 -Ø 13.2						
	MTSR M.I. S.P. (emdmill)											Ø23.5	

Cutter Diameters - Partial Profile - 60° - Solution for Internal and External Threading

Thread Milling		Pitch (mm)										
Family	Subfamily	1.50	1.75	2.00	2.50	3.00	3.50	4.00	4.50	5.00	5.50	6.00	8.00
SOLIDTHREAD	MTECI	Ø8.0 - Ø12.0		Ø12.0 - Ø16.0									
MULTI-MASTER	MM TRD	Ø15.7				Ø21.7							
T-SLOT	SD TRD												
MILLTHREAD	MTET Single Point	Ø8.8-Ø13.2	Ø8.8-Ø13.2	Ø13.2									
	MTSR M.I. S.P. (emdmill)	Ø23.5			Ø31.0								
	MTSR M.I. S.P.-U (endmill)				Ø35.5								

Cutter Diameters - Partial Profile - 55° - Solution for Internal and External Threading

Thread Milling		TPI						
Family	Subfamily	14	12	11	8	6	4	3
MULTI-MASTER	MM TRD	Ø21.7						
T-SLOT	SD TRD					Ø32		Ø40
MILLTHREAD	MTET Single Point	Ø8.8 -Ø13.2		Ø13.2				
	MTSR M.I. S.P. (emdmill)	Ø23.5	Ø31					
	MTSR M.I. S.P.-U (endmill)			Ø23		Ø35.5		

Cutter Diameters - Full Profile - Solution With Indexable Inserts

Thread Milling		Cutter Diameter (mm)	
Family	Subfamily	min.	max.
MILLTHREAD	MTE	Ø9.5	Ø48
	MTF	Ø63	Ø100
	MTFL	Ø20	Ø45
	MTSRH endmill	Ø23	Ø45
	MTSRH shell mill	Ø32	Ø63
	MTET Single Point	Ø7	Ø13.2

Cutter Diameters - Full Profile - ISO Standard - Solution for Internal Threading										
Thread Milling		Pitch (mm)								
Family	Subfamily	0.25	0.30	0.35	0.40	0.45	0.50	0.60	0.70	0.75
SOLIDTHREAD	MTECS	Ø0.72 - Ø0.90	Ø1.05	Ø1.2	Ø1.53	Ø1.65 - Ø1.95	Ø2.37 - Ø5.35	Ø2.75	Ø3.1	Ø8
	MTECSH			Ø1.2	Ø1.55	Ø1.65 - Ø1.95	Ø2.35	Ø2.75	Ø3.1	
	MTEC						Ø2.2 - Ø3.8		Ø3.1	Ø4.5
	MTECB						Ø3.8		Ø3.1	Ø4.5 - Ø10.0
	MTECZ									
	MTECQ									
MULTI-MASTER	MT-…-MM						Ø10.0 - Ø12.0			Ø10.0 - Ø12.0

Cutter Diameters - Full Profile - ISO Standard - Solution for Internal Threading									
Thread Milling		Pitch (mm)							
Family	Subfamily	0.80	1.00	1.25	1.50	1.75	2.00	2.50	3.00	3.50
SOLIDTHREAD	MTECS	Ø3.8	Ø4.65	Ø6	Ø7.8	Ø9	Ø11.8	Ø15		
	MTECSH	Ø3.8	Ø4.65	Ø5.95	Ø7.8	Ø9	Ø11.8			
	MTEC	Ø3.6	Ø4.0 - Ø8.0	Ø5	Ø7.0 - Ø16.0	Ø8	Ø10.0 - Ø20.0	Ø14	Ø16	
	MTECB	Ø3.8	Ø4.6 - Ø10.0	Ø6	Ø7.8 - Ø16.0	Ø9	Ø10.0 - Ø11.8	Ø15	Ø18	
	MTECZ		Ø4.8 - Ø8.0	Ø6	Ø7.8 - Ø16.0	Ø9	Ø10.0 - Ø11.8			
	MTECQ		Ø12		Ø10		Ø20			Ø20
MULTI-MASTER	MT-…-MM		Ø10.0 - Ø16.0	Ø10.0 - Ø12.0	Ø10.0 - Ø16.0	Ø12	Ø12.0 - Ø20.0	Ø15.4	Ø16.0 - Ø20.0	Ø20

Cutter Diameters - Full Profile - ISO Standard - Solution for External Threading						
Thread Milling		Pitch (mm)				
Family	Subfamily	1.00	1.25	1.50	1.75	2.00
SOLIDTHREAD	MTEC	Ø10	Ø10	Ø10.0 - Ø12.0	Ø12	Ø12

Cutter Diameter - Full Profile - UN Standard - Solution for Internal Threading											
Thread Milling		TPI									
Family	Subfamily	80	72	56	48	40	36	32	28	24	20
SOLIDTHREAD	MTECS	Ø1.15	Ø1.45	Ø1.65	Ø1.9	Ø2.1 - Ø2.45	Ø3.3	Ø2.55 - Ø3.7	Ø5	Ø6.6	Ø4.75 - Ø8.0
	MTECSH	Ø1.15		Ø1.65	Ø1.9	Ø2.1 - Ø2.45		Ø2.55 - Ø3.7	Ø4.2 - Ø5.0	Ø3.5 - Ø6.6	Ø4.75 - Ø8.0
	MTEC							Ø3.2	Ø4.0 - Ø6.0	Ø5.0 - Ø7.0	Ø4.5 - Ø12.0
	MTECB							Ø3.2 - Ø6.0	Ø5	Ø6.6 - Ø8.0	Ø8.0 - Ø10.0
	MTECZ										Ø10
MULTI-MASTER	MT-…-MM							10	10	10.0-12.0	10.0-12.0

Cutter Diameter - Full Profile - UN Standard - Solution for Internal Threading											
Thread Milling		TPI									
Family	Subfamily	18	16	14	13	12	11	10	9	8	7
SOLIDTHREAD	MTECS	Ø6.0 - Ø12.0	Ø6.7	Ø7.7	Ø9.2		Ø11.4				
	MTECSH	Ø6.0	Ø6.7	Ø7.7	Ø9.2		Ø11.4				
	MTEC	Ø5.0 - Ø10.0	Ø6.0 - Ø12.0	Ø15.0	Ø8.0	Ø10.0 - Ø16.0	Ø10.0	Ø12.0	Ø15.0	Ø16	
	MTECB	Ø5.6 - Ø11.3	Ø6.7 - Ø12.0	Ø16.0	Ø9.2		Ø11.4	Ø14.4		Ø19.5	
	MTECZ	Ø11.3	Ø6.7	Ø14.4							
MULTI-MASTER	MT-…-MM	Ø10.0-Ø16.0	Ø10.0-Ø12.0	Ø12.0-Ø16.0		Ø16.0-Ø20.0		Ø15.3	Ø16.0	Ø16.0-Ø20.0	Ø20.0

Cutter Diameter - Full Profile - UN Standard - Solution for External Threading			
Thread Milling		TPI	
Family	Subfamily	24	20
SOLIDTHREAD	MTEC	Ø10.0	Ø12.0

Cutter Diameter - Full Profile - Whitworth Standard - Solution for Internal and External Threading					
Thread Milling		TPI			
Family	Subfamily	28	19	14	11
SOLIDTHREAD	MTECS	Ø7.8	Ø10	Ø12	
	MTEC	Ø6	Ø8	Ø12	Ø12.0 - Ø16.0
	MTECB	Ø7.8	Ø10	Ø16	Ø16.0 - Ø20.0
	MTECZ	Ø7.8	Ø10	Ø16	
MULTI-MASTER	MT-…-MM		Ø10	Ø16.0 - Ø20.0	Ø16.0 - Ø20.0

Cutter Diameter - Full Profile - BSPT Standard - Solution for Internal and External Threading					
Thread Milling		TPI			
Family	Subfamily	28	19	14	11
SOLIDTHREAD	MTEC	Ø6	Ø8	Ø12	Ø16

Cutter Diameter - Full Profile - UNJ Standard - Solution for Internal Threading								
Thread Milling		TPI						
Family	Subfamily	32	28	24	20	18	16	13
SOLIDTHREAD	MTECS	Ø3.3	Ø5.1	Ø6.7	Ø4.9 - Ø8.0	Ø6.15	Ø6.9	Ø9.4

Cutter Diameters - Full Profile - MJ Standard - Solution for Internal Threading						
Thread Milling		Pitch (mm)				
Family	Subfamily	0.70	0.80	1.00	1.25	1.75
SOLIDTHREAD	MTECS	Ø3.2	Ø3.9	Ø4.8	Ø6.1	Ø9.2

Cutter Diameter - Full Profile - NPT Standard - Solution for Internal and External Threading						
Thread Milling		TPI				
Family	Subfamily	27	18	14	11.5	8
SOLIDTHREAD	MTEC	Ø6.0	Ø8.0	Ø12	Ø16	Ø20
	MTECB	Ø7.6	Ø10	Ø15.5		

Cutter Diameter - Full Profile - NPTF Standard - Solution for Internal and External Threading				
Thread Milling		TPI		
Family	Subfamily	27	18	14
SOLIDTHREAD	MTEC	Ø6.0	Ø8.0	Ø12.0
	MTECZ	Ø7.6	Ø10.0	

Application	
Coolant	• What type of coolant is available (external / internal coolant)?
↓	
Tool Adaptor	• What tool adaptor is available?

ISCAR recommends always using coolant when threading, but this also depends on the type of machine that's available.

Tool adaptation selection, like coolant selection, depends on the type of machine that's available.

The table below defines the thread milling family / line adaptation and coolant possibility.

Family	Subfamily	Adaptation	Coolant
SOLIDTHREAD	MTECS	Cylindrical	Internal coolant holes directed to the cutting edges along the flutes for MJ and UNJ standards only. For other standards no coolant channels
	MTECSH		
	MTEC		No coolant channels
	MTECB		Central coolant hole
	MTECZ		Internal coolant holes directed to the cutting edges along the flutes
	MTECQ		Central coolant hole
MULTI-MASTER	MT-…-MM	Cylindrical	No coolant channels
	MM TRD		
T-SLOT	SD TRD	Cylindrical	No coolant channels
MILLTHREAD	MTE	Weldon	Internal coolant channels detected to cutting area
	MTF	Shell Mill	
	MTFLE	Shell Mill	
	MTSRH endmill	Weldon	
	MTSRH shell mill	Shell Mill	
	MTSR -U (shell mill)	Shell Mill	
	MTET Single Point	Cylindrical	Internal coolant channels detected to cutting area
	MTSR M.I. S.P. (emdmill)	Weldon	
	MTSR M.I. S.P.-U (endmill)	Weldon	

Tool Configuration

Machining Load / Application Stability	• Are there geometrical limitations in the part that requires small cutting forces, such as thin walls, high overhang?

If small cutting edges are required due to geometrical limitations in the part, such as thin walls, high overhang, etc., **ISCAR** recommends using either a single-point cutter or a cutter with helix cutting edges, or to increase radial passes.

The table below defines the thread milling family / line according to the cutter's cutting geometry.

Family	Subfamily	Single-Point Cutter	Multi-Tooth	Helical Cutting Edges
SOLIDTHREAD	MTECS	V		
	MTECSH	V		
	MTEC			V
	MTECB			V
	MTECZ			V
	MTECQ			V
MULTI-MASTER	MT-…-MM			V
	MM TRD	V		
T-SLOT	SD TRD	V		
MILLTHREAD	MTE		V	
	MTF		V	
	MTFLE		V	
	MTSR -U (shell mill)		V	
	MTSRH endmill		V	V
	MTSRH shell mill		V	V
	MTET Single Point	V		
	MTSR M.I. S.P. (emdmill)		V	
	MTSR M.I. S.P.-U (endmill)		V	

Tool Material

Grade	• Which cutting tool grade is most suitable for threading?

Selecting a grade is strongly connected with the cutting geometry of a tool and other factors. The following table can assist in making the right choice: they visualize a grade position in the field of application in accordance with standard ISO 513 and characterize the grade properties compared with other grades.

The tables provide a summary of data about grade application in coordinates of classification numbers from standard ISO 513 and availability of each grade per thread family.

There are main and complementary grades. The main grades are more popular in machining a considered class of engineering materials but in specific cases the complementary grades can be effective as well. In a situation where a product produced from a main grade is not available, a complementary grade provides an acceptable alternative.

The figures prioritize the main grades by numbers in brackets below the designation of a grade. Prioritizing has general character and is intended for help in selecting the grade when the information about application is not enough. A basic principle for selecting a grade is that if abrasive wear is dominant, a hard grade should be used, while a tough grade is needed for substantial mechanical loading during cutting.

			Material					
			Steel	Stainless Steel	Cast Iron	Non ferrous	High Temp. Allows	Hardened Steel
			Material Field					
Grade	Tough	IC528	P25 - P45(2)	M30 - M40(2)			S15 - S30	
		IC908	P15 - P30(1)	M20 - M30(1)	K20 - K30(1)	N10 - N25(1)	S10 - S25(1)	H20 - H30(2)
	Hard	IC903	P05-P15	M10-M20			S10-S20	H01-H10(1)
		IC902	P05-P15	M10-M15	K05-K15		S05-S10(2)	H05-H15

(1) Recommended; (2) Suitable

Economical Consideration

Economical Efficiency	• Which tool should be used; indexable insert, indexable head or solid cutter? • What are the number of cutting edges?

The parameter for a number of cutting edges is an economic consideration.
The more cutting edges on an insert, the lower the cost per insert cutting edge.

Example for a Quick and Easy way to Select a Correct Solution
Requirements:

- M20x1.75 according to ISO Standard
- Internal threads with depth of 27.5mm
- Full Thread profile
- Through hole
- AISI 316 stainless steel

Available: internal coolant, Weldon and cylindrical adaptations.

Application

Gender of Thread	• Is external or internal threading required?

Required internal threading in through hole, meaning that the thread families below are suitable.

Thread Milling		Internal Threading
Family	Subfamily	Through Hole
SOLIDTHREAD	MTECS	V
	MTECSH	V
	MTEC	V
	MTECB	•
	MTECZ	V
	MTECQ	•
MULTI-MASTER	MT-…-MM	V
	MM TRD	V
T-SLOT	SD TRD	V
MILLTHREAD	MTE	V
	MTF	V
	MTSRH endmill	V
	MTSRH shell mill	V
	MTSR -U (shell mill)	V
	MTET Single Point	V
	MTSR M.I. S.P. (emdmill)	V
	MTSR M.I. S.P.-U (endmill)	V

Application

Thread Profile/ Thread Standard / Pitch or TPI	• Is full profile or partial profile required? • What is the threading profile (square, triangular, trapezoidal or other)? • What is the threading standard? • What is the threading pitch / TPI?

Required full profile according to ISO standard M20x1.75, meaning a triangular thread form with an angle of 60°.

Thread Milling		Pitch (mm)										
Family	Subfamily	1.50	1.75	2.00	2.50	3.00	3.50	4.00	4.50	5.00	5.50	6.00
SOLIDTHREAD	MTECS	ISO	ISO MJ	ISO	ISO							
	MTECSH	ISO	ISO	ISO								
	MTEC	ISO	ISO	ISO	ISO	ISO						
	MTECB	ISO	ISO	ISO	ISO	ISO						
	MTECZ	ISO	ISO	ISO								
MULTI-MASTER	MT-…-MM	ISO	ISO	ISO	ISO	ISO	ISO					
MILLTHREAD	MTE	ISO	ISO	ISO	ISO							
	MTF	ISO	ISO	ISO	ISO	ISO	ISO	ISO	ISO	ISO	ISO	ISO

Application

Depth of thread	• What is the depth of thread?

The required thread depth is 27.5mm. According to the table below, the selection options are concentrated into the most specific solutions.

Maximum Thread Depth - Full and Partial Profile - ISO Standard - Solution for Internal Threading

Thread Milling		Pitch (mm)											
Family	Subfamily	1.50	1.75	2.00	2.50	3.00	3.50	4.00	4.50	5.00	5.50	6.00	8.00
SOLIDTHREAD	MTEC	33.8	28.9	41	48.8	58.5							
	MTECB	33.8	28.9	39	48.8	58.5							
	MTECZ	33.8	28.9	27									
MILLTHREAD	MTE	263	206	263	206	263	263	263	263	263	210	210	
	MTF	65	50	65	50	65	65	65	65	65	65	65	

Application

Machining Diameter	• What is the machining diameter?

For internal thread milling, in most cases the initial endmill diameter is recommended to be up to 70% of the thread's major diameter.

The requested thread with a major diameter of 20 mm, means that the maximum recommended diameter can be 14 mm (20*0.7=14).

Cutter Diameters - Full Profile - ISO Standard - Solution for Internal Threading

Thread Milling		Pitch (mm)		
Family	Subfamily	1.5	1.75	2
SOLIDTHREAD	MTEC	Ø7.0 - Ø16.0	Ø8	Ø10.0 - Ø20.0
	MTECB	Ø7.8 - Ø16.0	Ø9	Ø10.0 - Ø11.8
	MTECZ	Ø7.8 - Ø16.0	Ø9	Ø10.0 - Ø11.8

Cutter Diameters - Full Profile - Solution With Indexable Inserts

Thread Milling		Cutter Diameter (mm)	
Family	Subfamily	min.	max.
MILLTHREAD	MTE	Ø9.5	Ø48

Application

Coolant	• What type of coolant is available (external / internal coolant)?
Tool Adaptor	• What tool adaptor is available?

For an internal through hole, it is recommended to use solid cutters with internal coolant holes directed to the cutting edges along the flutes, or tools with internal coolant channels directed to the cutting area for indexable inserts.

Family	Subfamily	Adaptation	Coolant
SOLIDTHREAD	MTECZ	Cylindrical	Internal coolant holes directed to the cutting edges along the flutes
MILLTHREAD	MTE	Weldon	Internal coolant channels detected to cutting area

Tool Configuration

Machining Load / Application Stability	• Are there geometrical limitations in the part that requires small cutting forces, such as thin walls, high overhang?

There are no geometric limitations in the part.

Family	Subfamily	Multi-Tooth	Helical Cutting Edges
SOLIDTHREAD	MTECZ		V
MILLTHREAD	MTE	V	

Tool Material

Grade	• Which cutting tool grade is most suitable for threading?

Cutters with grade IC908 are suitable for thread milling in AISI 316 stainless steel.

			Material					
			Steel	**Stainless Steel**	**Cast Iron**	**Nonferrous**	**High Temp. Allows**	**Steel**
			Material Field					
Grade	Tough	IC528	P25 - P45(2)	M30 - M40(2)			S15 - S30	
		IC908	P15 - P30(1)	M20 - M30(1)	K20 - K30(1)	N10 N25(1)	S10 - S25(1)	H20 - H30(2)
	Hard	IC903	P05-P15	M10-M20			S10-S20	H01-H10(1)
		IC902	P05-P15	M10-M15	K05-K15		S05-S10(2)	H05-H15

(1) Recommended; (2) Suitable

Economical Consideration

Economical Efficiency	• Which tool should be used; indexable insert, indexable head or solid cutter? • What are the number of cutting edges?

Two cutters are suitable for mill threading;

- MTECZ – a solid carbide endmill with 3 flutes and cutting diameter of 9 mm.
- MTE - a tool carrying a single indexable insert with 2 cutting edges and a cutting diameter of 13.2 mm.

Conclusion: If MTECZ is selected, we can finish the requested thread faster than if MTE is selected, but a solution with interchangeable inserts will be cheaper in terms of longer-term instrument expenditure.

Cutting Conditions

Recommended initial cutting conditions are shown in the tables below.

In any case the better to use our program MillThread Advisor for correct process and cutting conditions reconsiderations (https://www.iscar.com/mts/)

Machining Data for Solid Carbide Threading Endmills With Small Diameter, Short Solid Carbide Thread Mills

ISO	Materials	Cutting Speed, m/min	Feed mm/Tooth for Diameter (mm)												
			Ø1.5	Ø2	Ø3	Ø4	Ø5	Ø6	Ø7	Ø8	Ø9	Ø10	Ø12	Ø14	Ø15
P	Low & medium carbon steels	60-120	0.05	0.05	0.07	0.09	0.11	0.13	0.14	0.15	0.16	0.16	0.17	0.18	0.18
P	High carbon steels	60-90	0.04	0.05	0.06	0.08	0.09	0.1	0.12	0.13	0.14	0.14	0.16	0.17	0.18
P	Alloy steels, treated steels	50-80	0.04	0.04	0.05	0.05	0.06	0.07	0.07	0.08	0.09	0.1	0.12	0.13	0.14
P	Cast steels	70-90	0.04	0.04	0.05	0.05	0.06	0.07	0.07	0.08	0.09	0.1	0.12	0.13	0.14
M	Stainless steels	60-90	0.03	0.03	0.04	0.05	0.06	0.06	0.07	0.08	0.09	0.1	0.11	0.12	0.13
S	Nickel alloys, titanium alloys	20-40	0.03	0.03	0.04	0.04	0.05	0.06	0.06	0.06	0.07	0.07	0.07	0.08	0.08
K	Cast iron	40-80	0.05	0.05	0.07	0.09	0.11	0.13	0.14	0.15	0.16	0.16	0.17	0.18	0.18
N	Aluminum	80-150	0.05	0.05	0.07	0.09	0.11	0.13	0.14	0.15	0.16	0.16	0.17	0.18	0.18
N	Synthetics, duroplastics, thermoplastics	50-200	0.1	0.11	0.12	0.14	0.16	0.18	0.19	0.19	0.19	0.19	0.19	0.2	0.2

ISO	Materials	Cutting Speed, ft/min	Feed (Inch/Tooth) for Diameter (Inch)												
			Ø.06	Ø.08	Ø.12	Ø.16	Ø.20	Ø.24	Ø.28	Ø.31	Ø.35	Ø.39	Ø.47	Ø.55	Ø.59
P	Low & medium carbon steels	200-390	.0018	.0021	.0028	.0035	.0043	.0050	.0057	.0060	.0062	.0064	.0067	.0070	.0071
P	High carbon steels	200-300	.0016	.0019	.0024	.0030	.0035	.0041	.0046	.0050	.0054	.0057	.0062	.0067	.0069
P	Alloy steels, treated steels	160-260	.0015	.0017	.0019	.0021	.0024	.0026	.0028	.0033	.0037	.0041	.0047	.0052	.0055
P	Cast steels	230-300	.0015	.0017	.0019	.0021	.0024	.0026	.0028	.0033	.0037	.0041	.0047	.0052	.0055
M	Stainless steels	200-300	.0011	.0013	.0016	.0019	.0022	.0025	.0026	.0031	.0035	.0038	.0044	.0049	.0051
S	Nickel alloys, titanium alloys	70-130	.0011	.0013	.0015	.0017	.0020	.0022	.0024	.0025	.0026	.0027	.0029	.0031	.0031
K	Cast iron	130-260	.0018	.0021	.0028	.0035	.0043	.0050	.0057	.0060	.0062	.0064	.0067	.0070	.0071
N	Aluminum	260-490	.0018	.0021	.0028	.0035	.0043	.0050	.0057	.0060	.0062	.0064	.0067	.0070	.0071
N	Synthetics, duroplastics, thermoplastics	160-660	.0038	.0042	.0049	.0056	.0063	.0070	.0073	.0074	.0075	.0075	.0077	.0078	.0078

Machining Data for Solid Carbide Thread Mills for Small Internal Threads in Hard Materials

ISO	Material	Hardness HRC	Cutting Speed m/min	Feed mm/Tooth for Cutting Diameter (mm)								
				1.5	2	3	4	5	6	7	8	9
H	Hardened Steels	45-50	60-70	0.04	0.04	0.05	0.05	0.06	0.06	0.07	0.07	0.08
H		51-55	50-60	0.03	0.03	0.04	0.04	0.05	0.05	0.06	0.06	0.07
H		56-62	40-50	0.02	0.02	0.03	0.03	0.04	0.04	0.05	0.05	0.06

ISO	Material	Hardness HRc	Cutting Speed SFM	Feed (IPT) for Cutting Diameter (D)								
				.06	.08	.12	.16	.2	.24	.28	.31	.35
H	Hardened Steels	45-50	200-230	.0016	.0016	.002	.002	.0024	.0024	.0028	.0028	.0031
H		51-55	160-200	.0012	.0012	.0016	.0016	.002	.002	.0024	.0024	.0028
H		56-62	130-160	.0008	.0008	.0012	.0012	.0016	.0016	.002	.002	.0024

Machining Data for Indexable Insert Threading Tools

ISO	Material		Condition	Tensile Strength [N/mm²]	Tensile Strength [Ksp]	Hardness HB	Material No.	Indexable Cutting Speed for IC908 m/min	Indexable Cutting Speed for IC908 SFM
P	Non-alloy steel and cast steel, free cutting steel	< 0.25 %C	Annealed	420	61	125	1	100-200	330-655
P		≥ 0.25 %C	Annealed	650	94	190	2	95-190	310-625
P		< 0.55 %C	Quenched and tempered	850	123	250	3	90-180	295-590
P		≥ 0.55 %C	Annealed	750	109	220	4	90-170	295-560
P			Quenched and tempered	1000	145	300	5	80-150	260-490
P	Low alloy steel and cast steel (less than 5% of alloying elements)		Annealed	600	87	200	6	120-170	395-560
P			Quenched and tempered	930	135	275	7	115-160	375-525
P				1000	145	300	8	105-150	345-490
P				1200	174	350	9	90-140	295-460
P	High alloyed steel, cast steel, and tool steel		Annealed	680	99	200	10	90-170	295-560
P			Quenched and tempered	1100	160	325	11	75-145	245-475
P	Stainless steel and cast steel		Ferritic/martensitic	680	99	200	12	110-170	360-560
P			Martensitic	820	119	240	13	100-160	330-525
M	Stainless steel		Austenitic	600	87	180	14	90-145	295-475
K	Grey cast iron (GG)		Ferritic			160	17	65-135	215-445
K			Pearlitic			250	18	65-110	215-360
K	Cast iron nodular (GGG)		Ferritic/pearlitic			180	15	65-135	215-445
K			Pearlitic			260	16	60-100	195-330
K	Malleable cast iron		Ferritic			130	19	65-135	215-445
K			Pearlitic			230	20	60-120	195-395
N	Aluminum- wrought alloy		Not cureable			60	21	110-260	360-855
N			Cured			100	22	110-200	360-655
N	Aluminum-cast, alloyed	=<12% Si	Not cureable			75	23	145-350	475-1150
N			Cured			90	24	145-275	475-900
N		>12% Si	High temperature			130	25	95-225	310-740
N	Copper alloys	>1% Pb	Free cutting			110	26	145-350	475-1150
N			Brass			90	27	145-350	475-1150
N			Electrolitic copper			100	28	145-350	475-1150
N	Non-metallic		Duroplastics, fiber plastics				29	90-370	295-1215
N			Hard rubber				30	80-330	260-1085
S	High temp. alloys	Fe based	Annealed			200	31	20-60	65-195
S			Cured			280	32	20-50	65-165
S		Ni or Co based	Annealed			250	33	20-30	65-100
S			Cured			350	34	10-20	35-65
S			Cast			320	35	15-25	50-80
S	Titanium Ti alloys			RM 400	58		36	30-90	100-295
S			Alpha+beta alloys cured	RM 1050	152		37	20-70	65-230
H	Hardened steel		Hardened			55 HRC	38	25-60	80-195
H			Hardened			60 HRC	39	20-40	65-130
H	Chilled cast iron		Cast			400	40	25-60	80-195
H	Cast iron		Hardened			55 HRC	41	20-50	65-165

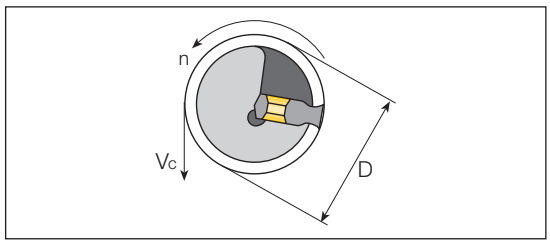
Calculating RPM:

Metric Example: V=120 m/min, D=30 mm

$$n = \frac{Vc \times 1000}{\pi \times D} = \frac{120 \times 1000}{3.14 \times 30} = 1274 \text{ RPM}$$

Inch Example: V= 410 SFM, D=1.5 inch

$$n = \frac{Vc \times 12}{\pi \times D} = \frac{410 \times 12}{3.14 \times 1.5} = 1045 \text{ RPM}$$



Feed: 0.05-0.15 mm/Tooth
0.002-0.006 Inch/Tooth

Machining Data for Solid Carbide Threading Endmills

ISO	Material		Condition	Tensile Strength [N/mm²]	Hardness HB	Material No.
P	Non-alloy steel and cast steel, free cutting steel	< 0.25 %C	Annealed	420	125	1
		≥ 0.25 %C	Annealed	650	190	2
		< 0.55 %C	Quenched and tempered	850	250	3
		≥ 0.55 %C	Annealed	750	220	4
			Quenched and tempered	1000	300	5
	Low alloy steel and cast steel (less than 5% of alloying elements)		Annealed	600	200	6
			Quenched and tempered	930	275	7
				1000	300	8
				1200	350	9
	High alloyed steel, cast steel, and tool steel		Annealed	680	200	10
			Quenched and tempered	1100	325	11
	Stainless steel and cast steel		Ferritic/martensitic	680	200	12
			Martensitic	820	240	13
M	Stainless steel		Austenitic	600	180	14
K	Grey cast iron (GG)		Ferritic		160	17
			Pearlitic		250	18
	Cast iron nodular (GGG)		Ferritic/pearlitic		180	15
			Pearlitic		260	16
	Malleable cast iron		Ferritic		130	19
			Pearlitic		230	20
N	Aluminum- wrought alloy		Not cureable		60	21
			Cured		100	22
	Aluminum-cast, alloyed	=<12% Si	Not cureable		75	23
			Cured		90	24
		>12% Si	High temperature		130	25
	Copper alloys	>1% Pb	Free cutting		110	26
			Brass		90	27
			Electrolitic copper		100	28
	Non-metallic		Duroplastics, fiber plastics			29
			Hard rubber			30
S	High temp. alloys	Fe based	Annealed		200	31
			Cured		280	32
		Ni or Co based	Annealed		250	33
			Cured		350	34
			Cast		320	35
	Titanium Ti alloys			RM 400		36
			Alpha+beta alloys cured	RM 1050		37
H	Hardened steel		Hardened		55 HRC	38
			Hardened		60 HRC	39
	Chilled cast iron		Cast		400	40
	Cast iron		Hardened		55 HRC	41

Material No.	Cutting Speed (m/min)	Cutting Diameter											
		Feed mm/Tooth											
	IC908	2	3	4	6	8	10	12	14	16	20	25	30
1	100-250	0.03	0.04	0.04	0.06	0.07	0.08	0.09	0.11	0.12	0.15	0.18	0.21
2	80-210	0.03	0.04	0.04	0.06	0.07	0.08	0.09	0.11	0.12	0.15	0.18	0.21
3	65-170												
4	110-180	0.02	0.03	0.03	0.05	0.06	0.07	0.08	0.09	0.1	0.12	0.15	0.18
5	95-160	0.02	0.03	0.03	0.05	0.06	0.07	0.08	0.09	0.1	0.12	0.15	0.18
6	90-160	0.02	0.02	0.03	0.03	0.04	0.05	0.05	0.06	0.07	0.08	0.1	0.11
7	65-200	0.02	0.02	0.03	0.03	0.04	0.05	0.05	0.06	0.07	0.08	0.1	0.11
8	70-210	0.02	0.02	0.03	0.03	0.04	0.05	0.05	0.06	0.07	0.08	0.1	0.11
9	95-160	0.02	0.02	0.03	0.03	0.04	0.05	0.05	0.06	0.07	0.08	0.1	0.11
10	130-170	0.02	0.02	0.03	0.03	0.04	0.05	0.05	0.06	0.07	0.08	0.1	0.11
11	75-100	0.02	0.02	0.03	0.03	0.04	0.05	0.05	0.06	0.07	0.08	0.1	0.11
12	110-170	0.02	0.02	0.03	0.03	0.04	0.05	0.05	0.06	0.07	0.08	0.1	0.11
13	70-155	0.02	0.02	0.03	0.03	0.04	0.05	0.05	0.06	0.07	0.08	0.1	0.11
14	85-100	0.02	0.02	0.03	0.03	0.04	0.05	0.05	0.06	0.07	0.08	0.1	0.11
15	120-160	0.03	0.04	0.04	0.06	0.07	0.08	0.09	0.11	0.12	0.15	0.18	0.21
16	75-160	0.03	0.04	0.04	0.06	0.07	0.08	0.09	0.11	0.12	0.15	0.18	0.21
17	70-150	0.03	0.04	0.04	0.06	0.07	0.08	0.09	0.11	0.12	0.15	0.18	0.21
18	110-140	0.03	0.04	0.04	0.06	0.07	0.08	0.09	0.11	0.12	0.15	0.18	0.21
19	120-160	0.03	0.04	0.04	0.06	0.07	0.08	0.09	0.11	0.12	0.15	0.18	0.21
20	110-140	0.03	0.04	0.04	0.06	0.07	0.08	0.09	0.11	0.21	0.15	0.18	0.21
21	160-300	0.03	0.04	0.04	0.06	0.07	0.08	0.09	0.11	0.12	0.15	0.18	0.21
22													
23	150-350	0.03	0.04	0.04	0.06	0.07	0.08	0.09	0.11	0.12	0.15	0.18	0.21
24													
25	100-250	0.02	0.02	0.03	0.03	0.04	0.05	0.05	0.06	0.07	0.08	0.10	0.12
26													
27													
28													
29	100-400	0.05	0.06	0.07	0.09	0.1	0.11	0.12	0.13	0.15	0.18	0.22	0.25
30													
31													
32													
33	20-80	0.02	0.02	0.02	0.03	0.03	0.03	0.03	0.04	0.04	0.04	0.05	0.05
34													
35													
36													
37	20-80	0.02	0.02	0.02	0.03	0.03	0.03	0.03	0.04	0.04	0.04	0.05	0.05
38	55-65												
39	45-55												
40	90-105												
41	55-65												

* For cutters with long cutting flute, reduce feed rate by 40%.

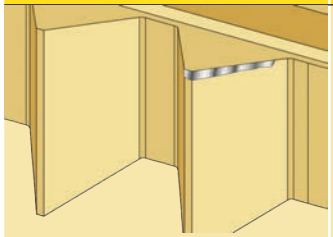
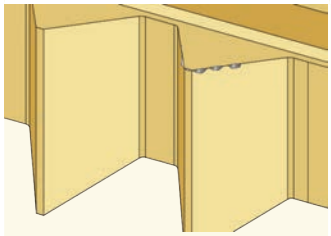
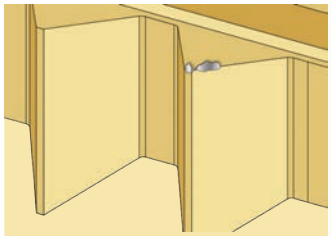
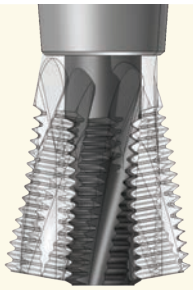
Machining Data for Solid Carbide Threading Endmills

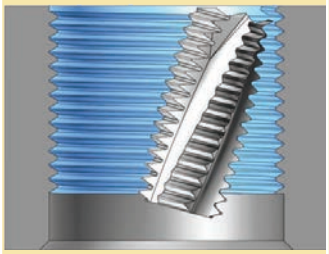
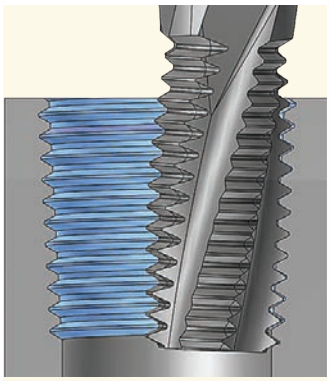
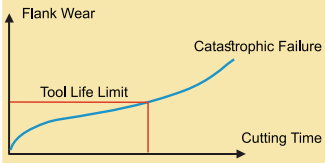
ISO	Material		Condition	Tensile Strength [Kspi]	Hardness HB	Material No.
P	Non-alloy steel and cast steel, free cutting steel	< 0.25 %C	Annealed	61	125	1
		≥ 0.25 %C	Annealed	94	190	2
		< 0.55 %C	Quenched and tempered	123	250	3
		≥ 0.55 %C	Annealed	109	220	4
			Quenched and tempered	145	300	5
	Low alloy steel and cast steel (less than 5% of alloying elements)		Annealed	87	200	6
			Quenched and tempered	135	275	7
				145	300	8
				174	350	9
	High alloyed steel, cast steel, and tool steel		Annealed	99	200	10
			Quenched and tempered	160	325	11
	Stainless steel and cast steel		Ferritic/martensitic	99	200	12
			Martensitic	119	240	13
M	Stainless steel		Austenitic	87	180	14
K	Grey cast iron (GG)		Ferritic		160	17
			Pearlitic		250	18
	Cast iron nodular (GGG)		Ferritic/pearlitic		180	15
			Pearlitic		260	16
	Malleable cast iron		Ferritic		130	19
			Pearlitic		230	20
N	Aluminum- wrought alloy		Not cureable		60	21
			Cured		100	22
	Aluminum- cast, alloyed	=<12% Si	Not cureable		75	23
			Cured		90	24
		>12% Si	High temperature		130	25
	Copper alloys	>1% Pb	Free cutting		110	26
			Brass		90	27
			Electrolitic copper		100	28
	Non-metallic		Duroplastics, fiber plastics			29
			Hard rubber			30
S	High temp. alloys	Fe based	Annealed		200	31
			Cured		280	32
		Ni or Co based	Annealed		250	33
			Cured		350	34
			Cast		320	35
	Titanium Ti alloys			58		36
			Alpha+beta alloys cured	152		37
H	Hardened steel		Hardened		55 HRC	38
			Hardened		60 HRC	39
	Chilled cast iron		Cast		400	40
	Cast iron		Hardened		55 HRC	41

Material No.	Cutting Speed (SFM)	Cutting Diameter										
		Feed (in/Tooth)										
	IC908	3/32	1/8	5/32	1/4	5/16	3/8	1/2	5/8	3/4	1.0	1.25
1	330-820	.0012	.0016	.0016	.0024	.0028	.0031	.0035	.0047	.0059	.0071	.0083
2	260-690	.0012	.0016	.0016	.0024	.0028	.0031	.0035	.0047	.0059	.0071	.0083
3	210-560											
4	360-590	.0008	.0012	.0012	.0020	.0024	.0028	.0031	.0039	.0047	.0059	.0071
5	310-520	.0008	.0012	.0012	.0020	.0025	.0028	.0031	.0039	.0047	.0059	.0071
6	300-520	.0008	.0008	.0012	.0012	.0016	.0020	.0020	.0028	.0031	.0039	.0043
7	210-660	.0008	.0008	.0012	.0012	.0016	.0020	.0020	.0028	.0031	.0039	.0043
8	230-690	.0008	.0008	.0012	.0012	.0016	.0020	.0020	.0028	.0031	.0039	.0043
9	310-520	.0008	.0008	.0012	.0012	.0016	.0020	.0020	.0028	.0031	.0039	.0043
10	430-560	.0008	.0008	.0012	.0012	.0016	.0020	.0020	.0028	.0031	.0039	.0043
11	250-330	.0008	.0008	.0012	.0012	.0016	.0020	.0020	.0028	.0031	.0039	.0043
12	360-560	.0008	.0008	.0012	.0012	.0016	.0020	.0020	.0028	.0031	.0039	.0043
13	230-510	.0008	.0008	.0012	.0012	.0016	.0020	.0020	.0028	.0031	.0039	.0043
14	280-330	.0008	.0008	.0012	.0012	.0016	.0020	.0020	.0028	.0031	.0039	.0043
15	230-490	.0012	.0016	.0016	.0024	.0028	.0031	.0035	.0047	.0059	.0071	.0083
16	360-460	.0012	.0016	.0016	.0024	.0028	.0031	.0035	.0047	.0059	.0071	.0083
17	390-520	.0012	.0016	.0016	.0024	.0028	.0031	.0035	.0047	.0059	.0071	.0083
18	250-520	.0012	.0016	.0016	.0024	.0028	.0031	.0035	.0047	.0059	.0071	.0083
19	390-520	.0012	.0016	.0016	.0024	.0028	.0031	.0035	.0047	.0059	.0071	.0083
20	360-460	.0012	.0016	.0016	.0024	.0028	.0031	.0035	.0047	.0059	.0071	.0083
21	520-980	.0012	.0016	.0016	.0024	.0028	.0031	.0035	.0047	.0059	.0071	.0083
22												
23												
24												
25												
26												
27												
28												
29	330-460	.0020	.0024	0028	0035	.0039	.0043	.0047	.0059	.0071	.0087	.0110
30												
31												
32												
33	70-260	.0008	.0008	.0008	.0012	.0012	.0012	.0012	.0016	.0016	.0020	.0020
34												
35												
36												
37	70-260	.0008	.0008	.0008	.0012	.0012	.0012	.0012	.0016	.0016	.0020	.0020
38	180-210											
39	150-180											
40	300-340											
41	180-210											

* For cutters with long cutting flute, reduce feed rate by 40%.

Troubleshooting

Problem	Cause	Solution
 Flank Wear	• High cutting speed • Chip too thin • Insufficient coolant	• Reduce cutting speed • Increase feed rate and reduce radial passes • Check coolant pressure / flow direction
 Fracture/Chipping	• Vibration • High load on cutting edge	• Check stability • Reduce feed rate • Add radial passes
 Build up Edge	• Cutting speed too low • Insufficient coolant	• Increase cutting speed • Check coolant pressure / flow direction
 Thread Surface-Chatter Marks/Vibrations	• Feed rate is too high • Large profile • Thread length too long	• Reduce feed rate • Add passes • Add radial passes • Reduce overhang
 Thread Accuracy (GO/NOGO Gauge)	• Tool deflection • CNC program error	• Reduce feed rate • Add radial passes • Use ZERO compensation • Check CNC program

Problem	Cause	Solution
  Insert/Tool Breakage	• High load on the cutting edge • Unproper cutting conditions • Chip evacuation • CNC program error	• Add radial passes • Adjust cutting conditions • Add sufficient coolant • Check CNC program
 Tapered Thread	• Tool cutting load • Tool overhang	• Add radial passes and/or reduce cutting conditions • Clamp tool to the minimum overhang length
 Short Tool Life	• Unsuitable cutting conditions • Vibrations	• Adjust feed/speed • Reduce overhang as short as possible • Check tool and workpiece clamping

Special Request Form Thread Milling

Project Information

Customer _____ Industry _____ Country _____

Customer Goal (Productivity, Economy, etc.): _____

Proposal for: ☐ Insert ☐ Tool ☐ Machining Concept

ISCAR Representative: Email: _____ Tel: _____

Competitors: _____ Target Price: _____ Annual Consumption: _____

Thread

Designation _____ Pitch _____ Standard _____ Tolerance Clas _____

Major Dia. _____ Minor Dia. _____ Pitch Dia. _____ Number of Starts _____

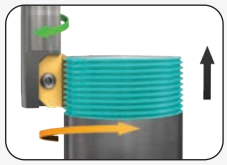
Thread Depth _____ ☐ Through Hole ☐ Blind Hole

Special Form _____

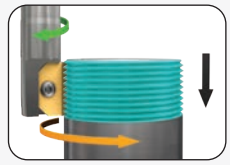
For non-standard profiles, detailed information must be supplied (drawing, dimensions & tolerances)

Application

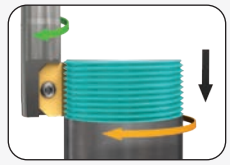
Part _____ Material _____ Hardness _____



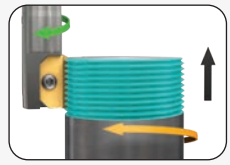
☐ External Right-hand Thread Conventional Milling



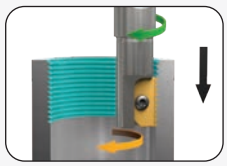
☐ External Left-hand Thread Conventional Milling



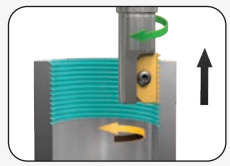
☐ External Right-hand Thread Climb Milling



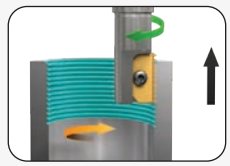
☐ External Left-hand Thread Climb Milling



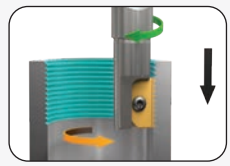
☐ Internal Right-hand Thread Conventional Milling



☐ Internal Left-hand Thread Conventional Milling

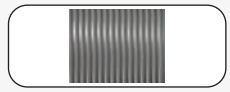


☐ Internal Right-hand Thread Climb Milling



☐ Internal Left-hand

Serration:

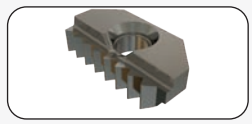


☐

Solution



☐ Single-Tooth



☐ Multi-Tooth



☐ Indexable



☐ Multi-Master



☐ Solid Carbide



☐ Multi-Master Indexable

Attachments ☐ Drawing ☐ Model ☐ Sketch ☐ Photo

Machine

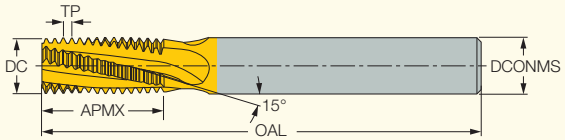
Model _____ Shank Type/Size _____

Coolant: ☐ Internal ☐ External ☐ None Type: _____

Remarks: _____

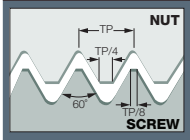
SOLIDTHREAD

MTEC-ISO
Solid Carbide Internal Threading Endmills for ISO Thread Profile



Application: General engineering

M E T R I C



Designation	Dimensions									IC908
	TP[1]	M Coarse	M Fine	DCONMS	DC	NOF[2]	APMX	OAL	Shank[3]	
MTEC 06022C5 0.5ISO	0.500	M3	=>4	6.00	2.20	3	5.30	58.00	C	●
MTEC 06038C10 0.5ISO	0.500	-	=>5	6.00	3.80	3	10.30	58.00	C	●
MTEC 06031C7 0.7ISO	0.700	M4	=>5	6.00	3.10	3	7.40	58.00	C	●
MTEC 06045C10 0.75ISO	0.750	-	=>6	6.00	4.50	3	10.00	58.00	C	●
MTEC 06036C9 0.8ISO	0.800	M5	=>6	6.00	3.60	3	9.20	58.00	C	●
MTEC 0604C10 1.0ISO	1.000	M6	=>7	6.00	4.00	3	10.50	58.00	C	●
MTEC 0604C14 1.0ISO	1.000	M6	=>7	6.00	4.00	3	14.50	58.00	C	●
MTEC 0606C12 1.0ISO	1.000	-	=>9	6.00	6.00	3	12.50	58.00	C	●
MTEC 0808D16 1.0ISO	1.000	-	=>10	8.00	8.00	4	16.50	64.00	C	●
MTEC 0605C14 1.25ISO	1.250	M8	=>10	6.00	5.00	3	14.40	58.00	C	●
MTEC 0605C19 1.25ISO	1.250	M8	=>10	6.00	5.00	3	19.40	58.00	C	●
MTEC 0807C17 1.5ISO	1.500	M10	=>12	8.00	7.00	3	17.30	64.00	C	●
MTEC 0807C24 1.5ISO	1.500	M10	=>12	8.00	7.00	3	24.80	76.00	C	●
MTEC 1010D21 1.5ISO	1.500	-	=>14	10.00	10.00	4	21.80	73.00	C	●
MTEC 1616F33 1.5ISO	1.500	-	=>20	16.00	16.00	6	33.80	100.00	C	●
MTEC 0808C20 1.75ISO	1.750	M12	=>14	8.00	8.00	3	20.10	64.00	C	●
MTEC 0808C28 1.75ISO	1.750	M12	=>14	8.00	8.00	3	28.90	76.00	C	●
MTEC 1010C27 2.0ISO	2.000	M14	=>15	10.00	10.00	3	27.00	73.00	C	●
MTEC 1010C39 2.0ISO	2.000	M14	=>15	10.00	10.00	3	39.00	100.00	C	●
MTEC 1212D27 2.0ISO	2.000	-	=>18	12.00	12.00	4	27.00	84.00	C	●
MTEC 2020F41 2.0ISO	2.000	-	=>26	20.00	20.00	6	41.00	105.00	C	●
MTEC 1414D33 2.5ISO	2.500	M20	=>22	14.00	14.00	4	33.80	84.00	C	●
MTEC 1414D48 2.5ISO	2.500	M20	=>22	14.00	14.00	4	48.80	107.00	C	●
MTEC 1616C40 3.0ISO	3.000	M24	=>25	16.00	16.00	3	40.50	100.00	C	●
MTEC 1616C58 3.0ISO	3.000	M24	=>25	16.00	16.00	3	58.50	120.00	C	●

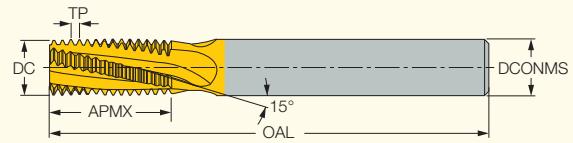
- For user guide, see pages 326-339
- For cutting conditions, see pages 362-367

(1) Thread pitch
(2) Number of flutes
(3) C-Cylindrical

SOLIDTHREAD

MTEC-ISO

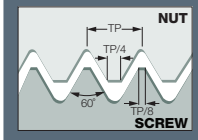
Solid Carbide Internal Threading Endmills for ISO Thread Profile





Application: General engineering

I N C H



Designation	Dimensions									IC908
	TP[1]	M Coarse	M Fine	DCONMS	DC	NOF[2]	APMX	OAL	Shank[3]	
MTEC 06022C5 0.5ISO	0.500	M3	=>4	6.00	2.20	3	5.30	58.00	C	●
MTEC 06038C10 0.5ISO	0.500	-	=>5	6.00	3.80	3	10.30	58.00	C	●
MTEC 06031C7 0.7ISO	0.700	M4	=>5	6.00	3.10	3	7.40	58.00	C	●
MTEC 06045C10 0.75ISO	0.750	-	=>6	6.00	4.50	3	10.00	58.00	C	●
MTEC 06036C9 0.8ISO	0.800	M5	=>6	6.00	3.60	3	9.20	58.00	C	●
MTEC 0604C10 1.0ISO	1.000	M6	=>7	6.00	4.00	3	10.50	58.00	C	●
MTEC 0604C14 1.0ISO	1.000	M6	=>7	6.00	4.00	3	14.50	58.00	C	●
MTEC 0606C12 1.0ISO	1.000	-	=>9	6.00	6.00	3	12.50	58.00	C	●
MTEC 0808D16 1.0ISO	1.000	-	=>10	8.00	8.00	4	16.50	64.00	C	●
MTEC 0605C14 1.25ISO	1.250	M8	=>10	6.00	5.00	3	14.40	58.00	C	●
MTEC 0605C19 1.25ISO	1.250	M8	=>10	6.00	5.00	3	19.40	58.00	C	●
MTEC 0807C17 1.5ISO	1.500	M10	=>12	8.00	7.00	3	17.30	64.00	C	●
MTEC 0807C24 1.5ISO	1.500	M10	=>12	8.00	7.00	3	24.80	76.00	C	●
MTEC 1010D21 1.5ISO	1.500	-	=>14	10.00	10.00	4	21.80	73.00	C	●
MTEC 1616F33 1.5ISO	1.500	-	=>20	16.00	16.00	6	33.80	100.00	C	●
MTEC 0808C20 1.75ISO	1.750	M12	=>14	8.00	8.00	3	20.10	64.00	C	●
MTEC 0808C28 1.75ISO	1.750	M12	=>14	8.00	8.00	3	28.90	76.00	C	●
MTEC 1010C27 2.0ISO	2.000	M14	=>15	10.00	10.00	3	27.00	73.00	C	●
MTEC 1010C39 2.0ISO	2.000	M14	=>15	10.00	10.00	3	39.00	100.00	C	●
MTEC 1212D27 2.0ISO	2.000	-	=>18	12.00	12.00	4	27.00	84.00	C	●
MTEC 2020F41 2.0ISO	2.000	-	=>26	20.00	20.00	6	41.00	105.00	C	●
MTEC 1414D33 2.5ISO	2.500	M20	=>22	14.00	14.00	4	33.80	84.00	C	●
MTEC 1414D48 2.5ISO	2.500	M20	=>22	14.00	14.00	4	48.80	107.00	C	●
MTEC 1616C40 3.0ISO	3.000	M24	=>25	16.00	16.00	3	40.50	100.00	C	●
MTEC 1616C58 3.0ISO	3.000	M24	=>25	16.00	16.00	3	58.50	120.00	C	●

- For user guide, see pages 326-339
- For cutting conditions, see pages 362-367

[1] Thread pitch

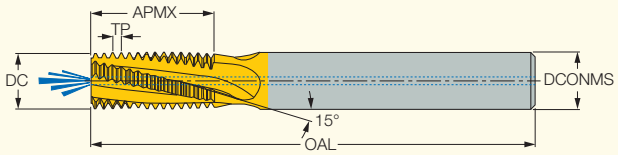
[2] Number of flutes

[3] C-Cylindrical

SOLIDTHREAD

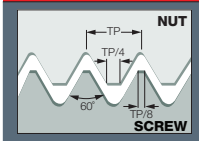
MTECB-ISO

Solid Carbide Internal Threading Endmills with Coolant Holes for ISO Thread Profile



Application: General engineering

M E T R I C



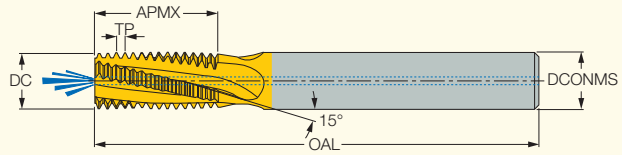
Designation	Dimensions									IC908
	TP[1]	M Coarse	M Fine	DCONMS	DC	NOF[2]	APMX	OAL	Shank[3]	
MTECB 06038C10 0.5ISO	0.500	-	=>5	6.00	3.80	3	10.30	58.00	C	●
MTECB 06031C7 0.7ISO	0.700	M4	=>5	6.00	3.10	3	7.40	58.00	C	●
MTECB 06045C10 0.75ISO	0.750	-	=>6	6.00	4.50	3	10.10	58.00	C	●
MTECB 1010D24 0.75ISO	0.750	-	=>12	10.00	10.00	4	24.40	73.00	C	●
MTECB 06038C9 0.8ISO	0.800	M5	=>6	6.00	3.80	3	9.20	58.00	C	●
MTECB 06046C10 1.0ISO	1.000	M6	=>7	6.00	4.60	3	10.50	58.00	C	●
MTECB 06046C14 1.0ISO	1.000	M6	=>6	6.00	4.60	3	14.50	58.00	C	●
MTECB 0606C12 1.0ISO	1.000	-	=>9	6.00	6.00	3	12.50	58.00	C	●
MTECB 0808D16 1.0ISO	1.000	-	=>10	8.00	8.00	4	16.50	64.00	C	●
MTECB 1010D24 1.0ISO	1.000	-	=>12	10.00	10.00	4	24.50	73.00	C	●
MTECB 0606C14 1.25ISO	1.250	M8	=>10	6.00	6.00	3	14.40	58.00	C	●
MTECB 0606C19 1.25ISO	1.250	M8	=>10	6.00	6.00	3	19.40	58.00	C	●
MTECB 1212D26 1.5ISO	1.500		=>16	12.00	12.00	4	26.30	84.00	C	●
MTECB 08078C17 1.5ISO	1.500	M10	=>12	8.00	7.80	3	17.00	64.00	C	●
MTECB 08078C24 1.5ISO	1.500	M10	=>12	8.00	7.80	3	24.80	76.00	C	●
MTECB 1010D21 1.5ISO	1.500	-	=>14	10.00	10.00	4	21.80	73.00	C	●
MTECB 1616F33 1.5ISO	1.500	-	=>20	16.00	16.00	6	33.80	105.00	C	●
MTECB 1009C20 1.75ISO	1.750	M12	=>12	10.00	9.00	3	20.10	73.00	C	●
MTECB 1009C28 1.75ISO	1.750	M12	=>12	10.00	9.00	3	28.90	73.00	C	●
MTECB 1010C27 2.0ISO	2.000	M14	=>15	10.00	10.00	3	27.00	73.00	C	●
MTECB 12118D27 2.0ISO	2.000	M16	=>17	12.00	11.80	4	27.00	84.00	C	●
MTECB 12118D39 2.0ISO	2.000	M16	=>17	12.00	11.80	4	39.00	105.00	C	●
MTECB 1615E33 2.5ISO	2.500	M20	=>22	16.00	15.00	5	33.80	105.00	C	●
MTECB 1615E48 2.5ISO	2.500	M20	=>22	16.00	15.00	5	48.80	105.00	C	●
MTECB 2018D58 3.0ISO	3.000	M24	=>25	20.00	18.00	4	58.50	120.00	C	●

- With internal coolant hole
- For user guide, see pages 326-339
- For cutting conditions, see pages 362-367

(1) Thread pitch
(2) Number of flutes
(3) C-Cylindrical

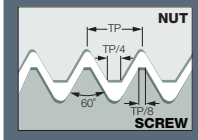
SOLIDTHREAD

Solid Carbide Internal Threading Endmills with Coolant Holes for ISO Thread Profile



Application: General engineering

I N C H



Designation	Dimensions									IC908
	TP[1]	M Coarse	M Fine	DCONMS	DC	NOF[2]	APMX	OAL	Shank[3]	
MTECB 06038C10 0.5ISO	0.500	-	=>5	6.00	3.80	3	10.30	58.00	C	●
MTECB 06031C7 0.7ISO	0.700	M4	=>5	6.00	3.10	3	7.40	58.00	C	●
MTECB 06045C10 0.75ISO	0.750	-	=>6	6.00	4.50	3	10.10	58.00	C	●
MTECB 1010D24 0.75ISO	0.750	-	=>12	10.00	10.00	4	24.40	73.00	C	●
MTECB 06038C9 0.8ISO	0.800	M5	=>6	6.00	3.80	3	9.20	58.00	C	●
MTECB 06046C10 1.0ISO	1.000	M6	=>7	6.00	4.60	3	10.50	58.00	C	●
MTECB 06046C14 1.0ISO	1.000	M6	=>6	6.00	4.60	3	14.50	58.00	C	●
MTECB 0606C12 1.0ISO	1.000	-	=>9	6.00	6.00	3	12.50	58.00	C	●
MTECB 0808D16 1.0ISO	1.000	-	=>10	8.00	8.00	4	16.50	64.00	C	●
MTECB 1010D24 1.0ISO	1.000	-	=>12	10.00	10.00	4	24.50	73.00	C	●
MTECB 0606C14 1.25ISO	1.250	M8	=>10	6.00	6.00	3	14.40	58.00	C	●
MTECB 0606C19 1.25ISO	1.250	M8	=>10	6.00	6.00	3	19.40	58.00	C	●
MTECB 1212D26 1.5ISO	1.500		=>16	12.00	12.00	4	26.30	84.00	C	●
MTECB 08078C17 1.5ISO	1.500	M10	=>12	8.00	7.80	3	17.00	64.00	C	●
MTECB 08078C24 1.5ISO	1.500	M10	=>12	8.00	7.80	3	24.80	76.00	C	●
MTECB 1010D21 1.5ISO	1.500	-	=>14	10.00	10.00	4	21.80	73.00	C	●
MTECB 1616F33 1.5ISO	1.500	-	=>20	16.00	16.00	6	33.80	105.00	C	●
MTECB 1009C20 1.75ISO	1.750	M12	=>12	10.00	9.00	3	20.10	73.00	C	●
MTECB 1009C28 1.75ISO	1.750	M12	=>12	10.00	9.00	3	28.90	73.00	C	●
MTECB 1010C27 2.0ISO	2.000	M14	=>15	10.00	10.00	3	27.00	73.00	C	●
MTECB 12118D27 2.0ISO	2.000	M16	=>17	12.00	11.80	4	27.00	84.00	C	●
MTECB 12118D39 2.0ISO	2.000	M16	=>17	12.00	11.80	4	39.00	105.00	C	●
MTECB 1615E33 2.5ISO	2.500	M20	=>22	16.00	15.00	5	33.80	105.00	C	●
MTECB 1615E48 2.5ISO	2.500	M20	=>22	16.00	15.00	5	48.80	105.00	C	●
MTECB 2018D58 3.0ISO	3.000	M24	=>25	20.00	18.00	4	58.50	120.00	C	●

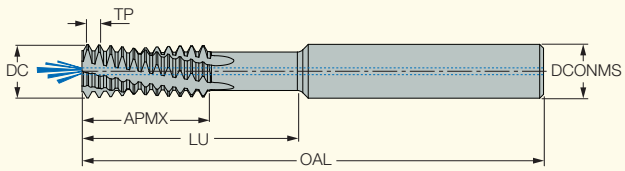
- With internal coolant hole
- For user guide, see pages 326-339
- For cutting conditions, see pages 362-367

[1] Thread pitch
[2] Number of flutes
[3] C-Cylindrical

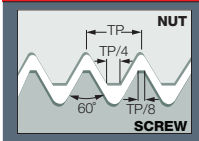
SOLIDTHREAD

MTECQ-ISO

Solid Carbide Threading Endmills with Internal Coolant Holes and a Reduced Diameter Neck for Deep Internal ISO Profile



M E T R I C



Designation	Dimensions TP[1]	TDZ	DCONMS	DC	NOF[2]	APMX	LU	OAL	Shank[3]	IC908
MTECQ 1010D32 1.0ISO	1.000	=>12	10.00	10.00	4	18.00	32.0	73.00	C	●
MTECQ 1212D38 1.0ISO	1.000	=>14	12.00	12.00	4	21.00	38.0	84.00	C	●
MTECQ 1010D30 1.5ISO	1.500	=>13	10.00	10.00	4	18.00	30.0	73.00	C	●
MTECQ 2020F60 1.5ISO	1.500	=>24	20.00	20.00	6	36.00	60.0	105.00	C	●
MTECQ 1212D42 2.0ISO	2.000	=>16	12.00	12.00	4	24.00	42.0	84.00	C	●
MTECQ 2020F56 2.0ISO	2.000	=>24	20.00	20.00	6	34.00	56.0	105.00	C	●
MTECQ 2020D45 3.5ISO	3.500	=>26	20.00	20.00	4	28.00	45.5	105.00	C	●

I N C H

Designation	Dimensions TP mm[1]	TDZ	DCONMS	DC	NOF[2]	APMX	LU	OAL	Shank	IC908
MTECQ 1010D32 1.0ISO	1.000	=>0.472	.394	.394	4	.709	1.260	2.874	C	●
MTECQ 1212D38 1.0ISO	1.000	=>0.551	.472	.472	4	.827	1.496	3.307	C	●
MTECQ 1010D30 1.5ISO	1.500	=>0.511	.394	.394	4	.709	1.181	2.874	C	●
MTECQ 2020F60 1.5ISO	1.500	=>0.944	.787	.787	6	1.417	2.362	4.134	C	●
MTECQ 1212D42 2.0ISO	2.000	=>0.629	.472	.472	4	.945	1.654	3.307	C	●
MTECQ 2020F56 2.0ISO	2.000	=>0.944	.787	.787	6	1.339	2.205	4.134	C	●
MTECQ 2020D45 3.5ISO	3.500	>=1.023	.787	.787	4	1.102	1.791	4.134	C	●

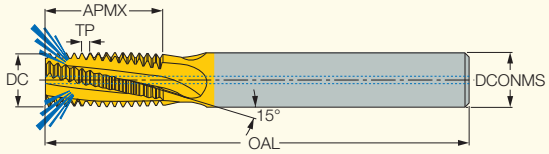
- For user guide, see pages 326-339
- For cutting conditions, see pages 362-367

(1) Thread pitch
(2) Number of flutes
(3) C-Cylindrical

SOLIDTHREAD

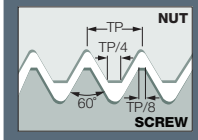
MTECZ-ISO

Solid Carbide Internal Threading Endmills with Coolant Holes Located in the Flutes



Application: General engineering

M E T R I C



Designation	TP[1]	M Coarse	M Fine	DCONMS	DC	NOF[2]	APMX	OAL	Shank[3]	IC908
	Dimensions									
MTECZ 06048C10 1.0ISO	1.000	M6	=>7	6.00	4.80	3	10.50	58.00	C	●
MTECZ 0606C12 1.0ISO	1.000	-	=>9	6.00	6.00	3	12.50	58.00	C	●
MTECZ 0808D16 1.0ISO	1.000	-	=>10	8.00	8.00	4	16.50	64.00	C	●
MTECZ 0606C14 1.25ISO	1.250	M8	=>10	6.00	6.00	3	14.40	58.00	C	●
MTECZ 0606C19 1.25ISO	1.250	M8	=>10	6.00	6.00	3	19.40	58.00	C	●
MTECZ 08078C17 1.5ISO	1.500	M10	=>12	8.00	7.80	3	17.00	64.00	C	●
MTECZ 1010D21 1.5ISO	1.500	-	=>14	10.00	10.00	4	21.80	73.00	C	●
MTECZ 1212D26 1.5ISO	1.500	-	=>16	12.00	12.00	4	26.30	84.00	C	●
MTECZ 1616E33 1.5ISO	1.500	-	=>20	16.00	16.00	5	33.80	101.00	C	●
MTECZ 1009C20 1.75ISO	1.750	M12	=>12	10.00	9.00	3	20.10	73.00	C	●
MTECZ 1009C28 1.75ISO	1.750	M12	=>12	10.00	9.00	3	28.90	73.00	C	●
MTECZ 1010C27 2.0ISO	2.000	M14	=>15	10.00	10.00	3	27.00	73.00	C	●
MTECZ 12118D27 2.0ISO	2.000	M16	=>17	12.00	11.80	4	27.00	84.00	C	●

I N C H

Designation	TP mm[1]	M Coarse	M Fine	DCONMS	DC	NOF[2]	APMX	OAL	Shank	IC908
	Dimensions									
MTECZ 06048C10 1.0ISO	1.000	M6	=>7	.236	.189	3	.413	2.283	C	●
MTECZ 0606C12 1.0ISO	1.000	-	=>9	.236	.236	3	.492	2.283	C	●
MTECZ 0808D16 1.0ISO	1.000	-	=>10	.315	.315	4	.650	2.520	C	●
MTECZ 0606C14 1.25ISO	1.250	M8	=>10	.236	.236	3	.567	2.283	C	●
MTECZ 0606C19 1.25ISO	1.250	M8	=>10	.236	.236	3	.764	2.283	C	●
MTECZ 08078C17 1.5ISO	1.500	M10	=>12	.315	.307	3	.669	2.520	C	●
MTECZ 1010D21 1.5ISO	1.500	-	=>14	.394	.394	4	.858	2.874	C	●
MTECZ 1212D26 1.5ISO	1.500	-	=>16	.472	.472	4	1.035	3.307	C	●
MTECZ 1616E33 1.5ISO	1.500	-	=>20	.630	.630	5	1.331	3.976	C	●
MTECZ 1009C20 1.75ISO	1.750	M12	=>12	.394	.354	3	.791	2.874	C	●
MTECZ 1009C28 1.75ISO	1.750	M12	=>12	.394	.354	3	1.138	2.874	C	●
MTECZ 1010C27 2.0ISO	2.000	M14	=>15	.394	.394	3	1.063	2.874	C	●
MTECZ 12118D27 2.0ISO	2.000	M16	=>17	.472	.465	4	1.063	3.307	C	●

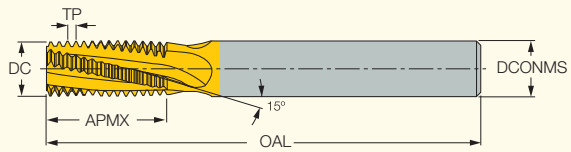
- With internal coolant hole
- For user guide, see pages 326-339
- For cutting conditions, see pages 362-367

(1) Thread pitch
(2) Number of flutes
(3) C-Cylindrical

SOLIDTHREAD

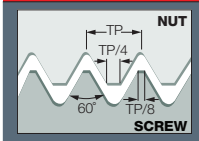
MTEC E-ISO

Solid Carbide External Threading Endmills for ISO Thread Profile



Application: General engineering

M E T R I C



Designation	Dimensions TP[1]	DCONMS	DC	NOF[2]	APMX	OAL	Shank[3]	IC908
MTEC E 1010D16 1.0ISO	1.000	10.00	10.00	4	16.50	73.00	C	●
MTEC E 1010D16 1.25ISO	1.250	10.00	10.00	4	16.90	73.00	C	●
MTEC E 1010D15 1.5ISO	1.500	10.00	10.00	4	15.80	73.00	C	●
MTEC E 1212D20 1.5ISO	1.500	12.00	12.00	4	20.30	84.00	C	●
MTEC E 1212D20 1.75ISO	1.750	12.00	12.00	4	20.10	84.00	C	●
MTEC E 1010C17 2.0ISO	2.000	10.00	10.00	3	17.00	73.00	C	●
MTEC E 1212D21 2.0ISO	2.000	12.00	12.00	4	21.00	84.00	C	●

I N C H

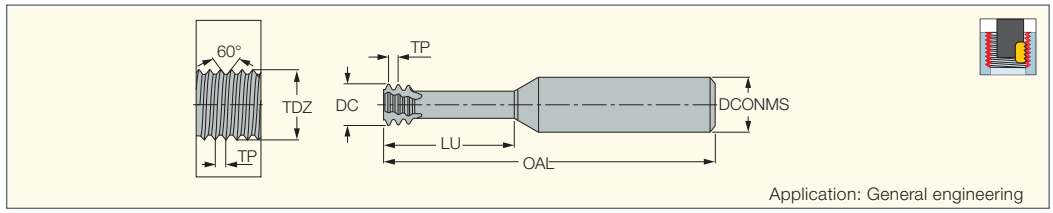
Designation	Dimensions TP mm[1]	DCONMS	DC	NOF[2]	APMX	OAL	Shank	IC908
MTEC E 1010D16 1.0ISO	1.000	.394	.394	4	.650	2.874	C	●
MTEC E 1010D16 1.25ISO	1.250	.394	.394	4	.665	2.874	C	●
MTEC E 1010D15 1.5ISO	1.500	.394	.394	4	.622	2.874	C	●
MTEC E 1212D20 1.5ISO	1.500	.472	.472	4	.799	3.307	C	●
MTEC E 1212D20 1.75ISO	1.750	.472	.472	4	.791	3.307	C	●
MTEC E 1010C17 2.0ISO	2.000	.394	.394	3	.669	2.874	C	●
MTEC E 1212D21 2.0ISO	2.000	.472	.472	4	.827	3.307	C	●

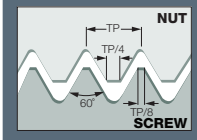
- For user guide, see pages 326-339
- For cutting conditions, see pages 362-367

(1) Thread pitch
(2) Number of flutes
(3) C-Cylindrical

SOLIDTHREAD

MTECS-ISO
Small Diameter Solid Carbide Threading Endmills for Internal ISO Profile



M E T R I C									
	Dimensions								IC908
Designation	DC	TP[2]	LU	OAL	DCONMS	TDZ	NOF[3]	Shank[4]	
MTECS 03007C2 0.25ISO	0.72	0.250	2.5	39.00	3.00	M1	3	C	●
MTECS 03009C3 0.25ISO	0.90	0.250	3.0	39.00	3.00	M1.2	3	C	●
MTECS 03011C4 0.3ISO [1]	1.05	0.300	4.0	39.00	3.00	M1.4	3	C	●
MTECS 03012C5 0.35ISO [1]	1.20	0.350	4.8	39.00	3.00	M1.6	3	C	●
MTECS 03016C6 0.4ISO [1]	1.53	0.400	6.0	39.00	3.00	M2	3	C	●
MTECS 06016C4 0.4ISO	1.53	0.400	4.5	58.00	6.00	M2	3	C	●
MTECS 03017C7 0.45ISO [1]	1.65	0.450	7.0	39.00	3.00	M2.2	3	C	●
MTECS 06017C5 0.45ISO	1.65	0.450	5.0	58.00	6.00	M2.2	3	C	●
MTECS 0602C5 0.45ISO	1.95	0.450	5.5	58.00	6.00	M2.5	3	C	●
MTECS 0602C5 0.45ISO-L	1.95	0.450	5.5	105.00	6.00	M2.5	3	C	●
MTECS 0602C7 0.45ISO	1.95	0.450	7.5	58.00	6.00	M2.5	3	C	●
MTECS 06024C6 0.5ISO	2.37	0.500	6.5	58.00	6.00	M3	3	C	●
MTECS 06024C9 0.5ISO	2.37	0.500	9.5	58.00	6.00	M3	3	C	●
MTECS 06024C9 0.5ISO-L	2.37	0.500	9.5	105.00	6.00	M3	3	C	●
MTECS 03024C12 0.5ISO	2.40	0.500	12.5	39.00	3.00	M3	3	C	●
MTECS 03024C15 0.5ISO	2.40	0.500	15.5	39.00	3.00	M3	3	C	●
MTECS 06028C10 0.6ISO	2.75	0.600	10.5	58.00	6.00	M3.5	3	C	●
MTECS 06028C7 0.6ISO	2.75	0.600	7.5	58.00	6.00	M3.5	3	C	●
MTECS 06031C12 0.7ISO	3.10	0.700	12.5	58.00	6.00	M4	3	C	●
MTECS 06031C120.7ISO-L	3.10	0.700	12.5	105.00	6.00	M4	3	C	●
MTECS 06031C16 0.7ISO	3.10	0.700	16.7	58.00	6.00	M4	3	C	●
MTECS 06031C9 0.7ISO	3.10	0.700	9.0	58.00	6.00	M4	3	C	●
MTECS 06038C12 0.8ISO	3.80	0.800	12.5	58.00	6.00	M5	3	C	●
MTECS 06038C16 0.8ISO	3.80	0.800	16.0	58.00	6.00	M5	3	C	●
MTECS 06038C160.8ISO-L	3.80	0.800	16.0	105.00	6.00	M5	3	C	●
MTECS 0604C20 0.8ISO	4.00	0.800	20.8	58.00	6.00	M5	3	C	●
MTECS 06047C14 1.0ISO	4.65	1.000	14.0	58.00	6.00	M6	3	C	●
MTECS 06047C20 1.0ISO	4.65	1.000	20.0	58.00	6.00	M6	3	C	●
MTECS 06047C201.0ISO-L	4.65	1.000	20.0	105.00	6.00	M6	3	C	●
MTECS 06048C25 1.0ISO	4.80	1.000	25.0	58.00	6.00	M6	3	C	●
MTECS 06054D20 0.5ISO	5.35	0.500	20.0	58.00	6.00	M6	4	C	●
MTECS 0606C18 1.25ISO	6.00	1.250	18.0	58.00	6.00	M8	3	C	●
MTECS 0606C24 1.25ISO	6.00	1.250	24.0	58.00	6.00	M8	3	C	●
MTECS0606C24 1.25ISO-L	6.00	1.250	24.6	100.00	6.00	M8	3	C	●
MTECS 08078C23 1.5ISO	7.80	1.500	23.0	64.00	8.00	M10	3	C	●
MTECS 08078C31 1.5ISO	7.80	1.500	31.5	64.00	8.00	M10	3	C	●
MTECS 0808D25 0.75ISO	8.00	0.750	25.0	64.00	8.00	M10	4	C	●
MTECS 1009C26 1.75ISO	9.00	1.750	26.0	73.00	10.00	M12	3	C	●
MTECS 1009C37 1.75ISO	9.00	1.750	37.8	73.00	10.00	M12	3	C	●
MTECS 12118D35 2.0ISO	11.80	2.000	35.0	84.00	12.00	M16	4	C	●
MTECS 12118D50 2.0ISO	11.80	2.000	50.0	100.00	12.00	M16	4	C	●
MTECS 1615E43 2.5ISO	15.00	2.500	43.0	100.00	16.00	M20	5	C	●

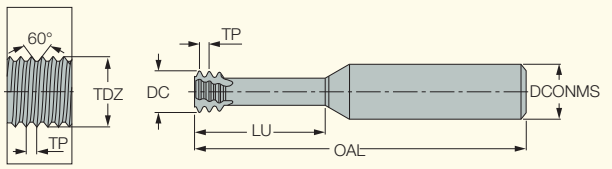
- For user guide, see pages 326-339
- For cutting conditions, see pages 362-367

[1] Specially designed for the production of dental implants
[2] Thread pitch
[3] Number of flutes
[4] C-Cylindrical

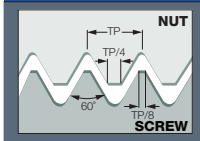
SOLIDTHREAD

MTECS-ISO

Small Diameter Solid Carbide Threading Endmills for Internal ISO Profile



Application: General engineering

I N C H									
	Dimensions								IC908
Designation	DC	TP[2]	LU	OAL	DCONMS	TDZ	NOF[3]	Shank[4]	
MTECS 03007C2 0.25ISO	0.72	0.250	2.5	39.00	3.00	M1	3	C	●
MTECS 03009C3 0.25ISO	0.90	0.250	3.0	39.00	3.00	M1.2	3	C	●
MTECS 03011C4 0.3ISO [1]	1.05	0.300	4.0	39.00	3.00	M1.4	3	C	●
MTECS 03012C5 0.35ISO [1]	1.20	0.350	4.8	39.00	3.00	M1.6	3	C	●
MTECS 03016C6 0.4ISO [1]	1.53	0.400	6.0	39.00	3.00	M2	3	C	●
MTECS 06016C4 0.4ISO	1.53	0.400	4.5	58.00	6.00	M2	3	C	●
MTECS 03017C7 0.45ISO [1]	1.65	0.450	7.0	39.00	3.00	M2.2	3	C	●
MTECS 06017C5 0.45ISO	1.65	0.450	5.0	58.00	6.00	M2.2	3	C	●
MTECS 0602C5 0.45ISO	1.95	0.450	5.5	58.00	6.00	M2.5	3	C	●
MTECS 0602C5 0.45ISO-L	1.95	0.450	5.5	105.00	6.00	M2.5	3	C	●
MTECS 0602C7 0.45ISO	1.95	0.450	7.5	58.00	6.00	M2.5	3	C	●
MTECS 06024C6 0.5ISO	2.37	0.500	6.5	58.00	6.00	M3	3	C	●
MTECS 06024C9 0.5ISO	2.37	0.500	9.5	58.00	6.00	M3	3	C	●
MTECS 06024C9 0.5ISO-L	2.37	0.500	9.5	105.00	6.00	M3	3	C	●
MTECS 03024C12 0.5ISO	2.40	0.500	12.5	39.00	3.00	M3	3	C	●
MTECS 03024C15 0.5ISO	2.40	0.500	15.5	39.00	3.00	M3	3	C	●
MTECS 06028C10 0.6ISO	2.75	0.600	10.5	58.00	6.00	M3.5	3	C	●
MTECS 06028C7 0.6ISO	2.75	0.600	7.5	58.00	6.00	M3.5	3	C	●
MTECS 06031C12 0.7ISO	3.10	0.700	12.5	58.00	6.00	M4	3	C	●
MTECS 06031C120.7ISO-L	3.10	0.700	12.5	105.00	6.00	M4	3	C	●
MTECS 06031C16 0.7ISO	3.10	0.700	16.7	58.00	6.00	M4	3	C	●
MTECS 06031C9 0.7ISO	3.10	0.700	9.0	58.00	6.00	M4	3	C	●
MTECS 06038C12 0.8ISO	3.80	0.800	12.5	58.00	6.00	M5	3	C	●
MTECS 06038C16 0.8ISO	3.80	0.800	16.0	58.00	6.00	M5	3	C	●
MTECS 06038C160.8ISO-L	3.80	0.800	16.0	105.00	6.00	M5	3	C	●
MTECS 0604C20 0.8ISO	4.00	0.800	20.8	58.00	6.00	M5	3	C	●
MTECS 06047C14 1.0ISO	4.65	1.000	14.0	58.00	6.00	M6	3	C	●
MTECS 06047C20 1.0ISO	4.65	1.000	20.0	58.00	6.00	M6	3	C	●
MTECS 06047C201.0ISO-L	4.65	1.000	20.0	105.00	6.00	M6	3	C	●
MTECS 06048C25 1.0ISO	4.80	1.000	25.0	58.00	6.00	M6	3	C	●
MTECS 06054D20 0.5ISO	5.35	0.500	20.0	58.00	6.00	M6	4	C	●
MTECS 0606C18 1.25ISO	6.00	1.250	18.0	58.00	6.00	M8	3	C	●
MTECS 0606C24 1.25ISO	6.00	1.250	24.0	58.00	6.00	M8	3	C	●
MTECS0606C24 1.25ISO-L	6.00	1.250	24.6	100.00	6.00	M8	3	C	●
MTECS 08078C23 1.5ISO	7.80	1.500	23.0	64.00	8.00	M10	3	C	●
MTECS 08078C31 1.5ISO	7.80	1.500	31.5	64.00	8.00	M10	3	C	●
MTECS 0808D25 0.75ISO	8.00	0.750	25.0	64.00	8.00	M10	4	C	●
MTECS 1009C26 1.75ISO	9.00	1.750	26.0	73.00	10.00	M12	3	C	●
MTECS 1009C37 1.75ISO	9.00	1.750	37.8	73.00	10.00	M12	3	C	●
MTECS 12118D35 2.0ISO	11.80	2.000	35.0	84.00	12.00	M16	4	C	●
MTECS 12118D50 2.0ISO	11.80	2.000	50.0	100.00	12.00	M16	4	C	●
MTECS 1615E43 2.5ISO	15.00	2.500	43.0	100.00	16.00	M20	5	C	●

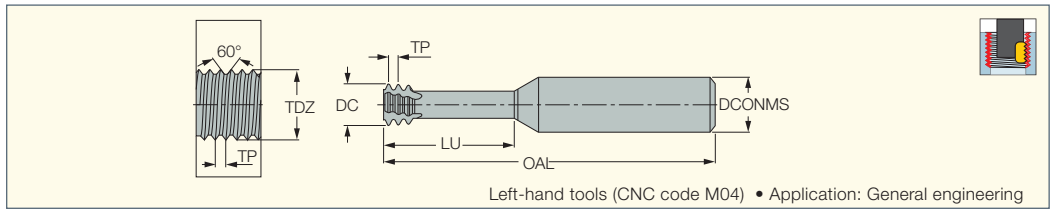
- For user guide, see pages 326-339
- For cutting conditions, see pages 362-367

[1] Specially designed for the production of dental implants
[2] Thread pitch
[3] Number of flutes
[4] C-Cylindrical

SOLIDTHREAD

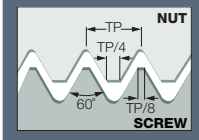
MTECSH-ISO

Small Diameter Short Left-Hand Cut Solid Carbide Internal ISO Profile Threading Endmills for Hardened Steel



Left-hand tools (CNC code M04) • Application: General engineering

M E T R I C



Designation	Dimensions DC	TP[1]	LU	OAL	DCONMS	TDZ	NOF[2]	Shank[3]	IC903
MTECSH 03011C4 0.3ISO	1.05	0.300	4.0	39.00	3.00	M1.4	3	C	•
MTECSH 03012C5 0.35ISO	1.20	0.350	4.8	39.00	3.00	M1.6, M1.8	3	C	•
MTECSH 03016C6 0.4ISO	1.55	0.400	6.0	39.00	3.00	M2	3	C	•
MTECSH 06016C4 0.4ISO	1.55	0.400	4.5	58.00	6.00	M2	3	C	•
MTECSH 06017C5 0.45ISO	1.65	0.450	5.0	58.00	6.00	M2.2	3	C	•
MTECSH 0602C5 0.45ISO	1.95	0.450	5.5	58.00	6.00	M2.5	3	C	•
MTECSH 0602C7 0.45ISO	1.95	0.450	7.5	58.00	6.00	M2.5	3	C	•
MTECSH 06024C6 0.5ISO	2.35	0.500	6.5	58.00	6.00	M3	3	C	•
MTECSH 06024C9 0.5ISO	2.35	0.500	9.5	58.00	6.00	M3	3	C	•
MTECSH 06028C7 0.6ISO	2.75	0.600	7.5	58.00	6.00	M3.5	3	C	•
MTECSH06028C10 0.6ISO	2.75	0.600	10.0	58.00	6.00	M3.5	3	C	•
MTECSH 06031C9 0.7ISO	3.10	0.700	9.0	58.00	6.00	M4	3	C	•
MTECSH 06031C12 0.7ISO	3.10	0.700	12.5	58.00	6.00	M4	3	C	•
MTECSH 06038C12 0.8ISO	3.80	0.800	12.5	58.00	6.00	M5	3	C	•
MTECSH 06038C16 0.8ISO	3.80	0.800	16.0	58.00	6.00	M5	3	C	•
MTECSH 06047C14 1.0ISO	4.65	1.000	14.0	58.00	6.00	M6	3	C	•
MTECSH 06047C20 1.0ISO	4.65	1.000	20.0	58.00	6.00	M6	3	C	•
MTECSH 0606C18 1.25ISO	5.95	1.250	18.0	58.00	6.00	M8	3	C	•
MTECSH 0606C24 1.25ISO	5.95	1.250	24.0	58.00	6.00	M8	3	C	•
MTECSH 08078C23 1.5ISO	7.80	1.500	23.0	64.00	8.00	M10	3	C	•
MTECSH 1009C26 1.75ISO	9.00	1.750	26.0	73.00	10.00	M12	3	C	•
MTECSH 12118D35 2.0ISO	11.80	2.000	35.0	84.00	12.00	M16	4	C	•

I N C H

Designation	Dimensions DC	TP[1]	LU	OAL	DCONMS	TDZ	NOF[2]	Shank[3]	IC903
MTECSH 03011C4 0.3ISO	1.05	0.300	4.0	39.00	3.00	M1.4	3	C	•
MTECSH 03012C5 0.35ISO	1.20	0.350	4.8	39.00	3.00	M1.6, M1.8	3	C	•
MTECSH 03016C6 0.4ISO	1.55	0.400	6.0	39.00	3.00	M2	3	C	•
MTECSH 06016C4 0.4ISO	1.55	0.400	4.5	58.00	6.00	M2	3	C	•
MTECSH 06017C5 0.45ISO	1.65	0.450	5.0	58.00	6.00	M2.2	3	C	•
MTECSH 0602C5 0.45ISO	1.95	0.450	5.5	58.00	6.00	M2.5	3	C	•
MTECSH 0602C7 0.45ISO	1.95	0.450	7.5	58.00	6.00	M2.5	3	C	•
MTECSH 06024C6 0.5ISO	2.35	0.500	6.5	58.00	6.00	M3	3	C	•
MTECSH 06024C9 0.5ISO	2.35	0.500	9.5	58.00	6.00	M3	3	C	•
MTECSH 06028C7 0.6ISO	2.75	0.600	7.5	58.00	6.00	M3.5	3	C	•
MTECSH06028C10 0.6ISO	2.75	0.600	10.0	58.00	6.00	M3.5	3	C	•
MTECSH 06031C9 0.7ISO	3.10	0.700	9.0	58.00	6.00	M4	3	C	•
MTECSH 06031C12 0.7ISO	3.10	0.700	12.5	58.00	6.00	M4	3	C	•
MTECSH 06038C12 0.8ISO	3.80	0.800	12.5	58.00	6.00	M5	3	C	•
MTECSH 06038C16 0.8ISO	3.80	0.800	16.0	58.00	6.00	M5	3	C	•
MTECSH 06047C14 1.0ISO	4.65	1.000	14.0	58.00	6.00	M6	3	C	•
MTECSH 06047C20 1.0ISO	4.65	1.000	20.0	58.00	6.00	M6	3	C	•
MTECSH 0606C18 1.25ISO	5.95	1.250	18.0	58.00	6.00	M8	3	C	•
MTECSH 0606C24 1.25ISO	5.95	1.250	24.0	58.00	6.00	M8	3	C	•
MTECSH 08078C23 1.5ISO	7.80	1.500	23.0	64.00	8.00	M10	3	C	•
MTECSH 1009C26 1.75ISO	9.00	1.750	26.0	73.00	10.00	M12	3	C	•
MTECSH 12118D35 2.0ISO	11.80	2.000	35.0	84.00	12.00	M16	4	C	•

• For user guide, see pages 326-339 • For cutting conditions, see pages 362-367

[1] Thread pitch

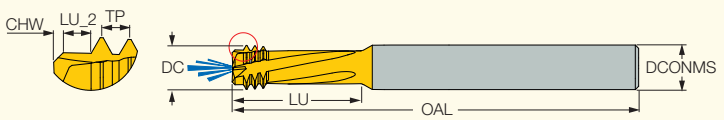
[2] Number of flutes

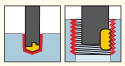
[3] C-Cylindrical

SOLIDTHREAD

MTECD-ISO

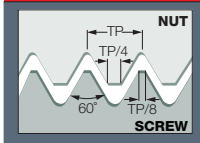
Small Diameter Short Left-Hand Cut Solid Carbide Endmills for Internal ISO Profile Drilling, Threading and Chamfering





Left-hand tools (CNC code M04) • Application: General engineering • Coolant holes only in 1.0-2.0 pitch tools

M E T R I C



Designation	Dimensions											IC908
	TP[1]	TDZ	DCONMS	DC	NOF[2]	LU	OAL	CHW	LU_2	Shank[3]	CSP[4]	
MTECD 06032C11 0.7ISO	0.700	M4	6.00	3.15	3	11.6	58.00	0.2	0.7	C	0	●
MTECD 0604C14 0.8ISO	0.800	M5	6.00	4.00	3	14.4	58.00	0.3	0.8	C	0	●
MTECD 08047C14 1.0ISO	1.000	M6-M9	8.00	4.70	3	14.0	64.00	0.4	1.0	C	1	●
MTECD 08061D18 1.25ISO	1.250	M8-M12	8.00	6.10	4	18.0	64.00	0.5	1.3	C	1	●
MTECD 08078D23 1.5ISO	1.500	M10-M15	8.00	7.80	4	23.0	64.00	0.6	1.5	C	1	●
MTECD 1009D26 1.75ISO	1.750	M12	10.00	9.00	4	26.0	73.00	0.6	1.8	C	1	●
MTECD 12118D35 2.0ISO	2.000	M16-M23	12.00	11.80	4	35.0	84.00	0.6	2.0	C	1	●

I N C H

Designation	Dimensions											IC908
	TP mm[1]	TDZ	DCONMS	DC	NOF[2]	LU	OAL	CHW	LU_2	Shank	CSP[3]	
MTECD 06032C11 0.7ISO	.700	M4	.236	.124	3	.457	2.283	0.2	.03	C	0	●
MTECD 0604C14 0.8ISO	.800	M5	.236	.157	3	.567	2.283	0.3	.03	C	0	●
MTECD 08047C14 1.0ISO	1.000	M6-M9	.315	.185	3	.551	2.520	0.4	.04	C	1	●
MTECD 08061D18 1.25ISO	1.250	M8-M12	.315	.240	4	.709	2.520	0.5	.05	C	1	●
MTECD 08078D23 1.5ISO	1.500	M10-M15	.315	.307	4	.906	2.520	0.6	.06	C	1	●
MTECD 1009D26 1.75ISO	1.750	M12	.394	.354	4	1.024	2.874	0.6	.07	C	1	●
MTECD 12118D35 2.0ISO	2.000	M16-M23	.472	.465	4	1.378	3.307	0.6	.08	C	1	●

• Thread hole, thread and chamfer are made by circular interpolation • For user guide, see pages 326-339 • For cutting conditions, see pages 362-367

(1) Thread pitch

(2) Number of flutes

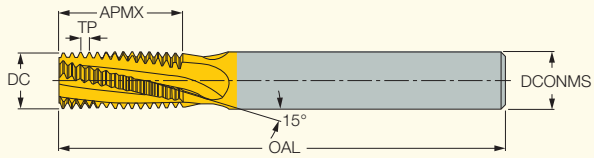
(3) C-Cylindrical

(4) 0 - Without coolant supply, 1 - With coolant supply

SOLIDTHREAD

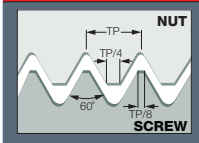
MTEC-UN

Solid Carbide Threading Endmills
for Internal UN Thread Profile



Application: General engineering

M E T R I C



Designation	TPI[1]	UNC	UNF	UNEF	DCONMS	DC	NOF[2]	APMX	OAL	Shank[3]	TP[4]	IC908
	Dimensions											
MTEC 06025C6 40UN	40.0	5	-	-	6.00	2.50	3	6.00	57.00	C	0.635	●
MTEC 06032C6 32UN	32.0	8	10	12	6.00	3.20	3	6.80	57.00	C	0.794	●
MTEC 0604C11 28UN	28.0	-	1/4	-	6.00	4.00	3	11.30	57.00	C	0.907	●
MTEC 0606C14 28UN	28.0	-	-	7/16,1/2	6.00	6.00	3	14.50	57.00	C	0.907	●
MTEC 0605C14 24UN	24.0	-	5/16	-	6.00	5.00	3	14.30	57.00	C	1.058	●
MTEC 0807C21 24UN	24.0	-	3/8	9/16,5/8	8.00	7.00	3	20.00	63.00	C	1.058	●
MTEC 06045C12 20UN	20.0	1/4	-	-	6.00	4.50	3	12.10	57.00	C	1.270	●
MTEC 0807C21 20UN	20.0	-	7/16,1/2	-	8.00	7.00	3	20.00	63.00	C	1.270	●
MTEC 1212E27 20UN	20.0	-	-	3/4,1	12.00	12.00	5	27.30	83.00	C	1.270	●
MTEC 0605C14 18UN	18.0	5/16	-	-	6.00	5.00	3	14.80	57.00	C	1.411	●
MTEC 1010D26 18UN	18.0	-	9/16,5/8	1-1/8,1-5/8	10.00	10.00	4	26.10	72.00	C	1.411	●
MTEC 0606C16 16UN	16.0	3/8	-	-	6.00	6.00	3	16.70	57.00	C	1.588	●
MTEC 1212D31 16UN	16.0	-	3/4	-	12.00	12.00	4	30.00	83.00	C	1.588	●
MTEC 1615E37 14UN	14.0	-	7/8	-	16.00	15.00	5	37.20	100.00	C	1.814	●
MTEC 0808C22 13UN	13.0	1/2	-	-	8.00	8.00	3	22.50	63.00	C	1.954	●
MTEC 1010C26 12UN	12.0	9/16	-	-	10.00	10.00	3	26.50	72.00	C	2.117	●
MTEC 1616E41 12UN	12.0	-	1,1-1/2	-	16.00	16.00	5	41.30	100.00	C	2.117	●
MTEC 1010C28 11UN	11.0	5/8	-	-	10.00	10.00	3	28.90	72.00	C	2.309	●
MTEC 1212C34 10UN	10.0	3/4	-	-	12.00	12.00	3	34.30	83.00	C	2.540	●
MTEC 1615C38 9UN	9.0	7/8	-	-	16.00	15.00	3	38.10	100.00	C	2.822	●
MTEC 1616C42 8UN	8.0	1.0	-	-	16.00	16.00	3	42.90	100.00	C	3.175	●

I N C H

Designation	TPI[1]	UNC	UNF	UNEF	DCONMS	DC	NOF[2]	APMX	OAL	Shank[3]	TP[4]	IC908
	Dimensions											
MTEC 06025C6 40UN	40.0	5	-	-	6.00	2.50	3	6.00	57.00	C	0.635	●
MTEC 06032C6 32UN	32.0	8	10	12	6.00	3.20	3	6.80	57.00	C	0.794	●
MTEC 0604C11 28UN	28.0	-	1/4	-	6.00	4.00	3	11.30	57.00	C	0.907	●
MTEC 0606C14 28UN	28.0	-	-	7/16,1/2	6.00	6.00	3	14.50	57.00	C	0.907	●
MTEC 0605C14 24UN	24.0	-	5/16	-	6.00	5.00	3	14.30	57.00	C	1.058	●
MTEC 0807C21 24UN	24.0	-	3/8	9/16,5/8	8.00	7.00	3	20.00	63.00	C	1.058	●
MTEC 06045C12 20UN	20.0	1/4	-	-	6.00	4.50	3	12.10	57.00	C	1.270	●
MTEC 0807C21 20UN	20.0	-	7/16,1/2	-	8.00	7.00	3	20.00	63.00	C	1.270	●
MTEC 1212E27 20UN	20.0	-	-	3/4,1	12.00	12.00	5	27.30	83.00	C	1.270	●
MTEC 0605C14 18UN	18.0	5/16	-	-	6.00	5.00	3	14.80	57.00	C	1.411	●
MTEC 1010D26 18UN	18.0	-	9/16,5/8	1-1/8,1-5/8	10.00	10.00	4	26.10	72.00	C	1.411	●
MTEC 0606C16 16UN	16.0	3/8	-	-	6.00	6.00	3	16.70	57.00	C	1.588	●
MTEC 1212D31 16UN	16.0	-	3/4	-	12.00	12.00	4	30.00	83.00	C	1.588	●
MTEC 1615E37 14UN	14.0	-	7/8	-	16.00	15.00	5	37.20	100.00	C	1.814	●
MTEC 0808C22 13UN	13.0	1/2	-	-	8.00	8.00	3	22.50	63.00	C	1.954	●
MTEC 1010C26 12UN	12.0	9/16	-	-	10.00	10.00	3	26.50	72.00	C	2.117	●
MTEC 1616E41 12UN	12.0	-	1,1-1/2	-	16.00	16.00	5	41.30	100.00	C	2.117	●
MTEC 1010C28 11UN	11.0	5/8	-	-	10.00	10.00	3	28.90	72.00	C	2.309	●
MTEC 1212C34 10UN	10.0	3/4	-	-	12.00	12.00	3	34.30	83.00	C	2.540	●
MTEC 1615C38 9UN	9.0	7/8	-	-	16.00	15.00	3	38.10	100.00	C	2.822	●
MTEC 1616C42 8UN	8.0	1.0	-	-	16.00	16.00	3	42.90	100.00	C	3.175	●

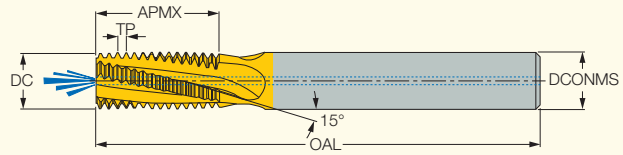
- For user guide, see pages 326-339
- For cutting conditions, see pages 362-367

(1) Threads per inch
(2) Number of flutes
(3) C-Cylindrical
(4) Thread pitch

SOLIDTHREAD

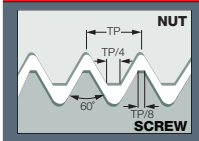
MTECB-UN

Solid Carbide Threading Endmills with Coolant Holes for Internal UN Thread Profile



Application: General engineering

M E T R I C



Designation	Dimensions TPI[1]	UNC	UNF	UNEF	DCONMS	DC	NOF[2]	APMX	OAL	Shank[3]	TP[4]	IC908
MTECB 06032C6 32UN	32.0	8	10	12	6.00	3.20	3	6.80	58.00	C	0.794	●
MTECB 0606C14 32UN	32.0	-	-	7/16-1/2	6.00	6.00	3	16.00	58.00	C	0.794	●
MTECB 0808D18 32UN	32.0	-	-	3/8	8.00	8.00	4	18.70	64.00	C	0.794	●
MTECB 0605C11 28UN	28.0	-	1/4	-	6.00	5.00	3	11.30	58.00	C	0.907	●
MTECB 08066C14 24UN	24.0	-	5/16	-	8.00	6.60	3	14.30	64.00	C	1.058	●
MTECB 0808D21 24UN	24.0	-	-	9/16-5/8	8.00	8.00	4	20.60	64.00	C	1.058	●
MTECB 0808C21 20UN	20.0	-	7/16	-	8.00	8.00	3	21.00	64.00	C	1.270	●
MTECB 1010D22 20UN	20.0	-	1/2	-	10.00	10.00	4	22.30	73.00	C	1.270	●
MTECB 06056C14 18UN	18.0	5/16	-	-	6.00	5.60	3	14.80	58.00	C	1.411	●
MTECB 12113D26 18UN	18.0	-	9/16-5/8	1-1/8_1-5/8	12.00	11.30	4	26.10	84.00	C	1.411	●
MTECB 08067C16 16UN	16.0	3/8	-	-	8.00	6.70	3	16.70	64.00	C	1.588	●
MTECB 1212D31 16UN	16.0	-	3/4	-	12.00	12.00	4	31.00	84.00	C	1.588	●
MTECB 08077C20 14UN	14.0	7/16	-	-	8.00	7.70	3	20.90	64.00	C	1.814	●
MTECB 1616E37 14UN	14.0	-	7/8	-	16.00	16.00	5	37.20	105.00	C	1.814	●
MTECB 10092C22 13UN	13.0	1/2	-	-	10.00	9.20	3	22.50	73.00	C	1.954	●
MTECB 12114C28 11UN	11.0	5/8	-	-	12.00	11.40	3	28.90	84.00	C	2.309	●
MTECB 16144D34 10UN	10.0	3/4	-	-	16.00	14.40	4	34.30	105.00	C	2.540	●
MTECB 20195D42 8UN	8.0	1	-	-	20.00	19.50	4	42.90	105.00	C	3.175	●

I N C H

Designation	Dimensions TPI[1]	UNC	UNF	UNEF	DCONMS	DC	NOF[2]	APMX	OAL	Shank[3]	TP[4]	IC908
MTECB 06032C6 32UN	32.0	8	10	12	6.00	3.20	3	6.80	58.00	C	0.794	●
MTECB 0606C14 32UN	32.0	-	-	7/16-1/2	6.00	6.00	3	16.00	58.00	C	0.794	●
MTECB 0808D18 32UN	32.0	-	-	3/8	8.00	8.00	4	18.70	64.00	C	0.794	●
MTECB 0605C11 28UN	28.0	-	1/4	-	6.00	5.00	3	11.30	58.00	C	0.907	●
MTECB 08066C14 24UN	24.0	-	5/16	-	8.00	6.60	3	14.30	64.00	C	1.058	●
MTECB 0808D21 24UN	24.0	-	-	9/16-5/8	8.00	8.00	4	20.60	64.00	C	1.058	●
MTECB 0808C21 20UN	20.0	-	7/16	-	8.00	8.00	3	21.00	64.00	C	1.270	●
MTECB 1010D22 20UN	20.0	-	1/2	-	10.00	10.00	4	22.30	73.00	C	1.270	●
MTECB 06056C14 18UN	18.0	5/16	-	-	6.00	5.60	3	14.80	58.00	C	1.411	●
MTECB 12113D26 18UN	18.0	-	9/16-5/8	1-1/8_1-5/8	12.00	11.30	4	26.10	84.00	C	1.411	●
MTECB 08067C16 16UN	16.0	3/8	-	-	8.00	6.70	3	16.70	64.00	C	1.588	●
MTECB 1212D31 16UN	16.0	-	3/4	-	12.00	12.00	4	31.00	84.00	C	1.588	●
MTECB 08077C20 14UN	14.0	7/16	-	-	8.00	7.70	3	20.90	64.00	C	1.814	●
MTECB 1616E37 14UN	14.0	-	7/8	-	16.00	16.00	5	37.20	105.00	C	1.814	●
MTECB 10092C22 13UN	13.0	1/2	-	-	10.00	9.20	3	22.50	73.00	C	1.954	●
MTECB 12114C28 11UN	11.0	5/8	-	-	12.00	11.40	3	28.90	84.00	C	2.309	●
MTECB 16144D34 10UN	10.0	3/4	-	-	16.00	14.40	4	34.30	105.00	C	2.540	●
MTECB 20195D42 8UN	8.0	1	-	-	20.00	19.50	4	42.90	105.00	C	3.175	●

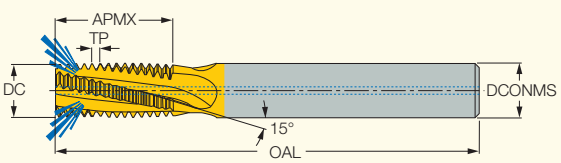
- For user guide, see pages 326-339
- For cutting conditions, see pages 362-367

(1) Threads per inch
(2) Number of flutes
(3) C-Cylindrical
(4) Thread pitch

SOLIDTHREAD

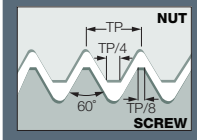
MTECZ-UN

Solid Carbide Threading Endmills with Coolant Holes Located in the Flutes for Internal UN Thread Profile



Application: General engineering

M E T R I C



Designation	TPI[1]	UNC	UNF	UNEF	DCONMS	DC	NOF[2]	APMX	OAL	Shank[3]	TP[4]	IC908
	Dimensions											
MTECZ 1010D22 20UN	20.0	-	1/2	-	10.00	10.00	4	22.30	73.00	C	1.270	●
MTECZ 12113D26 18UN	18.0	-	9/16-5/8	1_1/8-1_5/8	12.00	11.30	4	26.10	84.00	C	1.411	●
MTECZ 08067C16 16UN	16.0	3/8	-	-	8.00	6.70	3	16.70	64.00	C	1.588	●
MTECZ 16144D34 10UN	10.0	3/4	-	-	16.00	14.40	4	34.30	101.00	C	2.540	●

I N C H

Designation	TPI[1]	UNC	UNF	UNEF	DCONMS	DC	NOF[2]	APMX	OAL	Shank	TP mm[3]	IC908
	Dimensions											
MTECZ 1010D22 20UN	20.0	-	1/2	-	.394	.394	4	.878	2.874	C	1.270	●
MTECZ 12113D26 18UN	18.0	-	9/16-5/8	1_1/8-1_5/8	.472	.445	4	1.028	3.307	C	1.411	●
MTECZ 08067C16 16UN	16.0	3/8	-	-	.315	.264	3	.657	2.520	C	1.588	●
MTECZ 16144D34 10UN	10.0	3/4	-	-	.630	.567	4	1.350	3.976	C	2.540	●

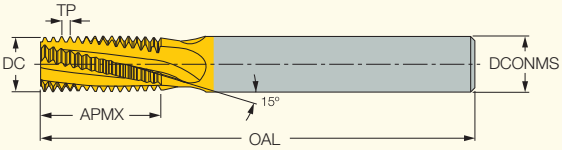
- With internal coolant hole • For user guide, see pages 326-339
- For cutting conditions, see pages 362-367

[1] Threads per inch
[2] Number of flutes
[3] C-Cylindrical
[4] Thread pitch

SOLIDTHREAD

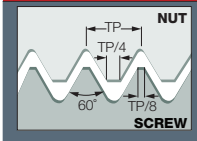
MTEC E-UN

Solid Carbide Threading Endmills with UN Form for External Threading



Application: General engineering

M E T R I C



Designation	TPI[1]	DCONMS	DC	NOF[2]	APMX	OAL	Shank[3]	IC908
	Dimensions							
MTEC E 1010D16 24UN	24.0	10.00	10.00	4	16.40	73.00	C	●
MTEC E 1212E21 20UN	20.0	12.00	12.00	5	21.00	84.00	C	●
MTEC E 1212D20 12UN	12.0	12.00	12.00	4	20.10	84.00	C	●

I N C H

Designation	TPI[1]	DCONMS	DC	NOF[2]	APMX	OAL	Shank	IC908
	Dimensions							
MTEC E 1010D16 24UN	24.0	.394	.394	4	.646	2.874	C	●
MTEC E 1212E21 20UN	20.0	.472	.472	5	.827	3.307	C	●
MTEC E 1212D20 12UN	12.0	.472	.472	4	.791	3.307	C	●

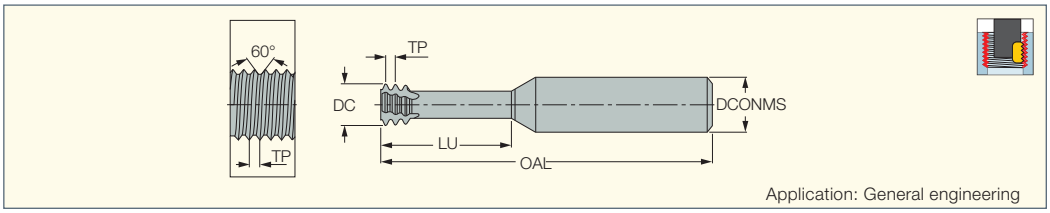
- For user guide, see pages 326-339
- For cutting conditions, see pages 362-367

[1] Threads per inch
[2] Number of flutes
[3] C-Cylindrical

SOLIDTHREAD

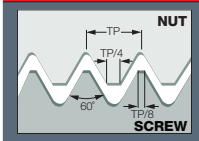
MTECS-UN

Small Diameter Solid
Carbide UN Profile Threading
Endmills for Steel



Application: General engineering

M E T R I C



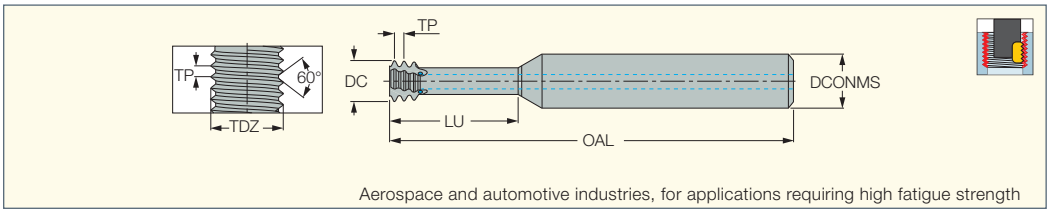
Designation	Dimensions DC	TPI[2]	TP[3]	LU	OAL	DCONMS	UNC	UNF	NOF[4]	Shank[5]	IC908
MTECS 03012C8 80UN	1.15	80.0	0.318	8.0	39.00	3.00	-	0	3	C	●
MTECS 03015C6 72UN [1]	1.45	72.0	0.353	6.0	39.00	3.00	-	1	3	C	●
MTECS 03016C6 56UN	1.65	56.0	0.454	6.6	39.00	3.00	2	3	3	C	●
MTECS 03016C9 56UN	1.65	56.0	0.454	9.2	39.00	3.00	2	3	3	C	●
MTECS 03016C11 56UN	1.65	56.0	0.454	11.4	39.00	3.00	2	3	3	C	●
MTECS 06016C4 56UN	1.65	56.0	0.454	4.4	58.00	6.00	2	3	3	C	●
MTECS 06016C6 56UN	1.65	56.0	0.454	6.6	58.00	6.00	2	3	3	C	●
MTECS 06019C5 48UN	1.90	48.0	0.529	5.2	58.00	6.00	3	4	3	C	●
MTECS 03021C8 40UN	2.10	40.0	0.635	8.0	39.00	3.00	4	-	3	C	●
MTECS 03021C12 40UN	2.10	40.0	0.635	12.0	39.00	3.00	4	-	3	C	●
MTECS 06021C8 40UN	2.10	40.0	0.635	8.0	58.00	6.00	4	-	3	C	●
MTECS 06024C9 40UN	2.45	40.0	0.635	9.6	58.00	6.00	5	6	3	C	●
MTECS 06021C6 40UN	2.10	40.0	0.635	6.3	58.00	6.00	4	-	3	C	●
MTECS 06021C6 40UN-L	2.10	40.0	0.635	6.3	105.00	6.00	4	-	3	C	●
MTECS 06033C9 36UN	3.30	36.0	0.706	9.0	58.00	6.00	-	8	3	C	●
MTECS 06025C7 32UN	2.55	32.0	0.794	7.1	58.00	6.00	6	-	3	C	●
MTECS 06025C10 32UN	2.55	32.0	0.794	10.5	58.00	6.00	6	-	3	C	●
MTECS 06025C10 32UN-L	2.55	32.0	0.794	10.5	105.00	6.00	6	-	3	C	●
MTECS 06032C9 32UN	3.20	32.0	0.794	9.5	58.00	6.00	8	10	3	C	●
MTECS 06032C12 32UN	3.20	32.0	0.794	12.5	58.00	6.00	8	10	3	C	●
MTECS 06037C10 32UN	3.70	32.0	0.794	10.5	58.00	6.00	-	10	3	C	●
MTECS 06037C15 32UN	3.70	32.0	0.794	15.0	58.00	6.00	-	10	3	C	●
MTECS 06037C15 32UN-L	3.70	32.0	0.794	15.0	101.00	6.00	-	10	3	C	●
MTECS 06042C11 28UN	4.20	28.0	0.907	11.0	58.00	6.00	-	12	3	C	●
MTECS 0605C14 28UN	5.00	28.0	0.907	14.5	58.00	6.00	-	1/4	3	C	●
MTECS 0605C19 28UN	5.00	28.0	0.907	19.0	58.00	6.00	-	1/4	3	C	●
MTECS 06035C10 24UN	3.50	24.0	1.058	10.6	58.00	6.00	10,12	-	3	C	●
MTECS 06035C15 24UN	3.50	24.0	1.058	15.5	58.00	6.00	10,12	-	3	C	●
MTECS 08066C17 24UN	6.60	24.0	1.058	17.0	64.00	8.00	-	5/16	3	C	●
MTECS 08066C24 24UN	6.60	24.0	1.058	24.0	64.00	8.00	-	5/16	3	C	●
MTECS 06047C14 20UN	4.75	20.0	1.270	14.0	58.00	6.00	1/4	-	3	C	●
MTECS 06047C19 20UN	4.75	20.0	1.270	19.0	58.00	6.00	1/4	-	3	C	●
MTECS 06047C19 20UN-L	4.75	20.0	1.270	19.0	100.00	6.00	1/4	-	3	C	●
MTECS 0808C25 20UN	8.00	20.0	1.270	25.0	64.00	8.00	-	7/16	3	C	●
MTECS 0808C34 20UN	8.00	20.0	1.270	34.6	64.00	8.00	-	7/16	3	C	●
MTECS 0606C17 18UN	6.00	18.0	1.411	17.0	58.00	6.00	5/16	-	3	C	●
MTECS 0606C23 18UN	6.00	18.0	1.411	23.0	58.00	6.00	5/16	-	3	C	●
MTECS 1212D35 18UN	12.00	18.0	1.411	35.0	84.00	12.00	-	5/8	4	C	●
MTECS 08067C22 16UN	6.70	16.0	1.588	22.0	64.00	8.00	3/8	-	3	C	●
MTECS 08067C30 16UN	6.70	16.0	1.588	30.2	64.00	8.00	3/8	-	3	C	●
MTECS 08077C25 14UN	7.70	14.0	1.814	25.0	64.00	8.00	7/16	-	3	C	●
MTECS 08077C35 14UN	7.70	14.0	1.814	35.2	64.00	8.00	7/16	-	3	C	●
MTECS 10092C27 13UN	9.20	13.0	1.954	27.5	73.00	10.00	1/2	-	3	C	●
MTECS 12114C34 11UN	11.40	11.0	2.309	34.5	84.00	12.00	5/8	-	3	C	●
MTECS 12114C50 11UN	11.40	11.0	2.309	50.0	101.00	12.00	5/8	-	3	C	●

- For user guide, see pages 326-339
- For cutting conditions, see pages 362-367

[1] Specially designed for the production of dental implants
[2] Threads per inch
[3] Thread pitch
[4] Number of flutes
[5] C-Cylindrical

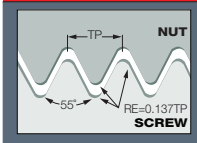
SOLIDTHREAD

MTECS-MJ
Small Diameter Short Solid Carbide MJ-Type Profile Threading Endmills



Aerospace and automotive industries, for applications requiring high fatigue strength

M E T R I C



Designation	Dimensions DC	TP[2]	LU	OAL	DCONMS	TDZ	NOF[3]	Shank[4]	CSP[5]	IC908
MTECS 06032C10 0.7MJ [1]	3.20	0.700	10.0	58.00	6.00	MJ4	3	C	0	●
MTECS 06039C12 0.8MJ [1]	3.90	0.800	12.5	58.00	6.00	MJ5	3	C	0	●
MTECS 06048C15 1.0MJ [1]	4.80	1.000	15.0	58.00	6.00	MJ6	3	C	0	●
MTECS 08061C20 1.25MJ	6.10	1.250	20.0	64.00	8.00	MJ8	3	C	1	●
MTECS 0808C25 1.5MJ	8.00	1.500	25.0	64.00	8.00	MJ10	3	C	1	●
MTECS 10092C30 1.75MJ	9.20	1.750	30.0	73.00	10.00	MJ12	3	C	1	●
MTECS 1010C35 2.0MJ	10.00	2.000	35.0	73.00	10.00	MJ14, MJ16	3	C	1	●

I N C H

Designation	Dimensions DC	TP mm[1]	LU	OAL	DCONMS	TDZ	NOF[2]	Shank	CSP[3]	IC908
MTECS 06032C10 0.7MJ	.126	.700	.394	2.283	.236	MJ4	3	C	0	●
MTECS 06039C12 0.8MJ	.154	.800	.492	2.283	.236	MJ5	3	C	0	●
MTECS 06048C15 1.0MJ	.189	1.000	.591	2.283	.236	MJ6	3	C	0	●
MTECS 08061C20 1.25MJ	.240	1.250	.787	2.520	.315	MJ8	3	C	1	●
MTECS 0808C25 1.5MJ	.315	1.500	.984	2.520	.315	MJ10	3	C	1	●
MTECS 10092C30 1.75MJ	.362	1.750	1.181	2.874	.394	MJ12	3	C	1	●
MTECS 1010C35 2.0MJ	.394	2.000	1.378	2.874	.394	MJ14, MJ16	3	C	1	●

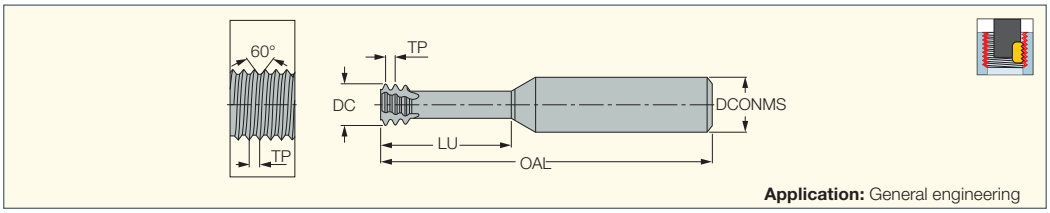
• For user guide, see pages 326-339 • For cutting conditions, see pages 362-367

[1] Without coolant holes
[2] Thread pitch
[3] Number of flutes
[4] C-Cylindrical
[5] 0 - Without coolant supply, 1 - With coolant supply

SOLIDTHREAD

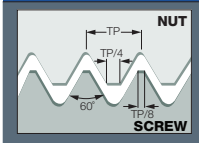
MTECS-UN

Small Diameter Solid
Carbide UN Profile Threading
Endmills for Steel



Application: General engineering

I N C H



Designation	Dimensions										IC908
	DC	TPI[2]	TP[3]	LU	OAL	DCONMS	UNC	UNF	NOF[4]	Shank[5]	
MTECS 03012C8 80UN	1.15	80.0	0.318	8.0	39.00	3.00	-	0	3	C	●
MTECS 03015C6 72UN [1]	1.45	72.0	0.353	6.0	39.00	3.00	-	1	3	C	●
MTECS 03016C6 56UN	1.65	56.0	0.454	6.6	39.00	3.00	2	3	3	C	●
MTECS 03016C9 56UN	1.65	56.0	0.454	9.2	39.00	3.00	2	3	3	C	●
MTECS 03016C11 56UN	1.65	56.0	0.454	11.4	39.00	3.00	2	3	3	C	●
MTECS 06016C4 56UN	1.65	56.0	0.454	4.4	58.00	6.00	2	3	3	C	●
MTECS 06016C6 56UN	1.65	56.0	0.454	6.6	58.00	6.00	2	3	3	C	●
MTECS 06019C5 48UN	1.90	48.0	0.529	5.2	58.00	6.00	3	4	3	C	●
MTECS 03021C8 40UN	2.10	40.0	0.635	8.0	39.00	3.00	4	-	3	C	●
MTECS 03021C12 40UN	2.10	40.0	0.635	12.0	39.00	3.00	4	-	3	C	●
MTECS 06021C8 40UN	2.10	40.0	0.635	8.0	58.00	6.00	4	-	3	C	●
MTECS 06024C9 40UN	2.45	40.0	0.635	9.6	58.00	6.00	5	6	3	C	●
MTECS 06021C6 40UN	2.10	40.0	0.635	6.3	58.00	6.00	4	-	3	C	●
MTECS 06021C6 40UN-L	2.10	40.0	0.635	6.3	105.00	6.00	4	-	3	C	●
MTECS 06033C9 36UN	3.30	36.0	0.706	9.0	58.00	6.00	-	8	3	C	●
MTECS 06025C7 32UN	2.55	32.0	0.794	7.1	58.00	6.00	6	-	3	C	●
MTECS 06025C10 32UN	2.55	32.0	0.794	10.5	58.00	6.00	6	-	3	C	●
MTECS 06025C10 32UN-L	2.55	32.0	0.794	10.5	105.00	6.00	6	-	3	C	●
MTECS 06032C9 32UN	3.20	32.0	0.794	9.5	58.00	6.00	8	10	3	C	●
MTECS 06032C12 32UN	3.20	32.0	0.794	12.5	58.00	6.00	8	10	3	C	●
MTECS 06037C10 32UN	3.70	32.0	0.794	10.5	58.00	6.00	-	10	3	C	●
MTECS 06037C15 32UN	3.70	32.0	0.794	15.0	58.00	6.00	-	10	3	C	●
MTECS 06037C15 32UN-L	3.70	32.0	0.794	15.0	101.00	6.00	-	10	3	C	●
MTECS 06042C11 28UN	4.20	28.0	0.907	11.0	58.00	6.00	-	12	3	C	●
MTECS 0605C14 28UN	5.00	28.0	0.907	14.5	58.00	6.00	-	1/4	3	C	●
MTECS 0605C19 28UN	5.00	28.0	0.907	19.0	58.00	6.00	-	1/4	3	C	●
MTECS 06035C10 24UN	3.50	24.0	1.058	10.6	58.00	6.00	10,12	-	3	C	●
MTECS 06035C15 24UN	3.50	24.0	1.058	15.5	58.00	6.00	10,12	-	3	C	●
MTECS 08066C17 24UN	6.60	24.0	1.058	17.0	64.00	8.00	-	5/16	3	C	●
MTECS 08066C24 24UN	6.60	24.0	1.058	24.0	64.00	8.00	-	5/16	3	C	●
MTECS 06047C14 20UN	4.75	20.0	1.270	14.0	58.00	6.00	1/4	-	3	C	●
MTECS 06047C19 20UN	4.75	20.0	1.270	19.0	58.00	6.00	1/4	-	3	C	●
MTECS 06047C19 20UN-L	4.75	20.0	1.270	19.0	100.00	6.00	1/4	-	3	C	●
MTECS 0808C25 20UN	8.00	20.0	1.270	25.0	64.00	8.00	-	7/16	3	C	●
MTECS 0808C34 20UN	8.00	20.0	1.270	34.6	64.00	8.00	-	7/16	3	C	●
MTECS 0606C17 18UN	6.00	18.0	1.411	17.0	58.00	6.00	5/16	-	3	C	●
MTECS 0606C23 18UN	6.00	18.0	1.411	23.0	58.00	6.00	5/16	-	3	C	●
MTECS 1212D35 18UN	12.00	18.0	1.411	35.0	84.00	12.00	-	5/8	4	C	●
MTECS 08067C22 16UN	6.70	16.0	1.588	22.0	64.00	8.00	3/8	-	3	C	●
MTECS 08067C30 16UN	6.70	16.0	1.588	30.2	64.00	8.00	3/8	-	3	C	●
MTECS 08077C25 14UN	7.70	14.0	1.814	25.0	64.00	8.00	7/16	-	3	C	●
MTECS 08077C35 14UN	7.70	14.0	1.814	35.2	64.00	8.00	7/16	-	3	C	●
MTECS 10092C27 13UN	9.20	13.0	1.954	27.5	73.00	10.00	1/2	-	3	C	●
MTECS 12114C34 11UN	11.40	11.0	2.309	34.5	84.00	12.00	5/8	-	3	C	●
MTECS 12114C50 11UN	11.40	11.0	2.309	50.0	101.00	12.00	5/8	-	3	C	●

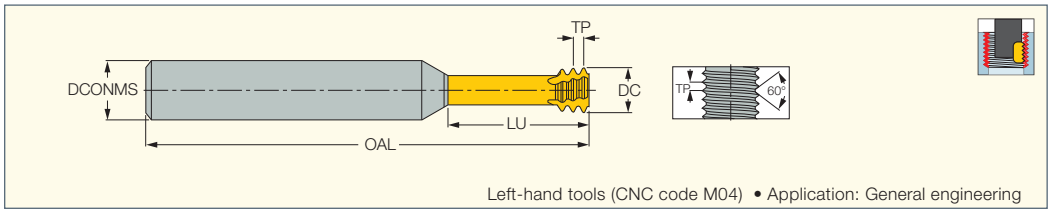
- For user guide, see pages 326-339
- For cutting conditions, see pages 362-367

[1] Specially designed for the production of dental implants
[2] Threads per inch
[3] Thread pitch
[4] Number of flutes
[5] C-Cylindrical

SOLIDTHREAD

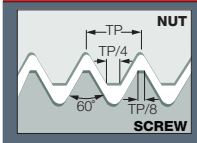
MTECSH-UN

Small Diameter Short Left-Hand Cut Solid Carbide UN Profile Threading Endmills for Hardened Steel



Left-hand tools (CNC code M04) • Application: General engineering

M E T R I C



Designation	Dimensions										IC903
	DC	TPI[1]	UNC	UNF	LU	OAL	DCONMS	NOF[2]	Shank[3]	TP[4]	
MTECSH 03015C6 72UN	1.45	72.0	-	1	6.0	39.00	3.00	3	C	0.353	●
MTECSH 06012C4 80UN	1.15	80.0	-	0	4.0	58.00	6.00	3	C	0.318	●
MTECSH 06016C6 56UN	1.65	56.0	2	3	6.6	58.00	6.00	3	C	0.454	●
MTECSH 06019C5 48UN	1.90	48.0	3	4	5.2	58.00	6.00	3	C	0.529	●
MTECSH 06021C6 40UN	2.10	40.0	4	-	6.3	58.00	6.00	3	C	0.635	●
MTECSH 06024C7 40UN	2.45	40.0	5	6	7.0	58.00	6.00	3	C	0.635	●
MTECSH 06021C8 40UN	2.10	40.0	4	-	8.0	58.00	6.00	3	C	0.635	●
MTECSH 06024C9 40UN	2.45	40.0	5	6	9.6	58.00	6.00	3	C	0.635	●
MTECSH 06025C7 32UN	2.55	32.0	6	-	7.1	58.00	6.00	3	C	0.794	●
MTECSH 06025C10 32UN	2.55	32.0	6	-	10.5	58.00	6.00	3	C	0.794	●
MTECSH 06032C9 32UN	3.20	32.0	8	-	9.5	58.00	6.00	3	C	0.794	●
MTECSH 06037C10 32UN	3.70	32.0	-	10	10.5	58.00	6.00	3	C	0.794	●
MTECSH 06032C12 32UN	3.20	32.0	8	-	12.5	58.00	6.00	3	C	0.794	●
MTECSH 06037C15 32UN	3.70	32.0	-	10	15.0	58.00	6.00	3	C	0.794	●
MTECSH 06042C11 28UN	4.20	28.0	-	12	11.0	58.00	6.00	3	C	0.907	●
MTECSH 0605C14 28UN	5.00	28.0	-	1/4	14.5	58.00	6.00	3	C	0.907	●
MTECSH 0605C19 28UN	5.00	28.0	-	1/4	19.0	58.00	6.00	3	C	0.907	●
MTECSH 06035C10 24UN	3.50	24.0	10,12	-	10.6	58.00	6.00	3	C	1.058	●
MTECSH 08066C17 24UN	6.60	24.0	-	5/16	17.0	64.00	8.00	3	C	1.058	●
MTECSH 08066C24 24UN	6.60	24.0	-	5/16	24.0	64.00	8.00	3	C	1.058	●
MTECSH 06047C14 20UN	4.75	20.0	1/4	-	14.0	58.00	6.00	3	C	1.270	●
MTECSH 06047C19 20UN	4.75	20.0	1/4	-	19.0	58.00	6.00	3	C	1.270	●
MTECSH 0808C25 20UN	8.00	20.0	-	7/16	25.0	64.00	8.00	3	C	1.270	●
MTECSH 0606C17 18UN	6.00	18.0	5/16	-	17.0	58.00	6.00	3	C	1.411	●
MTECSH 0606C23 18UN	6.00	18.0	5/16	-	23.0	58.00	6.00	3	C	1.411	●
MTECSH 08067C22 16UN	6.70	16.0	3/8	-	22.0	64.00	8.00	3	C	1.588	●
MTECSH 08077C25 14UN	7.70	14.0	7/16	-	25.0	64.00	8.00	3	C	1.814	●
MTECSH 10092C27 13UN	9.20	13.0	1/2	-	27.5	73.00	10.00	3	C	1.954	●
MTECSH 12114C34 11UN	11.40	11.0	5/8	-	34.5	84.00	12.00	3	C	2.309	●

- For user guide, see pages 326-339
- For cutting conditions, see pages 362-367

(1) Threads per inch
(2) Number of flutes
(3) C-Cylindrical
(4) Thread pitch

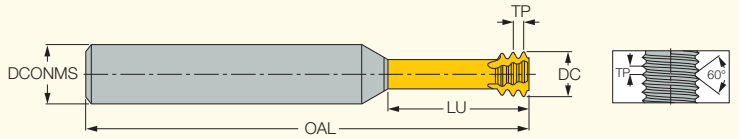
Cutting Data for Hardened Steel

ISO	Material	Hardness HRc	Cutting Speed m/min	Feed (mm/tooth) for Cutting Diameter (mm)								
				1.5	2	3	4	5	6	7	8	9
H	Hardened Steels	45-50	60-70	0.04	0.04	0.05	0.05	0.06	0.06	0.07	0.07	0.08
		51-55	50-60	0.03	0.03	0.04	0.04	0.05	0.05	0.06	0.06	0.07
		56-62	40-50	0.02	0.02	0.03	0.03	0.04	0.04	0.05	0.05	0.06

SOLIDTHREAD

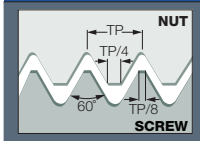
MTECSH-UN

Small Diameter Short Left-Hand Cut Solid Carbide UN Profile Threading Endmills for Hardened Steel



Left-hand tools (CNC code M04) • Application: General engineering

I N C H



Designation	Dimensions DC	TPI[1]	UNC	UNF	LU	OAL	DCONMS	NOF[2]	Shank[3]	TP[4]	IC903
MTECSH 03015C6 72UN	1.45	72.0	-	1	6.0	39.00	3.00	3	C	0.353	●
MTECSH 06012C4 80UN	1.15	80.0	-	0	4.0	58.00	6.00	3	C	0.318	●
MTECSH 06016C6 56UN	1.65	56.0	2	3	6.6	58.00	6.00	3	C	0.454	●
MTECSH 06019C5 48UN	1.90	48.0	3	4	5.2	58.00	6.00	3	C	0.529	●
MTECSH 06021C6 40UN	2.10	40.0	4	-	6.3	58.00	6.00	3	C	0.635	●
MTECSH 06024C7 40UN	2.45	40.0	5	6	7.0	58.00	6.00	3	C	0.635	●
MTECSH 06021C8 40UN	2.10	40.0	4	-	8.0	58.00	6.00	3	C	0.635	●
MTECSH 06024C9 40UN	2.45	40.0	5	6	9.6	58.00	6.00	3	C	0.635	●
MTECSH 06025C7 32UN	2.55	32.0	6	-	7.1	58.00	6.00	3	C	0.794	●
MTECSH 06025C10 32UN	2.55	32.0	6	-	10.5	58.00	6.00	3	C	0.794	●
MTECSH 06032C9 32UN	3.20	32.0	8	-	9.5	58.00	6.00	3	C	0.794	●
MTECSH 06037C10 32UN	3.70	32.0	-	10	10.5	58.00	6.00	3	C	0.794	●
MTECSH 06032C12 32UN	3.20	32.0	8	-	12.5	58.00	6.00	3	C	0.794	●
MTECSH 06037C15 32UN	3.70	32.0	-	10	15.0	58.00	6.00	3	C	0.794	●
MTECSH 06042C11 28UN	4.20	28.0	-	12	11.0	58.00	6.00	3	C	0.907	●
MTECSH 0605C14 28UN	5.00	28.0	-	1/4	14.5	58.00	6.00	3	C	0.907	●
MTECSH 0605C19 28UN	5.00	28.0	-	1/4	19.0	58.00	6.00	3	C	0.907	●
MTECSH 06035C10 24UN	3.50	24.0	10,12	-	10.6	58.00	6.00	3	C	1.058	●
MTECSH 08066C17 24UN	6.60	24.0	-	5/16	17.0	64.00	8.00	3	C	1.058	●
MTECSH 08066C24 24UN	6.60	24.0	-	5/16	24.0	64.00	8.00	3	C	1.058	●
MTECSH 06047C14 20UN	4.75	20.0	1/4	-	14.0	58.00	6.00	3	C	1.270	●
MTECSH 06047C19 20UN	4.75	20.0	1/4	-	19.0	58.00	6.00	3	C	1.270	●
MTECSH 0808C25 20UN	8.00	20.0	-	7/16	25.0	64.00	8.00	3	C	1.270	●
MTECSH 0606C17 18UN	6.00	18.0	5/16	-	17.0	58.00	6.00	3	C	1.411	●
MTECSH 0606C23 18UN	6.00	18.0	5/16	-	23.0	58.00	6.00	3	C	1.411	●
MTECSH 08067C22 16UN	6.70	16.0	3/8	-	22.0	64.00	8.00	3	C	1.588	●
MTECSH 08077C25 14UN	7.70	14.0	7/16	-	25.0	64.00	8.00	3	C	1.814	●
MTECSH 10092C27 13UN	9.20	13.0	1/2	-	27.5	73.00	10.00	3	C	1.954	●
MTECSH 12114C34 11UN	11.40	11.0	5/8	-	34.5	84.00	12.00	3	C	2.309	●

- For user guide, see pages 326-339
- For cutting conditions, see pages 362-367

(1) Threads per inch
(2) Number of flutes
(3) C-Cylindrical
(4) Thread pitch

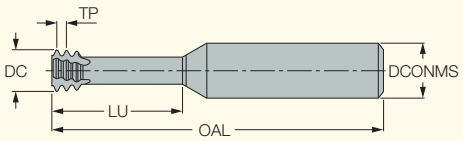
Cutting Data for Hardened Steel

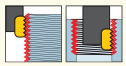
ISO	Material	Hardness HRc	Cutting Speed m/min	Feed (mm/tooth) for Cutting Diameter (mm) 1.5	2	3	4	5	6	7	8	9
H	Hardened Steels	45-50	60-70	0.04	0.04	0.05	0.05	0.06	0.06	0.07	0.07	0.08
		51-55	50-60	0.03	0.03	0.04	0.04	0.05	0.05	0.06	0.06	0.07
		56-62	40-50	0.02	0.02	0.03	0.03	0.04	0.04	0.05	0.05	0.06

SOLIDTHREAD

MTECS-W

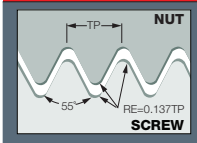
Short Solid Carbide Threading Endmills for Internal or External BSP and BSF Thread Profiles





Application: General engineering fittings and pipe couplings

M E T R I C



Designation	Dimensions DC	TPI(1)	LU	OAL	DCONMS	TDZ	NOF(2)	Shank(3)	IC908
MTECS 08078C19 28W	7.80	28.0	19.5	64.00	8.00	G 1/8	3	C	●
MTECS 1010D30 19W	10.00	19.0	30.0	73.00	10.00	G 1/4-3/8	4	C	●
MTECS 1212D37 14W	12.00	14.0	37.0	84.00	12.00	G 1/2-7/8	4	C	●
MTECS 1616D44 11W	16.00	11.0	44.0	105.00	16.00	G>1	4	C	●

I N C H

Designation	Dimensions DC	TPI(1)	LU	OAL	DCONMS	TDZ	NOF(2)	Shank(3)	IC908
MTECS 08078C19 28W	7.80	28.0	19.5	64.00	8.00	G 1/8	3	C	●
MTECS 1010D30 19W	10.00	19.0	30.0	73.00	10.00	G 1/4-3/8	4	C	●
MTECS 1212D37 14W	12.00	14.0	37.0	84.00	12.00	G 1/2-7/8	4	C	●
MTECS 1616D44 11W	16.00	11.0	44.0	105.00	16.00	G>1	4	C	●

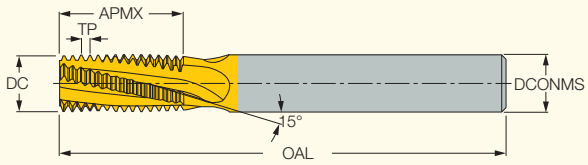
- For user guide, see pages 326-339
- For cutting conditions, see pages 362-367

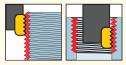
(1) Threads per inch
(2) Number of flutes
(3) C-Cylindrical

SOLIDTHREAD

MTEC-W

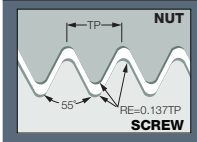
Solid Carbide Threading Endmills for Internal or External BSF/BSP Thread Profile





Application: General engineering fittings and pipe couplings

M E T R I C



Designation	Dimensions TPI(1)	TDZ	DCONMS	DC	NOF(2)	APMX	OAL	Shank(3)	IC908
MTEC 0606C9 28W	28.0	G1/8	6.00	6.00	3	9.50	58.00	C	●
MTEC 0808C14 19W	19.0	G1/4,G3/8	8.00	8.00	3	14.00	64.00	C	●
MTEC 1212D19 14W	14.0	G1/2,G7/8	12.00	12.00	4	19.30	84.00	C	●
MTEC 1212D26 14W	14.0	G1/2,G7/8	12.00	12.00	4	26.30	84.00	C	●
MTEC 1212C24 11W	11.0	G1,-G1-1/2	12.00	12.00	3	24.20	84.00	C	●
MTEC 1616D38 11W	11.0	G1,G3	16.00	16.00	4	38.10	101.00	C	●

I N C H

Designation	Dimensions TPI(1)	TDZ	DCONMS	DC	NOF(2)	APMX	OAL	Shank(3)	IC908
MTEC 0606C9 28W	28.0	G1/8	6.00	6.00	3	9.50	58.00	C	●
MTEC 0808C14 19W	19.0	G1/4,G3/8	8.00	8.00	3	14.00	64.00	C	●
MTEC 1212D19 14W	14.0	G1/2,G7/8	12.00	12.00	4	19.30	84.00	C	●
MTEC 1212D26 14W	14.0	G1/2,G7/8	12.00	12.00	4	26.30	84.00	C	●
MTEC 1212C24 11W	11.0	G1,-G1-1/2	12.00	12.00	3	24.20	84.00	C	●
MTEC 1616D38 11W	11.0	G1,G3	16.00	16.00	4	38.10	101.00	C	●

- For user guide, see pages 326-339
- For cutting conditions, see pages 362-367

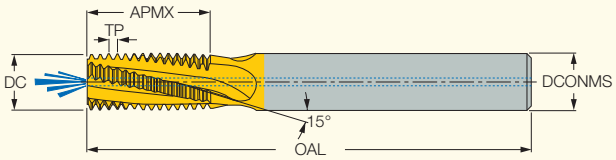
(1) Threads per inch
(2) Number of flutes
(3) C-Cylindrical

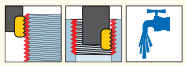
ISCAR

SOLIDTHREAD

MTECB-W

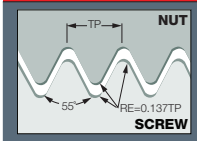
Solid Carbide Internal or External Threading Endmills with Coolant Holes for BSF/BSP Thread Profile





Application: General engineering fittings and pipe couplings

M E T R I C



Designation	Dimensions TPI(1)	TDZ	DCONMS	DC	NOF(2)	APMX	OAL	Shank(3)	IC908
MTECB 08078C14 28W	28.0	G1/8	8.00	7.80	3	14.10	64.00	C	●
MTECB 1010D16 19W	19.0	G1/4-3/8	10.00	10.00	4	16.70	73.00	C	●
MTECB 1616E26 14W	14.0	G1/2-7/8	16.00	16.00	5	26.30	105.00	C	●
MTECB 1616D38 11W	11.0	G=>1	16.00	16.00	4	38.10	105.00	C	●
MTECB 2020E47 11W	11.0	G=>1	20.00	20.00	5	47.30	105.00	C	●

I N C H

Designation	Dimensions TPI(1)	TDZ	DCONMS	DC	NOF(2)	APMX	OAL	Shank(3)	IC908
MTECB 08078C14 28W	28.0	G1/8	8.00	7.80	3	14.10	64.00	C	●
MTECB 1010D16 19W	19.0	G1/4-3/8	10.00	10.00	4	16.70	73.00	C	●
MTECB 1616E26 14W	14.0	G1/2-7/8	16.00	16.00	5	26.30	105.00	C	●
MTECB 1616D38 11W	11.0	G=>1	16.00	16.00	4	38.10	105.00	C	●
MTECB 2020E47 11W	11.0	G=>1	20.00	20.00	5	47.30	105.00	C	●

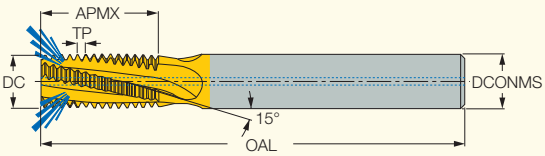
- For user guide, see pages 326-339
- For cutting conditions, see pages 362-367

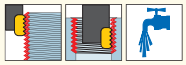
(1) Threads per inch
(2) Number of flutes
(3) C-Cylindrical

SOLIDTHREAD

MTECZ-BSF/BSP

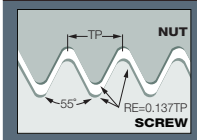
Solid Carbide Threading Endmills with Coolant Holes Located in the Flutes for Internal or External BSF/BSP Thread





Application: General engineering fittings and pipe couplings

M E T R I C



Designation	Dimensions TPI(1)	TDZ	DCONMS	DC	NOF(2)	APMX	OAL	Shank(3)	IC908
MTECZ 08078C14 28W	28.0	G1/8	8.00	7.80	3	14.10	64.00	C	●
MTECZ 1010D16 19W	19.0	G1/4-3/8	10.00	10.00	4	16.70	73.00	C	●
MTECZ 1616E26 14W	14.0	G1/2-7/8	16.00	16.00	5	26.30	101.00	C	●
MTECZ 1616D38 11W	11.0	G>1	16.00	16.00	4	38.10	101.00	C	●

I N C H

Designation	Dimensions TPI(1)	TDZ	DCONMS	DC	NOF(2)	APMX	OAL	Shank	IC908
MTECZ 08078C14 28W	28.0	G1/8	.315	.307	3	.555	2.520	C	●
MTECZ 1010D16 19W	19.0	G1/4-3/8	.394	.394	4	.657	2.874	C	●
MTECZ 1616E26 14W	14.0	G1/2-7/8	.630	.630	5	1.035	3.976	C	●
MTECZ 1616D38 11W	11.0	G>1	.630	.630	4	1.500	3.976	C	●

- With internal coolant hole
- For user guide, see pages 326-339
- For cutting conditions, see pages 362-367

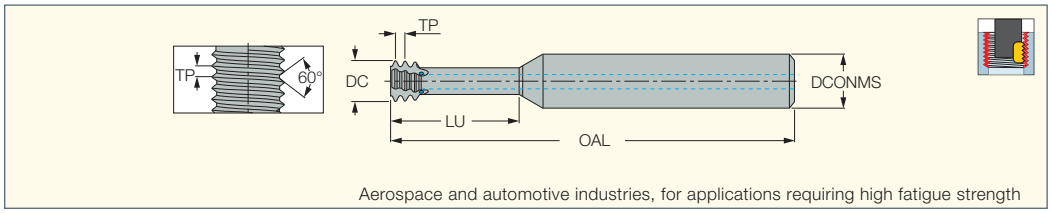
(1) Threads per inch
(2) Number of flutes
(3) C-Cylindrical

Member IMC Group

SOLIDTHREAD

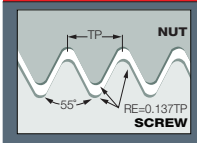
MTECS-UNJ

Small Diameter Short Solid Carbide UNJ-Type Profile Threading Endmills



Aerospace and automotive industries, for applications requiring high fatigue strength

M E T R I C



Designation	Dimensions DC	TPI[2]	UNJC	UNJF	LU	OAL	DCONMS	NOF[3]	Shank[4]	CSP[5]	IC908
MTECS 06033C10 32UNJ [1]	3.30	32.0	8	10	10.5	58.00	6.00	3	C	0	●
MTECS 08051C16 28UNJ	5.10	28.0	-	1/4	16.0	64.00	8.00	3	C	1	●
MTECS 08067C20 24UNJ	6.70	24.0	-	5/16, 3/8	20.0	64.00	8.00	3	C	1	●
MTECS 06049C16 20UNJ [1]	4.90	20.0	1/4	-	16.0	58.00	6.00	3	C	0	●
MTECS 0808C28 20UNJ	8.00	20.0	-	7/16	28.0	64.00	8.00	3	C	1	●
MTECS 08061C20 18UNJ	6.15	18.0	5/16	9/16	20.0	64.00	8.00	3	C	1	●
MTECS 08069C24 16UNJ	6.90	16.0	3/8	-	24.0	64.00	8.00	3	C	1	●
MTECS 08079C25 14UNJ	7.90	14.0	7/16	-	25.0	64.00	8.00	3	C	1	●
MTECS 10094C27 13UNJ	9.40	13.0	1/2	-	27.5	73.00	10.00	3	C	1	●

I N C H

Designation	Dimensions DC	TPI[1]	UNJC	UNJF	LU	OAL	DCONMS	NOF[2]	Shank	CSP[3]	IC908
MTECS 06033C10 32UNJ	.130	32.0	8	10	.413	2.283	.236	3	C	0	●
MTECS 08051C16 28UNJ	.201	28.0	-	1/4	.630	2.520	.315	3	C	1	●
MTECS 08067C20 24UNJ	.264	24.0	-	5/16, 3/8	.787	2.520	.315	3	C	1	●
MTECS 06049C16 20UNJ	.193	20.0	1/4	-	.630	2.283	.236	3	C	0	●
MTECS 0808C28 20UNJ	.315	20.0	-	7/16	1.102	2.520	.315	3	C	1	●
MTECS 08061C20 18UNJ	.242	18.0	5/16	9/16	.787	2.520	.315	3	C	1	●
MTECS 08069C24 16UNJ	.272	16.0	3/8	-	.945	2.520	.315	3	C	1	●
MTECS 08079C25 14UNJ	.311	14.0	7/16	-	.984	2.520	.315	3	C	1	●
MTECS 10094C27 13UNJ	.370	13.0	1/2	-	1.083	2.874	.394	3	C	1	●

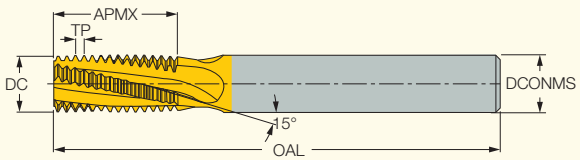
• For user guide, see pages 326-339 • For cutting conditions, see pages 362-367

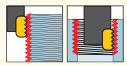
[1] Without coolant holes
[2] Threads per inch
[3] Number of flutes
[4] C-Cylindrical
[5] 0 - Without coolant supply, 1 - With coolant supply

SOLIDTHREAD

MTEC-BSPT

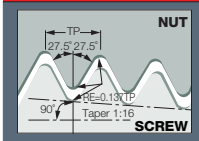
Solid Carbide Threading Endmills for External or Internal BSPT Thread Profile





Application: General engineering fittings and pipe couplings

M E T R I C



Designation	TPI[1]	TDZ	DCONMS	DC	NOF[2]	APMX	OAL	Shank[3]	IC908
	Dimensions								
MTEC 0606C9 28BSPT	28.0	RC1/8	6.00	5.40	3	8.16	57.00	C	●
MTEC 0808C14 19BSPT	19.0	RC1/4,RC3/8	8.00	7.16	3	12.03	64.00	C	●
MTEC 1212D19 14BSPT	14.0	RC1/2,RC7/8	12.00	10.88	4	16.33	84.00	C	●
MTEC 1616D28 11BSPT	11.0	RC1,RC2	16.00	14.17	4	25.40	101.00	C	●

I N C H

Designation	TPI[1]	TDZ	DCONMS	DC	NOF[2]	APMX	OAL	Shank[3]	IC908
	Dimensions								
MTEC 0606C9 28BSPT	28.0	RC1/8	6.00	5.40	3	8.16	57.00	C	●
MTEC 0808C14 19BSPT	19.0	RC1/4,RC3/8	8.00	7.16	3	12.03	64.00	C	●
MTEC 1212D19 14BSPT	14.0	RC1/2,RC7/8	12.00	10.88	4	16.33	84.00	C	●
MTEC 1616D28 11BSPT	11.0	RC1,RC2	16.00	14.17	4	25.40	101.00	C	●

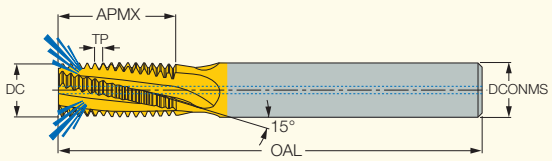
- For user guide, see pages 326-339
- For cutting conditions, see pages 362-367

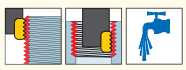
[1] Threads per inch
[2] Number of flutes
[3] C-Cylindrical

SOLIDTHREAD

MTECZ-BSPT

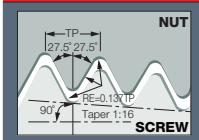
Solid Carbide Threading Endmills with Coolant Holes Located in the Flutes, for Internal or External BSPT Thread Profile





Application: General engineering fittings and pipe couplings

M E T R I C



Designation	TPI[1]	BSPT	DCONMS	DC	NOF[2]	APMX	OAL	Shank[3]	TP[4]	IC908
	Dimensions									
MTECZ 08078C14 28BSPT	28.0	RC1/8	8.00	7.80	3	14.10	64.00	C	0.907	●
MTECZ 1010D16 19BSPT	19.0	RC1/4-3/8	10.00	10.00	4	16.70	73.00	C	1.337	●

I N C H

Designation	TPI[1]	BSPT	DCONMS	DC	NOF[2]	APMX	OAL	Shank	TP mm[3]	IC908
	Dimensions									
MTECZ 08078C14 28BSPT	28.0	RC1/8	.315	.307	3	.555	2.520	C	.907	●
MTECZ 1010D16 19BSPT	19.0	RC1/4-3/8	.394	.394	4	.657	2.874	C	1.337	●

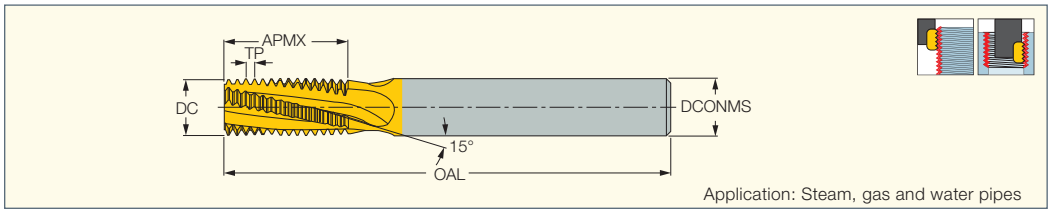
- With internal coolant hole • For user guide, see pages 326-339
- For cutting conditions, see pages 362-367

[1] Threads per inch
[2] Number of flutes
[3] C-Cylindrical
[4] Thread pitch

SOLIDTHREAD

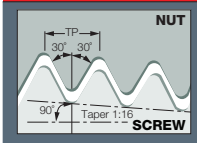
MTEC-NPT

Solid Carbide Threading Endmills for External or Internal NPT Thread Profile



Application: Steam, gas and water pipes

M E T R I C



Designation	Dimensions TPI[1]	TDZ	DCONMS	DC	NOF[2]	APMX	OAL	Shank[3]	IC908
MTEC 0606C9 27NPT	27.0	1/16,1/8	6.00	5.36	3	9.90	58.00	C	●
MTEC 0808C14 18NPT	18.0	1/4,3/8	8.00	7.12	3	14.80	64.00	C	●
MTEC 1212D20 14NPT	14.0	1/2,3/4	12.00	10.77	4	20.90	84.00	C	●
MTEC 1616D27 11.5NPT	11.5	1,2	16.00	14.24	4	27.60	101.00	C	●
MTEC 2020D39 8NPT	8.0	=>2-1/2	20.00	20.00	4	39.70	105.00	C	●

I N C H

Designation	Dimensions TPI[1]	TDZ	DCONMS	DC	NOF[2]	APMX	OAL	Shank[3]	IC908
MTEC 0606C9 27NPT	27.0	1/16,1/8	6.00	5.36	3	9.90	58.00	C	●
MTEC 0808C14 18NPT	18.0	1/4,3/8	8.00	7.12	3	14.80	64.00	C	●
MTEC 1212D20 14NPT	14.0	1/2,3/4	12.00	10.77	4	20.90	84.00	C	●
MTEC 1616D27 11.5NPT	11.5	1,2	16.00	14.24	4	27.60	101.00	C	●
MTEC 2020D39 8NPT	8.0	=>2-1/2	20.00	20.00	4	39.70	105.00	C	●

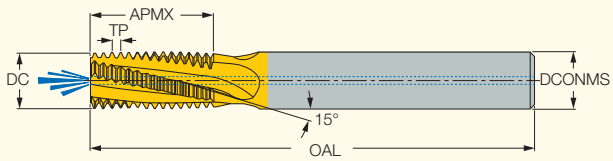
- For user guide, see pages 326-339
- For cutting conditions, see pages 362-367

[1] Threads per inch
[2] Number of flutes
[3] C-Cylindrical

SOLIDTHREAD

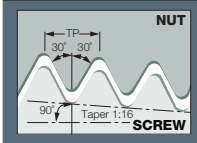
MTECB-NPT

Solid Carbide Threading Endmills with Coolant Holes for External or Internal NPT Thread Profile



Application: Steam, gas and water pipes

M E T R I C



Designation	Dimensions TPI[1]	TDZ	DCONMS	DC	NOF[2]	APMX	OAL	Shank[3]	IC908
MTECB 08076C10 27NPT	27.0	1/8	8.00	7.60	3	10.80	64.00	C	●
MTECB 1010D16 18NPT	18.0	1/4,3/8	10.00	10.00	4	16.20	73.00	C	●
MTECB 16155D22 14NPT	14.0	1/2,3/4	16.00	15.50	4	22.70	105.00	C	●

I N C H

Designation	Dimensions TPI[1]	TDZ	DCONMS	DC	NOF[2]	APMX	OAL	Shank[3]	IC908
MTECB 08076C10 27NPT	27.0	1/8	8.00	7.60	3	10.80	64.00	C	●
MTECB 1010D16 18NPT	18.0	1/4,3/8	10.00	10.00	4	16.20	73.00	C	●
MTECB 16155D22 14NPT	14.0	1/2,3/4	16.00	15.50	4	22.70	105.00	C	●

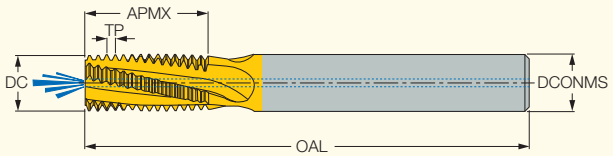
- For user guide, see pages 326-339
- For cutting conditions, see pages 362-367

[1] Threads per inch
[2] Number of flutes
[3] C-Cylindrical

SOLIDTHREAD

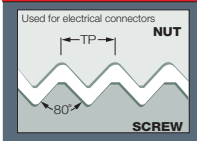
MTECB-PG

Solid Carbide Threading Endmills with Coolant Holes, for External and Internal PG Full Profile (DIN 40430)



Application: Electrical connectors

M E T R I C



Designation	TPI[1]	THOD	DCONMS	DC	NOF[2]	APMX	OAL	Shank[3]	TP[4]	IC908
	Dimensions									
MTECB 1212D20 18PG	18.0	Pg 9, 11, 13.5, 16	12.00	12.00	4	20.50	84.00	C	1.411	●
MTECB 1212D23 16PG	16.0	Pg 21, 29,36, 42, 48	12.00	12.00	4	23.00	84.00	C	1.588	●

I N C H

Designation	TPI[1]	THOD	DCONMS	DC	NOF[2]	APMX	OAL	Shank[3]	TP[4]	IC908
	Dimensions									
MTECB 1212D20 18PG	18.0	Pg 9, 11, 13.5, 16	12.00	12.00	4	20.50	84.00	C	1.411	●
MTECB 1212D23 16PG	16.0	Pg 21, 29,36, 42, 48	12.00	12.00	4	23.00	84.00	C	1.588	●

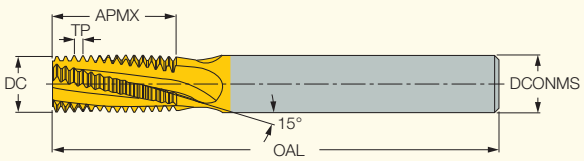
- With internal coolant hole • For user guide, see pages 326-339
- For cutting conditions, see pages 362-367

[1] Threads per inch
[2] Number of flutes
[3] C-Cylindrical
[4] Thread pitch

SOLIDTHREAD

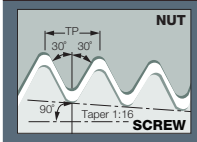
MTEC-NPTF

Solid Carbide Threading Endmills for External or Internal NPTF Thread Profile



Application: Steam, gas and water pipes

M E T R I C



Designation	TPI[1]	TDZ	DCONMS	DC	NOF[2]	APMX	OAL	Shank[3]	IC908
	Dimensions								
MTEC 0606C9 27NPTF	27.0	1/16,1/8	6.00	6.00	3	9.90	58.00	C	●
MTEC 0808C14 18NPTF	18.0	1/4,3/8	8.00	8.00	3	14.80	64.00	C	●
MTEC 1212D20 14NPTF	14.0	1/2,3/4	12.00	12.00	4	20.90	84.00	C	●

I N C H

Designation	TPI[1]	TDZ	DCONMS	DC	NOF[2]	APMX	OAL	Shank[3]	IC908
	Dimensions								
MTEC 0606C9 27NPTF	27.0	1/16,1/8	6.00	6.00	3	9.90	58.00	C	●
MTEC 0808C14 18NPTF	18.0	1/4,3/8	8.00	8.00	3	14.80	64.00	C	●
MTEC 1212D20 14NPTF	14.0	1/2,3/4	12.00	12.00	4	20.90	84.00	C	●

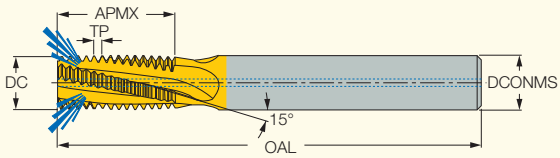
- For user guide, see pages 326-339
- For cutting conditions, see pages 362-367

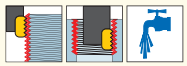
[1] Threads per inch
[2] Number of flutes
[3] C-Cylindrical

SOLIDTHREAD

MTECZ-NPTF

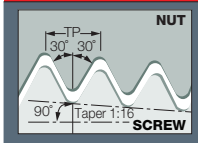
Solid Carbide Threading Endmills with Coolant Holes Located in the Flutes for Internal or External NPTF Thread Profile





Application: General engineering fittings and pipe couplings

M E T R I C



Designation	Dimensions								IC908
	TPI[1]	TDZ	DCONMS	DC	NOF[2]	APMX	OAL	Shank[3]	
MTECZ 08076C10 27NPTF	27.0	1/8	8.00	7.60	3	10.80	64.00	C	●
MTECZ 1010D16 18NPTF	18.0	1/4-3/8	10.00	10.00	4	16.20	73.00	C	●

I N C H

Designation	Dimensions								IC908
	TPI[1]	TDZ	DCONMS	DC	NOF[2]	APMX	OAL	Shank	
MTECZ 08076C10 27NPTF	27.0	1/8	.315	.299	3	.425	2.520	C	●
MTECZ 1010D16 18NPTF	18.0	1/4-3/8	.394	.394	4	.638	2.874	C	●

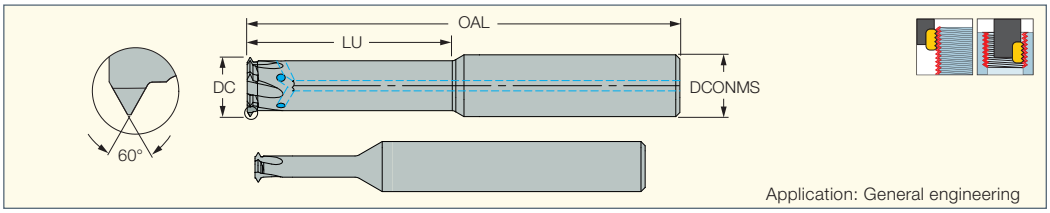
- For user guide, see pages 326-339
- For cutting conditions, see pages 362-367

[1] Threads per inch
[2] Number of flutes
[3] C-Cylindrical

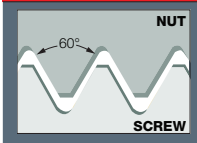
SOLIDTHREAD

MTECI-A60

60° Partial Profile Solid Carbide Thread Mills for Internal and External Threads



M E T R I C



Designation	TPN[1]	TPX[2]	TPN_ DF2[3]	TPX_ DF2[4]	TPIN[5]	TPIX[6]	TPIN_ DF2[7]	TPIX_ DF2[8]	Th	DCONMS	DC	NOF[9]	LU	OAL	Shank[10]	CSP[11]	Tough ↔ Hard IC908	Tough ↔ Hard IC902
MTECI 03019C5 A60	0.350	0.600	0.350	0.600	40.00	72.00	40.00	72.00	(a)	3.00	1.90	3	5.2	39.00	C	0		●
MTECI 03024C7 A60	0.500	0.800	0.500	0.800	32.00	48.00	32.00	48.00	(a)	3.00	2.40	3	7.1	38.00	C	0		●
MTECI 06032C9 A60	0.500	1.000	0.500	1.000	24.00	48.00	24.00	48.00	(a)	6.00	3.20	3	9.5	57.00	C	0		●
MTECI 0604C12 A60	0.500	1.000	0.500	1.000	24.00	48.00	24.00	48.00	(a)	6.00	4.00	3	12.5	58.00	C	0		●
MTECI 0605D20 A60	0.500	0.800	0.400	0.800	28.00	56.00	32.00	64.00	=>6	6.00	5.00	4	20.0	58.00	C	1	●	
MTECI 0808D28 A60	0.500	0.800	0.400	0.800	28.00	56.00	32.00	64.00	=>9	8.00	8.00	4	28.0	64.00	C	1	●	
MTECI 0808D30 A60	1.000	1.750	0.800	1.500	14.00	28.00	16.00	32.00	=>10	8.00	8.00	4	30.0	64.00	C	1	●	
MTECI 1010D35 A60	1.000	1.750	0.800	1.500	14.00	28.00	16.00	32.00	=>12	10.00	10.00	4	35.0	73.00	C	1	●	
MTECI 1212E39 A60	1.000	1.750	0.800	1.500	14.00	28.00	16.00	32.00	=>14	12.00	12.00	5	39.0	84.00	C	1	●	
MTECI 1212E40 A60	2.000	3.000	1.750	2.500	8.00	13.00	10.00	15.00	=>16	12.00	12.00	5	40.0	84.00	C	1	●	
MTECI 1614E45 A60	2.000	3.000	1.750	2.500	8.00	13.00	10.00	15.00	=>18	16.00	14.00	5	45.0	101.00	C	1	●	
MTECI 1616E50 A60	2.000	3.000	1.750	2.500	8.00	13.00	10.00	15.00	=>20	16.00	16.00	5	50.0	101.00	C	1	●	

I N C H

Designation	TPN (mm)[1]	TPX (mm)[2]	TPN_ DF2	TPX_ DF2	TPIN[3]	TPIX[4]	TPIN_ DF2	TPIX_DF2	Th	DCONMS	DC	NOF[5]	LU	OAL	Shank	CSP[6]	Tough ↔ Hard IC908	Tough ↔ Hard IC902
MTECI 03019C5 A60	.350	.600	.350	.600	40.00	72.00	40.00	72.00	(a)	.118	.075	3	.205	1.535	C	0		●
MTECI 03024C7 A60	.500	.800	.500	.800	32.00	48.00	32.00	48.00	(a)	.118	.094	3	.280	1.496	C	0		●
MTECI 06032C9 A60	.500	1.000	.500	1.000	24.00	48.00	24.00	48.00	(a)	.236	.126	3	.374	2.244	C	0		●
MTECI 0604C12 A60	.500	1.000	.500	1.000	24.00	48.00	24.00	48.00	(a)	.236	.157	3	.492	2.283	C	0		●
MTECI 0605D20 A60	.500	.800	.400	.800	28.00	56.00	32.00	64.00	=>6	.236	.197	4	.787	2.283	C	1	●	
MTECI 0808D28 A60	.500	.800	.400	.800	28.00	56.00	32.00	64.00	=>9	.315	.315	4	1.102	2.520	C	1	●	
MTECI 0808D30 A60	1.000	1.750	.800	1.500	14.00	28.00	16.00	32.00	=>10	.315	.315	4	1.181	2.520	C	1	●	
MTECI 1010D35 A60	1.000	1.750	.800	1.500	14.00	28.00	16.00	32.00	=>12	.394	.394	4	1.378	2.874	C	1	●	
MTECI 1212E39 A60	1.000	1.750	.800	1.500	14.00	28.00	16.00	32.00	=>14	.472	.472	5	1.535	3.307	C	1	●	
MTECI 1212E40 A60	2.000	3.000	1.750	2.500	8.00	13.00	10.00	15.00	=>16	.472	.472	5	1.575	3.307	C	1	●	
MTECI 1614E45 A60	2.000	3.000	1.750	2.500	8.00	13.00	10.00	15.00	=>18	.630	.551	5	1.772	3.976	C	1	●	
MTECI 1616E50 A60	2.000	3.000	1.750	2.500	8.00	13.00	10.00	15.00	=>20	.630	.630	5	1.968	3.976	C	1	●	

• (a)See table below • For user guide, see pages 326-339 • For cutting conditions, see pages 362-367

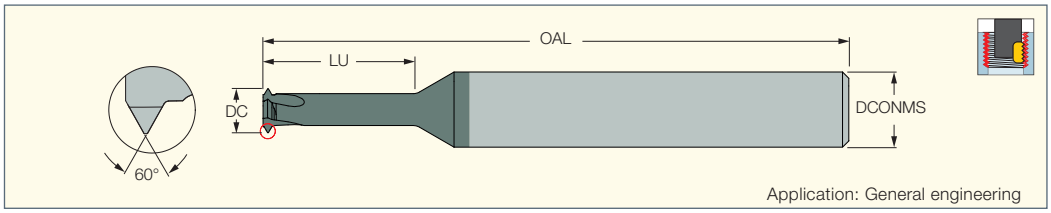
(1) Internal thread pitch minimum
(10) C-Cylindrical
(11) 0 - Without coolant supply, 1 - With coolant supply
(2) Internal thread pitch maximum
(3) External thread pitch minimum
(4) External thread pitch maximum
(5) Internal threads per inch minimum
(6) Internal threads per inch maximum
(7) External threads per inch minimum
(8) External threads per inch maximum
(9) Number of flutes

Designation	Possible Thread Sizes M Coarse	M Fine	UN, UNC, UNS,UNF, UNEF
MTECI 03019C5 A60	M2.5x0.45	M2.5x0.35, M3x0.35,	3-48UNC, 3-56UNF, 4-40UNC, 4-48UNF
MTECI 06032C9 A60	M4x0.7 M4.5x0.75	M4x0.5	8-32UNC, 8-36UNF, 10-24UNC, 10-28UNS, 10-32UNF
MTECI 0604C12 A60	M5x0.8 M6x1.0	M5x0.5, M5.5x0.5, M5x0.75	10-36UNS, 10-40UNS, 10-48UNS, 12-24UNC, 12-28UNF

SOLIDTHREAD

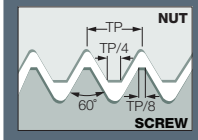
MTECI-ISO

Small Diameter Single Point
Internal ISO Profile Solid
Carbide Thread Mills



Application: General engineering

M E T R I C



Designation	Dimensions TP[1]	M Coarse	M Fine	DCONMS	DC	NOF[2]	LU	OAL	Shank[3]	IC902
MTECI 03009C4 0.25ISO	0.250	M1.2X0.25	M1.4X0.25, M1.6X0.25	3.00	0.90	3	4.3	39.00	C	●
MTECI 03007C3 0.25ISO	0.250	M1X0.25	-	3.00	0.72	3	3.6	39.00	C	●
MTECI 03011C5 0.3ISO	0.300	M1.4X0.3	-	3.00	1.05	3	5.0	39.00	C	●
MTECI 03012C6 0.35ISO	0.350	M1.6X0.35	M2X0.35, M2.2X0.35	3.00	1.20	3	5.7	39.00	C	●
MTECI 03016C7 0.4ISO	0.400	M2X0.4	-	3.00	1.55	3	7.1	39.00	C	●
MTECI 03024C10 0.5ISO	0.500	M3X0.5	M3.5X0.5, M4X0.5	3.00	2.37	3	10.6	39.00	C	●

I N C H

Designation	Dimensions TP mm[1]	M Coarse	M Fine	DCONMS	DC	NOF[2]	LU	OAL	Shank	IC902
MTECI 03009C4 0.25ISO	.250	M1.2X0.25	M1.4X0.25, M1.6X0.25	.118	.035	3	.169	1.535	C	●
MTECI 03007C3 0.25ISO	.250	M1X0.25	-	.118	.028	3	.142	1.535	C	●
MTECI 03011C5 0.3ISO	.300	M1.4X0.3	-	.118	.041	3	.197	1.535	C	●
MTECI 03012C6 0.35ISO	.350	M1.6X0.35	M2X0.35, M2.2X0.35	.118	.047	3	.224	1.535	C	●
MTECI 03016C7 0.4ISO	.400	M2X0.4	-	.118	.061	3	.280	1.535	C	●
MTECI 03024C10 0.5ISO	.500	M3X0.5	M3.5X0.5, M4X0.5	.118	.093	3	.417	1.535	C	●

• For user guide, see pages 326-339 • For cutting conditions, see pages 362-367

(1) Thread pitch
(2) Number of flutes
(3) C-Cylindrical

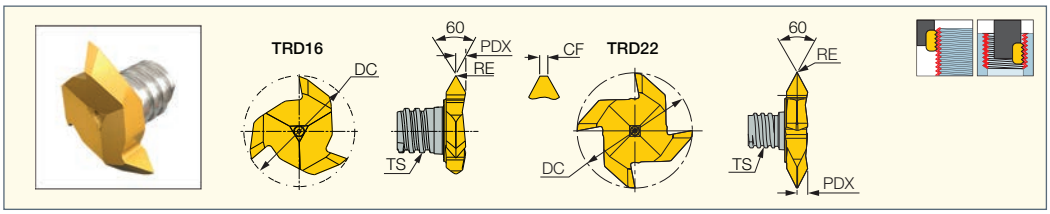
Multimaster Head

SOLIDTHREAD

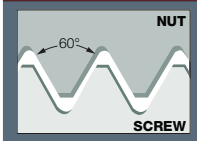
MULTI-MASTER
INDEXABLE SOLID CARBIDE LINE

MM TRD-M

Interchangeable Solid Carbide Milling Heads for 60° Partial Profile Thread Milling



M E T R I C



Designation	Dimensions DC	NOF(1)	TPN(2)	TPX(3)	RE	CF	PDX	THSZMS	TDZ(4)	DMIN	Standard	IC528
MM TRD16-M60-05P-3T06	15.70	3	0.500	2.000	- (5)	0.05	1.4	T06	M20	19.05	ISO 68, DIN 13	●
MM TRD16-M60-15P-3T06	15.70	3	1.500	2.000	0.05	-	1.4	T06	M22	19.05	ISO 68, DIN 13	●
MM TRD22-M60-30P-4T08	21.70	4	3.000	4.500	0.20	-	2.4	T08	M36	31.00	ISO 68, DIN 13	●

I N C H

Designation	Dimensions DC	NOF(1)	TPN (mm)(2)	TPX (mm)(3)	RE	CF	PDX	THSZMS	TDZ(4)	DMIN	Standard		IC528
MM TRD16-M60-05P-3T06	.618	3	.500	2.000	- (5)	.002	.06	T06	M20	.750	ISO 68, DIN 13	MM EGR 16-18*	●
MM TRD16-M60-15P-3T06	.618	3	1.500	2.000	.0020	-	.06	T06	M22	.750	ISO 68, DIN 13	MM EGR 16-18*	●
MM TRD22-M60-30P-4T08	.854	4	3.000	4.500	.0079	-	.09	T08	M36	1.220	ISO 68, DIN 13	MM EGR 20-22*	●

- For ISO metric thread (ISO 68, DIN13, ANSI B 1.13M-1983) • For clamping instructions, see pages 326-339 • For cutting conditions, see pages 362-367
- Do not apply lubricant to the threaded connection.

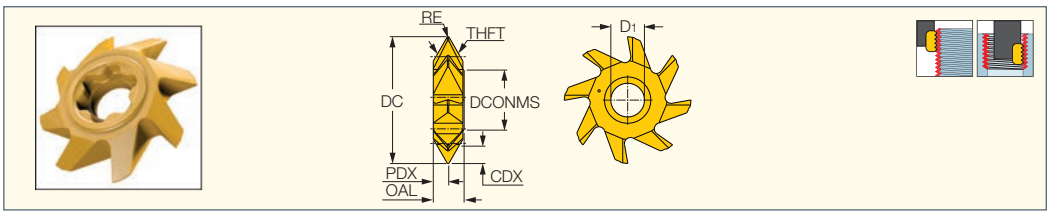
(1) Number of flutes
(2) Thread pitch minimum (mm)
(3) Thread pitch maximum (mm)
(4) Smallest possible thread
(5) Flat

SOLIDTHREAD

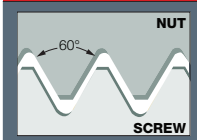
T-SLOT

SD TRD-M-SP

Interchangeable Solid Carbide Heads for 60° Partial Profile Thread Milling



M E T R I C



Designation	Dimensions DC	DMIN	DIOUT(1)	THFT(2)	TPN(3)	TPX(4)	TPIN(5)	TPIX(6)	PDX	RE	D1	CDX	OAL	ZEFP(7)	DCONMS	IC908
SD TRD32-M60-6P-SP15	31.70	42.00	36.00	VP60	4.000	6.000	4.00	6.00	3.70	0.30	8.40	4.70	7.70	8	15.00	●
SD TRD40-M60-8P-SP17	39.70	57.00	64.00	VP60	6.000	8.000	3.00	4.00	4.50	0.40	9.80	6.20	9.50	10	17.00	●

I N C H

Designation	Dimensions DC	DMIN	DIOUT(1)	THFT(2)	TPN (mm)(3)	TPX (mm)(4)	TPIN(5)	TPIX(6)	PDX	RE	D1	CDX	OAL	ZEFP(7)	DCONMS	IC908
SD TRD32-M60-6P-SP15	1.248	1.654	1.417	VP60	4.000	6.000	4.00	6.00	.1457	.0118	.331	.185	.303	8	.591	●
SD TRD40-M60-8P-SP17	1.563	2.244	2.520	VP60	6.000	8.000	3.00	4.00	.1772	.0157	.386	.244	.374	10	.669	●

- For user guide, see pages 326-339 • For cutting conditions, see pages 362-367

(1) Minimum diameter for external threading
(2) VP60=60° partial thread form
(3) Thread pitch minimum (mm)
(4) Thread pitch maximum (mm)
(5) Threads per inch minimum
(6) Threads per inch maximum
(7) Num. of cutting edges

Member IMC Group

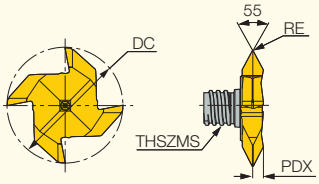
SOLIDTHREAD

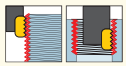
MULTI-MASTER
INDEXABLE SOLID CARBIDE LINE

MM TRD-W

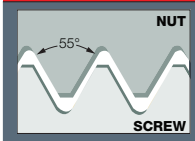
Interchangeable Solid Carbide Milling Heads for 55° Partial Profile Thread Milling







M E T R I C



Designation	Dimensions DC	NOF(1)	RE	PDX	TPIN(2)	TPIX(3)	THSZMS	TDZ(4)	DMIN	Standard	IC528
MM TRD22-W55-14P-4T08	21.70	4	0.20	2.0	11.00	14.00	T08	G3/4	24.20	DIN ISO 228, B.S. 84	•

I N C H

Designation	Dimensions DC	NOF(1)	RE	PDX	TPIN(2)	TPIX(3)	THSZMS	TDZ	DMIN	Standard		IC528
MM TRD22-W55-14P-4T08	.854	4	.0079	.08	11.00	14.00	T08	G3/4	.953	DIN ISO 228, B.S. 84	MM EGR 20-22*	•

• For user guide, see pages: 326-339 • For cutting conditions, see pages 362-367 • Do not apply lubricant to the threaded connection.

(1) Number of flutes
(2) Threads per inch minimum
(3) Threads per inch maximum
(4) Thread diameter size

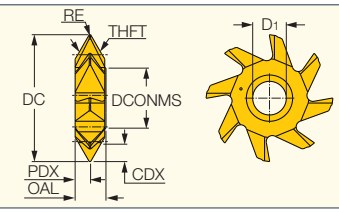
SOLIDTHREAD

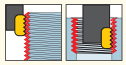
T-SLOT

SD TRD-W-SP

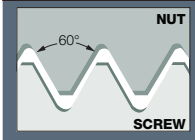
Interchangeable Solid Carbide Heads for 55° Partial Profile Thread Milling







M E T R I C



Designation	Dimensions DC	DMIN	DIOUT(1)	THFT(2)	THFT_2	TPIN(3)	TPIX(4)	PDX	D1	CDX	OAL	ZEFP(5)	RE	DCONMS	IC908
SD TRD32-W55-4T-SP15	31.70	46.00	35.00	VP55	WH55	4.00	6.00	3.70	8.40	4.70	7.70	8	0.50	15.00	•
SD TRD40-W55-3T-SP17	39.70	57.00	57.00	VP55	WH55	3.00	4.00	4.50	9.80	6.20	9.50	10	0.80	17.00	•

I N C H

Designation	Dimensions DC	DMIN	DIOUT(1)	THFT(2)	THFT_2	TPIN(3)	TPIX(4)	PDX	D1	CDX	OAL	ZEFP(5)	RE	DCONMS	IC908
SD TRD32-W55-4T-SP15	1.248	1.811	1.378	VP55	WH55	4.00	6.00	.1457	.331	.185	.303	8	.0197	.591	•
SD TRD40-W55-3T-SP17	1.563	2.244	2.244	VP55	WH55	3.00	4.00	.1772	.386	.244	.374	10	.0315	.669	•

• For user guide, see pages 326-339 • For cutting conditions, see pages 362-367

(1) Minimum diameter for external threading
(2) VP55=55° partial thread forms
(3) Threads per inch minimum
(4) Threads per inch maximum
(5) Num. of cutting edges

Identification Code

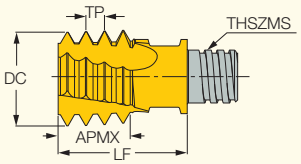
MT	10	D	6	0.75	ISO	MMT05/MMTT..*
MULTI-MASTER Thread Mill	Cutting Dia.	No. of Flutes	Cutting Length	Pitch	Thread Profile ISO UN G (55°)	Connection Size

SOLIDTHREAD

MULTI-MASTER
INDEXABLE SOLID CARBIDE LINE

MT-ISO-MM
Carbide Milling Heads with a Threaded Connection for Internal ISO Metric Thread

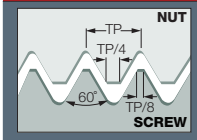






Application: General engineering

M E T R I C



Designation	Dimensions TP[1]	M Coarse	M Fine	DC	NOF[2]	APMX	LF	THSZMS	IC908
MT10D7.5 0.5ISO-MMT05	0.500	-	=>14	10.00	4	7.50	12.75	T05	●
MT 10D6 0.75ISO-MMT05	0.750	-	=>12	10.00	4	6.00	12.75	T05	●
MT 10D6 1.0ISO-MMT05	1.000	-	=>12	10.00	4	6.00	12.75	T05	●
MT 10D5 1.25ISO-MMT05	1.250	-	=>14	10.00	4	5.00	12.75	T05	●
MT 10D6 1.5ISO-MMT05	1.500	-	=>14	10.00	4	6.00	12.75	T05	●
MT 12D8 0.5ISO-MMT06	0.500	-	=>16	12.00	4	8.00	14.30	T06	●
MT 12E8 0.75ISO-MMT06	0.750	-	=>16	12.00	5	8.30	14.30	T06	●
MT 12E8 1.0ISO-MMT06	1.000	-	=>16	12.00	5	8.00	14.30	T06	●
MT 12D8 1.25ISO-MMT06	1.250	-	=>16	12.00	4	7.50	14.30	T06	●
MT 12D7 1.5ISO-MMT06	1.500	-	=>16	12.00	4	7.60	14.30	T06	●
MT 12D7 1.75ISO-MMT06	1.750	-	=>16	12.00	4	7.10	14.30	T06	●
MT12D10 2.0ISO-MMTT06	2.000	M16	=>17	12.00	4	8.00	14.30	T06	●
MT 16F12 1.0ISO-MMT08	1.000	-	=>22	16.00	6	12.00	20.00	T08	●
MT 16F12 1.5ISO-MMT08	1.500	-	=>20	16.00	6	12.00	20.00	T08	●
MT 16E12 2.0ISO-MMT08	2.000	-	=>19	16.00	5	12.00	20.00	T08	●
MT 15E13 2.5ISO-MMT08	2.500	M20	=>22	15.40	5	12.70	20.00	T08	●
MT 16C12 3.0ISO-MMT08	3.000	M24	=>25	16.00	3	12.10	20.00	T08	●
MT20F14 2.0ISO-MMTT10	2.000	-	=>27	20.00	6	12.00	21.00	T10	●
MT20D12 3.0ISO-MMTT10	3.000	-	=>27	20.00	4	12.20	21.00	T10	●
MT20D14 3.5ISO-MMTT10	3.500	-	=>30	20.00	4	10.60	21.00	T10	●

I N C H

Designation	Dimensions TP mm[1]	M Coarse	M Fine	DC	NOF[2]	APMX	LF	THSZMS				IC908
MT10D7.5 0.5ISO-MMT05	.500	-	=>14	.394	4	.295	.502	T05	MM KEY 6X4*			●
MT 10D6 0.75ISO-MMT05	.750	-	=>12	.394	4	.236	.502	T05	MM KEY 6X4*			●
MT 10D6 1.0ISO-MMT05	1.000	-	=>12	.394	4	.236	.502	T05	MM KEY 6X4*			●
MT 10D5 1.25ISO-MMT05	1.250	-	=>14	.394	4	.197	.502	T05	MM KEY 6X4*			●
MT 10D6 1.5ISO-MMT05	1.500	-	=>14	.394	4	.236	.502	T05	MM KEY 6X4*			●
MT 12D8 0.5ISO-MMT06	.500	-	=>16	.472	4	.315	.563	T06	MM KEY 8X5*			●
MT 12E8 0.75ISO-MMT06	.750	-	=>16	.472	5	.327	.563	T06	MM KEY 8X5*			●
MT 12E8 1.0ISO-MMT06	1.000	-	=>16	.472	5	.315	.563	T06	MM KEY 8X5*			●
MT 12D8 1.25ISO-MMT06	1.250	-	=>16	.472	4	.295	.563	T06	MM KEY 8X5*			●
MT 12D7 1.5ISO-MMT06	1.500	-	=>16	.472	4	.299	.563	T06	MM KEY 8X5*			●
MT 12D7 1.75ISO-MMT06	1.750	-	=>16	.472	4	.280	.563	T06	MM KEY 8X5*			●
MT12D8 2.0ISO-MMT06	2.000	M16	=>17	.472	4	.315	.563	T06	MM KEY 8X5*			●
MT 16F12 1.0ISO-MMT08	1.000	-	=>22	.630	6	.472	.787	T08	MM KEY 10X7*			●
MT 16F12 1.5ISO-MMT08	1.500	-	=>20	.630	6	.472	.787	T08		BIT SOCKET T30 3/8" DRIVE*	T-30/3 L*	●
MT 16E12 2.0ISO-MMT08	2.000	-	=>19	.630	5	.472	.787	T08	MM KEY 10X7*			●
MT 15E13 2.5ISO-MMT08	2.500	M20	=>22	.606	5	.500	.787	T08		BIT SOCKET T30 3/8" DRIVE*		●
MT 16C12 3.0ISO-MMT08	3.000	M24	=>25	.630	3	.476	.787	T08	MM KEY 10X7*			●
MT20F14 2.0ISO-MMTT10	2.000	-	=>27	.787	6	.472	.827	T10		BIT SOCKET T30 3/8" DRIVE*	T-40/3 L*	●
MT20D12 3.0ISO-MMTT10	3.000	-	=>27	.787	4	.480	.827	T10		BIT SOCKET T40 3/8" DRIVE*	T-40/3 L*	●
MT20D14 3.5ISO-MMTT10	3.500	-	=>30	.787	4	.417	.827	T10		BIT SOCKET T40 3/8" DRIVE*	T-40/3 L*	●

- Note: Description and dimensions relate to the new products with clamping flats.

There is a possibility that the customer will receive the old item (with TORX) until the stock is depleted.

- Do not apply lubricant to the threaded connection

(1) Thread pitch

(2) Number of flutes

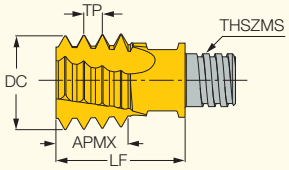
SOLIDTHREAD

MULTI-MASTER
INDEXABLE SOLID CARBIDE LINE

MT-UN-MM

Carbide Milling Heads with a Threaded Connection for Internal UN Thread Profile

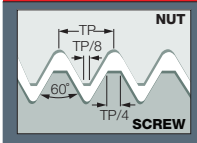






Application: General engineering

M E T R I C



Designation	TPI[1]	UNC	UNF	UNEF	DC	NOF[2]	APMX	LF	THSZMS	TP[3]	IC908
	Dimensions										
MT 10D7 32UN-MMT05	32.0	-	-	-	10.00	4	6.40	12.75	T05	0.794	●
MT 10D6 28UN-MMT05	28.0	-	1/2	-	10.00	4	5.50	12.75	T05	0.907	●
MT 10D6 24UN-MMT05	24.0	-	-	9/16-5/8	10.00	4	5.30	12.75	T05	1.058	●
MT 10D6 20UN-MMT05	20.0	-	1/2	-	10.00	4	5.10	12.75	T05	1.270	●
MT 10D5 18UN-MMT05	18.0	-	9/16-5/8	1 1/8-1 5/8	10.00	4	5.60	12.75	T05	1.411	●
MT 10D7 16UN-MMT05	16.0	-	3/4	-	10.00	4	6.40	12.75	T05	1.588	●
MT 12D8 24UN-MMT06	24.0	-	-	5/8- 11/16	12.00	4	7.40	14.30	T06	1.058	●
MT 12D8 20UN-MMT06	20.0	-	-	3/4 - 1	12.00	4	7.70	14.30	T06	1.270	●
MT 12D8 18UN-MMT06	18.0	-	5/8	=>1 11/16	12.00	4	7.10	14.30	T06	1.411	●
MT 12D8 16UN-MMT06	16.0	-	3/4	-	12.00	4	8.00	14.30	T06	1.588	●
MT 12D8 14UN-MMT06	14.0	-	7/8	-	12.00	4	7.30	14.30	T06	1.814	●
MT 16E11 18UN-MMT08	18.0	-	5/8	=>1 11/16	16.00	5	11.30	20.00	T08	1.411	●
MT 16E13 14UN-MMT08	14.0	-	7/8	-	16.00	5	12.70	20.00	T08	1.814	●
MT 16E13 12UN-MMT08	12.0	-	1-1 1/2	-	16.00	5	12.70	20.00	T08	2.117	●
MT 15D13 10UN-MMT08	10.0	3/4	-	-	15.30	4	12.70	20.00	T08	2.540	●
MT 16C11 9UN-MMT08	9.0	7/8	-	-	16.00	3	11.30	20.00	T08	2.822	●
MT 16C13 8UN-MMT08	8.0	1.0	-	-	16.00	3	12.70	20.00	T08	3.175	●
MT20F13 12UN-MMTT10	12.0	-	=>1	-	20.00	6	12.70	21.00	T10	2.117	●
MT20D13 8UN-MMTT10	8.0	1		-	20.00	4	12.70	21.00	T10	3.175	●
MT20D15 7UN-MMTT10	7.0	-	1 1/8 - 1 1/4	-	20.00	4	10.90	21.00	T10	3.629	●

I N C H

Designation	TPI[1]	UNC	UNF	UNEF	DC	NOF[2]	APMX	LF	THSZMS	TP mm[3]	IC908
	Dimensions										
MT 10D7 32UN-MMT05	32.0	-	-	-	.394	4	.252	.502	T05	.794	●
MT 10D6 28UN-MMT05	28.0	-	1/2	-	.394	4	.217	.502	T05	.907	●
MT 10D6 24UN-MMT05	24.0	-	-	9/16-5/8	.394	4	.209	.502	T05	1.058	●
MT 10D6 20UN-MMT05	20.0	-	1/2	-	.394	4	.201	.502	T05	1.270	●
MT 10D5 18UN-MMT05	18.0	-	9/16-5/8	1 1/8-1 5/8	.394	4	.220	.502	T05	1.411	●
MT 10D7 16UN-MMT05	16.0	-	3/4	-	.394	4	.252	.502	T05	1.588	●
MT 12D8 24UN-MMT06	24.0	-	-	5/8- 11/16	.472	4	.291	.563	T06	1.058	●
MT 12D8 20UN-MMT06	20.0	-	-	3/4 - 1	.472	4	.303	.563	T06	1.270	●
MT 12D8 18UN-MMT06	18.0	-	5/8	=>1 11/16	.472	4	.280	.563	T06	1.411	●
MT 12D8 16UN-MMT06	16.0	-	3/4	-	.472	4	.315	.563	T06	1.588	●
MT 12D8 14UN-MMT06	14.0	-	7/8	-	.472	4	.287	.563	T06	1.814	●
MT 16E11 18UN-MMT08	18.0	-	5/8	=>1 11/16	.630	5	.445	.787	T08	1.411	●
MT 16E13 14UN-MMT08	14.0	-	7/8	-	.630	5	.500	.787	T08	1.814	●
MT 16E13 12UN-MMT08	12.0	-	1-1 1/2	-	.630	5	.500	.787	T08	2.117	●
MT 15D13 10UN-MMT08	10.0	3/4	-	-	.602	4	.500	.787	T08	2.540	●
MT 16C11 9UN-MMT08	9.0	7/8	-	-	.630	3	.445	.787	T08	2.822	●
MT 16C13 8UN-MMT08	8.0	1.0	-	-	.630	3	.500	.787	T08	3.175	●
MT20F13 12UN-MMTT10	12.0	-	=>1	-	.787	6	.500	.827	T10	2.117	●
MT20D13 8UN-MMTT10	8.0	1		-	.787	4	.500	.827	T10	3.175	●
MT20D15 7UN-MMTT10	7.0	-	1 1/8 - 1 1/4	-	.787	4	.429	.827	T10	3.629	●

- Note: Description and dimensions relate to the new products with clamping flats.

There is a possibility that the customer will receive the old item (with TORX) until the stock is depleted.

- Do not apply lubricant to the threaded connection
- For user guide, see pages: 326-339 • For cutting conditions, see pages 362-367

(1) Threads per inch
(2) Number of flutes
(3) Thread pitch

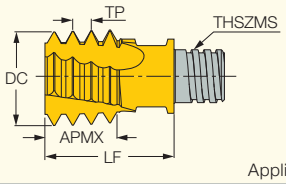
SOLIDTHREAD

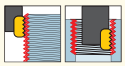
MULTI-MASTER
INDEXABLE SOLID CARBIDE LINE

MT-W-MM

Carbide Milling Heads with a Threaded Connection for Internal and External 55° BSW Thread Profile

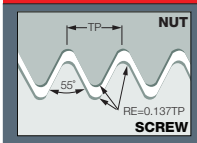






Application: General engineering fittings and pipe couplings

M E T R I C



Designation	Dimensions TPI[1]	TDZ	DC	NOF[2]	APMX	LF	THSZMS	TP[3]	IC908
MT 10D6 19W-MMT05	19.0	G1/4-3/8	10.00	4	5.30	12.75	T05	1.337	●
MT 16D13 14W-MMT08	14.0	G1/2-7/8	16.00	4	12.70	20.00	T08	1.814	●
MT 16D11 11W-MMT08	11.0	G=>1	16.00	4	11.50	20.00	T08	2.309	●
MT20F15 14W-MMTT10	14.0	G3/4-7/8	20.00	6	12.70	21.00	T10	1.814	●
MT20F14 11W-MMTT10	11.0	G=>1	20.00	6	11.50	21.00	T10	2.309	●

I N C H

Designation	Dimensions TPI[1]	TDZ	DC	NOF[2]	APMX	LF	THSZMS	TP mm[3]	IC908
MT 10D6 19W-MMT05	19.0	G1/4-3/8	.394	4	.209	.502	T05	1.337	●
MT 16D13 14W-MMT08	14.0	G1/2-7/8	.630	4	.500	.787	T08	1.814	●
MT 16D11 11W-MMT08	11.0	G=>1	.630	4	.453	.787	T08	2.309	●
MT20F15 14W-MMTT10	14.0	G3/4-7/8	.787	6	.500	.827	T10	1.814	●
MT20F14 11W-MMTT10	11.0	G=>1	.787	6	.453	.827	T10	2.309	●

- Note: Description and dimensions relate to the new products with clamping flats.

There is a possibility that the customer will receive the old item (with TORX) until the stock is depleted.

- Do not apply lubricant to the threaded connection

(1) Threads per inch
(2) Number of flutes
(3) Thread pitch







Thread Size	Key [1]	Torque Wrench [1]	Wrench [1]	Tightening Torque (Nxcm)	Tightening Torque (Lbfxinch)
T05	MM KEY 6x4	TORQUE WRENCH 5-50Nm 9X12	MM WRENCH 6-05	700	60
T06	MM KEY 8x5	TORQUE WRENCH 5-50Nm 9X12	MM WRENCH 8-06	1000	90
T08	MM KEY 10x7	TORQUE WRENCH 5-50Nm 9X12	MM WRENCH 10-08	1500	130
T10	MM KEY 13x8	TORQUE WRENCH 5-50Nm 9X12	MM WRENCH 13-10	2800	25

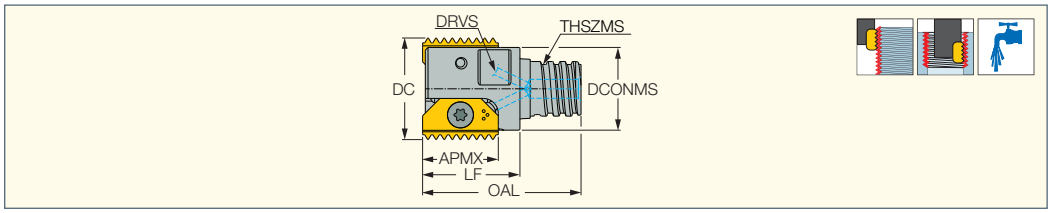
(1) Order separately

MILLTHREAD

MULTI-MASTER

MTE-MM

Indexable Threading Endmills with a MULTI-MASTER Shank Connection



M E T R I C

Designation	DC	APMX	CICT(1)	LF	THSZMS	DCONMS	OAL	DRVS(2)	TQ(3)	kg
MTE D13.7-1-MMT06-14	13.70	14.00	1	17.00	T06	9.60	23.30	8.0	1.2	0.03
MTE D15.8-1-MMT08-14	15.80	14.00	1	17.00	T08	11.70	24.50	10.0	1.2	0.02
MTE D20/D0.79-2-MMT10-14	20.00	14.00	2	18.00	T10	15.30	29.30	13.0	1.2	0.03
MTE D20/D0.79-3-MMT10-14	20.00	14.00	3	24.00	T10	15.30	35.30	13.0	1.2	0.02
MTE D21/D0.82-1-MMT10-21	21.00	21.00	1	25.00	T10	15.30	36.30	13.0	4.8	0.12
MTE D30.4/D1.2-2-MMT15-21	30.40	21.00	2	25.00	T15	23.90	42.00	20.0	4.8	0.13
MTE D30.4/D1.2-3-MMT15-21	30.40	21.00	3	34.00	T15	23.90	51.00	20.0	4.8	0.13
MTE D27-1-MMT12-30	27.00	30.00	1	38.20	T12	18.30	52.00	16.0	9.0	0.10

I N C H

Designation	DC	APMX	CICT(1)	LF	THSZMS	DCONMS	OAL	DRVS(2)	TQ(3)	Lbs
MTE D0.52-1-MMT06-14	.520	.5500	1	.670	T06	.360	.920	.300	10.62	.09
MTE D13.7-1-MMT06-14	.539	.5512	1	.669	T06	.378	.917	.315	10.62	.07
MTE D15.8-1-MMT08-14	.622	.5512	1	.669	T08	.461	.965	.394	10.62	.04
MTE D0.65-1-MMT08-14	.650	.5500	1	.670	T08	.480	.960	.400	10.62	.04
MTE D20/D0.79-2-MMT10-14	.787	.5512	2	.709	T10	.602	1.154	.512	10.62	.07
MTE D20/D0.79-3-MMT10-14	.787	.5512	3	.945	T10	.602	1.390	.512	10.62	.05
MTE D21/D0.82-1-MMT10-21	.827	.8268	1	.984	T10	.602	1.429	.512	42.48	.26
MTE D30.4/D1.2-2-MMT15-21	1.197	.8268	2	.984	T15	.941	1.654	.787	42.48	.29
MTE D30.4/D1.2-3-MMT15-21	1.197	.8268	3	1.339	T15	.941	2.008	.787	42.48	.29
MTE D27-1-MMT12-30	1.063	1.1811	1	1.504	T12	.720	2.047	.630	79.65	.22

• Tool cutting diameter should not exceed 2/3 of thread bore diameter • For user guide, see pages 326-339 • For cutting conditions, see pages 362-367

(1) Number of inserts

(2) Torque key size

(3) Recommended clamping torque

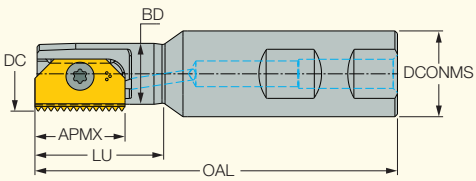
Spare Parts

Designation				
MTE D13.7-1-MMT06-14	SR M2.6-L6.7-S11	BLD T08/M7	SW4-SD	MM KEY 8X5*
MTE D15.8-1-MMT08-14	SR M2.6-L6.7-S11	BLD T08/M7	SW4-SD	MM KEY 10X7*
MTE D20/D0.79-2-MMT10-14	SR M2.6-L6.7-S11	BLD T08/M7	SW4-SD	MM KEY 13X8*
MTE D20/D0.79-3-MMT10-14	SR M2.6-L6.7-S11	BLD T08/M7	SW4-SD	MM KEY 13X8*
MTE D21/D0.82-1-MMT10-21	SR M4-IP15-MT	BLD IP15/S7	SW6-SD	MM KEY 13X8*
MTE D30.4/D1.2-2-MMT15-21	SR M4-IP15-MT	BLD IP15/S7	SW6-SD	MM KEY 20*
MTE D30.4/D1.2-3-MMT15-21	SR M4-IP15-MT	BLD IP15/S7	SW6-SD	MM KEY 20*
MTE D27-1-MMT12-30	SR M5-IP25-MT-S	BLD IP25/S7	SW6-T	MM KEY 16X9*

* Optional, should be ordered separately

MILLTHREAD

MTE D
Indexable Threading Endmills



M E T R I C

Designation	APMX	DC	NOF(4)	DCONMS	BD	LU	OAL	Shank(5)	TQ(6)	kg
MTE D09.5-1-W20-12 (1)	12.00	9.50	1	20.00	7.50	15.5	85.00	W	1.2	0.16
MTE D09.9-1-W20-12	12.00	9.90	1	20.00	7.50	16.0	85.00	W	1.2	0.16
MTE D12.2-1-W20-14	14.00	12.20	1	20.00	8.75	20.0	75.00	W	1.2	0.15
MTE D14.5-1-W20-14	14.00	14.50	1	20.00	10.80	27.1	85.00	W	1.2	0.16
MTE D17.0-1-W20-14	14.00	17.00	1	20.00	12.80	30.0	85.00	W	1.2	0.23
MTE D18-1-W20-21 (2)	21.00	18.50	1	20.00	14.20	30.0	85.00	W	4.8	0.20
MTE D21-1-W20-21	21.00	21.00	1	20.00	15.90	40.0	94.00	W	4.8	0.23
MTE D25-1-W20-21	21.00	25.00	1	20.00	20.00	61.0	115.00	W	4.8	0.24
MTE D29-1-W25-30 (3)	30.00	29.00	1	25.00	22.20	50.0	110.00	W	9.0	0.32
MTE D31-1-W25-30	30.00	31.00	1	25.00	25.00	90.0	150.00	W	9.0	0.60
MTE D38-1-W32-30	30.00	38.00	1	32.00	32.00	86.0	150.00	W	9.0	0.90
MTE D48-1-W40-40	40.00	48.00	1	40.00	35.00	78.0	153.00	W	9.0	1.30
MTE D48-1-W40-40-B	40.00	48.00	1	40.00	36.50	138.0	210.00	W	9.0	1.50

I N C H

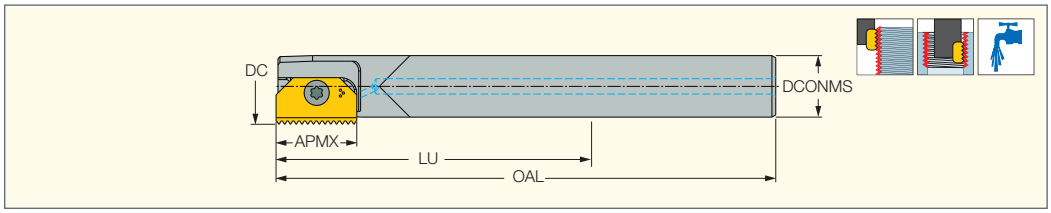
Designation	APMX	DC	NOF(4)	DCONMS	BD	LU	OAL	Shank(5)	TQ(6)	kg			
MTE D09.5-1-W20-12 (1)	12.00	9.50	1	20.00	7.50	15.5	85.00	W	1.2	0.16	SR M2.5-T8-MT	BLD T08/M7	SW4-SD
MTE D09.9-1-W20-12	12.00	9.90	1	20.00	7.50	16.0	85.00	W	1.2	0.16	SR M2.5-T8-MT	BLD T08/M7	SW4-SD
MTE D12.2-1-W20-14	14.00	12.20	1	20.00	8.75	20.0	75.00	W	1.2	0.15	SR M2.6-L6.7-S11	BLD T08/M7	SW4-SD
MTE D14.5-1-W20-14	14.00	14.50	1	20.00	10.80	27.1	85.00	W	1.2	0.16	SR M2.6-L6.7-S11	BLD T08/M7	SW4-SD
MTE D17.0-1-W20-14	14.00	17.00	1	20.00	12.80	30.0	85.00	W	1.2	0.23	SR M2.6-L6.7-S11	BLD T08/M7	SW4-SD
MTE D18-1-W20-21 (2)	21.00	18.50	1	20.00	14.20	30.0	85.00	W	4.8	0.20	SR M4-IP15-MT	BLD IP15/S7	SW6-SD
MTE D21-1-W20-21	21.00	21.00	1	20.00	15.90	40.0	94.00	W	4.8	0.23	SR M4-IP15-MT	BLD IP15/S7	SW6-SD
MTE D25-1-W20-21	21.00	25.00	1	20.00	20.00	61.0	115.00	W	4.8	0.24	SR M4-IP15-MT	BLD IP15/S7	SW6-SD
MTE D29-1-W25-30 (3)	30.00	29.00	1	25.00	22.20	50.0	110.00	W	9.0	0.32	SR M5-IP25-MT	BLD IP25/S7	SW6-T
MTE D31-1-W25-30	30.00	31.00	1	25.00	25.00	90.0	150.00	W	9.0	0.60	SR M5-IP25-MT	BLD IP25/S7	SW6-T
MTE D38-1-W32-30	30.00	38.00	1	32.00	32.00	86.0	150.00	W	9.0	0.90	SR M5-IP25-MT	BLD IP25/S7	SW6-T
MTE D48-1-W40-40	40.00	48.00	1	40.00	35.00	78.0	153.00	W	9.0	1.30	SR M5-IP25-MT	BLD IP25/S7	SW6-T
MTE D48-1-W40-40-B	40.00	48.00	1	40.00	36.50	138.0	210.00	W	9.0	1.50	SR M5-IP25-MT	BLD IP25/S7	SW6-T

- Tool cutting diameter should not exceed 2/3 of thread bore diameter
- All endmills are equipped with a bore for internal coolant
- For user guide, see pages 326-339
- For cutting conditions, see pages 362-367

(1) **Not suitable for inserts:** MT LNHT 1202 18NPTF, MT LNHT 1202 18NPT, MT LNHT 1202 19BSPT, MT LNHT 1202 I1.75ISO
(2) **Not suitable for inserts:**MT LNHT 2104 11.5NPT, 11.5NPTF, 8ABUT and MT LNHU 2104 I3.50ISO, I7UN
(3) Not suitable for MT LNHT 3005 4ABUT inserts
(4) Number of flutes
(5) W-Weldon
(6) Recommended clamping torque

MILLTHREAD

MTE D-C
Indexable Threading Endmills
with Cylindrical Carbide Shanks



M E T R I C

Designation	APMX	DC	DCONMS	LU	OAL	Shank(1)	TQ(2)	kg
MTE D09.9-1-C08C-12	12.00	9.90	8.00	94.00	127.00	C	1.2	0.07
MTE D13.7-1-C10C-14	14.00	13.70	10.00	77.00	110.00	C	1.2	0.10
MTE D13.7-1-C10C-14-B	14.00	13.70	10.00	120.00	153.50	C	1.2	0.12
MTE D15.2-1-C12C-14	14.00	15.20	12.00	139.00	182.30	C	1.2	0.12
MTE D21-1-C16C-21	21.00	21.00	16.00	86.60	130.00	C	4.8	0.01
MTE D21-1-C16C-21-B	21.00	21.00	16.00	163.00	206.30	C	4.8	0.60
MTE D27-1-C20C-30	30.00	27.00	20.00	204.00	263.00	C	9.0	0.99

I N C H

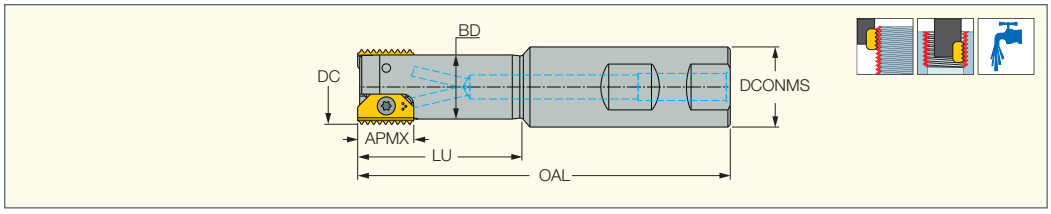
Designation	APMX	DC	DCONMS	LU	OAL	Shank(1)	TQ(2)	kg			
MTE D09.9-1-C08C-12	12.00	9.90	8.00	94.00	127.00	C	1.2	0.07	SR M2.5-T8-MT	BLD T08/M7	SW4-SD
MTE D13.7-1-C10C-14	14.00	13.70	10.00	77.00	110.00	C	1.2	0.10	SR M2.6-L6.7-S11	BLD T08/M7	SW4-SD
MTE D13.7-1-C10C-14-B	14.00	13.70	10.00	120.00	153.50	C	1.2	0.12	SR M2.6-L6.7-S11	BLD T08/M7	SW4-SD
MTE D15.2-1-C12C-14	14.00	15.20	12.00	139.00	182.30	C	1.2	0.12	SR M2.6-L6.7-S11	BLD T08/M7	SW4-SD
MTE D21-1-C16C-21	21.00	21.00	16.00	86.60	130.00	C	4.8	0.01	SR M4-IP15-MT	BLD IP15/S7	SW6-SD
MTE D21-1-C16C-21-B	21.00	21.00	16.00	163.00	206.30	C	4.8	0.60	SR M4-IP15-MT	BLD IP15/S7	SW6-SD
MTE D27-1-C20C-30	30.00	27.00	20.00	204.00	263.00	C	9.0	0.99	SR M5-IP25-MT-S	BLD IP25/S7	SW6-T

- For holders with long overhang, reduce the cutting speed and feed rate, between 20 to 40% (depending on workpiece, material, pitch and overhang)
- For user guide, see pages 326-339 • For cutting conditions, see pages 362-367

(1) C-Cylindrical
(2) Recommended clamping torque

MILLTHREAD

MTE D(Double Insert)
Double Insert Threading
Endmills with Weldon Shanks



M E T R I C

Designation	APMX	DC	DCONMS	BD	LU	OAL	Shank(1)	TQ(2)	kg
MTE D20.0-2-W20-14	14.00	20.00	20.00	16.00	41.0	93.00	W	1.2	0.20
MTE D20.0-3-W20-14	14.00	20.00	20.00	16.00	41.0	93.00	W	1.2	0.15
MTE D30-2-W25-21	21.00	30.00	25.00	-	-	108.00	W	4.8	0.40
MTE D40-2-W32-30	30.00	40.00	32.00	30.00	70.0	130.00	W	9.0	0.70
MTE D50-2-W40-40	40.00	50.00	40.00	38.00	78.0	153.00	W	9.0	0.80

I N C H

Designation	APMX	DC	DCONMS	BD	LU	OAL	Shank(1)	TQ(2)	kg			
MTE D20.0-2-W20-14	14.00	20.00	20.00	16.00	41.0	93.00	W	1.2	0.20	SR M2.6-L6.7-S11	BLD T08/M7	SW4-SD
MTE D20.0-3-W20-14	14.00	20.00	20.00	16.00	41.0	93.00	W	1.2	0.15	SR M2.6-L6.7-S11	BLD T08/M7	SW4-SD
MTE D30-2-W25-21	21.00	30.00	25.00	-	-	108.00	W	4.8	0.40	SR M4-IP15-MT	BLD IP15/S7	SW6-SD
MTE D40-2-W32-30	30.00	40.00	32.00	30.00	70.0	130.00	W	9.0	0.70	SR M5-IP25-MT	BLD IP25/S7	SW6-T
MTE D50-2-W40-40	40.00	50.00	40.00	38.00	78.0	153.00	W	9.0	0.80	SR M5-IP25-MT	BLD IP25/S7	SW6-T

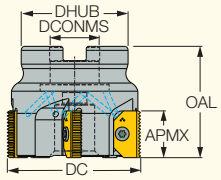
- Tool cutting diameter should not exceed 2/3 of thread bore diameter • All endmills are equipped with a bore for internal coolant
- For user guide, see pages 326-339 • For cutting conditions, see pages 362-367

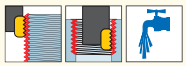
(1) W-Weldon
(2) Recommended clamping torque

MILLTHREAD

MTF D(Shell Mill)

Thread Milling Multi-Insert Shell Mills





M E T R I C

Designation	DC	APMX	CICT(1)	DHUB	DCONMS	OAL	TQ(2)	kg
MTF D063-5-22-21	63.00	21.00	5	40.00	22.00	50.00	4.8	0.70
MTF D063-4-22-30	63.00	30.00	4	48.00	22.00	50.00	9.0	0.56
MTF D080-4-27-30	80.00	30.00	4	60.00	27.00	50.00	9.0	0.10
MTF D080-4-27-40	80.00	40.00	4	60.00	27.00	65.00	9.0	1.04
MTF D100-4-32-30	100.00	30.00	4	78.00	32.00	50.00	9.0	1.89
MTF D100-8-32-30	100.00	30.00	8	78.00	32.00	50.00	9.0	0.15
MTF D100-4-32-40	100.00	40.00	4	78.00	32.00	65.00	9.0	0.20

I N C H

Designation	DC	APMX	CICT(1)	DHUB	DCONMS	OAL	TQ(2)	kg
MTF D063-5-22-21	63.00	21.00	5	40.00	22.00	50.00	4.8	0.70
MTF D063-4-22-30	63.00	30.00	4	48.00	22.00	50.00	9.0	0.56
MTF D080-4-27-30	80.00	30.00	4	60.00	27.00	50.00	9.0	0.10
MTF D080-4-27-40	80.00	40.00	4	60.00	27.00	65.00	9.0	1.04
MTF D100-4-32-30	100.00	30.00	4	78.00	32.00	50.00	9.0	1.89
MTF D100-8-32-30	100.00	30.00	8	78.00	32.00	50.00	9.0	0.15
MTF D100-4-32-40	100.00	40.00	4	78.00	32.00	65.00	9.0	0.20

• For user guide, see pages 326-339 • For cutting conditions, see pages 362-367

(1) Number of inserts

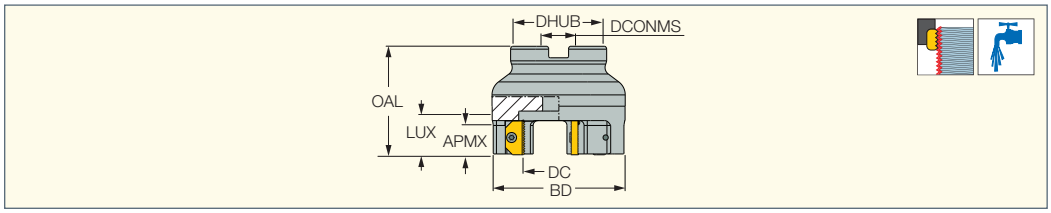
(2) Recommended clamping moment

Spare Parts

Designation				
MTF D063-5-22-21	SR M4-IP15-MT	SR M10X25 DIN912	BLD IP15/S7	SW6-SD
MTF D063-4-22-30	SR M5-IP25-MT	SR M10X25 DIN912	BLD IP25/S7	SW6-T
MTF D080-4-27-30	SR M5-IP25-MT	SR DIN 912 M12X25	BLD IP25/S7	SW6-T
MTF D080-4-27-40	SR M5-IP25-MT	SR DIN 912 M12X25	BLD IP25/S7	SW6-T
MTF D100-4-32-30	SR M5-IP25-MT	SR M16X30 DIN912	BLD IP25/S7	SW6-T
MTF D100-8-32-30	SR M5-IP25-MT	SR M16X30 DIN912	BLD IP25/S7	SW6-T
MTF D100-4-32-40	SR M5-IP25-MT	SR M16X30 DIN912	BLD IP25/S7	SW6-T

MILLTHREAD

MTFLE
External Multi-Tooth
Threading Shell Mills



M E T R I C

Designation	DC	BD	DHUB	DCONMS	OAL	LUX	APMX	CICT(1)	TQ(2)	kg
MTFLE D20-3-22-21	20.00	58.20	48.00	22.00	63.00	27.0	21.00	3	4.8	0.70
MTFLE D20-4-22-21	20.00	58.20	48.00	22.00	63.00	27.0	21.00	4	4.8	0.70
MTFLE D30-3-22-21	30.00	68.20	48.00	22.00	63.00	27.0	21.00	3	4.8	0.90
MTFLE D45-4-27-21	45.00	83.20	60.00	27.00	67.00	27.0	21.00	4	4.8	1.40

I N C H

Designation	DC	BD	DHUB	DCONMS	OAL	LUX	APMX	CICT(1)	TQ(2)	kg
MTFLE D20-3-22-21	20.00	58.20	48.00	22.00	63.00	27.0	21.00	3	4.8	0.70
MTFLE D20-4-22-21	20.00	58.20	48.00	22.00	63.00	27.0	21.00	4	4.8	0.70
MTFLE D30-3-22-21	30.00	68.20	48.00	22.00	63.00	27.0	21.00	3	4.8	0.90
MTFLE D45-4-27-21	45.00	83.20	60.00	27.00	67.00	27.0	21.00	4	4.8	1.40

• For user guide, see pages 326-339 • For cutting conditions, see pages 362-367
(1) Number of inserts
(2) Recommended clamping torque

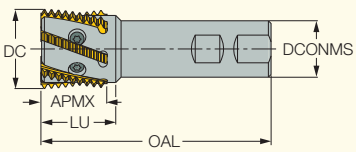
Spare Parts

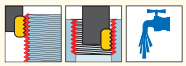
Designation				
MTFLE D20-3-22-21	SR M10X25 DIN912	BLD IP15/S7	SW6-SD	SR M4-IP15-MT
MTFLE D20-4-22-21	SR M10X25 DIN912	BLD IP15/S7	SW6-SD	SR M4-IP15-MT
MTFLE D30-3-22-21	SR M10X25 DIN912	BLD IP15/S7	SW6-SD	SR M4-IP15-MT
MTFLE D45-4-27-21	SR DIN 912 M12X25	BLD IP15/S7	SW6-SD	SR M4-IP15-MT

MILLTHREAD

MTSRH (endmills)

Endmills with Coolant Holes
for Helical Threading Inserts





M E T R I C

Designation	DC	APMX	DCONMS	OAL	LU	NOF(1)	Shank(2)	kg	MIID(3)
MTSRH 23-2	23.00	27.00	25.00	110.00	50.0	2	W	0.30	MTH 23 E 1.0 ISO
MTSRH 32-5	32.00	32.00	32.00	130.00	60.0	5	W	0.65	MTH 32 E 1.5 ISO
MTSRH 45-6	45.00	37.00	32.00	130.00	-	6	W	0.88	MTH 45 E 1.5 ISO

I N C H

Designation	DC	APMX	DCONMS	OAL	LU	NOF(1)	Shank(2)	kg	MIID(3)		
MTSRH 23-2	23.00	27.00	25.00	110.00	50.0	2	W	0.30	MTH 23 E 1.0 ISO	S23	K21
MTSRH 32-5	32.00	32.00	32.00	130.00	60.0	5	W	0.65	MTH 32 E 1.5 ISO	S32	
MTSRH 45-6	45.00	37.00	32.00	130.00	-	6	W	0.88	MTH 45 E 1.5 ISO	S45X	K40

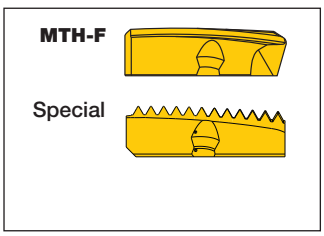
- Note: ISCAR can provide special contour inserts on request

(1) Number of flutes
(2) W-Weldon
(3) Master insert identification





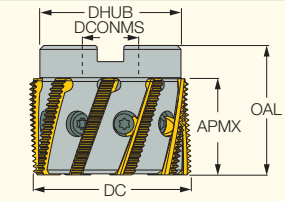
MTSRH with **MTH-F**
Finishing Inserts

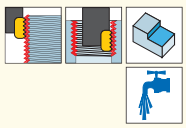


MILLTHREAD

MTSRH (helical shell mill)

Shell Mills with Coolant Holes
for Helical Threading Inserts





M E T R I C

Designation	DC	APMX	DHUB	DCONMS	OAL	NOF(1)	kg	MIID(2)
MTSRH 32-5M	32.00	32.00	26.00	16.00	52.00	5	0.15	MTH 32 E 1.5 ISO
MTSRH 45-6M	45.00	37.00	38.00	22.00	60.00	6	0.30	MTH 45 E 1.5 ISO
MTSRH 63-9	63.00	38.00	51.70	22.00	50.00	9	0.66	MTH 63 11 W

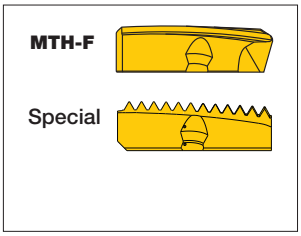
I N C H

Designation	DC	APMX	DHUB	DCONMS	OAL	NOF(1)	kg	MIID(2)		
MTSRH 32-5M	32.00	32.00	26.00	16.00	52.00	5	0.15	MTH 32 E 1.5 ISO	S32S	
MTSRH 45-6M	45.00	37.00	38.00	22.00	60.00	6	0.30	MTH 45 E 1.5 ISO	S45S	K40
MTSRH 63-9	63.00	38.00	51.70	22.00	50.00	9	0.66	MTH 63 11 W	S63	K40

- Note: ISCAR can provide special contour inserts on request • For user guide, see pages 326-339 • For cutting conditions, see pages 362-367

(1) Number of flutes
(2) Master insert identification



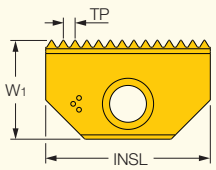


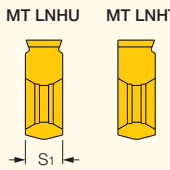
MILLTHREAD

MT LNH#-ISO (Internal)

Thread Milling Inserts for
Internal ISO Metric Profile

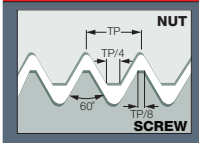








M E T R I C



Designation	Dimensions TP[1]	INSL	W1	S1	IC908
MT LNHT 1202 I0.50ISO	0.500	12.00	6.50	2.90	●
MT LNHU 1403 I0.50ISO	0.500	14.00	7.90	3.20	●
MT LNHT 1202 I0.75ISO	0.750	12.00	6.50	2.90	●
MT LNHU 1403 I0.75ISO	0.750	14.00	7.90	3.20	●
MT LNHT 1202 I1.00ISO	1.000	12.00	6.50	2.90	●
MT LNHU 1403 I1.00ISO	1.000	14.00	7.90	3.20	●
MT LNHU 2104 I1.00ISO	1.000	21.00	12.60	4.80	●
MT LNHT 1202 I1.25ISO	1.250	12.00	6.50	2.90	●
MT LNHU 1403 I1.25ISO	1.250	14.00	7.90	3.20	●
MT LNHT 1202 I1.50ISO	1.500	12.00	6.50	2.90	●
MT LNHU 1403 I1.50ISO	1.500	14.00	7.90	3.20	●
MT LNHU 2104 I1.50ISO	1.500	21.00	12.60	4.80	●
MT LNHU 3005 I1.50ISO	1.500	30.00	16.70	5.60	●
MT LNHU 4006 I1.50ISO	1.500	40.00	20.80	6.40	●
MT LNHT 1202 I1.75ISO	1.750	12.00	6.50	2.90	●
MT LNHU 1403 I1.75ISO	1.750	14.00	7.90	3.20	●
MT LNHU 2104 I1.75ISO	1.750	21.00	12.60	4.80	●
MT LNHU 1403 I2.00ISO	2.000	14.00	7.90	3.20	●
MT LNHU 2104 I2.00ISO	2.000	21.00	12.60	4.80	●
MT LNHU 3005 I2.00ISO	2.000	30.00	16.70	5.60	●
MT LNHU 4006 I2.00ISO	2.000	40.00	20.80	6.40	●
MT LNHU 1403 I2.50ISO	2.500	14.00	7.90	3.20	●
MT LNHU 2104 I2.50ISO	2.500	21.00	12.60	4.80	●
MT LNHU 2104 I3.00ISO	3.000	21.00	12.60	4.80	●
MT LNHU 3005 I3.00ISO	3.000	30.00	16.70	5.60	●
MT LNHU 4006 I3.00ISO	3.000	40.00	20.80	6.40	●
MT LNHU 2104 I3.50ISO	3.500	21.00	12.60	4.80	●
MT LNHU 3005 I3.50ISO	3.500	30.00	16.70	5.60	●
MT LNHU 4006 I3.50ISO	3.500	40.00	20.80	6.40	●
MT LNHU 3005 I4.00ISO	4.000	30.00	16.70	5.60	●
MT LNHU 4006 I4.00ISO	4.000	40.00	20.80	6.40	●
MT LNHU 3005 I4.50ISO	4.500	30.00	16.70	5.60	●
MT LNHU 4006 I4.50ISO	4.500	40.00	20.80	6.40	●
MT LNHU 3005 I5.00ISO	5.000	30.00	16.70	5.60	●
MT LNHU 4006 I5.00ISO	5.000	40.00	20.80	6.40	●
MT LNHU 4006 I5.50ISO	5.500	40.00	20.80	6.40	●
MT LNHU 4006 I6.00ISO	6.000	40.00	20.80	6.40	●

- For cutting speed recommendations, see pages 362-367
- For user guide, see pages: 326-339

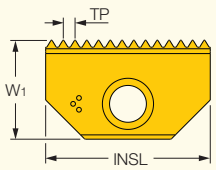
(1) Thread pitch

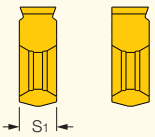
MILLTHREAD

MT LNH#-ISO (Internal)

Thread Milling Inserts for
Internal ISO Metric Profile

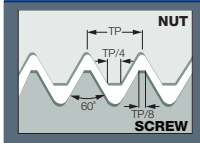








I N C H



Designation	Dimensions TP mm[1]	INSL	W1	S1	IC908
MT LNHT 1202 I0.50ISO	.500	.472	.256	.114	●
MT LNHU 1403 I0.50ISO	.500	.551	.311	.126	●
MT LNHT 1202 I0.75ISO	.750	.472	.256	.114	●
MT LNHU 1403 I0.75ISO	.750	.551	.311	.126	●
MT LNHT 1202 I1.00ISO	1.000	.472	.256	.114	●
MT LNHU 1403 I1.00ISO	1.000	.551	.311	.126	●
MT LNHU 2104 I1.00ISO	1.000	.827	.496	.189	●
MT LNHT 1202 I1.25ISO	1.250	.472	.256	.114	●
MT LNHU 1403 I1.25ISO	1.250	.551	.311	.126	●
MT LNHT 1202 I1.50ISO	1.500	.472	.256	.114	●
MT LNHU 1403 I1.50ISO	1.500	.551	.311	.126	●
MT LNHU 2104 I1.50ISO	1.500	.827	.496	.189	●
MT LNHU 3005 I1.50ISO	1.500	1.181	.657	.220	●
MT LNHU 4006 I1.50ISO	1.500	1.575	.819	.252	●
MT LNHT 1202 I1.75ISO	1.750	.472	.256	.114	●
MT LNHU 1403 I1.75ISO	1.750	.551	.311	.126	●
MT LNHU 2104 I1.75ISO	1.750	.827	.496	.189	●
MT LNHU 1403 I2.00ISO	2.000	.551	.311	.126	●
MT LNHU 2104 I2.00ISO	2.000	.827	.496	.189	●
MT LNHU 3005 I2.00ISO	2.000	1.181	.657	.220	●
MT LNHU 4006 I2.00ISO	2.000	1.575	.819	.252	●
MT LNHU 1403 I2.50ISO	2.500	.551	.311	.126	●
MT LNHU 2104 I2.50ISO	2.500	.827	.496	.189	●
MT LNHU 2104 I3.00ISO	3.000	.827	.496	.189	●
MT LNHU 3005 I3.00ISO	3.000	1.181	.657	.220	●
MT LNHU 4006 I3.00ISO	3.000	1.575	.819	.252	●
MT LNHU 2104 I3.50ISO	3.500	.827	.496	.189	●
MT LNHU 3005 I3.50ISO	3.500	1.181	.657	.220	●
MT LNHU 4006 I3.50ISO	3.500	1.575	.819	.252	●
MT LNHU 3005 I4.00ISO	4.000	1.181	.657	.220	●
MT LNHU 4006 I4.00ISO	4.000	1.575	.819	.252	●
MT LNHU 3005 I4.50ISO	4.500	1.181	.657	.220	●
MT LNHU 4006 I4.50ISO	4.500	1.575	.819	.252	●
MT LNHU 3005 I5.00ISO	5.000	1.181	.657	.220	●
MT LNHU 4006 I5.00ISO	5.000	1.575	.819	.252	●
MT LNHU 4006 I5.50ISO	5.500	1.575	.819	.252	●
MT LNHU 4006 I6.00ISO	6.000	1.575	.819	.252	●

- For cutting speed recommendations, see pages 362-367
- For user guide, see pages: 326-339

[1] Thread pitch

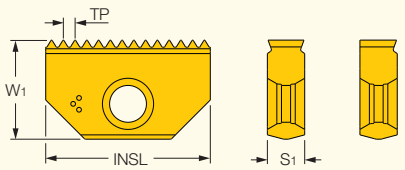
For tools, see pages: MTE D (405) • MTE D-C (406) • MTE-MM (404) • MTF D(Shell Mill) (407)

MILLTHREAD

MT LNHU-ISO (External)

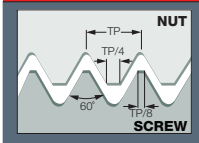
Thread Milling Inserts for
External ISO Metric Profile







M E T R I C



Designation	Dimensions TP[1]	INSL	W1	S1	IC908
MT LNHU 1403 E0.75ISO	0.750	14.00	7.90	3.20	•
MT LNHU 1403 E1.00ISO	1.000	14.00	7.90	3.20	•
MT LNHU 2104 E1.00ISO	1.000	21.00	12.60	4.80	•
MT LNHU 1403 E1.25ISO	1.250	14.00	7.90	3.20	•
MT LNHU 1403 E1.50ISO	1.500	14.00	7.90	3.20	•
MT LNHU 2104 E1.50ISO	1.500	21.00	12.60	4.80	•
MT LNHU 3005 E1.50ISO	1.500	30.00	16.70	5.60	•
MT LNHU 4006 E1.50ISO	1.500	40.00	20.80	6.40	•
MT LNHU 1403 E1.75ISO	1.750	14.00	7.90	3.20	•
MT LNHU 1403 E2.00ISO	2.000	14.00	7.90	3.20	•
MT LNHU 2104 E2.00ISO	2.000	21.00	12.60	4.80	•
MT LNHU 3005 E2.00ISO	2.000	30.00	16.70	5.60	•
MT LNHU 4006 E2.00ISO	2.000	40.00	20.80	6.40	•
MT LNHU 1403 E2.50ISO	2.500	14.00	7.90	3.20	•
MT LNHU 2104 E2.50ISO	2.500	21.00	12.80	4.80	•
MT LNHU 2104 E3.00ISO	3.000	21.00	12.80	4.80	•
MT LNHU 3005 E3.00ISO	3.000	30.00	16.70	5.60	•
MT LNHU 4006 E3.00ISO	3.000	40.00	20.80	6.40	•
MT LNHU 3005 E3.50ISO	3.500	30.00	16.70	5.60	•
MT LNHU 3005 E4.00ISO	4.000	30.00	16.70	5.60	•
MT LNHU 4006 E4.00ISO	4.000	40.00	20.80	6.40	•
MT LNHU 4006 E5.00ISO	5.000	40.00	20.80	6.40	•
MT LNHU 4006 E6.00ISO	6.000	40.00	20.80	6.40	•

I N C H

Designation	Dimensions TP mm[1]	INSL	W1	S1	IC908
MT LNHU 1403 E0.75ISO	.750	.551	.311	.126	•
MT LNHU 1403 E1.00ISO	1.000	.551	.311	.126	•
MT LNHU 2104 E1.00ISO	1.000	.827	.496	.189	•
MT LNHU 1403 E1.25ISO	1.250	.551	.311	.126	•
MT LNHU 1403 E1.50ISO	1.500	.551	.311	.126	•
MT LNHU 2104 E1.50ISO	1.500	.827	.496	.189	•
MT LNHU 3005 E1.50ISO	1.500	1.181	.657	.220	•
MT LNHU 4006 E1.50ISO	1.500	1.575	.819	.252	•
MT LNHU 1403 E1.75ISO	1.750	.551	.311	.126	•
MT LNHU 1403 E2.00ISO	2.000	.551	.311	.126	•
MT LNHU 2104 E2.00ISO	2.000	.827	.496	.189	•
MT LNHU 3005 E2.00ISO	2.000	1.181	.657	.220	•
MT LNHU 4006 E2.00ISO	2.000	1.575	.819	.252	•
MT LNHU 1403 E2.50ISO	2.500	.551	.311	.126	•
MT LNHU 2104 E2.50ISO	2.500	.827	.504	.189	•
MT LNHU 2104 E3.00ISO	3.000	.827	.504	.189	•
MT LNHU 3005 E3.00ISO	3.000	1.181	.657	.220	•
MT LNHU 4006 E3.00ISO	3.000	1.575	.819	.252	•
MT LNHU 3005 E3.50ISO	3.500	1.181	.657	.220	•
MT LNHU 3005 E4.00ISO	4.000	1.181	.657	.220	•
MT LNHU 4006 E4.00ISO	4.000	1.575	.819	.252	•
MT LNHU 4006 E5.00ISO	5.000	1.575	.819	.252	•
MT LNHU 4006 E6.00ISO	6.000	1.575	.819	.252	•

• For cutting speed recommendations, see pages 362-367

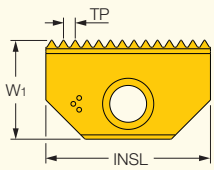
(1) Thread pitch

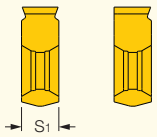
MILLTHREAD

MT LNH#-UN (Internal)

Thread Milling Inserts for American (UN, UNC, UNF, UNEF, UNS) Full Profile Threads for General Applications

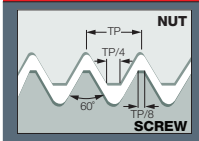








M E T R I C



Designation	Dimensions TPI[1]	INSL	W1	S1	TP[2]	IC908
MT LNHT 1202 I32UN	32.0	12.00	6.50	2.90	0.794	●
MT LNHT 1202 I28UN	28.0	12.00	6.50	2.90	0.907	●
MT LNHT 1202 I24UN	24.0	12.00	6.50	2.90	1.058	●
MT LNHT 1202 I20UN	20.0	12.00	6.50	2.90	1.270	●
MT LNHT 1202 I18UN	18.0	12.00	6.50	2.90	1.411	●
MT LNHT 1202 I16UN	16.0	12.00	6.50	2.90	1.588	●
MT LNHU 1403 I32UN	32.0	14.00	7.90	3.20	0.794	●
MT LNHU 1403 I28UN	28.0	14.00	7.90	3.20	0.907	●
MT LNHU 1403 I27UN	27.0	14.00	7.90	3.20	0.941	●
MT LNHU 1403 I24UN	24.0	14.00	7.90	3.20	1.058	●
MT LNHU 1403 I20UN	20.0	14.00	7.90	3.20	1.270	●
MT LNHU 1403 I18UN	18.0	14.00	7.90	3.20	1.411	●
MT LNHU 1403 I16UN	16.0	14.00	7.90	3.20	1.588	●
MT LNHU 1403 I14UN	14.0	14.00	7.90	3.20	1.814	●
MT LNHU 1403 I12UN	12.0	14.00	7.90	3.20	2.117	●
MT LNHU 1403 I11UN	11.0	14.00	7.90	3.20	2.309	●
MT LNHU 1403 I10UN	10.0	14.00	7.90	3.20	2.540	●
MT LNHU 2104 I24UN	24.0	21.00	12.60	4.80	1.058	●
MT LNHU 2104 I20UN	20.0	21.00	12.60	4.80	1.270	●
MT LNHU 2104 I18UN	18.0	21.00	12.60	4.80	1.411	●
MT LNHU 2104 I16UN	16.0	21.00	12.60	4.80	1.588	●
MT LNHU 2104 I14UN	14.0	21.00	12.60	4.80	1.814	●
MT LNHU 2104 I12UN	12.0	21.00	12.60	4.80	2.117	●
MT LNHU 2104 I10UN	10.0	21.00	12.60	4.80	2.540	●
MT LNHU 2104 I8UN	8.0	21.00	12.60	4.80	3.175	●
MT LNHU 2104 I7UN	7.0	21.00	12.60	4.80	3.629	●
MT LNHU 3005 I20UN	20.0	30.00	16.70	5.60	1.270	●
MT LNHU 3005 I18UN	18.0	30.00	16.70	5.60	1.411	●
MT LNHU 3005 I16UN	16.0	30.00	16.70	5.60	1.588	●
MT LNHU 3005 I14UN	14.0	30.00	16.70	5.60	1.814	●
MT LNHU 3005 I12UN	12.0	30.00	16.70	5.60	2.117	●
MT LNHU 3005 I10UN	10.0	30.00	16.70	5.60	2.540	●
MT LNHU 3005 I8UN	8.0	30.00	16.70	5.60	3.175	●
MT LNHU 3005 I6UN	6.0	30.00	16.70	5.60	4.233	●
MT LNHU 3005 I5UN	5.0	30.00	16.70	5.60	5.080	●
MT LNHU 4006 I16UN	16.0	40.00	20.80	6.40	1.588	●
MT LNHU 4006 I14UN	14.0	40.00	20.80	6.40	1.814	●
MT LNHU 4006 I12UN	12.0	40.00	20.80	6.40	2.117	●
MT LNHU 4006 I10UN	10.0	40.00	20.80	6.40	2.540	●
MT LNHU 4006 I8UN	8.0	40.00	20.80	6.40	3.175	●
MT LNHU 4006 I6UN	6.0	40.00	20.80	6.40	4.233	●
MT LNHU 4006 I4.5UN	4.5	40.00	20.80	6.40	5.644	●
MT LNHU 4006 I4UN	4.0	40.00	20.80	6.40	6.350	●

• For cutting speed recommendations, see pages 362-367

(1) Threads per inch

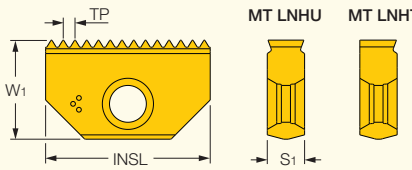
(2) Thread pitch

MILLTHREAD

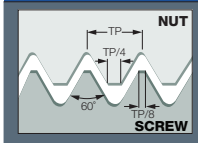
MT LNH#-UN (Internal)

Thread Milling Inserts for American (UN, UNC, UNF, UNEF, UNS) Full Profile Threads for General Applications







I N C H						
	Dimensions					IC908
Designation	TPI[1]	INSL	W1	S1	TP mm[2]	
MT LNHT 1202 I32UN	32.0	.472	.256	.114	.794	●
MT LNHT 1202 I28UN	28.0	.472	.256	.114	.907	●
MT LNHT 1202 I24UN	24.0	.472	.256	.114	1.058	●
MT LNHT 1202 I20UN	20.0	.472	.256	.114	1.270	●
MT LNHT 1202 I18UN	18.0	.472	.256	.114	1.411	●
MT LNHT 1202 I16UN	16.0	.472	.256	.114	1.588	●
MT LNHU 1403 I32UN	32.0	.551	.311	.126	.794	●
MT LNHU 1403 I28UN	28.0	.551	.311	.126	.907	●
MT LNHU 1403 I27UN	27.0	.551	.311	.126	.941	●
MT LNHU 1403 I24UN	24.0	.551	.311	.126	1.058	●
MT LNHU 1403 I20UN	20.0	.551	.311	.126	1.270	●
MT LNHU 1403 I18UN	18.0	.551	.311	.126	1.411	●
MT LNHU 1403 I16UN	16.0	.551	.311	.126	1.588	●
MT LNHU 1403 I14UN	14.0	.551	.311	.126	1.814	●
MT LNHU 1403 I12UN	12.0	.551	.311	.126	2.117	●
MT LNHU 1403 I11UN	11.0	.551	.311	.126	2.309	●
MT LNHU 1403 I10UN	10.0	.551	.311	.126	2.540	●
MT LNHU 2104 I24UN	24.0	.827	.496	.189	1.058	●
MT LNHU 2104 I20UN	20.0	.827	.496	.189	1.270	●
MT LNHU 2104 I18UN	18.0	.827	.496	.189	1.411	●
MT LNHU 2104 I16UN	16.0	.827	.496	.189	1.588	●
MT LNHU 2104 I14UN	14.0	.827	.496	.189	1.814	●
MT LNHU 2104 I12UN	12.0	.827	.496	.189	2.117	●
MT LNHU 2104 I10UN	10.0	.827	.496	.189	2.540	●
MT LNHU 2104 I8UN	8.0	.827	.496	.189	3.175	●
MT LNHU 2104 I7UN	7.0	.827	.496	.189	3.629	●
MT LNHU 3005 I20UN	20.0	1.181	.657	.220	1.270	●
MT LNHU 3005 I18UN	18.0	1.181	.657	.220	1.411	●
MT LNHU 3005 I16UN	16.0	1.181	.657	.220	1.588	●
MT LNHU 3005 I14UN	14.0	1.181	.657	.220	1.814	●
MT LNHU 3005 I12UN	12.0	1.181	.657	.220	2.117	●
MT LNHU 3005 I10UN	10.0	1.181	.657	.220	2.540	●
MT LNHU 3005 I8UN	8.0	1.181	.657	.220	3.175	●
MT LNHU 3005 I6UN	6.0	1.181	.657	.220	4.233	●
MT LNHU 3005 I5UN	5.0	1.181	.657	.220	5.080	●
MT LNHU 4006 I16UN	16.0	1.575	.819	.252	1.588	●
MT LNHU 4006 I14UN	14.0	1.575	.819	.252	1.814	●
MT LNHU 4006 I12UN	12.0	1.575	.819	.252	2.117	●
MT LNHU 4006 I10UN	10.0	1.575	.819	.252	2.540	●
MT LNHU 4006 I8UN	8.0	1.575	.819	.252	3.175	●
MT LNHU 4006 I6UN	6.0	1.575	.819	.252	4.233	●
MT LNHU 4006 I4.5UN	4.5	1.575	.819	.252	5.644	●
MT LNHU 4006 I4UN	4.0	1.575	.819	.252	6.350	●

• For cutting speed recommendations, see pages 362-367 • For user guide, see pages: 326-339

(1) Threads per inch

(2) Thread pitch

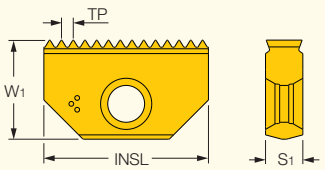
For tools, see pages: MTE D (405) • MTE D-C (406) • MTE-MM (404) • MTF D(Shell Mill) (407)

MILLTHREAD

MT LNHU-UN (External)

External (UN, UNC,UNF,UNEF, UNS) Full Profile Thread Milling Inserts for General Industries







M E T R I C

Designation	Dimensions TPI(1)	INSL	W1	S1	IC908
MT LNHU 1403 E32UN	32.0	14.00	7.90	3.20	●
MT LNHU 1403 E28UN	28.0	14.00	7.90	3.20	●
MT LNHU 1403 E24UN	24.0	14.00	7.90	3.20	●
MT LNHU 1403 E20UN	20.0	14.00	7.90	3.20	●
MT LNHU 1403 E18UN	18.0	14.00	7.90	3.20	●
MT LNHU 1403 E16UN	16.0	14.00	7.90	3.20	●
MT LNHU 1403 E14UN	14.0	14.00	7.90	3.20	●
MT LNHU 1403 E12UN	12.0	14.00	7.90	3.20	●
MT LNHU 2104 E24UN	24.0	21.00	12.60	4.80	●
MT LNHU 2104 E20UN	20.0	21.00	12.60	4.80	●
MT LNHU 2104 E18UN	18.0	21.00	12.60	4.80	●
MT LNHU 2104 E16UN	16.0	21.00	12.60	4.80	●
MT LNHU 2104 E14UN	14.0	21.00	12.60	4.80	●
MT LNHU 2104 E12UN	12.0	21.00	12.60	4.80	●
MT LNHU 2104 E10UN	10.0	21.00	12.60	4.80	●
MT LNHU 3005 E20UN	20.0	30.00	16.70	5.60	●
MT LNHU 3005 E18UN	18.0	30.00	16.70	5.60	●
MT LNHU 3005 E16UN	16.0	30.00	16.70	5.60	●
MT LNHU 3005 E14UN	14.0	30.00	16.70	5.60	●
MT LNHU 3005 E12UN	12.0	30.00	16.70	5.60	●
MT LNHU 3005 E10UN	10.0	30.00	16.70	5.60	●
MT LNHU 3005 E8UN	8.0	30.00	16.70	5.60	●
MT LNHU 3005 E6UN	6.0	30.00	16.70	5.60	●
MT LNHU 4006 E16UN	16.0	40.00	20.80	6.40	●
MT LNHU 4006 E14UN	14.0	40.00	20.80	6.40	●
MT LNHU 4006 E12UN	12.0	40.00	20.80	6.40	●
MT LNHU 4006 E10UN	10.0	40.00	20.80	6.40	●
MT LNHU 4006 E8UN	8.0	40.00	20.80	6.40	●
MT LNHU 4006 E6UN	6.0	40.00	20.80	6.40	●

• For cutting speed recommendations, see pages 362-367 • For user guide, see pages: 326-339

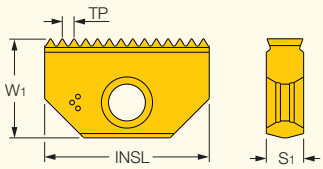
(1) Threads per inch

MILLTHREAD

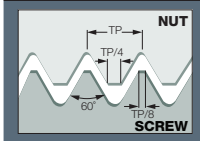
MT LNHU-UN (External)

External (UN, UNC,UNF,UNEF, UNS) Full Profile Thread Milling Inserts for General Industries







I N C H					
	Dimensions				
Designation	TPI[1]	INSL	W1	S1	IC908
MT LNHU 1403 E32UN	32.0	.551	.311	.126	●
MT LNHU 1403 E28UN	28.0	.551	.311	.126	●
MT LNHU 1403 E24UN	24.0	.551	.311	.126	●
MT LNHU 1403 E20UN	20.0	.551	.311	.126	●
MT LNHU 1403 E18UN	18.0	.551	.311	.126	●
MT LNHU 1403 E16UN	16.0	.551	.311	.126	●
MT LNHU 1403 E14UN	14.0	.551	.311	.126	●
MT LNHU 1403 E12UN	12.0	.551	.311	.126	●
MT LNHU 2104 E24UN	24.0	.827	.496	.189	●
MT LNHU 2104 E20UN	20.0	.827	.496	.189	●
MT LNHU 2104 E18UN	18.0	.827	.496	.189	●
MT LNHU 2104 E16UN	16.0	.827	.496	.189	●
MT LNHU 2104 E14UN	14.0	.827	.496	.189	●
MT LNHU 2104 E12UN	12.0	.827	.496	.189	●
MT LNHU 2104 E10UN	10.0	.827	.496	.189	●
MT LNHU 3005 E20UN	20.0	1.181	.657	.220	●
MT LNHU 3005 E18UN	18.0	1.181	.657	.220	●
MT LNHU 3005 E16UN	16.0	1.181	.657	.220	●
MT LNHU 3005 E14UN	14.0	1.181	.657	.220	●
MT LNHU 3005 E12UN	12.0	1.181	.657	.220	●
MT LNHU 3005 E10UN	10.0	1.181	.657	.220	●
MT LNHU 3005 E8UN	8.0	1.181	.657	.220	●
MT LNHU 3005 E6UN	6.0	1.181	.657	.220	●
MT LNHU 4006 E16UN	16.0	1.575	.819	.252	●
MT LNHU 4006 E14UN	14.0	1.575	.819	.252	●
MT LNHU 4006 E12UN	12.0	1.575	.819	.252	●
MT LNHU 4006 E10UN	10.0	1.575	.819	.252	●
MT LNHU 4006 E8UN	8.0	1.575	.819	.252	●
MT LNHU 4006 E6UN	6.0	1.575	.819	.252	●

• For cutting speed recommendations, see pages 362-367 • For user guide, see pages: 326-339

[1] Threads per inch

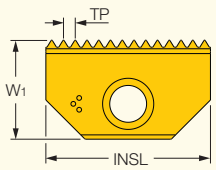
For tools, see pages: MTE D (405) • MTE D-C (406) • MTE-MM (404) • MTF D(Shell Mill) (407) • MTFLE (408)

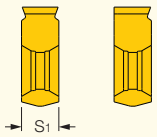
MILLTHREAD

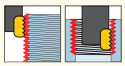
MT LNH#-W

External & Internal Whitworth (BSW, BSF, BSP) Full Profile Thread Milling Inserts for Fittings and Pipe Couplings









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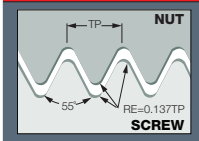


Designation	TPI[1]	Dimensions INSL	W1	S1	TP[2]	IC908
MT LNHT 1202 19W	19.0	12.00	6.50	2.90	1.337	●
MT LNHU 1403 24W	24.0	14.00	7.90	3.20	1.058	●
MT LNHU 1403 20W	20.0	14.00	7.90	3.20	1.270	●
MT LNHU 1403 19W	19.0	14.00	7.90	3.20	1.337	●
MT LNHU 1403 16W	16.0	14.00	7.90	3.20	1.588	●
MT LNHU 1403 14W	14.0	14.00	7.90	3.20	1.814	●
MT LNHU 2104 20W	20.0	21.00	12.60	4.80	1.270	●
MT LNHU 2104 19W	19.0	21.00	12.60	4.80	1.337	●
MT LNHU 2104 16W	16.0	21.00	12.60	4.80	1.588	●
MT LNHU 2104 14W	14.0	21.00	12.60	4.80	1.814	●
MT LNHU 2104 11W	11.0	21.00	12.60	4.80	2.309	●
MT LNHU 3005 16W	16.0	30.00	16.70	5.60	1.588	●
MT LNHU 3005 14W	14.0	30.00	16.70	5.60	1.814	●
MT LNHU 3005 11W	11.0	30.00	16.70	5.60	2.309	●
MT LNHU 4006 11W	11.0	40.00	20.80	6.40	2.309	●
MT LNHU 4006 8W	8.0	40.00	20.80	6.40	3.175	●

I N C H

Designation	TPI[1]	Dimensions INSL	W1	S1	TP mm[2]	IC908
MT LNHT 1202 19W	19.0	.472	.256	.114	1.337	●
MT LNHU 1403 24W	24.0	.551	.311	.126	1.058	●
MT LNHU 1403 20W	20.0	.551	.311	.126	1.270	●
MT LNHU 1403 19W	19.0	.551	.311	.126	1.337	●
MT LNHU 1403 16W	16.0	.551	.311	.126	1.588	●
MT LNHU 1403 14W	14.0	.551	.311	.126	1.814	●
MT LNHU 2104 20W	20.0	.827	.496	.189	1.270	●
MT LNHU 2104 19W	19.0	.827	.496	.189	1.337	●
MT LNHU 2104 16W	16.0	.827	.496	.189	1.588	●
MT LNHU 2104 14W	14.0	.827	.496	.189	1.814	●
MT LNHU 2104 11W	11.0	.827	.496	.189	2.309	●
MT LNHU 3005 16W	16.0	1.181	.657	.220	1.588	●
MT LNHU 3005 14W	14.0	1.181	.657	.220	1.814	●
MT LNHU 3005 11W	11.0	1.181	.657	.220	2.309	●
MT LNHU 4006 11W	11.0	1.575	.819	.252	2.309	●
MT LNHU 4006 8W	8.0	1.575	.819	.252	3.175	●

• For cutting speed recommendations, see pages 362-367

(1) Threads per inch

(2) Thread pitch

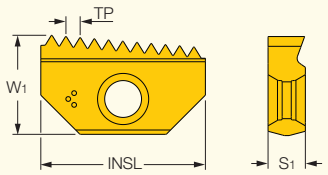
Member IMC Group

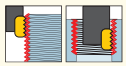
MILLTHREAD

MT LNHT-NPT

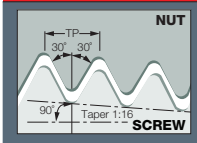
External and Internal NPT Full Profile Thread Milling Inserts for Steam, Gas and Water Pipes







M E T R I C



Designation	Dimensions TPI[1]	INSL	W1	S1	TP[2]	IC908
MT LNHT 1202 18NPT	18.0	12.00	6.50	2.90	1.411	●
MT LNHT 1403 18NPT	18.0	14.00	7.90	3.20	1.411	●
MT LNHT 1403 14NPT	14.0	14.00	7.90	3.20	1.814	●
MT LNHT 2104 14NPT	14.0	21.00	12.60	4.80	1.814	●
MT LNHT 2104 11.5NPT	11.5	21.00	12.60	4.80	2.209	●
MT LNHT 3005 11.5NPT	11.5	30.00	16.70	5.60	2.209	●
MT LNHT 3005 8NPT	8.0	30.00	16.70	5.60	3.175	●
MT LNHT 4006 11.5NPT	11.5	40.00	20.80	6.40	2.209	●
MT LNHT 4006 8NPT	8.0	40.00	20.80	6.40	3.175	●

I N C H

Designation	Dimensions TPI[1]	INSL	W1	S1	TP mm[2]	IC908
MT LNHT 1202 18NPT	18.0	.472	.256	.114	1.411	●
MT LNHT 1403 18NPT	18.0	.551	.311	.126	1.411	●
MT LNHT 1403 14NPT	14.0	.551	.311	.126	1.814	●
MT LNHT 2104 14NPT	14.0	.827	.496	.189	1.814	●
MT LNHT 2104 11.5NPT	11.5	.827	.496	.189	2.209	●
MT LNHT 3005 11.5NPT	11.5	1.181	.657	.220	2.209	●
MT LNHT 3005 8NPT	8.0	1.181	.657	.220	3.175	●
MT LNHT 4006 11.5NPT	11.5	1.575	.819	.252	2.209	●
MT LNHT 4006 8NPT	8.0	1.575	.819	.252	3.175	●

• For cutting speed recommendations, see pages 362-367

(1) Threads per inch

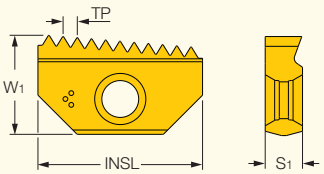
(2) Thread pitch

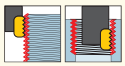
MILLTHREAD

MT LNHT-NPTF

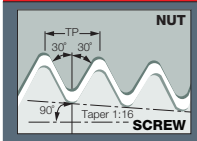
External and Internal NPTF Full Profile Thread Milling Inserts for Steam, Gas and Water Pipes







M E T R I C



Designation	Dimensions TPI[1]	INSL	W1	S1	TP[2]	IC908
MT LNHT 1202 18NPTF	18.0	12.00	6.50	2.90	1.411	●
MT LNHT 1403 18NPTF	18.0	14.00	7.90	3.20	1.411	●
MT LNHT 1403 14NPTF	14.0	14.00	7.90	3.20	1.814	●
MT LNHT 2104 14NPTF	14.0	21.00	12.60	4.80	1.814	●
MT LNHT 2104 11.5NPTF	11.5	21.00	12.60	4.80	2.209	●
MT LNHT 3005 11.5NPTF	11.5	30.00	16.70	5.60	2.209	●
MT LNHT 3005 8NPTF	8.0	30.00	16.70	5.60	3.175	●
MT LNHT 4006 11.5NPTF	11.5	40.00	20.80	6.40	2.209	●
MT LNHT 4006 8NPTF	8.0	40.00	20.80	6.40	3.175	●

I N C H

Designation	Dimensions TPI[1]	INSL	W1	S1	TP mm[2]	IC908
MT LNHT 1202 18NPTF	18.0	.472	.256	.114	1.411	●
MT LNHT 1403 18NPTF	18.0	.551	.311	.126	1.411	●
MT LNHT 1403 14NPTF	14.0	.551	.311	.126	1.814	●
MT LNHT 2104 14NPTF	14.0	.827	.496	.189	1.814	●
MT LNHT 2104 11.5NPTF	11.5	.827	.496	.189	2.209	●
MT LNHT 3005 11.5NPTF	11.5	1.181	.657	.220	2.209	●
MT LNHT 3005 8NPTF	8.0	1.181	.657	.220	3.175	●
MT LNHT 4006 11.5NPTF	11.5	1.575	.819	.252	2.209	●
MT LNHT 4006 8NPTF	8.0	1.575	.819	.252	3.175	●

• For cutting speed recommendations, see pages 362-367

(1) Threads per inch

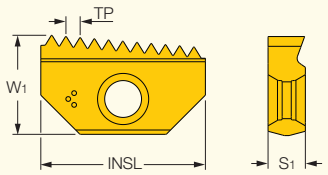
(2) Thread pitch

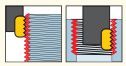
MILLTHREAD

MT LNHT-BSPT

External and Internal Thread
Milling Inserts for BSPT Full Profile







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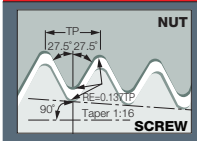


Designation	Dimensions TPI[1]	INSL	W1	S1	TP[2]	IC908
MT LNHT 1202 19BSPT	19.0	12.00	6.50	2.90	1.337	●
MT LNHT 1403 19BSPT	19.0	14.00	7.90	3.20	1.337	●
MT LNHT 1403 14BSPT	14.0	14.00	7.90	3.20	1.814	●
MT LNHT 2104 14BSPT	14.0	21.00	12.60	4.80	1.814	●
MT LNHT 2104 11BSPT	11.0	21.00	12.60	4.80	2.309	●
MT LNHT 3005 11BSPT	11.0	30.00	16.70	5.60	2.309	●
MT LNHT 4006 11BSPT	11.0	40.00	20.80	6.40	2.309	●

I N C H

Designation	Dimensions TPI[1]	INSL	W1	S1	TP mm[2]	IC908
MT LNHT 1202 19BSPT	19.0	.472	.256	.114	1.337	●
MT LNHT 1403 19BSPT	19.0	.551	.311	.126	1.337	●
MT LNHT 1403 14BSPT	14.0	.551	.311	.126	1.814	●
MT LNHT 2104 14BSPT	14.0	.827	.496	.189	1.814	●
MT LNHT 2104 11BSPT	11.0	.827	.496	.189	2.309	●
MT LNHT 3005 11BSPT	11.0	1.181	.657	.220	2.309	●
MT LNHT 4006 11BSPT	11.0	1.575	.819	.252	2.309	●

• For cutting speed recommendations, see pages 362-367

(1) Threads per inch

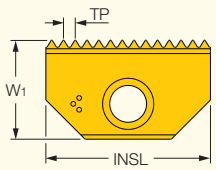
(2) Thread pitch

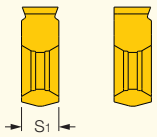
MILLTHREAD

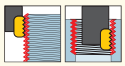
MT LNH#-NPSF

External and Internal NPSF Full Profile Thread Milling Inserts









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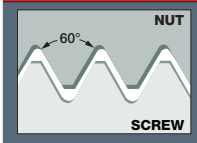


Designation	Dimensions TPI[1]	INSL	W1	S1	TP[2]	IC908
MT LNHT 1202 18NPSF	18.0	12.00	6.50	2.90	1.411	●
MT LNHU 1403 18NPSF	18.0	14.00	7.90	3.20	1.411	●
MT LNHU 1403 14NPSF	14.0	14.00	7.90	3.20	1.814	●
MT LNHU 2104 14NPSF	14.0	21.00	12.60	4.75	1.814	●
MT LNHU 2104 11.5NPSF	11.5	21.00	12.60	4.75	2.209	●
MT LNHU 3005 11.5NPSF	11.5	30.00	16.70	5.60	2.209	●
MT LNHU 3005 8NPSF	8.0	30.00	16.70	5.60	3.175	●
MT LNHU 4006 11.5NPSF	11.5	40.00	20.80	6.35	2.209	●
MT LNHU 4006 8NPSF	8.0	40.00	20.80	6.35	3.175	●

I N C H

Designation	Dimensions TPI[1]	INSL	W1	S1	TP mm[2]	IC908
MT LNHT 1202 18NPSF	18.0	.472	.256	.114	1.411	●
MT LNHU 1403 18NPSF	18.0	.551	.311	.126	1.411	●
MT LNHU 1403 14NPSF	14.0	.551	.311	.126	1.814	●
MT LNHU 2104 14NPSF	14.0	.827	.496	.187	1.814	●
MT LNHU 2104 11.5NPSF	11.5	.827	.496	.187	2.209	●
MT LNHU 3005 11.5NPSF	11.5	1.181	.657	.220	2.209	●
MT LNHU 3005 8NPSF	8.0	1.181	.657	.220	3.175	●
MT LNHU 4006 11.5NPSF	11.5	1.575	.819	.250	2.209	●
MT LNHU 4006 8NPSF	8.0	1.575	.819	.250	3.175	●

• The same insert for external & internal thread. • For cutting speed recommendations, see pages 362-367

(1) Threads per inch

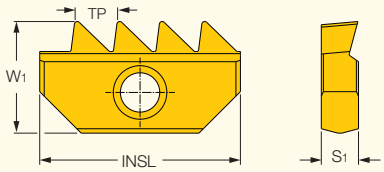
(2) Thread pitch

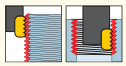
MILLTHREAD

MT LNHT-ABUT

External & Internal Single-Sided American Buttress Thread Milling Inserts







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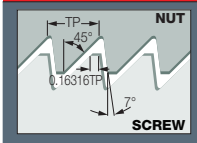


Designation	Dimensions TPI[2]	INSL	W1	S1	TP[3]	IC908
MT LNHT 2104 16ABUT	16.0	21.00	12.00	4.70	1.588	●
MT LNHT 2104 12ABUT	12.0	21.00	12.00	4.70	2.117	●
MT LNHT 2104 10ABUT	10.0	21.00	12.00	4.70	2.540	●
MT LNHT 2104 8ABUT	8.0	21.00	12.00	4.70	3.175	●
MT LNHT 3005 16ABUT	16.0	30.00	16.70	5.60	1.588	●
MT LNHT 3005 12ABUT	12.0	30.00	16.70	5.60	2.117	●
MT LNHT 3005 10ABUT	10.0	30.00	16.70	5.60	2.540	●
MT LNHT 3005 8ABUT	8.0	30.00	16.70	5.60	3.175	●
MT LNHT 3005 6ABUT	6.0	30.00	16.70	5.60	4.233	●
MT LNHT 3005 4ABUT [1]	4.0	30.00	16.70	5.60	6.350	●
MT LNHT 4006 4ABUT	4.0	40.00	20.00	6.30	6.350	●

I N C H

Designation	Dimensions TPI[2]	INSL	W1	S1	TP mm[3]	IC908
MT LNHT 2104 16ABUT	16.0	.827	.472	.185	1.588	●
MT LNHT 2104 12ABUT	12.0	.827	.472	.185	2.117	●
MT LNHT 2104 10ABUT	10.0	.827	.472	.185	2.540	●
MT LNHT 2104 8ABUT	8.0	.827	.472	.185	3.175	●
MT LNHT 3005 16ABUT	16.0	1.181	.657	.220	1.588	●
MT LNHT 3005 12ABUT	12.0	1.181	.657	.220	2.117	●
MT LNHT 3005 10ABUT	10.0	1.181	.657	.220	2.540	●
MT LNHT 3005 8ABUT	8.0	1.181	.657	.220	3.175	●
MT LNHT 3005 6ABUT	6.0	1.181	.657	.220	4.233	●
MT LNHT 3005 4ABUT [1]	4.0	1.181	.657	.220	6.350	●
MT LNHT 4006 4ABUT	4.0	1.575	.787	.248	6.350	●

• For cutting speed recommendations, see pages 362-367

[1] Due to deep thread profile, the tool should be modified

[2] Threads per inch

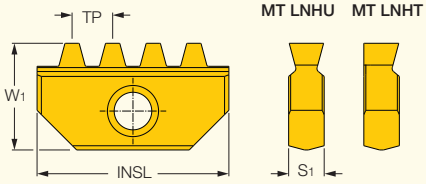
[3] Thread pitch

MILLTHREAD

MT LNH#-ACME (Internal)

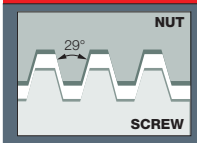
Internal ACME Profile Thread
Milling Inserts for Feed Screws







M E T R I C



Designation	Dimensions TPI[1]	INSL	W1	S1	TP[2]	IC908
MT LNHU 2104 I12ACME	12.0	21.00	12.00	4.70	2.117	●
MT LNHU 2104 I10ACME	10.0	21.00	12.00	4.70	2.540	●
MT LNHU 3005 I12ACME	12.0	30.00	16.70	5.60	2.117	●
MT LNHU 3005 I10ACME	10.0	30.00	16.70	5.60	2.540	●
MT LNHU 3005 I8ACME	8.0	30.00	16.70	5.60	3.175	●
MT LNHU 3005 I6ACME	6.0	30.00	16.70	5.60	4.233	●
MT LNHU 3005 I5ACME	5.0	30.00	16.70	5.60	5.080	●
MT LNHU 3005 I4ACME	4.0	30.00	16.70	5.60	6.350	●
MT LNHU 4006 I4ACME	4.0	40.00	20.00	6.30	6.350	●
MT LNHT 4006 I3.5ACME	3.5	40.00	20.00	6.30	7.257	●
MT LNHT 4006 I3ACME	3.0	40.00	20.00	6.30	8.467	●

I N C H

Designation	Dimensions TPI[1]	INSL	W1	S1	TP mm[2]	IC908
MT LNHU 2104 I12ACME	12.0	.827	.472	.185	2.117	●
MT LNHU 2104 I10ACME	10.0	.827	.472	.185	2.540	●
MT LNHU 3005 I12ACME	12.0	1.181	.657	.220	2.117	●
MT LNHU 3005 I10ACME	10.0	1.181	.657	.220	2.540	●
MT LNHU 3005 I8ACME	8.0	1.181	.657	.220	3.175	●
MT LNHU 3005 I6ACME	6.0	1.181	.657	.220	4.233	●
MT LNHU 3005 I5ACME	5.0	1.181	.657	.220	5.080	●
MT LNHU 3005 I4ACME	4.0	1.181	.657	.220	6.350	●
MT LNHU 4006 I4ACME	4.0	1.575	.787	.248	6.350	●
MT LNHT 4006 I3.5ACME	3.5	1.575	.787	.248	7.257	●
MT LNHT 4006 I3ACME	3.0	1.575	.787	.248	8.467	●

• For cutting speed recommendations, see pages 362-367

(1) Threads per inch

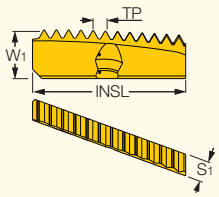
(2) Thread pitch

MILLTHREAD

MTH-ISO (external)

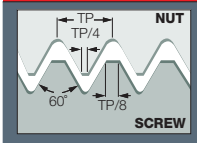
Helical Thread Milling Inserts for ISO Metric External Threads







M E T R I C



Designation	Dimensions TP[1]	INSL	W1	S1	IC908
MTH 23 E 1.0 ISO	1.000	27.00	8.00	3.50	●
MTH 23 E 1.5 ISO	1.500	27.00	8.00	3.50	●
MTH 32 E 1.5 ISO	1.500	32.00	9.00	4.00	●
MTH 45 E 1.5 ISO	1.500	37.00	11.90	5.00	●
MTH 23 E 2.0 ISO	2.000	27.00	8.00	3.50	●
MTH 32 E 2.0 ISO	2.000	32.00	9.00	4.00	●
MTH 45 E 2.0 ISO	2.000	37.00	11.90	5.00	●
MTH 23 E 3.0 ISO	3.000	27.00	8.00	3.50	●
MTH 32 E 3.0 ISO	3.000	32.00	9.00	4.00	●
MTH 32 E 4.0 ISO	4.000	32.00	9.00	4.00	●

I N C H

Designation	Dimensions TP mm[1]	INSL	W1	S1	IC908
MTH 23 E 1.0 ISO	1.000	1.063	.315	.138	●
MTH 23 E 1.5 ISO	1.500	1.063	.315	.138	●
MTH 32 E 1.5 ISO	1.500	1.260	.354	.157	●
MTH 45 E 1.5 ISO	1.500	1.457	.469	.197	●
MTH 23 E 2.0 ISO	2.000	1.063	.315	.138	●
MTH 32 E 2.0 ISO	2.000	1.260	.354	.157	●
MTH 45 E 2.0 ISO	2.000	1.457	.469	.197	●
MTH 23 E 3.0 ISO	3.000	1.063	.315	.138	●
MTH 32 E 3.0 ISO	3.000	1.260	.354	.157	●
MTH 32 E 4.0 ISO	4.000	1.260	.354	.157	●

• For cutting speed recommendations, see pages 362-367

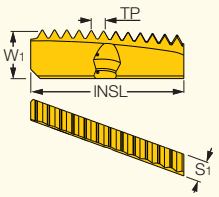
(1) Thread pitch

MILLTHREAD

MTH-ISO (internal)

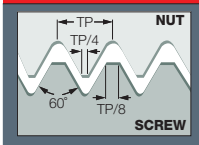
Helical Thread Milling Inserts for ISO Metric Internal Threads







M E T R I C



Designation	Dimensions TP[1]	INSL	W1	S1	THID[2]	IC908
MTH 23 I 1.0 ISO	1.000	27.00	8.00	3.50	=>M26	●
MTH 32 I 1.0 ISO	1.000	32.00	9.00	4.00	=>M34	●
MTH 23 I 1.5 ISO	1.500	27.00	8.00	3.50	=>M27	●
MTH 32 I 1.5 ISO	1.500	32.00	9.00	4.00	=>M35	●
MTH 45 I 1.5 ISO	1.500	37.00	11.90	5.00	=>M50	●
MTH 63 I 1.5 ISO	1.500	38.00	11.90	5.00	=>M70	●
MTH 23 I 2.0 ISO	2.000	27.00	8.00	3.50	=>M28	●
MTH 32 I 2.0 ISO	2.000	32.00	9.00	4.00	=>M36	●
MTH 45 I 2.0 ISO	2.000	37.00	11.90	5.00	=>M50	●
MTH 63 I 2.0 ISO	2.000	38.00	11.90	5.00	=>M70	●
MTH 23 I 3.0 ISO	3.000	27.00	8.00	3.50	=>M30	●
MTH 32 I 3.0 ISO	3.000	32.00	9.00	4.00	=>M38	●
MTH 45 I 3.0 ISO	3.000	37.00	11.90	5.00	=>M56	●
MTH 63 I 3.0 ISO	3.000	38.00	11.90	5.00	=>M75	●
MTH 23 I 3.5 ISO	3.500	27.00	8.00	3.50	=>M33	●
MTH 32 I 3.5 ISO	3.500	32.00	9.00	4.00	-	●
MTH 45 I 3.5 ISO	3.500	37.00	11.90	5.00	-	●
MTH 23 I 4.0 ISO	4.000	27.00	8.00	3.50	=>M36	●
MTH 32 I 4.0 ISO	4.000	32.00	9.00	4.00	=>M40	●
MTH 45 I 4.0 ISO	4.000	37.00	11.90	5.00	=>M56	●
MTH 63 I 4.0 ISO	4.000	38.00	11.90	5.00	=>M75	●
MTH 32 I 4.5 ISO	4.500	32.00	9.00	4.00	=>M44	●
MTH 45 I 4.5 ISO	4.500	37.00	11.90	5.00	-	●
MTH 32 I 5.0 ISO	5.000	32.00	9.00	4.00	=>M48	●
MTH 45 I 5.0 ISO	5.000	37.00	11.90	5.00	-	●
MTH 45 I 5.5 ISO	5.500	37.00	11.90	5.00	=>M56	●
MTH 45 I 6.0 ISO	6.000	37.00	11.90	5.00	=>M64	●
MTH 63 I 6.0 ISO	6.000	38.00	11.90	5.00	=>M78	●

• For cutting speed recommendations, see pages 362-367

(1) Thread pitch

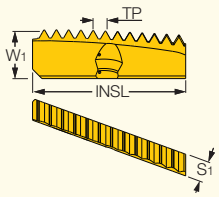
(2) Internal thread designation

MILLTHREAD

MTH-ISO (internal)

Helical Thread Milling Inserts for ISO Metric Internal Threads







I N C H

Designation	TP mm[1]	INSL	W1	S1	THID[2]	IC908
	Dimensions					
MTH 23 I 1.0 ISO	1.000	1.063	.315	.138	=>M26	●
MTH 32 I 1.0 ISO	1.000	1.260	.354	.157	=>M34	●
MTH 23 I 1.5 ISO	1.500	1.063	.315	.138	=>M27	●
MTH 32 I 1.5 ISO	1.500	1.260	.354	.157	=>M35	●
MTH 45 I 1.5 ISO	1.500	1.457	.469	.197	=>M50	●
MTH 63 I 1.5 ISO	1.500	1.496	.469	.197	=>M70	●
MTH 23 I 2.0 ISO	2.000	1.063	.315	.138	=>M28	●
MTH 32 I 2.0 ISO	2.000	1.260	.354	.157	=>M36	●
MTH 45 I 2.0 ISO	2.000	1.457	.469	.197	=>M50	●
MTH 63 I 2.0 ISO	2.000	1.496	.469	.197	=>M70	●
MTH 23 I 3.0 ISO	3.000	1.063	.315	.138	=>M30	●
MTH 32 I 3.0 ISO	3.000	1.260	.354	.157	=>M38	●
MTH 45 I 3.0 ISO	3.000	1.457	.469	.197	=>M56	●
MTH 63 I 3.0 ISO	3.000	1.496	.469	.197	=>M75	●
MTH 23 I 3.5 ISO	3.500	1.063	.315	.138	=>M33	●
MTH 32 I 3.5 ISO	3.500	1.260	.354	.157	-	●
MTH 45 I 3.5 ISO	3.500	1.457	.469	.197	-	●
MTH 23 I 4.0 ISO	4.000	1.063	.315	.138	=>M36	●
MTH 32 I 4.0 ISO	4.000	1.260	.354	.157	=>M40	●
MTH 45 I 4.0 ISO	4.000	1.457	.469	.197	=>M56	●
MTH 63 I 4.0 ISO	4.000	1.496	.469	.197	=>M75	●
MTH 32 I 4.5 ISO	4.500	1.260	.354	.157	=>M44	●
MTH 45 I 4.5 ISO	4.500	1.457	.469	.197	-	●
MTH 32 I 5.0 ISO	5.000	1.260	.354	.157	=>M48	●
MTH 45 I 5.0 ISO	5.000	1.457	.469	.197	-	●
MTH 45 I 5.5 ISO	5.500	1.457	.469	.197	=>M56	●
MTH 45 I 6.0 ISO	6.000	1.457	.469	.197	=>M64	●
MTH 63 I 6.0 ISO	6.000	1.496	.469	.197	=>M78	●

• For cutting speed recommendations, see pages 362-367

(1) Thread pitch

(2) Internal thread designation

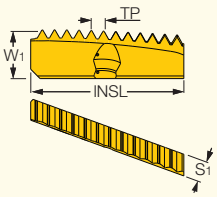
For tools, see pages: MTSRH (endmills) (409)

MILLTHREAD

MTH-UN (external)

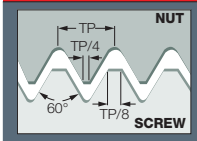
Helical Thread Milling Inserts for American Full Profile External Threads for General Applications







M E T R I C



Designation	Dimensions TPI[1]	INSL	W1	S1	IC908
MTH 23 E 20 UN	20.0	27.00	8.00	3.50	●
MTH 23 E 18 UN	18.0	27.00	8.00	3.50	●
MTH 23 E 16 UN	16.0	27.00	8.00	3.50	●
MTH 23 E 14 UN	14.0	27.00	8.00	3.50	●
MTH 23 E 12 UN	12.0	27.00	8.00	3.50	●
MTH 23 E 10 UN	10.0	27.00	8.00	3.50	●
MTH 23 E 8 UN	8.0	27.00	8.00	3.50	●
MTH 23 E 7 UN	7.0	27.00	8.00	3.50	●
MTH 32 E 24 UN	24.0	32.00	9.00	4.00	●
MTH 32 E 20 UN	20.0	32.00	9.00	4.00	●
MTH 32 E 18 UN	18.0	32.00	9.00	4.00	●
MTH 32 E 16 UN	16.0	32.00	9.00	4.00	●
MTH 32 E 12 UN	12.0	32.00	9.00	4.00	●
MTH 32 E 8 UN	8.0	32.00	9.00	4.00	●
MTH 32 E 6 UN	6.0	32.00	9.00	4.00	●

I N C H

Designation	Dimensions TPI[1]	INSL	W1	S1	IC908
MTH 23 E 20 UN	20.0	1.063	.315	.138	●
MTH 23 E 18 UN	18.0	1.063	.315	.138	●
MTH 23 E 16 UN	16.0	1.063	.315	.138	●
MTH 23 E 14 UN	14.0	1.063	.315	.138	●
MTH 23 E 12 UN	12.0	1.063	.315	.138	●
MTH 23 E 10 UN	10.0	1.063	.315	.138	●
MTH 23 E 8 UN	8.0	1.063	.315	.138	●
MTH 23 E 7 UN	7.0	1.063	.315	.138	●
MTH 32 E 24 UN	24.0	1.260	.354	.157	●
MTH 32 E 20 UN	20.0	1.260	.354	.157	●
MTH 32 E 18 UN	18.0	1.260	.354	.157	●
MTH 32 E 16 UN	16.0	1.260	.354	.157	●
MTH 32 E 12 UN	12.0	1.260	.354	.157	●
MTH 32 E 8 UN	8.0	1.260	.354	.157	●
MTH 32 E 6 UN	6.0	1.260	.354	.157	●

• Used for UN, UNC, UNF, UNEF and UNS thread profiles • For cutting speed recommendations, see pages 362-367.

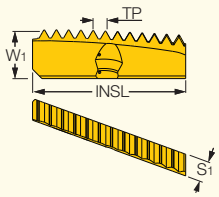
(1) Threads per inch

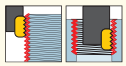
MILLTHREAD

MTH-W (int. & ext.)

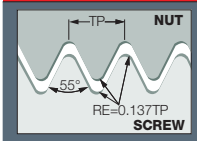
External & Internal Whitworth (BSW, BSF, BSP) Helical Thread Milling Inserts for Fittings and Pipe Couplings







M E T R I C



Designation	TPI[1]	INSL	W1	S1	THID[2]	THOD[3]	TP[4]	IC908
	Dimensions							
MTH 23 14 W	14.0	27.00	8.00	3.50	=>G7/8"	>G1/2"	1.814	●
MTH 23 11 W	11.0	27.00	8.00	3.50	=>G1"	>G1"	2.309	●
MTH 32 14 W	14.0	32.00	9.00	4.00	-	=>G1/2"	1.814	●
MTH 32 11 W	11.0	32.00	9.00	4.00	=>G1_1/8"	>G1"	2.309	●
MTH 45 11 W	11.0	37.00	11.90	5.00	=>G1_3/4"	>G1"	2.309	●
MTH 63 11 W	11.0	38.00	11.90	5.00	=>G2_1/2"	>G1"	2.309	●

I N C H

Designation	TPI[1]	INSL	W1	S1	THID[2]	THOD[3]	TP mm[4]	IC908
	Dimensions							
MTH 23 14 W	14.0	1.063	.315	.138	=>G7/8"	>G1/2"	1.814	●
MTH 23 11 W	11.0	1.063	.315	.138	=>G1"	>G1"	2.309	●
MTH 32 14 W	14.0	1.260	.354	.157	-	=>G1/2"	1.814	●
MTH 32 11 W	11.0	1.260	.354	.157	=>G1_1/8"	>G1"	2.309	●
MTH 45 11 W	11.0	1.457	.469	.197	=>G1_3/4"	>G1"	2.309	●
MTH 63 11 W	11.0	1.496	.469	.197	=>G2_1/2"	>G1"	2.309	●

- For cutting speed recommendations, see pages 362-367

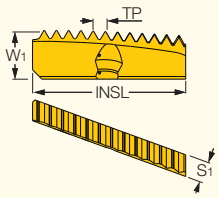
(1) Threads per inch
(2) Internal thread designation
(3) External thread designation
(4) Thread pitch

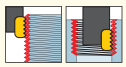
MILLTHREAD

MTH-NPTF (int. & ext.)

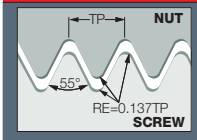
External & Internal NPTF Helical Thread Milling Inserts for Steam, Gas and Water Pipes







M E T R I C



Designation	TPI[1]	INSL	W1	S1	THID[2]	THOD[3]	TP[4]	IC908
	Dimensions							
MTH 23 11.5 NPTF	11.5	27.00	8.00	3.50	1"-2" NPTF	1"-2" NPTF	2.209	●
MTH 32 11.5 NPTF	11.5	32.00	9.00	4.00	1_1/4"-2" NPTF	1"-2" NPTF	2.209	●

I N C H

Designation	TPI[1]	INSL	W1	S1	THID[2]	THOD[3]	TP mm[4]	IC908
	Dimensions							
MTH 23 11.5 NPTF	11.5	1.063	.315	.138	1"-2" NPTF	1"-2" NPTF	2.209	●
MTH 32 11.5 NPTF	11.5	1.260	.354	.157	1_1/4"-2" NPTF	1"-2" NPTF	2.209	●

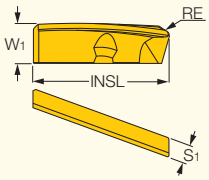
- For cutting speed recommendations, see pages 362-367

(1) Threads per inch
(2) Internal thread designation
(3) External thread designation
(4) Thread pitch

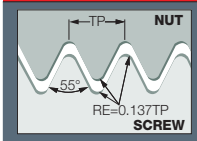
ISCARMILL

MTH-F
Helical Long Edge
Finishing Inserts





M E T R I C



Designation	Dimensions L	CW	S	RE	IC908
MTH 23F R0.2	27.00	8.00	3.50	0.20	●
MTH 23F R0.5	27.00	8.00	3.50	0.50	●
MTH 23F R1.0	27.00	8.00	3.50	1.00	●
MTH 32F R0.2	32.00	9.00	4.00	0.20	●
MTH 32F R0.5	32.00	9.00	4.00	0.50	●
MTH 32F R1.0	32.00	9.00	4.00	1.00	●
MTH 45F R0.2	37.00	11.90	5.00	0.20	●
MTH 45F R0.5	37.00	11.90	5.00	0.50	●
MTH 45F R1.0	37.00	11.90	5.00	1.00	●
MTH 45F R1.5	37.00	11.90	5.00	1.50	●
MTH 45F R2.0	37.00	11.90	5.00	2.00	●
MTH 63F R0.2	38.00	11.90	5.00	0.20	●
MTH 63F R0.5	38.00	11.90	5.00	0.50	●
MTH 63F R1.0	38.00	11.90	5.00	1.00	●
MTH 63F R1.5	38.00	11.90	5.00	1.50	●
MTH 63F R2.0	38.00	11.90	5.00	2.00	●

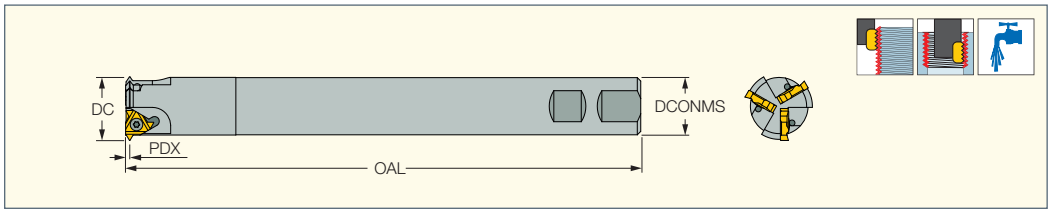
I N C H

Designation	Dimensions L	W1	S	RE	IC908
MTH 23F R0.2	1.063	.315	.138	.0080	●
MTH 23F R0.5	1.063	.315	.138	.0200	●
MTH 23F R1.0	1.063	.315	.138	.0394	●
MTH 32F R0.2	1.260	.354	.157	.0080	●
MTH 32F R0.5	1.260	.354	.157	.0200	●
MTH 32F R1.0	1.260	.354	.157	.0394	●
MTH 45F R0.2	1.457	.469	.197	.0080	●
MTH 45F R0.5	1.457	.469	.197	.0200	●
MTH 45F R1.0	1.457	.469	.197	.0394	●
MTH 45F R1.5	1.457	.469	.197	.0590	●
MTH 45F R2.0	1.457	.469	.197	.0790	●
MTH 63F R0.2	1.496	.469	.197	.0080	●
MTH 63F R0.5	1.496	.469	.197	.0200	●
MTH 63F R1.0	1.496	.469	.197	.0394	●
MTH 63F R1.5	1.496	.469	.197	.0590	●
MTH 63F R2.0	1.496	.469	.197	.0790	●

MILLTHREAD

MTSR M.I. S.P.

Indexable Multi-Insert Threading Endmills with Weldon Shanks, for Single Point Inserts



M E T R I C

Designation	DC	PDX	NOF(1)	DCONMS	OAL	Shank(2)	Shank m.(3)	Insert	kg		
MTSR 0023 Q11	23.50	1.0	3	20.00	190.00	W	S	MT3 11..D	0.41	SR M2.6-L6.7-S11	T-8/5
MTSR 0031 R16	31.00	1.8	3	25.00	225.00	W	S	MT3 16..D	0.76	SR 5-40-L9.7-S16S	

I N C H

Designation	DC	PDY	CICT(1)	DCONMS	OAL	Insert	Lbs
MTSR 0925 Q11	.925	.04	3	.750	7.500	MT3 11..D	.00
MTSR 1220 R16	1.220	.07	3	1.000	8.860	MT3 16..D	.00

- Minimum bore should be one-third larger than D
- For user guide, see pages 326-335

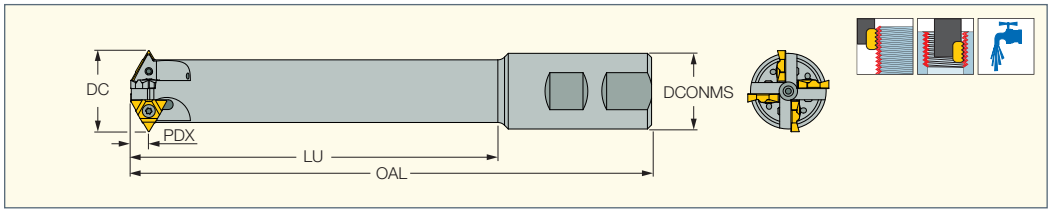
(1) Number of flutes
(2) W-Weldon
(3) S-Steel shanks

For inserts, see pages: MT3-55D (433) • MT3-60D (433)

MILLTHREAD

MTSR M.I. S.P.-U

Indexable Multi-Insert Threading Endmills with Weldon Shanks, for Single Point U-Type Inserts



M E T R I C

Designation	DC	PDX	NOF(1)	DCONMS	LU	OAL	Shank(2)	Shank m.(3)	Insert	kg		
MTSR 0023 M11U	23.00	5.0	3	25.00	88.0	150.00	W	S	MT3 11U..D	0.32	SR M2.6-L6.7-S11	T-8/5
MTSR 0035 R16U	35.50	7.6	4	32.00	155.0	220.00	W	S	MT3 16U..D	0.95	SR 5-40-L9.7-S16S	

I N C H

Designation	DC	PDY	CICT(1)	DCONMS	LU	OAL	Insert	Lbs
MTSR 0580 M11U	.580	.20	1	.625	2.16	5.900	MT3 11U..D	.00
MTSR 0810 M11U	.810	.20	2	1.000	2.56	5.900	MT3 11U..D	.71
MTSR 0905 M11U	.905	.20	3	1.000	3.46	5.900	MT3 11U..D	.74
MTSR 1400 R16U	1.400	.30	4	1.250	6.10	8.660	MT3 16U..D	.00

- Minimum bore should be one-third larger than D
- For user guide, see pages 326-335

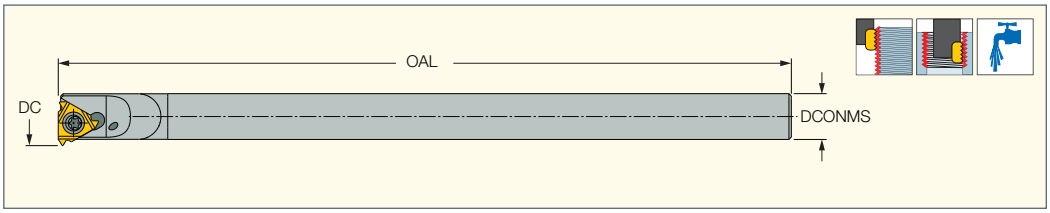
(1) Number of flutes
(2) W-Weldon
(3) S-Steel shanks

For inserts, see pages: MT3-U55D (433) • MT3-U60D (433)

MILLTHREAD

MTET Single Point

Indexable Threading Endmills
with Cylindrical Shanks,
for Single Point Inserts



M E T R I C

Designation	Dimensions												Recommended Machining Data
	TPN[2]	TPX[3]	TPIX[4]	TPIN[5]	DC	DCONMS	OAL	Shank[6]	Shank m.[7]	Insert	CSP[8]	kg	f_z (mm/rev)
MTET D7.0-1-C5C-06	0.500	1.250	48.00	20.00	7.00	5.00	63.00	C	C	06IR/EL	0	0.06	0.05-0.15
MTET D8.8-1-C6C-08	0.500	1.750	48.00	14.00	8.80	6.00	100.00	C	C	08IR/EL	1	0.06	0.05-0.15
MTET D13.2-1-C10C-11 [1]	0.500	2.000	48.00	11.00	13.20	10.00	150.00	C	C	11IR/EL	1	0.13	0.05-0.15

I N C H

Designation	Dimensions												Recommended Machining Data
	TPN[2]	TPX[3]	TPIX[4]	TPIN[5]	DC	DCONMS	OAL	Shank[6]	Shank m.[7]	Insert	CSP[8]	kg	f_z (mm/rev)
MTET D7.0-1-C5C-06	0.500	1.250	48.00	20.00	7.00	5.00	63.00	C	C	06IR/EL	0	0.06	0.05-0.15
MTET D8.8-1-C6C-08	0.500	1.750	48.00	14.00	8.80	6.00	100.00	C	C	08IR/EL	1	0.06	0.05-0.15
MTET D13.2-1-C10C-11 [1]	0.500	2.000	48.00	11.00	13.20	10.00	150.00	C	C	11IR/EL	1	0.13	0.05-0.15

- For user guide, see pages 326-335
- For inserts, refer to ISCAR Turning and Threading Tools catalog • Tool cutting diameter should not exceed 2/3 of thread bore diameter

[1] For internal threading use internal R.H insert, for external threading use external L.H insert
[2] Thread pitch minimum (mm)
[3] Thread pitch maximum (mm)
[4] Threads per inch maximum
[5] Threads per inch minimum
[6] C-Cylindrical
[7] Shank material C-carbide
[8] 0 - Without coolant supply, 1 - With coolant supply

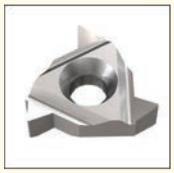
Spare Parts

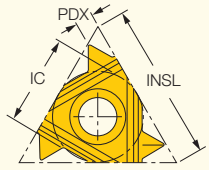
Designation		
MTET D7.0-1-C5C-06	SR 14-552	T-6/5
MTET D8.8-1-C6C-08	SR 14-558-S	T-6/5
MTET D13.2-1-C10C-11	SR M2.6-L6.7-S11	T-8/5

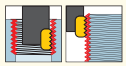
MILLTHREAD

MT3-55D

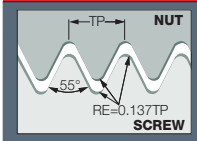
55° Partial Profile Laydown Thread Milling Inserts, for General Industry







M E T R I C



Designation	Dimensions IC	TPIX(1)	TPIN(2)	INSL	PDX	IC908
MT3 1155D	6.35	24.00	14.00	11.00	1.0	●
MT3 1655D	9.52	12.00	8.00	16.49	1.8	●

I N C H

Designation	Dimensions IC	TPIX(1)	TPIN(2)	INSL	PDX	IC908
MT3 1155D	.250	24.00	14.00	.433	.04	●
MT3 1655D	.375	12.00	8.00	.649	.07	●

- For detailed cutting data, see pages 362-367

(1) Threads per inch maximum

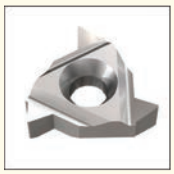
(2) Threads per inch minimum

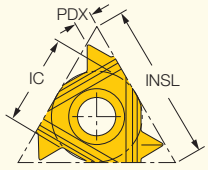
For tools, see pages: MTSR M.I. S.P. (430)

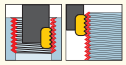
MILLTHREAD

MT3-60D

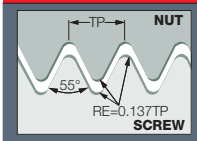
60° Partial Profile Laydown Thread Milling Inserts, for General Industry







M E T R I C



Designation	Dimensions IC	TPN(1)	TPX(2)	TPN_DF2(3)	TPX_DF2(4)	TPIN(5)	TPIX(6)	TPIN_DF2(7)	TPIX_DF2(8)	INSL	PDX	IC908
MT3 1160D	6.35	1.000	2.000	0.750	1.500	12.00	24.00	14.00	32.00	11.00	1.0	●
MT3 1660D	9.52	2.500	3.500	2.000	3.000	7.00	10.00	8.00	12.00	16.49	1.8	●

I N C H

Designation	Dimensions IC	TPN (mm)(1)	TPX (mm)(2)	TPN_DF2	TPX_DF2	TPIN(3)	TPIX(4)	TPIN_DF2	TPIX_DF2	INSL	PDX	IC908
MT3 1160D	.250	1.000	2.000	.750	1.500	12.00	24.00	14.00	32.00	.433	.04	●
MT3 1660D	.375	2.500	3.500	2.000	3.000	7.00	10.00	8.00	12.00	.649	.07	●

- For technical information and detailed cutting data, see pages 362-367

(1) Internal thread pitch minimum

(2) Internal thread pitch maximum

(3) External thread pitch minimum

(4) External thread pitch maximum

(5) Internal threads per inch minimum

(6) Internal threads per inch maximum

(7) External threads per inch minimum

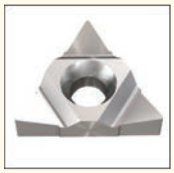
(8) External threads per inch maximum

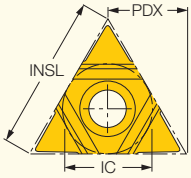
For tools, see pages: MTSR M.I. S.P. (430)

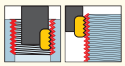
MILLTHREAD

MT3-U55D

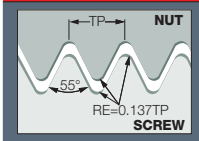
55° Partial Profile Laydown
U-Type Thread Milling Inserts,
for General Industry







M E T R I C



Designation	Dimensions IC	TPIX[1]	TPIN[2]	INSL	PDX	IC908
MT3 11U55D	6.35	12.00	7.00	11.00	5.0	●
MT3 16U55D	9.52	6.00	4.50	16.49	7.6	●

I N C H

Designation	Dimensions IC	TPIX[1]	TPIN[2]	INSL	PDX	IC908
MT3 11U55D	.250	12.00	7.00	.433	.20	●
MT3 16U55D	.375	6.00	4.50	.649	.30	●

- For detailed cutting data, see pages 362-367

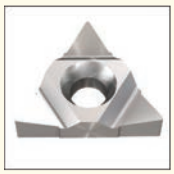
[1] Threads per inch maximum
[2] Threads per inch minimum

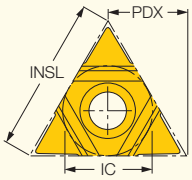
For tools, see pages: MTSR M.I. S.P.-U (430)

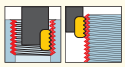
MILLTHREAD

MT3-U60D

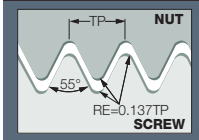
60° Partial Profile Laydown
U-Type Thread Milling Inserts,
for General Industry







M E T R I C



Designation	Dimensions IC	TPN[1]	TPX[2]	TPN_DF2[3]	TPX_DF2[4]	TPIN[5]	TPIX[6]	TPIN_DF2[7]	TPIX_DF2[8]	INSL	PDX	IC908
MT3 11U60D	6.35	2.500	4.000	2.000	3.000	6.00	10.00	8.00	12.00	11.00	5.0	●
MT3 16U60D	9.52	4.000	6.000	3.000	5.000	4.00	6.00	5.00	8.00	16.49	7.6	●

I N C H

Designation	Dimensions IC	TPN (mm)[1]	TPX (mm)[2]	TPN_DF2	TPX_DF2	TPIN[3]	TPIX[4]	TPIN_DF2	TPIX_DF2	INSL	PDX	IC908
MT3 11U60D	.250	2.500	4.000	2.000	3.000	6.00	10.00	8.00	12.00	.433	.20	●
MT3 16U60D	.375	4.000	6.000	3.000	5.000	4.00	6.00	5.00	8.00	.649	.30	●

- For technical information and detailed cutting data, see pages 362-367

[1] Internal thread pitch minimum
[2] Internal thread pitch maximum
[3] External thread pitch minimum
[4] External thread pitch maximum
[5] Internal threads per inch minimum
[6] Internal threads per inch maximum
[7] External threads per inch minimum
[8] External threads per inch maximum

For tools, see pages: MTSR M.I. S.P.-U (430)

TAPS



Tap Designation Code Key

TGP	UNC	1/4-20	M	□	HE	Ti

Tap Style

TPH	- Hand Tap
TPF	- Forming Tap
TPG	- Gun Point
TPS	- Spiral Flute
TPST	- Straight Flute

D - TPI
D - Pitch

B - Bore for Coolant

(on request)

Coating Types*

Ni	- Nitriding
Ti	- TiN
TC	- TiCN
TA	- TiAlN
St	- Black Oxide

Coating Types*

Ni	- Nitriding
Ti	- TiN
TC	- TiCN
TA	- TiAlN
St	- Black Oxide

* On request

Thread Standard

M	- ISO Metric Coars Thread DIN-13
MF	- ISO Metric Fine Thread DIN-13
UNF	- Unfied Fine Thread
UNC	- Unfied Coarse Thread

Tap Color Codes(1)

- **M** - Multi-Material Application
- **W** - Steel with Good Machinability Rm<750 N/mm²
- **S** - Stainless Steel
- **H** - Hardened Steel and High Temp./Super Alloys Rm>750 N/mm²
- **G** - Grey Cast Iron
- **N** - Low Alloy Steel Rm<600 N/mm²
- **A** - Aluminum and Aluminum Alloys
- **F** - Any Material with at least 8~10% Elongation

(1) The tools have a matching colored ring around the shank

Tap Materials

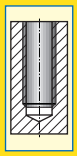
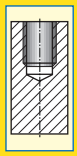
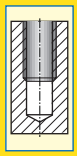
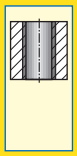
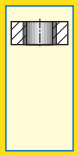
HS	- H.S.S. (M2)
HE	- H.S.S- E 5% Co. **HSS** (M35)
PM	- Compacted Powder
HM	- Solid Carbide

Chamfer Lead According to **DIN2197** (specified for each tool family)

- **A** Form A (Chamfer Lead 5-6 Threads)
- **B** Form B (with Gun-Nose and Chamfer Lead 4-5 Threads)
- **C** Form C (Chamfer Lead 2-3 Threads)
- **D** Form D (Chamfer Lead 4-5 Threads)
- **E** Form E (Chamfer Lead 1.5-2 Threads)



Tap Selection Guide and Cutting Speed Recommendations

Material No.	Hole Type[4]					Tap Color Code[1]	
						Tool Material[1]	
						Surface Treatment/Coating[2]	
						Flute Hand and Angle	
						Lead According to DIN 2197[3]	
	1	2	3	4	5	Hole Type[4]	
	Material		Condition	Tensile Strength [N/mm²]	Hardness HB	Chip	Coolant
1	Non-alloy steel and cast steel, free cutting steel and cast steel (less than 5% all elements)	< 0.25 %C	Annealed	420	125	Ext. Long	T
2		>= 0.25 %C	Annealed	650	190	Medium	T
3		< 0.55 %C	Quench and tempered	850	250	Long	T
4		>= 0.55 %C	Annealed	750	220	Long	T
7				930	275	Long	X
8			Quench and tempered	1000	300	Long	X
9				1200	350	Long	A
10	High alloyed steel, cast steel and tool steel		Annealed	680	200	Long	X
11			Quench and tempered	1100	325	Long	X
12	Stainless steel		Ferritic/ Martensitis	680	200	Medium	A
13			Martensitic	820	240	Long	A
14	Stainless steel		Austenitic	600	180	Long	A
15	Grey cast iron (GG)		Ferritic/pearlitic		180	Ext. Short	X
16			Pearlitic		260	Ext. Short	X
17	Cast iron nodular (GGG)		Ferritic		160	Short	X
18			Pearlitic		250	Ext. Short	X
19	Malleable cast iron		Ferritic		130	Short	X
20			Pearlitic		230	Short	X
21	Aluminum-wrought alloy		Not cureable		60	Medium	T
22			Cured		100	Medium	T
23	Aluminum-cast, alloyed	<=12% Si	Not cureable		75	Short	T
24			Cured		90	Short	T
25		>12% Si	High temp.		130	Short	T
26	Copper alloys	>1% Pb	Free cutting		110	Med/Short	T
27			Brass		90	Long	T
28			Electrolitic copper		100	Long	T
29	Non-metalic		Duroplastics, fiber plastics			Short	Z
31	High temp. alloys	Fe based	Annealed		200	Long	A
32			Cured		280	Long	A
33	Super alloys	Ni or Co based	Annealed		250	Long	A
34			Cured		350	Long	A
35			Cast		250	Long	A
36	Titanium and Ti alloys		Alpha+beta alloys cured	400		Med/Short	A
37				1050		Med/Short	A

[1] See page 783 [2] See page 799 [3] See page 800 [4] See page 801

Coolant
A - Cutting oil
T - Oil emulsion
X - Oil or emulsion
Z - Dry or emulsion

W(1)	M	M	M	M	M	M	S	H	N	H	G	F
HSS	HSS-E	HSS-E	HSS-E	HSS-E	HSS-E	HSS-E	HSS-E	HSS-E	HSS-E	HSS-E	HSS-E	HSS-E
-	-	TI	ST	-	TI	ST	ST	-	ST	ST	NI	TI
-	-	-	-	$R_{40}°$	$R_{40}°$	$R_{40}°$	-	-	$R_{40}°$	$R_{40}°$	-	-
1\2\3	B	B	B	C	C	C	B	B	C	C	C	C
1-2-3-4-5	4-5	4-5	4-5	1-2-3	1-2-3	1-2-3	4-5	4-5	1-2-3	1-2-3	1-2-3-4-5	1-2-3-4-5
m/min	m/min	m/min	m/min	m/min	m/min	m/min	m/min	m/min	m/min	m/min	m/min	m/min
•	10-25 ••	15-45 •	8-25 ••	20-25 ••	15-45 •	8-25 ••		20-25 ••	8-25 •	20-25 ••		20-60 •
•	10-20 ••	12-40 •	10-35 ••	15-20 ••	12-40 •	10-35 ••		15-20 ••	10-35 ••	15-20 ••		20-60 •
•	12-18 ••	15-25 •	6-12 ••	12-18 ••	15-25 •	6-12 ••		12-18 ••		12-18 ••		17-55 •
•	12-18 ••	15-40 •	6-20 ••	12-18 ••	15-40 •	6-20 ••		12-18 ••		12-18 ••		17-55 •
•	10-15 ••	5-25 •	4-10 ••	10-15 ••	5-25 •	4-10 ••		10-15 ••		10-15 ••		
•	6-10 ••	5-25 •	4-10 ••	6-10 ••	5-25 •	4-10 ••		6-10 ••		6-10 ••		
•	3-5 ••	5-20 •	3-5 ••	3-5 ••	5-20 •	3-5 ••		3-5 ••		3-5 ••		
•	10-15 ••	20-30 •	7-12 ••	10-15 ••	20-30 •	7-12 ••		10-15 ••		10-15 ••		10-30 •
•	7-13 ••	12-25 •	5-10 ••	7-13 ••	12-25 •	5-10 ••		7-13 ••		7-13 ••		
•	5-9 ••	8-18 •	1-5 •	5-9 ••	2-10 •	1-5 •	2-10 •			5-9 ••		7-15 •
•	4-6 ••	8-15 •	1-5 •	4-6 ••	2-10 •	1-5 •	2-10 •			4-6 ••		
•	5-9 ••	8-15 •	1-4 •	5-9 ••	2-10 •	1-4 •	2-10 •			5-9 ••		•
•	10-15 ••	15-45 ••	13-20 •	10-15 ••	15-45 ••	13-20 •				10-15 ••	10-30 •	
•	8-12 ••	10-40 ••	21-31 •	8-12 ••	10-40 ••	21-31 •				8-12 ••	10-30 •	
•	8-12 •	10-25 ••	21-31 •	8-12 •	10-25 •	21-31 •				8-12 ••	10-40 •	
•	8-12 ••	10-20 ••	21-31 •	8-12 ••	10-20 ••	21-31 •				8-12 ••	10-35 •	
•	10-15 •	15-45 ••	13-20 •	10-15 ••	15-45 ••	13-20 •				10-15 ••	10-45 •	
•	10-15 •	10-40 ••	13-20 •	10-15 ••	10-40 ••	13-20 •				10-15 ••	10-40 •	
•	25-35 •	50-70 •	12-25 ••	25-35 •	30-60 •	12-25 ••			12-25 ••	25-35 ••		
•	25-35 •	50-70 •	12-25 ••	25-35 •	30-60 •	12-25 ••			12-25 ••	25-35 ••		
•	10-15 •	10-40 •	10-25 ••	10-15 •	15-40 •	10-25 ••			10-25 ••	10-15 ••		
•	10-15 •	10-40 •	10-25 ••	10-15 •	15-40 •	10-25 ••			10-25 ••	10-15 ••		
•	10-15 •	10-30 •	10-20 ••	10-15 •	15-30 •	10-20 ••			10-20 ••	10-15 ••		
•	25-35 •	50-70 •	20-40 ••	25-35 •	30-65 •	20-40 ••			20-40 ••	25-35 ••		17-40 •
•	15-20 •	5-60 •	13-30 ••	15-20 •	20-45 •	13-30 ••			13-30 ••	15-20 ••		20-60 •
•	15-20 •	5-25 •	10-17 ••	15-20 •	15-30 •	10-17 ••			10-17 ••	15-20 ••		20-60 •
•	6-10 •	5-25 •	6-13 ••	6-10 •	10-20 •	6-13 ••			6-13 ••	6-10 ••		
•	2-4 ••	4-8 •		2-4 •	3-7 ••			2-4		2-4 •		
•	2-4 ••	4-8 •		2-4	3-7 ••			2-4		2-4 •		
•	2-4 ••	4-8 •		2-4	3-7 ••			2-4		2-4 •		
•	2-4 ••	4-8 •		2-4	3-7 ••			2-4		2-4 •		
•	2-4 ••	4-8 •		2-4	3-7 ••			2-4		2-4 •		
•	6-10 ••			6-10 ••				6-10		6-10 •		
•	6-10 •			6-10 ••				6-10		6-10 •		

• Recommended

•• Suitable

(1) Hand Tap

Tap Surface Treatments and Coating Types

The high speed steels we use grant high wear resistance and toughness.
For machining certain materials, various surface treatments are an advantage.

Steam Tempered (ST)
The steam tempered is a Fe3O4 oxide coating which reduces the friction between the tool and workpiece and prevents cold welding.

Nitriding (NI)
Recommended surface treatment for machining hard wear/abrasive materials such as grey cast iron, aluminum alloys with high silicon percentage (more than 10%).

TiN Coating (TI)
The TiN coating has a hardness of approximately 2,300 HV and is temperature resistant up to approximately 600°C. This is an excellent golden colored coating for general applications.

TiCN-COATING – TiCN
TiCN takes place of TiN when the conditions require the coating to have a different hardness and toughness. The TiCN brings an advantage to machining very difficult steels or cutting interrupted bores. The TiCN-coating has a hardness of approx. 3,000 HV, but is temperature-resistant up to approx. 400° only. That means TiCN needs excellent cooling for long service life.
Color: Blue-grey coefficient of friction against steel : 0.4

TiAIN-COATING – TiAIN
This is a special coating for machining abrasive materials such as: gray cast iron, alu-alloys with silicon, fiber reinforced plastics, etc., or machining under high temperatures, which means with insufficient cooling, or high speeds ≥ 600m/min. The TiAIN has a hardness of approx. 3,000 HV and is temperature resistant up to approx. 800°. Color: Violet-grey coefficient of friction against steel : 0.4

Hardslick-COATING – Hardslick
Hardslick combines in a novel way the advantages of an extremely hard, thermally stable TiAIN-coating with the sliding and lubricating properties of an outer WC/C (Tungsten carbide/carbon) coating. The hardslick coating has a hardness of approx. 3,000 HV and is temperature-resistant up to approx. 800°.
Color: Violet-grey coefficient of friction against steel : 0.2

Tolerances According to DIN EN 22857
For taps with ISO metric threads. The following chart gives a comparison between the new standard DIN EN 22857 and the withdrawn standard DIN 802 part 1. An important change is the re-classification from tap tolerance to tap application class.

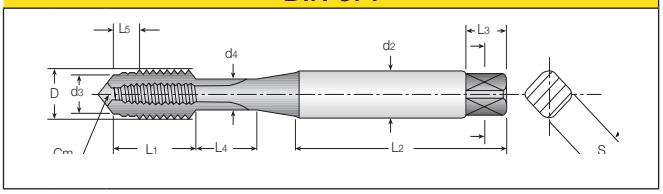
Application Class for Taps to DIN EN 22857		Tolerance Class to Withdrawn Standard DIN 802 Part 1	Allotment of the Tolerance Zones of the nut Thread to be cut				
Class 1	ISO 1	4H	4H	5H	-	-	-
Class 2	ISO 2	6H	5G	5G	6H	-	-
Class 3	ISO 3	6G	-	-	6G	7H	8H
-	-	7G	-	-	-	7G	8G

A suitable transition period is to be expected.

Codes for tolerance classes 7G/8G and <X> tolerance zones have yet to be standardized within DIN EN 22857, and the values from DIN 802 part will remain valid.

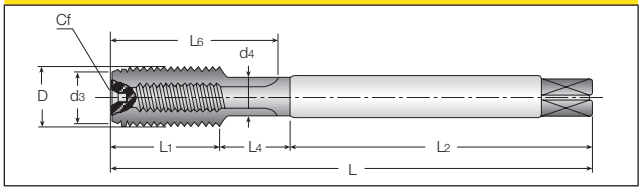
Tap Nomenclature and Standards

DIN 371



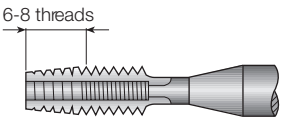
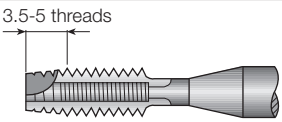
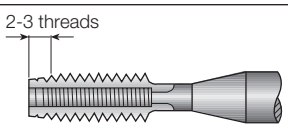
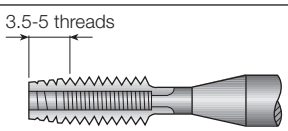
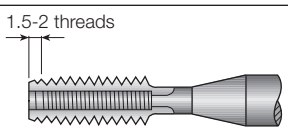
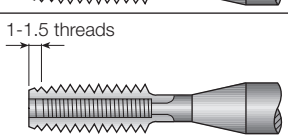
D - Major diameter
d2 - Shank diameter
d3 - Chamfer diameter
d4 - Neck diameter

DIN 376

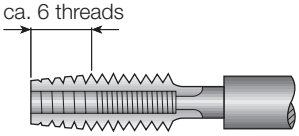
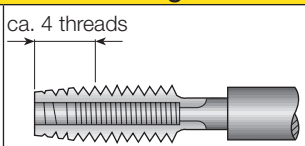
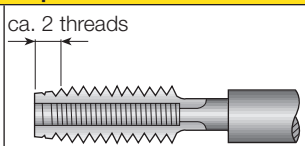


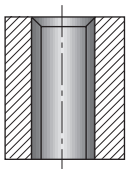
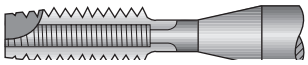
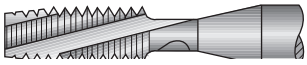
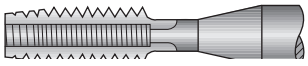
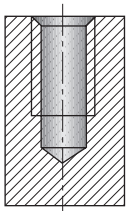
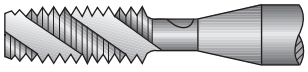
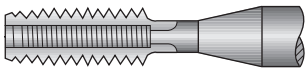
L - Total length
L - Total length
L1 - Thread length
L2 - Shank length
L3 - Square length
L4 - Neck length
L5 - Chamfer length
L6 - Flute length
S - Square size
Cm - Center male
Cf - Center female

Chamfer Lead Forms According to DIN 2197

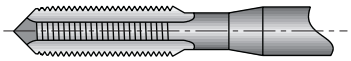
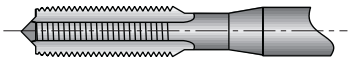
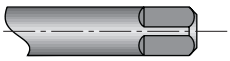
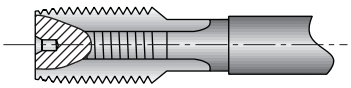
A		**Form A** Long, 6-8 threads for short through holes.
B		**Form B** Medium, 3.5-5 threads, with spiral point for all through holes and deep tapping holes.
C		**Form C** Long, 2-3 threads for blind holes and generally for aluminum grey cast iron and brass.
D		**Form D** Medium, 3.5-5 threads for through and blind holes with sufficient runout.
E		**Form E** Extremely short, 1.5-2 threads for blind holes with little runout depth. Avoid use if possible.
F		**Form F** Extremely short, 1-1.5 threads for blind holes with little runout depth. Avoid use if possible.

Chamfer Lead Length for Sets of 3 Hand Taps

		
First taper tap	Second tap	Bottoming tap

Tap Styles for Hole Types	
Throughole 	 1 Straight fluted tap with spiral point  2 Left-hand spiral fluted tap  3 Straight fluted tap with long chamfer lead
Blind hole 	 1 Right-hand spiral fluted tap  2 Straight fluted tap with short chamfer lead

Front and End Configurations According to DIN2197

Front End	Shank End
1 External Center 	4 External Center 
2 Stepped External Center 	5 Chamfer 
3 Internal Center 	6 Internal Center 

Thread Dia. Range (mm)	Front End	Shank End	Tap Standard
≤Ø6	1	4 5	DIN352
Ø7	1 2	4 5 6	DIN371
≥Ø8	1 2 3	5 6	DIN376

Pre-Tapping Hole Sizes

ISO Metric Threads Coarse Pitch			
M	Pitch mm	Max Core Dia.mm	Drill Size mm
1	0.25	0.785	0.75
1,1	0.25	0.885	0.85
1,2	0.25	0.985	0.95
1,4	0.30	1.160	1.10
1,6	0.35	1.321	1.25
1,7	0.35	1.346	1.30
1,8	0.35	1.521	1.45
2	0.40	1.679	1.60
2,2	0.45	1.838	1.75
2,3	0.40	1.920	1.90
2,5	0.45	2.138	2.05
2,6	0.45	2.176	2.10
3	0.50	2.599	2.50
3,5	0.60	3.010	2.90
4	0.70	3.422	3.30
4,5	0.75	3.878	3.70
5	0.80	4.334	4.20
6	1.00	5.153	5.00
7	1.00	6.153	6.00
8	1.25	6.912	6.80
9	1,25	7.912	7.80
10	1.50	8.676	8.50
11	1.50	9.676	9.50
12	1.75	10.441	10.20
14	2.00	12.210	12.00
16	2.00	14.210	14.00
18	2.50	15.744	15.50
20	2.50	17.744	17.50
22	2.50	19.744	19.50
24	3.00	21.252	21.00
27	3.00	24.252	24.00
30	3.50	26.771	26.50
33	3.50	29.771	29.50
36	4.00	32.270	32.00
39	4.00	35.270	35.00
42	4.50	37.799	37.50
45	4.50	40.799	40.50
48	5.00	43.297	43.00
52	5.00	47.297	47.00
56	5.50	50.796	50.50
60	5.50	54.796	54.50
64	6.00	58.305	58.00
68	6.00	62.305	62.00

ISO Metric Threads Fine Pitch			
MF	Pitch mm	Max Core Dia.mm	Drill Size mm
2,5	0.35	2.221	2.15
3	0.35	2.271	2.65
3,5	0.35	3.221	3.15
4	0.50	3.599	3.50
4,5	0.50	4.099	4.00
5	0.50	4.599	4.50
5,5	0.50	5.099	5.00
6	0.75	5.378	5.20
7	0.75	6.378	6.20
8	0.75	7.378	7.20
8	1.00	7.153	7.00
9	0.75	8.378	8.20
9	1.00	8.153	8.00
10	0.75	9.378	9.20
10	1.00	9.153	9.00
10	1.25	8.912	8.80
11	0.75	10.378	10.20
11	1.00	10.153	10.00
12	1.00	11.153	11.00
12	1,25	10.912	10.80
12	1,50	10.676	10.50
14	1,00	13.153	13.00
14	1,25	12.912	12.80
14	1.50	12.676	12.50
15	1.00	14.153	14.00
15	1.50	13.676	13.50
16	1.00	15.153	15.00
16	1.50	14.676	14.50
17	1.00	16.153	16.00
17	1.50	15.676	15.50
18	1.00	17.153	17.00
18	1.50	16.676	16.50
18	2.00	16.210	16.00
20	1.00	19.153	19.00
20	1.50	18.676	18.50
20	2.00	18.210	18.00
22	1,00	21.153	21.00
22	1.50	20.676	20.50
22	2.00	20.210	20.00
24	1.00	23.153	23.00
24	1,50	22.676	22.50
24	2,00	22.210	22.00
25	1.00	24.153	24.00
25	1.50	23.676	23.50

ISO Metric Threads Fine Pitch			
MF	Pitch mm	Max Core Dia.mm	Drill Size mm
25	2.00	23.210	23.00
26	1.50	24.676	24.50
27	1.00	26.153	26.00
27	1.50	25.676	25.50
27	2.00	25.210	25.00
28	1.00	27.153	27.00
28	1.50	26.676	26.50
28	2.00	26.210	26.00
30	1.00	29.153	29.00
30	1.50	28.676	28.50
30	2.00	28.210	28.00
30	3.00	27.252	27.00
32	1.50	30.675	30.50
32	2.00	30.210	30.00
33	1.50	31.676	31.50
33	2.00	31.210	31.00
33	3.00	30.252	30.00
35	1.50	33.676	33.50
36	1.50	34.676	34.50
36	2.00	34.210	34.00
36	3.00	33.252	33.00
38	1.50	36.676	36.50
39	1.50	37.676	37.50
39	2.00	37.210	37.00
39	3.00	36.252	36.00
40	1,50	38.676	38.50
40	2.00	38.210	38.00
40	3,00	37.252	37.00
42	1,50	40.676	40.50
42	2,00	40.210	40.00
42	3,00	39.252	39.00
45	1.50	43.676	43.50
45	2.00	43.210	43.00
45	3.00	42.252	42.00
48	1.50	46.676	46.50
48	2.00	46.210	46.00
48	3.00	45.252	45.00
50	1.50	48.676	48.50
50	2.00	48.210	48.00
50	3.00	47.252	47.00
52	1.50	50.676	50.50
52	2.00	50.210	50.00
52	3.00	49.252	49.00

Recommended Tap Drill Size		
M	Pitch mm	Drill Size mm
1	0.25	0.9
1.1	0.25	1
1.2	0.25	1.1
1.4	0.3	1.28
1.6	0.35	1.47
1.7	0.35	1.57
1.8	0.35	1.67
2	0.4	1.85
2.2	0.45	2.03
2.3	0.4	2.15
2.5	0.45	2.33
2.6	0.45	2.43
3	0.5	2.8
3.5	0.6	3.25
4	0.7	3.7
4.5	0.75	4.2
5	0.8	4.65
6	1	5.55
7	1	6.55
8	1.25	6.6
9	1.25	7.45
10	1.5	8.45
11	1.5	9.35
12	1.75	11.25
14	2	13.1
16	2	15.1
18	2.5	16.85
20	2.5	18.85
22	2.5	20.85
24	3	22.65
27	3	25.65
30	3.5	28.4
33	3.5	31.4
36	4	34.15
39	4	37.15
42	4.5	39.9
45	4.5	42.9
48	5	45.65

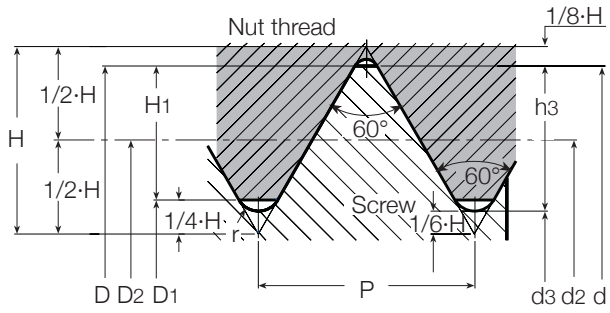
Recommended Tap Drill Size		
MF	Pitch mm	Drill Size mm
2.5	0.35	2.37
2.6	0.35	2.47
3	0.35	2.88
3.5	0.35	3.38
4	0.5	3.8
5	0.5	4.8
6	0.5	5.8
6	0.75	5.7
7	0.75	6.7
8	0.75	7.7
8	1	7.6
9	0.75	8.7
9	1	8.6
10	0.75	9.7
10	1	9.6
10	1.25	9.45
11	1	10.6
12	1	11.6
12	1.25	11.45
12	1.5	11.35
14	1	13.6
14	1.25	13.45
14	1.5	13.35
15	1	14.6
15	1.5	14.35
16	1	15.6
16	1.5	15.35
18	4	17.6
18	1.5	17.35
18	2	17.1
20	1	19.6
20	1.5	19.35
20	2	19.1
24	2	23.1
30	2	29.1
36	3	34.65
42	4	40.15
48	3	46.65

American Unified Coarse Threads			
UNC	T.P.I	Max. Core Dia. Inch	Drill Size mm
#1	64	1.585	1.5
#2	56	1.872	1.8
#3	48	2.146	2.1
#4	40	2.385	2.3
#5	40	2.697	2.6
#6	32	2.896	2.85
#8	32	3.528	3.5
#10	24	3.95	3.9
#12	24	4.59	4.5
1/4"	20	5.25	5.2
5/16"	18	6.68	6.6
3/8"	16	8.082	8
7/16"	14	9.441	9.4
1/2"	13	10.881	10.75
9/16"	12	12.301	12.25
5/8"	11	13.693	13.5
3/4"	10	16.624	16.5
7/8"	9	19.52	19.5
1"	8	22.344	22.25
1*1/8"	7	25.082	25
1*1/4"	7	28.258	28.25
1*3/8"	6	30.851	30.75
1*1/2"	6	34.026	34
1*3/4"	5	39.56	39.5
2"	4.5	45.367	45.25

American Unified Fine Threads			
UNF	T.P.I	Max. Core Dia. Inch	Drill Size mm
#0	80	1.306	1.3
#1	72	1.613	1.6
#2	64	1.913	1.9
#3	56	2.197	2.1
#4	48	2.459	2.4
#5	44	2.741	2.7
#6	40	3.012	3
#8	36	3.597	3.5
#10	32	4.168	4.1
#12	28	4.717	4.7
1/4"	28	5.563	5.5
5/16"	24	6.995	6.9
3/8"	24	8.565	8.5
7/16"	20	9.947	9.9
1/2"	20	11.524	11.5
9/16"	18	12.969	12.9
5/8"	18	14.554	14.5
3/4"	16	17.546	17.5
7/8"	14	20.493	20.5
1"	12	23.363	23.25
1*1/8"	12	26.538	26.5
1*1/4"	12	29.713	29.5
1*3/8"	12	32.888	32.7
1*1/2"	12	36.063	36

ISO Metric Thread Nominal Dimensions According to UNI 4535-64

Tap flank diameter production tolerances for ISO 6H
Nut threads limit dimensions - nut threads ISO 6H



Coarse Pitch Threads Dimensions in mm

$H = 0.86603P$

$H_1 = \frac{5}{8} H = 0.54127P$

$h_3 = \frac{17}{24} H = 0.61343P$

$d_2 = D_2 = d - \frac{3}{4} H = d - 0.64952P$

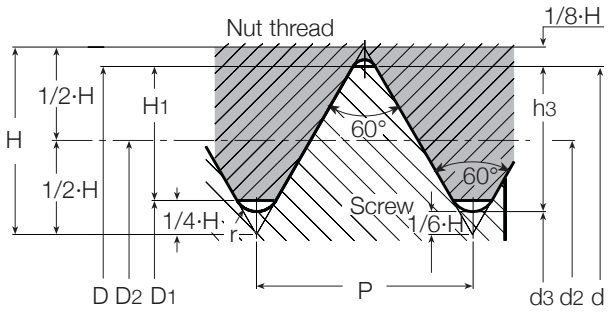
$d_3 = d - 2h_3 = d - 1.22687P$

$r = \frac{H}{6} = 0.14434P$

Nominal Dia. d=D	Pitch P	Flank Dia. $d_2=D_2$	Minor Diameter		Thread Depth		Radius r	Flank Dia. Tap Tolerance 6H d_2		Flank Dia. Tap Tolerance 6H	
			Screw d_3	Nut D_1	Screw h_3	Nut H_1		Min.	Max.	Min.	Max.
M1.6	0.35	1.373	1.171	1.221	0.215	0.189	0.051	1.393	1.407	1.373	1.458
M1.8	0.35	1.573	1.371	1.421	0.215	0.189	0.051	1.593	1.607	1.573	1.658
M2	0.4	1.740	1.509	1.567	0.245	0.217	0.058	1.761	1.776	1.740	1.830
M2.2	0.45	1.908	1.648	1.713	0.276	0.244	0.065	1.931	1.946	1.908	2.003
M2.5	0.45	2.208	1.948	2.013	0.276	0.244	0.065	2.231	2.246	2.208	2.303
M3	0.5	2.675	2.387	2.459	0.307	0.271	0.072	2.699	2.715	2.675	2.775
M3.5	0.6	3.110	2.764	2.850	0.368	0.325	0.087	3.137	3.155	3.110	3.222
M4	0.7	3.545	3.141	3.242	0.429	0.379	0.101	3.574	3.593	3.545	3.663
M4.5	0.75	4.013	3.580	3.688	0.460	0.406	0.108	4.042	4.061	4.013	4.131
M5	0.8	4.480	4.019	4.134	0.491	0.433	0.115	4.510	4.530	4.480	4.605
M6	1	5.350	4.773	4.917	0.613	0.541	0.144	5.385	5.409	5.350	5.500
M7	1	6.350	5.773	5.917	0.613	0.541	0.144	6.385	6.409	6.350	6.500
M8	1.25	7.188	6.466	6.647	0.767	0.677	0.180	7.226	7.251	7.188	7.348
M9	1.25	8.188	7.466	7.647	0.767	0.677	0.180	8.226	8.251	8.188	8.348
M10	1.5	9.026	8.160	8.376	0.920	0.812	0.217	9.068	9.096	9.026	9.206
M11	1.5	10.026	9.160	9.376	0.920	0.812	0.217	10.068	10.096	10.026	10.206
M12	1.75	10.863	9.853	10.106	1.074	0.947	0.253	10.911	10.943	10.863	11.063
M14	2	12.701	11.546	11.835	1.227	1.083	0.289	12.752	12.786	12.701	12.913
M16	2	14.701	13.546	13.835	1.227	1.083	0.289	14.752	14.786	14.701	14.913
M18	2.5	16.376	14.933	15.294	1.534	1.353	0.361	16.430	16.466	16.376	16.600
M20	2.5	18.376	16.933	17.294	1.534	1.353	0.361	18.430	18.466	18.376	18.600
M22	2.5	20.376	18.933	19.294	1.534	1.353	0.361	20.430	20.466	20.376	20.600
M24	3	22.051	20.319	20.752	1.840	1.624	0.433	22.115	22.157	22.051	22.316
M27	3	25.051	23.319	23.752	1.840	1.624	0.433	25.115	25.157	25.051	25.316
M30	3.5	27.727	25.706	26.211	2.147	1.894	0.505	27.794	27.839	27.727	28.007
M33	3.5	30.727	28.706	29.211	2.147	1.894	0.505	30.794	30.839	30.727	31.007
M36	4	33.402	31.093	31.670	2.454	2.165	0.577	33.473	33.520	33.402	33.702
M39	4	36.402	34.093	34.670	2.454	2.165	0.577	36.473	36.520	36.402	36.702
M42	4.5	39.077	36.479	37.129	2.760	2.436	0.650	39.152	39.202	39.077	39.392
M45	4.5	42.077	39.479	40.129	2.760	2.436	0.650	42.152	42.202	42.077	42.392
M48	5	44.752	41.866	42.587	3.067	2.706	0.722	44.832	44.885	44.752	45.087
M52	5	48.752	45.866	46.587	3.067	2.706	0.722	48.832	48.885	48.752	49.087
M56	5.5	52.428	49.252	50.046	3.374	2.977	0.794	52.512	52.568	52.428	52.783
M60	5.5	56.428	53.252	54.046	3.374	2.977	0.794	56.512	56.568	56.428	56.783
M64	6	60.103	56.639	57.505	3.681	3.248	0.866	60.193	60.253	60.103	60.478
M68	6	64.103	60.639	61.505	3.681	3.248	0.866	64.193	64.253	64.103	64.478
Metric Thread MA (old UNI 159 Profile)								Nut Tolerance SH8			
M1.7	0.35	1.473	1.246	1.246	0.227	0.227	0.040	1.493	1,507	1.473	1.529
M2.3	0.4	2.040	1.780	1.780	0.260	0.260	0.040	2.061	2.076	2.040	2.120
M2.6	0.45	2.308	2.016	2.016	0.292	0.292	0.050	2.331	2.346	2.308	2.388

ISO .Metric Fine Thread Nominal Dimensions According to UNI 4535-64

Tap flank diameter production tolerances for ISO 6H
Nut threads limit dimensions - nut threads ISO 6H



Coarse Pitch Threads Dimensions in mm

$H = 0.86603P$

$H_1 = \frac{5}{8} H = 0.54127P$

$h_3 = \frac{17}{24} H = 0.61343P$

$d_2 = D_2 = d - \frac{3}{4} H = d - 0.64952P$

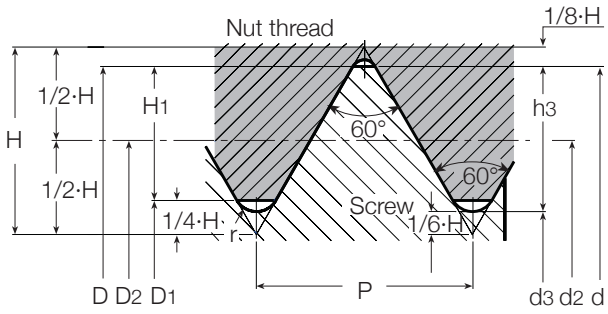
$d_3 = d - 2h_3 = d - 1.22687P$

$r = \frac{H}{6} = 0.14434P$

Nominal Dia. d=D	Pitch P	Flank Dia. $d_2=D_2$	Minor Diameter		Thread Depth		Radius r	Flank Dia. Tap Tolerance 6H d_2		Flank Dia. Tap Tolerance 6H	
			Screw d_3	Nut D_1	Screw h_3	Nut H_1		Min.	Max.	Min.	Max.
M 2	0.25	1.838	1.693	1.729	0.153	0.135	0.036	1.844	1.856	1.838	1.886
M 2.5	0.35	2.273	2.701	2.121	0.215	0.189	0.051	2.293	2.307	2.273	2.358
M 3	0.35	2.773	2.571	2.621	0.215	0.189	0.051	2.794	2.809	2.773	2.863
M 3.5	0.35	3.273	3.071	3.121	0.215	0.189	0.051	3.294	3.309	3.273	3.363
M 4	0.5	3.675	3.387	3.459	0.307	0.271	0.072	3.699	3.715	3.675	3.775
M 4.5	0.5	4.175	3.887	3.959	0.307	0.271	0.072	4.199	4.215	4.175	4.275
M 5	0.5	4.675	4.387	4.459	0.307	0.271	0.072	4.699	4.715	4.675	4.775
M 5.5	0.5	5.175	4.887	4.959	0.307	0.271	0.072	5.199	5.215	5.175	5.275
M 6	0.5	5.675	5.387	5.459	0.307	0.271	0.072	5.702	5.72	5.675	5.787
M 6	0.75	5.513	5.08	5.188	0.46	0.406	0.108	5.545	5.566	5.513	5.645
M 7	0.75	6.513	6.08	6.188	0.46	0.406	0.108	6.545	6.566	6.513	6.645
M 8	0.5	7.675	7.387	7.459	0.307	0.271	0.072	7.702	7.72	7.675	7.787
M 8	0.75	7.513	7.08	7.188	0.46	0.406	0.108	7.545	7.566	7.513	7.645
M 8	1	7.35	6.773	6.917	0.613	0.541	0.144	7.835	7.409	7.35	7.5
M 9	0.75	8.513	8.08	8.188	0.46	0.406	0.108	8.545	8.566	8.513	8.645
M 9	1	8.35	7.773	7.917	0.613	0.541	0.144	8.385	8.409	8.35	8.5
M 10	0.5	9.675	9.387	9.459	0.307	0.271	0.072	9.702	9.72	9.675	9.787
M 10	0.75	9.513	9.08	9.188	0.46	0.406	0.108	9.545	9.566	9.513	9.645
M 10	1	9.35	8.773	8.917	0.613	0.541	0.144	9.385	9.409	9.35	9.5
M 10	1.25	9.188	8.466	8.647	0.767	0.677	0.18	9.226	9.251	9.188	9.348
M 11	0.75	10.513	10.08	10.188	0.46	0.406	0.108	10.545	10.566	10.513	10.645
M 11	1	10.35	9.773	9.917	0.613	0.541	0.144	10.385	10.409	10.35	10.5
M 12	0.75	11.513	11.08	11.188	0.46	0.406	0.108	11.547	11.569	11.513	11.653
M 12	1	11.35	10.773	10.917	0.613	0.541	0.144	11.388	11.413	11.35	11.51
M 12	1.25	11.188	10.466	10.647	0.767	0.677	0.18	11.23	11.258	11.188	11.368
M 12	1.5	11.026	10.16	10.376	0.92	0.812	0.217	11.071	11.101	11.026	11.216
M 13	1	12.35	11.773	11.917	0.613	0.541	0.144	12.388	12.413	12.35	12.51
M 14	1	13.35	12.773	12.917	0.613	0.541	0.144	13.388	13.413	13.35	13.51
M 14	1.25	13.188	12.466	12.647	0.767	0.677	0.18	13.23	13.258	13.188	13.368
M 14	1.5	13.026	12.16	12.376	0.92	0.812	0.217	13.071	13.101	13.026	13.216
M 15	1	14.35	13.773	13.917	0.613	0.541	0.144	14.388	14.413	14.35	14.51
M 15	1.5	14.026	13.16	13.376	0.92	0.812	0.217	14.071	14.101	14.026	14.216
M 16	1	15.35	14.773	14.917	0.613	0.541	0.144	15.388	15.413	15.35	15.51
M 16	1.25	15.188	14.466	14.647	0.767	0.677	0.18	15.23	15.258	15.188	15.368
M 16	1.5	15.026	14.16	14.376	0.92	0.812	0.217	15.071	15.101	15.026	15.216
M 17	1	16.35	15.773	15.917	0.613	0.541	0.144	16.388	16.413	16.35	16.51
M 17	1.5	16.026	15.16	15.376	0.92	0.812	0.217	16.071	16.101	16.026	16.216

ISO .Metric Fine Thread
Nominal Dimensions According to UNI 4535-64

Tap flank diameter production tolerances for ISO 6H
Nut threads limit dimensions - nut threads ISO 6H



Coarse Pitch Threads Dimensions in mm

$H = 0.86603P$

$H_1 = \frac{5}{8} H = 0.54127P$

$h_3 = \frac{17}{24} H = 0.61343P$

$d_2 = D_2 = d - \frac{3}{4} H = d - 0.64952P$

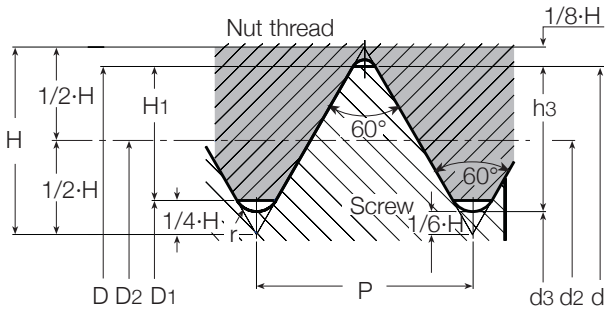
$d_3 = d - 2h_3 = d - 1.22687P$

$r = \frac{H}{6} = 0.14434P$

Nominal Dia. d=D	Pitch P	Flank Dia. $d_2=D_2$	Minor Diameter		Thread Depth		Radius r	Flank Dia. Tap Tolerance 6H d_2		Flank Dia. Tap Tolerance 6H	
			Screw d_3	Nut D_1	Screw h_3	Nut H_1		Min.	Max.	Min.	Max.
M 18	1	17.350	16.773	16.917	0.613	0.541	0.144	17.388	17.413	17.35	17.51
M 18	1.5	17.026	16.16	16.376	0.92	0.812	0.217	17.071	17.101	17.026	17.216
M 18	2	16.701	15.546	15.835	1.227	1.083	0.289	16.752	16.786	16.701	16.913
M 20	1	19.35	18.773	18.917	0.613	0.541	0.144	19.388	19.413	19.35	19.51
M 20	1.5	19.026	18.16	18.376	0.92	0.812	0.217	19.071	19.101	19.026	19.216
M 20	2	18.701	17.546	17.835	1.227	1.083	0.289	18.752	18.786	18.701	18.913
M 22	1	21.35	20.773	20.917	0.613	0.541	0.144	21.388	21.413	21.35	21.51
M 22	1.5	21.026	20.16	20.376	0.92	0.812	0.217	21.071	21.101	21.026	21.216
M 22	2	20.701	19.546	19.835	1.227	1.083	0.289	20.752	20.786	20.701	20.913
M 24	1	23.350	22.773	22.917	0.613	0.541	0.144	23.390	23.416	23.350	23.520
M 24	1.5	23.026	22.160	22.376	0.920	0.812	0.217	23.074	23.106	23.026	23.226
M 24	2	22.701	21.546	21.835	1.227	1.083	0.289	22.754	22.791	22.701	22.925
M 25	1	24.350	23.773	23.917	0.613	0.541	0.144	24.390	24.416	24.350	24.520
M 25	1.5	24.026	23.160	23.376	0.920	0.812	0.217	24.074	24.106	24.026	24.226
M 25	2	23.701	22.546	22.835	1.227	1.083	0.289	23.754	23.791	23.701	23.925
M 26	1	25.350	24.773	24.917	0.613	0.541	0.144	25.390	25.416	25.350	25.520
M 26	1.5	25.026	24.160	24.376	0.920	0.812	0.217	25.074	25.106	25.026	25.226
M 26	2	24.701	23.546	23.835	1.227	1.083	0.289	24.754	24.791	24.701	24.925
M 27	1	26.350	25.773	25.917	0.613	0.541	0.144	26.390	26.416	26.350	26.520
M 27	1.5	26.026	25.160	25.376	0.920	0.812	0.217	26.074	26.106	26.026	26.226
M 27	2	25.701	24.546	24.835	1.227	1.083	0.289	25.754	25.791	25.701	25.925
M 28	1	27.350	26.773	26.917	0.613	0.541	0.144	27.390	27.416	27.350	27.520
M 28	1.5	27.026	26.160	26.376	0.920	0.812	0.217	27.074	27.106	27.026	27.226
M 28	2	26.701	25.546	25.835	1.227	1.083	0.289	26.754	26.791	26.701	26.925
M 30	1	29.350	28.773	28.917	0.613	0.541	0.144	29.390	29.416	29.350	29.520
M 30	1.5	29.026	28.160	28.376	0.920	0.812	0.217	29.074	29.106	29.026	29.226
M 30	2	28.701	27.546	27.835	1.227	1.083	0.289	28.754	28.791	28.701	28.925
M 30	3	28.051	26.319	26.752	1.840	1.624	0.433	28.115	28.157	28.051	28.316
M 32	1.5	31.026	30.160	30.376	0.920	0.812	0.217	31.074	31.106	31.026	31.226
M 32	2	30.701	29.546	29.835	1.227	1.083	0.289	30.754	30.791	30.701	30.925
M 33	1.5	32.026	31.160	31.376	0.920	0.812	0.217	32.074	32.106	32.026	32.226
M 33	2	31.701	30.546	30.835	1.227	1.083	0.289	31.754	31.791	31.701	31.925
M 33	3	31.051	29.319	29.752	1.840	1.624	0.433	31.115	31.157	31.051	31.316
M 35	1.5	34.026	33.160	33.376	0.920	0.812	0.217	34.074	34.106	34.026	34.226
M 35	2	33.701	32.546	32.835	1.227	1.083	0.289	33.754	33.791	33.701	33.925
M 36	1.5	35.026	34.160	34.376	0.920	0.812	0.217	35.074	35.106	35.026	35.226
M 36	2	34.701	33.546	33.835	1.227	1.083	0.289	34.754	34.791	34.701	34.925
M 36	3	34.051	32.319	32.752	1.840	1.624	0.433	34.115	34.157	34.051	34.316

ISO .Metric Fine Thread
Nominal Dimensions According to UNI 4535-64

Tap flank diameter production tolerances for ISO 6H
Nut threads limit dimensions - nut threads ISO 6H



Coarse Pitch Threads Dimensions in mm

$H = 0.86603P$

$H_1 = \frac{5}{8} H = 0.54127P$

$h_3 = \frac{17}{24} H = 0.61343P$

$d_2 = D_2 = d - \frac{3}{4} H = d - 0.64952P$

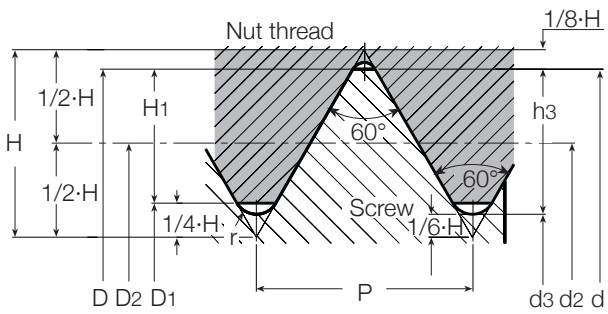
$d_3 = d - 2h_3 = d - 1.22687P$

$r = \frac{H}{6} = 0.14434P$

Nominal Dia. d=D	Pitch P	Flank Dia. $d_2=D_2$	Minor Diameter		Thread Depth		Radius r	Flank Dia. Tap Tolerance 6H d_2		Flank Dia. Tap Tolerance 6H	
			Screw d_3	Nut D_1	Screw h_3	Nut H_1		Min.	Max.	Min.	Max.
M 38	1.5	37.026	36.160	36.376	0.920	0.812	0.217	37.074	37.106	37.026	37.226
M 39	1.5	38.026	37.160	37.376	0.920	0.812	0.217	38.074	38.106	38.026	38.226
M 39	2	37.701	36.546	36.835	1.227	1.083	0.289	37.754	37.791	37.701	37.925
M 39	3	37.051	35.319	35.752	1.840	1.624	0.433	37.115	37.157	37.051	37.316
M 40	1.5	39.026	38.160	38.376	0.920	0.812	0.217	39.074	39.106	39.026	39.226
M 40	2	38.701	37.546	37.835	1.227	1.083	0.289	38.754	38.791	38.701	38.925
M 40	3	38.051	36.319	36.752	1.840	1.624	0.433	38.115	38.157	38.051	38.316
M 42	1.5	41.026	40.160	40.376	0.920	0.812	0.217	41.074	41.106	41.026	41.226
M 42	2	40.701	39.546	39.835	1.227	1.083	0.289	40.754	40.791	40.701	40.925
M 42	3	40.051	38.319	38.752	1.840	1.624	0.433	40.115	40.157	40.051	40.316
M 45	1.5	44.026	43.160	43.376	0.920	0.812	0.217	44.074	44.106	44.026	44.226
M 45	2	43.701	42.546	42.835	1.227	1.083	0.289	43.754	43.791	43.701	43.925
M 45	3	43.051	41.319	41.752	1.840	1.624	0.433	43.115	43.157	43.051	43.316
M 48	1.5	47.026	46.160	46.376	0.920	0.812	0.217	47.077	47.111	47.026	47.238
M 48	2	46.701	45.546	45.835	1.227	1.083	0.289	46.758	46.796	46.701	46.937
M 48	3	46.051	44.319	44.752	1.840	1.624	0.433	46.118	46.163	46.051	46.331
M 50	1.5	49.026	48.160	48.376	0.920	0.812	0.217	49.077	49.111	49.026	49.238
M 50	2	48.701	47.546	47.835	1.227	1.083	0.289	48.758	48.796	48.701	48.937
M 50	3	48.051	46.319	46.752	1.840	1.624	0.433	48.118	48.163	48.051	48.331
M 52	1.5	51.026	50.160	50.376	0.920	0.812	0.217	51.077	51.111	51.026	51.238
M 52	2	50.701	49.546	49.835	1.227	1.083	0.289	50.758	50.796	50.701	50.937
M 52	3	50.051	48.319	48.752	1.840	1.624	0.433	50.118	50.163	50.051	50.331
M 55	1.5	54.026	53.160	53.376	0.920	0.812	0.217	54.077	54.111	54.026	54.238
M 55	2	53.701	52.546	52.835	1.227	1.083	0.289	53.758	53.796	53.701	53.937
M 55	3	53.051	51.319	51.752	1.840	1.624	0.433	53.118	53.163	53.051	53.331
M 56	1.5	55.026	54.160	54.376	0.920	0.812	0.217	55.077	55.111	55.026	55.238
M 56	2	54.701	53.546	53.835	1.227	1.083	0.289	54.758	54.796	54.701	54.937
M 56	3	54.051	52.319	52.752	1.840	1.624	0.433	54.118	54.163	54.051	54.331
M 58	1.5	57.026	56.160	56.376	0.920	0.812	0.217	57.077	57.111	57.026	57.238
M 58	2	56.701	55.546	55.835	1.227	1.083	0.289	56.758	56.796	56.701	56.937
M 58	3	56.051	54.319	54.752	1.840	1.624	0.433	56.118	56.163	56.051	56.331
M 60	1.5	59.026	58.160	58.376	0.920	0.812	0.217	59.077	59.111	59.026	59.238
M 60	2	58.701	57.546	57.835	1.227	1.083	0.289	58.758	58.796	58.701	58.937
M 60	3	58.051	56.319	56.752	1.840	1.624	0.433	58.118	58.163	58.051	58.331
Metric Thread MA (old UNI 160 Profile)										Nut Tolerance SH8	
M 2,3	0.25	2.138	1.976	1.976	0.162	0.162	0.03	2.144	2.156	2.138	2.194
M 2,6	0.35	2.373	2.146	2.146	0.227	0.227	0.04	2.393	2.407	2.373	2.429

UNIFIED Coarse Thread
Nominal Dimensions According to ANSI B1.1

Tap flank diameter production tolerances for ISO 2B Nut threads limit dimensions - nut threads ANSI B1.1, 2B-3B



Coarse Pitch Threads Dimensions in mm

$H = 0.86603P$

$H_1 = \frac{5}{8} H = 0.54127P$

$h_3 = \frac{17}{24} H = 0.61343P$

$d_2 = D_2 = d - \frac{3}{4} H = d - 0.64952P$

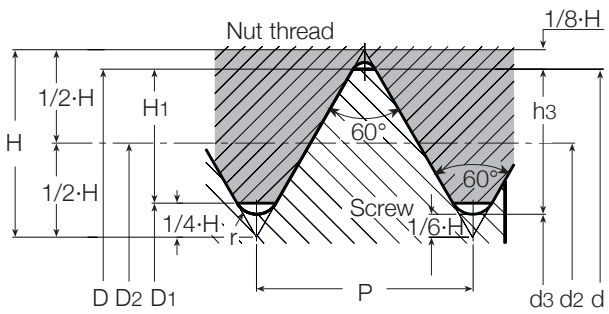
$d_3 = d - 2h_3 = d - 1.22687P$

$r = \frac{H}{6} = 0.14434P$

Nominal T.P.I Dia.		Pitch P	External Dia. d=D	Flank Dia. $d_2=D_2$	Minor Diameter		Pitch Diameter Tap Tolerance 2B		Pitch Diameter Nut Tolerance		
					Nut D_1	Screw h_3	Min.	Max.	max. 2B/3B	max. 2B	max. 3B
UNC#1	- 64	0.397	1.854	1.598	1.425	1.367	1.610	1.623	1.598	1.664	1.646
UNC# 2	- 64	0.454	2.184	1.890	1.694	1.628	1.902	1.915	1.890	1.961	1.943
UNC#3	- 48	0.529	2.515	2.172	1.941	1.864	2.184	2.197	2.172	2.248	2.228
UNC# 4	- 40	0.635	2.845	2.433	2.156	2.065	2.446	2.459	2.433	2.517	2.494
UNC# 5	- 40	0.635	3.175	2.764	2.487	2.395	2.776	2.789	2.764	2.847	2.827
UNC# 6	- 32	0.794	3.505	2.990	2.647	2.532	3.105	3.028	2.990	3.084	3.058
UNC# 8	- 32	0.794	4.166	3.650	3.307	3.193	3.675	3.688	3.650	3.746	3.721
UNC# 10	- 24	1.058	4.826	4.138	3.680	3.528	4.163	4.176	4.138	4.247	4.219
UNC# 12	- 24	1.058	5.486	4.798	4.341	4.188	4.823	4.836	4.798	4.910	4.882
UNC 1/4"	- 20	1.270	6.350	5.524	4.976	4.793	5.575	5.588	5.524	5.646	5.616
UNC 5/16"	- 18	1.411	7.938	7.021	6.411	6.205	7.071	7.084	7.021	7.155	7.120
UNC 3/8"	- 16	1.588	9.525	8.494	7.805	7.577	8.545	8.557	8.494	8.639	8.603
UNC 7/16"	- 14	1.814	11.112	9.934	9.149	8.887	9.985	9.997	9.934	10.089	10.051
UNC 1/2"	- 13	1.954	12.700	11.430	10.584	10.302	11.481	11.494	11.430	11.595	11.552
UNC 9/16"	- 12	2.117	14.288	12.913	11.996	11.692	12.964	12.977	12.913	13.086	13.043
UNC 5/8"	- 11	2.309	15.875	14.376	13.376	13.043	14.427	14.440	14.376	14.559	14.514
UNC 3/4"	- 10	2.540	19.050	17.399	16.229	15.933	17.450	17.463	17.399	17.595	17.544
UNC 7/8"	- 9	2.822	22.225	20.391	19.169	18.763	20.455	20.467	20.391	20.599	20.546
UNC 1"	- 8	3.175	25.400	23.338	21.963	21.504	23.401	23.414	23.338	23.561	23.505
UNC 1 1/8"	- 7	3.629	28.575	26.218	24.648	24.122	26.294	26.319	26.218	26.457	26.398
UNC 1 1/4"	- 7	3.629	31.750	29.393	27.823	27.297	29.469	29.494	29.393	29.637	29.576
UNC 1 3/8"	- 6	4.233	34.925	32.174	30.343	29.731	32.250	32.276	32.174	32.438	32.372
UNC 1 1/2"	- 6	4.233	38.100	35.349	33.518	32.906	35.425	35.451	35.349	35.616	35.550
UNC 1 3/4"	- 5	5.080	44.450	41.151	38.951	38.217	41.241	41.266	41.151	41.445	41.372
UNC 2"	- 4 1/2	5.644	50.800	47.135	44.689	43.876	47.235	47.260	47.135	47.450	47.371
UNC 2 1/4"	- 4 1/2	5.644	57.150	53.485	51.039	50.226			53.485	53.805	53.726
UNC 2 1/2"	- 4	6.350	63.500	59.375	56.627	55.710			59.375	59.718	59.632
UNC 2 3/4"	- 4	6.350	69.850	65.725	62.977	62.060			65.725	66.073	65.987
UNC 3"	- 4	6.350	76.200	72.075	69.327	68.410			72.075	72.428	72.339
UNC 3 1/4"	- 4	6.350	82.550	78.425	75.677	74.760			78.425	78.783	78.694
UNC 3 1/2"	- 4	6.350	88.900	84.775	82.027	81.110			84.775	85.183	85.049
UNC 3 3/4"	- 4	6.350	95.250	91.125	88.377	87.460			91.125	91.493	91.402
UNC 4"	- 4	6.350	101.600	97.475	94.727	93.810			97.475	97.848	97.757

UNIFIED Fine Thread
Nominal Dimensions According to ANSI B1.1

Tap flank diameter production tolerances
for ISO 2B Nut threads limit dimensions
- nut threads ANSI B1.1, 2B-3B



Coarse Pitch Threads Dimensions in mm

$H = 0.86603P$

$H_1 = \frac{5}{8} H = 0.54127P$

$h_3 = \frac{17}{24} H = 0.61343P$

$d_2 = D_2 = d - \frac{3}{4} H = d - 0.64952P$

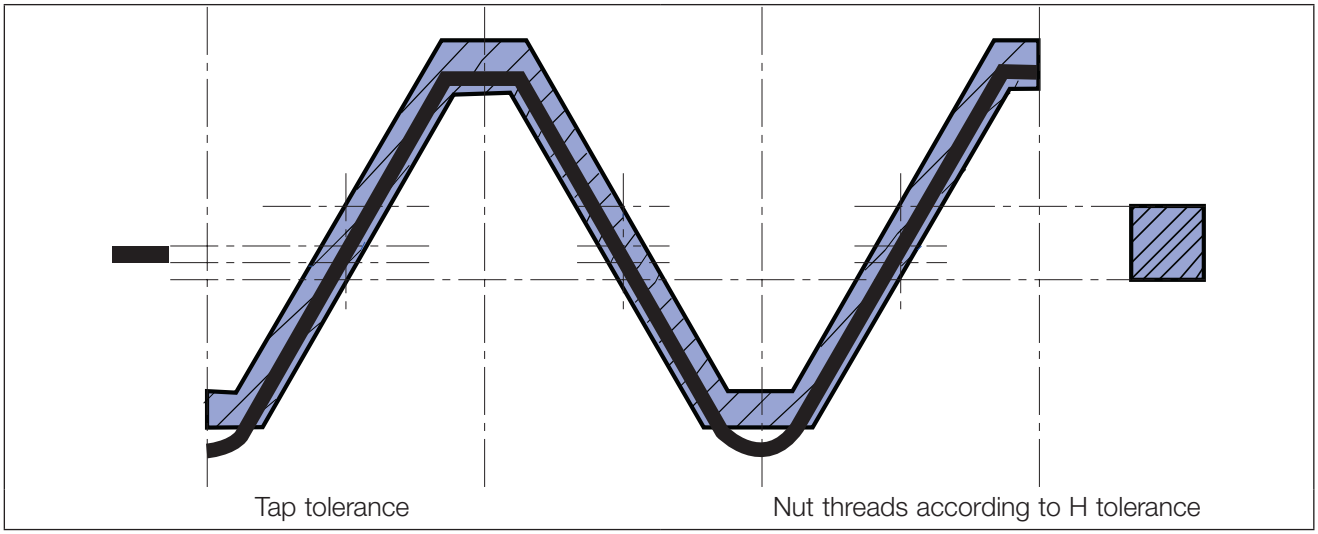
$d_3 = d - 2h_3 = d - 1.22687P$

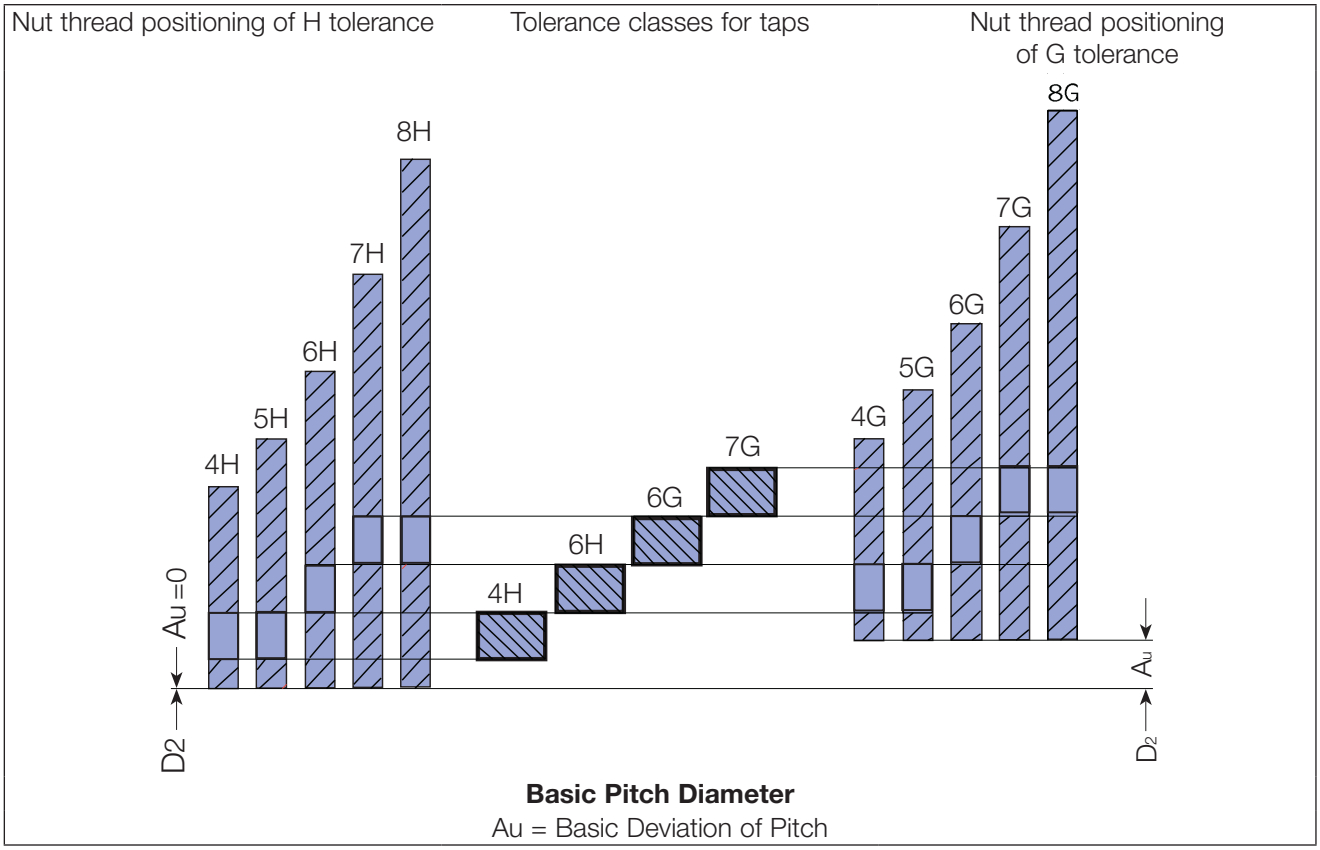
$r = \frac{H}{6} = 0.14434P$

Nominal T.P.I Dia.		Pitch P	External Dia. d=D	Flank Dia. $d_2=D_2$	Minor Diameter		Pitch Diameter Tap Tolerance 2B		Pitch Diameter Nut Tolerance		
					Nut D_1	Screw h_3	Min.	Max.	max. 2B/3B	max. 2B	max. 3B
UNF#0	- 80	0.318	1.524	1.318	1.181	1.135	1.331	1.344	1.318	1.377	1.361
UNF#1	- 72	0.353	1.854	1.626	1.473	1.422	1.638	1.651	1.626	1.689	1.674
UNF#2	- 64	0.397	2.184	1.928	1.755	1.697	1.941	1.953	1.928	1.996	1.979
UNF#3	- 56	0.454	2.515	2.220	2.024	1.958	2.233	2.245	2.220	2.291	2.273
UNF#4	- 48	0.529	2.845	2.502	2.271	2.195	2.515	2.527	2.502	2.581	2.560
UNF#5	- 44	0.577	3.175	2.799	2.550	2.466	2.812	2.824	2.799	2.880	2.860
UNF#6	- 40	0.635	3.505	3.094	2.817	2.725	3.108	3.119	3.094	3.180	3.157
UNF#8	- 36	0.706	4.166	3.708	3.401	3.299	3.721	3.734	3.708	3.800	3.777
UNF#10	- 32	0.794	4.826	4.310	3.967	3.853	4.336	4.348	4.310	4.409	4.384
UNF#12	- 28	0.907	5.486	4.897	4.503	4.374	4.923	4.935	4.897	5.004	4.976
UNF 1/4"	- 28	0.907	6.350	5.761	5.367	5.237	5.799	5.812	5.761	5.870	5.842
UNF 5/16"	- 24	1.058	7.938	7.249	6.792	6.640	7.287	7.300	7.249	7.371	7.341
UNF 3/8"	- 24	1.058	9.525	8.837	8.379	8.227	8.875	8.887	8.837	8.961	8.931
UNF 7/16"	- 20	1.270	11.112	10.287	9.738	9.555	10.338	10.351	10.287	10.424	10.391
UNF 1/2"	- 20	1.270	12.700	11.874	11.326	11.143	11.925	11.938	11.874	12.017	11.981
UNF 9/16"	- 18	1.411	14.288	13.371	12.761	12.555	13.421	13.434	13.371	13.520	13.482
UNF 5/8"	- 18	1.411	15.875	14.958	14.348	14.143	15.009	15.022	14.958	15.110	15.072
UNF 3/4"	- 16	1.588	19.050	18.019	17.330	17.102	18.070	18.082	18.019	18.184	18.143
UNF 7/8"	- 14	1.814	22.225	21.046	20.262	20.000	21.110	21.123	21.046	21.224	21.181
UNF 1"	- 12	2.117	25.400	24.026	23.109	22.804	24.089	24.102	24.026	24.219	24.171
UNF 1*1/8"	- 12	2.117	28.575	27.201	26.284	25.979	27.252	27.277	27.201	27.339	27.351
UNF 1*1/4"	- 12	2.117	31.750	30.376	29.459	29.154	30.427	30.452	30.376	30.579	30.528
UNF 1*3/8"	- 12	2.117	34.925	33.551	32.634	32.329	33.602	33.627	33.551	33.759	33.706
UNF 1*1/2"	- 12	2.117	38.100	36.726	35.809	35.504	36.777	36.802	36.726	36.937	36.886

Tap Tolerances

Tolerance classes of taps and tolerance positions for screw threads as per ISO metric standard.





For Optimum Tapping Conditions, Reduced Machining Times and Increased Tap Life

Selection of the Most Suitable Tap

As a general rule, materials with deformation capability of at least 10% can be cold-formed.
To decide on the most suitable tap, please refer to the tap recommendation table on page 784.

Pre-Tapping Holes

Check that the holes are within the prescribed size range depending on the application (see table on page ??) The holes should be clean and swarf-free.

Lubrication

Frequently the lubricant content of the coolant used for general machining is too low for tapping.

- If it is not possible to increase the lubricant content, following are some possible solutions:
- A separate lubricating unit can be connected to the machine control, to deliver the required quantity of concentrated emulsion into the core hole or onto the tap. Tapping in separate operations allows the use of the ideal tapping lubricant.

Tapping Speeds

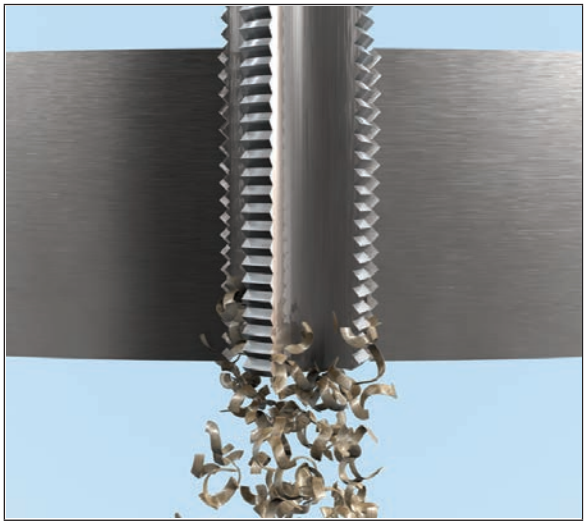
The tapping speed has a great influence on chip flow and the life of the tap. It is worthwhile to establish the ideal speed by tapping trials.
For recommended initial values, see table on page 784. In addition, the following should be taken into consideration: characteristics of the material, machine and clamping method.

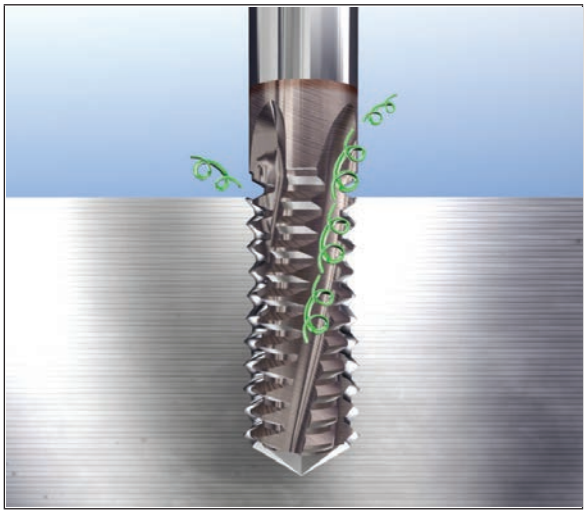
Effects of Unsuitable Tapping Speed

- forced tapping
- tap lead chipping caused by overloaded cutting tooth
- torn threads
- unsatisfactory tap life
- rejected threads

Chip Explusion

Tap selection is also influenced by the type of hole being threaded. Through hole tapping usually requires a tap that pushes the chips out in front of the cutting edge and through the other end of the hole. A bottom hole tap must pull chips up and out of the hole.





Tap Jamming

Some possible causes of tap jamming are:

- unsuitable tap
- tap with incorrect cutting geometry
- unsuitable coolant for material
- insufficient coolant
- axial pressure (pull or push) on the tap
- core hole too small
- breaks in walls of core hole
- speed too high or too low
- swarf trapped in the hole
- incorrect alignment of tap and core hole
- tap eccentricity

Results of Tap Jamming

- torn threads
- short tap life
- rejected threads
- tap breakage
- scrap workpieces

Tap Mounting

The tap must be mounted on the axis of the core hole.
On non-synchronized machines (feed/speed) we recommend the use of a tapping spindle.

Tapping Heads

As a rule, with non-synchronized machine spindles (feed/ speed), the feed rate should be programmed approximately 5-10% lower than the thread pitch. In these cases, a tapping chuck must be used which will compensate the difference between the feed rate and the thread pitch. It is important that the tension spring in the axial compensation is set to a minimum pressure to avoid axially loading the tap. The compression spring should be tensioned so the tap starts to cut by compressing the spring up to one-half pitch.

Important

Verify that the correct speed has been selected. Ensure that ample lubricating coolant is being used. Machine and equipment stability are essential for optimal performance and results.

Forming Taps

Forming taps (roll forming or cold forming) produce threads by deforming the material near the hole walls rather than by cutting the material. This method often works well in ductile materials. However, in brittle materials it often results in unsatisfactory threads.

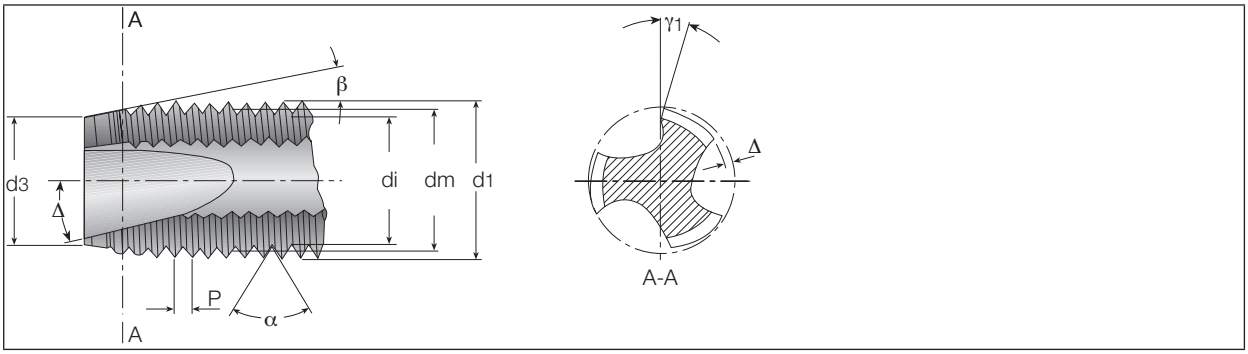
Torque requirements for forming taps are considerably higher than for cutting taps. When forming taps are used, chuck capacity must be decreased by 25%. Forming taps do not produce chips.

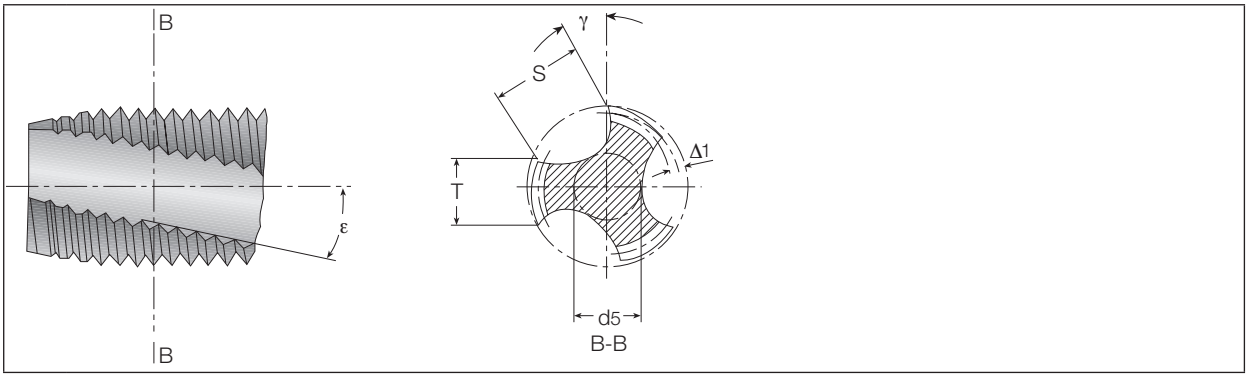
Troubleshooting

Problem	Cause	Solution
Tapped Hole Oversized	Incorrect tap (cutting geometry unsuitable for application)	Use tap selected from the relevant material group
	Faulty alignment	Ensure that the tap is correctly aligned with the core hole axis
	Tap jamming	Improve lubrication and direction of coolant Adjust cutting speed
	Incorrectly reground tap (lead tip is not concentric)	Regrind tap
Stripped Threads	Incorrect tap (cutting geometry incorrect for application)	Use a tap from the relevant material group
	Spindle speed and feed rate are not synchronized	Check feed rate programming and/or pitch of leading Spindle. Use a tapping spindle with axial float (**GTI**/**GTIN**)
	Insufficient starting pressure exerted on tap (causes peeling)	Increase starting pressure
Bell Mouthed Tapped Hole	Incorrect starting pressure	Use a tapping spindle with axial float (**GTI**/**GTIN**)
Unsatisfactory Thread Surface Finish	Incorrect tap (cutting geometry unsuitable For application)	Select tap for the relevant material group
	The tap is blunt	Replace or regrind tap
	Tap badly re-ground	Regrind tap. Check that cutting geometry is suitable for material
	Incorrect lubricant, concentration or quantity	Ensure the use of a suitable coolant and an ample supply
Partial Chipping of tap	Swarf jamming	Check cutting speed. Use alternative tap
	Tap has jammed against bottom of pre-hole	Check hole and thread depths. Drill a deeper pre-hole
	Tap incorrectly reground (lead-in diameter too short, therefore too few cutting teeth)	Ensure that correct dimensions are maintained when regrinding
	Irregular workpiece material structure	Adjust cutting speed. Improve lubricant quality of coolant
Partial Chipping of tap	Swarf jamming	Check cutting speed. Use alternative tap
	Tap has jammed against bottom of pre-hole	Check hole and thread depths. Drill a deeper pre-hole
	Tap incorrectly reground (lead-in diameter too short, therefore too few cutting teeth)	Ensure that correct dimensions are maintained when regrinding
	Irregular workpiece material structure	Adjust cutting speed. Improve lubricant quality of coolant

Problem	Cause	Solution
Excessive tap Wear	Incorrect cutting speed	Adjust cutting speed to suit workpiece material
	Coolant lacking in lubricating qualities And/or quantity	Ensure the use of a suitable coolant and an ample supply. Check that the coolant is reaching the cutting zone
	Surface of the pre-hole is compacted	Check pre-hole drilling conditions (drill carefully to reduce risk of surface compacting). Check drill cutting edges
Tap Breakage	Incorrect tap in use (cutting geometry unsuitable for application)	Use tap from the relevant material group
	Centering error	Ensure that axes of tap and pre-hole are aligned
	Blunt tap	regrind tap
	Tap has reached bottom of pre-hole	Use tapping spindle with axial float and slipping clutch (**GTI**/**GTIN**)
	Pre-hole too small	Check for correct pre-hole size, see pages 435-455

Tap Nomenclature (Regrinding)





d1 Major diameter
dm Flank diameter
di Minor diameter
d3 Chamfer diameter
P Pitch
a Flank angle
ß Chamfer angle
j Gun nose angle
ϒ Gun nose front rake angle
Δ Chamfer relief
Δ 1 Pitch diameter relief on the land
ϒ1 Rake angle
T Width of land
S Flute width
d5 Web thickness
ε Angle of spiral flute

Regrinding

Tap regrinding takes place in two steps:

1 regrinding of relieved chamfer

2 regrinding of flutes (see picture 1)

Regrinding of Relieved Chamfer

It is recommended that the resharpening should be executed either on specific tap regrinding machines or on conventional resharpening machines equipped with an auxiliary device to generate the circular back relief.

Picture 2 shows the regrinding done with the cylindrical surface of a grinding wheel. Before regrinding, verify that the tap, fixed between points or on the pincer, runs concentrical. Also ensure that angle B is in the correct order to keep the same number of threads on chamfer.

Resharpening of Flutes

The rake angle g is obtained by moving the tap axis, in relation to the regrinding surface, of an amount X to be calculated with the formula: X = 1/2 d1 sin (Υ)
(see picture 3).(d1 =tap major diameter)

Example:

Tap 10 X 1,5 to cut on steel strength = 600 N/mm^2

d1 = 10 mm ; Υ = 15° ; sin (Υ) = 0,25882;

$$X = \frac{0.25885}{2} \text{ x10 ; X=1.29 mm}$$

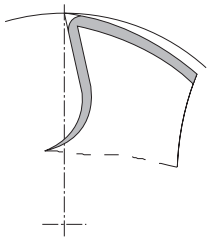
On all taps with spiral flutes, it is possible to find the pitch of the spiral in reference to the lead screw necessary for resharpening. In case of using taps equipped with a deburring tool, it is necessary to extend the flutes according to the supplier's recommendation. As the wear on a tap is mainly on the chamfer area, for taps with a gun nose, regrinding the flutes can be done on the front area only (see picture 4).

In cases where the thread flanks are worn (in addition to the active edges), regrinding as described above is impractical.

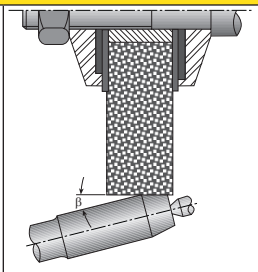
In this case restoration is done, by cutting the chamfer away (thus creating a shorter tap) and then reproducing the chamfer with same angle and relief.
(see picture 5)

In the absence of special regrinding machines, such restoration is advisable for regrinding taps with spiral flutes. This is because regrinding the flutes becomes unnecessary.

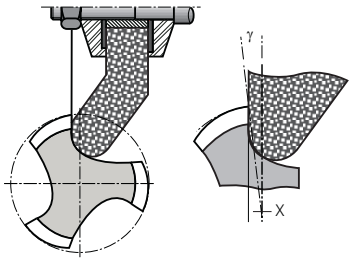
Picture 1



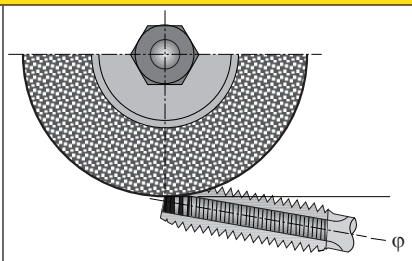
Picture 2



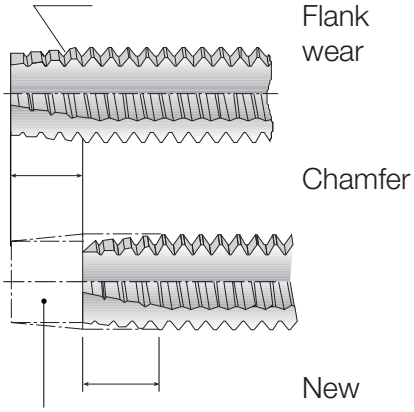
Picture 3



Picture 4



Picture 5



General Recommendations (Regrinding)

Maintenance
It is important to periodically regrind the worn tap.
This is to avoid permanent damage or even tool breakage.

The Grinding Wheels
The structure and grain of grinding wheels must be appropriate for the tap to be resharpened.

Taps for Cast Iron
Taps used on cast iron can rarely be resharpened, as it is very abrasive and tends to wear the flank in such a manner that it becomes grossly out of tolerance.

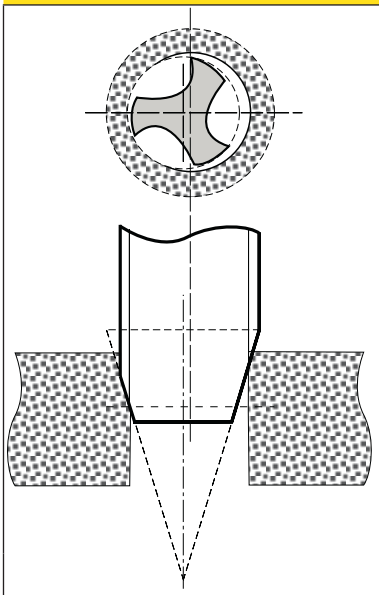
Taps for Aluminun
After regrinding it is advisable to remove the steel burrs with a wire brush.

Tap Inspection
It is important to inspect the tap after regrinding to ensure that all of the dimensions and angles have remained according to the specifications.

Controls (Tests)
Once the tap is resharpened, it is always best to test it to correctly obtain the same threads as when the tap was new.

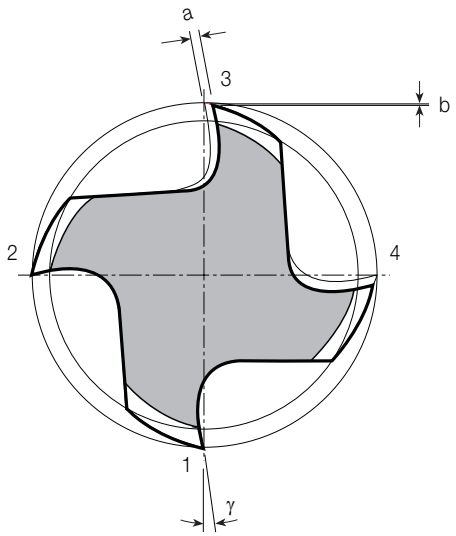
- The chamfer must be perfectly on axis in order to avoid the effects of picture 6.
  The cutters must have correct divisions.
- The results of resharpening with an incorrect division is shown in picture 7.
- The length and number of threads in chamfer must be precisely identical to those of the new tap.

Picture 6



Chamfer out of center

Picture 7



Incorrect division-cutters not concentric

Test Report Form

Company _____ **Department** _____

Address _____ **Phone** _____

_____

Tool

Description of the tap being used at present Thread diameter and pitch

_____

Make _____ Type _____

Class of tolerance

☐ Right-hand cutting ☐ Left-hand cutting _____

☐ Fluteless ☐ Right-hand spiral flutes _____ Degrees _____

☐ Straight flutes ☐ Left-hand spiral flutes _____ Degrees _____

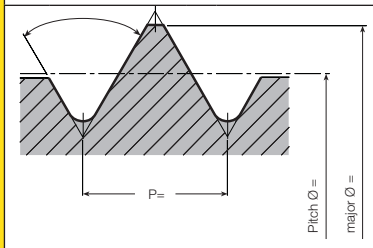
☐ Spiral point ☐ Length of chamfer _____ Mm _____

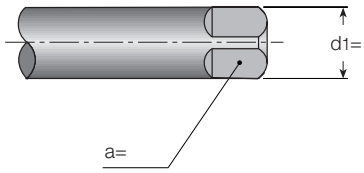
Additional information for special pitches or thread forms

Major diameter _____

Pitch diameter _____ Flank angle _____ Degrees _____

Minor diameter _____





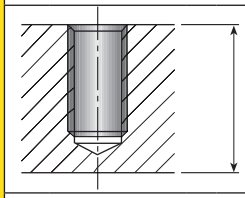
Hole

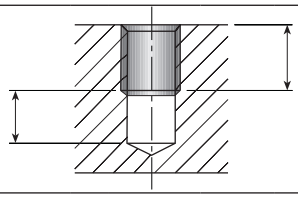
Tap drill diameter _____ Length of hole _____

☐ Through hold Depth of full thread _____

☐ Blind hole

Special requirements or unusual characteristics of the threaded product _____





Unusual characteristics of the threaded product or of the tapping method. _____

Ie. counterbore, tapping on an angle, etc. _____

Tapping Speed	_____ M/min _____ RPM
Lubricant	☐ None ☐ Emulsion _____ % ☐ Cutting oil ☐ Other _____ ☐ Under pressure ☐ Vaporization _____
Machine	Type _____ ☐ Horizontal Tapping ☐ Vertical Tapping
Driving	☐ Tap revolvers Number of spindles _____ ☐ Workpiece revolvers
Feed	☐ Without ☐ Power ☐ CNC _____ %
Toolholder	☐ Rigid ☐ Floating ☐ Safety clutch Make _____ Type _____
Material to be Tapped	Material no. or designation _____ Composition, if known _____ Tensile strength or hardness _____ N/mm^2 _____ HB _____ HRc Chip form ☐ Short ☐ Long ☐ Annealed steel ☐ Hardened steel ☐ Heat treated steel

More details: _____

_____

_____

_____

_____

_____

_____

Contact person _____

Date _____ Signature _____

Thread Standards

Cylindrical Threads	
UNC	Unified coarse thread series
UNF	Unified fine thread series
UNEF	Unified extra-fine thread series
UN	Constant pitch series - threads with constant pitch of T.P.I. 4, 6, 8, 12, 16, 20, 28, 32
UNS	Selected combinations - threads with special dia. - pitch combinations
UNJ	Unified threads with constant pitch with radius on minor diameter from 0.15011 pitch to 0.18042 pitch
UNJC	Unified coarse thread with radius on minor diameter from 0.15011 pitch to 0.18042 pitch
UNJEF	Unified extra-fine thread with radius on minor diameter from 0.15011 pitch to 0.18042 pitch
UNJF	Unified fine threads with radius on minor diameter from 0.15011 pitch to 0.18042 pitch

Pipe Cylindrical Threads	
NPS	Cylindrical threads for pipe
NPSC	American Standard for pipe coupling
NPSF	American Standard for internal threads on pipe, dryseal
NPSH	American Standard for cylindrical threads for pipes, joints and nipples
NPSI	American Standard for internal cylindrical threads on pipe (dryseal)
NPSL	American Standard for cylindrical threads on pipes for nuts
NPSM	American Standard for cylindrical threads on pipes for mechanical joints
NGO	American National pipe threads for gas exhaust
NGS	American National pipe threads for gas

Taper Pipe Threads	
ANPT	Taper pipe threads for Army, Navy and Airforce
F-PTE	Taper pipe fine threads (dryseal)

Trapezoidal and saw Tooth Threads	
ACME-C ACME	Self-centering threads
ACME-G ACME	Generical application
STUB-ACME	ACME Flat threads with reduced thread depth
60° STUB-ACME	ACME Flat threads with 60° flank angle
N BUTT	American National Saw tooth threads

British Standard	
BSW	Whitworth British Standard coarse pitch
BSF	Whitworth British Standard fine pitch
WHIT	Whitworth Standard special pitch
R	British Standard external threading for taper pipe (dryseal) (already BSP-Tr)
Rc	British Standard internal threading taper thread for pipe (BSP-Tr)
Rp	British Standard cylindrical thread for pipe (already BSP.Pl)
BA	British Standard Association threads
BSC	British Standard threads for bicycles
CEI	British Standard for bicycles

GTI / GTIN - Tapping Attachment

Compact tapping collet with tension and compression floating mechanism for ER32 collet chucks

A tapping collet for standard and rigid tapping operations.

The **GTIN** ER32 collet makes tap removal and replacement easy, quick and reliable.

Designed for stationary and rotating applications, the **GTIN** ER32 collets are economical and efficient due to the ability to use existing

ER32 collet chucks (with various shank sizes and types).

Applications:
The **GTIN** ER32 tapping collet is designed especially for CNC mill/turn centers, for regular and rigid tapping.

Advantages:
Quick tap change with a front clamping nut

- Compact design for minimal clearance between the turret and chuck
- Fits every type of stationary and rotating ER32 collet chuck
- Positive tap drive with internal square driver
- Compensates for machine feed and tap pitch variance, resulting in greater thread accuracy
- Floating mechanism compensates for misalignment between tap and workpiece
- High accuracy due to tension and compression mechanism
- Available for all tap shank standards (DIN, ISO, ANSI, JIS)
- Tapping range M1-M16 (#0 to 5/8")
- Saves setup time by quick tap changing without removing **GTIN** from the machine
- Optimal for machines which have limited space between the turret and workpiece

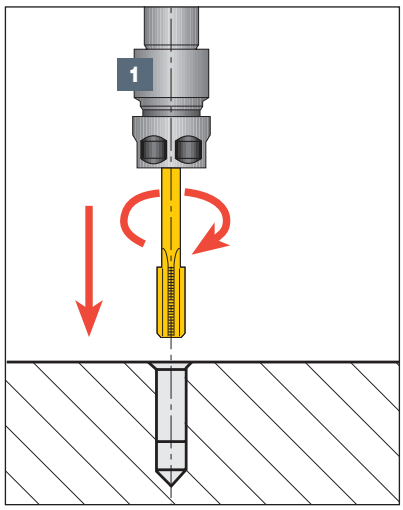




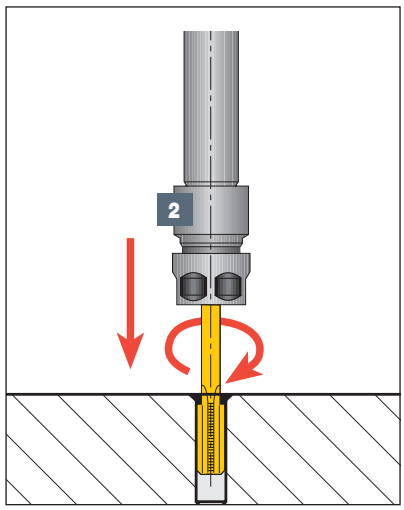
Operation

For through- and blind-hole tapping:

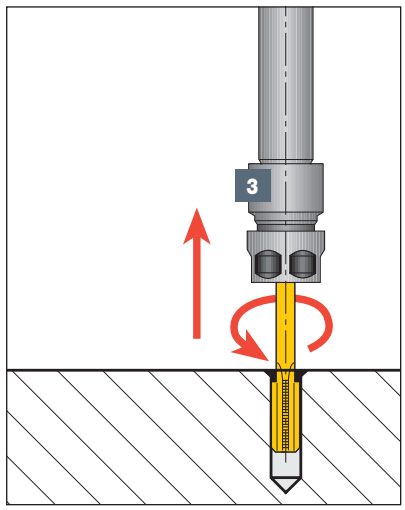
1 Enter feed rate according to thread pitch (or 1-2 % lower). Set spindle to starting point with 0.08 mm clearance.



2 Start spindle forward with right hand rotation until reaching desired depth.



3 Stop feed and rotation and reverse to starting point.



Description:

Short tap chucks for ER collets.

Application:

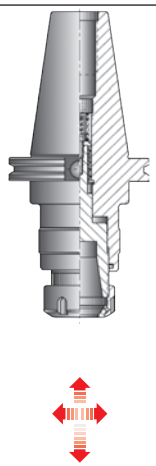
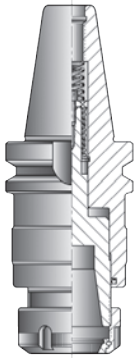
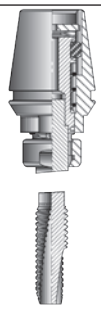
Axial float/tension/compression type for CNC milling machines and lathes with reversing motors and rigid tapping.

Features:

- Compensates for machine feed and tap pitch variance
- Floating mechanism compensates for misalignment between tap and workpiece
- Right- and left-hand tapping

Advantages:

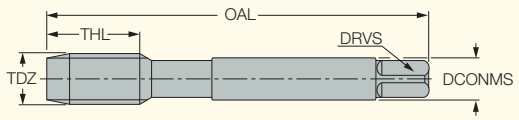
- Practical and efficient tap holding by the ER spring collet without using jaw drive
- Compact design for minimal clearance applications
- Heavy duty design for high torque drive ensures the same accuracy as the tap itself

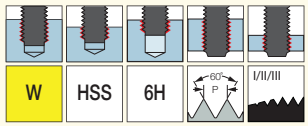
			
CAT ANSI B5.50	BT MAS-403	Straight Shank	**GTIN**

HSS TAPS

TPH M-W (HSS)

DIN 13 HSS Hand Tap Set for ISO Metric Coarse Threads





M E T R I C

Designation	Dimensions TDZ	TP[2]	OAL	THL	DCONMS	NOF[3]	DRVS[4]	Pre-hole	Standard	HS
TPH M-2X0.4-W	M2	0.400	36.00	8.0	2.80	3	2.10	1.60	DIN 352	●
TPH M-2.2X0.45-W	M2.2	0.450	36.00	9.0	2.80	3	2.10	1.75	DIN 352	●
TPH M-2.3X0.4-W [1]	M2.3	0.400	36.00	9.0	2.80	3	2.10	1.90	DIN 352	●
TPH M-2.5X0.45-W	M2.5	0.450	40.00	9.0	2.80	3	2.10	2.05	DIN 352	●
TPH M-2.6X0.45-W [1]	M2.6	0.450	40.00	9.0	2.80	3	2.10	2.10	DIN 352	●
TPH M-3X0.5-W	M3	0.500	40.00	11.0	3.50	3	2.70	2.50	DIN 352	●
TPH M-3.5X0.6-W	M3.5	0.600	45.00	13.0	4.00	3	3.00	2.90	DIN 352	●
TPH M-4X0.7-W	M4	0.700	45.00	13.0	4.50	3	3.40	3.30	DIN 352	●
TPH M-4.5X0.75-W	M4.5	0.750	50.00	16.0	6.00	3	4.90	3.70	DIN 352	●
TPH M-5X0.8-W	M5	0.800	52.00	16.0	6.00	3	4.90	4.20	DIN 352	●
TPH M-5.5X0.9-W	M5.5	0.900	56.00	18.0	6.00	3	4.90	4.60	DIN 352	●
TPH M-6X1.0-W	M6	1.000	56.00	18.0	6.00	3	4.90	5.00	DIN 352	●
TPH M-7X1.0-W	M7	1.000	56.00	18.0	6.00	3	4.90	6.00	DIN 352	●
TPH M-8X1.25-W	M8	1.250	63.00	20.0	6.00	3	4.90	6.80	DIN 352	●
TPH M-9X1.25-W	M9	1.250	63.00	20.0	7.00	4	5.50	7.80	DIN 352	●
TPH M-10X1.5-W	M10	1.500	70.00	22.0	7.00	4	5.50	8.50	DIN 352	●
TPH M-11X1.5-W	M11	1.500	70.00	22.0	8.00	4	6.20	9.50	DIN 352	●
TPH M-12X1.75-W	M12	1.750	80.00	24.0	9.00	4	7.00	10.20	DIN 352	●
TPH M-14X2.0-W	M14	2.000	80.00	26.0	11.00	4	9.00	12.00	DIN 352	●
TPH M-16X2.0-W	M16	2.000	80.00	27.0	12.00	4	9.00	14.00	DIN 352	●
TPH M-18X2.5-W	M18	2.500	95.00	30.0	14.00	4	11.00	15.50	DIN 352	●
TPH M-20X2.5-W	M20	2.500	95.00	32.0	16.00	4	12.00	17.50	DIN 352	●

I N C H

Designation	Dimensions TDZ	TP mm[1]	OAL	THL	DCONMS	NOF[2]	DRVS[3]	Pre-hole	Standard	HS
TPH M-2X0.4-W	M2	.400	1.417	.315	.110	3	.083	.06	DIN 352	●
TPH M-2.2X0.45-W	M2.2	.450	1.417	.354	.110	3	.083	.07	DIN 352	●
TPH M-2.5X0.45-W	M2.5	.450	1.575	.354	.110	3	.083	.08	DIN 352	●
TPH M-2.6X0.45-W	M2.6	.450	1.575	.354	.110	3	.083	.08	DIN 352	●
TPH M-3X0.5-W	M3	.500	1.575	.433	.138	3	.106	.10	DIN 352	●
TPH M-3.5X0.6-W	M3.5	.600	1.772	.512	.157	3	.118	.11	DIN 352	●
TPH M-4X0.7-W	M4	.700	1.772	.512	.177	3	.134	.13	DIN 352	●
TPH M-4.5X0.75-W	M4.5	.750	1.968	.630	.236	3	.193	.15	DIN 352	●
TPH M-5X0.8-W	M5	.800	2.047	.630	.236	3	.193	.17	DIN 352	●
TPH M-5.5X0.9-W	M5.5	.900	2.205	.709	.236	3	.193	.18	DIN 352	●
TPH M-6X1.0-W	M6	1.000	2.205	.709	.236	3	.193	.20	DIN 352	●
TPH M-7X1.0-W	M7	1.000	2.205	.709	.236	3	.193	.24	DIN 352	●
TPH M-8X1.25-W	M8	1.250	2.480	.787	.236	3	.193	.27	DIN 352	●
TPH M-9X1.25-W	M9	1.250	2.480	.787	.276	4	.217	.31	DIN 352	●
TPH M-10X1.5-W	M10	1.500	2.756	.866	.276	4	.217	.33	DIN 352	●
TPH M-11X1.5-W	M11	1.500	2.756	.866	.315	4	.244	.37	DIN 352	●
TPH M-12X1.75-W	M12	1.750	3.150	.945	.354	4	.276	.40	DIN 352	●
TPH M-14X2.0-W	M14	2.000	3.150	1.024	.433	4	.354	.47	DIN 352	●
TPH M-16X2.0-W	M16	2.000	3.150	1.063	.472	4	.354	.55	DIN 352	●
TPH M-18X2.5-W	M18	2.500	3.740	1.181	.551	4	.433	.61	DIN 352	●
TPH M-20X2.5-W	M20	2.500	3.740	1.260	.630	4	.472	.69	DIN 352	●

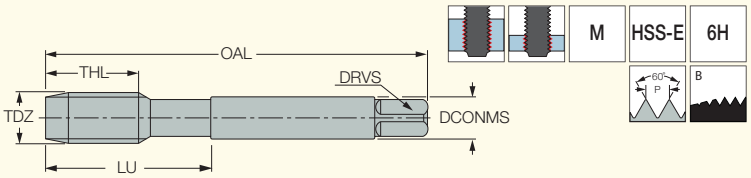
• NOTE: Each set contains 2 or 3 taps • For user guide and cutting conditions, see pages 435-455

[1] DIN profile
[2] Thread pitch
[3] Number of flutes
[4] Torque key size

ONETAP

TPG M (HSS)

DIN 13 HSS Machine Taps for ISO Metric Coarse Threads for a Wide Range of Materials



M E T R I C

Designation	Dimensions TDZ	TP[1]	OAL	THL	LU	DCONMS	NOF[2]	DRVS[3]	Pre-hole	Standard	Tough ↔ Hard HE	HEST	HETI
TPG M-2X0.4-M	M2	0.400	45.00	8.0	13.0	2.80	3	2.10	1.60	DIN 371	●	●	●
TPG M-2.2X0.45-M	M2.2	0.450	45.00	8.0	13.0	2.80	3	2.10	1.75	DIN 371	●	●	●
TPG M-2.3X0.4-M	M2.3	0.400	45.00	8.0	13.0	2.80	3	2.10	1.90	DIN 371	●	●	●
TPG M-2.5X0.45-M	M2.5	0.450	50.00	9.0	15.0	2.80	3	2.10	2.05	DIN 371	●	●	●
TPG M-2.6X0.45-M	M2.6	0.450	50.00	9.0	15.0	2.80	3	2.10	2.10	DIN 371	●	●	●
TPG M-3X0.5-M	M3	0.500	56.00	11.0	18.0	3.50	3	2.70	2.50	DIN 371	●	●	●
TPG M-3.5X0.6-M	M3.5	0.600	56.00	12.0	20.0	4.00	3	3.00	2.90	DIN 371	●	●	●
TPG M-4X0.7-M	M4	0.700	63.00	13.0	21.0	4.50	3	3.40	3.30	DIN 371	●	●	●
TPG M-4.5X0.75-M	M4.5	0.750	70.00	14.0	25.0	6.00	3	4.90	3.70	DIN 371	●	●	●
TPG M-5X0.8-M	M5	0.800	70.00	15.0	25.0	6.00	3	4.90	4.20	DIN 371	●	●	●
TPG M-6X1.0-M	M6	1.000	80.00	17.0	30.0	6.00	3	4.90	5.00	DIN 371	●	●	●
TPG M-7X1.0-M	M7	1.000	80.00	17.0	30.0	7.00	3	5.50	6.00	DIN 371	●	●	●
TPG M-8X1.25-M	M8	1.250	90.00	20.0	35.0	8.00	3	6.20	6.80	DIN 371	●	●	●
TPG M-9X1.25-M	M9	1.250	90.00	20.0	35.0	9.00	3	7.00	7.80	DIN 371	●	●	●
TPG M-10X1.5-M	M10	1.500	100.00	22.0	39.0	10.00	3	8.00	8.50	DIN 371	●	●	●
TPG M-11X1.5-M	M11	1.500	100.00	22.0	-	8.00	3	6.20	9.50	DIN 376	●	●	●
TPG M-12X1.75-M	M12	1.750	110.00	24.0	-	9.00	3	7.00	10.20	DIN 376	●	●	●
TPG M-14X2.0-M	M14	2.000	110.00	26.0	-	11.00	3	9.00	12.00	DIN 376	●	●	●
TPG M-16X2.0-M	M16	2.000	110.00	27.0	-	12.00	3	9.00	14.00	DIN 376	●	●	●
TPG M-18X2.5-M	M18	2.500	125.00	30.0	-	14.00	4	11.00	15.50	DIN 376	●	●	●
TPG M-20X2.5-M	M20	2.500	140.00	32.0	-	16.00	4	12.00	17.50	DIN 376	●	●	●
TPG M-22X2.5-M	M22	2.500	140.00	32.0	-	18.00	4	14.50	19.50	DIN 376	●	●	●
TPG M-24X3.0-M	M24	3.000	160.00	34.0	-	18.00	4	14.50	21.00	DIN 376	●	●	●
TPG M-27X3.0-M	M27	3.000	160.00	36.0	-	20.00	4	16.00	24.00	DIN 376	●	●	●
TPG M-30X3.5-M	M30	3.500	180.00	40.0	-	22.00	4	18.00	26.50	DIN 376	●	●	●

I N C H

Designation	Dimensions TDZ	TP mm[1]	OAL	THL	LU	DCONMS	NOF[2]	DRVS[3]	Pre-hole	Standard	Tough ↔ Hard HE	HEST	HETI
TPG M-2X0.4-M	M2	.400	1.772	.315	.51	.110	3	.083	.06	DIN 371	●	●	●
TPG M-2.2X0.45-M	M2.2	.450	1.772	.315	.51	.110	3	.083	.07	DIN 371	●	●	●
TPG M-2.3X0.4-M	M2.3	.400	1.772	.315	.51	.110	3	.083	.07	DIN 371	●	●	●
TPG M-2.5X0.45-M	M2.5	.450	1.968	.354	.59	.110	3	.083	.08	DIN 371	●	●	●
TPG M-2.6X0.45-M	M2.6	.450	1.968	.354	.59	.110	3	.083	.08	DIN 371	●	●	●
TPG M-3X0.5-M	M3	.500	2.205	.433	.71	.138	3	.106	.10	DIN 371	●	●	●
TPG M-3.5X0.6-M	M3.5	.600	2.205	.472	.79	.157	3	.118	.11	DIN 371	●	●	●
TPG M-4X0.7-M	M4	.700	2.480	.512	.83	.177	3	.134	.13	DIN 371	●	●	●
TPG M-4.5X0.75-M	M4.5	.750	2.756	.551	.98	.236	3	.193	.15	DIN 371	●	●	●
TPG M-5X0.8-M	M5	.800	2.756	.591	.98	.236	3	.193	.17	DIN 371	●	●	●
TPG M-6X1.0-M	M6	1.000	3.150	.669	1.18	.236	3	.193	.20	DIN 371	●	●	●
TPG M-7X1.0-M	M7	1.000	3.150	.669	1.18	.276	3	.217	.24	DIN 371	●	●	●
TPG M-8X1.25-M	M8	1.250	3.543	.787	1.38	.315	3	.244	.27	DIN 371	●	●	●
TPG M-9X1.25-M	M9	1.250	3.543	.787	1.38	.354	3	.276	.31	DIN 371	●	●	●
TPG M-10X1.5-M	M10	1.500	3.937	.866	1.54	.394	3	.315	.33	DIN 371	●	●	●
TPG M-11X1.5-M	M11	1.500	3.937	.866	-	.315	3	.244	.37	DIN 376	●	●	●
TPG M-12X1.75-M	M12	1.750	4.331	.945	-	.354	3	.276	.40	DIN 376	●	●	●
TPG M-14X2.0-M	M14	2.000	4.331	1.024	-	.433	3	.354	.47	DIN 376	●	●	●
TPG M-16X2.0-M	M16	2.000	4.331	1.063	-	.472	3	.354	.55	DIN 376	●	●	●
TPG M-18X2.5-M	M18	2.500	4.921	1.181	-	.551	4	.433	.61	DIN 376	●	●	●
TPG M-20X2.5-M	M20	2.500	5.512	1.260	-	.630	4	.472	.69	DIN 376	●	●	●
TPG M-22X2.5-M	M22	2.500	5.512	1.260	-	.709	4	.571	.77	DIN 376	●	●	●
TPG M-24X3.0-M	M24	3.000	6.299	1.339	-	.709	4	.571	.83	DIN 376	●	●	●
TPG M-27X3.0-M	M27	3.000	6.299	1.417	-	.787	4	.630	.94	DIN 376	●	●	●
TPG M-30X3.5-M	M30	3.500	7.087	1.575	-	.866	4	.709	1.04	DIN 376	●	●	●

• For user guide and cutting conditions, see pages 435-455

(1) Thread pitch

(2) Number of flutes

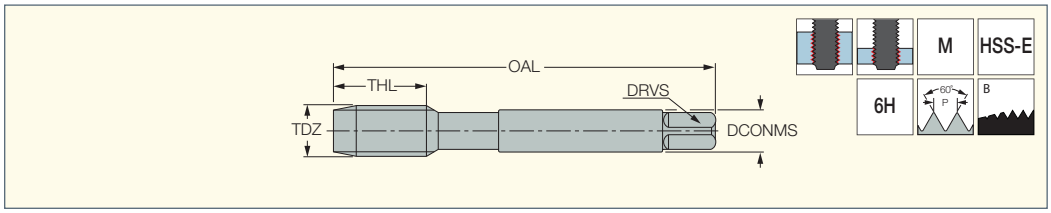
(3) Torque key size

Member IMC Group

ONETAP

TPG MF (HSS)

DIN 13 HSS Machine Taps for ISO Metric Fine Threads for a Wide Range of Materials



M E T R I C												
	Dimensions									Tough ↔ Hard		
Designation	TDZ	TP[1]	OAL	THL	DCONMS	NOF[2]	DRVS[3]	Pre-hole	Standard	HE	HEST	HETI
TPG MF-4X0.5-M	M4	0.500	63.00	10.0	2.80	3	2.10	3.50	DIN 374	●	●	●
TPG MF-5X0.5-M	M5	0.500	70.00	11.0	3.50	3	2.70	4.50	DIN 374	●	●	●
TPG MF-6X0.75-M	M6	0.750	80.00	13.0	4.50	3	3.40	5.20	DIN 374	●	●	●
TPG MF-6X0.5-M	M6	0.500	80.00	13.0	4.50	3	3.40	5.50	DIN 374	●	●	●
TPG MF-7X0.75-M	M7	0.750	80.00	14.0	5.50	3	4.30	6.20	DIN 374	●	●	●
TPG MF-8X1.0-M	M8	1.000	90.00	17.0	6.00	3	4.90	7.00	DIN 374	●	●	●
TPG MF-8X0.75-M	M8	0.750	80.00	14.0	6.00	3	4.90	7.20	DIN 374	●	●	●
TPG MF-10X1.25-M	M10	1.250	100.00	22.0	7.00	3	5.50	8.80	DIN 374	●	●	●
TPG MF-10X1.0-M	M10	1.000	90.00	18.0	7.00	3	5.50	9.00	DIN 374	●	●	●
TPG MF-10X0.75-M	M10	0.750	90.00	18.0	7.00	3	5.50	9.20	DIN 374	●	●	●
TPG MF-12X1.5-M	M12	1.500	100.00	22.0	9.00	3	7.00	10.50	DIN 374	●	●	●
TPG MF-12X1.25-M	M12	1.250	100.00	22.0	9.00	3	7.00	10.80	DIN 374	●	●	●
TPG MF-12X1.0-M	M12	1.000	100.00	18.0	9.00	3	7.00	11.00	DIN 374	●	●	●
TPG MF-14X1.5-M	M14	1.500	100.00	22.0	11.00	3	9.00	12.50	DIN 374	●	●	●
TPG MF-14X1.25-M	M14	1.250	100.00	22.0	11.00	3	9.00	12.80	DIN 374	●	●	●
TPG MF-14X1.0-M	M14	1.000	100.00	18.0	11.00	3	9.00	13.00	DIN 374	●	●	●
TPG MF-16X1.5-M	M16	1.500	100.00	22.0	12.00	3	9.00	14.50	DIN 374	●	●	●
TPG MF-16X1.0-M	M16	1.000	100.00	18.0	12.00	3	9.00	15.00	DIN 374	●	●	●
TPG MF-18X1.5-M	M18	1.500	110.00	25.0	14.00	4	11.00	16.50	DIN 374	●	●	●
TPG MF-18X1.0-M	M18	1.000	110.00	20.0	14.00	4	11.00	17.00	DIN 374	●	●	●
TPG MF-20X1.5-M	M20	1.500	125.00	25.0	16.00	4	12.00	18.50	DIN 374	●	●	
TPG MF-20X1.0-M	M20	1.000	125.00	20.0	16.00	4	12.00	19.00	DIN 374	●	●	●
TPG MF-22X1.5-M	M22	1.500	125.00	25.0	18.00	4	14.50	20.50	DIN 374	●	●	●
TPG MF-22X1.0-M	M22	1.000	125.00	20.0	18.00	4	14.50	21.00	DIN 374	●	●	●
TPG MF-24X2.0-M	M24	2.000	140.00	27.0	18.00	4	14.50	22.00	DIN 374	●	●	●
TPG MF-24X1.5-M	M24	1.500	140.00	27.0	18.00	4	14.50	22.50	DIN 374	●	●	●
TPG MF-26X1.5-M	M26	1.500	140.00	28.0	18.00	4	14.50	24.50	DIN 374	●	●	●
TPG MF-27X2.0-M	M27	2.000	140.00	28.0	20.00	4	16.00	25.00	DIN 374	●	●	●
TPG MF-27X1.5-M	M27	1.500	140.00	28.0	20.00	4	16.00	25.50	DIN 374	●	●	●
TPG MF-28X1.5-M	M28	1.500	140.00	28.0	20.00	4	16.00	26.50	DIN 374	●	●	●
TPG MF-30X2.0-M	M30	2.000	150.00	30.0	22.00	4	18.00	28.00	DIN 374	●	●	●
TPG MF-30X1.5-M	M30	1.500	150.00	30.0	22.00	4	18.00	28.50	DIN 374	●	●	●

• For user guide and cutting conditions, see pages 435-455

(1) Thread pitch

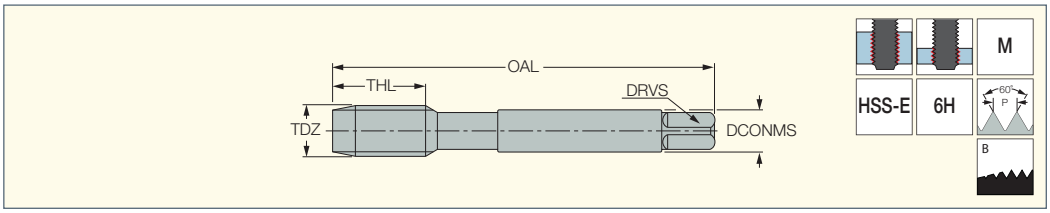
(2) Number of flutes

(3) Torque key size

ONETAP

TPG MF (HSS)

DIN 13 HSS Machine Taps for ISO Metric Fine Threads for a Wide Range of Materials



I N C H												
	Dimensions									Tough ↔ Hard		
Designation	TDZ	TP mm[1]	OAL	THL	DCONMS	NOF[2]	DRVS[3]	Pre-hole	Standard	HE	HEST	HETI
TPG MF-4X0.5-M	M4	.500	2.480	.394	.110	3	.083	.14	DIN 374	●	●	●
TPG MF-5X0.5-M	M5	.500	2.756	.433	.138	3	.106	.18	DIN 374	●	●	●
TPG MF-6X0.75-M	M6	.750	3.150	.512	.177	3	.134	.20	DIN 374	●	●	●
TPG MF-6X0.5-M	M6	.500	3.150	.512	.177	3	.134	.22	DIN 374	●	●	●
TPG MF-7X0.75-M	M7	.750	3.150	.551	.217	3	.169	.24	DIN 374	●	●	●
TPG MF-8X1.0-M	M8	1.000	3.543	.669	.236	3	.193	.28	DIN 374	●	●	●
TPG MF-8X0.75-M	M8	.750	3.150	.551	.236	3	.193	.28	DIN 374	●	●	●
TPG MF-10X1.25-M	M10	1.250	3.937	.866	.276	3	.217	.35	DIN 374	●	●	●
TPG MF-10X1.0-M	M10	1.000	3.543	.709	.276	3	.217	.35	DIN 374	●	●	●
TPG MF-10X0.75-M	M10	.750	3.543	.709	.276	3	.217	.36	DIN 374	●	●	●
TPG MF-12X1.5-M	M12	1.500	3.937	.866	.354	3	.276	.41	DIN 374	●	●	●
TPG MF-12X1.25-M	M12	1.250	3.937	.866	.354	3	.276	.43	DIN 374	●	●	●
TPG MF-12X1.0-M	M12	1.000	3.937	.709	.354	3	.276	.43	DIN 374	●	●	●
TPG MF-14X1.5-M	M14	1.500	3.937	.866	.433	3	.354	.49	DIN 374	●	●	●
TPG MF-14X1.25-M	M14	1.250	3.937	.866	.433	3	.354	.50	DIN 374	●	●	●
TPG MF-14X1.0-M	M14	1.000	3.937	.709	.433	3	.354	.51	DIN 374	●	●	●
TPG MF-16X1.5-M	M16	1.500	3.937	.866	.472	3	.354	.57	DIN 374	●		●
TPG MF-16X1.0-M	M16	1.000	3.937	.709	.472	3	.354	.59	DIN 374	●	●	●
TPG MF-18X1.5-M	M18	1.500	4.331	.984	.551	4	.433	.65	DIN 374	●	●	●
TPG MF-18X1.0-M	M18	1.000	4.331	.787	.551	4	.433	.67	DIN 374	●	●	●
TPG MF-20X1.5-M	M20	1.500	4.921	.984	.630	4	.472	.73	DIN 374	●	●	
TPG MF-20X1.0-M	M20	1.000	4.921	.787	.630	4	.472	.75	DIN 374	●	●	●
TPG MF-22X1.5-M	M22	1.500	4.921	.984	.709	4	.571	.81	DIN 374	●	●	●
TPG MF-22X1.0-M	M22	1.000	4.921	.787	.709	4	.571	.83	DIN 374	●	●	●
TPG MF-24X2.0-M	M24	2.000	5.512	1.063	.709	4	.571	.87	DIN 374	●	●	●
TPG MF-24X1.5-M	M24	1.500	5.512	1.063	.709	4	.571	.89	DIN 374	●	●	●
TPG MF-26X1.5-M	M26	1.500	5.512	1.102	.709	4	.571	.96	DIN 374	●	●	●
TPG MF-27X2.0-M	M27	2.000	5.512	1.102	.787	4	.630	.98	DIN 374	●	●	●
TPG MF-27X1.5-M	M27	1.500	5.512	1.102	.787	4	.630	1.00	DIN 374	●	●	●
TPG MF-28X1.5-M	M28	1.500	5.512	1.102	.787	4	.630	1.04	DIN 374	●	●	●
TPG MF-30X2.0-M	M30	2.000	5.906	1.181	.866	4	.709	1.10	DIN 374	●	●	●
TPG MF-30X1.5-M	M30	1.500	5.906	1.181	.866	4	.709	1.12	DIN 374	●	●	●

• For user guide and cutting conditions, see pages 435-455

(1) Pitch in mm

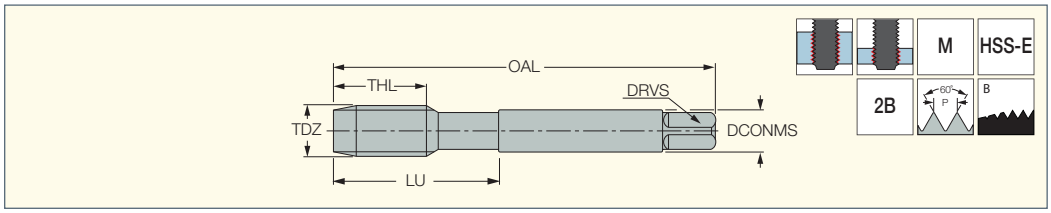
(2) Number of flutes

(3) Torque key size

ONETAP

TPG UNC (HSS)

HSS Machine Taps for Unified Coarse Threads for a Wide Range of Materials



M E T R I C

Designation	Dimensions										Tough ↔ Hard		
	TDZ	TPI(1)	OAL	THL	LU	DCONMS	NOF(2)	DRVS(3)	Pre-hole	Standard	HE	HEST	HETI
TPG UNC-#4-40-M	#4	40.0	56.00	11.0	18.0	3.50	3	2.70	2.30	DIN 371	●	●	●
TPG UNC-#5-40-M	#5	40.0	56.00	11.0	18.0	3.50	3	2.70	2.60	DIN 371	●	●	●
TPG UNC-#6-32-M	#6	32.0	56.00	12.0	20.0	4.00	3	3.00	2.85	DIN 371	●	●	●
TPG UNC-#8-32-M	#8	32.0	63.00	13.0	21.0	4.50	3	3.40	3.50	DIN 371	●	●	●
TPG UNC-#10-24-M	#10	24.0	70.00	15.0	25.0	6.00	3	4.90	3.90	DIN 371	●	●	●
TPG UNC-#12-24-M	#12	24.0	80.00	16.0	30.0	6.00	3	4.90	4.50	DIN 371	●	●	●
TPG UNC-1/4-20-M	1/4"	20.0	80.00	17.0	30.0	7.00	3	5.50	5.20	DIN 371	●	●	●
TPG UNC-5/16-18-M	5/16"	18.0	90.00	20.0	35.0	8.00	3	6.20	6.60	DIN 371	●	●	●
TPG UNC-3/8-16-M	3/8"	16.0	100.00	22.0	39.0	9.00	3	7.00	8.00	DIN 371	●	●	●
TPG UNC-7/16-14-M	7/16"	14.0	100.00	22.0	-	8.00	3	6.20	9.40	DIN 376	●	●	●
TPG UNC-1/2-13-M	1/2"	13.0	110.00	25.0	-	9.00	3	7.00	10.75	DIN 376	●	●	●
TPG UNC-9/16-12-M	9/16"	12.0	110.00	26.0	-	11.00	3	9.00	12.25	DIN 376	●	●	●
TPG UNC-5/8-11-M	5/8"	11.0	110.00	27.0	-	12.00	3	9.00	13.50	DIN 376	●	●	●
TPG UNC-3/4-10-M	3/4"	10.0	125.00	30.0	-	14.00	4	11.00	16.50	DIN 376	●	●	●
TPG UNC-7/8-9-M	7/8"	9.0	140.00	32.0	-	18.00	4	14.50	19.50	DIN 376	●	●	●
TPG UNC-1-8-M	1"	8.0	160.00	36.0	-	20.00	4	16.00	22.25	DIN 376	●	●	●

I N C H

Designation	Dimensions										Tough ↔ Hard		
	TDZ	TPI(1)	OAL	THL	LU	DCONMS	NOF(2)	DRVS(3)	Pre-hole	Standard	HE	HEST	HETI
TPG UNC-#4-40-M	#4	40.0	2.205	.433	.71	.138	3	.106	.09	DIN 371	●	●	●
TPG UNC-#5-40-M	#5	40.0	2.205	.433	.71	.138	3	.106	.10	DIN 371	●	●	●
TPG UNC-#6-32-M	#6	32.0	2.205	.472	.79	.157	3	.118	.11	DIN 371	●	●	●
TPG UNC-#8-32-M	#8	32.0	2.480	.512	.83	.177	3	.134	.14	DIN 371	●	●	●
TPG UNC-#10-24-M	#10	24.0	2.756	.591	.98	.236	3	.193	.15	DIN 371	●	●	●
TPG UNC-#12-24-M	#12	24.0	3.150	.630	1.18	.236	3	.193	.18	DIN 371	●	●	●
TPG UNC-1/4-20-M	1/4"	20.0	3.150	.669	1.18	.276	3	.217	.20	DIN 371	●	●	●
TPG UNC-5/16-18-M	5/16"	18.0	3.543	.787	1.38	.315	3	.244	.26	DIN 371	●	●	●
TPG UNC-3/8-16-M	3/8"	16.0	3.937	.866	1.54	.354	3	.276	.31	DIN 371	●	●	●
TPG UNC-7/16-14-M	7/16"	14.0	3.937	.866	-	.315	3	.244	.37	DIN 376	●	●	●
TPG UNC-1/2-13-M	1/2"	13.0	4.331	.984	-	.354	3	.276	.42	DIN 376	●	●	●
TPG UNC-9/16-12-M	9/16"	12.0	4.331	1.024	-	.433	3	.354	.48	DIN 376	●	●	●
TPG UNC-5/8-11-M	5/8"	11.0	4.331	1.063	-	.472	3	.354	.53	DIN 376	●	●	●
TPG UNC-3/4-10-M	3/4"	10.0	4.921	1.181	-	.551	4	.433	.65	DIN 376	●	●	●
TPG UNC-7/8-9-M	7/8"	9.0	5.512	1.260	-	.709	4	.571	.77	DIN 376	●	●	●
TPG UNC-1-8-M	1"	8.0	6.299	1.417	-	.787	4	.630	.88	DIN 376	●	●	●

• For user guide and cutting conditions, see pages 435-455

(1) Threads per inch

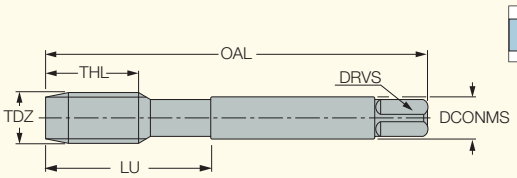
(2) Number of flutes

(3) Torque key size

ONETAP

TPG UNF (HSS)

HSS Machine Taps for Unified Fine Threads for a Wide Range of Materials



M E T R I C

Designation	Dimensions TDZ	TPI(1)	OAL	THL	LU	DCONMS	NOF(2)	DRVS(3)	Pre-hole	Standard	Tough ↔ Hard HE	HEST	HETI
TPG UNF-#4-48-M	#4	48.0	56.00	11.0	18.0	3.50	3	2.70	2.40	DIN 371	●	●	●
TPG UNF-#5-44-M	#5	44.0	56.00	11.0	18.0	3.50	3	2.70	2.70	DIN 371	●	●	●
TPG UNF-#6-40-M	#6	40.0	56.00	12.0	20.0	4.00	3	3.00	3.00	DIN 371	●	●	●
TPG UNF-#8-36-M	#8	36.0	63.00	13.0	21.0	4.50	3	3.40	3.50	DIN 371	●	●	●
TPG UNF-#10-32-M	#10	32.0	70.00	15.0	25.0	6.00	3	4.90	4.10	DIN 371	●	●	●
TPG UNF-#12-28-M	#12	28.0	80.00	16.0	30.0	6.00	3	4.90	4.70	DIN 371	●	●	●
TPG UNF-1/4-28-M	1/4"	28.0	80.00	17.0	30.0	7.00	3	5.50	5.50	DIN 371	●	●	●
TPG UNF-5/16-24-M	5/16"	24.0	90.00	17.0	35.0	8.00	3	6.20	6.90	DIN 371	●	●	●
TPG UNF-3/8-24-M	3/8"	24.0	100.00	18.0	39.0	9.00	3	7.00	8.50	DIN 371	●	●	●
TPG UNF-7/16-20-M	7/16"	20.0	100.00	22.0	-	8.00	3	6.20	9.90	DIN 374	●	●	●
TPG UNF-1/2-20-M	1/2"	20.0	100.00	22.0	-	9.00	3	7.00	11.50	DIN 374	●	●	●
TPG UNF-9/16-18-M	9/16"	18.0	100.00	22.0	-	11.00	3	9.00	12.90	DIN 374	●	●	●
TPG UNF-5/8-18-M	5/8"	18.0	100.00	22.0	-	12.00	3	9.00	14.50	DIN 374	●	●	●
TPG UNF-3/4-16-M	3/4"	16.0	110.00	25.0	-	14.00	4	11.00	17.50	DIN 374	●	●	●
TPG UNF-7/8-14-M	7/8"	14.0	125.00	26.0	-	18.00	4	14.50	20.50	DIN 374	●	●	●
TPG UNF-1-12-M	1"	12.0	140.00	28.0	-	20.00	4	16.00	23.25	DIN 374	●	●	●

I N C H

Designation	Dimensions TDZ	TPI(1)	OAL	THL	LU	DCONMS	NOF(2)	DRVS(3)	Pre-hole	Standard	Tough ↔ Hard HE	HEST	HETI
TPG UNF-#4-48-M	#4	48.0	2.205	.433	.71	.138	3	.106	.09	DIN 371	●	●	●
TPG UNF-#5-44-M	#5	44.0	2.205	.433	.71	.138	3	.106	.11	DIN 371	●	●	●
TPG UNF-#6-40-M	#6	40.0	2.205	.472	.79	.157	3	.118	.12	DIN 371	●	●	●
TPG UNF-#8-36-M	#8	36.0	2.480	.512	.83	.177	3	.134	.14	DIN 371	●	●	●
TPG UNF-#10-32-M	#10	32.0	2.756	.591	.98	.236	3	.193	.16	DIN 371	●	●	●
TPG UNF-#12-28-M	#12	28.0	3.150	.630	1.18	.236	3	.193	.19	DIN 371	●	●	●
TPG UNF-1/4-28-M	1/4"	28.0	3.150	.669	1.18	.276	3	.217	.22	DIN 371	●	●	●
TPG UNF-5/16-24-M	5/16"	24.0	3.543	.669	1.38	.315	3	.244	.27	DIN 371	●	●	●
TPG UNF-3/8-24-M	3/8"	24.0	3.937	.709	1.54	.354	3	.276	.33	DIN 371	●	●	●
TPG UNF-7/16-20-M	7/16"	20.0	3.937	.866	-	.315	3	.244	.39	DIN 374	●	●	●
TPG UNF-1/2-20-M	1/2"	20.0	3.937	.866	-	.354	3	.276	.45	DIN 374	●	●	●
TPG UNF-9/16-18-M	9/16"	18.0	3.937	.866	-	.433	3	.354	.51	DIN 374	●	●	●
TPG UNF-5/8-18-M	5/8"	18.0	3.937	.866	-	.472	3	.354	.57	DIN 374	●	●	●
TPG UNF-3/4-16-M	3/4"	16.0	4.331	.984	-	.551	4	.433	.69	DIN 374	●	●	●
TPG UNF-7/8-14-M	7/8"	14.0	4.921	1.024	-	.709	4	.571	.81	DIN 374	●	●	●
TPG UNF-1-12-M	1"	12.0	5.512	1.102	-	.787	4	.630	.92	DIN 374	●	●	●

• For user guide and cutting conditions, see pages 435-455

(1) Threads per inch

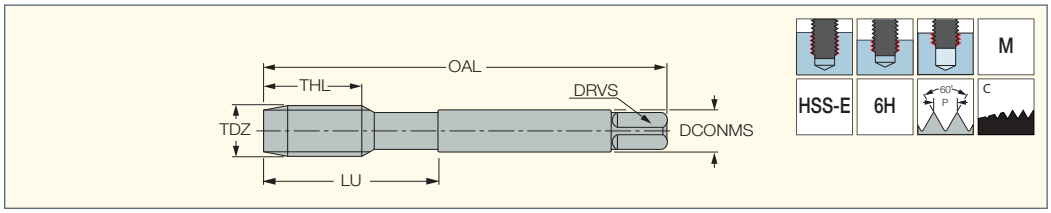
(2) Number of flutes

(3) Torque key size

ONETAP

TPS M (HSS)

DIN 13 HSS Spiral Flute Machine Taps for Metric Coarse Threads for a Wide Range of Materials



M E T R I C

Designation	Dimensions											Tough ↔ Hard		
	TDZ	TP[1]	OAL	THL	LU	DCONMS	NOF[2]	DRVS[3]	Pre-hole	Standard		HE	HEST	HETI
TPS M-2X0.4-M	M2	0.400	45.00	8.0	13.0	2.80	3	2.10	1.60	DIN 371	N	●	●	●
TPS M-2.2X0.45-M	M2.2	0.450	45.00	8.0	13.0	2.80	3	2.10	1.75	DIN 371	N	●	●	●
TPS M-2.3X0.4-M	M2.3	0.400	45.00	8.0	13.0	2.80	3	2.10	1.90	DIN 371	N	●	●	●
TPS M-2.5X0.45-M	M2.5	0.450	50.00	9.0	15.0	2.80	3	2.10	2.05	DIN 371	N	●	●	●
TPS M-2.6X0.45-M	M2.6	0.450	50.00	9.0	15.0	2.80	3	2.10	2.10	DIN 371	N	●	●	●
TPS M-3X0.5-M	M3	0.500	56.00	6.0	18.0	3.50	3	2.70	2.50	DIN 371	N	●	●	●
TPS M-3.5X0.6-M	M3.5	0.600	56.00	7.0	20.0	4.00	3	3.00	2.90	DIN 371	N	●	●	●
TPS M-4X0.7-M	M4	0.700	63.00	7.0	21.0	4.50	3	3.40	3.30	DIN 371	N	●	●	●
TPS M-4.5X0.75-M	M4.5	0.750	70.00	8.0	25.0	6.00	3	4.90	3.70	DIN 371	N	●	●	●
TPS M-5X0.8-M	M5	0.800	70.00	8.0	25.0	6.00	3	4.90	4.20	DIN 371	N	●	●	●
TPS M-6X1.0-M	M6	1.000	80.00	10.0	30.0	6.00	3	4.90	5.00	DIN 371	N	●	●	●
TPS M-7X1.0-M	M7	1.000	80.00	10.0	30.0	7.00	3	5.50	6.00	DIN 371	N	●	●	●
TPS M-8X1.25-M	M8	1.250	90.00	13.0	35.0	8.00	3	6.20	6.80	DIN 371	N	●	●	●
TPS M-9X1.25-M	M9	1.250	90.00	13.0	35.0	9.00	3	7.00	7.80	DIN 371	N	●	●	●
TPS M-10X1.5-M	M10	1.500	100.00	15.0	39.0	10.00	3	8.00	8.50	DIN 371	N	●	●	●
TPS M-11X1.5-M	M11	1.500	100.00	17.0	-	8.00	3	6.20	9.50	DIN 376	N	●	●	●
TPS M-12X1.75-M	M12	1.750	110.00	18.0	-	9.00	3	7.00	10.20	DIN 376	N	●	●	●
TPS M-14X2.0-M	M14	2.000	110.00	20.0	-	11.00	3	9.00	12.00	DIN 376	N	●	●	●
TPS M-16X2.0-M	M16	2.000	110.00	20.0	-	12.00	3	9.00	14.00	DIN 376	N	●	●	●
TPS M-16X2.0-M-B	M16	2.000	110.00	20.0	-	12.00	3	9.00	14.00	DIN 376	Y	●		
TPS M-18X2.5-M	M18	2.500	125.00	25.0	-	14.00	4	11.00	15.50	DIN 376	N	●	●	●
TPS M-18X2.5-M-B	M18	2.500	125.00	25.0	-	14.00	4	11.00	15.50	DIN 376	Y	●		
TPS M-20X2.5-M	M20	2.500	140.00	25.0	-	16.00	4	12.00	17.50	DIN 376	N	●	●	●
TPS M-20X2.5-M-B	M20	2.500	140.00	25.0	-	16.00	4	12.00	17.50	DIN 376	Y	●		
TPS M-22X2.5-M	M22	2.500	140.00	25.0	-	18.00	4	14.50	19.50	DIN 376	N	●	●	●
TPS M-22X2.5-M-B	M22	2.500	140.00	25.0	-	18.00	4	14.50	19.50	DIN 376	Y	●		
TPS M-24X3.0-M	M24	3.000	160.00	30.0	-	18.00	4	14.50	21.00	DIN 376	N	●	●	●
TPS M-24X3.0-M-B	M24	3.000	160.00	30.0	-	18.00	4	14.50	21.00	DIN 376	Y	●		
TPS M-27X3.0-M	M27	3.000	160.00	30.0	-	20.00	4	16.00	24.00	DIN 376	N	●	●	●
TPS M-30X3.5-M	M30	3.500	180.00	35.0	-	22.00	4	18.00	26.50	DIN 376	N	●	●	●
TPS M-30X3.5-M-B	M30	3.500	180.00	35.0	-	22.00	4	18.00	26.50	DIN 376	Y	●		

• For user guide and cutting conditions, see pages 435-455

(1) Thread pitch

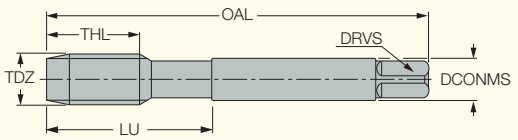
(2) Number of flutes

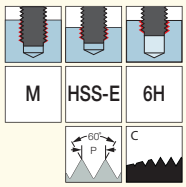
(3) Torque key size

ONETAP

TPS M (HSS)

DIN 13 HSS Spiral Flute Machine Taps for Metric Coarse Threads for a Wide Range of Materials





I N C H

Designation	Dimensions TDZ	TP mm[1]	OAL	THL	LU	DCONMS	NOF[2]	DRVS[3]	Pre-hole	Standard		Tough ↔ Hard HE	HEST	HETI
TPS M-2X0.4-M	M2	.400	1.772	.315	.51	.110	3	.083	.06	DIN 371	N	●	●	●
TPS M-2.2X0.45-M	M2.2	.450	1.772	.315	.51	.110	3	.083	.07	DIN 371	N	●	●	●
TPS M-2.3X0.4-M	M2.3	.400	1.772	.315	.51	.110	3	.083	.07	DIN 371	N	●	●	●
TPS M-2.5X0.45-M	M2.5	.450	1.968	.354	.59	.110	3	.083	.08	DIN 371	N	●	●	●
TPS M-2.6X0.45-M	M2.6	.450	1.968	.354	.59	.110	3	.083	.08	DIN 371	N	●	●	●
TPS M-3X0.5-M	M3	.500	2.205	.236	.71	.138	3	.106	.10	DIN 371	N	●	●	●
TPS M-3.5X0.6-M	M3.5	.600	2.205	.276	.79	.157	3	.118	.11	DIN 371	N	●	●	●
TPS M-4X0.7-M	M4	.700	2.480	.276	.83	.177	3	.134	.13	DIN 371	N	●	●	●
TPS M-4.5X0.75-M	M4.5	.750	2.756	.315	.98	.236	3	.193	.15	DIN 371	N	●	●	●
TPS M-5X0.8-M	M5	.800	2.756	.315	.98	.236	3	.193	.17	DIN 371	N	●	●	●
TPS M-6X1.0-M	M6	1.000	3.150	.394	1.18	.236	3	.193	.20	DIN 371	N	●	●	●
TPS M-7X1.0-M	M7	1.000	3.150	.394	1.18	.276	3	.217	.24	DIN 371	N	●	●	●
TPS M-8X1.25-M	M8	1.250	3.543	.512	1.38	.315	3	.244	.27	DIN 371	N	●	●	●
TPS M-9X1.25-M	M9	1.250	3.543	.512	1.38	.354	3	.276	.31	DIN 371	N	●	●	●
TPS M-10X1.5-M	M10	1.500	3.937	.591	1.54	.394	3	.315	.33	DIN 371	N	●	●	●
TPS M-11X1.5-M	M11	1.500	3.937	.669	-	.315	3	.244	.37	DIN 376	N	●	●	●
TPS M-12X1.75-M	M12	1.750	4.331	.709	-	.354	3	.276	.40	DIN 376	N	●	●	●
TPS M-14X2.0-M	M14	2.000	4.331	.787	-	.433	3	.354	.47	DIN 376	N	●	●	●
TPS M-16X2.0-M	M16	2.000	4.331	.787	-	.472	3	.354	.55	DIN 376	N	●	●	●
TPS M-16X2.0-M-B	M16	2.000	4.331	.787	-	.472	3	.354	.55	DIN 376	Y	●		
TPS M-18X2.5-M	M18	2.500	4.921	.984	-	.551	4	.433	.61	DIN 376	N	●	●	●
TPS M-18X2.5-M-B	M18	2.500	4.921	.984	-	.551	4	.433	.61	DIN 376	Y	●		
TPS M-20X2.5-M	M20	2.500	5.512	.984	-	.630	4	.472	.69	DIN 376	N	●	●	●
TPS M-20X2.5-M-B	M20	2.500	5.512	.984	-	.630	4	.472	.69	DIN 376	Y	●		
TPS M-22X2.5-M	M22	2.500	5.512	.984	-	.709	4	.571	.77	DIN 376	N	●	●	●
TPS M-22X2.5-M-B	M22	2.500	5.512	.984	-	.709	4	.571	.77	DIN 376	Y	●		
TPS M-24X3.0-M	M24	3.000	6.299	1.181	-	.709	4	.571	.83	DIN 376	N	●	●	●
TPS M-24X3.0-M-B	M24	3.000	6.299	1.181	-	.709	4	.571	.83	DIN 376	Y	●		
TPS M-27X3.0-M	M27	3.000	6.299	1.181	-	.787	4	.630	.94	DIN 376	N	●	●	●
TPS M-30X3.5-M	M30	3.500	7.087	1.378	-	.866	4	.709	1.04	DIN 376	N	●	●	●
TPS M-30X3.5-M-B	M30	3.500	7.087	1.378	-	.866	4	.709	1.04	DIN 376	Y	●		

• For user guide and cutting conditions, see pages 435-455

(1) Pitch in mm

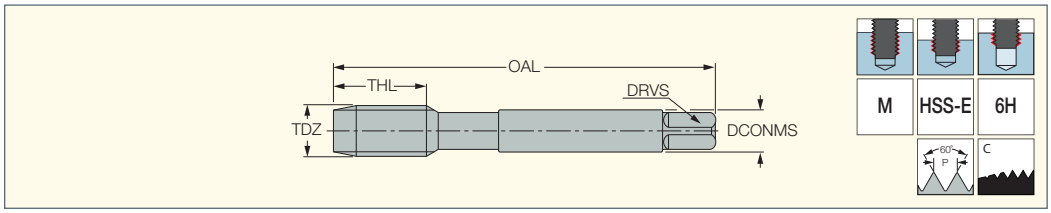
(2) Number of flutes

(3) Torque key size

ONETAP

TPS MF (HSS)

DIN 13 HSS Spiral Flute Machine Taps for Metric Fine Threads for a Wide Range of Materials



M E T R I C

Designation	Dimensions									Tough ↔ Hard		
	TDZ	TP(1)	OAL	THL	DCONMS	NOF(2)	DRVS(3)	Pre-hole	Standard	HE	HEST	HETI
TPS MF-4X0.5-M	M4	0.500	63.00	5.0	2.80	3	2.10	3.50	DIN 374	•	•	•
TPS MF-5X0.5-M	M5	0.500	70.00	5.0	3.50	3	2.70	4.50	DIN 374	•	•	•
TPS MF-6X0.75-M	M6	0.750	80.00	8.0	4.50	3	3.40	5.20	DIN 374	•	•	•
TPS MF-6X0.5-M	M6	0.500	80.00	5.0	4.50	3	3.40	5.50	DIN 374	•	•	•
TPS MF-7X0.75-M	M7	0.750	80.00	10.0	5.50	3	4.30	6.20	DIN 374	•	•	•
TPS MF-8X1.0-M	M8	1.000	90.00	10.0	6.00	3	4.90	7.00	DIN 374	•	•	•
TPS MF-8X0.75-M	M8	0.750	80.00	8.0	6.00	3	4.90	7.20	DIN 374	•	•	•
TPS MF-10X1.25-M	M10	1.250	100.00	16.0	7.00	3	5.50	8.80	DIN 374	•	•	•
TPS MF-10X1.0-M	M10	1.000	90.00	10.0	7.00	3	5.50	9.00	DIN 374	•	•	•
TPS MF-10X0.75-M	M10	0.750	90.00	10.0	7.00	3	5.50	9.20	DIN 374	•	•	•
TPS MF-12X1.5-M	M12	1.500	100.00	15.0	9.00	3	7.00	10.50	DIN 374	•	•	•
TPS MF-12X1.25-M	M12	1.250	100.00	15.0	9.00	3	7.00	10.80	DIN 374	•	•	•
TPS MF-12X1.0-M	M12	1.000	100.00	11.0	9.00	3	7.00	11.00	DIN 374	•	•	•
TPS MF-14X1.5-M	M14	1.500	100.00	15.0	11.00	3	9.00	12.50	DIN 374	•	•	•
TPS MF-14X1.25-M	M14	1.250	100.00	15.0	11.00	3	9.00	12.80	DIN 374	•	•	•
TPS MF-14X1.0-M	M14	1.000	100.00	11.0	11.00	3	9.00	13.00	DIN 374	•	•	•
TPS MF-16X1.5-M	M16	1.500	100.00	15.0	12.00	3	9.00	14.50	DIN 374	•	•	•
TPS MF-16X1.0-M	M16	1.000	100.00	12.0	12.00	3	9.00	15.00	DIN 374	•	•	•
TPS MF-18X1.5-M	M18	1.500	110.00	17.0	14.00	4	11.00	16.50	DIN 374	•	•	•
TPS MF-18X1.0-M	M18	1.000	110.00	13.0	14.00	4	11.00	17.00	DIN 374	•	•	•
TPS MF-20X1.5-M	M20	1.500	125.00	17.0	16.00	4	12.00	18.50	DIN 374	•	•	•
TPS MF-20X1.0-M	M20	1.000	125.00	14.0	16.00	4	12.00	19.00	DIN 374	•	•	•
TPS MF-22X1.5-M	M22	1.500	125.00	17.0	18.00	4	14.50	20.50	DIN 374	•	•	•
TPS MF-22X1.0-M	M22	1.000	125.00	14.0	18.00	4	14.50	21.00	DIN 374	•	•	•
TPS MF-24X2.0-M	M24	2.000	140.00	20.0	18.00	4	14.50	22.00	DIN 374	•	•	•
TPS MF-24X1.5-M	M24	1.500	140.00	20.0	18.00	4	14.50	22.50	DIN 374	•	•	•
TPS MF-26X1.5-M	M26	1.500	140.00	20.0	18.00	4	14.50	24.50	DIN 374	•	•	•
TPS MF-27X2.0-M	M27	2.000	140.00	20.0	20.00	4	16.00	25.00	DIN 374	•	•	•
TPS MF-27X1.5-M	M27	1.500	140.00	20.0	20.00	4	16.00	25.50	DIN 374	•	•	•
TPS MF-28X1.5-M	M28	1.500	140.00	20.0	20.00	4	16.00	26.50	DIN 374	•	•	•
TPS MF-30X2.0-M	M30	2.000	150.00	22.0	22.00	4	18.00	28.00	DIN 374	•	•	•
TPS MF-30X1.5-M	M30	1.500	150.00	22.0	22.00	4	18.00	28.50	DIN 374	•	•	•

• For user guide and cutting conditions, see pages 435-455

(1) Thread pitch

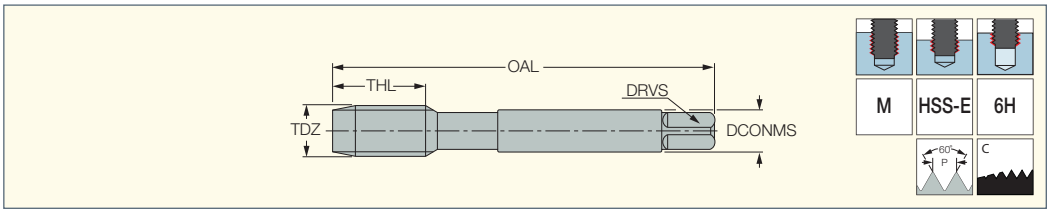
(2) Number of flutes

(3) Torque key size

ONETAP

TPS MF (HSS)

DIN 13 HSS Spiral Flute Machine Taps for Metric Fine Threads for a Wide Range of Materials



INCH												
	Dimensions									Tough ↔ Hard		
Designation	TDZ	TP mm[1]	OAL	THL	DCONMS	NOF[2]	DRVS[3]	Pre-hole	Standard	HE	HEST	HETI
TPS MF-4X0.5-M	M4	.500	2.480	.197	.110	3	.083	.14	DIN 374	●	●	●
TPS MF-5X0.5-M	M5	.500	2.756	.197	.138	3	.106	.18	DIN 374	●	●	●
TPS MF-6X0.75-M	M6	.750	3.150	.315	.177	3	.134	.20	DIN 374	●	●	●
TPS MF-6X0.5-M	M6	.500	3.150	.197	.177	3	.134	.22	DIN 374	●	●	●
TPS MF-7X0.75-M	M7	.750	3.150	.394	.217	3	.169	.24	DIN 374	●	●	●
TPS MF-8X1.0-M	M8	1.000	3.543	.394	.236	3	.193	.28	DIN 374	●	●	●
TPS MF-8X0.75-M	M8	.750	3.150	.315	.236	3	.193	.28	DIN 374	●	●	●
TPS MF-10X1.25-M	M10	1.250	3.937	.630	.276	3	.217	.35	DIN 374	●	●	●
TPS MF-10X1.0-M	M10	1.000	3.543	.394	.276	3	.217	.35	DIN 374	●	●	●
TPS MF-10X0.75-M	M10	.750	3.543	.394	.276	3	.217	.36	DIN 374	●	●	●
TPS MF-12X1.5-M	M12	1.500	3.937	.591	.354	3	.276	.41	DIN 374	●	●	●
TPS MF-12X1.25-M	M12	1.250	3.937	.591	.354	3	.276	.43	DIN 374	●	●	●
TPS MF-12X1.0-M	M12	1.000	3.937	.433	.354	3	.276	.43	DIN 374	●	●	●
TPS MF-14X1.5-M	M14	1.500	3.937	.591	.433	3	.354	.49	DIN 374	●	●	●
TPS MF-14X1.25-M	M14	1.250	3.937	.591	.433	3	.354	.50	DIN 374	●	●	●
TPS MF-14X1.0-M	M14	1.000	3.937	.433	.433	3	.354	.51	DIN 374	●	●	●
TPS MF-16X1.5-M	M16	1.500	3.937	.591	.472	3	.354	.57	DIN 374	●	●	●
TPS MF-16X1.0-M	M16	1.000	3.937	.472	.472	3	.354	.59	DIN 374	●	●	●
TPS MF-18X1.5-M	M18	1.500	4.331	.669	.551	4	.433	.65	DIN 374	●	●	●
TPS MF-18X1.0-M	M18	1.000	4.331	.512	.551	4	.433	.67	DIN 374	●	●	●
TPS MF-20X1.5-M	M20	1.500	4.921	.669	.630	4	.472	.73	DIN 374	●	●	●
TPS MF-20X1.0-M	M20	1.000	4.921	.551	.630	4	.472	.75	DIN 374	●	●	●
TPS MF-22X1.5-M	M22	1.500	4.921	.669	.709	4	.571	.81	DIN 374	●	●	●
TPS MF-22X1.0-M	M22	1.000	4.921	.551	.709	4	.571	.83	DIN 374	●	●	●
TPS MF-24X2.0-M	M24	2.000	5.512	.787	.709	4	.571	.87	DIN 374	●	●	●
TPS MF-24X1.5-M	M24	1.500	5.512	.787	.709	4	.571	.89	DIN 374	●	●	●
TPS MF-26X1.5-M	M26	1.500	5.512	.787	.709	4	.571	.96	DIN 374	●	●	●
TPS MF-27X2.0-M	M27	2.000	5.512	.787	.787	4	.630	.98	DIN 374	●	●	●
TPS MF-27X1.5-M	M27	1.500	5.512	.787	.787	4	.630	1.00	DIN 374	●	●	●
TPS MF-28X1.5-M	M28	1.500	5.512	.787	.787	4	.630	1.04	DIN 374	●	●	●
TPS MF-30X2.0-M	M30	2.000	5.906	.866	.866	4	.709	1.10	DIN 374	●	●	●
TPS MF-30X1.5-M	M30	1.500	5.906	.866	.866	4	.709	1.12	DIN 374	●	●	●

• For user guide and cutting conditions, see pages 435-455

(1) Pitch in mm

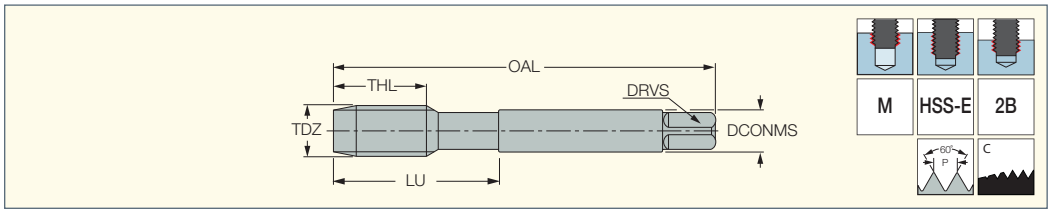
(2) Number of flutes

(3) Torque key size

ONETAP

TPS UNC (HSS)

HSS Spiral Flute Machine Taps for Unified Coarse Threads for a Wide Range of Materials



M E T R I C

Designation	Dimensions										Tough ↔ Hard		
	TDZ	TPI[1]	OAL	THL	LU	DCONMS	NOF[2]	DRVS[3]	Pre-hole	Standard	HE	HEST	HETI
TPS UNC-#4-40-M	#4	40.0	56.00	6.0	18.0	3.50	3	2.70	2.30	DIN 371	●	●	●
TPS UNC-#5-40-M	#5	40.0	56.00	7.0	18.0	3.50	3	2.70	2.60	DIN 371	●	●	●
TPS UNC-#6-32-M	#6	32.0	56.00	7.0	20.0	4.00	3	3.00	2.85	DIN 371	●	●	●
TPS UNC-#8-32-M	#8	32.0	63.00	8.0	21.0	4.50	3	3.40	3.50	DIN 371	●	●	●
TPS UNC-#10-24-M	#10	24.0	70.00	10.0	25.0	6.00	3	4.90	3.90	DIN 371	●	●	●
TPS UNC-#12-24-M	#12	24.0	80.00	10.0	30.0	6.00	3	4.90	4.50	DIN 371	●	●	●
TPS UNC-1/4-20-M	1/4"	20.0	80.00	13.0	30.0	7.00	3	5.50	5.20	DIN 371	●	●	●
TPS UNC-5/16-18-M	5/16"	18.0	90.00	14.0	35.0	8.00	3	6.20	6.60	DIN 371	●	●	●
TPS UNC-3/8-16-M	3/8"	16.0	100.00	16.0	39.0	9.00	3	7.00	8.00	DIN 371	●	●	●
TPS UNC-7/16-14-M	7/16"	14.0	100.00	17.0	-	8.00	3	6.20	9.40	DIN 376	●	●	●
TPS UNC-1/2-13-M	1/2"	13.0	110.00	20.0	-	9.00	3	7.00	10.75	DIN 376	●	●	●
TPS UNC-9/16-12-M	9/16"	12.0	110.00	20.0	-	11.00	3	9.00	12.25	DIN 376	●	●	●
TPS UNC-5/8-11-M	5/8"	11.0	110.00	22.0	-	12.00	3	9.00	13.50	DIN 376	●	●	●
TPS UNC-3/4-10-M	3/4"	10.0	125.00	25.0	-	14.00	4	11.00	16.50	DIN 376		●	●
TPS UNC-7/8-9-M	7/8"	9.0	140.00	27.0	-	18.00	4	14.50	19.50	DIN 376	●	●	●
TPS UNC-1-8-M	1"	8.0	160.00	30.0	-	20.00	4	16.00	22.25	DIN 376	●	●	●

I N C H

Designation	Dimensions										Tough ↔ Hard		
	TDZ	TPI[1]	OAL	THL	LU	DCONMS	NOF[2]	DRVS[3]	Pre-hole	Standard	HE	HEST	HETI
TPS UNC-#4-40-M	#4	40.0	2.205	.236	.71	.138	3	.106	.09	DIN 371	●	●	●
TPS UNC-#5-40-M	#5	40.0	2.205	.276	.71	.138	3	.106	.10	DIN 371	●	●	●
TPS UNC-#6-32-M	#6	32.0	2.205	.276	.79	.157	3	.118	.11	DIN 371	●	●	●
TPS UNC-#8-32-M	#8	32.0	2.480	.315	.83	.177	3	.134	.14	DIN 371	●	●	●
TPS UNC-#10-24-M	#10	24.0	2.756	.394	.98	.236	3	.193	.15	DIN 371	●	●	●
TPS UNC-#12-24-M	#12	24.0	3.150	.394	1.18	.236	3	.193	.18	DIN 371	●	●	●
TPS UNC-1/4-20-M	1/4"	20.0	3.150	.512	1.18	.276	3	.217	.20	DIN 371	●	●	●
TPS UNC-5/16-18-M	5/16"	18.0	3.543	.551	1.38	.315	3	.244	.26	DIN 371	●	●	●
TPS UNC-3/8-16-M	3/8"	16.0	3.937	.630	1.54	.354	3	.276	.31	DIN 371	●	●	●
TPS UNC-7/16-14-M	7/16"	14.0	3.937	.669	-	.315	3	.244	.37	DIN 376	●	●	●
TPS UNC-1/2-13-M	1/2"	13.0	4.331	.787	-	.354	3	.276	.42	DIN 376	●	●	●
TPS UNC-9/16-12-M	9/16"	12.0	4.331	.787	-	.433	3	.354	.48	DIN 376	●	●	●
TPS UNC-5/8-11-M	5/8"	11.0	4.331	.866	-	.472	3	.354	.53	DIN 376	●	●	●
TPS UNC-3/4-10-M	3/4"	10.0	4.921	.984	-	.551	4	.433	.65	DIN 376		●	●
TPS UNC-7/8-9-M	7/8"	9.0	5.512	1.063	-	.709	4	.571	.77	DIN 376	●	●	●
TPS UNC-1-8-M	1"	8.0	6.299	1.181	-	.787	4	.630	.88	DIN 376	●	●	●

• For user guide and cutting conditions, see pages 435-455

[1] Threads per inch

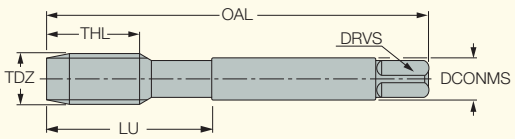
[2] Number of flutes

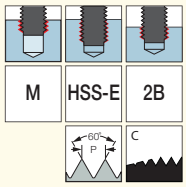
[3] Torque key size

ONETAP

TPS UNF (HSS)

HSS Spiral Flute Machine Taps for Unified Fine Threads for a Wide Range of Materials





M E T R I C

Designation	Dimensions										Tough ↔ Hard		
	TDZ	TPI(1)	OAL	THL	LU	DCONMS	NOF(2)	DRVS(3)	Pre-hole	Standard	HE	HEST	HETI
TPS UNF-#4-48-M	#4	48.0	56.00	6.0	18.0	3.50	3	2.70	2.40	DIN 371	●	●	●
TPS UNF-#5-44-M	#5	44.0	56.00	7.0	18.0	3.50	3	2.70	2.70	DIN 371	●	●	●
TPS UNF-#6-40-M	#6	40.0	56.00	7.0	20.0	4.00	3	3.00	3.00	DIN 371	●	●	●
TPS UNF-#8-36-M	#8	36.0	63.00	8.0	21.0	4.50	3	3.40	3.50	DIN 371	●	●	●
TPS UNF-#10-32-M	#10	32.0	70.00	10.0	25.0	6.00	3	4.90	4.10	DIN 371	●	●	●
TPS UNF-#12-28-M	#12	28.0	80.00	10.0	30.0	6.00	3	4.90	4.70	DIN 371	●	●	●
TPS UNF-1/4-28-M	1/4"	28.0	80.00	10.0	30.0	7.00	3	5.50	5.50	DIN 371	●	●	●
TPS UNF-5/16-24-M	5/16"	24.0	90.00	10.0	35.0	8.00	3	6.20	6.90	DIN 371	●	●	●
TPS UNF-3/8-24-M	3/8"	24.0	100.00	10.0	39.0	9.00	3	7.00	8.50	DIN 371	●	●	●
TPS UNF-7/16-20-M	7/16"	20.0	100.00	13.0	-	8.00	3	6.20	9.90	DIN 374	●	●	●
TPS UNF-1/2-20-M	1/2"	20.0	100.00	13.0	-	9.00	3	7.00	11.50	DIN 374		●	●
TPS UNF-9/16-18-M	9/16"	18.0	100.00	15.0	-	11.00	3	9.00	12.90	DIN 374	●	●	●
TPS UNF-5/8-18-M	5/8"	18.0	100.00	15.0	-	12.00	3	9.00	14.50	DIN 374	●	●	●
TPS UNF-3/4-16-M	3/4"	16.0	110.00	17.0	-	14.00	4	11.00	17.50	DIN 374	●	●	●
TPS UNF-7/8-14-M	7/8"	14.0	125.00	17.0	-	18.00	4	14.50	20.50	DIN 374	●	●	●
TPS UNF-1-12-M	1"	12.0	140.00	20.0	-	20.00	4	16.00	23.25	DIN 374	●	●	●

I N C H

Designation	Dimensions										Tough ↔ Hard		
	TDZ	TPI(1)	OAL	THL	LU	DCONMS	NOF(2)	DRVS(3)	Pre-hole	Standard	HE	HEST	HETI
TPS UNF-#4-48-M	#4	48.0	2.205	.236	.71	.138	3	.106	.09	DIN 371	●	●	●
TPS UNF-#5-44-M	#5	44.0	2.205	.276	.71	.138	3	.106	.11	DIN 371	●	●	●
TPS UNF-#6-40-M	#6	40.0	2.205	.276	.79	.157	3	.118	.12	DIN 371	●	●	●
TPS UNF-#8-36-M	#8	36.0	2.480	.315	.83	.177	3	.134	.14	DIN 371	●	●	●
TPS UNF-#10-32-M	#10	32.0	2.756	.394	.98	.236	3	.193	.16	DIN 371	●	●	●
TPS UNF-#12-28-M	#12	28.0	3.150	.394	1.18	.236	3	.193	.19	DIN 371	●	●	●
TPS UNF-1/4-28-M	1/4"	28.0	3.150	.394	1.18	.276	3	.217	.22	DIN 371	●	●	●
TPS UNF-5/16-24-M	5/16"	24.0	3.543	.394	1.38	.315	3	.244	.27	DIN 371	●	●	●
TPS UNF-3/8-24-M	3/8"	24.0	3.937	.394	1.54	.354	3	.276	.33	DIN 371	●	●	●
TPS UNF-7/16-20-M	7/16"	20.0	3.937	.512	-	.315	3	.244	.39	DIN 374	●	●	●
TPS UNF-1/2-20-M	1/2"	20.0	3.937	.512	-	.354	3	.276	.45	DIN 374		●	●
TPS UNF-9/16-18-M	9/16"	18.0	3.937	.591	-	.433	3	.354	.51	DIN 374	●	●	●
TPS UNF-5/8-18-M	5/8"	18.0	3.937	.591	-	.472	3	.354	.57	DIN 374	●	●	●
TPS UNF-3/4-16-M	3/4"	16.0	4.331	.669	-	.551	4	.433	.69	DIN 374	●	●	●
TPS UNF-7/8-14-M	7/8"	14.0	4.921	.669	-	.709	4	.571	.81	DIN 374	●	●	●
TPS UNF-1-12-M	1"	12.0	5.512	.787	-	.787	4	.630	.92	DIN 374	●	●	●

• For user guide and cutting conditions, see pages 435-455

(1) Threads per inch

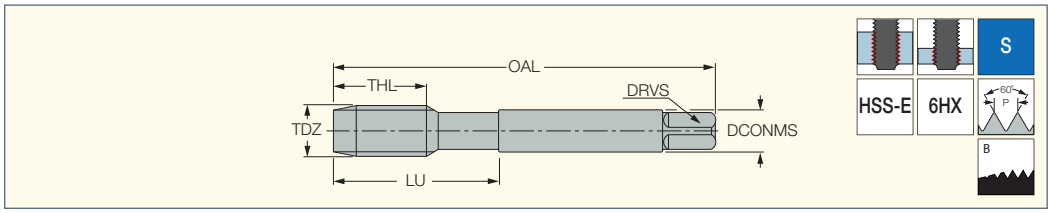
(2) Number of flutes

(3) Torque key size

HSSTAPS

TPG M-S (HSS)

HSS Gun Point Machine Taps According to DIN 13 for ISO Metric Coarse Threads on Steel with Good Machinability



M E T R I C

Designation	Dimensions									HEST
	TDZ	TP[1]	OAL	THL	LU	DCONMS	NOF[2]	DRVS[3]	Pre-hole	
TPG M-2.2X0.45-S	M2.2	0.450	45.00	8.0	-	2.80	3	2.10	1.75	●
TPG M-2.3X0.4-S	M2.3	0.400	45.00	8.0	-	2.80	3	2.10	1.90	●
TPG M-2.5X0.45-S	M2.5	0.450	50.00	9.0	-	2.80	3	2.10	2.05	●
TPG M-2.6X0.45-S	M2.6	0.450	50.00	9.0	-	2.80	3	2.10	2.10	●
TPG M-3X0.5-S	M3	0.500	56.00	11.0	18.0	3.50	3	2.70	2.50	●
TPG M-3.5X0.6-S	M3.5	0.600	56.00	12.0	20.0	4.00	3	3.00	2.90	●
TPG M-4X0.7-S	M4	0.700	63.00	13.0	21.0	4.50	3	3.40	3.30	●
TPG M-4.5X0.75-S	M4.5	0.750	70.00	14.0	25.0	6.00	3	4.90	3.70	●
TPG M-5X0.8-S	M5	0.800	70.00	15.0	25.0	6.00	3	4.90	4.20	●
TPG M-6X1.0-S	M6	1.000	80.00	17.0	30.0	6.00	3	4.90	5.00	●
TPG M-8X1.25-S	M8	1.250	90.00	20.0	35.0	8.00	3	6.20	6.80	●
TPG M-9X1.25-S	M9	1.250	90.00	20.0	35.0	9.00	3	7.00	7.80	●
TPG M-10X1.5-S	M10	1.500	100.00	22.0	39.0	10.00	3	8.00	8.50	●
TPG M-11X1.5-S	M11	1.500	100.00	22.0	-	8.00	3	6.20	9.50	●
TPG M-12X1.75-S	M12	1.750	110.00	24.0	-	9.00	4	7.00	10.20	●
TPG M-16X2.0-S	M16	2.000	110.00	27.0	-	12.00	4	9.00	14.00	●
TPG M-18X2.5-S	M18	2.500	125.00	30.0	-	14.00	4	11.00	15.50	●
TPG M-20X2.5-S	M20	2.500	140.00	32.0	-	16.00	4	12.00	17.50	●

I N C H

Designation	Dimensions									HEST
	TDZ	TP mm[1]	OAL	THL	LU	DCONMS	NOF[2]	DRVS[3]	Pre-hole	
TPG M-2.2X0.45-S	M2.2	.450	1.772	.315	-	.110	3	.083	.07	●
TPG M-2.3X0.4-S	M2.3	.400	1.772	.315	-	.110	3	.083	.07	●
TPG M-2.5X0.45-S	M2.5	.450	1.968	.354	-	.110	3	.083	.08	●
TPG M-2.6X0.45-S	M2.6	.450	1.968	.354	-	.110	3	.083	.08	●
TPG M-3X0.5-S	M3	.500	2.205	.433	.71	.138	3	.106	.10	●
TPG M-3.5X0.6-S	M3.5	.600	2.205	.472	.79	.157	3	.118	.11	●
TPG M-4X0.7-S	M4	.700	2.480	.512	.83	.177	3	.134	.13	●
TPG M-4.5X0.75-S	M4.5	.750	2.756	.551	.98	.236	3	.193	.15	●
TPG M-5X0.8-S	M5	.800	2.756	.591	.98	.236	3	.193	.17	●
TPG M-6X1.0-S	M6	1.000	3.150	.669	1.18	.236	3	.193	.20	●
TPG M-8X1.25-S	M8	1.250	3.543	.787	1.38	.315	3	.244	.27	●
TPG M-10X1.5-S	M10	1.500	3.937	.866	1.54	.394	3	.315	.33	●
TPG M-11X1.5-S	M11	1.500	3.937	.866	-	.315	3	.244	.37	●
TPG M-12X1.75-S	M12	1.750	4.331	.945	-	.354	4	.276	.40	●
TPG M-16X2.0-S	M16	2.000	4.331	1.063	-	.472	4	.354	.55	●
TPG M-18X2.5-S	M18	2.500	4.921	1.181	-	.551	4	.433	.61	●
TPG M-20X2.5-S	M20	2.500	5.512	1.260	-	.630	4	.472	.69	●

• For user guide and cutting conditions, see pages 435-455

(1) Thread pitch

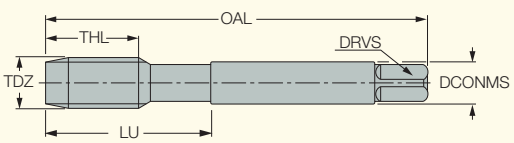
(2) Number of flutes

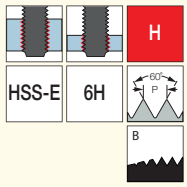
(3) Torque key size

HSSTAPS

TPG M-H (HSS)

DIN 13 HSS Gun Point Machine Taps for ISO Metric Coarse Threads for Hardened Steel and H.T.A.





M E T R I C

Designation	Dimensions									HE
	TDZ	TP[1]	OAL	THL	LU	DCONMS	NOF[2]	DRVS[3]	Pre-hole	
TPG M-2X0.4-H	M2	0.400	45.00	8.0	-	2.80	3	2.10	1.60	●
TPG M-2.3X0.4-H	M2.3	0.400	45.00	8.0	-	2.80	3	2.10	1.90	●
TPG M-2.5X0.45-H	M2.5	0.450	50.00	9.0	-	2.80	3	2.10	2.05	●
TPG M-2.6X0.45-H	M2.6	0.450	50.00	9.0	-	2.80	3	2.10	2.10	●
TPG M-3X0.5-H	M3	0.500	56.00	11.0	18.0	3.50	3	2.70	2.50	●
TPG M-3.5X0.6-H	M3.5	0.600	56.00	12.0	20.0	4.00	3	3.00	2.90	●
TPG M-4X0.7-H	M4	0.700	63.00	13.0	21.0	4.50	3	3.40	3.30	●
TPG M-4.5X0.75-H	M4.5	0.750	70.00	14.0	25.0	6.00	3	4.90	3.70	●
TPG M-5X0.8-H	M5	0.800	70.00	15.0	25.0	6.00	3	4.90	4.20	●
TPG M-6X1.0-H	M6	1.000	80.00	17.0	30.0	6.00	3	4.90	5.00	●
TPG M-7X1.0-H	M7	1.000	80.00	17.0	30.0	7.00	3	5.50	6.00	●
TPG M-8X1.25-H	M8	1.250	90.00	20.0	35.0	8.00	3	6.20	6.80	●
TPG M-9X1.25-H	M9	1.250	90.00	20.0	35.0	9.00	3	7.00	7.80	●
TPG M-10X1.5-H	M10	1.500	100.00	22.0	39.0	10.00	3	8.00	8.50	●
TPG M-11X1.5-H	M11	1.500	100.00	22.0	-	8.00	3	6.20	9.50	●
TPG M-12X1.75-H	M12	1.750	110.00	24.0	-	9.00	3	7.00	10.20	●
TPG M-14X2.0-H	M14	2.000	110.00	26.0	-	11.00	3	9.00	12.00	●
TPG M-16X2.0-H	M16	2.000	110.00	27.0	-	12.00	3	9.00	14.00	●
TPG M-18X2.5-H	M18	2.500	125.00	30.0	-	14.00	4	11.00	15.50	●
TPG M-20X2.5-H	M20	2.500	140.00	32.0	-	16.00	4	12.00	17.50	●

I N C H

Designation	Dimensions									HE
	TDZ	TP mm[1]	OAL	THL	LU	DCONMS	NOF[2]	DRVS[3]	Pre-hole	
TPG M-2X0.4-H	M2	.400	1.772	.315	-	.110	3	.083	.06	●
TPG M-2.3X0.4-H	M2.3	.400	1.772	.315	-	.110	3	.083	.07	●
TPG M-2.5X0.45-H	M2.5	.450	1.968	.354	-	.110	3	.083	.08	●
TPG M-2.6X0.45-H	M2.6	.450	1.968	.354	-	.110	3	.083	.08	●
TPG M-3X0.5-H	M3	.500	2.205	.433	.71	.138	3	.106	.10	●
TPG M-3.5X0.6-H	M3.5	.600	2.205	.472	.79	.157	3	.118	.11	●
TPG M-4X0.7-H	M4	.700	2.480	.512	.83	.177	3	.134	.13	●
TPG M-4.5X0.75-H	M4.5	.750	2.756	.551	.98	.236	3	.193	.15	●
TPG M-5X0.8-H	M5	.800	2.756	.591	.98	.236	3	.193	.17	●
TPG M-6X1.0-H	M6	1.000	3.150	.669	1.18	.236	3	.193	.20	●
TPG M-7X1.0-H	M7	1.000	3.150	.669	1.18	.276	3	.217	.24	●
TPG M-8X1.25-H	M8	1.250	3.543	.787	1.38	.315	3	.244	.27	●
TPG M-10X1.5-H	M10	1.500	3.937	.866	1.54	.394	3	.315	.33	●
TPG M-11X1.5-H	M11	1.500	3.937	.866	-	.315	3	.244	.37	●
TPG M-12X1.75-H	M12	1.750	4.331	.945	-	.354	3	.276	.40	●
TPG M-14X2.0-H	M14	2.000	4.331	1.024	-	.433	3	.354	.47	●
TPG M-16X2.0-H	M16	2.000	4.331	1.063	-	.472	3	.354	.55	●
TPG M-18X2.5-H	M18	2.500	4.921	1.181	-	.551	4	.433	.61	●
TPG M-20X2.5-H	M20	2.500	5.512	1.260	-	.630	4	.472	.69	●

• For user guide and cutting conditions, see pages 435-455

(1) Thread pitch

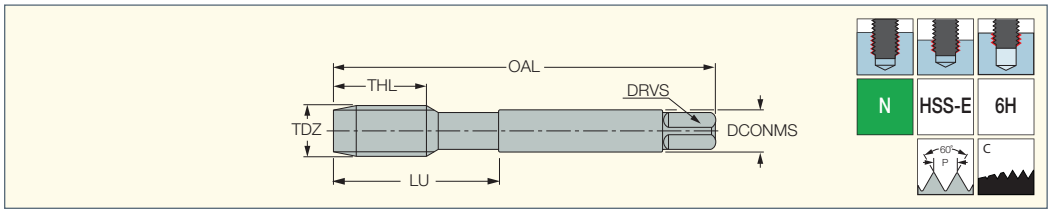
(2) Number of flutes

(3) Torque key size

HSSTAPS

TPS M-N (HSS)

DIN 13 HSS R.H. 40° Spiral Flute Machine Taps for ISO Metric Coarse Threads for Low Alloyed Steel



M E T R I C

Designation	Dimensions											HEST
	TDZ	TP[2]	OAL	THL	LU	DCONMS	NOF[3]	DRVS[4]	Pre-hole	FHA	Standard	
TPS M-2X0.4-N	M2	0.400	45.00	8.0	-	2.80	3	2.10	1.60	40.0	DIN 371	•
TPS M-2.2X0.45-N	M2.2	0.450	45.00	8.0	-	2.80	3	2.10	1.75	40.0	DIN 371	•
TPS M-2.3X0.4-N [1]	M2.3	0.400	45.00	8.0	-	2.80	3	2.10	1.90	40.0	DIN 371	•
TPS M-2.5X0.45-N	M2.5	0.450	50.00	9.0	-	2.80	3	2.10	2.05	40.0	DIN 371	•
TPS M-2.6X0.45-N [1]	M2.6	0.450	50.00	9.0	-	2.80	3	2.10	2.10	40.0	DIN 371	•
TPS M-3X0.5-N	M3	0.500	56.00	6.0	18.0	3.50	3	2.70	2.50	40.0	DIN 371	•
TPS M-3.5X0.6-N	M3.5	0.600	56.00	7.0	20.0	4.00	3	3.00	2.90	40.0	DIN 371	•
TPS M-4X0.7-N	M4	0.700	63.00	7.0	21.0	4.50	3	3.40	3.30	40.0	DIN 371	•
TPS M-4.5X0.75-N	M4.5	0.750	70.00	8.0	25.0	6.00	3	4.90	3.70	40.0	DIN 371	•
TPS M-5X0.8-N	M5	0.800	70.00	8.0	25.0	6.00	3	4.90	4.20	40.0	DIN 371	•
TPS M-6X1.0-N	M6	1.000	80.00	10.0	30.0	6.00	3	4.90	5.00	40.0	DIN 371	•
TPS M-7X1.0-N	M7	1.000	80.00	10.0	30.0	7.00	3	5.50	6.00	40.0	DIN 371	•
TPS M-8X1.25-N	M8	1.250	90.00	13.0	35.0	8.00	3	6.20	6.80	40.0	DIN 371	•
TPS M-9X1.25-N	M9	1.250	90.00	13.0	35.0	9.00	3	7.00	7.80	40.0	DIN 371	•
TPS M-10X1.5-N	M10	1.500	100.00	15.0	39.0	10.00	3	8.00	8.50	40.0	DIN 371	•
TPS M-11X1.5-N	M11	1.500	100.00	17.0	-	8.00	3	6.20	9.50	40.0	DIN 376	•
TPS M-12X1.75-N	M12	1.750	110.00	18.0	-	9.00	3	7.00	10.20	40.0	DIN 376	•
TPS M-14X2.0-N	M14	2.000	110.00	20.0	-	11.00	3	9.00	12.00	40.0	DIN 376	•
TPS M-16X2.0-N	M16	2.000	110.00	20.0	-	12.00	3	9.00	14.00	40.0	DIN 376	•
TPS M-18X2.5-N	M18	2.500	125.00	25.0	-	14.00	4	11.00	15.50	40.0	DIN 376	•
TPS M-20X2.5-N	M20	2.500	140.00	25.0	-	16.00	4	12.00	17.50	40.0	DIN 376	•

I N C H

Designation	Dimensions											HEST
	TDZ	TP mm[1]	OAL	THL	LU	DCONMS	NOF[2]	DRVS[3]	Pre-hole	FHA	Standard	
TPS M-2X0.4-N	M2	.400	1.772	.315	-	.110	3	.083	.06	40.0	DIN 371	•
TPS M-2.2X0.45-N	M2.2	.450	1.772	.315	-	.110	3	.083	.07	40.0	DIN 371	•
TPS M-2.3X0.4-N	M2.3	.400	1.772	.315	-	.110	3	.083	.07	40.0	DIN 371	•
TPS M-2.5X0.45-N	M2.5	.450	1.968	.354	-	.110	3	.083	.08	40.0	DIN 371	•
TPS M-3X0.5-N	M3	.500	2.205	.236	.71	.138	3	.106	.10	40.0	DIN 371	•
TPS M-3.5X0.6-N	M3.5	.600	2.205	.276	.79	.157	3	.118	.11	40.0	DIN 371	•
TPS M-4X0.7-N	M4	.700	2.480	.276	.83	.177	3	.134	.13	40.0	DIN 371	•
TPS M-4.5X0.75-N	M4.5	.750	2.756	.315	.98	.236	3	.193	.15	40.0	DIN 371	•
TPS M-5X0.8-N	M5	.800	2.756	.315	.98	.236	3	.193	.17	40.0	DIN 371	•
TPS M-6X1.0-N	M6	1.000	3.150	.394	1.18	.236	3	.193	.20	40.0	DIN 371	•
TPS M-7X1.0-N	M7	1.000	3.150	.394	1.18	.276	3	.217	.24	40.0	DIN 371	•
TPS M-8X1.25-N	M8	1.250	3.543	.512	1.38	.315	3	.244	.27	40.0	DIN 371	•
TPS M-9X1.25-N	M9	1.250	3.543	.512	1.38	.354	3	.276	.31	40.0	DIN 371	•
TPS M-10X1.5-N	M10	1.500	3.937	.591	1.54	.394	3	.315	.33	40.0	DIN 371	•
TPS M-11X1.5-N	M11	1.500	3.937	.669	-	.315	3	.244	.37	40.0	DIN 376	•
TPS M-12X1.75-N	M12	1.750	4.331	.709	-	.354	3	.276	.40	40.0	DIN 376	•
TPS M-14X2.0-N	M14	2.000	4.331	.787	-	.433	3	.354	.47	40.0	DIN 376	•
TPS M-16X2.0-N	M16	2.000	4.331	.787	-	.472	3	.354	.55	40.0	DIN 376	•
TPS M-18X2.5-N	M18	2.500	4.921	.984	-	.551	4	.433	.61	40.0	DIN 376	•
TPS M-20X2.5-N	M20	2.500	5.512	.984	-	.630	4	.472	.69	40.0	DIN 376	•

• For user guide and cutting conditions, see pages 435-455

[1] DIN profile

[2] Thread pitch

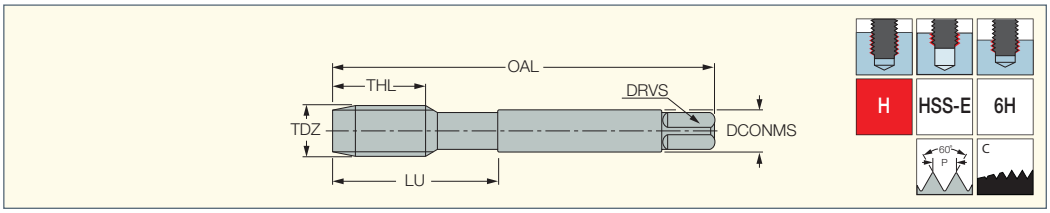
[3] Number of flutes

[4] Torque key size

HSSTAPS

TPS M-H (HSS)

DIN 13 HSS Right-Hand 40° Spiral Flute Machine Taps for ISO Metric Coarse Threads for H.T.A.



M E T R I C

Designation	Dimensions										HEST
	TDZ	TP[2]	OAL	THL	LU	DCONMS	NOF[3]	DRVS[4]	Pre-hole	FHA	
TPS M-2X0.4-H	M2	0.400	45.00	8.0	-	2.80	3	2.10	1.60	40.0	●
TPS M-2.2X0.45-H	M2.2	0.450	45.00	8.0	-	2.80	3	2.10	1.75	40.0	●
TPS M-2.3X0.4-H [1]	M2.3	0.400	45.00	8.0	-	2.80	3	2.10	1.90	40.0	●
TPS M-2.5X0.45-H	M2.5	0.450	50.00	9.0	-	2.80	3	2.10	2.05	40.0	●
TPS M-2.6X0.45-H [1]	M2.6	0.450	50.00	9.0	-	2.80	3	2.10	2.10	40.0	●
TPS M-3X0.5-H	M3	0.500	56.00	6.0	18.0	3.50	3	2.70	2.50	40.0	●
TPS M-3.5X0.6-H	M3.5	0.600	56.00	7.0	20.0	4.00	3	3.00	2.90	40.0	●
TPS M-4X0.7-H	M4	0.700	63.00	7.0	21.0	4.50	3	3.40	3.30	40.0	●
TPS M-4.5X0.75-H	M4.5	0.750	70.00	8.0	25.0	6.00	3	4.90	3.70	40.0	●
TPS M-5X0.8-H	M5	0.800	70.00	8.0	25.0	6.00	3	4.90	4.20	40.0	●
TPS M-6X1.0-H	M6	1.000	80.00	10.0	30.0	6.00	3	4.90	5.00	40.0	●
TPS M-7X1.0-H	M7	1.000	80.00	10.0	30.0	7.00	3	5.50	6.00	40.0	●
TPS M-8X1.25-H	M8	1.250	90.00	13.0	35.0	8.00	3	6.20	6.80	40.0	●
TPS M-9X1.25-H	M9	1.250	90.00	13.0	35.0	9.00	3	7.00	7.80	40.0	●
TPS M-10X1.5-H	M10	1.500	100.00	15.0	39.0	10.00	3	8.00	8.50	40.0	●
TPS M-11X1.5-H	M11	1.500	100.00	17.0	-	8.00	3	6.20	9.50	40.0	●
TPS M-12X1.75-H	M12	1.750	110.00	18.0	-	9.00	3	7.00	10.20	40.0	●
TPS M-14X2.0-H	M14	2.000	110.00	20.0	-	11.00	3	9.00	12.00	40.0	●
TPS M-16X2.0-H	M16	2.000	110.00	20.0	-	12.00	3	9.00	14.00	40.0	●
TPS M-18X2.5-H	M18	2.500	125.00	25.0	-	14.00	4	11.00	15.50	40.0	●
TPS M-20X2.5-H	M20	2.500	140.00	25.0	-	16.00	4	12.00	17.50	40.0	●

I N C H

Designation	Dimensions										HEST
	TDZ	TP mm[1]	OAL	THL	LU	DCONMS	NOF[2]	DRVS[3]	Pre-hole	FHA	
TPS M-2X0.4-H	M2	.400	1.772	.315	-	.110	3	.083	.06	40.0	●
TPS M-2.2X0.45-H	M2.2	.450	1.772	.315	-	.110	3	.083	.07	40.0	●
TPS M-2.5X0.45-H	M2.5	.450	1.968	.354	-	.110	3	.083	.08	40.0	●
TPS M-2.6X0.45-H	M2.6	.450	1.968	.354	-	.110	3	.083	.08	40.0	●
TPS M-3X0.5-H	M3	.500	2.205	.236	.71	.138	3	.106	.10	40.0	●
TPS M-3.5X0.6-H	M3.5	.600	2.205	.276	.79	.157	3	.118	.11	40.0	●
TPS M-4X0.7-H	M4	.700	2.480	.276	.83	.177	3	.134	.13	40.0	●
TPS M-4.5X0.75-H	M4.5	.750	2.756	.315	.98	.236	3	.193	.15	40.0	●
TPS M-5X0.8-H	M5	.800	2.756	.315	.98	.236	3	.193	.17	40.0	●
TPS M-6X1.0-H	M6	1.000	3.150	.394	1.18	.236	3	.193	.20	40.0	●
TPS M-7X1.0-H	M7	1.000	3.150	.394	1.18	.276	3	.217	.24	40.0	●
TPS M-8X1.25-H	M8	1.250	3.543	.512	1.38	.315	3	.244	.27	40.0	●
TPS M-9X1.25-H	M9	1.250	3.543	.512	1.38	.354	3	.276	.31	40.0	●
TPS M-10X1.5-H	M10	1.500	3.937	.591	1.54	.394	3	.315	.33	40.0	●
TPS M-11X1.5-H	M11	1.500	3.937	.669	-	.315	3	.244	.37	40.0	●
TPS M-12X1.75-H	M12	1.750	4.331	.709	-	.354	3	.276	.40	40.0	●
TPS M-14X2.0-H	M14	2.000	4.331	.787	-	.433	3	.354	.47	40.0	●
TPS M-16X2.0-H	M16	2.000	4.331	.787	-	.472	3	.354	.55	40.0	●
TPS M-18X2.5-H	M18	2.500	4.921	.984	-	.551	4	.433	.61	40.0	●
TPS M-20X2.5-H	M20	2.500	5.512	.984	-	.630	4	.472	.69	40.0	●

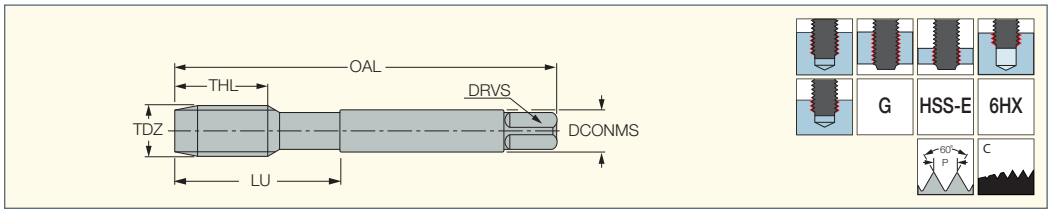
• For user guide and cutting conditions, see pages 435-455

(1) DIN profile
(2) Thread pitch
(3) Number of flutes
(4) Torque key size

HSSTAPS

TPST M-G (HSS)

DIN 13 HSS Straight Flute Machine Taps for ISO Metric Coarse Threads for Grey Cast Iron



M E T R I C

Designation	Dimensions									HENI
	TDZ	TP[2]	OAL	THL	LU	DCONMS	NOF[3]	DRVS[4]	Pre-hole	
TPST M-2.2X0.45-G	M2.2	0.450	45.00	8.0	-	2.80	3	2.10	1.75	●
TPST M-2.3X0.4-G [1]	M2.3	0.400	45.00	8.0	-	2.80	3	2.10	1.90	●
TPST M-2.5X0.45-G	M2.5	0.450	50.00	9.0	-	2.80	3	2.10	2.05	●
TPST M-2.6X0.45-G [1]	M2.6	0.450	50.00	9.0	-	2.80	3	2.10	2.10	●
TPST M-3.5X0.6-G	M3.5	0.600	56.00	12.0	20.0	4.00	3	3.00	2.90	●
TPST M-4X0.7-G	M4	0.700	63.00	13.0	21.0	4.50	3	3.40	3.30	●
TPST M-4.5X0.75-G	M4.5	0.750	70.00	14.0	25.0	6.00	3	4.90	3.70	●
TPST M-5X0.8-G	M5	0.800	70.00	15.0	25.0	6.00	4	4.90	4.20	●
TPST M-6X1.0-G	M6	1.000	80.00	17.0	30.0	6.00	4	4.90	5.00	●
TPST M-7X1.0-G	M7	1.000	80.00	17.0	30.0	7.00	4	5.50	6.00	●
TPST M-8X1.25-G	M8	1.250	90.00	20.0	35.0	8.00	4	6.20	6.80	●
TPST M-9X1.25-G	M9	1.250	90.00	20.0	35.0	9.00	4	7.00	7.80	●
TPST M-10X1.5-G	M10	1.500	100.00	22.0	39.0	10.00	4	8.00	8.50	●
TPST M-11X1.5-G	M11	1.500	100.00	22.0	-	8.00	4	6.20	9.50	●
TPST M-12X1.75-G	M12	1.750	110.00	24.0	-	9.00	4	7.00	10.20	●
TPST M-14X2.0-G	M14	2.000	110.00	26.0	-	11.00	4	9.00	12.00	●
TPST M-16X2.0-G	M16	2.000	110.00	27.0	-	12.00	4	9.00	14.00	●
TPST M-18X2.5-G	M18	2.500	125.00	30.0	-	14.00	4	11.00	15.50	●
TPST M-20X2.5-G	M20	2.500	140.00	32.0	-	16.00	4	12.00	17.50	●

I N C H

Designation	Dimensions									HENI
	TDZ	TP mm[1]	OAL	THL	LU	DCONMS	NOF[2]	DRVS[3]	Pre-hole	
TPST M-2.2X0.45-G	M2.2	.450	1.772	.315	-	.110	3	.083	.07	●
TPST M-2.3X0.4-G	M2.3	.400	1.772	.315	-	.110	3	.083	.07	●
TPST M-2.5X0.45-G	M2.5	.450	1.968	.354	-	.110	3	.083	.08	●
TPST M-2.6X0.45-G	M2.6	.450	1.968	.354	-	.110	3	.083	.08	●
TPST M-3.5X0.6-G	M3.5	.600	2.205	.472	.79	.157	3	.118	.11	●
TPST M-4X0.7-G	M4	.700	2.480	.512	.83	.177	3	.134	.13	●
TPST M-4.5X0.75-G	M4.5	.750	2.756	.551	.98	.236	3	.193	.15	●
TPST M-5X0.8-G	M5	.800	2.756	.591	.98	.236	4	.193	.17	●
TPST M-6X1.0-G	M6	1.000	3.150	.669	1.18	.236	4	.193	.20	●
TPST M-8X1.25-G	M8	1.250	3.543	.787	1.38	.315	4	.244	.27	●
TPST M-9X1.25-G	M9	1.250	3.543	.787	1.38	.354	4	.276	.31	●
TPST M-10X1.5-G	M10	1.500	3.937	.866	1.54	.394	4	.315	.33	●
TPST M-11X1.5-G	M11	1.500	3.937	.866	-	.315	4	.244	.37	●
TPST M-12X1.75-G	M12	1.750	4.331	.945	-	.354	4	.276	.40	●
TPST M-14X2.0-G	M14	2.000	4.331	1.024	-	.433	4	.354	.47	●
TPST M-16X2.0-G	M16	2.000	4.331	1.063	-	.472	4	.354	.55	●
TPST M-18X2.5-G	M18	2.500	4.921	1.181	-	.551	4	.433	.61	●
TPST M-20X2.5-G	M20	2.500	5.512	1.260	-	.630	4	.472	.69	●

• For user guide and cutting conditions, see pages 435-455

[1] DIN profile

[2] Thread pitch

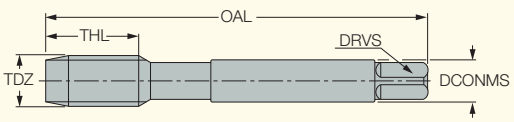
[3] Number of flutes

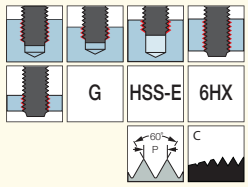
[4] Torque key size

HSS TAPS

TPST MF-G (HSS)

DIN 13 HSS Straight Flute
Machine Taps for ISO Metric
Fine Threads for Grey Cast Iron





M E T R I C

Designation	Dimensions TDZ	TP[1]	OAL	THL	DCONMS	NOF[2]	DRVS[3]	Pre-hole	HENI
TPST MF-10X1.0-G	M10	1.000	90.00	18.0	7.00	3	5.50	9.00	●
TPST MF-10X1.25-G	M10	1.250	100.00	22.0	7.00	3	5.50	8.80	●
TPST MF-12X1.25-G	M12	1.250	100.00	22.0	9.00	3	7.00	10.80	●
TPST MF-14X1.5-G	M14	1.500	100.00	22.0	11.00	3	9.00	12.50	●
TPST MF-16X1.5-G	M16	1.500	100.00	22.0	12.00	4	9.00	14.50	●
TPST MF-22X1.5-G	M22	1.500	125.00	25.0	18.00	4	14.50	20.50	●

I N C H

Designation	Dimensions TDZ	TP mm[1]	OAL	THL	DCONMS	NOF[2]	DRVS[3]	Pre-hole	HENI
TPST MF-10X1.0-G	M10	1.000	3.543	.709	.276	3	.217	.35	●
TPST MF-10X1.25-G	M10	1.250	3.937	.866	.276	3	.217	.35	●
TPST MF-12X1.25-G	M12	1.250	3.937	.866	.354	3	.276	.43	●
TPST MF-14X1.5-G	M14	1.500	3.937	.866	.433	3	.354	.49	●
TPST MF-16X1.5-G	M16	1.500	3.937	.866	.472	4	.354	.57	●
TPST MF-22X1.5-G	M22	1.500	4.921	.984	.709	4	.571	.81	●

• For user guide and cutting conditions, see pages 435-455

(1) Thread pitch
(2) Number of flutes
(3) Torque key size

PRE-THREAD DRILLING



Pre-Tapping Hole Sizes

ISO Metric Threads Coarse Pitch			
M	Pitch mm	Max Core Dia.mm	Drill Size mm
1	0.25	0.785	0.75
1,1	0.25	0.885	0.85
1,2	0.25	0.985	0.95
1,4	0.30	1.160	1.10
1,6	0.35	1.321	1.25
1,7	0.35	1.346	1.30
1,8	0.35	1.521	1.45
2	0.40	1.679	1.60
2,2	0.45	1.838	1.75
2,3	0.40	1.920	1.90
2,5	0.45	2.138	2.05
2,6	0.45	2.176	2.10
3	0.50	2.599	2.50
3,5	0.60	3.010	2.90
4	0.70	3.422	3.30
4,5	0.75	3.878	3.70
5	0.80	4.334	4.20
6	1.00	5.153	5.00
7	1.00	6.153	6.00
8	1.25	6.912	6.80
9	1,25	7.912	7.80
10	1.50	8.676	8.50
11	1.50	9.676	9.50
12	1.75	10.441	10.20
14	2.00	12.210	12.00
16	2.00	14.210	14.00
18	2.50	15.744	15.50
20	2.50	17.744	17.50
22	2.50	19.744	19.50
24	3.00	21.252	21.00
27	3.00	24.252	24.00
30	3.50	26.771	26.50
33	3.50	29.771	29.50
36	4.00	32.270	32.00
39	4.00	35.270	35.00
42	4.50	37.799	37.50
45	4.50	40.799	40.50
48	5.00	43.297	43.00
52	5.00	47.297	47.00
56	5.50	50.796	50.50
60	5.50	54.796	54.50
64	6.00	58.305	58.00
68	6.00	62.305	62.00

ISO Metric Threads Fine Pitch			
MF	Pitch mm	Max Core Dia.mm	Drill Size mm
2,5	0.35	2.221	2.15
3	0.35	2.271	2.65
3,5	0.35	3.221	3.15
4	0.50	3.599	3.50
4,5	0.50	4.099	4.00
5	0.50	4.599	4.50
5,5	0.50	5.099	5.00
6	0.75	5.378	5.20
7	0.75	6.378	6.20
8	0.75	7.378	7.20
8	1.00	7.153	7.00
9	0.75	8.378	8.20
9	1.00	8.153	8.00
10	0.75	9.378	9.20
10	1.00	9.153	9.00
10	1.25	8.912	8.80
11	0.75	10.378	10.20
11	1.00	10.153	10.00
12	1.00	11.153	11.00
12	1,25	10.912	10.80
12	1,50	10.676	10.50
14	1,00	13.153	13.00
14	1,25	12.912	12.80
14	1.50	12.676	12.50
15	1.00	14.153	14.00
15	1.50	13.676	13.50
16	1.00	15.153	15.00
16	1.50	14.676	14.50
17	1.00	16.153	16.00
17	1.50	15.676	15.50
18	1.00	17.153	17.00
18	1.50	16.676	16.50
18	2.00	16.210	16.00
20	1.00	19.153	19.00
20	1.50	18.676	18.50
20	2.00	18.210	18.00
22	1,00	21.153	21.00
22	1.50	20.676	20.50
22	2.00	20.210	20.00
24	1.00	23.153	23.00
24	1,50	22.676	22.50
24	2,00	22.210	22.00
25	1.00	24.153	24.00
25	1.50	23.676	23.50

ISO Metric Threads Fine Pitch			
MF	Pitch mm	Max Core Dia.mm	Drill Size mm
25	2.00	23.210	23.00
26	1.50	24.676	24.50
27	1.00	26.153	26.00
27	1.50	25.676	25.50
27	2.00	25.210	25.00
28	1.00	27.153	27.00
28	1.50	26.676	26.50
28	2.00	26.210	26.00
30	1.00	29.153	29.00
30	1.50	28.676	28.50
30	2.00	28.210	28.00
30	3.00	27.252	27.00
32	1.50	30.675	30.50
32	2.00	30.210	30.00
33	1.50	31.676	31.50
33	2.00	31.210	31.00
33	3.00	30.252	30.00
35	1.50	33.676	33.50
36	1.50	34.676	34.50
36	2.00	34.210	34.00
36	3.00	33.252	33.00
38	1.50	36.676	36.50
39	1.50	37.676	37.50
39	2.00	37.210	37.00
39	3.00	36.252	36.00
40	1,50	38.676	38.50
40	2.00	38.210	38.00
40	3,00	37.252	37.00
42	1,50	40.676	40.50
42	2,00	40.210	40.00
42	3,00	39.252	39.00
45	1.50	43.676	43.50
45	2.00	43.210	43.00
45	3.00	42.252	42.00
48	1.50	46.676	46.50
48	2.00	46.210	46.00
48	3.00	45.252	45.00
50	1.50	48.676	48.50
50	2.00	48.210	48.00
50	3.00	47.252	47.00
52	1.50	50.676	50.50
52	2.00	50.210	50.00
52	3.00	49.252	49.00

Recommended Tap Drill Size		
M	Pitch mm	Drill Size mm
1	0.25	0.9
1.1	0.25	1
1.2	0.25	1.1
1.4	0.3	1.28
1.6	0.35	1.47
1.7	0.35	1.57
1.8	0.35	1.67
2	0.4	1.85
2.2	0.45	2.03
2.3	0.4	2.15
2.5	0.45	2.33
2.6	0.45	2.43
3	0.5	2.8
3.5	0.6	3.25
4	0.7	3.7
4.5	0.75	4.2
5	0.8	4.65
6	1	5.55
7	1	6.55
8	1.25	6.6
9	1.25	7.45
10	1.5	8.45
11	1.5	9.35
12	1.75	11.25
14	2	13.1
16	2	15.1
18	2.5	16.85
20	2.5	18.85
22	2.5	20.85
24	3	22.65
27	3	25.65
30	3.5	28.4
33	3.5	31.4
36	4	34.15
39	4	37.15
42	4.5	39.9
45	4.5	42.9
48	5	45.65

Recommended Tap Drill Size		
MF	Pitch mm	Drill Size mm
2.5	0.35	2.37
2.6	0.35	2.47
3	0.35	2.88
3.5	0.35	3.38
4	0.5	3.8
5	0.5	4.8
6	0.5	5.8
6	0.75	5.7
7	0.75	6.7
8	0.75	7.7
8	1	7.6
9	0.75	8.7
9	1	8.6
10	0.75	9.7
10	1	9.6
10	1.25	9.45
11	1	10.6
12	1	11.6
12	1.25	11.45
12	1.5	11.35
14	1	13.6
14	1.25	13.45
14	1.5	13.35
15	1	14.6
15	1.5	14.35
16	1	15.6
16	1.5	15.35
18	4	17.6
18	1.5	17.35
18	2	17.1
20	1	19.6
20	1.5	19.35
20	2	19.1
24	2	23.1
30	2	29.1
36	3	34.65
42	4	40.15
48	3	46.65

American Unified Coarse Threads			
UNC	T.P.I	Max. Core Dia. inch	Drill Size mm
#1	64	1.585	1.5
#2	56	1.872	1.8
#3	48	2.146	2.1
#4	40	2.385	2.3
#5	40	2.697	2.6
#6	32	2.896	2.85
#8	32	3.528	3.5
#10	24	3.95	3.9
#12	24	4.59	4.5
1/4"	20	5.25	5.2
5/16"	18	6.68	6.6
3/8"	16	8.082	8
7/16"	14	9.441	9.4
1/2"	13	10.881	10.75
9/16"	12	12.301	12.25
5/8"	11	13.693	13.5
3/4"	10	16.624	16.5
7/8"	9	19.52	19.5
1"	8	22.344	22.25
1*1/8"	7	25.082	25
1*1/4"	7	28.258	28.25
1*3/8"	6	30.851	30.75
1*1/2"	6	34.026	34
1*3/4"	5	39.56	39.5
2"	4.5	45.367	45.25

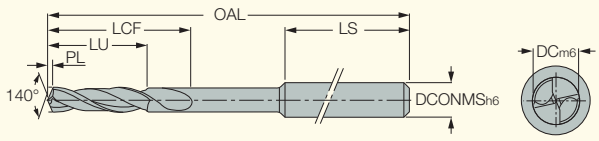
American Unified Fine Threads			
UNF	T.P.I	Max. Core Dia. inch	Drill Size mm
#0	80	1.306	1.3
#1	72	1.613	1.6
#2	64	1.913	1.9
#3	56	2.197	2.1
#4	48	2.459	2.4
#5	44	2.741	2.7
#6	40	3.012	3
#8	36	3.597	3.5
#10	32	4.168	4.1
#12	28	4.717	4.7
1/4"	28	5.563	5.5
5/16"	24	6.995	6.9
3/8"	24	8.565	8.5
7/16"	20	9.947	9.9
1/2"	20	11.524	11.5
9/16"	18	12.969	12.9
5/8"	18	14.554	14.5
3/4"	16	17.546	17.5
7/8"	14	20.493	20.5
1"	12	23.363	23.25
1*1/8"	12	26.538	26.5
1*1/4"	12	29.713	29.5
1*3/8"	12	32.888	32.7
1*1/2"	12	36.063	36

SOLIDDRILL

SOLIDDRILL

SCD-AP4 (4xD)
DIN 6537 Solid Carbide
Drills without Coolant Holes,
Drilling Depth 4xD

DC	Tolerance m6
0.8-2.9	0.002-0.008



M E T R I C

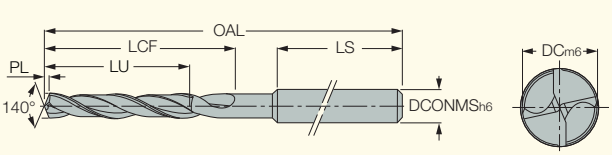
Designation	Dimensions DC	DCONMS	LU	LCF	LS	OAL	Th(1)	PL	IC908
SCD 011-004-030 AP4	1.10	3.00	4.4	6.6	35.4	46.00	M1.4	0.200	•
SCD 016-006-030 AP4	1.60	3.00	6.4	9.6	32.4	46.00	M2	0.290	•
SCD 025-010-030 AP4	2.50	3.00	10.0	15.0	41.0	60.00	M3	0.450	•
SCD 029-011-030 AP4	2.90	3.00	11.6	17.4	38.6	60.00	M3.5	0.530	•

• For user guide and cutting conditions, see pages 505-513 • For regrinding instructions, see pages 501-504 501-504

SOLIDDRILL

SCD-AP6 (6xD)
DIN 6537 Solid Carbide
Drills without Coolant Holes,
Drilling Depth 6xD

DC	Tolerance m6
0.8-2.9	0.002-0.008



M E T R I C

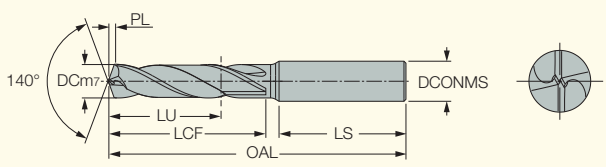
Designation	Dimensions DC	DCONMS	LU	LCF	LS	OAL	Th(1)	PL	IC908
SCD 011-006-030 AP6	1.10	3.00	6.6	8.8	33.0	46.00	M1.4	0.200	•
SCD 016-009-030 AP6	1.60	3.00	9.6	12.8	29.3	46.00	M2	0.290	•
SCD 025-015-030 AP6	2.50	3.00	15.0	20.0	36.8	60.00	M3	0.450	•
SCD 029-017-030 AP6	2.90	3.00	17.4	23.2	34.4	60.00	M3.5	0.530	•

• For user guide and cutting conditions, see pages 505-513 • For regrinding instructions, see pages 501-504 (1) Used for standard thread size

SOLIDDRILL

SCD-AP3N (3xD)
DIN 6537 Solid Carbide
Drills without Coolant Holes,
Drilling Depth 3xD

DC	Tolerance m7
3.00-6	0.004-0.016
6.01-10	0.008-0.021
10.01-18	0.007-0.025
18.01-21	0.008-0.029



M E T R I C

Designation	Dimensions DC	DCONMS	OAL	LU	LCF	PL	LS	Th(1)	IC908
SCD 033-014-060 AP3N	3.30	6.00	62.00	14.00	20.0	0.500	34.0	M4	•
SCD 042-017-060 AP3N	4.20	6.00	66.00	17.00	24.0	0.700	35.0	M5	•
SCD 050-020-060 AP3N	5.00	6.00	66.00	20.00	28.0	0.800	36.0	M6	•
SCD 060-020-060 AP3N	6.00	6.00	66.00	20.00	28.0	0.900	36.0	M7	•
SCD 068-024-080 AP3N	6.80	8.00	79.00	24.00	34.0	1.100	36.0	M8	•
SCD 078-029-080 AP3N	7.80	8.00	79.00	29.00	41.0	1.200	36.0	M9	•
SCD 085-035-100 AP3N	8.50	10.00	89.00	35.00	47.0	1.300	40.0	M10	•
SCD 095-035-100 AP3N	9.50	10.00	89.00	35.00	47.0	1.500	40.0	M11	•
SCD 102-040-120 AP3N	10.20	12.00	101.00	40.00	55.0	1.600	45.0	M12	•
SCD 120-040-120 AP3N	12.00	12.00	101.00	40.00	55.0	1.900	45.0	M14	•

• For user guide and cutting conditions, see pages 505-513 • For regrinding instructions, see pages 501-504
(1) Used for standard thread size

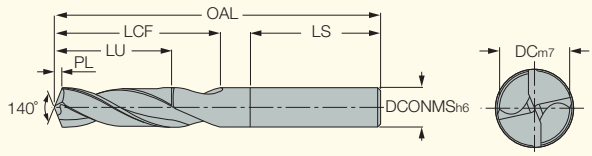
ISCAR

SOLIDDRILL

SCD-AP3 (3xD)

DIN 6537 Solid Carbide Drills without Coolant Holes, Drilling Depth 3xD

DC	Tolerance m7
3.00- 6	0.004-0.016
6.01-10	0.006-0.021
10.01-18	0.007-0.025
18.01-21	0.008-0.029



M E T R I C

Designation	Dimensions DC	DCONMS	LU	LCF	OAL	LS	Th(1)	PL	IC908
SCD 140-043-140 AP3	14.00	14.00	43.0	60.0	107.00	45.0	M16	2.550	●
SCD 155-045-160 AP3	15.50	16.00	45.0	65.0	115.00	45.0	M18	2.820	●
SCD 175-051-180 AP3	17.50	18.00	51.0	73.0	123.00	48.0	M20	3.180	●
SCD 195-055-200 AP3	19.50	20.00	55.0	79.0	131.00	48.0	M22	3.550	●

• For user guide and cutting conditions, see pages 505-513 • For regrinding instructions, see pages 501-504

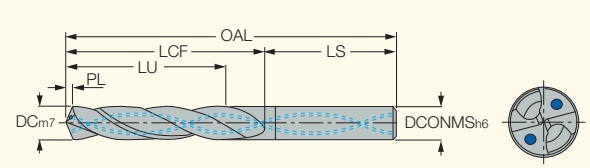
(1) Used for standard thread size

SOLIDDRILL

SCD-ACP3 (3xD)

Solid Carbide Drills with Coolant Holes, Drilling Depth 3xD

D	Tolerance m7
.118-.236	.00016-.00063
.236-.394	.00024-.00083
.394-.709	.00028-.00099
.709- .827	.00031-.00114



I N C H

Designation	Dimensions DC	DCONMS	LU	LCF	OAL	LS	Th(1)	PL	IC908
SCD 0185-105-0187ACP3	.185	.187	.800	1.05	2.580	1.44	12-28 UNF	.03400	●
SCD 0577-208-0625ACP3	.577	.625	1.380	2.08	4.090	1.91	5/8-18 UNF	.10500	●

• For user guide and cutting conditions, see pages 505-513 • For regrinding instructions, see pages 501-504 501-504

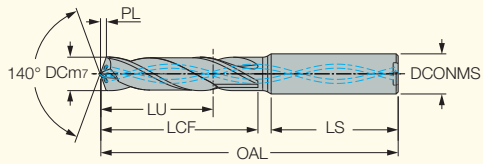
(1) Used for standard thread size.

SOLIDDRILL

SCD-ACP3N (3XD)

DIN 6537 Solid Carbide Drills with Coolant Holes, Drilling Depth 3xD

DC	Tolerance m7
3.00-6	0.004-0.016
6.01-10	0.008-0.021
10.01-18	0.007-0.025
18.01-21	0.008-0.029



METRIC

Designation	Dimensions DC	DCONMS	OAL	LU	LCF	PL	LS	Th(1)	IC908
SCD 033-014-060 ACP3N	3.30	6.00	62.00	14.00	20.0	0.500	34.0	M4	●
SCD 042-017-060 ACP3N	4.20	6.00	66.00	17.00	24.0	0.700	35.0	M5	●
SCD 050-020-060 ACP3N	5.00	6.00	66.00	20.00	28.0	0.800	36.0	M6	●
SCD 060-020-060 ACP3N	6.00	6.00	66.00	20.00	28.0	0.900	36.0	M7	●
SCD 068-024-080 ACP3N	6.80	8.00	79.00	24.00	34.0	1.100	36.0	M8	●
SCD 078-029-080 ACP3N	7.80	8.00	79.00	29.00	41.0	1.200	36.0	M9	●
SCD 085-035-100 ACP3N	8.50	10.00	89.00	35.00	47.0	1.300	40.0	M10	●
SCD 095-035-100 ACP3N	9.50	10.00	89.00	35.00	47.0	1.500	40.0	M11	●
SCD 102-040-120 ACP3N	10.20	12.00	102.00	40.00	55.0	1.600	45.0	M12	●
SCD 120-040-120 ACP3N	12.00	12.00	102.00	40.00	55.0	1.900	45.0	M14	●

INCH

Designation	Dimensions DC	DCONMS	LU	PL	LCF	LS	OAL	Th(1)	IC908
SCD0163-105-0187ACP3N	.163	.187	.8000	.03000	1.05	1.44	2.580	10-32 UNF	●
SCD0180-105-0187ACP3N	.180	.187	.8000	.03300	1.05	1.44	2.580	12-24 UNC	●
SCD0207-128-0250ACP3N	.207	.250	.9600	.03800	1.28	1.44	2.820	1/4-20 UNC	●
SCD0276-146-0312ACP3N	.276	.312	1.0700	.05000	1.46	1.52	3.060	5/16-24 UNF	●
SCD0339-172-0375ACP3N	.339	.375	1.2700	.06200	1.72	1.59	3.420	3/8-24 UNF	●
SCD0376-185-0437ACP3N	.376	.437	1.3400	.06800	1.85	1.67	3.620	7/16-14 UNC	●
SCD0394-185-0437ACP3N	.394	.437	1.3400	.07200	1.85	1.67	3.620	7/16-20 UNF	●
SCD0434-185-0437ACP3N	.434	.437	1.3400	.07900	1.85	1.67	3.620	1/2-13 UNC	●
SCD0457-185-0500ACP3N	.457	.500	1.3400	.08300	1.85	1.79	3.740	1/2-20 UNF	●

• For user guide and cutting conditions, see pages 505-513 • For regrinding instructions, see pages 501-504

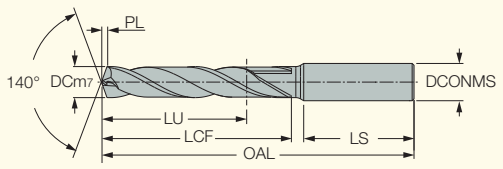
(1) Used for standard thread size

SOLIDDRILL

SCD-AP5N (5xD)

DIN 6537 Solid Carbide Drills without Coolant Holes, Drilling Depth 5xD

DC	Tolerance m7
3.00-6	0.004-0.016
6.01-10	0.008-0.021
10.01-18	0.007-0.025
18.01-21	0.008-0.029



METRIC

Designation	Dimensions DC	DCONMS	OAL	LU	LCF	PL	LS	Th(1)	IC908
SCD 033-023-060 AP5N	3.30	6.00	66.00	23.00	28.0	0.500	34.0	M4	●
SCD 042-029-060 AP5N	4.20	6.00	74.00	29.00	36.0	0.700	35.0	M5	●
SCD 050-035-060 AP5N	5.00	6.00	82.00	35.00	44.0	0.800	36.0	M6	●
SCD 060-035-060 AP5N	6.00	6.00	82.00	35.00	44.0	0.900	36.0	M7	●
SCD 068-043-080 AP5N	6.80	8.00	91.00	43.00	53.0	1.100	36.0	M8	●
SCD 078-043-080 AP5N	7.80	8.00	91.00	43.00	53.0	1.200	36.0	M9	●
SCD 085-049-100 AP5N	8.50	10.00	103.00	49.00	61.0	1.300	40.0	M10	●
SCD 095-049-100 AP5N	9.50	10.00	103.00	49.00	61.0	1.500	40.0	M11	●
SCD 102-056-120 AP5N	10.20	12.00	118.00	56.00	71.0	1.600	45.0	M12	●
SCD 120-056-120 AP5N	12.00	12.00	118.00	56.00	71.0	1.900	45.0	M14	●

• For user guide and cutting conditions, see pages 505-513 • For regrinding instructions, see pages 501-504

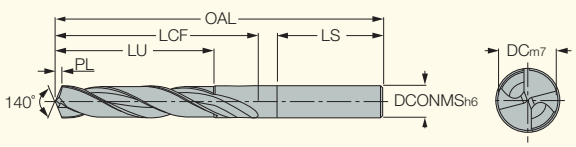
(1) Used for standard thread size

SOLIDDRILL

SCD-AP5 (5xD)

Solid Carbide Drills without Coolant Holes, Drilling Depth 5xD

DC	Tolerance m7
3.00-6	0.004-0.016
6.01-10	0.008-0.021
10.01-18	0.007-0.025
18.01-21	0.008-0.029



M E T R I C

Designation	Dimensions DC	DCONMS	LU	LCF	OAL	LS	Th(1)	PL	IC908
SCD 140-060-140 AP5	14.00	14.00	60.0	77.0	124.00	45.0	M16	2.550	●
SCD 155-063-160 AP5	15.50	16.00	63.0	83.0	133.00	45.0	M18	2.820	●
SCD 175-071-180 AP5	17.50	18.00	71.0	93.0	143.00	48.0	M20	3.180	●
SCD 195-077-200 AP5	19.50	20.00	77.0	101.0	153.00	48.0	M22	3.550	●

• For user guide and cutting conditions, see pages 505-513 • For regrinding instructions, see pages 501-504 501-504

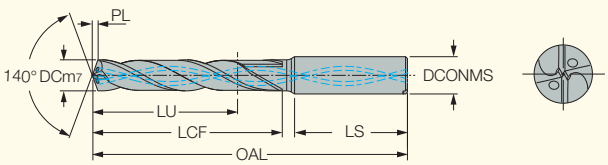
(1) Used for standard thread size

SOLIDDRILL

SCD-ACP5N (5xD)

DIN 6537 Solid Carbide Drills with Coolant Holes, Drilling Depth 5xD

DC	Tolerance m7
3.00-6	0.004-0.016
6.01-10	0.008-0.021
10.01-18	0.007-0.025
18.01-21	0.008-0.029



M E T R I C

Designation	Dimensions DC	DCONMS	OAL	LU	LCF	PL	LS	Th(1)	IC908
SCD 033-023-060 ACP5N	3.30	6.00	66.00	23.00	28.0	0.600	30.0	M4	●
SCD 042-029-060 ACP5N	4.20	6.00	74.00	29.00	36.0	0.760	35.0	M5	●
SCD 050-035-060 ACP5N	5.00	6.00	82.00	35.00	44.0	0.910	35.0	M6	●
SCD 060-035-060 ACP5N	6.00	6.00	82.00	35.00	44.0	1.090	35.0	M7	●
SCD 068-043-080 ACP5N	6.80	8.00	91.00	43.00	53.0	1.240	35.0	M8	●
SCD 078-043-080 ACP5N	7.80	8.00	91.00	43.00	53.0	1.420	35.0	M9	●
SCD 085-049-100 ACP5N	8.50	10.00	103.00	49.00	61.0	1.550	38.0	M10	●
SCD 095-049-100 ACP5N	9.50	10.00	103.00	49.00	61.0	1.730	38.0	M11	●
SCD 102-056-120 ACP5N	10.20	12.00	118.00	56.00	71.0	1.860	41.0	M12	●
SCD 120-056-120 ACP5N	12.00	12.00	118.00	56.00	71.0	2.180	41.0	M14	●

I N C H

Designation	Dimensions DC	DCONMS	LU	PL	LCF	LS	OAL	Th(1)	IC908
SCD0156-106-0187ACP5N	.156	.187	.8400	.02800	1.06	1.44	2.600	10-30 UNF	●
SCD0185-138-0187ACP5N	.185	.187	1.1300	.03400	1.38	1.44	2.910	12-28 UNF	●
SCD0213-169-0250ACP5N	.213	.250	1.3700	.03900	1.69	1.44	3.230	1/4-28 UNF	●
SCD0218-169-0250ACP5N	.218	.250	1.3700	.04000	1.69	1.44	3.230	7/32	●
SCD0257-197-0312ACP5N	.257	.312	1.5900	.04700	1.97	1.52	3.580	5/16-18 UNC	●
SCD0265-197-0312ACP5N	.265	.312	1.5900	.04800	1.97	1.52	3.580	17/64	●
SCD0312-197-0312ACP5N	.312	.312	1.5900	.05700	1.97	1.53	3.580	3/8-16 UNC	●
SCD0328-236-0375ACP5N	.328	.375	1.9200	.06000	2.36	1.59	4.060	3/8-24 UNF	●
SCD0359-236-0375ACP5N	.359	.375	1.9200	.06500	2.36	1.59	4.060	23/64	●
SCD0375-236-0375ACP5N	.375	.375	1.9200	.06800	2.36	1.59	4.060	3/8	●
SCD0390-260-0437ACP5N	.390	.437	2.0900	.07100	2.60	1.67	4.370	25/64	●
SCD0421-260-0437ACP5N	.421	.437	2.0900	.07700	2.60	1.67	4.370	1/2-13 UNC	●
SCD0437-260-0437ACP5N	.437	.437	2.0900	.08000	2.60	1.67	4.370	7/16	●
SCD0453-276-0500ACP5N	.453	.500	2.1900	.08200	2.76	1.79	4.650	1/2-20 UNF	●
SCD0468-276-0500ACP5N	.468	.500	2.1900	.08500	2.76	1.79	4.650	9/16-12 UNC	●

• For user guide and cutting conditions, see pages 505-513 • For regrinding instructions, see pages 501-504

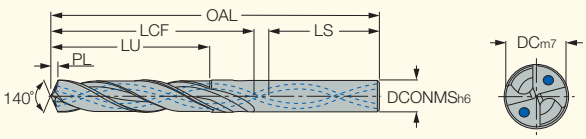
(1) Used for standard thread size

SOLIDDRILL

SCD-ACP5 (5xD)

Solid Carbide Drills with Coolant Holes, Drilling Depth 5xD

DC	Tolerance m7
3.00-6	0.004-0.016
6.01-10	0.008-0.021
10.01-18	0.007-0.025
18.01-21	0.008-0.029



M E T R I C

Designation	Dimensions DC	DCONMS	LU	LCF	OAL	Th(1)	LS	PL	IC908
SCD 122-060-140 ACP5	12.20	14.00	60.0	77.0	124.00	M14	45.0	2.220	•
SCD 140-060-140 ACP5	14.00	14.00	60.0	77.0	124.00	M16	45.0	2.550	•
SCD 155-063-160 ACP5	15.50	16.00	63.0	83.0	133.00	M18	45.0	2.820	•
SCD 195-077-200 ACP5	19.50	20.00	77.0	101.0	153.00	M22	48.0	3.550	•

I N C H

Designation	Dimensions DC	DCONMS	LU	LCF	OAL	LS	Th(1)	PL	IC908
SCD 0484-276-0500ACP5	.484	.500	2.190	2.76	4.650	1.79	31/64	.08800	•
SCD 0500-276-0500ACP5	.500	.500	2.190	2.76	4.650	1.79	9/16-18 UNF	.09100	•
SCD 0515-299-0562ACP5	.515	.562	2.360	2.99	4.880	1.79	33/64	.09400	•
SCD 0562-299-0562ACP5	.562	.562	2.360	2.99	4.880	1.79	5/8-18 UNF	.10200	•
SCD 0656-362-0687ACP5	.656	.687	2.870	3.62	5.630	1.91	21/32	.11900	•
SCD 0687-362-0687ACP5	.687	.687	2.870	3.62	5.630	1.91	3/4-16 UNF	.12500	•

• For user guide and cutting conditions, see pages 505-513 • For regrinding instructions, see pages 501-504 501-504

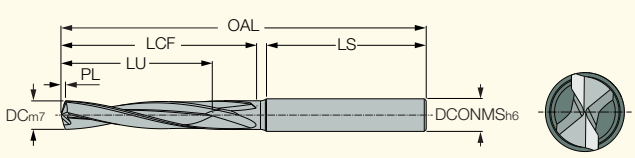
(1) Used for standard thread size

SOLIDDRILL

SCD-AH5 (5xD)

Solid Carbide Drills for Hard Materials, Drilling Depth 5xD

DC	Tolerance m7
3.00-6	0.004-0.016
6.01-10	0.008-0.021
10.01-18	0.007-0.025
18.01-21	0.008-0.029



M E T R I C

Designation	Dimensions DC	LU	LCF	DCONMS	LS	OAL	Th(1)	PL	IC903
SCD 033-017-060 AH5	3.30	16.5	26.0	6.00	35.0	66.00	M4	0.600	•
SCD 042-021-060 AH5	4.20	21.0	32.0	6.00	46.0	82.00	M5	0.760	•
SCD 050-025-060 AH5	5.00	25.0	37.0	6.00	41.0	82.00	M6	0.910	•
SCD 060-030-060 AH5	6.00	30.0	43.0	6.00	37.0	82.00	M7	1.090	•
SCD 068-034-080 AH5	6.80	34.0	49.0	8.00	39.0	91.00	M8	1.240	•
SCD 078-039-080 AH5	7.80	42.0	55.0	8.00	34.0	91.00	M9	1.420	•
SCD 085-043-100 AH5	8.50	42.5	59.0	10.00	46.0	112.00	M10	1.550	•
SCD 095-048-100 AH5	9.50	47.5	66.0	10.00	39.0	112.00	M11	1.730	•

Recommended Machining Conditions for SCD...AH5 Solid Drills

ISO	Material	Hardness	Material No.	Cutting Speed Vc (m/min)	Feed vs. Drill Diameter (mm/rev) Ø3-5	Ø5.1-8	Ø8.1-12
H	Hardened steel	50-55 HRc	38	25-40	0.04-0.07	0.05-0.08	0.06-0.10
	Hardened steel	56-60 HRc	39	15-25	0.03-0.06	0.04-0.07	0.05-0.08
	Hardened steel	61-70 HRc	39	10-15	0.02-0.04	0.03-0.05	0.03-0.05

Materials over 50 HRc must be used with external cooling while machining.Use of semi-synthetic or emulsion with more than 6% oil concentration is highly recommended to extend tool life and hole quality.

• For user guide see pages 505-513• For regrinding instructions, see pages 501-504

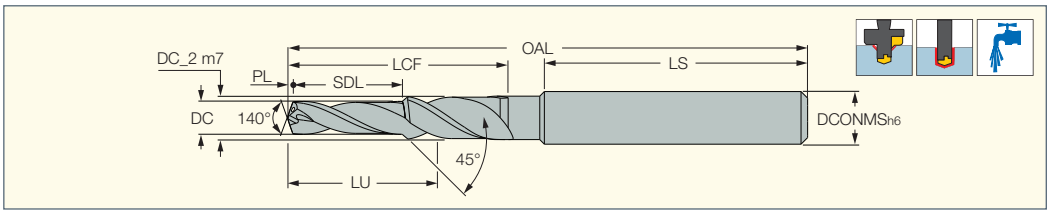
(1) Used for standard thread size

SOLIDDRILL

PRETHREAD

SCDT

Pre-Thread Solid Carbide
Drills with Coolant Holes



M E T R I C

Designation	Dimensions										IC908
	DC	SDL	DCONMS	Th(1)	DC_2	PL	LU	LCF	OAL	LS	
SCDT 025-009-060-M3	2.50	8.8	6.00	M3	4.00	0.450	16.00	20.0	62.00	36.0	●
SCDT 033-011-060-M4	3.30	11.4	6.00	M4	4.50	0.600	19.00	24.0	62.00	36.0	●
SCDT 042-014-060-M5	4.20	13.6	6.00	M5	5.50	0.760	22.00	28.0	66.00	36.0	●
SCDT 050-017-080-M6	5.00	16.5	8.00	M6	6.60	0.910	27.00	34.0	79.00	40.0	●
SCDT 068-021-100-M8	6.80	21.0	10.00	M8	9.00	1.240	38.00	47.0	89.00	40.0	●
SCDT 085-026-120-M10	8.50	25.5	12.00	M10	11.00	1.550	45.00	55.0	102.00	40.0	●

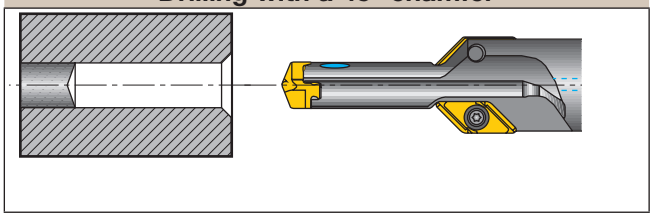
• For user guide and cutting conditions, see pages 505-513

(1) Used for standard thread size

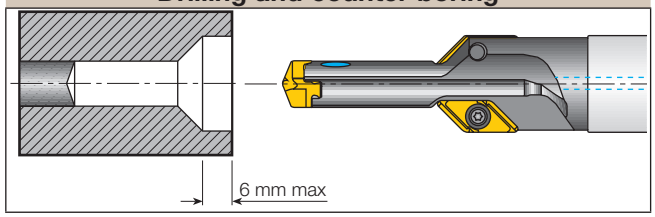
Pre-Thread DCT Drills

There are two main applications for pre-thread hole drilling:
Drilling pre-thread blind and through holes:

Drilling with a 45° chamfer



Drilling and counter boring



Pre-Thread DCT Metric Threads Recommended Diameters

Drill Designation	Dia. Range	M Thread	Head Dia.	MF Head	Head Dia.	TR Thread	Head Dia.	M Helicoil Thread	Head Dia.
DCT 068-021-14B-M8	6.80-7.49	M8	6.8	MF8X0.75	7.20	TR10X3	7.49		
				MF8X1	7.00				
DCT 085-026-14B-M10	8.30-8.99	M10	8.5	MF10X1	8.99	TR10X1.5	8.60	M8	8.40
				MF10X1.25	8.80				
DCT 102-030-14B-M12	10.0-10.99	M12	10.2	MF11X1	10.00	TR12X2	10.20	M10	10.50
				MF12X1	10.99	TR14X4	10.50		
				MF12X1.25	10.80				
				MF12X1.5	10.50				
DCT 120-035-16B-M14	12.0-12.99	M14	12.0	MF13X1	12.00	TR14X2	12.20	M12	12.50
				MF14X1	12.99	TR16X4	12.30		
				MF14X1.25	12.80				
				MF14X1.5	12.50				
DCT 140-039-18B-M16	14.0-14.99	M16	14.0	MF14X1	14.00	TR18X4	14.30	M14	14.99
				MF16X1	14.99				
				MF16X1.5	14.50				
DCT 175-042-20B-M20	17.3-17.99	M20	17.5			TR22X5	17.30		
				MF20X2	17.99				
DCT 210-048-25B-M24	21.0-21.99	M24	21.0	MF22X1	21.00				

Inch Threads

Drill Designation	Dia. Range	UNF Thread	Head Dia.	UNC Thread	Head Dia.	UNC Helicoil Thread	Head Dia.	BSW Thread	Head Dia.	BSF Thread	Head Dia.
DCT 085-026-14B-M10	8.30-8.99	UNF 3/8-24	8.5			UNC 5/16-18	8.4				
DCT 102-030-14B-M12	10.0-10.99			UNC 1/2-13	10.8			BSW 1/2-12	10.5	BSF 1/2-16	10.99
DCT 120-035-16B-M14	12.0-12.99			UNC 9/16-12	12.3					BSF 9/16-16	12.50
DCT 140-039-18B-M16	14.0-14.99	UNF 5/8-18	14.5								
DCT 175-042-20B-M20	17.3-17.99	UNF 3/4-16	17.5								

Inch Threads

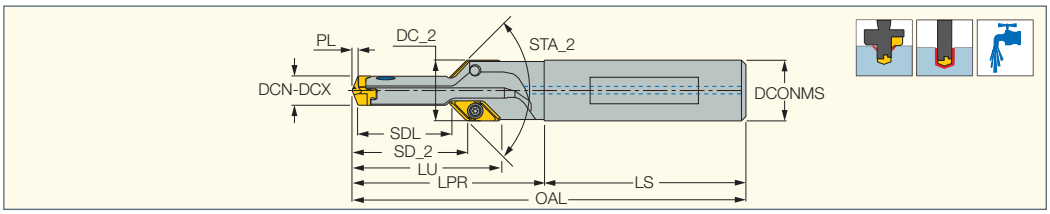
Drill Designation	Dia. Range	NPT Thread	Head Dia.	BSF Thread	Head Dia.	BSP Thread	Head Dia.	UNEF Thread	Head Dia.	UNJF Helicoil Thread	Head Dia.
DCT 085-026-14B-M10	8.30-8.99	NPT 1/8-27	8.5			G 1/8-28	8.8	UNEF 3/8-32	8.7	UNJF 3/8-24	8.6
DCT 102-030-14B-M12	10.0-10.99			BSF 1/2-16	10.99						
DCT 120-035-16B-M14	12.0-12.99			BSF 9/16-16	12.50						
DCT 140-039-18B-M16	14.0-14.99	NPT 3/8-18	14.5					UNEF 5/8-24	14.8	UNJF 5/8-18	14.5
DCT 175-042-20B-M20	17.3-17.99	NPT 1/2-14	17.5					UNEF 3/4-20	17.8		

Indexable Drilling

PRETHREAD

DCT (M8-M24)

Indexable Head Drills with Chamfering Inserts Mainly for Pre-Thread Holes



	M	E	T	R	I	C								
Designation	**DCN(2)**	**Dnominal(3)**	**DCX(4)**	**DC_2**	**DCONMS**	**SDL**	**LU**	**LPR**	**OAL**	**LS**	**STA_2**	**PL**	**SSC(5)**	**Th(6)**	**SD_2**
DCT 068-021-14B-M8 (1)	6.80	6.80	7.40	13.90	14.00	20.9	31.70	43.10	88.14	45.0	90.0	1.240	6.8	M8	25.74
DCT 085-026-14B-M10	8.30	8.50	8.90	14.00	14.00	26.3	36.60	48.00	93.05	45.0	90.0	1.550	8.0	M10	30.55
DCT 102-030-14B-M12	10.00	10.20	10.90	14.00	14.00	30.0	39.80	53.90	98.86	45.0	90.0	1.860	10.0	M12	33.76
DCT 120-035-16B-M14	12.00	12.00	12.90	16.00	16.00	34.9	45.10	60.20	108.18	48.0	90.0	2.180	12.0	M14	39.08
DCT 140-039-18B-M16	14.00	14.00	14.90	18.00	18.00	39.0	49.60	62.50	110.55	48.0	90.0	2.550	14.0	M16	43.55
DCT 175-042-20B-M20	17.30	17.50	17.90	21.00	20.00	42.0	53.00	66.20	116.18	50.0	90.0	3.180	17.0	M20	46.98
DCT 210-048-25B-M24	21.00	21.00	21.90	25.50	25.00	48.2	60.30	72.80	128.82	56.0	90.0	3.820	21.0	M24	54.32

- Hole tolerance: D+0.05 in average conditions. However, it can be higher or lower according to machine and tooling conditions.
- For user guide and cutting conditions, see pages 501-513

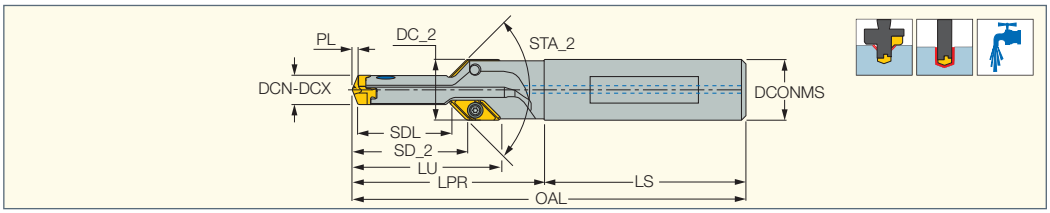
(1) Reduce recommended feed for DCT 6.8 mm drills by 10%
(2) Cutting diameter minimum • Do not mount smaller drilling heads other than the specified range of the drill body
(3) Pre-thread hole diameter
(4) Cutting diameter maximum
(5) Seat size code
(6) Used for standard thread size

CHAMDRILL

PRETHREAD

DCT (3/8-7/8 UNC/UNF)

Indexable Head Drills with Chamfering Inserts Mainly for Pre-Thread Holes



	I	N	C	H										
Designation	**DCN(1)**	**Dnominal(2)**	**DCX(3)**	**DC_2**	**DCONMS**	**SDL**	**SD_2**	**LPR**	**LU**	**OAL**	**LS**	**STA_2**	**PL**	**SSC(4)**	**Th(5)**
DCT 0311-100-063B-3/8UNC	.303	.311	.352	.590	.625	1.000	1.2050	1.860	1.4400	3.750	1.89	90.0	.05500	8.0	3/8UNC
DCT 0331-100-063B-3/8UNF	.323	.331	.352	.610	.625	1.000	1.2090	1.860	1.4500	3.750	1.89	90.0	.05900	8.0	3/8UNF
DCT 0366-106-063B-7/16UNC	.358	.366	.392	.630	.625	1.060	1.2650	1.900	1.5000	3.790	90.0	1.89	.06500	9.0	7/16UNC
DCT 0390-106-063B-7/16UNF	.382	.390	.392	.630	.625	1.060	1.2500	1.900	1.4900	3.790	1.89	90.0	.07000	9.0	7/16UNF
DCT 0421-106-063B-1/2UNC	.413	.421	.430	.630	.625	1.060	1.2450	1.970	1.4800	3.860	1.89	90.0	.07500	10.0	1/2UNC
DCT 0453-106-063B-1/2UNF	.445	.453	.471	.630	.625	1.060	1.2310	1.970	1.4700	3.860	1.89	90.0	.08100	11.0	1/2UNF
DCT 0484-106-063B-9/16UNC	.476	.484	.510	.630	.625	1.060	1.2270	1.980	1.4600	3.870	90.0	1.89	.08700	12.0	9/16UNC
DCT 0516-106-063B-9/16UNF	.512	.516	.550	.630	.625	1.060	1.2130	1.980	1.4500	3.870	1.89	90.0	.09300	13.0	9/16UNF
DCT 0531-120-075B-5/8UNC	.524	.531	.550	.750	.750	1.200	1.4150	2.110	1.6500	4.080	1.97	90.0	.09500	13.0	5/8UNC
DCT 0579-120-075B-5/8UNF	.571	.579	.589	.750	.750	1.200	1.3940	2.130	1.6300	4.100	1.97	90.0	.10400	14.0	5/8UNF
DCT 0657-140-075B-3/4UNC	.650	.657	.665	.780	.750	1.400	1.5680	2.320	1.8000	4.290	90.0	1.97	.11800	16.0	3/4UNC
DCT 0689-140-100B-3/4UNF	.681	.689	.707	.880	1.000	1.400	1.6240	2.320	1.8600	4.520	2.20	90.0	.12400	17.0	3/4UNF
DCT 0764-165-100B-7/8UNC	.756	.764	.786	1.000	1.000	1.650	1.9170	2.620	2.1500	4.820	2.20	90.0	.13700	19.0	7/8UNC
DCT 0811-165-100B-7/8UNF	.803	.811	.825	1.000	1.000	1.650	1.8960	2.630	2.1300	4.830	2.20	90.0	.14600	20.0	7/8UNF

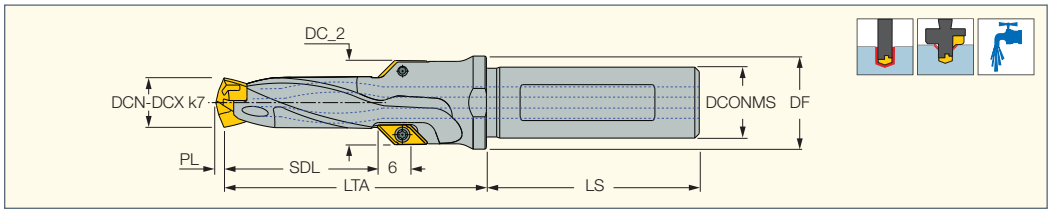
- Hole tolerance: D+.002 in average conditions. However, it can be higher or lower according to machine and tooling conditions
- For user guide and cutting conditions, see pages 505-513

(1) Cutting diameter minimum • Do not mount smaller drilling heads other than the specified range of the drill body
(2) Pre-thread hole diameter
(3) Cutting diameter maximum
(4) Seat size code
(5) Used for standard thread size

PRETHREAD

DCNT (M8-M24)

Indexable Head Drills with Chamfering Inserts Mainly for Pre-Thread Holes



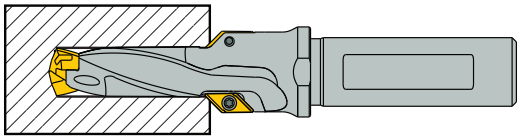
	METRIC											
Designation	**Dnominal[1]**	**Th[2]**	**DCN[3]**	**DCX[4]**	**DC_2**	**SDL**	**PL**	**LTA**	**DCONMS**	**DF**	**LS**	**SSC[5]**
DCNT 068-021-12A-M8	6.80	M8	6.50	6.90	13.50	21.00	1.240	43.80	12.00	16.00	45.0	6.5
DCNT 085-026-12A-M10	8.50	M10	8.50	8.90	15.50	26.00	1.200	48.80	12.00	17.00	45.0	8.0
DCNT 102-030-16A-M12	10.20	M12	10.00	10.40	17.00	30.00	1.500	52.50	16.00	20.00	48.0	10.0
DCNT 120-035-16A-M14	12.00	M14	12.00	12.40	19.00	35.00	1.800	61.00	16.00	21.00	48.0	12.0
DCNT 140-039-16A-M16	14.00	M16	14.00	14.40	21.00	39.00	2.100	66.90	16.00	23.00	48.0	14.0
DCNT 175-042-20A-M20	17.50	M20	17.00	17.90	24.00	42.00	2.700	69.30	20.00	25.00	50.0	17.0
DCNT 210-048-25A-M24	21.00	M24	21.00	21.90	28.00	48.00	3.200	80.00	25.00	32.00	56.0	21.0

- Hole tolerance: D+0.05 in average conditions. However, it can be higher or lower according to machine and tooling conditions
- Do not mount smaller drilling heads other than the specified range of the drill body. • For user guide and cutting conditions, see pages 505-513

[1] Pre-thread hole diameter [2] Used for standard thread size [3] Cutting diameter minimum [4] Cutting diameter maximum [5] Pocket size

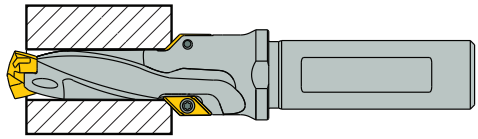
1. Drilling pre-thread blind holes:

Drilling with a 45° chamfer



2. Drilling pre-thread through holes:

Drilling with a 45° chamfer



Pre-Thread Recommended Hole Diameters with DCNT Drills

Drill Designation	Dia. Range	M Thread	Head Dia.	MF Head	Head Dia.	TR Thread	Head Dia.	M Helicoil Thread	Head Dia.
DCNT 068-021-12A-M8	6.5-6.99	M8	6.8						
DCNT 085-026-12A-M10	8.5-8.99	M10	8.5	MF10x1	8.99	TR10x1.5	8.6		
				MF10x1.25	8.8				
DCNT 102-030-16A-M12	10.0-10.99	M12	10.2	MF11x1	10.0	TR12x2	10.2	M10	10.5
				MF12x1	10.99				
				MF12x1.25	10.8	TR14x4	10.5		
				MF12x1.5	10.5				
DCNT 120-035-16A-M14	12.0-12.99	M14	12.0	MF13x1	12.0	TR14x2	12.2	M12	12.5
				MF14x1	12.99				
				MF14x1.25	12.8	TR16x4	12.3		
				MF14x1.5	12.5				
DCNT 140-039-16A-M16	14.0-14.99	M16	14.0		14.0	TR18x4	14.3	M14	14.99
				MF16x1	14.99				
				MF16x1.5	14.5				
DCNT 175-042-20A-M20	17.0-17.99	M20	17.5	MF20x2	17.99	TR22x5	17.3		
DCNT 210-048-25A-M24	21.0-21.99	M24	21.0	MF22x1	21.0				

Drill Designation	Dia. Range	UNF Thread	Head Dia.	UNC Thread	Head Dia.	BSW Thread	Head Dia.	BSF Thread	Head Dia.
DCNT 068-021-12A-M8	6.5-6.99								
DCNT 085-026-12A-M10	8.5-8.99	UNF3/8-24	8.5						
DCNT 102-030-16A-M12	10.0-10.99			UNC1/2-13	10.8	BSW1/2-12	10.5	BSF1/2-16	10.99
DCNT 120-035-16A-M14	12.0-12.99			UNC9/16-12	12.3			BSF9/16-16	12.5
DCNT 140-039-16A-M16	14.0-14.99	UNF5/8-18	14.5						
DCNT 175-042-20A-M20	17.0-17.99	UNF3/4-16	17.5						
DCNT 210-048-25A-M24	21.0-21.99								

Drill Designation	Dia. Range	NPT Thread	Head Dia.	BSP Thread	Head Dia.	UNEF Thread	Head Dia.	UNJF Helicoil Thread	Head Dia.
DCNT 068-021-12A-M8	6.5-6.99								
DCNT 085-026-12A-M10	8.5-8.99	NPT1/8-27	8.5	G1/8-28	8.8	UNEF3/8-32	8.7	UNJF3/8-24	8.6
DCNT 102-030-16A-M12	10.0-10.99								
DCNT 120-035-16A-M14	12.0-12.99								
DCNT 140-039-16A-M16	14.0-14.99	NPT3/8-18	14.5			UNEF5/8-24	14.8	UNJF5/8-18	14.5
DCNT 175-042-20A-M20	17.0-17.99	NPT1/2-14	17.5			UNEF3/4-20	17.8		
DCNT 210-048-25A-M24	21.0-21.99								

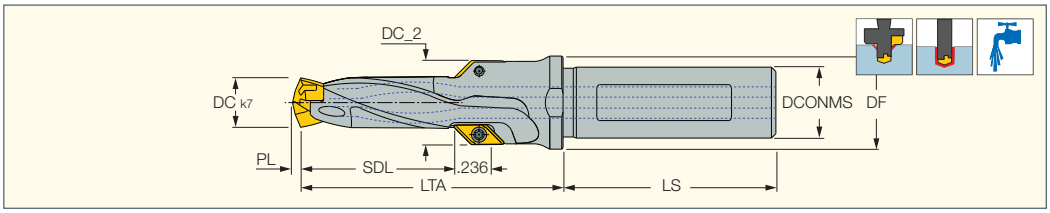
Spare Parts

Designation			
DCNT 068-021-12A-M8	SR 34-508	T-7/51	K DCN 6-9.99-Y
DCNT 085-026-12A-M10	SR 34-508	T-7/51	K DCN 6-9.99
DCNT 102-030-16A-M12	SR 34-508	T-7/51	K DCN 10-13.99
DCNT 120-035-16A-M14	SR 34-508	T-7/51	K DCN 10-13.99
DCNT 140-039-16A-M16	SR 34-508	T-7/51	K DCN 14-17.99
DCNT 175-042-20A-M20	SR 34-508	T-7/51	K DCN 14-17.99
DCNT 210-048-25A-M24	SR 34-508	T-7/51	K DCN 18-21.99

PRETHREAD

DCNT (UNC/UNF)

Indexable Head Drills with Chamfering Inserts Mainly for Pre-Thread Holes



	INCH											
Designation	**Dnominal[1]**	**Th[2]**	**DCN[3]**	**DCX[4]**	**DC_2**	**SDL**	**PL**	**LTA**	**DCONMS**	**DF**	**LS**	**SSC[5]**
DCNT 0315-100-050A-3/8UNC	.315	3/8	.315	.331	.590	1.0000	.04700	1.950	.500	.669	1.77	8.0
DCNT0370-106-050A-7/16UNC	.370	7/8	.354	.370	.630	1.0600	.05600	2.060	.500	.709	1.77	9.0
DCNT0425-106-063A-1/2UNC	.425	1/2	.413	.429	.689	1.0600	.06500	2.090	.625	.787	1.89	10.0
DCNT0484-106-063A-9/16UNC	.484	9/16	.472	.488	.748	1.0600	.07400	2.150	.625	.827	1.89	12.0
DCNT0531-120-063A-5/8UNC	.531	5/8	.512	.528	.787	1.2000	.08100	2.300	.625	.866	1.89	13.0
DCNT0650-140-075A-3/4UNC	.650	3/4	.630	.665	.905	1.4000	.09900	2.640	.750	.984	1.97	16.0
DCNT0768-165-100A-7/8UNC	.768	7/8	.748	.783	1.024	1.6500	.11700	3.010	1.000	1.260	2.20	19.0
DCNT 0335-100-050A-3/8UNF	.335	3/8	.315	.331	.590	1.0000	.05100	1.950	.500	.669	1.77	8.0
DCNT0390-106-050A-7/16UNF	.390	7/16	.374	.390	.650	1.0600	.06000	2.060	.500	.709	1.77	9.0
DCNT0453-106-063A-1/2UNF	.453	1/2	.453	.469	.728	1.0600	.06900	2.120	.625	.787	1.89	11.0
DCNT0508-106-063A-9/16UNF	.508	9/16	.492	.508	.768	1.0600	.07800	2.170	.625	.827	1.89	12.0
DCNT0571-120-063A-5/8UNF	.571	5/8	.571	.587	.827	1.2000	.08700	2.340	.625	.906	1.89	14.0
DCNT0689-140-075A-3/4UNF	.689	3/4	.669	.705	.945	1.4000	.10600	2.700	.750	1.063	1.97	17.0
DCNT0807-165-100A-7/8UNF	.807	7/8	.787	.823	1.063	1.6500	.12200	3.080	1.000	1.260	2.20	20.0

- Hole tolerance: D+.002" in average conditions. However, it can be higher or lower according to machine and tooling conditions
- Do not mount smaller drilling heads other than the specified range of the drill body. • For user guide and cutting conditions, see pages 505-513

(1) Pre-thread hole diameter
(2) Used for standard thread size
(3) Cutting diameter minimum
(4) Cutting diameter maximum
(5) Seat size code

Spare Parts

Designation			
DCNT 0315-100-050A-3/8UNC	SR 34-508	T-7/51	K DCN 6-9.99
DCNT0370-106-050A-7/16UNC	SR 34-508	T-7/51	K DCN 6-9.99
DCNT0425-106-063A-1/2UNC	SR 34-508	T-7/51	K DCN 10-13.99
DCNT0484-106-063A-9/16UNC	SR 34-508	T-7/51	K DCN 10-13.99
DCNT0531-120-063A-5/8UNC	SR 34-508	T-7/51	K DCN 10-13.99
DCNT0650-140-075A-3/4UNC	SR 34-508	T-7/51	K DCN 14-17.99
DCNT0768-165-100A-7/8UNC	SR 34-508	T-7/51	K DCN 18-21.99
DCNT 0335-100-050A-3/8UNF	SR 34-508	T-7/51	K DCN 6-9.99
DCNT0390-106-050A-7/16UNF	SR 34-508	T-7/51	K DCN 6-9.99
DCNT0453-106-063A-1/2UNF	SR 34-508	T-7/51	K DCN 10-13.99
DCNT0508-106-063A-9/16UNF	SR 34-508	T-7/51	K DCN 10-13.99
DCNT0571-120-063A-5/8UNF	SR 34-508	T-7/51	K DCN 14-17.99
DCNT0689-140-075A-3/4UNF	SR 34-508	T-7/51	K DCN 14-17.99
DCNT0807-165-100A-7/8UNF	SR 34-508	T-7/51	K DCN 18-21.99

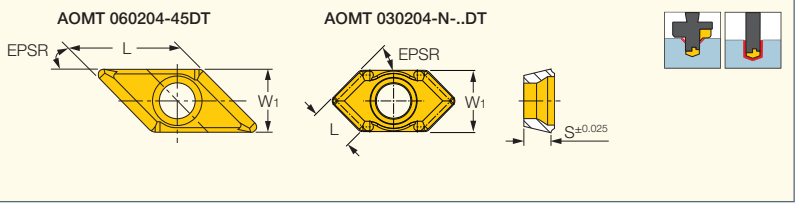
Spare Parts

Designation			
DCT 0311-100-063B-3/8UNC	SR 34-508	T-7/51	K DCM- 8
DCT 0331-100-063B-3/8UNF	SR 34-508	T-7/51	K DCM- 8
DCT 0366-106-063B-7/16UNC	SR 34-508	T-7/51	K DCM- 9
DCT 0390-106-063B-7/16UNF	SR 34-508	T-7/51	K DCM- 9
DCT 0421-106-063B-1/2UNC	SR 34-508	T-7/51	K DCM-10
DCT 0453-106-063B-1/2UNF	SR 34-508	T-7/51	K DCM-11
DCT 0484-106-063B-9/16UNC	SR 34-508	T-7/51	K DCM-12
DCT 0516-106-063B-9/16UNF	SR 34-508	T-7/51	K DCM-13
DCT 0531-120-075B-5/8UNC	SR 34-508	T-7/51	K DCM-13
DCT 0579-120-075B-5/8UNF	SR 34-508	T-7/51	K DCM-14
DCT 0657-140-075B-3/4UNC	SR 34-508	T-7/51	K DCM-16
DCT 0689-140-100B-3/4UNF	SR 34-508	T-7/51	K DCM-17
DCT 0764-165-100B-7/8UNC	SR 34-508	T-7/51	K DCM-19
DCT 0811-165-100B-7/8UNF	SR 34-508	T-7/51	K DCM-20

PRETHREAD

AOMT-Chamfering
Chamfering Inserts





M E T R I C

Designation	Dimensions L	W1	S	EPSR	Tough ↔ Hard IC1008	IC508	IC908
AOMT 060204-45DT	5.66	4.50	1.96	45.5		●	●
AOMT 060204-45HD (1)	5.66	4.50	1.96	45.5			●
AOMT 030204-N-45DT (2)	2.80	4.00	1.59	45.5	●		
AOMT 030204-N-30DT (2)	4.00	4.00	1.59	30.5	●		

I N C H

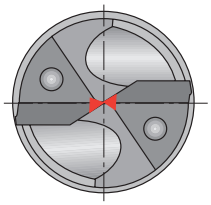
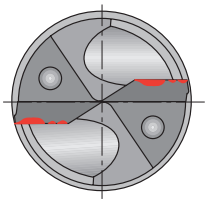
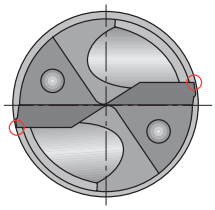
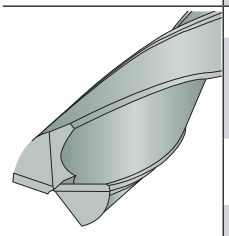
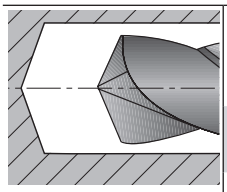
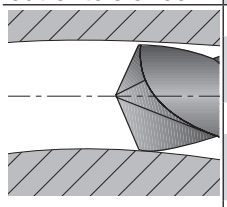
Designation	Dimensions L	W1	S	EPSR	Tough ↔ Hard IC1008	IC508	IC908
AOMT 060204-45DT	.223	.177	.077	45.5		●	●
AOMT 060204-45HD (1)	.223	.177	.077	45.5			●
AOMT 030204-N-45DT (2)	.110	.157	.063	45.5	●		
AOMT 030204-N-30DT (2)	.157	.157	.063	30.5	●		

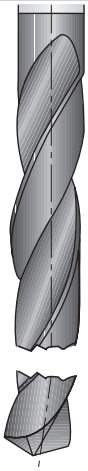
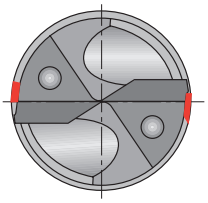
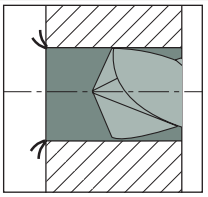
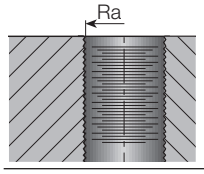
- The cutting speed is dependent on the drilling insert being used

(1) For low carbon steel

(2) Used for specially tailored tools

Troubleshooting

Problem	Cause	Solution
 Chipping on the chisel edge	• Poor clamping of the chuck	• Check the clamping. Use hydraulic clamping chuck, maxin power chuck or a shrink system.
	• Unsuitable cutting conditions	• Decrease feed, increase coolant pressure.
	• Chisel runout	• Check or replace the clamping adaptation.
	• Workpiece movement	• Increase workpiece chucking force.
 Chipping on the cutting edges / built-up edge	• Poor clamping of the chuck	• Check the clamping. Use hydraulic clamping chuck, maxin power chuck or a shrink system.
	• Unsuitable cutting conditions	• Increase cutting speed, reduce feed rate.
	• Insufficient coolant	• Check cooling lubricant. Increase coolant pressure. In the case of external coolant supply, improve jet direction and add cooling jets.
	• Rough application	• Reduce feed rate by 30-50% during entry and exiting.
 Excessive wear on the cutting corners	• Insufficient coolant	• Check cooling lubricant. Increase coolant pressure. In the case of external coolant supply, improve jet direction and add coolant jets.
	• Large runout	• Check if the runout is within 0.02 mm T.I.R. (radial & axial)
	• Unsuitable cutting conditions	• Reduce cutting speed, increase feed.
	• Rough application	• Reduce feed rate by 30-50% during entry and exit.
	• Poor clamping of the chuck	• Check the clamping. Use hydraulic clamping chuck, maxin power chuck or a shrink system.
 Chipping on the lands	• Workpiece movement	• Increase workpiece chucking force.
	• Insufficient coolant	• Check cooling lubricant. Increase coolant pressure. In the case of external coolant supply, improve jet direction and add coolant jets.
	• Wrong drill	• Check drill type, drilling depth, cooling system and workpiece material.
	• Unsuitable cutting conditions	• Increase feed. When spot drilling, reduce feed.
 Hole diameter out of tolerance	• Unsuitable cutting conditions	• If hole size is too large, increase cutting speed or reduce feed. If hole size is too small, reduce cutting speed or increase feed.
	• Poor clamping of the chuck	• Check the clamping. Use hydraulic clamping chuck, maxin power chuck or a shrink system.
	• Large runout	• Make sure that the drill's runout is within 0.02 mm (radial & axial).
	• Worn out center point (chisel)	• Regrind cutting edge or replace the drill.
 Hole not straight	• Insufficient chip evacuation	• Use pecking cycle.
	• Poor clamping of the chuck	• Check the clamping. Use hydraulic clamping chuck, maxin power chuck or a shrink system.
	• Workpiece rigidity	• Increase workpiece chucking force.
	• Worn out drill center point (chisel)	• Regrind cutting edge.
	• Unsuitable cutting conditions	• Increase feed. When spot drilling, reduce feed.

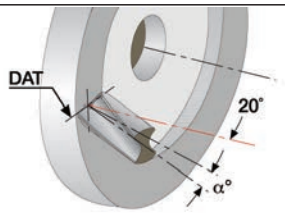
Problem	Cause	Solution
 Drill breakage	• Poor clamping of the chuck	• Check the clamping. Use hydraulic clamping chuck, maxin power chuck or a shrink system.
	• Workpiece movement	• Increase workpiece chucking force.
	• Wrong drill	• Check drill type and drilling depth, cooling system and workpiece material.
	• Insufficient coolant	• Check cooling lubricant. Increase coolant pressure. In the case of external coolant supply, improve jet direction and add cooling jets.
	• Unsuitable cutting conditions	• Reduce feed.
	• Worn out drill center point (chisel)	• Regrind cutting edge.
	• Insufficient chip evacuation	• Use pecking cycle.
 Chipping on the cutting corners	• Poor clamping of the chuck	• Check the clamping and adaptation. Use hydraulic clamping chuck, maxin power chuck or a shrink system.
	• Workpiece movement	• Increase workpiece chucking force.
	• Wrong drill	• Check drill type and drilling depth, cooling system and workpiece material. Possibly use longer drill.
	• Insufficient coolant	• Check cooling lubricant. Increase coolant pressure. In the case of external coolant supply, improve jet direction and add cooling jets.
	• Unsuitable cutting conditions	• Check cutting parameters, and possibly reduce feed.
	• Worn out or broken cutting corner	• Replace drill or regrind cutting edge.
Problem	• Cause	• Solution
 Burrs on exit	• Unsuitable cutting conditions	• Reduce feed by 30-50% during exit.
	• Worn out drill	• Replace drill.
 Rough surface finish	• Unsuitable cutting conditions	• Adjust feed to improve chip flow.
	• Large runout	• Make sure that the drill's runout is within 0.02 mm (radial & axial).
	• Chip jamming	• Reduce cutting speed.
		• Increase coolant pressure.
		• Apply pecking procedure.
 Deviation of hole position	• Large runout	• Make sure that the drill runout is within 0.02 mm (radial & axial).
	• Poor stability	• Check and improve drill and workpiece clamping rigidity.
	• Rough application	• When drilling hard materials or sloped surfaces, reduce feed by 30-50% during entrance.
		• Use a short pilot drill with 140° point angle.

Regrinding Instructions for AP and ACP Geometries

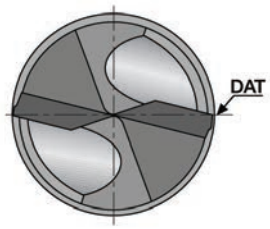
For each grinding operation, rotate the drill 180° and repeat the grinding procedure.

1 Primary Clearance



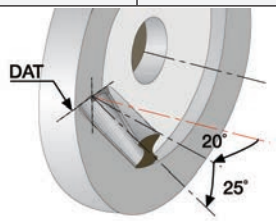


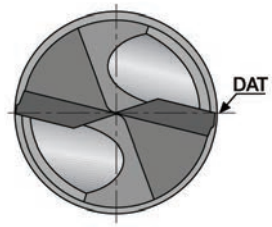
a°	D Range
7	0.8-6.0
10	>6.1



2 Secondary Clearance

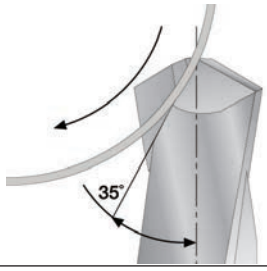


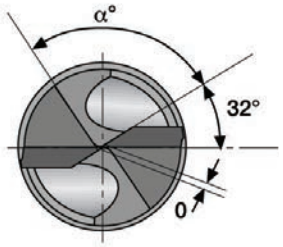




3 Chisel

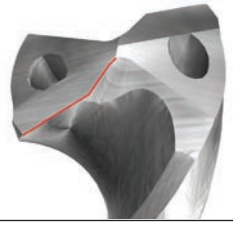


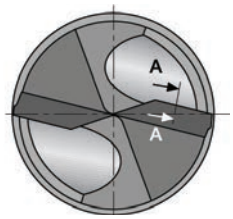


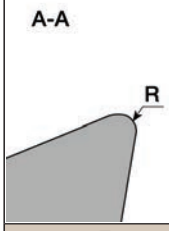


a°	D Range
100	3.0-4.8
105	4.9-10
95	10.1-20

4 Edge Preparation







R	D Range
0.02	0.8-6.0
0.03	6.1-18.0
0.04	18.1>UP

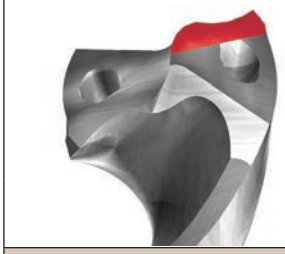
Grinding Wheel Recommended Specifications:

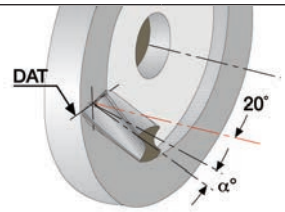
1 Diameter grinding wheel: GA2
2 Grinding wheel bond: synthetic resin
3 Grit size: 325/400 mesh (45/38µ)
4 Diamond concentration: C-75 (3.3 carat/cm^3)
5 Cutting fluid emulsion 3%

Regrinding Instructions for AG and ACG Geometries

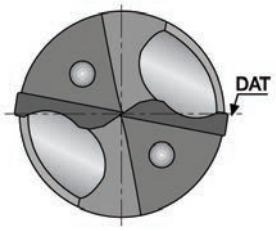
For each Grinding operation, rotate the drill 180° and repeat the grinding procedure.

1 Primary Clearance

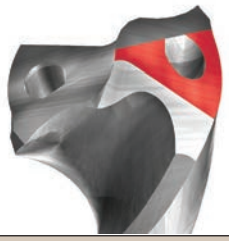


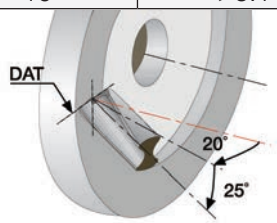


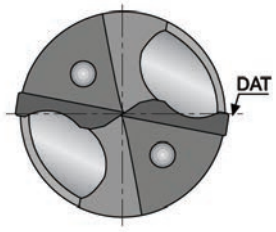
a°	D Range
7	0.8-6.0
10	>6.1



2 Secondary Clearance

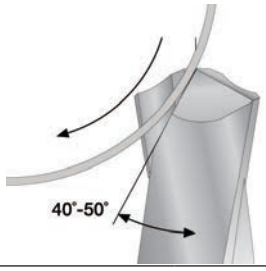


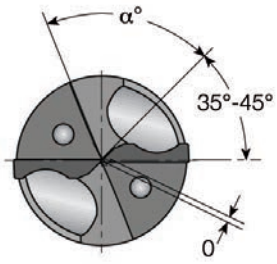




3 Chisel

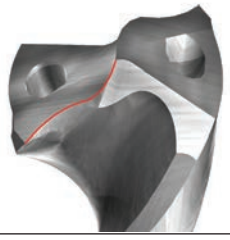


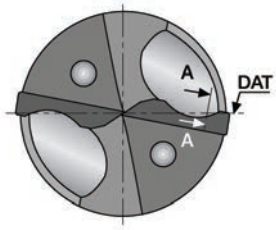




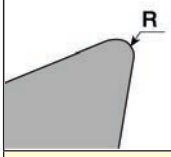
a°	D Range
100	3.0-4.8
105	4.9-10
95	10.1-20

4 Edge Preparation





A-A



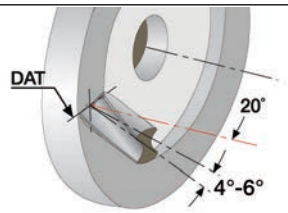
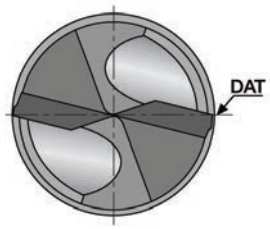
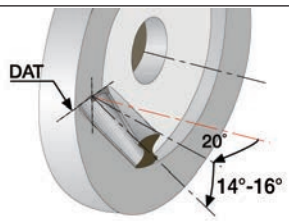
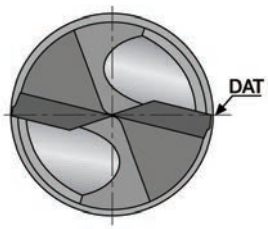
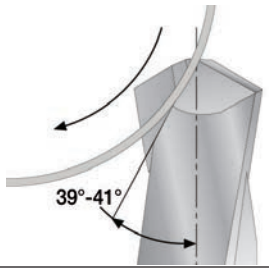
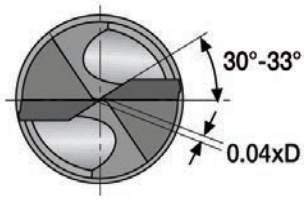
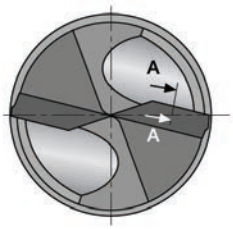
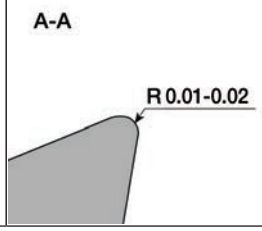
R	D Range
0.02	0.8-6.0
0.03	6.1-18.0
0.04	18.1>UP

Grinding Wheel Recommended Specifications:

1 Diameter grinding wheel: GA2
2 Grinding wheel bond: synthetic resin
3 Grit size: 325/400 mesh (45/38µ)
4 Diamond concentration: C-75 (3.3 carat/cm^3)
5 Cutting fluid emulsion 3%

Regrinding Instructions for AH Geometry

For each grinding operation, rotate the drill 180° and repeat the grinding procedure.

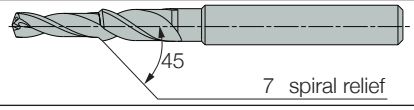
1	**Primary Clearance**		
2	**Secondary Clearance**		
3	**Chisel**		
4	**Edge Preparation**		

Grinding Wheel Recommended Specifications:

1 Diameter grinding wheel: GA2
2 Grinding wheel bond: synthetic resin
3 Grit size: 325/400 mesh (45/38µ)
4 Diamond concentration: C-75 (3.3 carat/cm^3)
5 Cutting fluid emulsion 3%

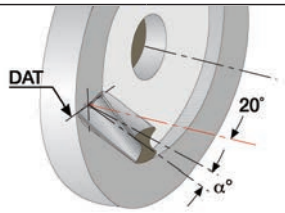
Regrinding Instructions for SCDT Pre-Thread SOLIDDRILL

For each grinding operation, rotate the drill 180° and repeat the grinding procedure.

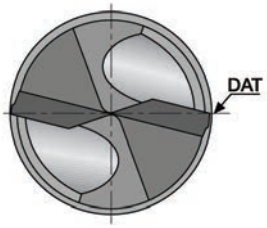


1 Primary Clearance

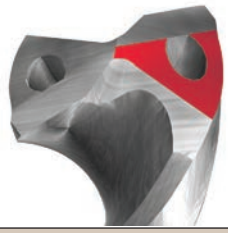


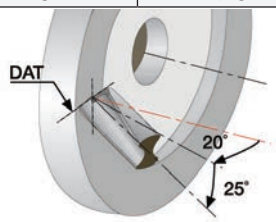


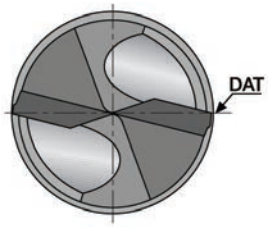
a°	D Range
7	0.8-6.6
10	>6.1



2 Secondary Clearance

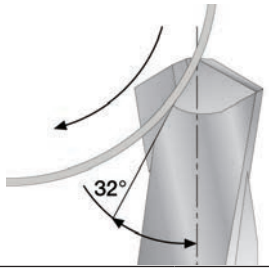


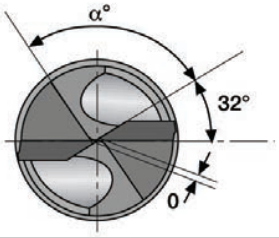




3 Chisel

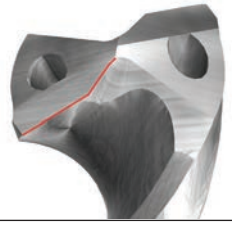


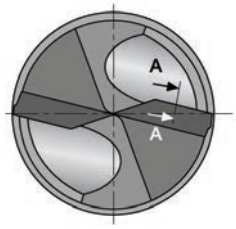


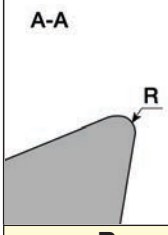


a°	D Range
100	3.0-4.8
105	4.9-10
95	10.1-20

4 Edge Preparation







R	D Range
0.02	0.8-6.0
0.03	6.1-18.0
0.04	18.1>UP

Grinding Wheel Recommended Specifications:

1 Diameter grinding wheel: GA2
2 Grinding wheel bond: synthetic resin
3 Grit size: 325/400 mesh (45/38µ)
4 Diamond concentration: C-75 (3.3 carat/cm^3)
5 Cutting fluid emulsion 3%

General - Calculations - Metric

Spindle Speed (min^{-1})

$$n = \frac{v_c \cdot 1000}{\pi \cdot D}$$

Cutting Speed (m/min)

$$v_c = \frac{\pi \cdot D \cdot n}{1000}$$

Table Feed (mm/min)

$$v_f = f \cdot n$$

Material Removal Rate (cm^3/min)

$$Q = \frac{v_f \cdot \pi \cdot D_2}{4000}$$

Power Requirement (kW)

$$Pc = \frac{Q}{60.000 \cdot \eta} \cdot kc$$

Torque (Nm)

$$M_c = \frac{f \cdot k_c}{1000} \cdot \frac{D_2}{8}$$

Feed Force (approx.) (N)

$$F_f = 0.7 \cdot \frac{D}{2} \cdot f \cdot kc \cdot \sin k$$

Machining Time (min/piece)

$$T_c = \frac{L+h}{vf}$$

Machining Cost ($/piece)

$$C_c = \frac{C_{Mh}}{60} \cdot Tc$$

f	=	Feed/rev	mm/rev
k_c	=	Material specific cutting force	N/mm^2
h	=	point to workpiece before feeding	mm
D	=	Diameter of hole	mm
L	=	Depth of hole	mm
C_{Mh}	=	Cost/machine hour	$/h
η	=	Machine efficiency	%
k	=	90° } 180° bottom drills	
sin k	=	1 } DR...	
k	=	70° } 140° point angle drills	
sin k	=	0.94 } SCD.., DCM.., DCN..	

General - Calculations - Inch

Spindle Speed (min^{-1})

$$n = \frac{v_c \cdot 12}{\pi \cdot D}$$

Cutting sfm

$$v_c = \frac{\pi \cdot D \cdot n}{12}$$

Table Feed (in/min)

$$v_f = f \cdot n$$

Material Removal Rate (in^3/min)

$$Q = \frac{v_f \cdot \pi \cdot D_2}{4}$$

Power Consumption (hp)

$$Pc = \frac{Q}{396 \cdot \eta} \cdot kc$$

Torque

$$Mc = f \cdot kc \cdot 1000 \cdot \frac{D_2}{8} \cdot \sin k$$

Feed Force (approx.) (lbf)

$$F_f = 700 \cdot \frac{D}{2} \cdot f \cdot kc \cdot \sin k$$

Machining Time (min/piece)

$$T_c = \frac{L+h}{vf}$$

Machining Cost ($/piece)

$$C_c = \frac{I_{nh}}{60} \cdot Tc$$

f	=	Feed/rev	ipr
k_c	=	Material specific cutting force	kpsi
h	=	point to workpiece before feeding	in
D	=	Diameter of hole	in
L	=	Depth of hole	in
Inh	=	Cost/machine hour	$/h
η	=	Machine efficiency	%
k	=	90° } 180° bottom drills	
sin k	=	1 } DR...	
k	=	70° } 140° point angle drills	
sin k	=	0.94 } SCD.., DIn.., DCN..	

k_c Values

ISCAR Material Group	k_c Value N/mm^2	k_c Value kpsi
1	1350	196
2	1500	218
3	1675	243
4	1700	247
5	1900	276
6	1775	257
7	1675	243
8	1725	250
9	1800	261
10	2450	355
11	2500	363
12	1875	272
13	1875	272
14	2150	312
15	1150	167
16	1350	196
17	1225	178
18	1350	196
19	1225	178
20	1450	206
21	700	102
22	800	116
23	700	102
26	700	102
27	750	109
28	700	102
31	2600	377
32	3100	450
33	3300	479
34	3300	479
35	3300	479
36	1700	247
37	2110	306
38	4600	667
39	4700	682
40	4600	667
41	4500	653

Tool Family	Dia. (mm)	Dia. (in)	L/D Ratio	Hole accuracy*
DR	12-80	.469-3.15	2XD-5XD	IT 12-13
SUMOCHAM	4-32.9	.157-1.26	1.5XD-12XD	IT 8-9
CHAM-IQ-DRILL	33-40	1.299-1.575	1.5XD-8XD	IT 8-9
COMBICHAM	26-50	1.125-2.00	5XD	IT 9-10
LOGIQ	12-25	.472-.984	1.5XD-8XD	IT 8-9
MODUDRILL	33-40	1.299-1.575	3XD-12XD	IT 9-10

* ISO tolerance grade, provided in average cutting conditions

Machining Data for Solid Carbide Drills D=0.8-2.9 mm

ISO	Material		Condition	Tensile Strength [N/mm²]	Hardness HB	Material No.(1)
P	Non-alloy steel and cast steel, free cutting steel	< 0.25 %C	Annealed	420	125	1
		>= 0.25 %C	Annealed	650	190	2
		< 0.55 %C	Quenched and tempered	850	250	3
		>= 0.55 %C	Annealed	750	220	4
			Quenched and tempered	1000	300	5
	Low alloy steel and cast steel (less than 5% of alloying elements)		Annealed	600	200	6
			Quenched and tempered	930	275	7
				1000	300	8
				1200	350	9
	High alloyed steel, cast steel, and tool steel		Annealed	680	200	10
			Quenched and tempered	1100	325	11
	Stainless steel and cast steel		Ferritic/martensitic	680	200	12
			Martensitic	820	240	13
M	Stainless steel		Austenitic	600	180	14
K	Grey cast iron (GG)		Ferritic/pearlitic		180	15
			Pearlitic		260	16
	Nodular cast iron (GGG)		Ferritic		160	17
			Pearlitic		250	18
	Malleable cast iron		Ferritic		130	19
			Pearlitic		230	20
N	Aluminum- wrought alloy		Not cureable		60	21
			Cured		100	22
	Aluminum-cast, alloyed	<=12% Si	Not cureable		75	23
			Cured		90	24
		>12% Si	High temperature		130	25
	Copper alloys	>1% Pb	Free cutting		110	26
			Brass		90	27
			Electrolitic copper		100	28
	Non-metallic		Duroplastics, fiber plastics			29
			Hard rubber			30
S	High temp. alloys	Fe based	Annealed		200	31
			Cured		280	32
		Ni or Co based	Annealed		250	33
			Cured		350	34
			Cast		320	35
	Titanium Ti alloys			RM 400		36
			Alpha+beta alloys cured	RM 1050		37
H	Hardened steel		Hardened		55 HRC	38
			Hardened		60 HRC	39
	Chilled cast iron		Cast		400	40
	Cast iron		Hardened		55 HRC	41

- For drill with lengh to diameter ratio larger than 6xD, reduce feed by 20%
- If the RPM exceeds 10,000, a dynamic balance should be done to the system
- Maximal radial and axial runout should not exceed 0.01 mm

(1) For workpiece materials list, see pages 520-557

As a starting value, the middle of the recommended machining range should be used.

Then, (according to wear results), conditions can be changed in order to optimize performance.

Cutting Speed V_c (m/min)	Feed (mm/rev) vs. Drill Diameter			
	Ø0.8-1.4	Ø1.5-1.9	Ø2-2.4	Ø2.5-2.9
50-100	0.03-0.10	0.05-0.15	0.07-0.17	0.08-0.20
40-100	0.03-0.10	0.05-0.15	0.07-0.17	0.08-0.20
40-85	0.03-0.10	0.05-0.15	0.07-0.17	0.08-0.20
40-85	0.03-0.10	0.05-0.15	0.07-0.17	0.08-0.20
40-85	0.03-0.10	0.05-0.15	0.07-0.17	0.08-0.20
40-75	0.03-0.10	0.05-0.15	0.07-0.17	0.08-0.20
40-60	0.03-0.10	0.05-0.15	0.07-0.17	0.08-0.20
40-60	0.03-0.10	0.05-0.15	0.07-0.17	0.08-0.20
40-60	0.03-0.10	0.05-0.15	0.07-0.17	0.08-0.20
30-50	0.03-0.10	0.05-0.15	0.07-0.17	0.08-0.20
30-50	0.03-0.10	0.05-0.15	0.07-0.17	0.08-0.20
20-35	0.03-0.06	0.04-0.08	0.05-0.10	0.06-0.10
20-35	0.03-0.06	0.04-0.08	0.05-0.10	0.06-0.10
20-35	0.03-0.06	0.04-0.08	0.05-0.10	0.06-0.10
40-80	0.03-0.10	0.05-0.15	0.07-0.17	0.08-0.20
40-70	0.03-0.10	0.05-0.15	0.07-0.17	0.08-0.20
40-95	0.03-0.10	0.05-0.15	0.07-0.17	0.08-0.20
50-95	0.03-0.10	0.05-0.15	0.07-0.17	0.08-0.20
40-80	0.03-0.10	0.05-0.15	0.07-0.17	0.08-0.20
40-80	0.03-0.10	0.05-0.15	0.07-0.17	0.08-0.20
80-150	0.03-0.10	0.05-0.15	0.07-0.17	0.08-0.20
80-150	0.03-0.10	0.05-0.15	0.07-0.17	0.08-0.20
80-150	0.03-0.10	0.05-0.15	0.07-0.17	0.08-0.20
80-150	0.03-0.10	0.05-0.15	0.07-0.17	0.08-0.20
80-150	0.03-0.10	0.05-0.15	0.07-0.17	0.08-0.20
80-150	0.03-0.10	0.05-0.15	0.07-0.17	0.08-0.20
50-150	0.05-0.12	0.07-0.15	0.08-0.18	0.09-0.18
60-160	0.05-0.15	0.07-0.18	0.08-0.20	0.09-0.22
10-20	0.02-0.04	0.03-0.06	0.04-0.07	0.04-0.08
10-20	0.02-0.04	0.03-0.06	0.04-0.07	0.04-0.08
10-20	0.02-0.04	0.03-0.06	0.04-0.07	0.04-0.08
10-20	0.02-0.04	0.03-0.06	0.04-0.07	0.04-0.08
10-20	0.02-0.04	0.03-0.06	0.04-0.07	0.04-0.08
10-20	0.02-0.03	0.02-0.03	0.03-0.04	0.03-0.04
10-20	0.02-0.03	0.02-0.03	0.03-0.04	0.03-0.04
10-20	0.01-0.02	0.01-0.02	0.02-0.03	0.02-0.03
10-20	0.01-0.02	0.01-0.02	0.02-0.03	0.02-0.03
10-20	0.01-0.02	0.01-0.02	0.02-0.03	0.02-0.03
10-20	0.01-0.02	0.01-0.02	0.02-0.03	0.02-0.03

Machining Data for Solid Carbide Drills - IC908 D=3.0-20.0 mm

ISO	Material		Condition	Tensile Strength [N/mm²]	Hardness HB	Material No.(1)
P	Non-alloy steel and cast steel, free cutting steel	< 0.25 %C	Annealed	420	125	1
		>= 0.25 %C	Annealed	650	190	2
		< 0.55 %C	Quenched and tempered	850	250	3
		>= 0.55 %C	Annealed	750	220	4
			Quenched and tempered	1000	300	5
	Low alloy steel and cast steel (less than 5% of alloying elements)		Annealed	600	200	6
			Quenched and tempered	930	275	7
				1000	300	8
				1200	350	9
	High alloyed steel, cast steel, and tool steel		Annealed	680	200	10
			Quenched and tempered	1100	325	11
	Stainless steel and cast steel		Ferritic/martensitic	680	200	12
			Martensitic	820	240	13
M	Stainless steel		Austenitic	600	180	14
K	Grey cast iron (GG)		Ferritic/pearlitic		180	15
			Pearlitic		260	16
	Nodular cast iron (GGG)		Ferritic		160	17
			Pearlitic		250	18
	Malleable cast iron		Ferritic		130	19
			Pearlitic		230	20
N	Aluminum- wrought alloy		Not cureable		60	21
			Cured		100	22
	Aluminum-cast, alloyed	<=12% Si	Not cureable		75	23
			Cured		90	24
		>12% Si	High temperature		130	25
	Copper alloys	>1% Pb	Free cutting		110	26
			Brass		90	27
			Electrolitic copper		100	28
	Non-metallic		Duroplastics, fiber plastics			29
			Hard rubber			30
S	High temp. alloys	Fe based	Annealed		200	31
			Cured		280	32
		Ni or Co based	Annealed		250	33
			Cured		350	34
			Cast		320	35
	Titanium Ti alloys			RM 400		36
			Alpha+beta alloys cured	RM 1050		37
H	Hardened steel		Hardened		55 HRC	38
			Hardened		60 HRC	39
	Chilled cast iron		Cast		400	40
	Cast iron		Hardened		55 HRC	41

As a starting value, the middle of the recommended machining range should be used. Then, (according to wear results), conditions can be changed in order to optimize performance.

- When using external coolant supply only, reduce cutting speed by 10%
- Use internal coolant supply when machining austenitic stainless stee

(1) For workpiece materials list, see pages 520-557

Cutting Speed V_c m/min	Feed (mm/rev) vs. Drill Diameter				
	Ø3-5	Ø5.1-8	Ø8.1-12	Ø12.1-16	Ø16.1-20
80-120	0.10-0.18	0.15-0.25	0.2-0.30	0.20-0.35	0.25-0.40
80-110	0.10-0.18	0.15-0.25	0.2-0.30	0.20-0.35	0.25-0.40
70-100	0.10-0.20	0.15-0.28	0.2-0.35	0.20-0.38	0.25-0.42
70-90	0.10-0.18	0.15-0.25	0.2-0.30	0.20-0.35	0.25-0.40
60-80	0.10-0.18	0.15-0.25	0.2-0.30	0.20-0.35	0.25-0.40
50-70	0.10-0.20	0.15-0.28	0.2-0.35	0.20-0.38	0.25-0.42
60-80	0.10-0.20	0.15-0.28	0.18-0.35	0.20-0.38	0.25-0.42
50-70	0.10-0.15	0.12-0.20	0.14-0.25	0.16-0.30	0.18-0.32
25-75	0.04-0.10	0.05-0.15	0.05-0.18	0.08-0.20	0.10-0.20
25-75	0.04-0.10	0.05-0.15	0.05-0.18	0.08-0.20	0.10-0.20
25-75	0.04-0.10	0.05-0.15	0.05-0.18	0.08-0.20	0.10-0.20
85-105	0.15-0.25	0.20-0.35	0.25-0.45	0.30-0.50	0.35-0.55
75-90	0.15-0.25	0.20-0.35	0.25-0.45	0.30-0.50	0.35-0.55
65-80	0.12-0.20	0.15-0.25	0.20-0.35	0.25-0.40	0.30-0.45
70-300	0.10-0.25	0.15-0.35	0.25-0.45	0.30-0.50	0.35-0.55
70-200					
70-300	0.07-0.18	0.12-0.25	0.20-0.35	0.25-0.45	0.30-0.50
15-35	0.02-0.07	0.04-0.10	0.06-0.12	0.08-0.15	0.08-0.18
40-70	0.06-0.10	0.08-0.12	0.10-0.14	0.12-0.16	0.14-0.18

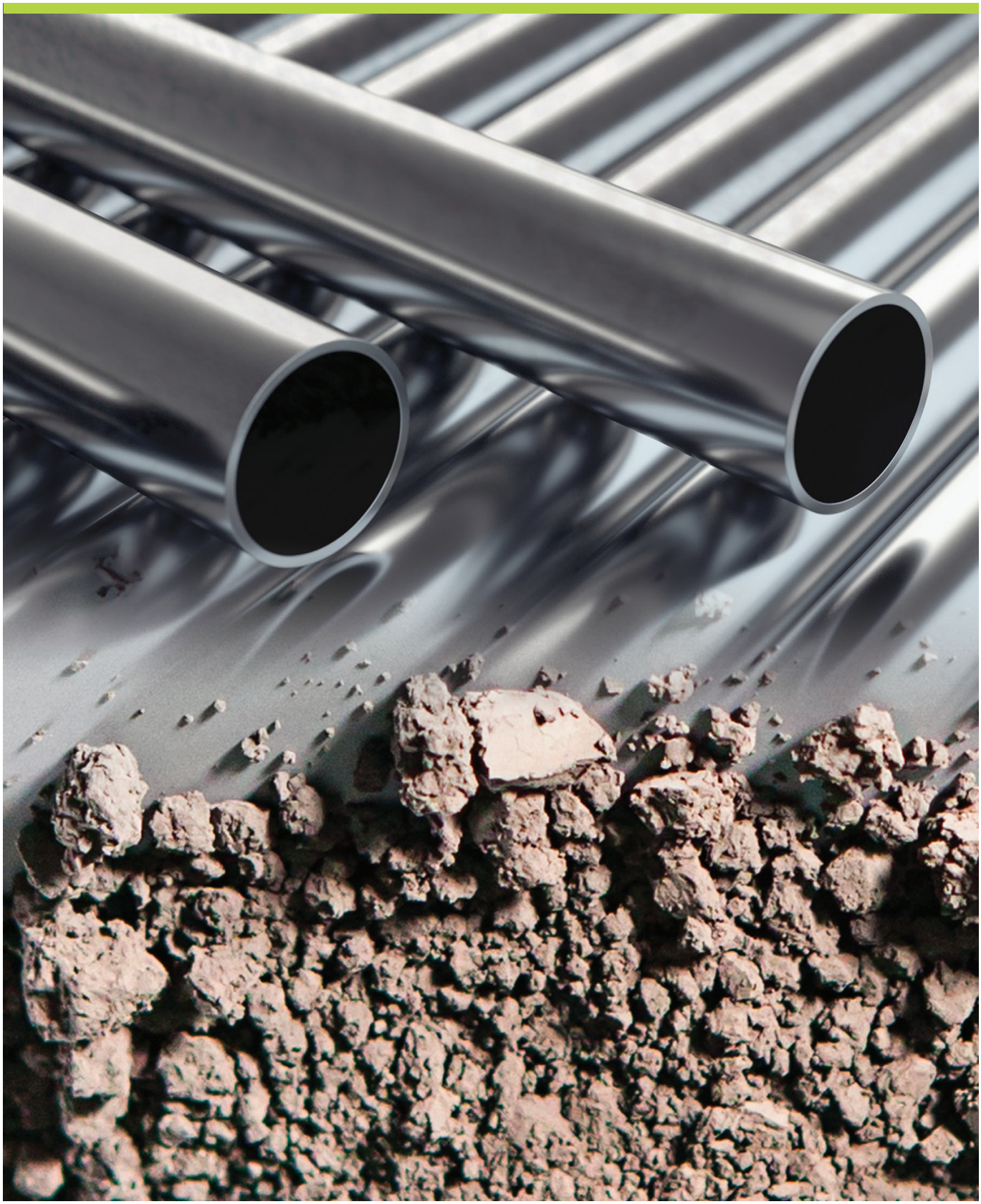
Cutting Recommendations for 3 Flute Solid Carbide Drills

ISO	Material		Condition	Tensile Strength [N/mm²]	Hardness HB	Material No.
P	Non-alloy steel and cast steel, free cutting steel	< 0.25 %C	Annealed	420	125	1
		>= 0.25 %C	Annealed	650	190	2
		< 0.55 %C	Quenched and tempered	850	250	3
		>= 0.55 %C	Annealed	750	220	4
			Quenched and tempered	1000	300	5
	Low alloy steel and cast steel (less than 5% of alloying elements)		Annealed	600	200	6
			Quenched and tempered	930	275	7
				1000	300	8
				1200	350	9
	High alloyed steel, cast steel, and tool steel		Annealed	680	200	10
			Quenched and tempered	1100	325	11
	Stainless steel and cast steel		Ferritic/martensitic	680	200	12
			Martensitic	820	240	13
M	Stainless steel		Austenitic	600	180	14
K	Grey cast iron (GG)		Ferritic/pearlitic		180	15
			Pearlitic		260	16
	Nodular cast iron (GGG)		Ferritic		160	17
			Pearlitic		250	18
	Malleable cast iron		Ferritic		130	19
			Pearlitic		230	20
N	Aluminum- wrought alloy		Not cureable		60	21
			Cured		100	22
	Aluminum-cast, alloyed	<=12% Si	Not cureable		75	23
			Cured		90	24
		>12% Si	High temperature		130	25
	Copper alloys	>1% Pb	Free cutting		110	26
			Brass		90	27
			Electrolitic copper		100	28
	Non-metallic		Duroplastics, fiber plastics			29
			Hard rubber			30
S	High temp. alloys	Fe based	Annealed		200	31
			Cured		280	32
		Ni or Co based	Annealed		250	33
			Cured		350	34
			Cast		320	35
	Titanium Ti alloys			RM 400		36
			Alpha+beta alloys cured	RM 1050		37
H	Hardened steel		Hardened		55 HRC	38
			Hardened		60 HRC	39
	Chilled cast iron		Cast		400	40
	Cast iron		Hardened		55 HRC	41

(1) For workpiece materials list, see pages 520-557

Cutting speed V_c m/min	Feed (mm/rev) vs. Drill Diameter				
	3-5	5.1-8	8.1-12	12.1-16	16.1-20
60-120	0.08-0.15	0.12-0.2	0.15-0.22	0.18-0.3	0.24-0.38
60-120					
70-100	0.08-0.16	0.12-0.23	0.15-0.28	0.2-0.34	0.25-0.40
70-110					
70-90					
60-120	0.08-0.15	0.12-0.2	0.15-0.22	0.16-0.28	0.2-0.32
70-110					
60-90					
50-80	0.08-0.16	0.12-0.23	0.15-0.28	0.15-0.31	0.2-0.34
60-120	0.08-0.16	0.12-0.23	0.15-0.28	0.15-0.31	0.2-0.34
40-70	0.08-0.12	0.1-0.16	0.11-0.2	0.13-0.24	0.15-0.26
25-80	0.03-0.08	0.04-0.12	0.04-0.15	0.065-0.16	0.08-0.18
25-80	0.03-0.08	0.04-0.12	0.04-0.15	0.065-0.16	0.08-0.18
60-110	0.1-0.2	0.14-0.24	0.18-0.32	0.22-0.38	0.26-0.4
60-110					
80-150	0.12-0.24	0.16-0.28	0.2-0.36	0.24-0.45	0.28-0.48
80-150					
90-115					
90-115					
100-300	0.14-0.25	0.18-0.35	0.25-0.45	0.3-0.5	0.35-0.55
100-200					
80-180	0.1-0.18	0.12-0.25	0.2-0.34	0.24-0.42	0.26-0.5
100-200					
80-180	0.1-0.18	0.12-0.25	0.2-0.34	0.24-0.42	0.26-0.5
15-40	0.03-0.06	0.04-0.08	0.05-0.1	0.06-0.12	0.08-0.15
15-25[1]					
15-40					
20-50	0.03-0.06	0.04-0.08	0.05-0.1	0.06-0.12	0.08-0.15

GRADES AND MATERIALS



Tool Material Grades for Indexable Inserts and Solid Tools

The indexable inserts and solid carbide tools for thread production are produced from different tungsten carbide grades. The grade is defined by a combination of substrate type, coating type and post-coating treatment. If the indexable insert or solid carbide tool is not coated, then the grade will be defined by substrate type only.

ISCAR's products for threading are made from cemented carbide. Cemented carbides are very hard materials, and therefore, can cut most engineering materials that are softer.
In most cases, to improve performance of thread cutting products when applied to machining a specific class of materials, the indexable inserts and solid carbide tools are coated. One of the most common methods of coating is by physical vapor deposition (PVD). PVD coatings have a wide distribution in indexable thread turning inserts and thread a solid carbide tools because they leave the cutting edges sharp.

PVD coatings are applied at a relatively low temperature (about 500°C).

Nano layered PVD coating

PVD coatings were introduced during the late 1980's. With the use of advanced nanotechnology, PVD coatings performed a gigantic step in overcoming complex problems that were impeding progress in the field. Developments in science and technology brought a new class of wear-resistant nano layered coatings. These coatings are a combination of layers having a thickness of up to 50 nm (nanometers) and demonstrate significant increases in the strength of the coating compared to conventional methods.

SUMO TEC technology

SUMO TEC is a specific post-coating treatment process developed by **ISCAR**.
The treatment has the effect of making coated surfaces even and uniform, minimizing inner stresses and droplets in coating. In CVD coatings, due to the difference in thermal expansion coefficients between the substrate and the coating layers, internal tensile stresses are produced. Also, PVD coatings feature surface droplets. These factors negatively affect a coating and therefore shorten insert tool life. Applying SUMO TEC post-coating technologies considerably reduces and even removes these unwanted defects and results in increasing tool life and greater productivity.

ISCAR offers a rich variety of carbide grades for indexable threading inserts and threading solid carbide tools.

ISCAR's Most Popular Carbide Grades for Threading

Grade				Application Field According ISO 513 Standard						Used in	
Description	Coating Type	Coating Layers	Post-Coating Treatment	P	M	K	N	S	H	Thread Turning	Thread Milling
IC28	Uncoated	Uncoated								•	
IC928	PVD	TiAlN								•	
IC528	PVD	TiCN + TiN								•	•
IC228	PVD	TiCN + TiN		P30 - P45	M25 - M40					•	
IC50M	Uncoated	Uncoated								•	
IC250	PVD	TiCN + TiN		P15 - P35	M20 - M40					•	
IC08	Uncoated	Uncoated			M15 - M30		N10 - N25	S15 - S30		•	
IC908	PVD	TiAlN		P15 - P30	M20 - M30	K20 - K40		S15 - S30	H20 - H30	•	•
IC808	PVD	TiAlN + TiN	•	P15 - P30	M20 - M30	K20 - K40		S15 - S30	H20 - H30	•	
IC1008	PVD	TiAlN + TiN								•	
IC508	PVD	TiCN + TiN								•	
IC806	PVD	AlTiN + TiAlN	•		M05 - M15			S05 - S15		•	
IC1007	PVD	TiAlN + TiN		P10 - P20	M05 - M15	K15 - K30		S10 - S20	H05 - H15	•	
IC903	PVD	TiAlN									•
IC902	PVD	TiAlN									•

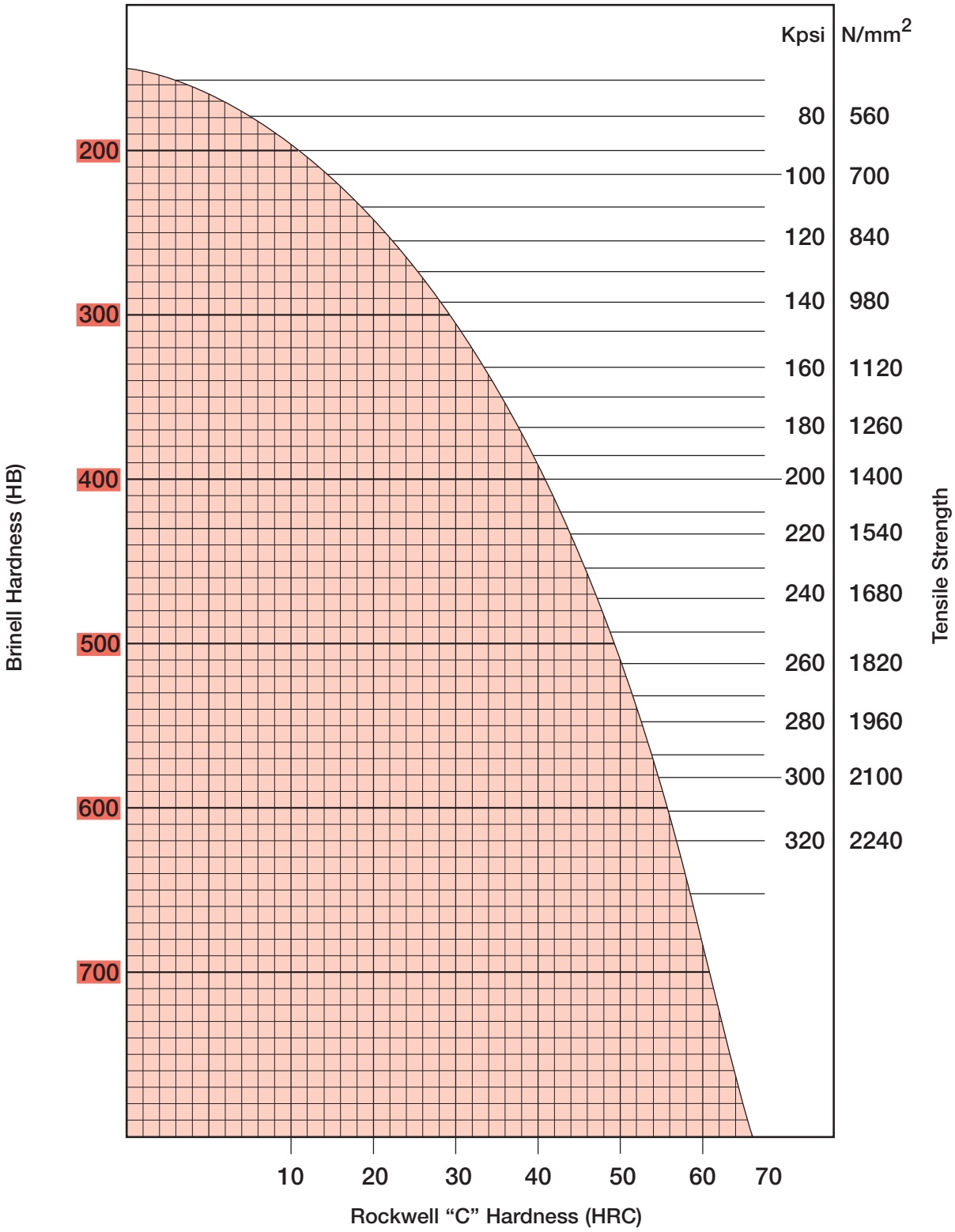
Material Groups

According to DIN / ISO 513 and VDI 3323

ISO	Material		Condition	Tensile Strength [N/mm^2]	K_c1 [N/mm^2]	mc	Hardness HB	Material No.
P	Non-alloy steel and cast steel, free cutting steel	< 0.25 %C	Annealed	420	1350	0.21	125	1
		>= 0.25 %C	Annealed	650	1500	0.22	190	2
		< 0.55 %C	Quenched and tempered	850	1675	0.24	250	3
		>= 0.55 %C	Annealed	750	1700	0.24	220	4
			Quenched and tempered	1000	1900	0.24	300	5
	Low alloy steel and cast steel (less than 5% of alloying elements)		Annealed	600	1775	0.24	200	6
			Quenched and tempered	930	1675	0.24	275	7
				1000	1725	0.24	300	8
				1200	1800	0.24	350	9
	High alloyed steel, cast steel, And tool steel		Annealed	680	2450	0.23	200	10
			Quenched and tempered	1100	2500	0.23	325	11
	Stainless steel and cast steel		Ferritic/martensitic	680	1875	0.21	200	12
			Martensitic	820	1875	0.21	240	13
M	Stainless steel		Austenitic, duplex	600	2150	0.20	180	14
K	Grey cast iron (GG)		Ferritic/pearlitic		1150	0.20	180	15
			Pearlitic		1350	0.28	260	16
	Nodular cast iron (GGG)		Ferritic		1225	0.25	160	17
			Pearlitic		1350	0.28	250	18
	Malleable cast iron		Ferritic		1225	0.25	130	19
			Pearlitic		1420	0.3	230	20
N	Aluminum- wrought alloy		Not hardenable		700	0.25	60	21
			Hardenable		800	0.25	100	22
	Aluminum-cast, alloyed	<=12% Si	Not hardenable		700	0.25	75	23
			Hardenable		700	0.25	90	24
		>12% Si	High temperature		750	0.25	130	25
	Copper alloys	>1% Pb	Free cutting		700	0.27	110	26
			Brass		700	0.27	90	27
			Electrolytic copper		700	0.27	100	28
	Non metallic		Duroplastics, fiber plastics					29
			Hard rubber					30
S	High temperature alloys	Fe based	Annealed		2600	0.24	200	31
			Hardened		3100	0.24	280	32
		Ni or Co based	Annealed		3300	0.24	250	33
			Hardened		3300	0.24	350	34
			Cast		3300	0.24	320	35
	Titanium alloys		Pure	RM 400	1700	0.23		36
			Alpha+beta alloys hardened	RM 1050	2110	0.22		37
H	Hardened steel		Hardened		4600		55 HRC	38
			Hardened		4700		60 HRC	39
	Chilled cast iron		Cast		4600		400	40
	Cast iron		Hardened		4500		55 HRC	41

Steel | Stainless Steel | Cast Iron | Nonferrous | High Temp. and Titanium Alloys | Hardened Steel and Cast Iron

Hardness Conversion Table





Material Groups According to VDI 3323 Standard

Mtl. No.	USA	European Union	Germany		United Kingdom
	AISI/SAE	EN	Werkstoff	DIN	BS
1			1.0028	Ust 34-2 (S250G1T)	
1			1.0034	RSt 34-2 (S250G2T)	1449 34/20HR; 1449 34/20HS; 1449 34/20CR; 1449 34/20CS
1			1.0035	St185 (Fe 310-0); St 33	Fe 310-0; 1449 15HR; 1449 15HS
1	A 570 Gr. 33; A 570 Gr. 36		1.0036	S235JRG1; (Fe 360 B); Ust 37-2	Fe 360 B; 4360-40 B
1			1.0037	S235JR (Fe 360 B); St 37-2	Fe 360 B; 4360-40 B
1	A 570 Gr. 40		1.0044	S275JR (Fe 430 B); St44-2	Fe 430 B FN; 1449 43/25 HR; 1449 43/25HS; 4360-43 B
1			1.0045	S355JR	4360-50 B
1	A 570 Gr.50; A 572 Gr.50		1.0050	E295 (Fe 490-2); St 50-2	Fe 490-2 FN; 4360-50 B
1	A 572 Gr. 65		1.0060	E335 (Fe 590-2); St 60-2	Fe 60-2; 4360-55 E; 4360-55 C
1			1.0112	P235S	1501-164-360B LT20
1			1.0114	S235JU; St 37-3 U	4360-40C
1			1.0130	P265S	1501-164-400B LT 20
1			1.0143	S275J0; St 44-3 U	4360-43C
1	A 573 Gr. 70; A 611 Gr.D		1.0144	S275J2G3 (Fe 430 D 1); St 44-3	Fe 430 D1 FF; 4360-43 C; 4360-43 D
1			1.0149	S275JOH; RoSt 44-2	4360-43C
1			1.0226	DX51D; St 02 Z	Z2
1	M 1010		1.0301	C10	040 A 10; 045 M 10; 1449 10 CS

France AFNOR	Sweden SS	Italy UNI	Spain UNE	Japan JIS	Russia GOST
A 34-2		Fe 330; Fe 330 B FU		SS 330	
A 34-2 NE		Fe 330 B FN			St2sp; St2ps
A 33	1300	Fe 320	Fe 310-0		St0
	1311; 1312	FE37BFU	AE 235 B; Fe 360 B		16D; 18kp; St3kp
E 24-2	1311	Fe 360 B; 1449 37/23 HR	AE 235 B; Fe 360 B	STKM 12 A; STKM 12 AC	
E 28-2	1412	Fe 430 B; Fe 430 B FN	AE 275 B; Fe 430 B FN	SM 400 A; SM 400 B; SM 400 C	St4ps; St4sp
E 36-2	2172	Fe 510 B	AE 355 B		
A 50-2	1550; 2172	Fe 490	a 490-2; Fe 490-2 FN	SS 490	ST5ps; ST5sp
A 60-2	1650	Fe 60-2; Fe 590	A 590-2; Fe 590-2 FN	SM 570	St6ps; St6sp
A37AP		Fe 360 C	AE 235 C		
E 24-3		Fe 360 C	AE 235 C		
A 42 AP			SPH 265		
E 28-3	1414-01	Fe 430 D	AE 275 D		
E 28-3; E 28-4	1411; 1412; 1414	Fe 430 B; Fe 430 C (FN); Fe 430 D (FF)	AE 275 D; Fe 430 D1 FF	SM 400 A; SM 400 B; SM 400 C	St4kp; St4ps; St4sp
	1412-04	Fe 430 C	Fe 430 C		
GC	1151 10	FeP 02 G	FeP 02 G		
AF 34 C 10; XC 10		C 10; 1 C 10	F.1511; F.151.A	S 10C	10

Mtl. No.	USA	European Union	Germany		United Kingdom
	AISI/SAE	EN	Werkstoff	DIN	BS
1	A 621 (1008)		1.0330	DC 01; St 2; St 12	1449 4 CR; 1449 3 CS
1	A 619 (1008)		1.0333	Ust 3 (DC03G1); Ust 13	1449 2 CR;1449 3 CR
1	A 621 (1008)		1.0334	UStW 23 (DD12G1)	
1	A 622 (1008)		1.0335	DD13; StW 24	1449 1 HR
1	A 620 (1008)		1.0338	DC04; St 4; St 14	1449 1 CR; 1449 2 CR
1	A 516 Gr. 65; 55 A 515 Gr. 65; 55 A 414 Gr. C; A 442 Gr.55		1.0345	P235GH/H I	1501 Gr. 141-360; 1501 Gr. 161-360; 151-360 1501 Gr. 161-400; 154-360 1501 Gr. 164-360; 161-360
1	(M) 1020; M 1023	2C/2D	1.0402	C22	055 M 15; 070 M 20; 1499 22 HS; 1499 22 CS
1	1020	2C/2D	1.0402	C22	050A20
1	1020; 1023	2C	1.0402	C22	055 M 15; 070 M 20
1			1.0425	P265GH/H II	1501 Gr. 161-400; 151-400 1501 Gr. 164-360; 161-400 1501 Gr. 164-400; 154-400
1	A27 65-35		1.0443	GS-45	A1
1			1.0539	S355NH;StE 335	
1			1.0545	S355N; StE 355	4360-50E
1			1.0546	S355NL;TStE 355	4360-50EE
1			1.0547	S355JOH	4360-50C
1			1.0549	S355 NLH;TStE 355	
1			1.0553	S355JO;St 52-3U	4360-50C

France AFNOR	Sweden SS	Italy UNI	Spain UNE	Japan JIS	Russia GOST
TC	1142	FeP 00; FeP 01	AP 11	SPHD	15 kp
E		FeP 02	AP 02	SPCD	
S C		FeP 12	AP 12	SPHE	10kp
3 C		FeP 13	AP 13	SPHE	08kp
ES	1147	FeP 04	AP 04	SPCE	08Ju; JuA
A 37 CP; A 37 AP	1331; 1330	FeE235; Fe 360 1 KW; Fe 360 1KG; Fe 360 2 KW; Fe 360 2 KG	A 37 RC I; RA II	SGV 410; SGV 450; SGV 480; SPV 450; SPV 480	
AF 42 C 20; XC 25; 1 C 22	1450	C 20; C 21; C 25	1 C 22; F.112	S20C	20
CC20	1450	C20; C21	F.112	S22 C	20
AF 42 C 20; XC 25; 1 C 22	1450	C 20;C 21;C 25	1 C 22F.112	S 20 C; S 22 C	
A 42 CP; A 42 AP	1431; 1430; 1432	Fe 410 1KW; Fe 410 1KG; Fe 410 1KT; Fe 410 2KW; Fe 410 2KG	A 42 RC I; A 42 RC II	SPV 315; SPV 355; SG 295; SGV 410; SGV 450; SGV 480	16K; 20K
E 23-45 M	1305				
TSE 355-4	2134-04	Fe 510 B	Fe 355 KGN		
E 355 R	2334-01	FeE 355 KG	AE 355 KG		
E 355 FP	2135-01	FeE 355 KT	AE 355 KT		
TSE 355-3	2172-04	Fe 510 C	Fe 510 C		
	2135	Fe 510 D	FeE 355 KTM		
E 36-3		Fe 510 C			

Mtl. No.	USA	European Union	Germany		United Kingdom
	AISI/SAE	EN	Werkstoff	DIN	BS
1	A 633 Gr.C; A 588		1.0562	P355N; StE 355	1501 Gr.225-490A LT 20
1			1.0565	P355NH; WStE 355	1501-225-490B LT 20
1			1.0566	P355NL1; TStE 355	1501-225-490A LT 50
1	1		1.0570	S355J2G3; St 52-3	Fe 510 D1 FF; 1449 50/35 HR›HS; 4360-50 D
1	1213		1.0715	9 SMn 28 (1SMn30)	230 M 07
1	1213		1.0715	9 SMn 28	230 M 07
1	12 L 13		1.0718	9 SMnPb 28 (11SMnPb30)	
1	1108; 1109		1.0721	10 S 20	10S20
1	11 L 08		1.0722	10 SPb 20	
1	11 L 08		1.0722	10 SPb 20	
1	1215		1.0736	9 SMn 36 11SMn37)	
1	12 L 14		1.0737	9 SMnPb 36 (11SMnPb37)	
1			1.0972	S315MC; QStE 300 TM	1501-40F30
1			1.0976	S355MC; QStE 360 TM	1501-43F35
1			1.0982	S460MC; QStE 460 TM	1501-50F45
1			1.0984	S500MC; QStE 500 TM	
1			1.0986	S500MC; QStE 500 TM	1501 - 60F55
1	1010		1.1121	CK 10; (C10E)	040 A 10
1			1.1121	St 37-1	4360 40 A
1	1015	32C	1.1141	CK 15; (C15E)	040 A 15; 080 M 15
1	1020; 1023		1.1151	C22E; CK 22	055 M 15; (070 M 20)
1			1.2083		

France AFNOR	Sweden SS	Italy UNI	Spain UNE	Japan JIS	Russia GOST
FeE 355 KG N; E 355 R/FP; A 510 AP	2106	FeE 355 KG; FeE 355 KW	AEE 355 KG; AEE 355 DD	SM 490 A; SM 490 B; SM 490 C; SM 490 YA; SM 490YB	15GF
A 510 AP	2106	FeE 355-2			
A 510 FP	2107-01	FeE 355-3			
E 36-3; E 36-4	2132; 2133; 2134; 2174	17GS; 17G1S	AE 355 D; Fe 510 D1 FF	SM 490 A; SM 490 B; SM 490 C; SM 490 YA; SM 490YB	17GS; 17G1S
S 250	1912	CF SMn 28	F.2111 - 11 SMn 28	SUM 22	
S 250	1912	CF 9 SMn 28	11 SMn 28	SUM 22	
S 250 Pb	1914	CF 9 SMnPb 28	F.2112-11 SMnPb 28	SUM 22 L; SUM 23 L; SUM 24 L	
10S20; 10 F 2		CF 10 S 20	F. 2121 - 10 S 20		
10PbF 2		CF 10 SPb 20	F.2122-10 SPb 20		
10 PbF 2		CF 10 SPb 20	10 SPb 20		
S 300		CF 9 Mn 36	F.2113 - 12 SMn 35	SUM 25	
S 300 Pb	1926	CF 9 SMnPb 36	F.2114- 12 SMnPb 35		
E 315 D					
E 355 D	2642	FeE 355TM			
E 490 D	2662	FeE 490 TM			
E 560 D		FeE 560 TM			
XC 10	1265	C 10; 2 C 10; 2 C 15	F-1510-C 10 K	S 9 CK; S 10 C	08;10
	1300				
XC 12; XC 15; XC 18	1370	C 15; C 16	F.1110-C 15 K; F.1511-C 16 K	S 15; S 15 CK	15
2 C 22; XC 18; XC 25	1450	C 20; C 25	F.1120-C 25 K	S 20 C; S 20 CK; S 22 C	20
	2314				

Mtl. No.	USA	European Union	Germany		United Kingdom
	AISI/SAE	EN	Werkstoff	DIN	BS
1	A572-60		1.8900	StE 380	4360 55 E
1	A36			St 44-2	4360 43 A
1				StE 320-3Z	1 501 160
2	(M) 1025		1.0406	C 25	070 M 26
2			1.0416	GS-38	
2	A 537 Cl.1; A 414 Gr. G; A 612		1.0473	P355GH; 19 Mn 6	
2	1035		1.0501	C35	080 A 32; 080 A 35; 080 M 36; 1449 40 CS
2	1045		1.0503	CF 45; (C45G)	060 A 47; 080 M 46
2	1040		1.0511	C40	080 M 40
2			1.0540	C 50	
2	A27 70-36		1.0551	GS-52	A2
2	A148 80-40		1.0553	GS-60	A3
2	A738		1.0577	S355J2G4 (Fe 510 D 2)	Fe 510 D2 FF; 1501 Gr.224-460; 1501 Gr. 224-490
2	1140	8M	1.0726	35 S 20	212 M 36
2	1146		1.0727	45 S 20 (46S20)	
2	1035; 1041	15	1.1157	40Mn4	150 M 36
2	1025		1.1158	C25E; CK 25	(070 M 25)
2	1536		1.1166	34Mn5	
2	1330	14A	1.1170	28Mn6	(150 M 28); (150 M 18)
2			1.1178	C30E; CK 30	080M30
2	1035		1.1180	C35R; Cm 35	080 A 35
2	1035; 1038		1.1181	C35E; CK 35	080 A 35; (080 M 36)
2	1035		1.1181	C35E; CK 35	080 A 35; (080 M 36)
2	1035		1.1183	Cf 35 (C35G)	080 A 35
2	1042		1.1191	GS- Ck 45	080 A 46

France AFNOR	Sweden SS	Italy UNI	Spain UNE	Japan JIS	Russia GOST
	2145	FeE390KG		S25C	
NFA 35-501 E 28	1411				
	1421				
1 C 25		C 25; 1 C 25			
20-400 M	1306				
A 52 CP	2101; 2102	Fe E 355-2	A 52 RC I, RA II	SGV 410; SGV 450; SGV 480	
1 C 35; AF 55 C 35; XC 38	1572; 1550	C 35; 1 C 35	F.113	S 35 C	35
XC 42 H 1 TS	1672	C 43; C 46		S 45 C	45
1 C 40; AF 60 C 40		C40; 1 C 40	F.114.A		
	1674	C 50	1 C 50		
280-480 M	1505				
320-560 M	1606				
A 52 FP	2107		A 52 RB II; AE 355 D		
35MF 6	1957		F.210.G		
45 MF 4	1973				
35 M 5; 40 M 5					40G
2 C 25; XC 25		C25	F.1120 - C 25 K	S 25 C; S 28 C	25
			TO.B	SMn 433 H	
20 M 5; 28 Mn 6		C 28 Mn	28 Mn 6	SCMn 1	30G
XC 32		C 30	2 C 30		
3 C 35; XC 32	1572		F.1135-C 35 K-1		
2 C 35; XC 32; XC 38 H 1	1550; 1572	C 35	F.1130-C 35 K	S 35 C	35
XC 38	1572	C36		S35C	
XC 38 H 1 TS	1572	C 36; C 38		S 35 C	35
XC 45	1660	C45	F-1140		

Mtl. No.	USA	European Union	Germany		United Kingdom
	AISI/SAE	EN	Werkstoff	DIN	BS
2	1049; 1050		1.1206	C50E; CK 50	080 M 50
2	1050; 1055		1.1213	Cf 53; (C53G)	070 M 55
2	4520		1.5423	22Mo4	1503-245-420
3	A 516 Gr.70; A 515 Gr. 70; A 414 Gr.F; A 414 Gr.G		1.0481	P295GH; 17 Mn 4	1501 Gr. 224
3	1043		1.0503	C35	060 A 47; 080 M 46; 1449 50 HS, 1449 50 CS
3	1074		1.0614	C 76 D; D 75-2	
3	1086		1.0616	C 86 D; D 85-2	
3	1095		1.0618	C 92 D; D 95-2	
3	1036; 1330		1.1165	30Mn5	120 M 36; (150 M 28)
3	1335		1.1167	36Mn5	150 M 36
3	1040		1.1186	C40E; CK 40	060 A 40; 080 A 40; 080 M 40
3	1045		1.1191	C45E; CK 45	080 M 46; 060 A 47
3	1049		1.1201	C45R; Cm 45	080 M 46
3			1.7242	18 CrMo 4	
3	A 387 Gr. 12 Cl		1.7337	16 CrMo 4 4	
3			1.7362	12 CrMo 19 5	3606-625
3	A572-60			17 MnV 6	436055 E
4	1055		1.0535	C55	070 M 55

France AFNOR	Sweden SS	Italy UNI	Spain UNE	Japan JIS	Russia GOST
2 C 50; XC 48 H 1; XC 50 H1	1674	C 50			50
XC 48 H TS	1674	C 53		S 50 C	50
		16 Mo 5 KG; 16 Mo 5 KW	F.2602- 16 Mo 5	SB 450 M; SB 480 M	
A 48 CP; A 48 AP		Fe 510 KG; Fe 510 KT; Fe 510 KW; Fe 510-2 KG; Fe 510-2KT; Fe 510-2KW; FeE 295	A 47 RC I; RA II	SG 365; SGV 410; SGV 450; SGV 480	14G2
1 C 45; AF 65 C 45	1672; 1650	C 45; 1 C 45	F.114	S 45 C	45
XC 75					
XC 80		C 85			
XC 90					
35 M 5			F.8211-30 Mn 5; f.8311-AM 30 Mn 5	SMn 433 H; SCMn 2	27ChGSNMDTL 30GSL
40 M 5	2120		F. 1203-36 Mn 6; F. 8212-36 Mn 5	ssmN 438 (H); SCMn 3	35G2; 35GL
2 C 40; XC 42 H 1		C 40		S 40 C	
2 C 45; XC 42 H 1; XC 45; XC 48 H 1	1672	C 45; C 46	F.1140-C 45 K; F.1142-C48 K	S 45 C; S 48 C	45
3 C 45; XC 42 H 1; XC 48 H 1	1660	C 45	F.1145-C 45K-1; F.1147C 48 K-1	S 50 C	
		A 18 CrMo 4 5 KW			15ChM
Z 10 CD 5.05		16 CrMo 20 5			
NFA 35-501 E 36	2142				
1 C 55; AF 70 C 55	1655	C 55; 1 C 55		S 55 C	55

Mtl. No.	USA	European Union	Germany		United Kingdom
	AISI/SAE	EN	Werkstoff	DIN	BS
4	1060	43D	1.0601	C60	060 A 62; 1449 HS; 1449 CS
4	107		1.0603	C67	080 A 67; 1449 70 HS
4	1074; 1075		1.0605	C75	1449 80 HS
4	1055		1.1203	C55E; CK 55	060 A 57; 070 M 55
4	1055		1.1209	C55R; Cm 55	070 M 55
4	1060; 1064	43D	1.1221	C60E; CK 60	060 A 62
4	1070		1.1231	Ck 67; (C67E)	060 A 67
4	1074; 1075; 1078		1.1248	CK 75; (C75E)	060 A 78
4	1086		1.1269	CK 85 (C85E)	
4	1095		1.1274	Ck 101 (C101E)	
4	W 112		1.1663	C 125 W	
4					
5			1.0070	E360 (Fe 690-2); St 70-2	Fe 690-2 FN
5			1.7238	49 CrMo 4	
5			1.7701	51 CrMoV 4	
6	A 284 Gr.D; A 573 Gr.58; A 570 Gr 36; A 570 Gr C; A 611 Gr. C		1.0116	S235J2G3 (Fe 360 D 1); St 37-3	Fe 360 D1 FF; 1449 37/23 CR; 4360-40 D
6	5120		1.0841	St 52-3	150 M 19
6	9255	45	1.0904	55 Si 7	250A53
6	9254		1.0904	55 Si 7	250 A 53
6	9262		1.0961	60SiCr7	
6	L3		1.2067	100Cr6	BL3
6	L1		1.2108	90 CrSi 5	
6	L2		1.2210	115CrV3	
6			1.2241	51CrV4	
6			1.2311	40 CrMnMo 7	

France AFNOR	Sweden SS	Italy UNI	Spain UNE	Japan JIS	Russia GOST
1 C 60; AF 70 C 55		C 60; 1 C 60		S 58 C	60(G)
XC 65		C 67			
		C 75			75
2 C 55; XC 55 H 1	1655	C 55	F.1150-C 55 K	S 55 C	55
3 C 55; XC 55 H 1		C 55	F.1155-C 55K-1		
2 C 60; XC 60 H 1	1665; 1678	C 60		S 58 C	60; 60G; 60GA
XC 68	1770	C70			65GA; 68GA; 70
XC 75	1774	C 75			75(A)
XC 90		C 90			85(A)
XC 100	1870	C 100	F-5117	SUP 4	
Y2 120					
	2223				
A 70-2	1655	Fe 70-2; Fe 690	A 690-2; Fe 690-2 FN		
		51 CrMoV 4			
E 24-3; E 24-4	1312; 1313	Fe 360 D1 FF; Fe 360 C FN; Fe 360 D FF; Fe 37-2	AE 235 D; Fe 360 D1 FF		St3kp; St3ps; St3sp; 16D
20 MC 5	2172	Fe 52	F-431		
55S7	2085	55Si8	56Si7		
55 S 7	2090				
60SC6		60SiCr8	60SiCr8		
Y100C6			100Cr6		
	2092	105WCR 5			
100C3		107CrV3KU			
		35 cRmO 8 KU			

Mtl. No.	USA	European Union	Germany		United Kingdom
	AISI/SAE	EN	Werkstoff	DIN	BS
6	4135		1.2330	35 CrMo 4	708 A 37
6			1.2419	105WCr6	105WC 13
6	0 1		1.2510	100 MnCrW 4	BO1
6	S1		1.2542	45 WCrV7	BS1
6	S1		1.2550	60WCrV7	
6	L6		1.2713	55NiCrMoV6	
6	L 6		1.2721	50NiCr13	
6	O2		1.2842	90MnCrV8	BO2
6	E 50100		1.3501	100 Cr 2	
6	52100	31	1.3505	100Cr6	2 S 135; 535 A 99
6			1.5024	46Si7	
6	9255		1.5025	51Si7	
6	9255		1.5026	55Si7	251 a 58
6	9260		1.5027	60Si7	251 A 60; 251 H 60
6	9260 H		1.5028	65Si7	
6			1.5120	38 MnSi 4	
6	A 204 Gr.A; 4017		1.5415	16Mo3; 15 Mo 3	1503-243 B
6	4419		1.5419	20Mo4	1503-243-430
6	A 350-LF 5		1.5622	14Ni6	
6	3415		1.5732	1 NilCr10	
6	3310; 3314	36A	1.5752	14NilCr14	655M13
6			1.6587	17CrNiMo6	820A16
6			1.6657	14NiCrMo134	
6	5015		1.7015	15 Cr 3	523 M 15
6	5132	18B	1.7033	34Cr4	530A32
6	5140	18	1.7035	41C r4	530M40
6	5140		1.7045	42Cr41	530 A 40
6	5115		1.7131	16MnCr5	527 M 17
6			1.7139	16MnCr5	
6	5155	48	1.7176	55Cr3	527 A 60

France AFNOR	Sweden SS	Italy UNI	Spain UNE	Japan JIS	Russia GOST
34 CD 4	2234	35CrMo4	34CrMo4	SCM435TK	
105WC13	2140	10WCr6	105WCr5		ChWG
8 MO 8	2140	10WCr6	105WCr5	SKS31	
	2710	45 WCrV8 KU	45WCrSi8		5ChW25F
55WC20	2710	58WCr9KU			
55NCDV7			F.520.S	SKT4	5ChNM
55 NCV 6	2550		f-528		
90 MV8					
100 C 6	2258	100Cr6	F.1310 - 100 Cr 6	SUJ2	SchCh15
45 S 7; Y 46 7; 46 SI 7			F. 1451 - 46 SI 7		
51 S 7; 51 Si 7	2090	48 Si 7; 50 Si 7	F.1450-50 Si 7		
55 S 7	2085; 2090	55 Si 7	F.1440 - 56 Si 7		55S2
60 S 7		60 Si 7	F. 1441 - 60 Si 7		60S2
60 S 7				50 P 7; SUP 6	
15 D 3	2912	16Mo3 KG; 16Mo3KW	F. 2601 - 16 Mo 3		
	2512	G 20 Mo 5; G 22 Mo5		SCPH 11	
16N6		14 Ni 6 KG; 14 Ni 6 KT	F.2641 - 15 Ni 6		
14 NC 11		16NiCr11	15NiCr11	SNC415(H)	
12NC15				SNC815(H)	
18NCD6			14NiCrMo13		
			14NiCrMo131		
12 C 3				SCr415(H)	15Ch
32C4		34Cr4(KB)	35Cr4	SCr430(H)	35Ch
42C4		41Cr4	42Cr4	SCr440(H)	
42 C 4 TS	2245	41Cr4	42Cr4	SCr440	
16 MC 5	2511	16MnCr5	16MnCr5		
	2127				
55 C 3	2253			SUP9(A)	50ChGA

Mtl. No.	USA	European Union	Germany		United Kingdom
	AISI/SAE	EN	Werkstoff	DIN	BS
6	4135; 4137		1.7220	34CrMo4	708 Aa 37
6	4142		1.7223	41CrMo4	
6	4140		1.7225	42CrMo4	708 M 0
6		33	1.7228	55NiCrMoV6G	823M30
6			1.7262	15CrMo5	
6			1.7321	20 mOcR 4	
6	ASTM A182 F12		1.7335	13CrMo4 4	1501-620Gr27
6	A 182-F11; A 182-F12		1.7335	13 CrMo 4 4	1 501 620 Gr. 27
6	ASTM A 182 F22		1.7380	10CrMo9 10	1501-622gR31; 1501-622gR45
6	A182 F22		1.7380	10 CrMo 9 10	1501-622
6			1.7715	14MoV6 3	1503-660-440
6	A355A	41B	1.8509	41CrAlMo 7	905 M 39
7	A570.36		1.0038	S235JRG2 (Fe 360 B); RSt 37-2	Fe 360 B FU; 1449 27/23 CR; 4360-40 B
7	3135	111A	1.5710	36NiCr6	640A35
7			1.5755	31 NiCr 14	653 M 31
7	8620	362	1.6523	2 NiCrMo2	805M20
7	8740		1.6546	40 NiCrMo 22	311-Tyre 7
7	4340	24	1.6565	40NiCrMo6	817 M 40
7	4130		1.7218	25CrMo4	CDS 110
7			1.7733	24 CrMoV 5 5	
7			1.7755	GS-45 CrMOV 10 4	
7			1.8070	21 CrMoV 5 11	
8	C 45 W		1.173	C 45 W3	
8	4142	19A	1.2332	47 CrMo 4	708 M 40
8	A128 (A)		1.3401	G-X120 Mn 12	
8	3435		1.5736	36 NiCr 10	
8	9840	110	1.6511	36CrNiMo4	816M40
8		40B	1.7361	32 CeMo12	722 M 24
8	6150	47	1.8159	50 CrV 4	735 A 50
8			1.8161	58 CrV 4	
8		40B	1.8515	32 CrMo 12	722 M 24

France AFNOR	Sweden SS	Italy UNI	Spain UNE	Japan JIS	Russia GOST
35 CD 4	2234				35ChM
		41CrMo4	42CrMo4	SNB 22-1	40ChFA
42 CD 4	2244				
	2512	653M31			
12 CD 4	2216		12CrMo4		
	2625				
		14CrMo4 5	14CrMo45		
15 CD 4.5	2216		12CrMo4	SCM415(H)	12ChM; 15ChM
12 CD 9.10	2218	12CrMo9, 12CrMo10	TU.H		
			13MoCrV6		
40 CAD 6.12	2940	41CrAlMo7	41CrAlMo7		
E 24-2NE	1312	Fe 360 B FN	AE 235 B FN; AE 235 B FU; Fe 360 B FN; Fe 360 B FU		St3ps; St3sp
35NC6				SNC236	
18 NC 13					
20 NCD 2	2506	20NiCrMo2	20NiCrMo2	SNCM220(H)	20ChGNM
		40NiCrMo2(KB)	40NiCrMo2	SNCM240	38ChGNM
35 NCD 6	2541	35NiCrMo6(KB)		SNCM 447	38Ch2N2MA
25 CD 4	2225	25CrMo4(KB)	55Cr3	SCM420; SCM430	20ChM; 30ChM
20 CDV 6		21 CrMoV 5 11			
		35 NiCr 9			
XC 48					
42 CD 4	2244	42CrMo4	42CrMo4	SCM (440)	
Z 120 M 12	2183	GX120Mn12	F. 8251-AM-X120Mn12	SCMnH 1; SCMn H 11	110G13L
30 NC 11					
40NCD3		36nlcRmO4(KB)	35NiCrMo4	SUP10	40ChN2MA
30 CD 12	2240	30CrMo12	F.124.A		
50CrV4	2230	50CrV4	51CrV4		50ChGFA
30 CD 12	2240	32CrMo12	F.124.A		

Mtl. No.	USA	European Union	Germany		United Kingdom
	AISI/SAE	EN	Werkstoff	DIN	BS
8		40C	1.8523	39CrMoV13 9	897M39
9			1.4882	X 50 CrMnNiNbN 21 9	
9			1.5864	35 niCr 18	
9				31 NiCrMo 13 4	830 m 31
10	A 619		1.0347	DCO3; RRSt; RRSt 13	1449 3 CR; 1449 2 CR
10	M 1015; M 1016; M 1017		1.0401	C15	080 M 15; 080 M 15; 1449 17 CS
10			1.0723	15 S22; 15 S 20	210 A 15; 210 M 15
	D 3		1.2080	X 210 Cr 12	BD 3
10	420		1.2083	X 42 Cr 13	
10			1.2085	X 33 CrS 16	
10			1.2162	21 MnCr 5	
10	L2		1.2210	115 Cr V3	
10			1.2311	40 CrMnMo7	
10	P20+S		1.2312	40CrMnMoS 8.6	
10		X38CrMo16	1.2316	X36CrMo17	
10	H 11		1.2343	x 38 CrMoV 5 1	BH 11
10			1.234	X 38 CrMoV 5 1	
10	H 13		1.2344	X 40 CrMoV 5 1	BH 13
10	A 2		1.2363	X100 CrMoV 5 1	BA 2
10			1.236	X 100 CrMo V5-1	
10	D 2		1.2379	X 155 CrVMo 12 1	BD2
10			1.238	X 155 CrVMo 12 1	
10	HNV3		1.2379	X210Cr12G	BD2
10	D 4 (D 6)		1.2436	X 210 CrW 12	BD6
10			1.244	X 210 CrW 12	
10	O1		1.251	100 MnCrW 4	B0 1
10	H 21		1.2581	X 30 WCrV 9 3	BH 21
10			1.2601	X 165 CrMoV 12	
10	H 12		1.2606	X 37 CrMoW 5 1	BH 12
10			1.277	X 45 NiCrMo 4	

France AFNOR	Sweden SS	Italy UNI	Spain UNE	Japan JIS	Russia GOST
		36CrMoV12			
Z 50 CMNNb 21.09					
	2534		f-1270		
E		Fep 02	AP 02		08JU
AF 37 C12; XC 18	1350	C15; C16; 1 C 15	F.111	S 15 C	
Z 200 C 12	1922		F.210.F	SUM 32	
Z40 C14	2314			SUS 420 J 2	
Z35V CD 17.S					
20 MC 5					
100 C3		107 CrV3 KU	F.520 L		
40 CMD 8		35 cRmO 8 KU			
40CMD8S					
Z 38 CDV 5		X 37 CrMoV 5 1 KU			4Ch5MFS
Z 38 CDV 5		X 37 CrMoV 51 KU			
Z 40 CDV 5	2242	X40CrMoV511KU	F-5318	SKD61	4Ch5MF1S
Z 100 CDV 5	2260	X100CrMoV51KU	F-5227	SKD12	
Z 160 CDV 12	2310	X165CrMoW12KU	X160CrMoW12KU	SKD11	
Z 160 CDV 12		X 155 CrVMo 12 1 KU			
Z160CDV12	2736				
Z 200 CD 12	2312	X215CrW 12 1 KU	F-5213		
90 MnWRrV5		95MnWCr 5 KU	95 MnCrW 5		
Z 30 WCV 9		X30WCrV 9 3 KU	F-526	SKD5	3Ch2W8F
	2310				
Z 35 CWDV 5		X 35 CrMoW 05 KU	F.537		5ChNM
45 NCD 16		40 NiCrMoV 8 KU			

Mtl. No.	USA	European Union	Germany		United Kingdom
	AISI/SAE	EN	Werkstoff	DIN	BS
10	O2		1.284	90 MnCrV 8	B0 2
10	D3		1.3343	S 6-5-2	BM2
10	ASTM A353		1.5662	X8Ni9	1501-509; 1501-510
10	ASM A353		1.5662	X8Ni9	502-650
10	2517		1.568	12Ni19	12Ni19
10	2515		1.5680	12 Ni 19	
10			1.713	16 MnCr 5	
10			1.276	X 19 NiCrMo 4	
11			1.3202	S 12-1-4-5	BT 15
11			1.3207	S 10-4-3-10	BT42
11	T 15		1.3243	S 6-5-2-5	
11			1.3246	S 7-4-2-5	
11			1.3247	S 2-10-1-8	BM 42
11	M 42		1.3249	S 2-9-2-8	BM 34
11	T 4		1.3255	S 18-1-2-5	BT 4
11	M 2		1.3343	S6-5-2	BM2
11	M 7		1.3348	S2-9-2	
11	T 1		1.3355	S 18-0-1	BT 1
11	HNV 3	52	1.4718	X45CrSi 9 3	401S45
11	422		1.4935	X20 CrMoWV 12 1	
12	403		1.4000	X6Cr13	403 S 17
12			1.4001	X6Cr14	
12	(410S)		1.4001	X7 Cr 13	(403 S 7)
12	405		1.4002	X6CrA12	405S17
12	405		1.4002	X6 CrAl 13	405 S 17
12	416		1.4005	X12CrS 13	416 S 21
12	410; CA-15	56A	1.4006	(G-)X10 Cr 13	410S21
12	430		1.4016	X8Cr17	Z8C17
12	430	60	1.4016	X6 Cr 17	430 S 15
12			1.4027	G-X20Cr14	420C29
12	420		1.4028	X30 Cr 13	420 S 45
12			1.4086	G-X120Cr29	452C11
12	430 F		1.4104	X12CrMoS17	420 S 37
12	440B		1.4112	X90 CrMoV 18	
12	434		1.4113	X6CrMo 17	434 S 17

France AFNOR	Sweden SS	Italy UNI	Spain UNE	Japan JIS	Russia GOST
90 MV 8		90 MnVCr 8 KU			
Z200C12	2715	X210Cr13KU	X210Cr12	SUH3	R6M5
		14 Ni 6 KG; 14 Ni 6 KT	XBNiO9		
9 Ni		X10Ni9	F-2645	SL9N60(53)	
Z18N5					
Z 18 N 5					
16 MC 5					
		HS 12-1-5-5	12-1-5-5		
Z130WKCDV					
KCV 06-05-05-04-02	2723	HS 6-5-2-5	6-5-2-5	SKH55	R6M5K5
Z110 WKCDV 07-05-04	7-4-2-5	HS 7-4-2-5	M 35		
Z110 DKCWV 09-08-04	2-10-1-8	HS 2-9-1-8	M 41		
			2-9-2-8		R6M5
Z 80 WKCV 18-05-04-0					
Z 85 WDCV	2722	HS 6 5 2	F-5604	SKH 51	
Z 100 DCWV 09-04-02-	2782	HS 2 9 2	F-5607		
Z 80 WCV 18-4-01					R18
Z45CS9		X45CrSi8	F322	SUH1	40Ch9S2
Z 6 C 13	2301	X6Cr13	F.3110	SUS403	08Ch13
			F8401		08Ch13
Z 8 C 13	2301				08Ch13
Z8CA12		X6CrAl13			
Z6CA13	2302	X6CrAl13			
Z11 CF 13	2380	X12 CrSC13	F-3411	SUS 416	
Z10 C 13	2302	X12Cr13	F.3401	SUS410	12Ch13
430S15	2320	X8Cr17	F.3113		12Ch17
Z 8 C 17	2320	X8Cr17	F3113	SUS430	12Ch17
Z20C13M					20Ch13L
Z 30 C 13	2304				20Ch13
Z 10 CF 17	2383	X10CrS17	F.3117	SUS430F	
Z 8 CD 17.01	2325	X8CrMo17		SUS434	

Mtl. No.	USA	European Union	Germany		United Kingdom
	AISI/SAE	EN	Werkstoff	DIN	BS
12			1.4340	G-X40CrNi27 4	
12	S31500		1.4417	X2CrNiM0Si19 5	
12	S31500		1.4417	X2 CrNoMoSi 18 5 3	
12			1.4418	X4 CrNiMo16 5	
12	XM 8; 430 Ti; 439		1.4510		
12	430tl		1.4510	X6 CrTi 17	
12			1.4511	X 6 CrNb 17	
12	409		1.4512	X 6 CrTi 12; (X2CrTi12)	LW 19; 409 S 19
12			1.4720	X20CrMo13	
12	405		1.4724	X10CrA113	403S17
12	430	60	1.4742	X10CrA118	439S15
12	HNV6	59	1.4747	X80CrNiSi20	443S65
12	446		1.4749	x18 cRn 28	
12	446		1.4762	X10CrA124	
12	EV 8		1.4871	X 53 CrMnNiN 21 9	349 S 54
12	302			x12 CrNi 18 9	302 S 31
12	429			X10 CrNi 15	
13	420		1.4021	X20Cr13	420S37
13	420		1.4031	X40 Cr 13	
13			1.4034	X46Cr13	420 S 45
13	431	57	1.4057	X20CrNi172	431 S 29
13	CA6-NM		1.4313	G-X4 CrNi 13 4	425 C 11
13			1.4544		S. 524; S. 526
13	348		1.4546	X5CrNiNb 18-10	347 S 31; 2 S. 130; 2 S. 143; 2 S. 144; 2 S. 145; S.525; S.527
13			1.4922	x20cRmV12-1	
13			1.4923	X22 CrMoV12 1	
14	304		1.4301	X 5 CrNi 18 9	304 S 15
14	303	58M	1.4305	X10 CrNiS 18 9	303 S 21
14	304L		1.4306	X2CrNi18 9	304S12

France AFNOR	Sweden SS	Italy UNI	Spain UNE	Japan JIS	Russia GOST
	2376				
	2376				
Z6CND16-04-01	2387				
Z 4 CT 17		X 6 CrTi 17	F.3115 -X 5 CrTi 17	SUS 430 LX	08 Ch17T
Z 4 CT 17					08Ch17T
Z 4 CNb 17		X 6 CrNb 17	F.3122-X 5 CrNb 17	SUS 430 LK	
Z 3 CT 12		X 6 CrTi 12		SUH 409	
Z10C13		X10CrA112	F.311		10Ch13SJu
Z10CAS18		X8Cr17	F.3113	SUS430	15Ch13SJu
Z80CSN20.02		X80CrSiNi20	F.320B	SUH4	
Z10CAS24	2322	X16Cr26		SUH446	
Z 52 CMN 21.09		X53CrMnNiN21 9		SUH35, SUH36	55Ch20G9AN4
Z 10 CN 18-09	2330				
Z 20 C 13	2303	14210			20Ch13
Z 40 C 14	2304				40Ch13
Z40 C 14		X40Cr14	F.3405	SUS420J2	
Z 15 CN 16.02	2321	X16CrNi16	F.3427	SUS431	20Ch17N2
Z 4 CND 13-04 M	2385	(G)X6CrNi304		SCS5	
		X 6 CrNiTi 18 11			08Ch 18N12T
		X 6 CrNiNb 18 11			
	2317	x20cRmOnI 12 01			
Z 5 CN 18.09	2332; 2333				08Ch18N10
Z 8 CNF 18-09	2346	X10CrNiS18.09	F.3508	SUS303	30Ch18N11
Z2CrNi18 10	2352	x2cRnI18 11	F.3503	SCS19	

Mtl. No.	USA	European Union	Germany		United Kingdom
	AISI/SAE	EN	Werkstoff	DIN	BS
14	304L		1.4306	X2 CrNi 18 10	304 S 11
14	CF-8	58E	1.4308	X6 CrNi 18 9	304 C 15
14	301		1.4310	X12CrN i17 7	301 S 21
14	304 LN		1.4311	X2 CrNiN 18 10	304 S 62
14			1.4312	G-X10CrNi18 8	302C25
14	305		1.4312	X8 CrNi 18 12	305 s 19
14	304	58E	1.4350	X5CrNi18 9	304S15
14	S32304		1.4362	X2 CrNiN 23 4	
14	202		1.4371	X3 CrMnNiN 188 8 7	284 S 16
14	316		1.4401	X 5 CrNiMo 17 12 2; (X4 CrNiMo 17 -12-2)	316 S 13; 316 S 17; 316 S 19; 316 S 31; 316 S 33
14	316L		1.4404	X2 CrNiMo 17 13 2; (X2 CrNiMo 17-12-2); GX 2 CrNiMoN 18-10	316 S 11; 316 S 13; 316 S 14; 316 S 31; 316 S 42; S.537; 316 C 12; T.75; S. 161
14	316LN		1.4406	X2 CrNiMoN 17 12 2; (X2CrNiMoN 18-10)	316 S 61; 316 S 63
14	CF-8M		1.4408	GX 5 CrNiMoN 7 12 2; G-X 6 CrNiMo 18 10	316 C 16 (LT 196); ANC 4 B
14			1.4410	G-X10CrNiMo18 9	
14	316 Ln		1.4429	X2 CrNiMo 17 -13-3	316 S 62
14	316L		1.4435	X2 CrNiMo18 14 3	316 S 11; 316 S 13; 316 S 14; 316 S 31; LW 22; LWCF 22
14	316		1.4436	X 5 CrNiMo 17 13 3; (X4CRNIMO 17-13-3	316 S 19; 316 S 31; 316 S 33; LW 23; LWCF 23

France AFNOR	Sweden SS	Italy UNI	Spain UNE	Japan JIS	Russia GOST
Z 3 CN 19-11	2352	X2CrNi18 11			
Z 6 CN 18-10 M	2333			SUS304L	
Z 12 CN 17.07	2331	X2CrNi18 07	F.3517		
Z 2 CN18.10	2371	X2CrNiN18 10		SUS304LN	
Z10CN18.9M					10Ch18N9L
					10Ch18N9L
Z6CN18.09	2332	X5CrNi18 10	F.3551	SUS304	
Z 2 CN 23-04 AZ	2327				
Z 8 CMN 18-08-05					
Z 3 CND 17 -11-01; Z 6 CND 17-11; Z 6 CND 17-11-02; Z 7 CND 17-11-02; Z 7 CND 17-12-02	2347	X 5 CrNiMo 17 12	F.3534-X 5 CrNiMo 17 12 2	SUS 316	
Z 2 CND 17-12; Z 2 CND 18-13; Z 3 CND 17-11-02; Z 3 CND 17-12-02 FF; Z 3 CND 18-12-03; Z 3 CND 19.10 M	2348	X 2 CrNiMo 17 12; G-X 2 CrNiMo 19 11	F.3533 - X 2 CrNiMo 17 13 2; F.3537 - X 2 CrNiMo 17 13 3	SUS 316 L	
Z2 CND 17-12 AZ		X 2 CrNiMoN 17 12	F.3542-X 2 CrNiMoN 17 12 2	SUS316LN	07 Ch 18N
	2343		F.8414-AM-X 7 CrNiMo 20 10	SCS 14	10G2S2MSL
Z5CND20.12M	2328				
Z 2 CND 17-13 Az	2375	X 2 CrNiMoN 17 13	F.3543-X 2 CrNiMoN 17 13 3	SUS 316 LN	
Z 3 CND 17-12-03; Z 3 CND 18-14-03	2375	X2CrNiMoN 17 13	F.3533-X 2 CrNiMo 17 13 2	SUS 316 L	O3 Ch 17N14M3
Z 6 CND 18-12-03; Z 7 CND 18-12-03	2343	X 5 CrNiMo 117 13; X 8 cRnImO 17 13	F.3543-X 5 CrNiMo 17 12 2 F.3538-X 5 CrNiMo 17 13 3	SUS 316	

Mtl. No.	USA	European Union	Germany		United Kingdom
	AISI/SAE	EN	Werkstoff	DIN	BS
14	317L		1.4438	X2 CrNiMo 18 16 4; (X2CrNiMo 18-15-4)	317 S 12
14	(s31726)		1.4439	X2 CrNiMoN 17 13 5	
14			1.444	X 2 CrNiMo 18 13	
14	317		1.4449	X5 CrNiMo 17 13 3	317 S 16
14	329		1.4460	X 4 CrNiMo 27 5 2; (X3CrNiMo27-5-2)	
14	329		1.4460	X8CrNiMo27 5	
14			1.4462	X2CrNiMoN22 5 3	318 S 13
14			1.4500	G-X7NiCrMoCuNb25 20	
14	17-7PH		1.4504		316S111
14	443 444		1.4521	X2CrMoTi18-2	
14	UNS N 08904		1.4539	X1NiCrMoCuN25-20-5	
14	CN-7M		1.4539	(G-)X1 NiCrMoCu 25 20 5	
14	321		1.4541	Z 6 CrNiTi 18-10	321 S 31; 321 S 51 (1010; 1105); LW 24; LWCF 24
14	630		1.4542	X5 CrNiCuNb 17 4; (X5 CrNiChNb 16-4)	
14	15-5PH		1.4545	Z7 CNU15.05	
14	S31254		1.4547	X1 CrNiMoN 20 18 7	
14	347	58F	1.4550	X6 CrNiNb 18 10	347 S 17
14			1.4552	G-X7CrNiNb18 9	
14	17-7PH		1.4568		316S111
14	316tTi		1.4571	X6 CrNiMoTi 17 12 2	320 S 31
14	316 Ti	58J	1.4571	X 6 CrNiMoTi 17 12 2	320 S 31
14			1.4581	G-X 5 CrNiMoNb	318 C 17
14	318		1.4583	X 10CrNiMoNb 18 12	303 S 21

France AFNOR	Sweden SS	Italy UNI	Spain UNE	Japan JIS	Russia GOST
Z 2 CND 19-15-04; Z 3 cnd 19-15-04	2367	X2CrNiMo18 16	f.3539-x 2 cRnImO 18 16 4	SUS317L	
Z 3 CND 18-14-06 AZ					
		X 5 CrNiMo 18 15		SUS 317	
(Z 3 CND 25-07 Az); Z 5 CND 27-05 Az	2324		F.3309-X 8 CrNiMo 17 12 2; F.3552-X 8 CrNiMo 18 16 4	SUS 329 J 1	
	2324				
Z 3 CND 22-05 Az; (Z 2 CND 24 -08 Az); (Z 3 CND 25-06-03 Az)	2377			SUS 329 J3L	
23NCDU25.20M					
		Z8CNA17-07	X2CrNiMo1712		
	2326		F.3123-X 2 CrMoTiNb 18 2	SUS 444	
Z 2 NCDU 25-20	2562				
Z1 NCDU 25-02 M	2564				
Z 6 CNT 18-10	2337	X 6 CrNiTi 18 11	F.3523 - X 6 CrNiTi 18 10	SUS 321	06Ch18N10T; 08Ch18N10T; 09Ch18N10T; 12Ch18N10T
Z 7 CNU 15-05; Z 7 CNU 17-04				SCS 24; SUS 630	
	2378				
Z 6 CNNb 18.10	2338	X6CrNiNb18 11	F.3552	SUS347	08Ch18N12B
Z4CNNb19.10M					
		Z8CNA17-07	X2CrNiMo1712		09Ch17NJu1
Z 6 CNDT 17-12002	2350				10Ch17N13M2T
Z 6 NDT 17.12	2350	X6CrNiMoTi17 12	F.3535		10Ch17N13M2T
Z 4 CNDNb 18.12 M					
Z15CNS20.12		x15cRnIsI2 12			

Mtl. No.	USA	European Union	Germany		United Kingdom
	AISI/SAE	EN	Werkstoff	DIN	BS
14			1.4585	G-X7CrNiMoCuNb18 18	
14			1.4821	X20CrNiSi25 4	
14			1.4823	G-X40CrNiSi27 4	
14	309	58C	1.4828	X15CrNiSi20 12	309 S 24
14	309S		1.4833	X6 CrNi 22 13	309 S 13
14	310 S		1.4845	X12 CrNi 25 21	310S24
14	321	58B	1.4878	X6 CrNiTi 18 9	32 1 S 20
14	Ss30415		1.4891	X5 CrNiNb 18 10	
14	S30815		1.4893	X8 CrNiNb 11	
14	304H		1.4948	X6 CrNi 18 11	304 S 51
14	660		1.4980	X5 NiCrTi 25 15	
14				X5 NiCrN 35 25	
14	S31753			X2 CrNiMoN 18 13 4	
14				X2 CrNiMoN 25 22 7	
15	CLASS20		0.6010	GG10	
15	A48-20B		0.6010	GG-10	
15	NO 25 B		0.6015	GG 15	Grade 150
15	CLASS25		0.6015	GG15	GRADE150
15	A48 25 B		0.6015	GG 15	Grade 150
15	A48-30B		0.6020	GG-20	Grade 220
15	NO 30 B		0.6020	GG 20	Grade 220
15	A436 Type 2		0.6660	GGL-NiCr202	L-NiCuCr202
15	60-40-18		0.7040	GGG 40	SNG 420/12
15	No 20 B			GG 10	
16	CLASS30		0.6020	GG20	GRADE220
16	A48-40 B		0.6025	EN- GJL-250 (GG25)	Grade260
16	CLASS45		0.6030	GG30	GRADE300
16	A48-45 B		0.6030		Grade 300
16	A48-50		0.6035	GG-35	GRADE 350
16	A48-60 B		0.6040	GG40	GRADE400
16			1.4829	X 12 CrNi 22 12	
16					
16					
17			0.7033	GGG-35.3	350/22 L 40

France AFNOR	Sweden SS	Italy UNI	Spain UNE	Japan JIS	Russia GOST
		X6CrNiMoTi17 12			
Z20CNS25.04					
Z15CNS20.12			F.8414	SCS17	20Ch20N14S2
Z 15 CN 24-13					
Z 12 CN 25-20	2361	X6CrNi25 20	F.331	SUH310	20Ch23N18
Z 6 CNT 18-12 (B)	2337	X6CrNiTi18 11	F.3553	SUS321	
	2372				
	2368				
Z 5 CN 18-09	2333				
Zz 8 nctv 25-15 b ff	2570				
Ft10D	110	G10			SCh10
FT 10 D	0110-00				SCh10
FT 15 D	0115-00	G 15	FG 15	FC150	SCh15
Ft15D	115	G 15	FG 15		SCh15
Ft 15 D	01 15-00	G14	FG15		SCh15
Ft 20 D	0120-00				SCh20
Ft 20 D	120	G 20		FC200	SCh20
L-NC 202	0523-00				
FCS 400-12	0717-02	GS 370-17	FGE 38-17	FCD400	VCh42-12
Ft 10 D	110			FC100	
Ft20D	120	G 20	FG 20		
Ft 25 D	125	G 25	FG 25	FC250	VCh60-2
Ft30D	130	G 30	FG 30	FC300	SCh20
Ft 30 D	01 30-00				SCh30
Ft35D	135	G 35	FG 35	FC350	SCh30
Ft 40 D	140				SCh40
					SCh25
FGS 370/17	0717-15				VCh42-12

Mtl. No.	USA	European Union	Germany		United Kingdom
	AISI/SAE	EN	Werkstoff	DIN	BS
17	60/40/18		0.7043	GGG-40.3	370/7
17	80-55-06		0.7050	EN- GJS-800-7 (GGG50)	SNG500/7
17	65-45-12		0.7050	GGG-50	SNG 500/7
17			0.7652	GGG-NiMn 13 7	S-NiMn 137
17	A43D2		0.7660	GGG-NiCr 20 2	Grade S6
17				GGG 40.3	SNG 370/17
18			0.7060	GGG60	SNG600/3
18	80/55/06		0.7060	GGG-60	600/3
18	100/70/03		0.7070	GGG-70	SNG700/2
18	A48 40 B				
19			0.8055	GTW55	
19	32510		0.8135	GTS-35-10	B 340/12
19	A47-32510		0.8135	GTS-35-10	B 340/2
19	A220-40010		0.8145	GTS-45-06	P 440/7
19				GTS-35	B 340/12
19					8 290/6
19	32510			GTS-35	B340/12
20			0.8035	GTM-35	W340/3
20			0.8040	GTW-40	W410/4
20			0.8045		
20			0.8065	GTMW-65	
20	A220-50005		0.8155	GTS-55-04	P 510/4
20	50005		0.8155	GTS-55-04	P510/4
20	70003		0.8165	GTS-65-02	P 570/3
20	90001		0.8170	GTS-70-02	P 690/2
20	A220-90001		0.8170	GTS-70-02	
20	1022; 1518		1.1133	20Mn5	120 M 19
20	400 10			GTS-45	P440/7
20	70003			GTS-65	P 570/3
21	Al99		3.0205		
21	1000		3.0255	Al99.5	L31; L34; L36
21			3.3315	AlMg1	
22			3.1325	AlCuMg 1	
22			3.1655	AlCuSiPb	

France AFNOR	Sweden SS	Italy UNI	Spain UNE	Japan JIS	Russia GOST
FGS 370/17	0717-15				VCh50-2
FGS 500/7	0727-02	GGG 50		FCD500	VCh50-2
FGS 500-7	0727-02				
S-Mn 137	0772-00				
S-NC 202	0776-00				
FGS 370-17	0717-12			FC250	
FGS600-3	07 32-03	GGG 60	GGG 60		
FGS 600/3	0727-03			FCD600	
FGS 700-2	07 37-01	GGG 70	GGG 70	FCD700	
			GTW 55		
MN35-10	810		GTS 35		KCh35-10
Mn 35-10	0815-00				KCh35-10
Mn 450-6	0852-00	GMN 45		FCMW370	
	0810-00				
MN 32-8	814			AC4A	
MN 35-10	08 15			FCMW330	
MB35-7	852		GTM 35		
MB40-10		GMB40	GTM 40		
		GMB45	GTM 45		KCh55-4
			GTW 65		KCh55-4
Mn 550-4	0854-00				KCh60-3
MP 50-5	854	GMN 55		FCMP490	KCh70-2
Mn 650-3	0856-00	GMN 65		FCMP590	KCh70-2
Mn 700-2	0862-00	GMN 70		FCMP690	KCh70-2
Mn 700-2	0864-00				20G
20 M 5	2132	G 22 Mn 3; 20 Mn 7	F.1515-20 Mn 6	SMnC 420	
	08 52				
MP 60-3	858			FCMP540	AD0
A59050C					D1
					AD35

Mtl. No.	USA	European Union	Germany		United Kingdom
	AISI/SAE	EN	Werkstoff	DIN	BS
22			3.2315	AlMgSi1	
22	7050		3.4345	AlZnMgCuO,5	L 86
22			3.437	AlZnMgCu 1,5	
23			3.2381	G-AlSi 10 Mg	
23			3.2382	GD-AlSi10Mg	
23	A360.2		3.2383	G-AlSi0Mg(Cu)	LM9
23			3.2581	G-AlSi12	
23			3.3561	G-AlMg 5	
23	ZE 41		3.5101	G-MgZn4sE1Zr1	MAG 5
23	EZ 33		3.5103	MgSE3Zn27r1	MAG 6
23	AZ 81		3.5812	G-MgAl8Zn1	NMAG 1
23	AZ 91		3.5912	G-MgAl9Zn1	MAG 7
23	A356-72				2789; 1973
23	356,1				LM25
23	A413.2			G-AlSi12	LM 6
23	A413.1			G-AlSi 12 (Cu)	LM 20
23	A413.0			GD-AlSi12	
23	A380.1			GD-AlSi8Cu3	LM24
24			2.1871	G-AlCu 4 TiMg	
24			3.1754	G-AlCu5Ni1,5	
24			3.2163	G-AlSi9Cu3	
24	4218 B		3.2371	G-AlSi 7 Mg	
24	SC64D		3.2373	G-AlSI9MGWA	
24			3.2373	G-AlSi 9 Mg	
24	QE 22		3.5106	G-MgAg3SE2Zr1	mag 12
24	GD-AlSI12			G-ALMG5	LM5
26	C93200		2.1090	G-CuSn 7 5 pb	
26	c 83600		2.1096	G-CuSn5ZnPb	LG 2
26	C 83600		2.1098	G-CuSn 2 Znpb	
26	C23000		2.1182	G-CuPb15Sn	LB1
26	C 93800		2.1182	G-CuPb15Sn	
27			2.0240	CuZn 15	
27	C27200		2.0321	CuZn 37	cz 108
27	C27700		2.0321	CuZn 37	cz 108
27			2.0590	G-CuZn40Fe	

France AFNOR	Sweden SS	Italy UNI	Spain UNE	Japan JIS	Russia GOST
					AK9
AZ 4 GU/9051		811-04			
					AK12
	4253				
G-TR3Z2					
NF A32-201					
	4244			A5052	AK7
	4261				
	4260			ADC12	AK12
	4247			A6061	
	4250			A7075	
					VAL 8
					AK8
A-S7G	4251			C4BS	AK9
A-SU12	4252				
U-E 7 Z 5 pb 4					
U-pb 15 E 8					
Uu-PB 15e 8					
CuZn 36, CuZn 37		C 2700			L 63
CuZn 36, CuZn 37		C2720			L 63

Mtl. No.	USA	European Union	Germany		United Kingdom
	AISI/SAE	EN	Werkstoff	DIN	BS
27	C 86500		2.0592	G-CuZn 35 Al 1	U-Z 36 N 3
27	C 86200		2.0596	G-CuZn 34 Al 2	HTB 1
27	C 18200		2.1293	CuCrZr	CC 102
28			2.0060	E-Cu57	
28			2.0375	CuZn36Pb3	
28	C 63000		2.0966	CuAl 10 Ni 5 Fe 4	Ca 104
28	B-148-52		2.0975	G-CuAl 10 Ni	
28	c 90700		2.1050	G-CuSn 10	CT1
28	C 90800		2.1052	G-CuSn 12	pb 2
28	C 81500		2.1292	G-CuCrF 35	CC1-FF
28			2.4764	CoCr20W15Ni	
31	N 08800		1.4558	X 2 NiCrAlTi 32 20	NA 15
31	N 08031		1.4562	X 1 NiCrMoCu 32 28 7	
31	N 08028		1.4563	X 1 NiCrMoCuN 31 27 4	
31	N 08330		1.4864	X 12 NiCrSi 36 16	NA 17
31	330		1.4864	X12 NiCrSi 36 16	NA 17
31			1.4865	G-X40NiCrSi38 18	330 C 40
31			1.4958	X 5 NiCrAlTi 31 20	
31	AMS 5544		2.4668	NiCr19NbMo	
32			1.4977	X 40 CoCrNi 20 20	
33	Monel 400		2.4360	NiCu30Fe	NA 13
33	5390A		2.4603		
33	Hastelloy C-4		2.4610	NiMo16cR16Ti	
33	Nimonic 75		2.4630	NiCr20Ti	HR 5,203-4
33			2.4630	NiCr20Ti	HR5,203-4
33	Inconel 690		2.4642	NiC29Fe	
33	Inconel 625		2.4856	NiCr22Mo9Nb	NA 21
33	5666		2.4856	NiCr22Mo9Nb	
33	Incoloy 825		2.4858	NiCr21Mo	NA 16
34	Monel k-500		2.4375	NiCu30 Al	NA 18
34	4676		2.4375	NiCu30Al	3072-76
34			2.4631	NiCr20TiAl	Hr40; 601
34	Inconel 718		2.4668	NiCr19FeNbMo	
34	Inconel 751		2.4694	NiCr16fE7TiAl	
34			2.4955	NiFe25Cr20NbTi	

France AFNOR	Sweden SS	Italy UNI	Spain UNE	Japan JIS	Russia GOST
HTB 1					
U-Z 36 N 3					LTs23AD; ZMts
U-Cr 0.8 Zr					
					LS60-2
U-A 10 N					BrAD; N10-4-4
UE 12 P					
Z1NCDU31-27-03	2584				EK 77
Z 12 NCS 35.16					
Z 12 NCS 37.18				SUH330	
		XG50NiCr39 19		SCH15	
NC20K14					
Z 42 CNKDWNb					
NU 30					
NC22FeD					
NC 20 T					
NC20T					
Nnc 30 Fe					
NC 22 FeDNb					
Inconel 625					
NC 21 Fe DU					KhN38VT
NU 30 AT					
NC20TA					KhN77TYuR
NC 19 Fe Nb					

Mtl. No.	USA	European Union	Germany		United Kingdom
	AISI/SAE	EN	Werkstoff	DIN	BS
34	5383		2.4668	NiCr19Fe19NbMo	HR8
34	5391		2 4670	S-NiCr13A16MoNb	3146-3
34	5660		2.4662	NiFe35Cr14MoTi	
34	5537C		2.4964	CoCr20W15Ni	
34	AMS 5772			C0Cr22W14Ni	
35	Inconel X-750		2.4669	NiCr15Fe7TiAl	
35	Hastelloy B		2.4685	G-NiMo28	
35	Hastelloy C		2.4810	G-NiMo30	
35	AMS 5399		2.4973	NiCr19Co11MoTi	
35			3.7115	TiAl5Sn2	
36	R 50250		3.7025	Ti 1	2 TA 1
36	R 52250		3.7225	Ti 1 pd	TP 1
36	AMS 5397		2.4674	NiCo15Cr10MoAlTi	
37			3.7124	TiCu2	2 TA 21-24
37	R 54620		3.7145	TiAl6Sn2Zr4Mo2Si	
37			3.7165	TiAl6V4	TA 10-13; TA 28
37			3.7185	TiAl4Mo4Sn2	TA 45-51; TA 57
37			3.7195	TiAl 3 V 2.5	
37				TiAl4Mo4Sn4Si0.5	
37	AMS R54520			TiAl5Sn2.5	TA14/17
37	AMS R56400			TiAl6V4	TA10-13/TA28
37	AMS R56401			TiAl6V4ELI	TA11
38	W 1		1.1545	C 105 W1	BW 1A
38	W210		1.1545	C105W1	BW2
38			1.2762	75 CrMoNiW 6 7	
38	440C		1.4125	X105 CrMo 17	
38			1.6746	32 nIcRmO 14 5	832 M 31
40	Ni- Hard 2		0.9620	G-X 260 NiCr 4 2	Grade 2 A
40	Ni- Hard 1		0.9625	G-X 330 Ni Cr 4 2	Grade 2 B
40	Ni-Hard 4		0.9630	G-X 300 CrNiSi 9 5 2	
40			0.9640	G-X 300 CrMoNi 15 2 1	
40	A 532 III A 25% Cr		0.9650	G-X 260 Cr 27	Grade 3 D

France AFNOR	Sweden SS	Italy UNI	Spain UNE	Japan JIS	Russia GOST
NC19eNB					
NC12AD					
ZSNCDT42					
KC20WN					
KC22WN					
NC 15 TNb A					
NC19KDT					VT5-1
					VT1-00
T-A 6 V					VT6
T-A5E					
T-A6V					
Y1 105	1880	C 100 KU	F-5118	SK 3	
Y120	2900	C120KU	CF.515	SUP4	U10A
Z 100 CD 17		X 105 CrMo 17			95Ch18
35 NCD 14					
	0512-00				
	0513-00				
	0466-00				ChWG

Mtl. No.	USA	European Union	Germany		United Kingdom
	AISI/SAE	EN	Werkstoff	DIN	BS
40	A 532 III A 25% Cr		0.9655	G-X 300 CrNMo 27 1	Grade 3 E
40	310		1.4841	X15 CrNiSi 25 20	314 S31
41			0.9635	G-X 300 CrMo 15 3	
41			0.9645	G-X 260 CrMoNi 20 2 1	

France AFNOR	Sweden SS	Italy UNI	Spain UNE	Japan JIS	Russia GOST
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