



TURNING

Stellram® Cutting
Tool Products

ATIstellram.com

ATImetals.com

Turning

Machining Solutions for Mission Critical Metallics®

Increase productivity and reduce tooling costs in today's most challenging applications with machining solutions from ATI Stellram Cutting Tool Systems.

ATI is a leading producer of specialty metals including titanium and titanium alloys, nickel-based alloys and superalloys, stainless steel and specialty alloys, powder metals and tungsten and tungsten alloys as well as a manufacturer of precision components and fabrications.

ATI Stellram, an operating unit within the Allegheny Technologies Incorporated (ATI) group of companies, is a metalcutting and metal finishing technology leader. Featured products include Stellram® Cutting Tool Systems, Garryson® Abrasives, Burrs and Routers and Landis® Threading Systems.

ATI Stellram draws on the advanced R&D capabilities throughout ATI enabling us to provide "Best in Class" machining solutions for the aerospace, defense, power generation, oil and gas, medical, transportation and construction and mining industries.

We, as Stellram employees, are responsible for achieving customer satisfaction by continually improving processes, products, deliveries and services to ensure they meet or exceed customer requirements. We strive for zero defects in everything we do while promoting a safe work environment for all employees at work and at home.



All Stellram's products are supported by a confident and technical sales team backed by an extensive customer care policy.



Turning Solutions

This product catalog highlights a broad range of tooling solutions ideal for turning, boring, threading, grooving and cutoff applications and features:

- A complete range of PVD and CVD "First Choice" grades that includes the advanced NL range of coatings, fine-tuned to specific materials and applications for optimum results.
- Geometries that also offer a "First Choice" range from finishing to roughing to meet the increasing demands of higher feed rates for greater chip control.
- Comprehensive threading programs available in a wide range of standard and customer licensed thread forms.
- A full line of toolholders and boring bars to support and compliment our elite grade and geometry programs.
- Application and customer service support from our technical sales engineers ready to address your on-site needs and backed by an experienced customer service team.

Rely on ATI Stellram to achieve "Best in Class" machining solutions for your high performance applications.

Please contact us for additional information on any of the products illustrated in this catalog or any other part of Stellram's comprehensive tooling program.



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Stellram®
Cutting Tool Systems

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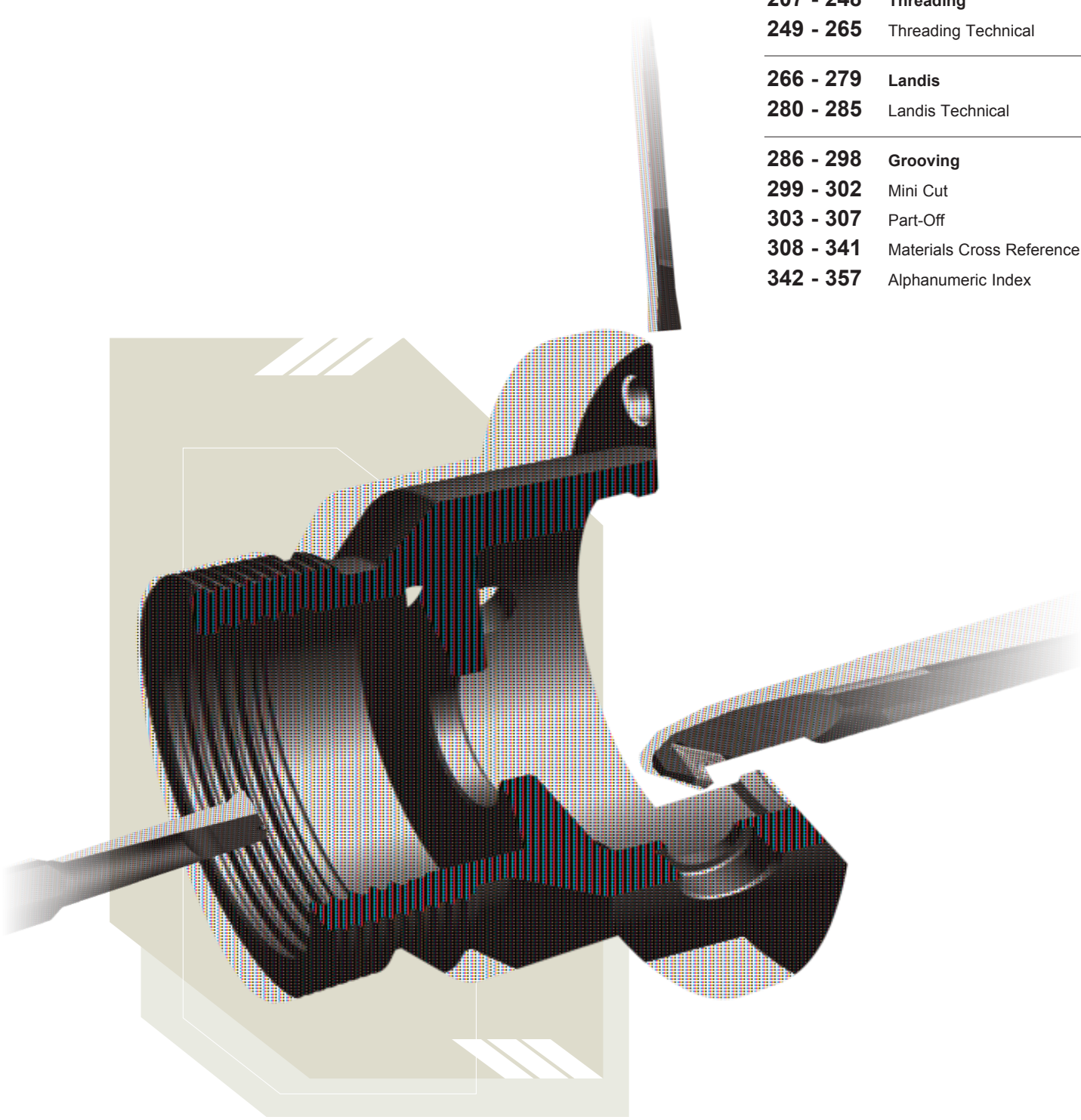
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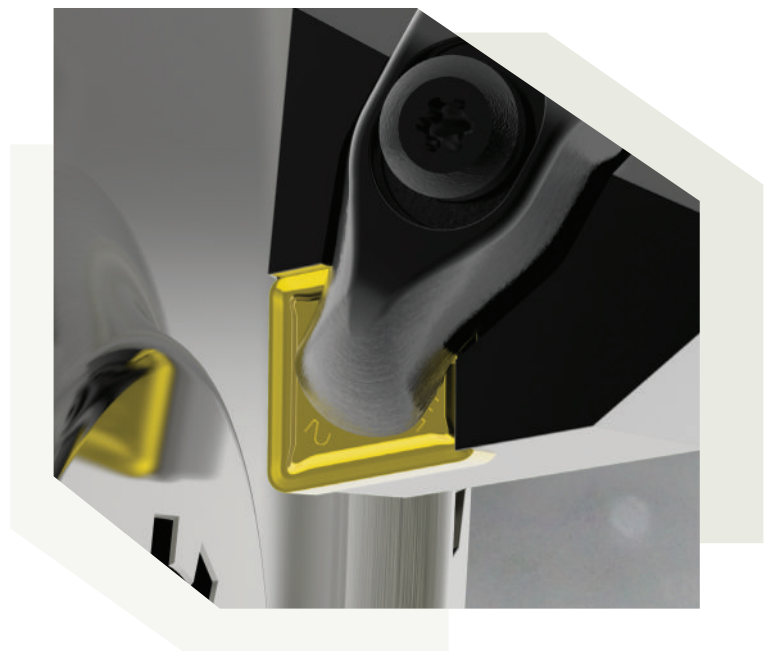
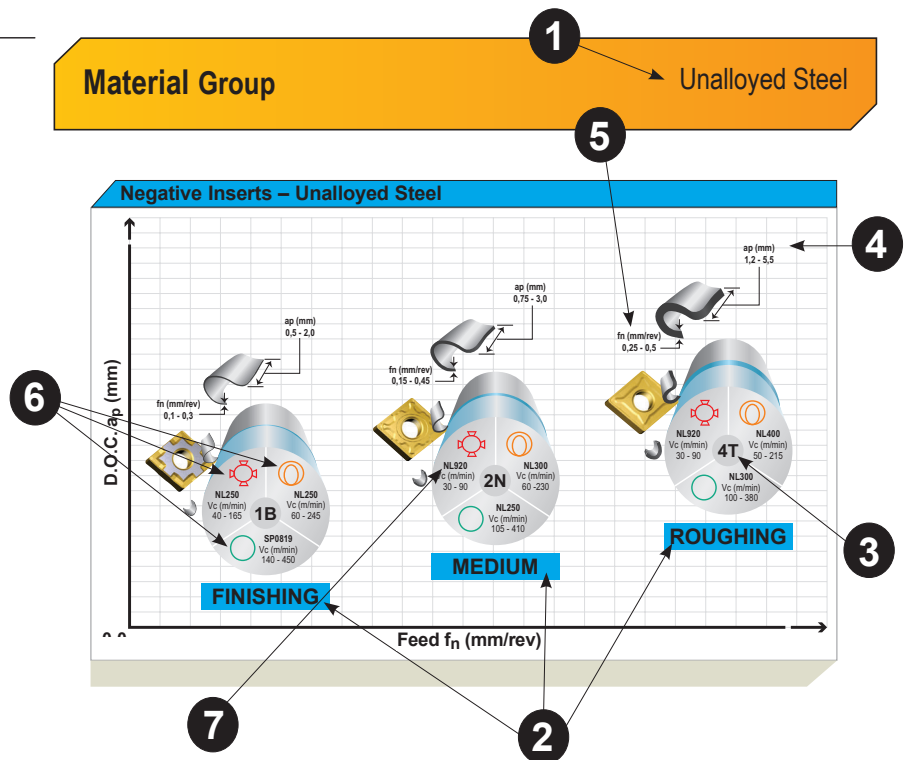


Tool Selection

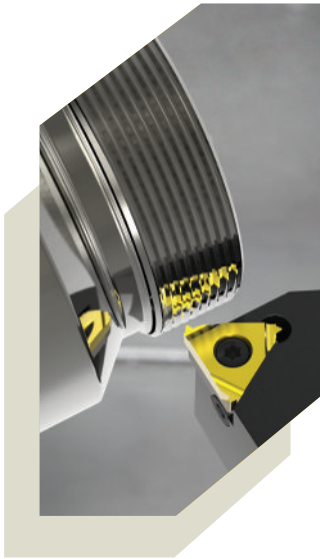
The following Material Guide pages enable you to select the appropriate geometry and grade along with a suggested start point for speeds and feeds. Simply select the material to be machined and type of machining operation.

1st Choice

- 1 Select your material.
- 2 Select your machining operation from finishing to roughing.
- 3 Recommended geometry for the operation.
- 4 Maximum and minimum depth of cut for this geometry.
- 5 Maximum and minimum feed for this geometry.
- 6 Choose the machining condition as below:
 - Interrupted cut 
 - Varying depth of cut 
 - Good condition 
- 7 Recommended grade and cutting speeds for this condition.



Machining Materials Guide



Unalloyed Steels



Alloyed Steels



Stainless Steels



PH Stainless



Cast Irons



Aluminum & Alloys



High Temperature Alloys



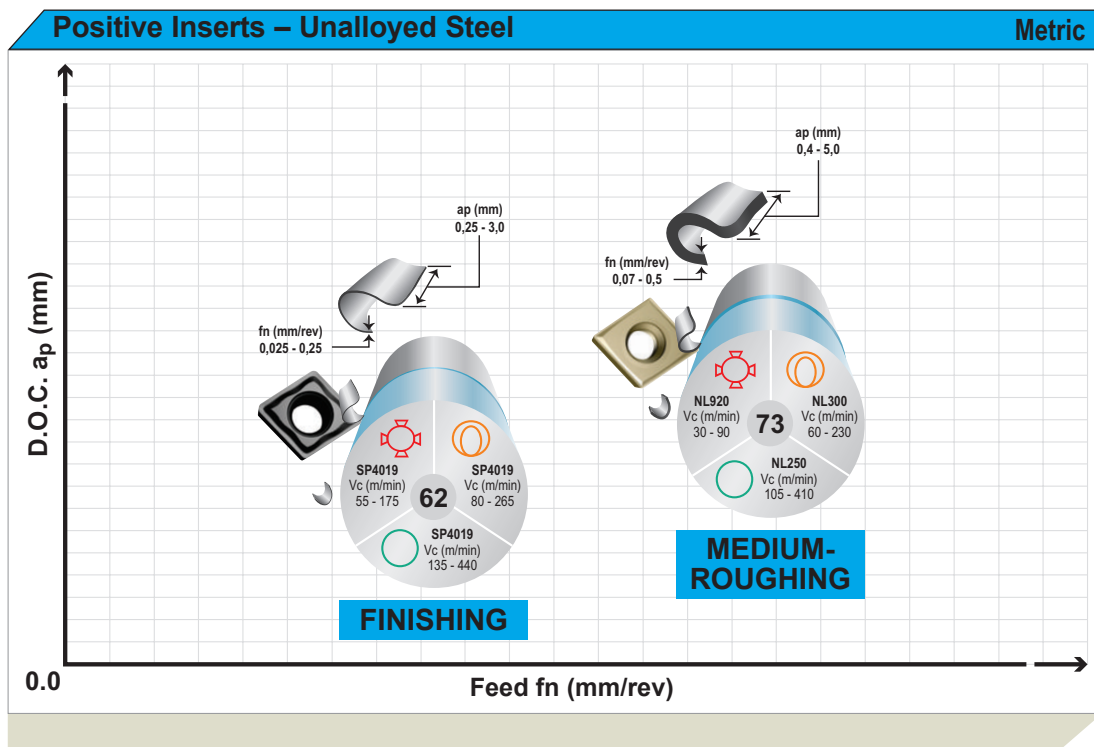
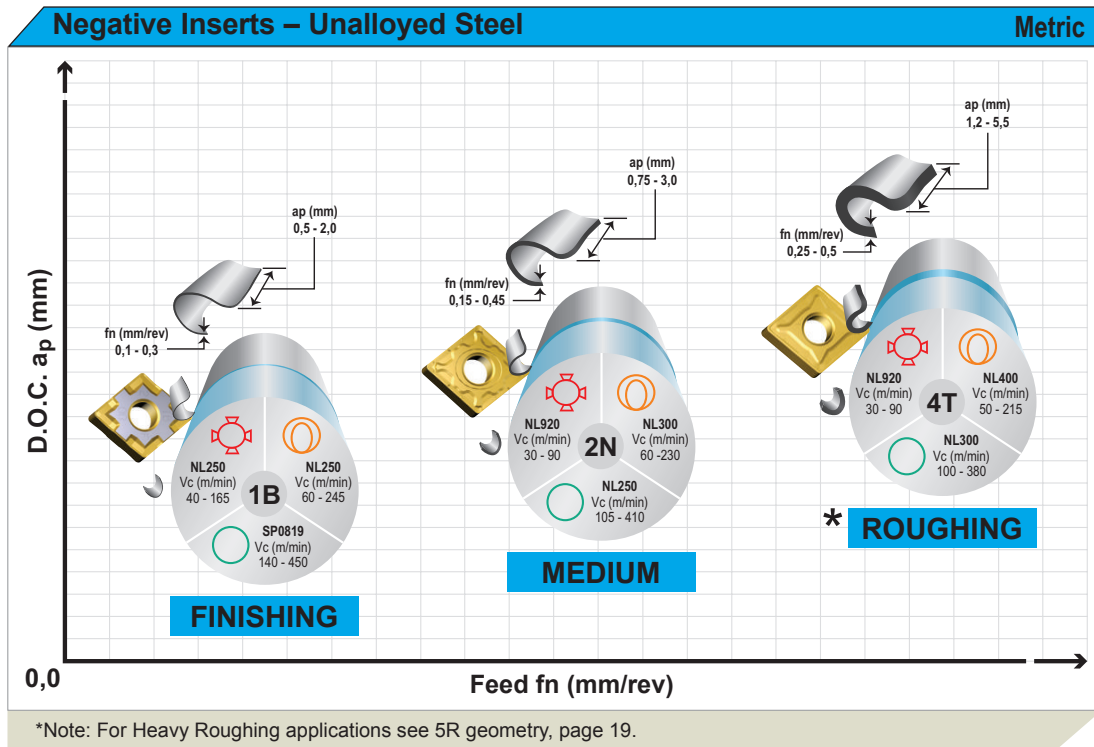
Hard Materials (52-56 HRC)



Material Guide – Key to Recommended Inserts

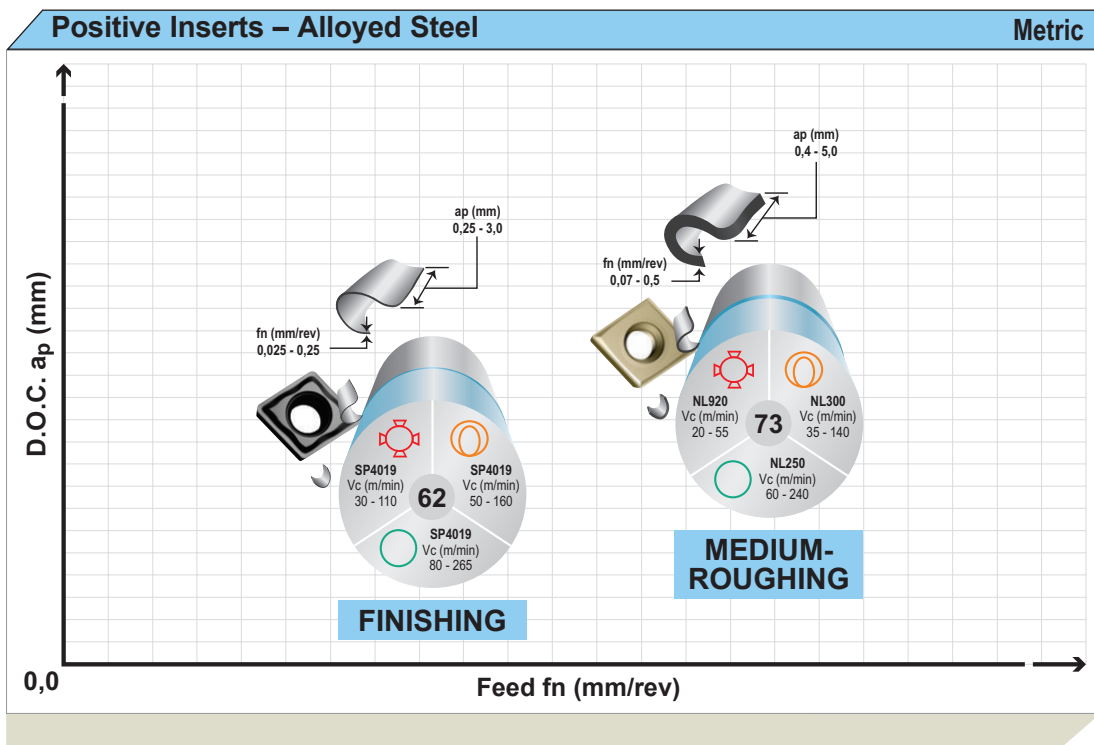
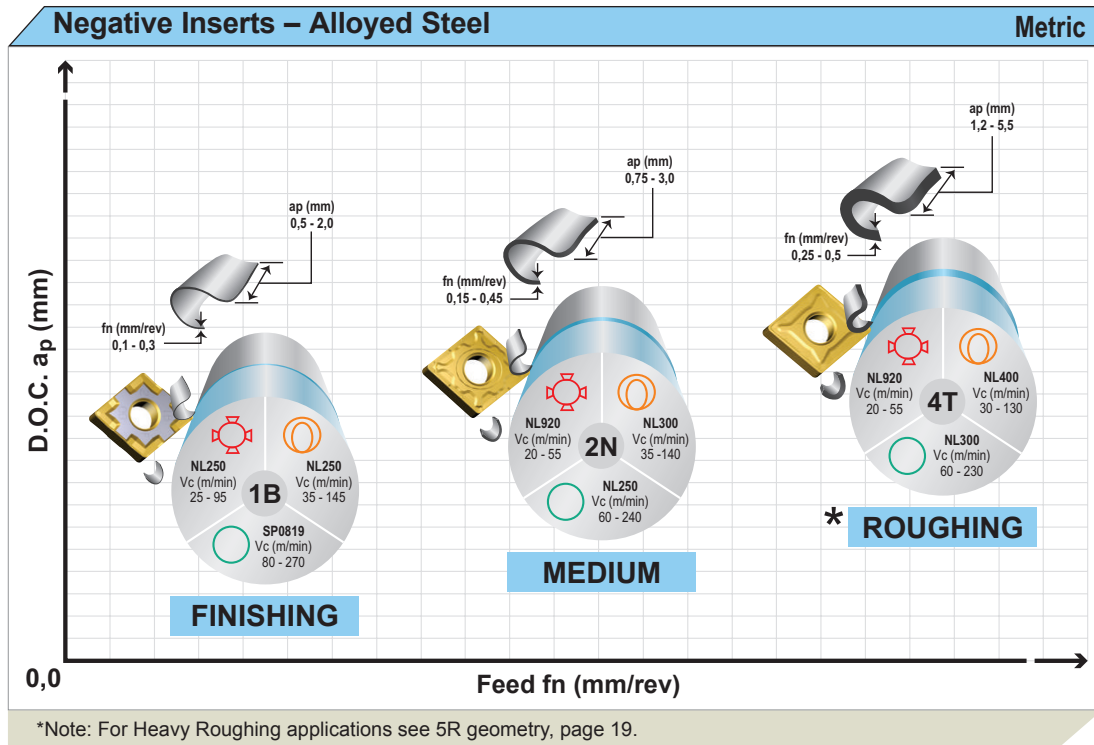
Material Designation

Unalloyed Steels
 Alloyed Steels
 Stainless Steels
 PH Stainless
 Cast Irons
 Aluminum & Alloys
 High Temp. Alloys
 Hard Materials



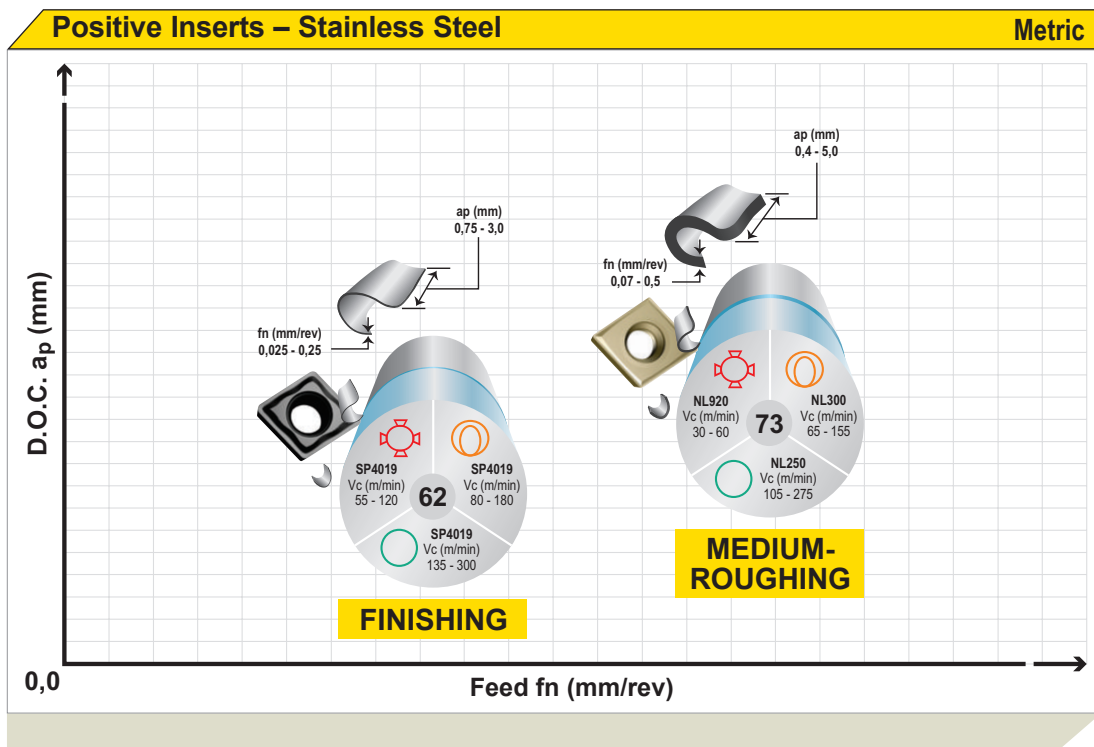
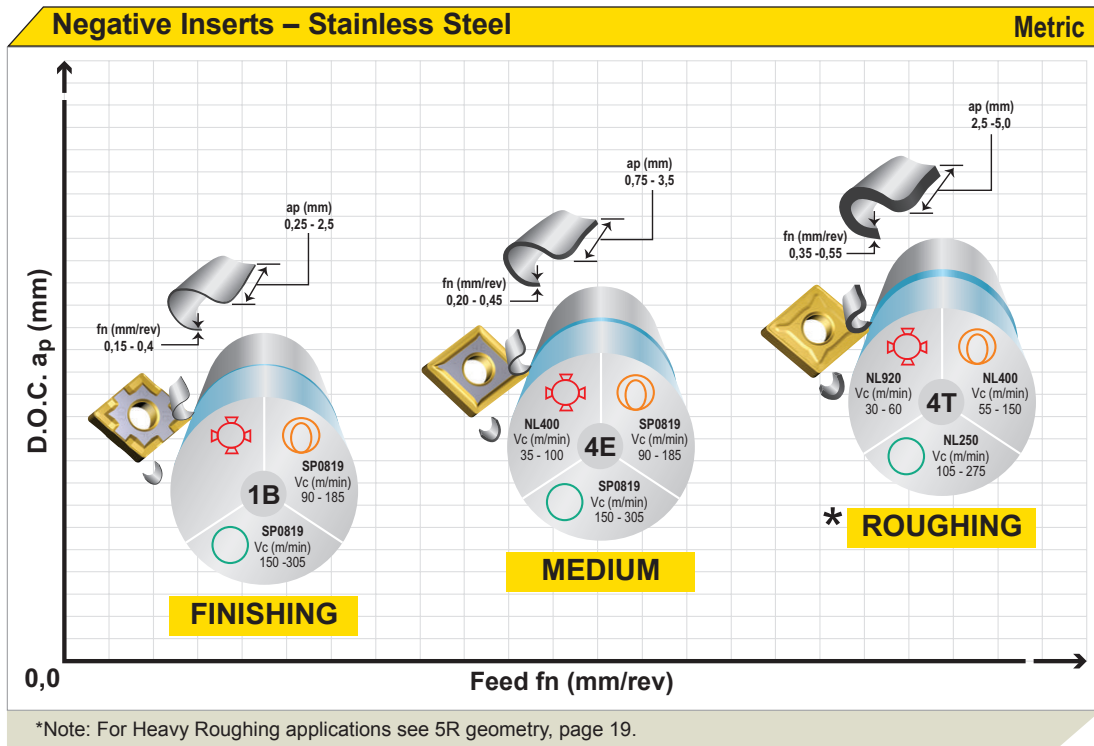
Please note the above recommended cutting speeds, geometries and grades are for guidance only. For more detailed information, see pages 14 - 25 (geometry technical information & grade technical information).

Key		Interrupted cut		Varying depth of cut		Good condition
------------	--	-----------------	--	----------------------	--	----------------



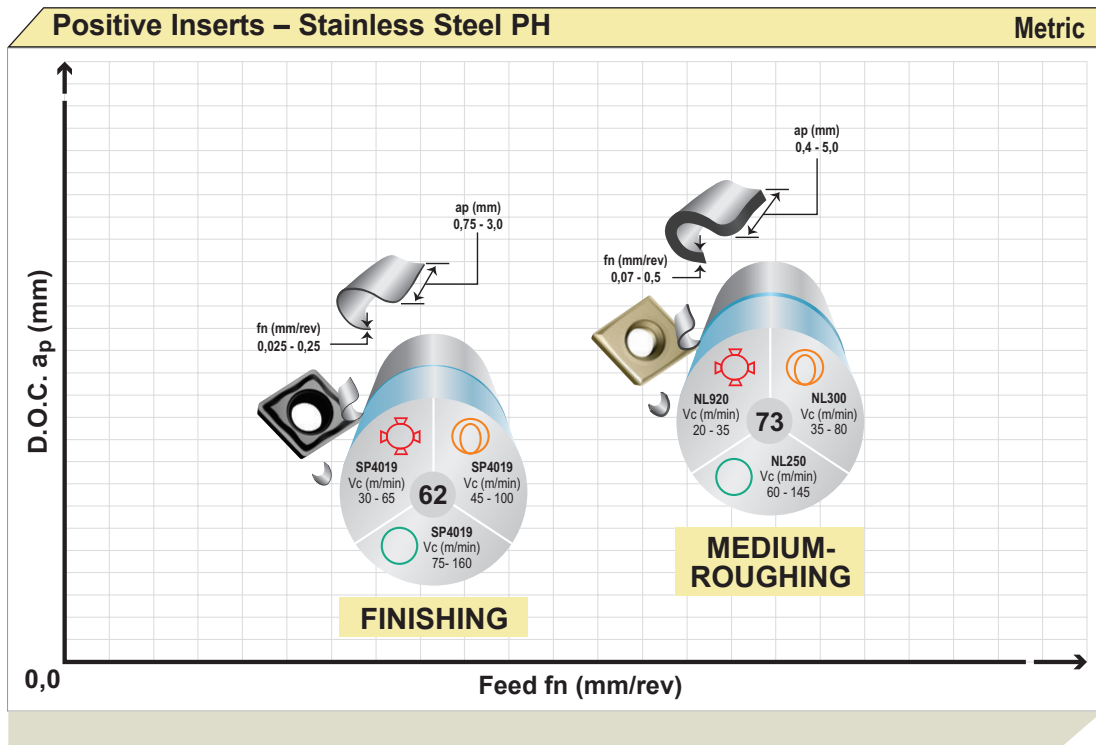
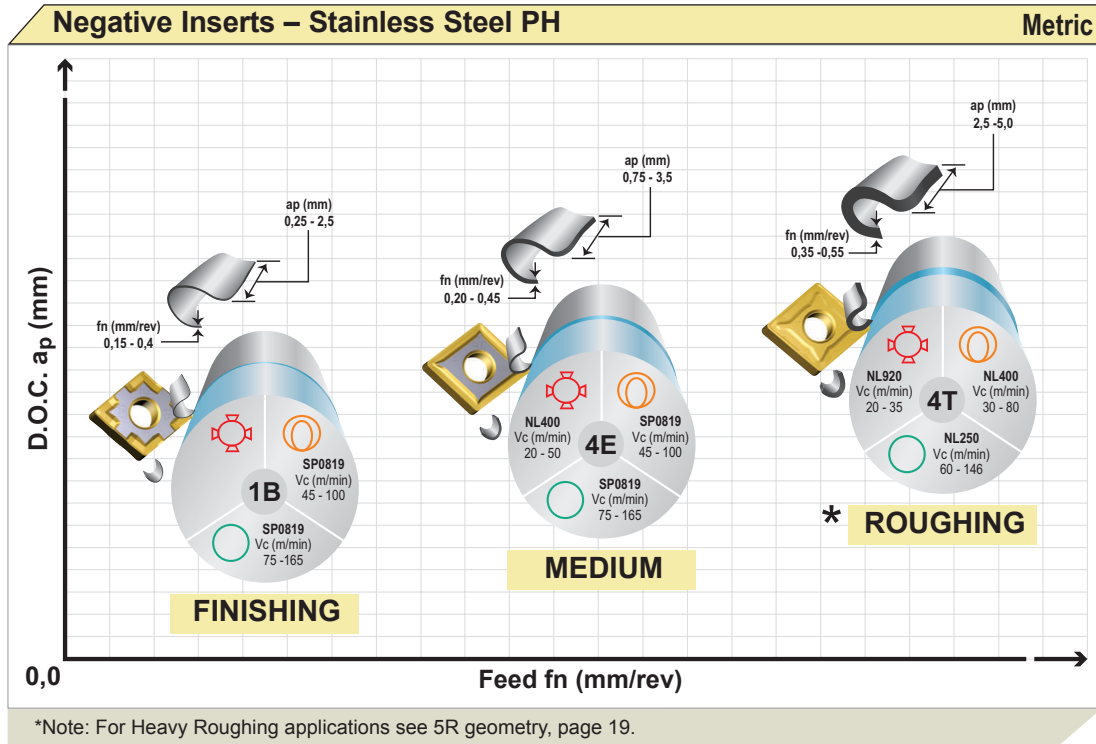
Please note the above recommended cutting speeds, geometries and grades are for guidance only. For more detailed information, see pages 14 - 25 (geometry technical information & grade technical information).

Key		Interrupted cut		Varying depth of cut		Good condition
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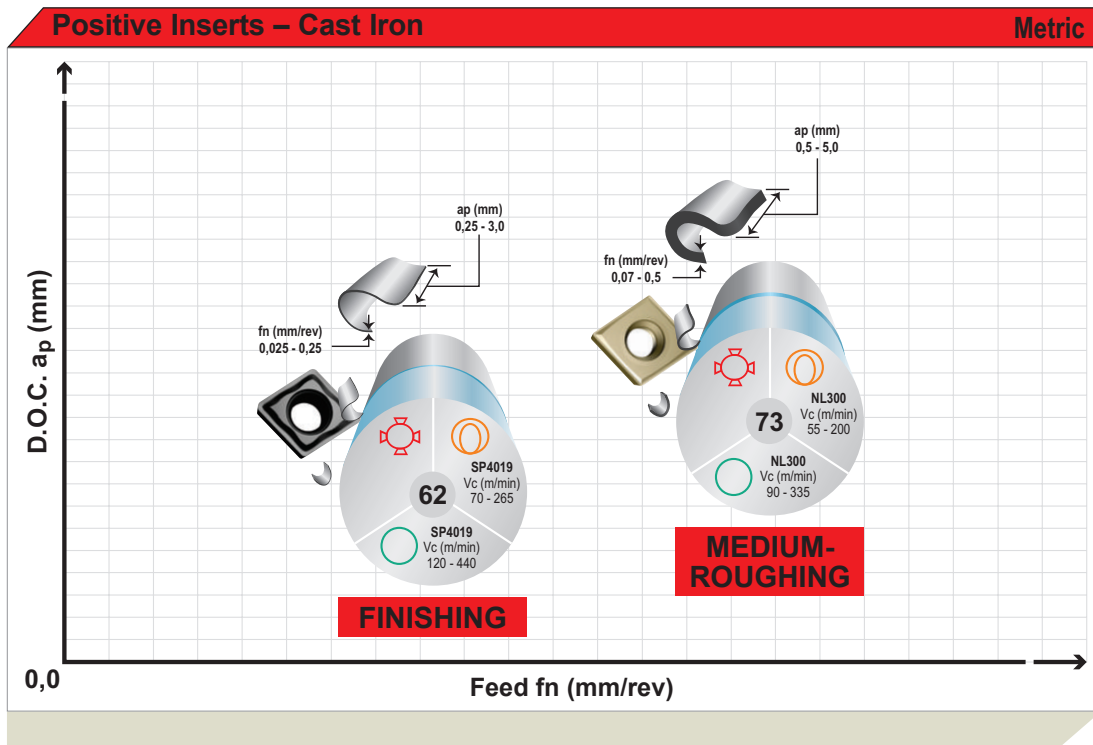
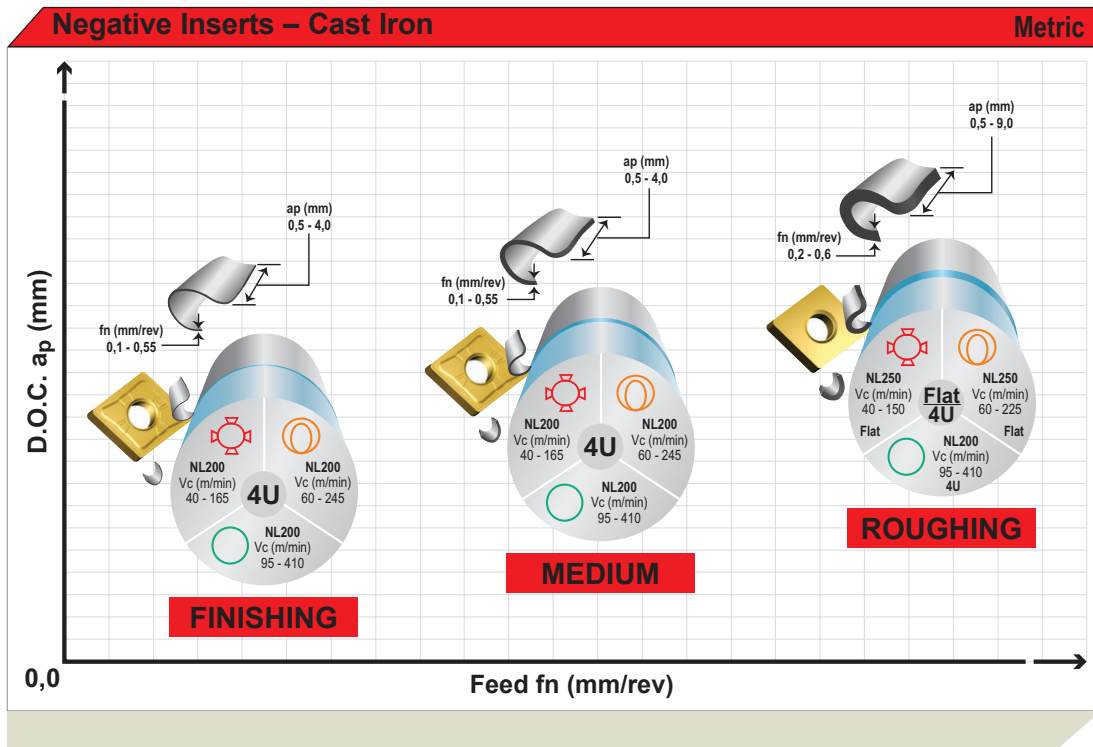
Please note the above recommended cutting speeds, geometries and grades are for guidance only. For more detailed information, see pages 14 - 25 (geometry technical information & grade technical information).

Key		Interrupted cut		Varying depth of cut		Good condition
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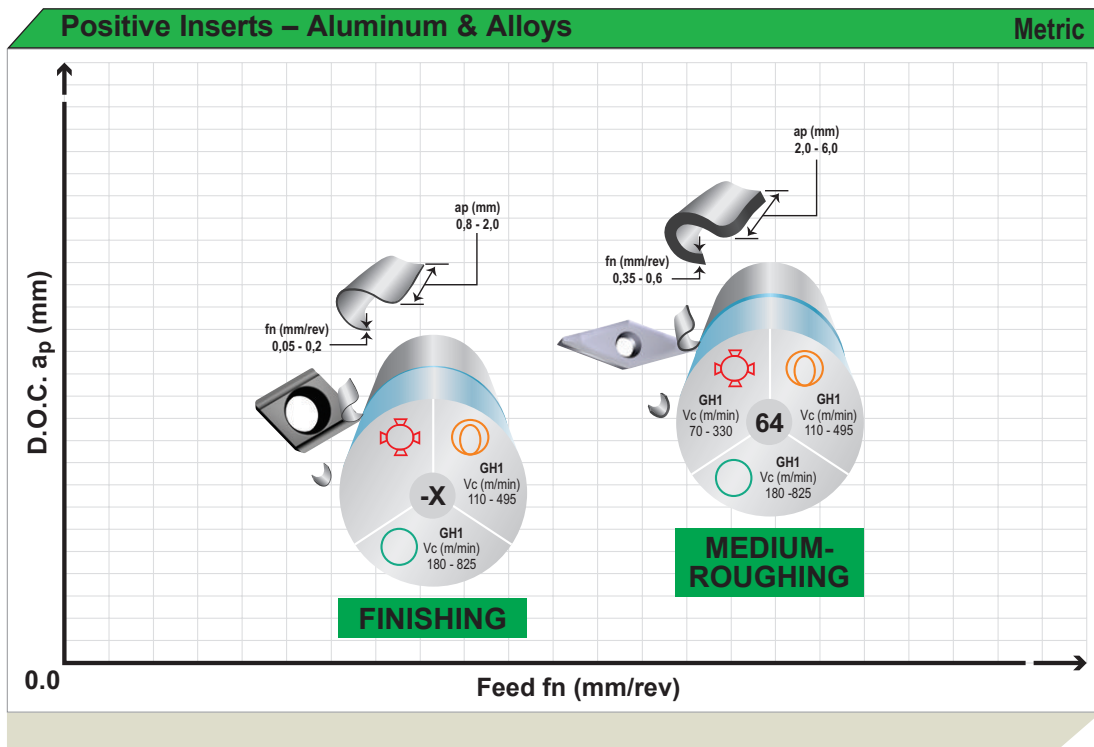
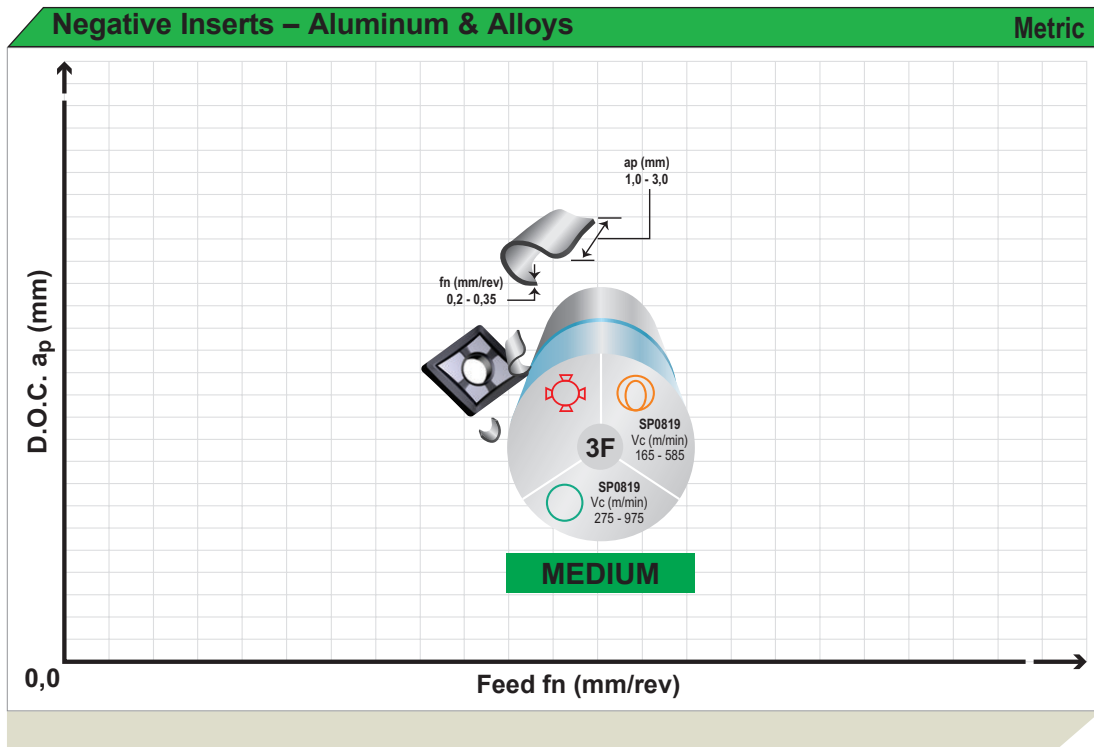
Please note the above recommended cutting speeds, geometries and grades are for guidance only. For more detailed information, see pages 14 - 25 (geometry technical information & grade technical information).

Key		Interrupted cut		Varying depth of cut		Good condition
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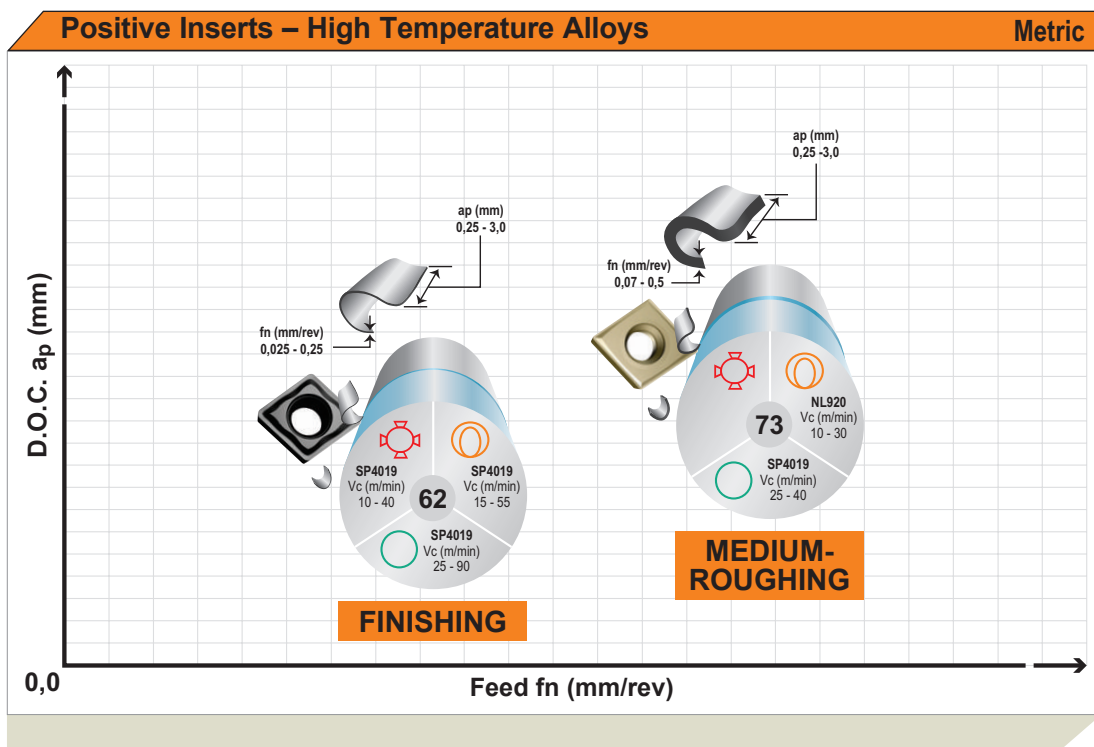
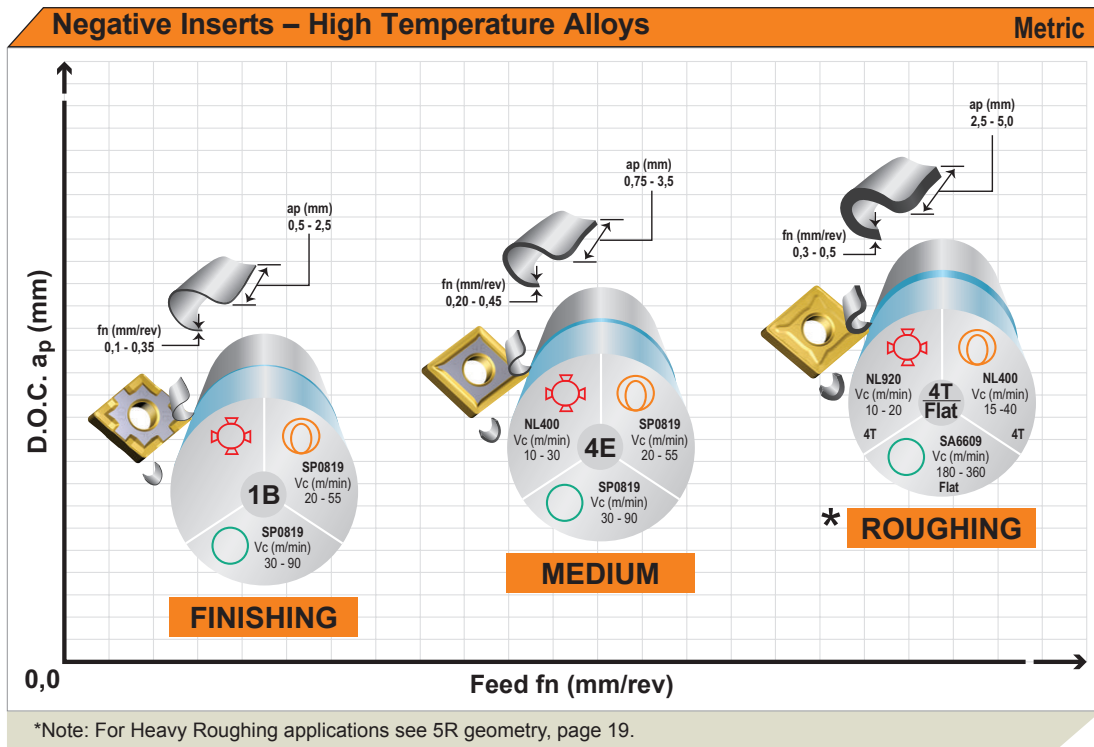
Please note the above recommended cutting speeds, geometries and grades are for guidance only. For more detailed information, see pages 14 - 25 (geometry technical information & grade technical information).

Key		Interrupted cut		Varying depth of cut		Good condition
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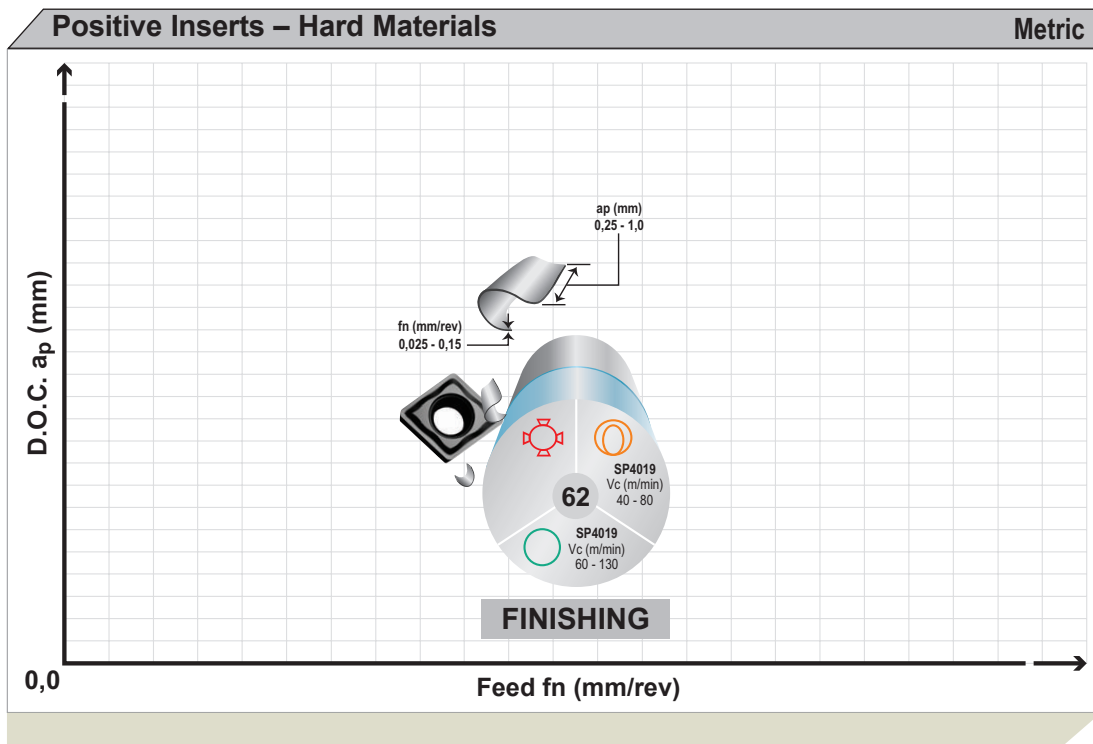
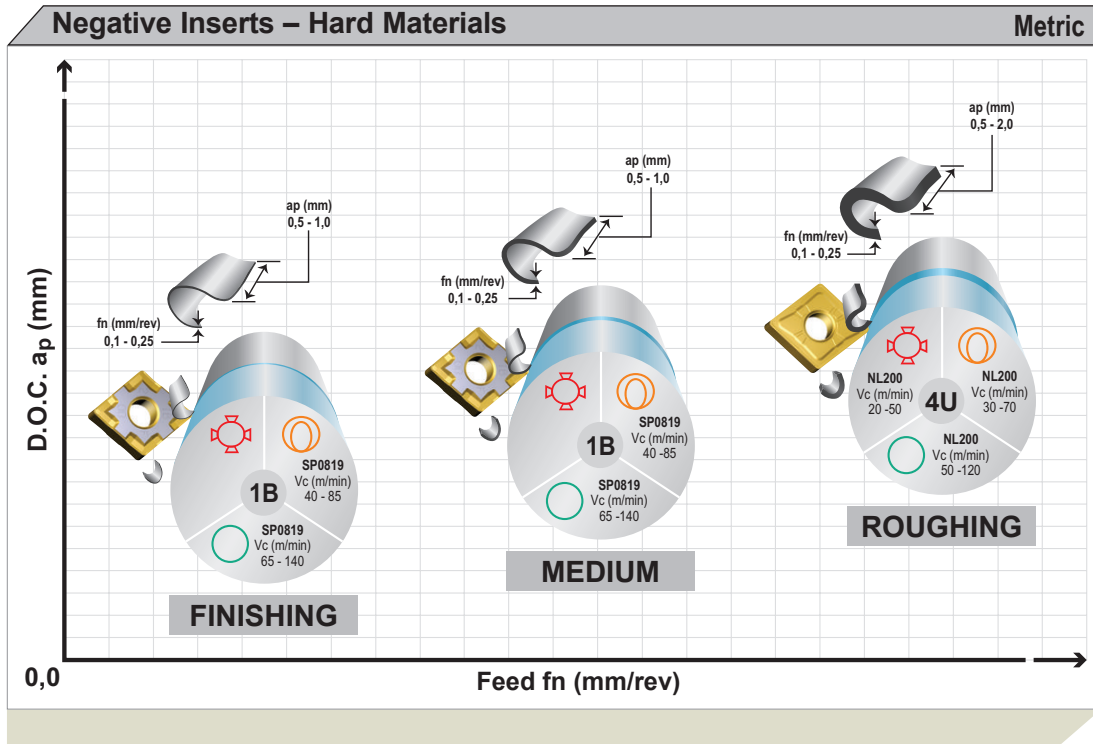
Please note the above recommended cutting speeds, geometries and grades are for guidance only. For more detailed information, see pages 14 - 25 (geometry technical information & grade technical information).

Key		Interrupted cut		Varying depth of cut		Good condition
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Please note the above recommended cutting speeds, geometries and grades are for guidance only. For more detailed information, see pages 14 - 25 (geometry technical information & grade technical information).

Key		Interrupted cut		Varying depth of cut		Good condition
------------	--	-----------------	--	----------------------	--	----------------



Please note the above recommended cutting speeds, geometries and grades are for guidance only. For more detailed information, see pages 14 - 25 (geometry technical information & grade technical information).

Key		Interrupted cut		Varying depth of cut		Good condition
-----	---	-----------------	---	----------------------	--	----------------

Geometry User Guide

1st Choice



Diamond will indicate the recommended insert for each material. Stellram's Material Guide enables you to find the right insert for your machining requirements.

- 1 Application information
- 2 Material Guide information – diamond indicates the recommended materials related to the geometry.
- 3 Detailed outline of geometry profile.
- 4 Identifies depth of cut (D.O.C) and feed rate range applicable to the geometry.
- 5 Cutting condition applicable to geometry.

2N Inserts

2N Geometry Technical Information

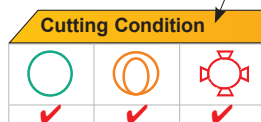
- 1 **Light to Medium Roughing:** Positive rake angle provides a positive cutting action reducing cutting pressure, this makes 2N a good first choice geometry for a wide range of applications and materials.
Available in Grades: NL250, NL300 & NL920

Materials Application

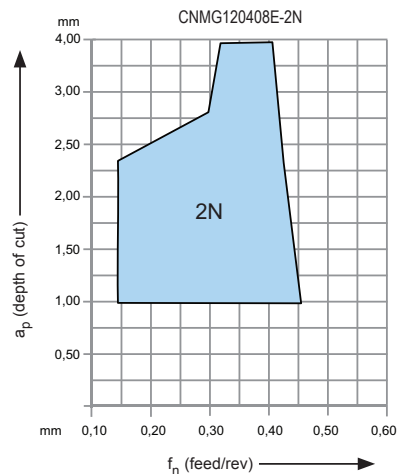
SP0819					
P	M	K	N	S	H
◆	◆				

NL250					
P	M	K	N	S	H
◆	◆				

NL250					
P	M	K	N	S	H
◆	◆				



Alloyed Steel: 900 - 1200 N/mm² HBN 260 - 340



Negative Insert Geometries

1B Inserts

1B Geometry Technical Information

Finishing:

The 1B Geometry is ideal for the finish machining of Steels, Stainless Steels, and High Temperature Alloys. The precisely controlled cutting edge and nose profile removes material cleanly and efficiently, leaving a superior surface finish. **Available in Grades: SP0819 & NL250**

Materials Application

SP0819					
P	M	K	N	S	H
◆	◆			◆	◆

NL250					
P	M	K	N	S	H
◆	◆			◆	

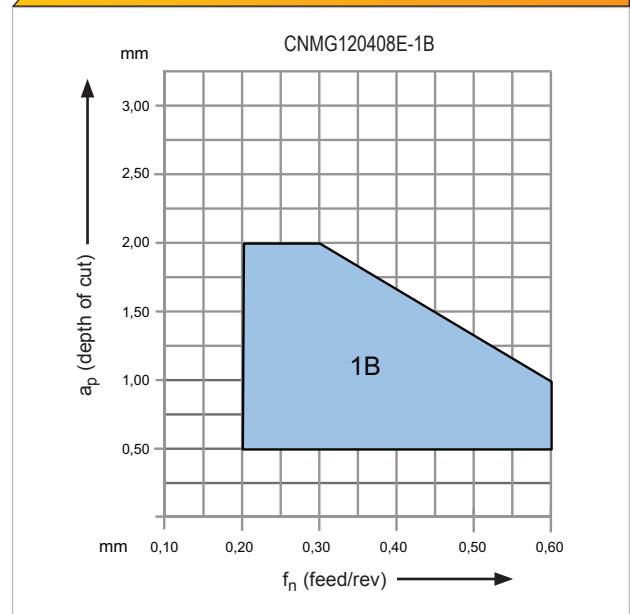
Cutting Condition



Profile



Alloyed Steel: 4140 (41CrMo4)



2N Inserts

2N Geometry Technical Information

Light to Medium Roughing:

The 2N Geometry's positive rake angle, provides a positive cutting action with reduced cutting pressure, making it an excellent first choice for a wide range of applications and materials.

Available in Grades: NL250, NL300 & NL920

Materials Application

NL250					
P	M	K	N	S	H
◆	◆				

NL300					
P	M	K	N	S	H
◆	◆				

NL920					
P	M	K	N	S	H
◆	◆				

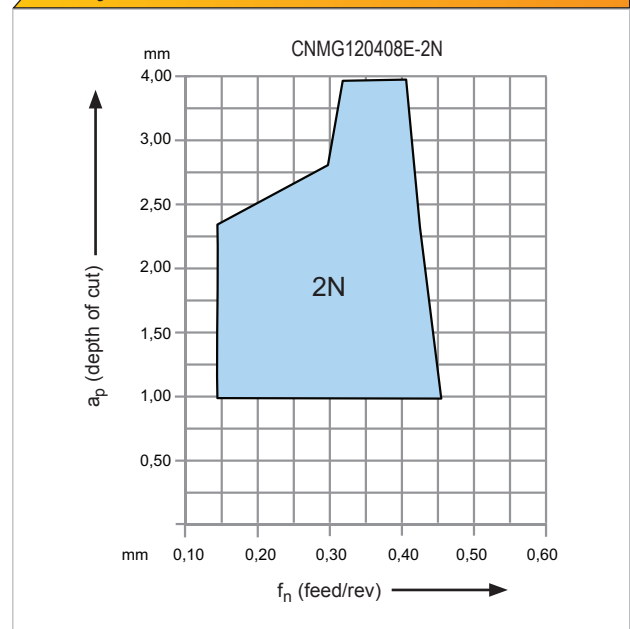
Cutting Condition



Profile



Alloyed Steel: 900 - 1200 N/mm² HBN 260 - 340



Material Guide – Key to Recommended Inserts

Material Designation

◆ P Unalloyed Steels
 ◆ P Alloyed Steels
 ◆ M Stainless Steels
 ◆ M PH Stainless
 ◆ K Cast Irons
 ◆ N Aluminum & Alloys
 ◆ S High Temp. Alloys
 ◆ H Hard Materials

Negative Insert Geometries

3F Inserts

3F Geometry Technical Information

Finishing to Light Roughing:

The 3F Geometry has a precision ground periphery to ensure a precise cutting edge profile, with accurate indexability. The micro edge conditioning reduces the cutting pressure, built-up edge and improves the surface finish in difficult to machine materials. **Available in Grade: SP0819**

Materials Application

SP0819					
P	M	K	N	S	H
	◆		◆	◆	

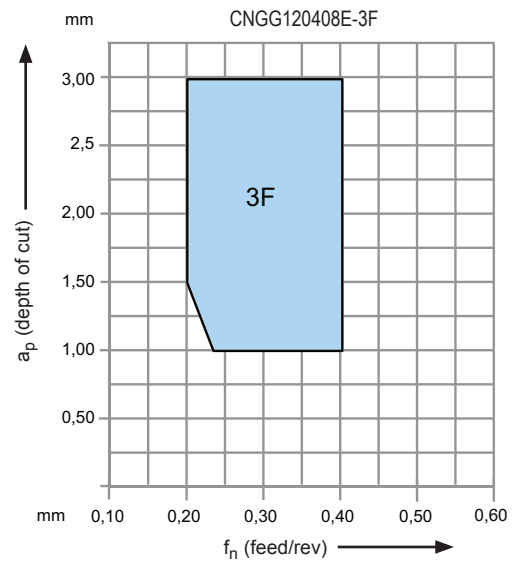
Cutting Condition



Profile



Stainless Steel: ATI 316™



3J Inserts

3J Geometry Technical Information

Medium to Light Roughing:

The 3J Geometry has a smooth cutting action which reduces cutting forces, improves surface finishes and increases the tool life, making it ideal for the machining of Stainless Steels. **Available in Grade: SP4019**

Materials Application

SP4019					
P	M	K	N	S	H
	◆			◆	

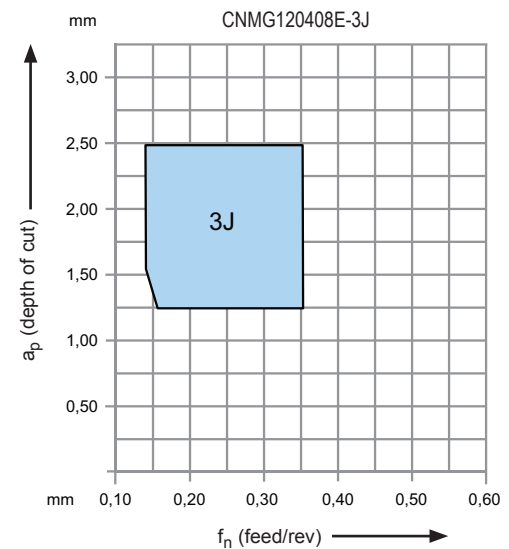
Cutting Condition



Profile



Stainless Steel: ATI 316™



Material Guide – Key to Recommended Inserts

Material Designation

◆ P Unalloyed Steels
 ◆ P Alloyed Steels
 ◆ M Stainless Steels
 ◆ M PH Stainless
 ◆ K Cast Irons
 ◆ N Aluminum & Alloys
 ◆ S High Temp. Alloys
 ◆ H Hard Materials

Negative Insert Geometries

4E Inserts

4E Geometry Technical Information

Semi-Finishing to Light Roughing:

The 4E Geometry was designed specifically for the machining of High Nickel, High Cobalt, and Titanium based alloys. It's reinforced chip-breaker and precision edge condition enhances the performance of this geometry. **Available in Grades: SP0819 & NL400**

Materials Application

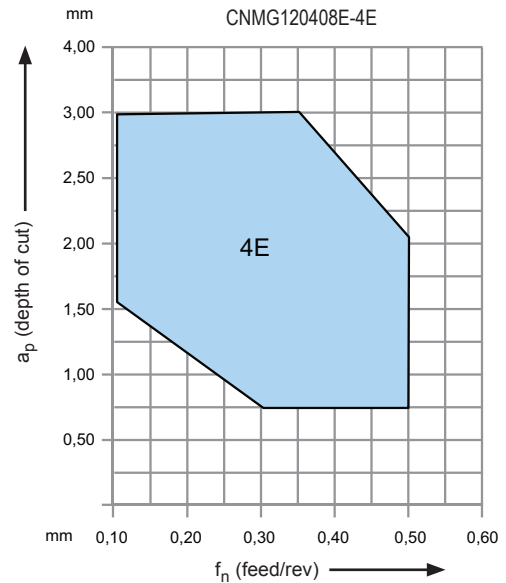
SP0819					
P	M	K	N	S	H
	♦			♦	

NL400					
P	M	K	N	S	H
	♦			♦	

Cutting Condition		
✓	✓	Light



Titanium Alloy: ATI 6-4™



4T Inserts

4T Geometry Technical Information

General Purpose Roughing:

The 4T Geometry is the first choice for general purpose machining of all Steels, Stainless Steels and Cast Irons.

Available in Grades: NL250, NL300, NL400 & NL920

Materials Application

NL250					
P	M	K	N	S	H
♦	♦	♦			

NL300					
P	M	K	N	S	H
♦	♦	♦			

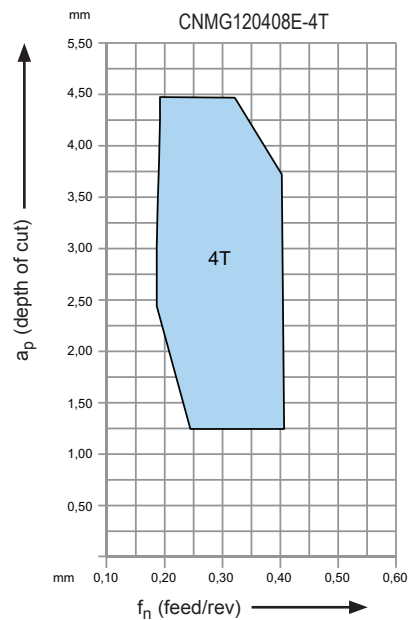
NL400					
P	M	K	N	S	H
♦	♦				

NL920					
P	M	K	N	S	H
♦	♦	♦			

Cutting Condition		
✓	✓	✓



Alloyed Steel: 800 - 1200 N/mm² HBN 230 - 340



Material Guide – Key to Recommended Inserts

Material Designation

♦ P Unalloyed Steels
 ♦ P Alloyed Steels
 ♦ M Stainless Steels
 ♦ M PH Stainless
 ♦ K Cast Irons
 ♦ N Aluminum & Alloys
 ♦ S High Temp. Alloys
 ♦ H Hard Materials

4U Geometry Technical Information

Medium to Roughing:

The 4U Geometry was designed specifically for roughing applications in Grey, Ductile and Malleable Irons. The geometry design produces low cutting pressure with excellent chip control, enhancing the tool life.
Available in Grade: NL200

Materials Application

NL200					
P	M	K	N	S	H
♦		♦			♦

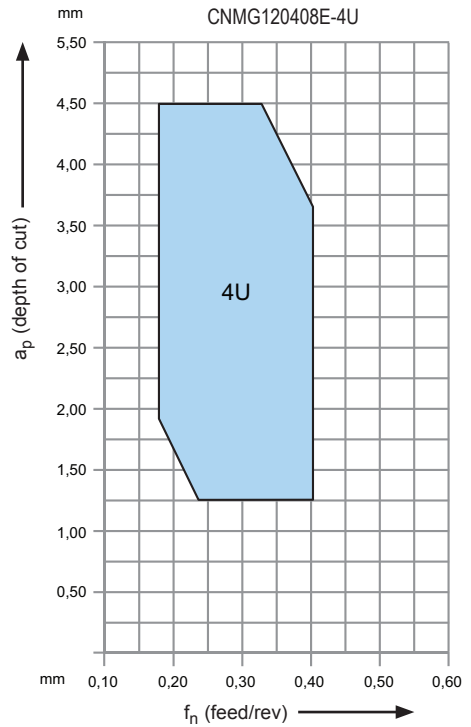
Cutting Condition



Profile



Ductile Iron: HBN 170



Material Guide – Key to Recommended Inserts

Material Designation

♦ P Unalloyed Steels
 ♦ P Alloyed Steels
 ♦ M Stainless Steels
 ♦ M PH Stainless
 ♦ K Cast Irons
 ♦ N Aluminum & Alloys
 ♦ S High Temp. Alloys
 ♦ H Hard Materials

5R Geometry Technical Information

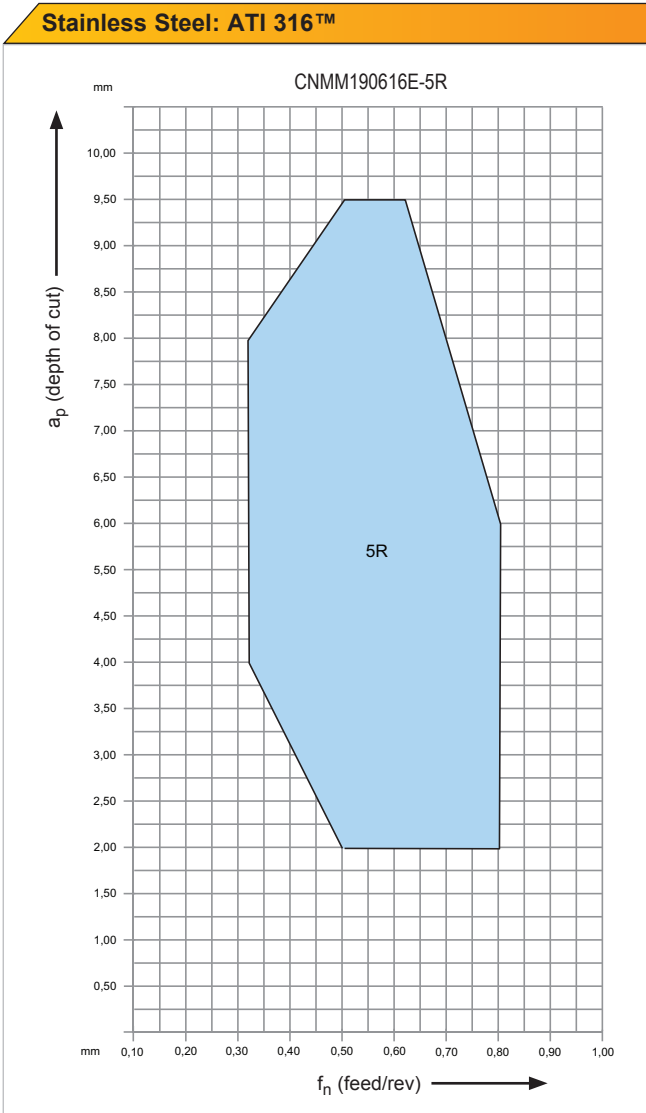
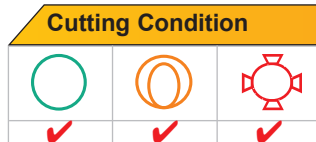
Single Sided Heavy Roughing:

The 5R Geometry was designed specifically for the heavy, rough machining of Steels, Stainless Steels, High Nickel, High Cobalt and Titanium based alloys. It is the first choice when stability, high feed rates and strong edge conditions are required.

Available in Grades: NL300, NL400 & NL920

Materials Application

NL300					
P	M	K	N	S	H
◆	◆				
NL400					
P	M	K	N	S	H
◆	◆			◆	
NL920					
P	M	K	N	S	H
◆	◆			◆	



Material Guide – Key to Recommended Inserts

Material Designation

- ◆ P Unalloyed Steels
- ◆ P Alloyed Steels
- ◆ M Stainless Steels
- ◆ M PH Stainless
- ◆ K Cast Irons
- ◆ N Aluminum & Alloys
- ◆ S High Temp. Alloys
- ◆ H Hard Materials

Positive Insert Geometries

-15 Inserts

-15 Geometry Technical Information

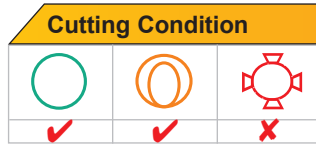
Medium to Finishing:

The -15 Geometry is ideally suited to applications which require light depths of cut and feeds, and where vibration could be an issue. This geometry is ground and has a sharp edge condition.

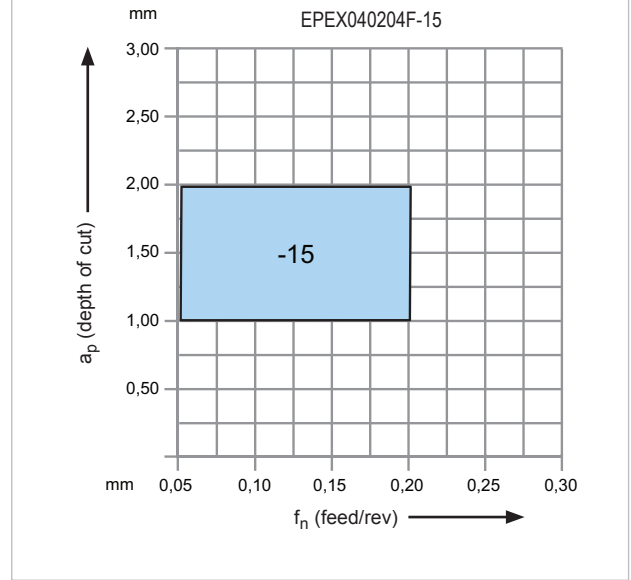
Available in Grades: **SP4019** & **GH1**

Materials Application

SP4019					
P	M	K	N	S	H
◆	◆			◆	
GH1					
P	M	K	N	S	H
			◆		



Aluminium: <16% Si HBN 116



-61 Inserts

-61 Geometry Technical Information

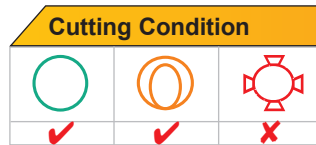
Finishing:

The -61 Geometry has 6 cutting edges and is one of the most economical inserts for small part machining. The chip-breaker provides good chip control and surface finish.

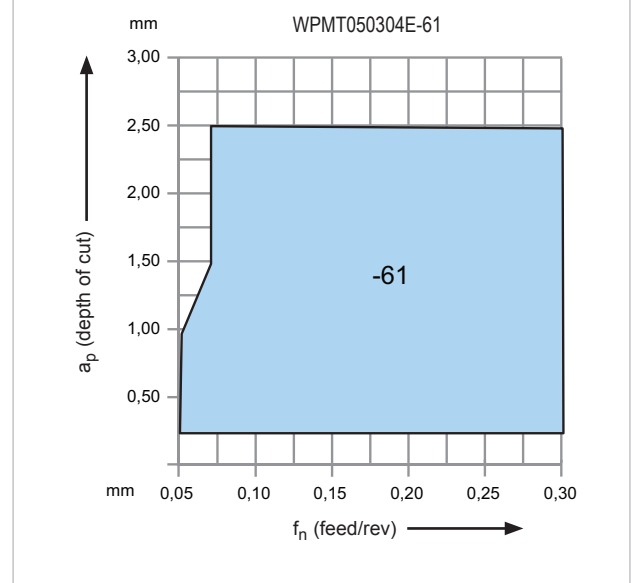
Available in Grade: **SP4019**

Materials Application

SP4019					
P	M	K	N	S	H
◆	◆	◆			



Unalloyed Steel: 750 - 950 N/mm² HBN 220 - 270



Material Guide – Key to Recommended Inserts

Material Designation

◆ P Unalloyed Steels
 ◆ P Alloyed Steels
 ◆ M Stainless Steels
 ◆ M PH Stainless
 ◆ K Cast Irons
 ◆ N Aluminum & Alloys
 ◆ S High Temp. Alloys
 ◆ H Hard Materials

Positive Insert Geometries

-62 Inserts

-62 Geometry Technical Information

Finishing:

The -62 Geometry is one of the most versatile geometries for the machining of Steels, Stainless Steels, High Nickel, High Cobalt and Titanium based alloys. This positive geometry was designed for a wide variety of finishing applications.

Available in Grade: **SP4019**

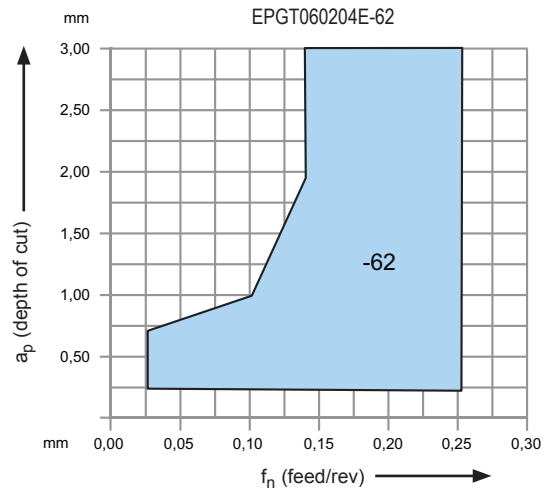
Materials Application

SP4019					
P	M	K	N	S	H
◆	◆	◆		◆	◆

Cutting Condition		
✓	✓	✗



Unalloyed Steel: 750 - 950 N/mm² HBN 220 - 270



-64 Geometry Technical Information

Medium to Roughing:

The -64 Geometry is a very positive geometry, with polished top rake and ground periphery. Specifically designed for the machining of Aluminum, Plastics and Soft Alloys.

Available in Grade: **GH1**

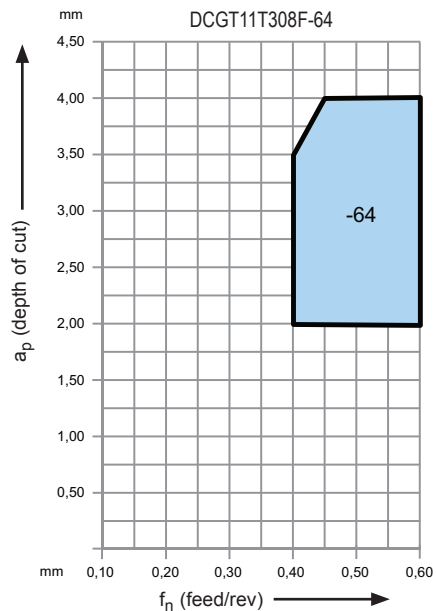
Materials Application

GH1					
P	M	K	N	S	H
			◆		

Cutting Condition		
✓	✓	✗



Aluminium: <16% Si HBN 116



-64 Inserts

Material Guide – Key to Recommended Inserts

Material Designation

◆ Unalloyed Steels
 ◆ Alloyed Steels
 ◆ Stainless Steels
 ◆ PH Stainless
 ◆ Cast Irons
 ◆ Aluminum & Alloys
 ◆ High Temp. Alloys
 ◆ Hard Materials

Positive Insert Geometries

-66 Inserts

-66 Geometry Technical Information

Medium to Finishing:

The -66 Geometry has a precision ground periphery and pressed in chip-breaker, with a sharp edge condition, ideally suited for fine chip control when machining medical and small precision components.

Available in Grade: GH1

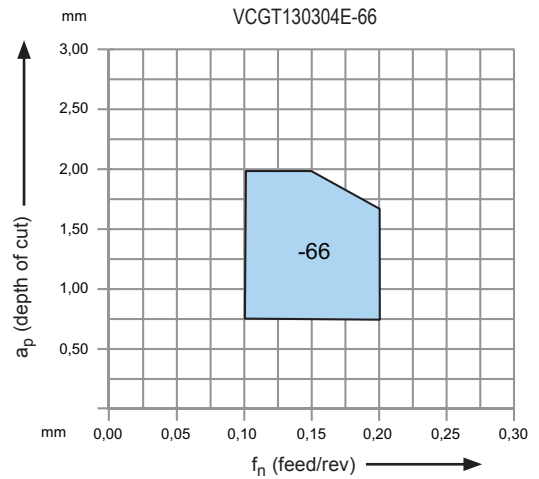
Materials Application

GH1					
P	M	K	N	S	H
	◆		◆		

Cutting Condition		
✓	✓	✗



Stainless Steel: 450 - 700 N/mm² HBN 120 - 180



-73 Inserts

-73 Geometry Technical Information

Medium to Roughing:

The -73 Geometry is an as pressed geometry, covering a wide range of applications and materials, making it the ideal first choice for most medium to roughing, machining applications.

Available in Grades: SP4019, NL300 & NL920

Materials Application

SP4019					
P	M	K	N	S	H
◆	◆			◆	

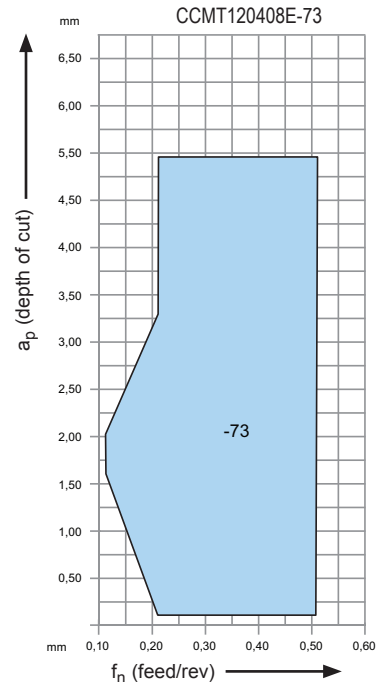
NL300					
P	M	K	N	S	H
◆	◆				

NL920					
P	M	K	N	S	H
◆	◆			◆	

Cutting Condition		
✓	✓	✓



Alloyed Steel: 900 - 1200 N/mm² HBN 260 - 340



Material Guide – Key to Recommended Inserts

Material Designation

◆ P Unalloyed Steels
 ◆ P Alloyed Steels
 ◆ M Stainless Steels
 ◆ M PH Stainless
 ◆ K Cast Irons
 ◆ N Aluminum & Alloys
 ◆ S High Temp. Alloys
 ◆ H Hard Materials

-M Geometry Technical Information

Medium to Finishing:

The -M Geometry has a small, well defined chip-breaker for a soft cutting action, resulting in very little stress being produced, when machining small diameter components.

Available in Grades: **SP4019 & GH1**

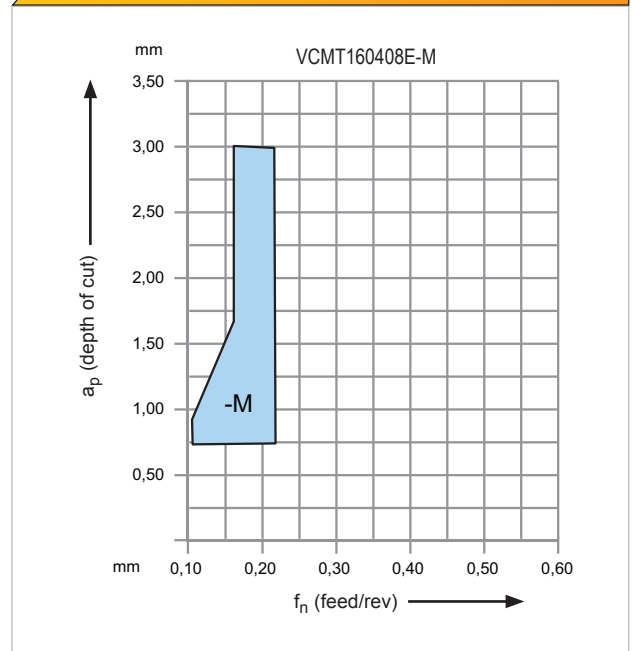
Materials Application

SP4019					
P	M	K	N	S	H
◆	◆			◆	
GH1					
P	M	K	N	S	H
	◆			◆	

Cutting Condition		



Unalloyed Steel: 750 - 950 N/mm² HBN 220 - 270



Material Guide – Key to Recommended Inserts

Material Designation

◆ P Unalloyed Steels
 ◆ P Alloyed Steels
 ◆ M Stainless Steels
 ◆ M PH Stainless
 ◆ K Cast Irons
 ◆ N Aluminum & Alloys
 ◆ S High Temp. Alloys
 ◆ H Hard Materials

-T Geometry Technical Information

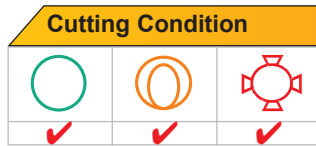
Medium to Roughing:

The -T Geometry is a utility geometry giving a stable cutting action in a wide variety of demanding applications.

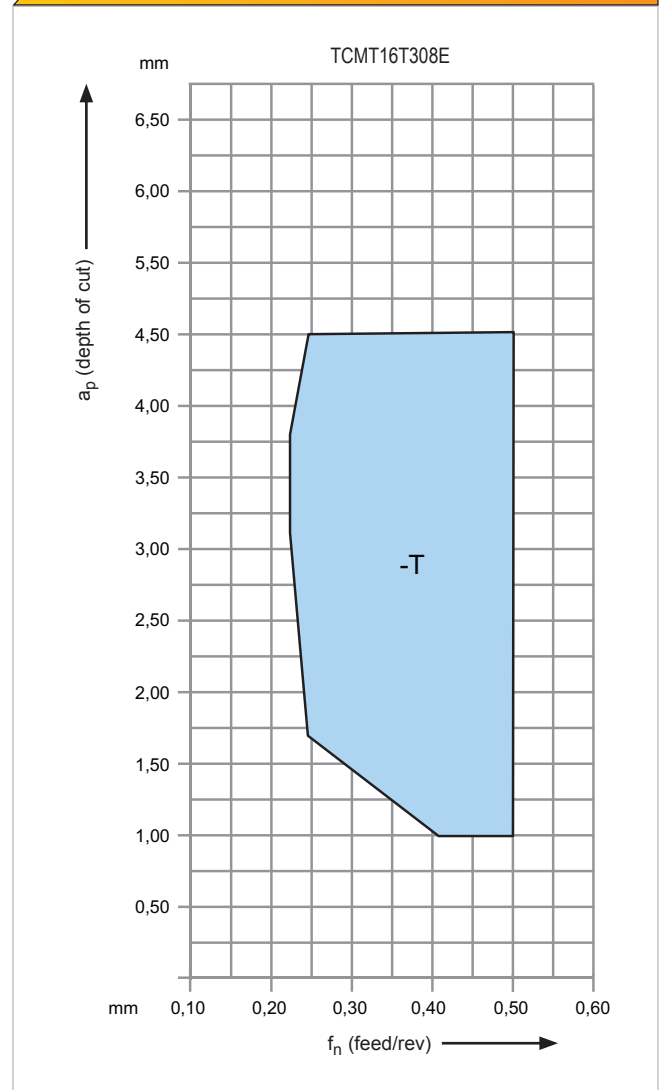
Available in Grades: SP4019, NL250, NL300, NL400 & NL920

Materials Application

SP4019					
P	M	K	N	S	H
◆	◆			◆	
NL250					
P	M	K	N	S	H
◆	◆				
NL300					
P	M	K	N	S	H
◆	◆				
NL400					
P	M	K	N	S	H
◆	◆			◆	
NL920					
P	M	K	N	S	H
◆	◆			◆	



Unalloyed Steel: 750 - 950 N/mm² HBN 220 - 270



Material Guide – Key to Recommended Inserts

Material Designation

- ◆ P Unalloyed Steels
- ◆ P Alloyed Steels
- ◆ M Stainless Steels
- ◆ M PH Stainless
- ◆ K Cast Irons
- ◆ N Aluminum & Alloys
- ◆ S High Temp. Alloys
- ◆ H Hard Materials

-X Geometry Technical Information

Medium to Roughing:

The -X Geometry has a precision ground parallel chip groove, available with a fully ground periphery or as pressed, both with a sharp edge condition. Ideal for the machining of components which have vibration sensitive applications.

Available in Grades: **SP4019** & **GH1**

Materials Application

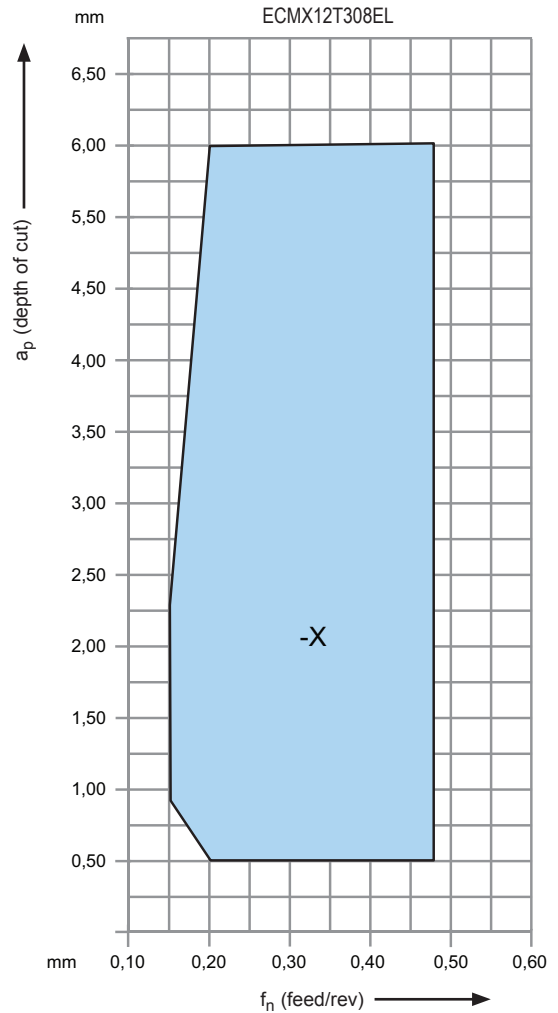
SP4019					
P	M	K	N	S	H
◆				◆	

GH1					
P	M	K	N	S	H
			◆		

Cutting Condition		



Aluminium: <16% Si HBN 116



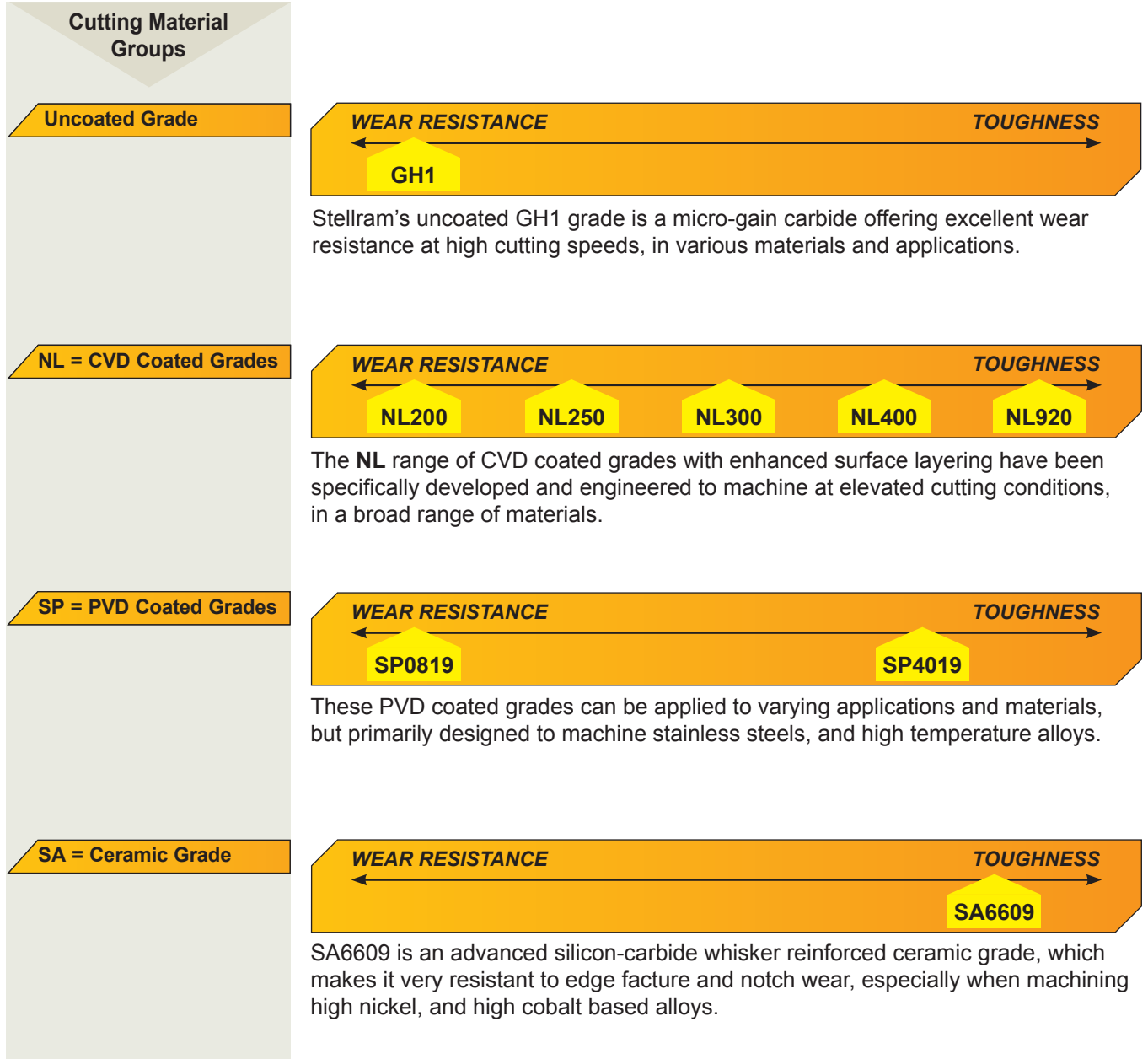
Material Guide – Key to Recommended Inserts

Material Designation

◆ P Unalloyed Steels
 ◆ P Alloyed Steels
 ◆ M Stainless Steels
 ◆ M PH Stainless
 ◆ K Cast Irons
 ◆ N Aluminum & Alloys
 ◆ S High Temp. Alloys
 ◆ H Hard Materials

Grade Selection

ATI Stellram's range of carbide and ceramic grades offer solutions to suit all material groups.



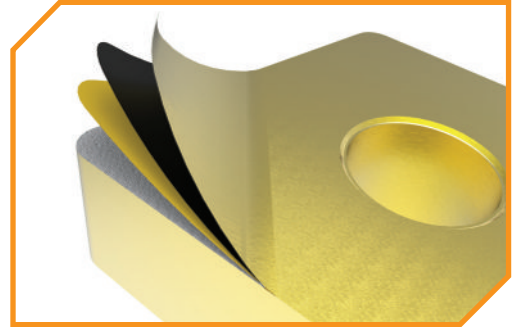
Grade Descriptions

NL200 & NL250

NL200

Coating Type: CVD

First choice to machine Cast Iron, this grade has a very good resistance to wear and deformation, suitable for medium and finishing applications on gray and malleable cast irons.



Available in the following geometries:
Medium – Roughing: 4U

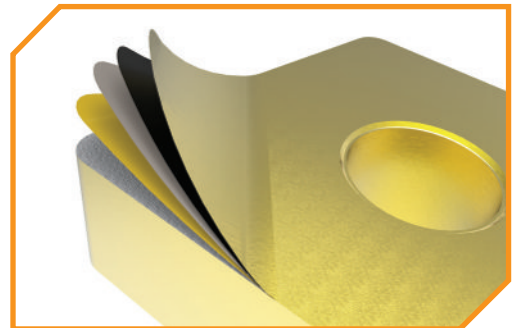
NL200	Application Range											MAX	DRY	Cutting speed	
	01	05	10	15	20	25	30	35	40	45	50			m/min	
	Vc min		Vc max												
◆◆ P			●	●	●							●	●	60	415
◆◆ M															
◆ K		●	●	●								●	●	95	410
◆ N															
◆ S															
◆ H		●	●									●		45	125

Recommended ● Acceptable ◎

NL250

Coating Type: CVD

Wear resistant grade for semi-finishing and finishing applications. Suitable for stable conditions with limited interrupted machining.



Available in the following geometries:
Finishing: 1B
Light-Medium Roughing: 2N
Roughing: 4T
Flat Top: Roughing

NL250	Application Range											MAX	DRY	Cutting speed	
	01	05	10	15	20	25	30	35	40	45	50			m/min	
	Vc min		Vc max												
◆◆ P			●	●	●	●						●	●	60	405
◆◆ M		●	●	●	●							●		60	275
◆ K		●	●	●	●							●	●	95	375
◆ N															
◆ S		●	●	●								●		20	80
◆ H															

Recommended ● Acceptable ◎

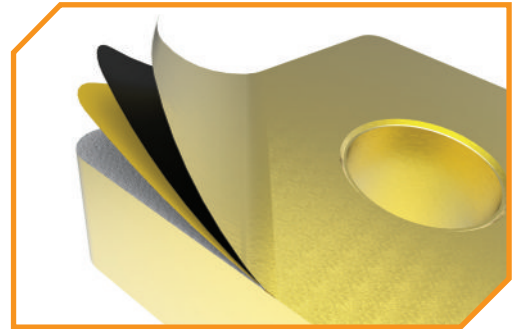
Grade Descriptions

NL300 & NL400

NL300

Coating Type: CVD

A tough but wear resistant grade for medium and rough machining with light scale but, no interruption. General purpose for Steels and Cast Iron materials.



Available in the following geometries:

Medium roughing: -73

Light-Medium Roughing: 2N

Roughing: 4T

Single Sided Heavy Roughing: 5R

Medium – Roughing:-T

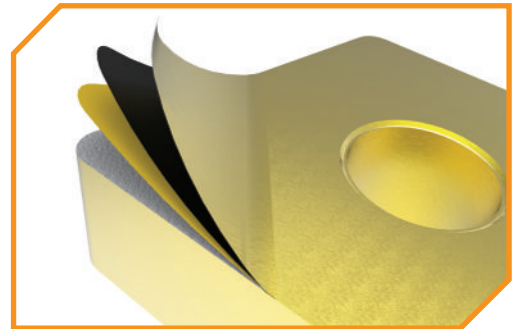
NL300	Application Range											MAX	DRY	Cutting speed	
	01	05	10	15	20	25	30	35	40	45	50			m/min	
	Vc min		Vc max												
◆◆ P			●	●	●	●	●					●	●	60	380
◆◆ M				●	●	●						●	●	60	255
◆ K			●	●	●	●						●	●	90	335
◆ N															
◆ S															
◆ H															

Recommended ● Acceptable ◎

NL400

Coating Type: CVD

A very tough grade for medium and rough machining, primarily on Stainless Steel and Exotic Alloys. Good resistance to thermal diffusion, and accepts light interruption.



Available in the following geometries:

Light Roughing – Semi-Finishing: 4E

Roughing: 4T

Single Sided Heavy Roughing: 5R

NL400	Application Range											MAX	DRY	Cutting speed	
	01	05	10	15	20	25	30	35	40	45	50			m/min	
	Vc min		Vc max												
◆◆ P					●	●	●	●				●	●	50	360
◆◆ M			●	●	●	●	●					●	●	50	245
◆ K															
◆ N															
◆ S			●	●	●	●						●	●	15	70
◆ H															

Recommended ● Acceptable ◎

Grade Descriptions

NL920 & SP0819

NL920



Coating Type: CVD

A fine grain but tough grade, with a high degree of edge security on Steels and Stainless Steels. Performs well on rough and heavy machining applications, including interrupted applications.

Available in the following geometries:

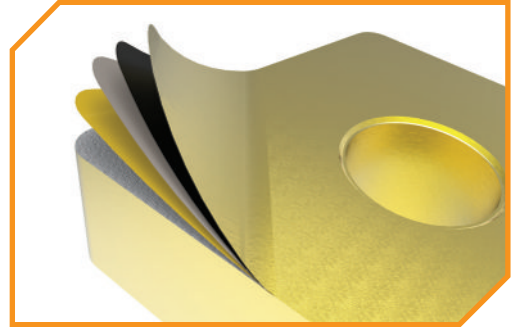
Light-Medium: 2N

Roughing: 4T

Sing Sided Heavy Roughing: 5R

Medium –Roughing: -73

Medium –Roughing: -T



NL920	Application Range											MAX	DRY	Cutting speed	
	01	05	10	15	20	25	30	35	40	45	50			m/min	
	Vc min		Vc max												
◆◆ P							●	●	●	●		●	●	45	225
◆◆ M							●	●	●			●		40	155
◆ K							●	●	●			●	●	70	225
◆ N															
◆ S					●	●	●					●		15	45
◆ H															

Recommended ● Acceptable ◎

SP0819



Coating Type: PVD

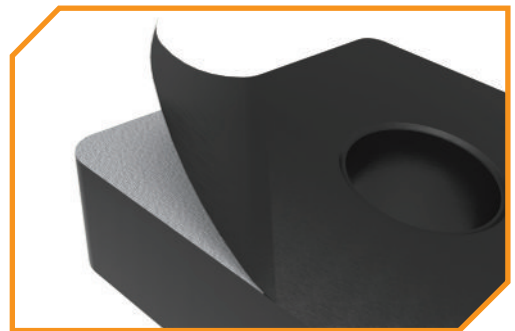
A very wear resistant micro grain substrate with a new generation of TiAlN coating. First choice to machine difficult to machine materials, including PH Stainless Steel. Requires higher cutting speeds in finishing and medium operations, with stable conditions and clean material.

Available in the following geometries:

Finishing: 1B

Finishing-Light Roughing: 3F

Semi Finishing – Light Roughing: 4E



SP0819	Application Range											MAX	DRY	Cutting speed	
	01	05	10	15	20	25	30	35	40	45	50			m/min	
	Vc min		Vc max												
◆◆ P	●	●										●	●	80	450
◆◆ M		●	●									●		75	315
◆ K															
◆ N		●	●									●	●	275	975
◆ S		●	●									●		25	90
◆ H		●	●									●		65	140

Recommended ● Acceptable ◎

Grade Descriptions

SP4019 & GH1

SP4019

Coating Type: PVD

A tough micro-grain substrate with new generation TiAlN coating, renders this PVD grade extremely hard for unmatched performance in all materials.



Available in the following geometries:

Finishing: -62 (positive)

Finishing – Light Roughing: 3J

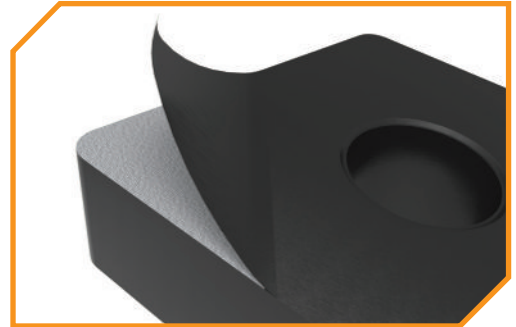
Medium -Roughing: -73 (positive)

Medium – Finishing: -15

Medium – Roughing: -X

Finishing: -61

Medium- Roughing: -T



SP4019	Application Range											MAX	DRY	Cutting speed	
	01	05	10	15	20	25	30	35	40	45	50			m/min	
														Vc min	Vc max
◆◆ P			●	●	●	●						●	●	80	440
◆◆ M		●	●	●	●							●		75	300
◆ K				●	●	●						●	●	120	440
◆ N			●	●	●							●	●	365	975
◆ S		●	●									●		25	90
◆ H			●	●	●							●		60	130

Recommended ● Acceptable ◎

GH1

Coating Type: Uncoated

A very wear resistant uncoated micrograin for Cast Irons, Hardened Steel to 58 HRC and non ferrous alloys. Produces a low cutting pressure at high speed due to sharp cutting edge definition.



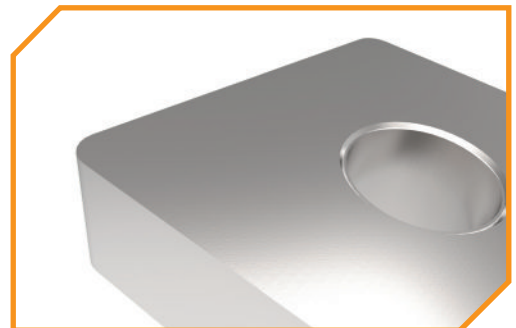
Available in the following positive geometries:

Medium – Roughing: X

Medium – Finishing: -64

Medium – Finishing: -66

Medium – Finishing: M



GH1	Application Range											MAX	DRY	Cutting speed	
	01	05	10	15	20	25	30	35	40	45	50			m/min	
														Vc min	Vc max
◆◆ P															
◆◆ M															
◆ K			●	●	●	●	●					●	●	70	225
◆ N		●	●	●								●	●	185	825
◆ S															
◆ H															

Recommended ● Acceptable ◎

SA6609

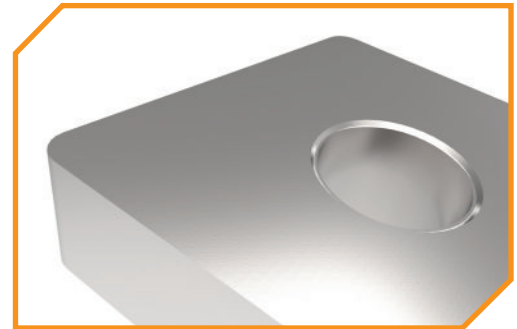
Coating Type: Uncoated

A whisker ceramic grade for roughing and medium machining applications, on High Temperature Alloys. Excellent wear resistance with elevated cutting surface speeds.

Available in two edge preparation:

Finishing to medium: E010

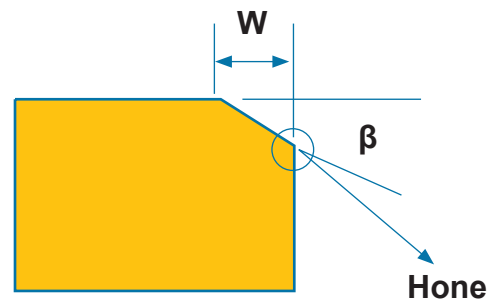
Medium to roughing: E030



SA6609	Application Range												MAX	DRY	Cutting speed	
	01	05	10	15	20	25	30	35	40	45	50	m/min				
												Vc min			Vc max	
◆◆ P																
◆◆ M																
◆ K																
◆ N																
◆ S			●	●	●								●	180	450	
◆ H																

Recommended ● Acceptable ◎

Edge Condition	W	β	Hone
	mm	mm	mm
E010	0.05	20°	0
E030	0.15	20°	0



Negative Turning: Geometry, Grade and Material Selection

Geometry	Grade																												
	SP0819						SP4019						NL200						NL250										
	P	M	K	N	S	H	P	M	K	N	S	H	P	M	K	N	S	H	P	M	K	N	S	H					
1B	◆◆	◆◆			◆	◆																		◆◆	◆◆			◆	
2N																								◆◆	◆◆				
3F		◆◆		◆	◆																								
3J								◆◆			◆																		
4E		◆◆			◆																								
4T																								◆◆	◆◆	◆			
4U																◆◆		◆				◆							
Flat-Top																											◆		
5R																													

Negative Turning: Geometry, Grade and Material Selection

Geometry	Grade																											
	NL300						NL400						NL920															
	P	M	K	N	S	H	P	M	K	N	S	H	P	M	K	N	S	H										
1B																												
2N	◆◆	◆◆																					◆◆	◆◆				
3F																												
3J																												
4E								◆◆			◆																	
4T	◆◆	◆◆	◆				◆◆	◆◆								◆◆	◆◆	◆					◆◆	◆◆	◆			
4U																												
Flat-Top																												
5R	◆◆	◆◆					◆◆	◆◆			◆				◆◆	◆◆					◆		◆◆	◆◆				◆

Material Guide – Key to Recommended Inserts

Material Designation

◆ P Unalloyed Steels
 ◆ P Alloyed Steels
 ◆ M Stainless Steels
 ◆ M PH Stainless
 ◆ K Cast Irons
 ◆ N Aluminum & Alloys
 ◆ S High Temp. Alloys
 ◆ H Hard Materials

Positive Turning: Geometry, Grade and Material Selection

Geometry	Grade																	
	SP4019						NL250						NL300					
	P	M	K	N	S	H	P	M	K	N	S	H	P	M	K	N	S	H
15	◆	◆	◆			◆												
X	◆	◆				◆												
61	◆	◆	◆															
62	◆	◆	◆			◆												
64																		
66																		
73	◆	◆	◆			◆								◆	◆			
M	◆	◆	◆			◆												
T	◆	◆	◆			◆	◆	◆	◆					◆	◆			

Positive Turning: Geometry, Grade and Material Selection

Geometry	Grade																	
	NL400						NL920						GH1					
	P	M	K	N	S	H	P	M	K	N	S	H	P	M	K	N	S	H
15																	◆	
X																	◆	
61																		
62																		
64																	◆	
66														◆	◆		◆	
73							◆	◆	◆			◆						
M														◆	◆			◆
T	◆	◆	◆			◆	◆	◆	◆			◆						

Material Guide – Key to Recommended Inserts

Material Designation

- ◆ P Unalloyed Steels
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- ◆ H Hard Materials

Cutting Speed

(Vc) m/min

Cutting Speed (v _c) m/min							
ISO	Materials	Rm and Hardness	CVD Coated				
			NL200	NL250	NL300	NL400	NL920
			min. - max.	min. - max.	min. - max.	min. - max.	min. - max.
P	Unalloyed Steel	<600 N/mm ² <180 HBN	167 - 415	162 - 406	158 - 381	135 - 361	117 - 226
		<950 N/mm ² <280 HBN	108 - 269	105 - 263	102 - 244	88 - 234	76 - 146
	Alloyed Steel	700-950 N/mm ² 200-280 HBN	99 - 247	97 - 241	94 - 229	80 - 215	70 - 134
		950-1200 N/mm ² 280-355 HBN	90 - 224	88 - 220	85 - 201	73 - 195	63 - 122
		1200-1400 N/mm ² 355-415 HBN	62 - 153	60 - 150	58 - 134	50 - 133	43 - 83
M	Stainless Steel	Austenitic + Ferritic 300 series		110 - 274	110 - 255	91 - 244	79 - 152
		Martensitic 400 series		105 - 263	105 - 245	88 - 234	76 - 146
	PH Stainless	Refractory P.H.		59 - 146	60 - 135	49 - 130	42 - 81
K	Cast Iron	Grey GG-Ft	165 - 411	161 - 373	157 - 335		116 - 224
		Spheroidal-Ductile GGG-FGS	143 - 355	139 - 322	135 - 290		100 - 193
		Malleable GTS - MN/MP	96 - 239	94 - 217	91 - 195		68 - 130
N	Aluminium & Alloys	Aluminium & Alloys < 16% 116 HB					
		Aluminium + Silicon > 16% 92 HB					
S	High Temperature Alloys	Iron Based		23 - 59		20 - 52	17 - 33
		Cobalt Based		19 - 48		16 - 42	14 - 26
		Nickel Based		20 - 51		17 - 46	15 - 28
		Titanium Based		32 - 80		27 - 72	23 - 45
H	Hard Materials	Hard Steel >1400 N/mm ² >415 HBN	45 - 125				
		Chilled Cast Iron >1400 N/mm ² >400 HBN	50 - 120				

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Cutting Speed

(Vc) m/min

Cutting Speed (v _c) m/min								
ISO	Materials	Rm and Hardness	PVD				Uncoated	Ceramic
			SP0819	SP4019	SP4030 (Grooving)	SP4066 (Threading)	GH1 Micrograin	SA6609
P	Unalloyed Steel	<600 N/mm ² <180 HBN	212 - 451	208 - 442	135 - 271	230 - 485		
		<950 N/mm ² <280 HBN	138 - 293	135 - 287	88 - 176	150 - 315		
	Alloyed Steel	700-950 N/mm ² 200-280 HBN	126 - 268	123 - 263	80 - 161	135 - 290		
		950-1200 N/mm ² 280-355 HBN	115 - 244	112 - 239	73 - 146	125 - 265		
		1200-1400 N/mm ² 355-415 HBN	78 - 167	77 - 163	50 - 100	85 - 180		
M	Stainless Steel	Austenitic + Ferritic 300 series	143 - 305	140 - 299	107 - 229	154 - 329	80 - 150	
		Martensitic 400 series	149 - 317	135 - 287	102 - 220	160 - 342	80 - 160	
	PH Stainless	Refractory P.H.	76 - 163	75 - 159	57 - 122	82 - 175	40 - 80	
K	Cast Iron	Grey GG-Ft		206 - 438	134 - 268	226 - 482	116 - 224	
		Spheroidal-Ductile GGG-FGS		178 - 378	116 - 232	195 - 416	100 - 193	
		Malleable GTS - MN/MP		120 - 255	78 - 156	132 - 280	60 - 130	
N	Aluminium & Alloys	Aluminium & Alloys < 16% 116 HB	396 - 976	365 - 975	366 - 915		335 - 823	
		Aluminium + Silicon > 16% 92 HB	274 - 671		244 - 610		183 - 549	
S	High Temperature Alloys	Iron Based	31 - 65	30 - 64	20 - 39	33 - 70	15 - 35	180 - 450
		Cobalt Based	25 - 53	24 - 52	16 - 32	27 - 57	15 - 25	180 - 400
		Nickel Based	27 - 57	26 - 56	17 - 34	29 - 61	15 - 30	180 - 360
		Titanium Based	42 - 89	41 - 88	27 - 54	45 - 96	25 - 45	
H	Hard Materials	Hard Steel >1400 N/mm ² >415 HBN	70 - 140	62 - 131				
		Chilled Cast Iron >1400 N/mm ² >400 HBN	65 - 135	60 - 127				

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ISO Turning Grade

Classification Chart

Optimum Grade Performance

ISO Grade Classification											
Groups	Materials	Code	CVD Grades					PVD Grades		Uncoated Grade GH1	Whisker Ceramic SA6609
			NL200	NL250	NL300	NL400	NL920	SP0819	SP4019		
P	Unalloyed and Alloyed Steels	P01									
		P05									
		P10									
		P15									
		P20									
		P25									
		P30									
		P35									
		P40									
		P45									
		P50									
M	Stainless Steels	M01									
		M05									
		M10									
		M15									
		M20									
		M25									
		M30									
		M35									
		M40									
		M40									
K	Cast Irons	K01									
		K05									
		K10									
		K15									
		K20									
		K25									
		K30									
		K35									
		K40									
		K40									
N	Aluminum & Alloys	N01									
		N05									
		N10									
		N15									
		N20									
		N25									
S	High Temperature Alloys	S01									
		S05									
		S10									
		S15									
		S20									
		S25									
		S30									
H	Hard Materials	H01									
		H05									
		H10									
		H15									
		H20									
		H25									
		H30									

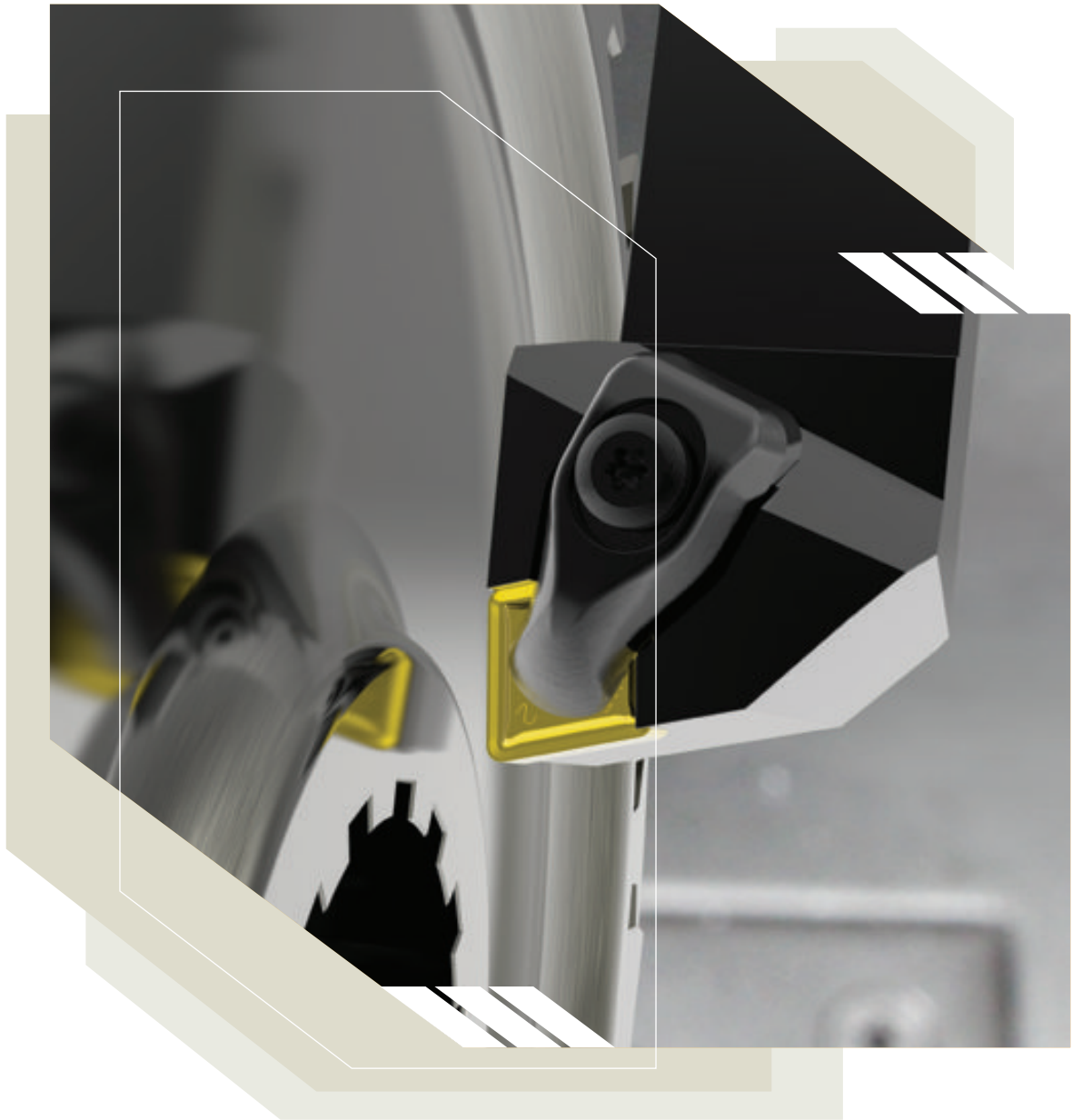


Material Guide – Key to Recommended Inserts

Material Designation

- Unalloyed Steels
- Alloyed Steels
- Stainless Steels
- PH Stainless
- Cast Irons
- Aluminum & Alloys
- High Temp. Alloys
- Hard Materials

Turning Inserts



ISO Insert Designation

S

1

N

2

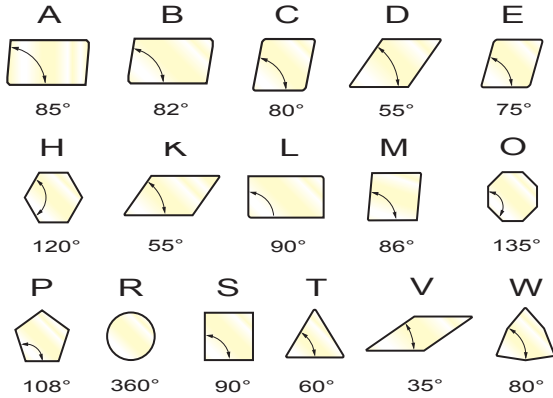
M

3

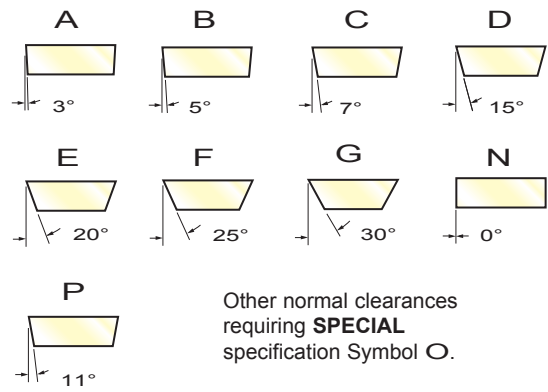
G

4

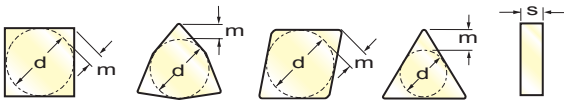
1 Shape



2 Clearance



3 Tolerance



Class		d	m	s
A	mm	±0,025	±0,005	±0,025
C	mm	±0,025	±0,013	±0,025
E	mm	±0,025	±0,025	±0,025
F	mm	±0,013	±0,005	±0,025
G	mm	±0,025	±0,025	±0,13
H	mm	±0,013	±0,013	±0,025
J	mm	*	±0,005	±0,025
K	mm	*	±0,013	±0,025
L	mm	*	±0,025	±0,025
M	mm	*	*	±0,127
U	mm	*	*	±0,127
N	mm	*	*	±0,025

* See tables below.

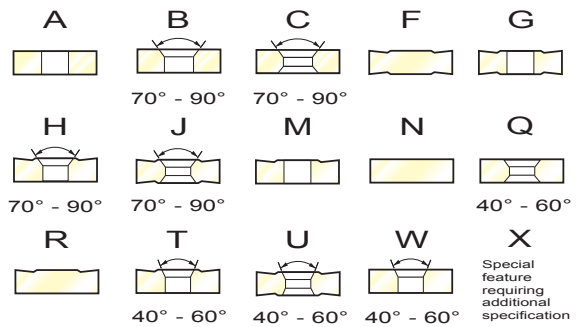
Valid for shape D only (M & N Tolerance)

IC	d	m
5,56	±0,05	±0,11
6,35	±0,05	±0,11
7,94	±0,05	±0,11
9,525	±0,05	±0,11
12,7	±0,08	±0,15
15,875	±0,10	±0,18
19,05	±0,10	±0,18

Valid for shapes:
C, E, H, M, O, P, S, T, R, W

IC	d		m	
	J, K, L, M, N	U	M, N	U
4,76	±0,05	±0,08	±0,08	±0,13
5,56	±0,05	±0,08	±0,08	±0,13
6	±0,05	±0,08	±0,08	±0,13
6,35	±0,05	±0,08	±0,08	±0,13
7,94	±0,05	±0,08	±0,08	±0,13
8	±0,05	±0,08	±0,08	±0,13
9,525	±0,05	±0,08	±0,08	±0,13
10	±0,05	±0,08	±0,08	±0,13
12	±0,08	±0,13	±0,13	±0,2
12,7	±0,08	±0,13	±0,13	±0,2
15,875	±0,1	±0,18	±0,15	±0,27
16	±0,1	±0,18	±0,15	±0,27
19,05	±0,1	±0,18	±0,15	±0,27
20	±0,1	±0,18	±0,15	±0,27
25	±0,13	±0,25	±0,18	±0,38
25,4	±0,13	±0,25	±0,18	±0,38
31,75	±0,15	±0,25	±0,2	±0,38
32	±0,15	±0,25	±0,2	±0,38

4 Type



ISO Insert Designation

12
5

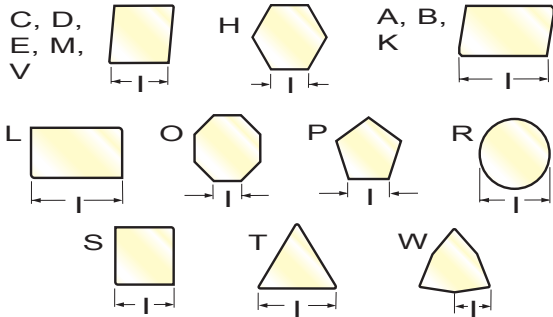
04
6

08
7

E
8

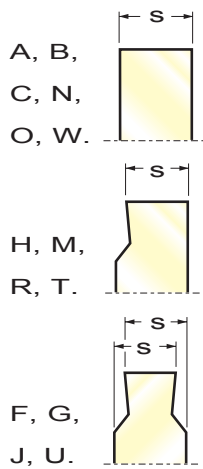
5 Size

Integers to be preceded by a 0 (zero).
Disregard any decimals. e.g. 9.525 = 09



6 Thickness

Integers to be preceded by a 0 (zero) or the letter T.
Disregard any decimals.



Examples:

01	= 1,588
T1	= 1,984
02	= 2,381
03	= 3,175
T3	= 3,969
04	= 4,763
05	= 5,556
06	= 6,350
07	= 7,938
09	= 9,525
11	= 11,113
12	= 12,700
14	= 14,288
15	= 15,875

7 Corner

Inserts with wiper edges

Cutting edge Angle (K_r) 1st letter: Wiper edge normal Clearance 2nd letter: (α_n)

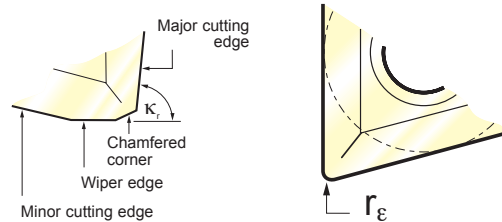
A = 45°	A = 3°
D = 60°	B = 5°
E = 75°	C = 7°
F = 85°	D = 15°
G = 87°	E = 20°
P = 90°	F = 25°
Z = ANY OTHER	G = 30°
	N = 0°
	P = 11°
	Z = ANY OTHER

7 Corner continued

Inserts with rounded corners. The corner radius is indicated in 0.1mm. Integers to be preceded by a 0 (zero). If the corner is not rounded, use the symbol of designation 00 (zero zero).

Examples:

00	= SHARP CORNER	24	= 2,4
01	= 0,1	28	= 2,8
02	= 0,2	32	= 3,2
04	= 0,4	40	= 4,0
08	= 0,8	48	= 4,8
12	= 1,2	56	= 5,6
16	= 1,6	64	= 6,4
20	= 2,0	X	= ANY OTHER



8 Edge Condition

	Symbol
Sharp	F
Honed (Rounded)	E
Chamfered (Negative Land)	T
Chamfered + Honed	S

P

1

D

2

J

3

N

4

R

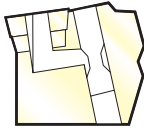
5

1 Assembly

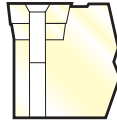
M
Clamp
Lock



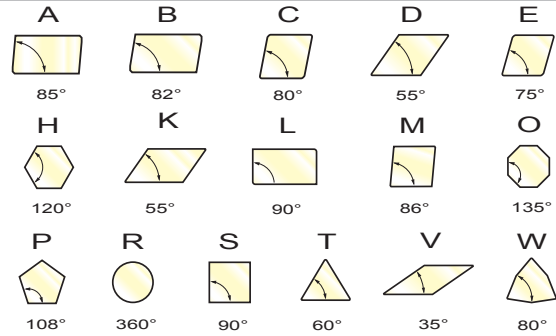
P
Lever
Lock



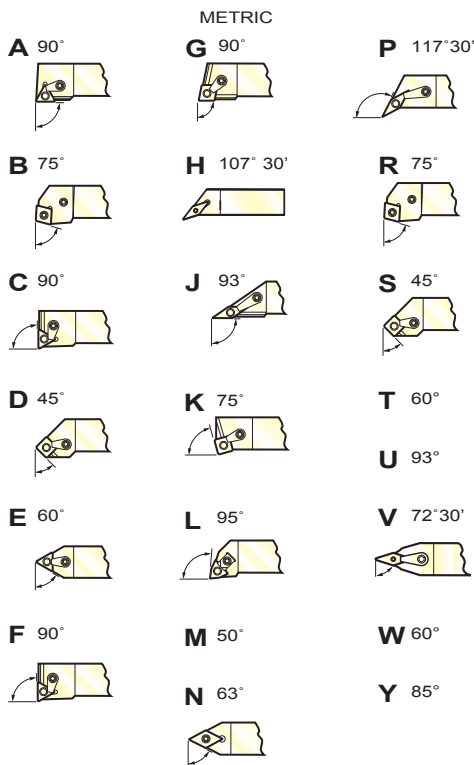
S
Posicut®



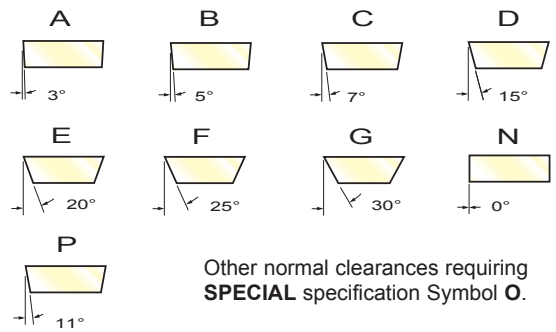
2 Insert Shape



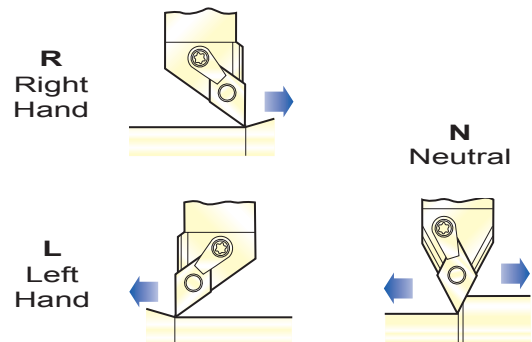
3 Tool Style



4 Clearance



5 Hand



20
6

20
7

K
8

12
9

-
10

-
11

6 Tool Height



06 = 6

08 = 8

10 = 10

12 = 12

14 = 14

16 = 16

20 = 20

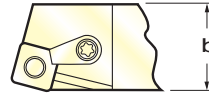
25 = 25

32 = 32

40 = 40

50 = 50

7 Tool Width



06 = 6

08 = 8

10 = 10

12 = 12

14 = 14

16 = 16

20 = 20

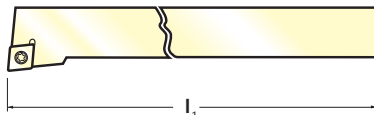
25 = 25

32 = 32

40 = 40

50 = 50

8 Tool Length



A = 32

B = 40

C = 50

D = 60

E = 70

F = 80

G = 90

H = 100

J = 110

K = 125

L = 140

M = 150

N = 160

P = 170

Q = 180

R = 200

S = 250

T = 300

U = 350

V = 400

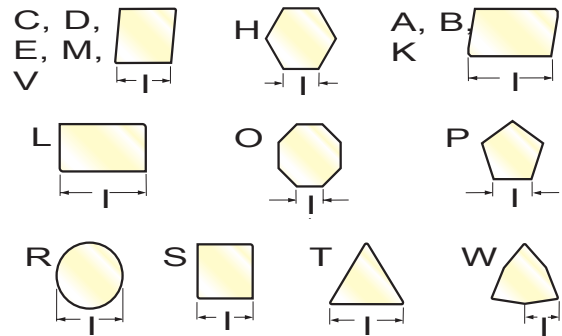
W = 450

Y = 500

X = SPECIAL

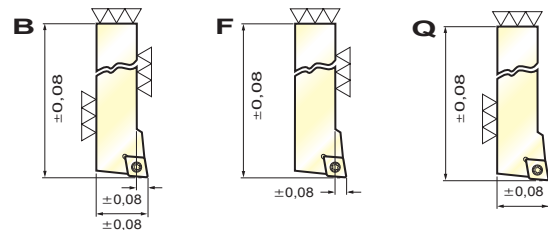
9 Insert Size

Integers to be preceded by a 0 (zero).
Disregard any decimals. e.g. 9,525 = 09



10 Optional

Qualified tools.



11 Optional

Supplementary optional symbol (numbers or letters) added by the manufacturer.

Must be separated from the standardised designation by a dash (-).

A
1

25
2

R
3

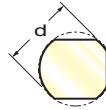
- P
4

C
5

1 Bar Type

- | | |
|---|--|
| A Steel shank and coolant hole. | F Cemented carbide shank with steel head and anti-vibration device. |
| B Steel shank and anti-vibration device. | G Cemented carbide shank with steel head, coolant hole and anti-vibration device. |
| C Cemented carbide shank with steel head. | H Heavy metal shank. |
| D Steel shank, anti-vibration device and coolant hole. | J Heavy metal shank and coolant hole. |
| E Cemented carbide shank with steel head and coolant hole. | S Steel shank. |

2 Bar Ø



METRIC

06 = 6

08 = 8

10 = 10

12 = 12

16 = 16

20 = 20

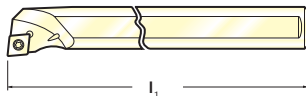
25 = 25

32 = 32

40 = 40

50 = 50

3 Bar Length



METRIC

F = 80

H = 100

K = 125

M = 150

P = 170

Q = 180

R = 200

S = 250

T = 300

U = 350

V = 400

W = 450

Y = 500

X = SPECIAL

4 Assembly

M
Clamp Lock



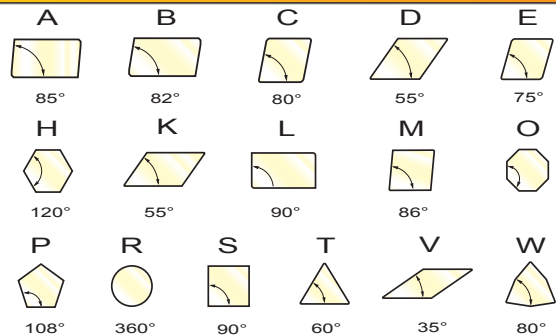
P
Lever Lock



S
Posicut®



5 Insert Shape



L

6

N

7

R

8

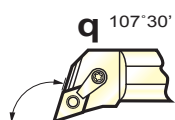
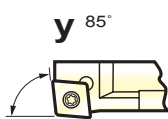
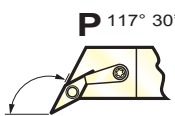
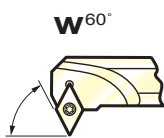
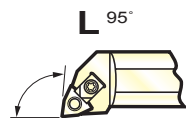
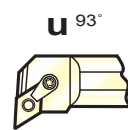
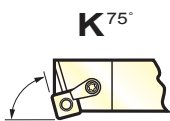
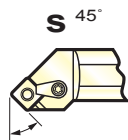
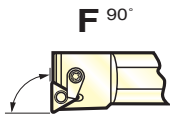
12

9

-

10

6 Tool Style



8 Hand

R
Right
Hand



L
Left
Hand



9 Insert Size

Integers to be preceded by a **0** (zero).
Disregard any decimals. e.g. 9,525 = **09**

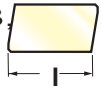
C, D,
E, M,
V



H



A, B,
K



L



O



P



R



S



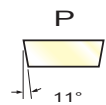
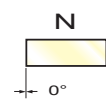
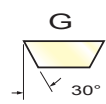
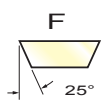
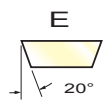
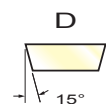
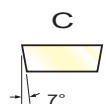
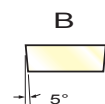
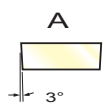
T



W



7 Clearance



Other normal clearances requiring
SPECIAL specification Symbol **O**.

10 Optional

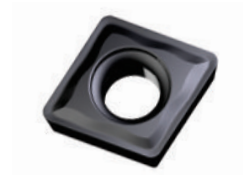
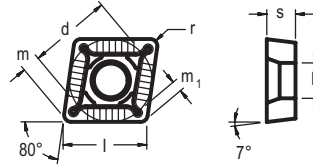
Supplementary optional symbol (numbers or letters) added
by the manufacturer.

Must be separated from the standardised designation by a
dash (-).

C Style

Turning Inserts

CCGT -62 Geometry



EDP	ISO Description	Grade	Dimensions (mm)					Material	Application
			d	l	s	r _e	h		
031243	CCGT060200E-62	SP4019	6,35	6,45	2,38	0,00	2,80		Finishing
030568	CCGT060201E-62	SP4019	6,35	6,45	2,38	0,10	2,80		Finishing
030569	CCGT060202E-62	SP4019	6,35	6,45	2,38	0,20	2,80		Finishing
030570	CCGT060204E-62	SP4019	6,35	6,45	2,38	0,40	2,80		Finishing
030571	CCGT09T300E-62	SP4019	9,52	9,57	3,97	0,00	4,40		Finishing
030572	CCGT09T301E-62	SP4019	9,52	9,57	3,97	0,10	4,40		Finishing
030573	CCGT09T302E-62	SP4019	9,52	9,57	3,97	0,20	4,40		Finishing
030574	CCGT09T304E-62	SP4019	9,52	9,57	3,97	0,40	4,40		Finishing
030575	CCGT09T308E-62	SP4019	9,52	9,57	3,97	0,80	4,40		Finishing

For Toolholders External: see page 46 | Internal: see page 47

Material Guide – Key to Recommended Inserts

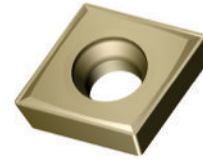
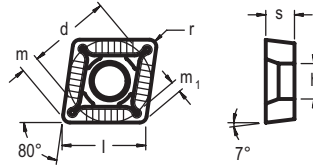
Material Designation

P Unalloyed Steels
 P Alloyed Steels
 M Stainless Steels
 M PH Stainless
 K Cast Irons
 N Aluminum & Alloys
 S High Temp. Alloys
 H Hard Materials

C Style

Turning Inserts

CCMT -73 Geometry



EDP	ISO Description	Grade	Dimensions (mm)					Material	Application
			d	l	s	r _e	h		
032365	CCMT060202E-73	SP4019	6,35	6,45	2,38	0,20	2,80		Medium
032366	CCMT060204E-73	SP4019	6,35	6,45	2,38	0,40	2,80		Medium
032367	CCMT060204E-73	NL300	6,35	6,45	2,38	0,40	2,80		Medium
032368	CCMT060208E-73	SP4019	6,35	6,45	2,38	0,80	2,80		Medium
032369	CCMT060208E-73	NL300	6,35	6,45	2,38	0,80	2,80		Medium
032370	CCMT09T304E-73	SP4019	9,52	9,57	3,97	0,40	4,40		Medium
032371	CCMT09T304E-73	NL300	9,52	9,57	3,97	0,40	4,40		Medium
032372	CCMT09T304E-73	NL920	9,52	9,57	3,97	0,40	4,40		Medium
032373	CCMT09T308E-73	SP4019	9,52	9,57	3,97	0,80	4,40		Medium
032374	CCMT09T308E-73	NL300	9,52	9,57	3,97	0,80	4,40		Medium
032375	CCMT09T308E-73	NL920	9,52	9,57	3,97	0,80	4,40		Medium
032376	CCMT120404E-73	SP4019	12,70	12,90	2,38	0,40	5,16		Medium
032377	CCMT120404E-73	NL300	12,70	12,90	2,38	0,40	5,16		Medium
032378	CCMT120404E-73	NL920	12,70	12,90	2,38	0,40	5,16		Medium
032379	CCMT120408E-73	SP4019	12,70	12,90	4,76	0,80	5,16		Medium
032380	CCMT120408E-73	NL300	12,70	12,90	4,76	0,80	5,16		Medium
032381	CCMT120408E-73	NL920	12,70	12,90	4,76	0,80	5,16		Medium
032382	CCMT120412E-73	SP4019	12,70	12,90	4,76	1,20	5,16		Medium
032383	CCMT120412E-73	NL300	12,70	12,90	4,76	1,20	5,16		Medium
032384	CCMT120412E-73	NL920	12,70	12,90	4,76	1,20	5,16		Medium

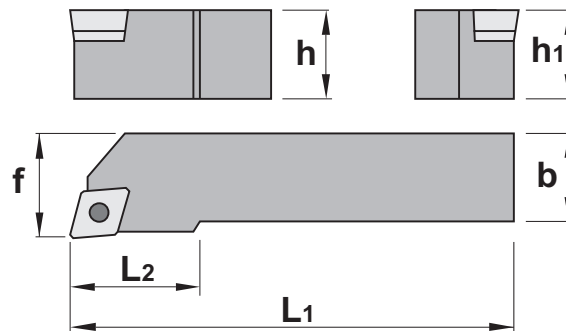
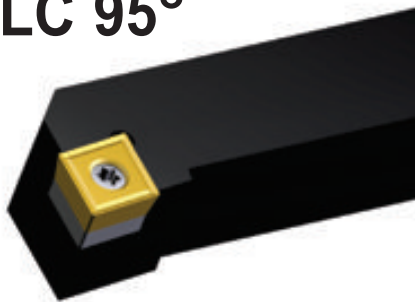
For Toolholders External: see page 46 | Internal: see page 47

Material Guide – Key to Recommended Inserts

Material Designation

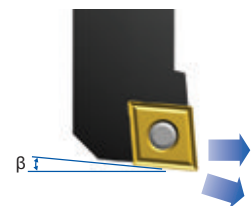
Unalloyed Steels
 Alloyed Steels
 Stainless Steels
 PH Stainless
 Cast Irons
 Aluminum & Alloys
 High Temp. Alloys
 Hard Materials

SCLC 95°







SCLC LH & RH External Square Shank Toolholders

EDP	ISO Description	Hand	Insert Sizes	Dimensions (mm)				
				h = h1	b	f	L1	L2
028507	SCLCL 1010 E06	LH	CC_0602	10	10	12	70	10
028513	SCLCR 1010 E06	RH	CC_0602	10	10	12	70	10
028508	SCLCL 1212 F09	LH	CC_09T3	12	12	16	80	16
028509	SCLCL 1616 H09	LH	CC_09T3	16	16	20	100	18
028510	SCLCL 2020 K09	LH	CC_09T3	20	20	25	125	22
028514	SCLCR 1212 F09	RH	CC_09T3	12	12	16	80	16
028515	SCLCR 1616 H09	RH	CC_09T3	16	16	20	100	18
028516	SCLCR 2020 K09	RH	CC_09T3	20	20	25	125	22
028512	SCLCL 2525 M12	LH	CC_1204	25	25	32	150	25
028518	SCLCR 2525 M12	RH	CC_1204	25	25	32	150	25

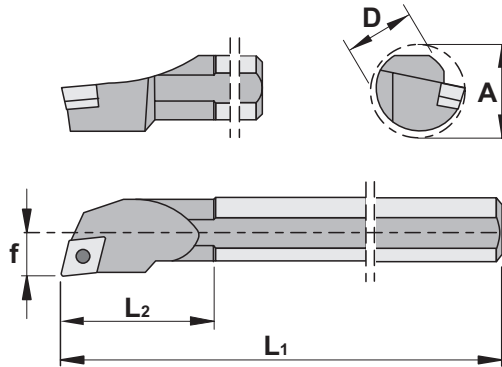


S Style External Toolholder for Positive Inserts:
 CC_06, CC_09, and CC_12
 Application: Face and Turn O/D
 Approach 95°
 Axial 0°
 Radial 0°
 Profiling Clearance Angle $\beta = 0^\circ$
 RH Holder Shown

SCLCL/R Spare Parts

Item Description	Insert Screw EDP		Insert Key EDP		Anvil EDP		Anvil Screw EDP	
SCLCL/R 1010 E06	015061	F2507T	018488	T7	-	-	-	-
SCLCL/R 1212 F09	015262	D4010T	015240	T15	-	-	-	-
SCLCL/R 1616 H09								
SCLCL/R 2020 K09	034500	1540	034577	K5517	028571	SA3614	028739	SAS1760
SCLCL/R 2525 M12								

A.. SCLC 95°







A.. SCLC LH & RH Internal Boring Bars

EDP	ISO Description	Hand	Insert Sizes	Dimensions (mm)					
				Min Bore Ø A	ØD	f	L1	L2	Through Coolant
033481	A08F SCLCL 06	LH	CC_0602	11	8	5	80	20	☹
033903	A10H SCLCL 06	LH	CC_0602	13	10	7	100	21	☹
018349	A12K SCLCL 06	LH	CC_0602	16	12	9	125	23	☹
033482	A08F SCLCR 06	RH	CC_0602	11	8	5	80	20	☹
033483	A10H SCLCR 06	RH	CC_0602	13	10	7	100	21	☹
018350	A12K SCLCR 06	RH	CC_0602	16	12	9	125	23	☹
018351	A16M SCLCL 09	LH	CC_09T3	20	16	11	150	31	☹
018353	A20Q SCLCL 09	LH	CC_09T3	24	20	13	180	36	☹
018355	A25R SCLCL 09	LH	CC_09T3	31	25	17	200	42	☹
018352	A16M SCLCR 09	RH	CC_09T3	20	16	11	150	31	☹
018354	A20Q SCLCR 09	RH	CC_09T3	24	20	13	180	36	☹
018356	A25R SCLCR 09	RH	CC_09T3	31	25	17	200	42	☹
033904	A32S SCLCL 12	LH	CC_1204	39	32	22	250	45	☹
033905	A32S SCLCR 12	RH	CC_1204	39	32	22	250	45	☹



S Style Internal Boring Bar for Positive Inserts:
 CC_06, CC_09, and CC_1204
 Application: I/D Boring
 Approach 95°
 Axial 0°
 Radial -6°
 Profiling Clearance Angle $\beta = 0^\circ$
 RH Bar shown

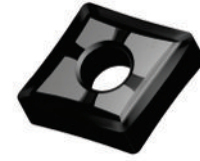
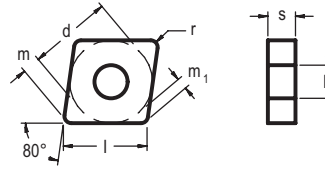
A.. SCLCL/R Spare Parts

Item Description	Insert Screw EDP		Insert Key EDP		Anvil EDP		Anvil Screw EDP	
A08F SCLCL/R 06	034498	1425	018488	T7	-	-	-	-
A10H SCLCL/R 06								
A12K SCLCL/R 06								
A16M SCLCL/R 09	034499	1440	015240	T15	-	-	-	-
A20Q SCLCL/R 09								
A25R SCLCL/R 09								
A32S SCLCL/R 12	034500	1540	034577	K5517	028571	SA3614	028739	SAS1760

C Style

Turning Inserts

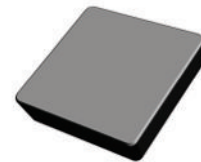
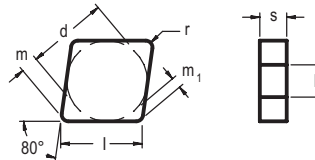
CNGG 3F Geometry



EDP	ISO Description	Grade	Dimensions (mm)					Material	Application
			d	l	s	r _e	h		
031543	CNGG120402F-3F	SP0819	12,70	12,90	4,76	0,80	5,16		Medium
031544	CNGG120404F-3F	SP0819	12,70	12,90	4,76	0,80	5,16		Medium
031545	CNGG120408F-3F	SP0819	12,70	12,90	4,76	0,80	5,16		Medium
031546	CNGG120412F-3F	SP0819	12,70	12,90	4,76	0,80	5,16		Medium

For Toolholders External: see pages 61 - 65 | Internal: see pages 66

CNGN Ceramics



EDP	ISO Description	Grade	Dimensions (mm)					Material	Application
			d	l	s	r _e	h		
032314	CNGN120404 E010	SA6609	12,70	12,90	4,76	0,40	5,16		Roughing
032315	CNGN120408 E010	SA6609	12,70	12,90	4,76	0,80	5,16		Roughing
032316	CNGN120408 E030	SA6609	12,70	12,90	4,76	0,80	5,16		Roughing
032317	CNGN120412 E010	SA6609	12,70	12,90	4,76	1,20	5,16		Roughing
032318	CNGN120412 E030	SA6609	12,70	12,90	4,76	1,20	5,16		Roughing
032319	CNGN120416 E030	SA6609	12,70	12,90	4,76	1,60	5,16		Roughing
032320	CNGN120708 E010	SA6609	12,70	12,90	7,94	0,80	5,16		Roughing
032321	CNGN120712 E010	SA6609	12,70	12,90	7,94	1,20	5,16		Roughing
032322	CNGN120716 E030	SA6609	12,70	12,90	7,94	1,60	5,16		Roughing
032323	CNGN160612 E010	SA6609	15,88	16,10	6,35	1,20	6,35		Roughing

Note: For edge condition refer to Grade page 31

Material Guide – Key to Recommended Inserts

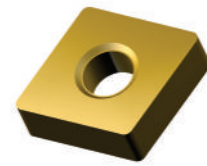
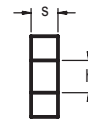
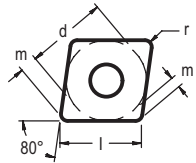
Material Designation

Unalloyed Steels
 Alloyed Steels
 Stainless Steels
 PH Stainless
 Cast Irons
 Aluminum & Alloys
 High Temp. Alloys
 Hard Materials

C Style

Turning Inserts

CNMA Flat Top



EDP	ISO Description	Grade	Dimensions (mm)					Material	Application
			d	l	s	r _e	h		
032385	CNMA120404E	NL250	12,70	12,90	4,76	0,40	5,16	◆	Heavy Roughing
032386	CNMA120408E	NL250	12,70	12,90	4,76	0,80	5,16	◆	Heavy Roughing
032387	CNMA120412E	NL250	12,70	12,90	4,76	1,20	5,16	◆	Heavy Roughing
032388	CNMA120416E	NL250	12,70	12,90	4,76	1,60	5,16	◆	Heavy Roughing
032389	CNMA160612E	NL250	15,88	16,10	6,35	1,20	6,35	◆	Heavy Roughing
032390	CNMA160616E	NL250	15,88	16,10	6,35	1,60	6,35	◆	Heavy Roughing
032391	CNMA160632E	NL250	15,88	16,10	6,35	3,20	6,35	◆	Heavy Roughing
032392	CNMA190612E	NL250	19,05	19,40	6,35	1,20	7,92	◆	Heavy Roughing
032393	CNMA190616E	NL250	19,05	19,40	6,35	1,60	7,92	◆	Heavy Roughing
032394	CNMA190632E	NL250	19,05	19,40	6,35	3,20	7,92	◆	Heavy Roughing

For Toolholders External: see pages 61 - 65 | Internal: see pages 66

Material Guide – Key to Recommended Inserts

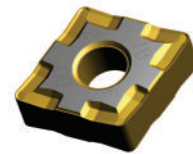
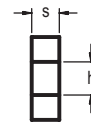
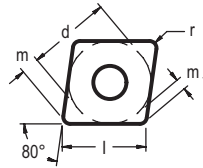
Material Designation

◆ P Unalloyed Steels
 ◆ P Alloyed Steels
 ◆ M Stainless Steels
 ◆ M PH Stainless
 ◆ K Cast Irons
 ◆ N Aluminum & Alloys
 ◆ S High Temp. Alloys
 ◆ H Hard Materials

C Style

Turning Inserts

CNMG 1B Geometry



EDP	ISO Description	Grade	Dimensions (mm)					Material	Application
			d	l	s	r _e	h		
032395	CNMG120404E-1B	NL250	12,70	12,90	4,76	0,40	5,16		Finishing
030864	CNMG120404E-1B	SP0819	12,70	12,90	4,76	0,40	5,16		Finishing
030865	CNMG120408E-1B	SP0819	12,70	12,90	4,76	0,80	5,16		Finishing
032396	CNMG120408E-1B	NL250	12,70	12,90	4,76	0,80	5,16		Finishing
032397	CNMG120412E-1B	NL250	12,70	12,90	4,76	1,20	5,16		Finishing
030866	CNMG120412E-1B	SP0819	12,70	12,90	4,76	1,20	5,16		Finishing

For Toolholders External: see pages 61 - 65 | Internal: see pages 66

Material Guide – Key to Recommended Inserts

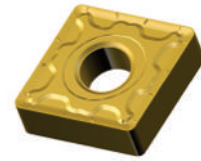
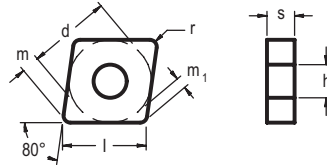
Material Designation

P Unalloyed Steels
 P Alloyed Steels
 M Stainless Steels
 M PH Stainless
 K Cast Irons
 N Aluminum & Alloys
 S High Temp. Alloys
 H Hard Materials

C Style

Turning Inserts

CNMG 2N Geometry



EDP	ISO Description	Grade	Dimensions (mm)					Material	Application
			d	l	s	r _e	h		
032398	CNMG120404E-2N	NL250	12,70	12,90	4,76	0,40	5,16		Medium
032399	CNMG120404E-2N	NL300	12,70	12,90	4,76	0,40	5,16		Medium
032400	CNMG120404E-2N	NL920	12,70	12,90	4,76	0,40	5,16		Medium
032401	CNMG120408E-2N	NL250	12,70	12,90	4,76	0,80	5,16		Medium
032402	CNMG120408E-2N	NL300	12,70	12,90	4,76	0,80	5,16		Medium
032403	CNMG120408E-2N	NL920	12,70	12,90	4,76	0,80	5,16		Medium
032404	CNMG120412E-2N	NL250	12,70	12,90	4,76	1,20	5,16		Medium
032405	CNMG120412E-2N	NL300	12,70	12,90	4,76	1,20	5,16		Medium
032406	CNMG120412E-2N	NL920	12,70	12,90	4,76	1,20	5,16		Medium
032407	CNMG120416E-2N	NL250	12,70	12,90	4,76	1,60	5,16		Medium
032408	CNMG120416E-2N	NL300	12,70	12,90	4,76	1,60	5,16		Medium
032409	CNMG120416E-2N	NL920	12,70	12,90	4,76	1,60	5,16		Medium

For Toolholders External: see pages 61 - 65 | Internal: see pages 66

Material Guide – Key to Recommended Inserts

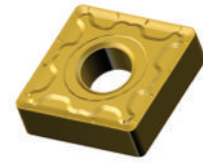
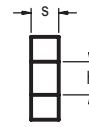
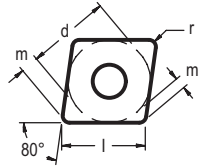
Material Designation

P Unalloyed Steels
 P Alloyed Steels
 M Stainless Steels
 M PH Stainless
 K Cast Irons
 N Aluminum & Alloys
 S High Temp. Alloys
 H Hard Materials

C Style

Turning Inserts

CNMG 2N Geometry



EDP	ISO Description	Grade	Dimensions (mm)					Material	Application
			d	l	s	r _e	h		
032410	CNMG160608E-2N	NL250	15,88	16,10	6,35	0,80	6,35		Medium
032411	CNMG160608E-2N	NL300	15,88	16,10	6,35	0,80	6,35		Medium
032412	CNMG160608E-2N	NL920	15,88	16,10	6,35	0,80	6,35		Medium
032413	CNMG160612E-2N	NL250	15,88	16,10	6,35	1,20	6,35		Medium
032414	CNMG160612E-2N	NL300	15,88	16,10	6,35	1,20	6,35		Medium
032415	CNMG160612E-2N	NL920	15,88	16,10	6,35	1,20	6,35		Medium
032416	CNMG160616E-2N	NL250	15,88	16,10	6,35	1,60	6,35		Medium
032417	CNMG160616E-2N	NL300	15,88	16,10	6,35	1,60	6,35		Medium
032418	CNMG160616E-2N	NL920	15,88	16,10	6,35	1,60	6,35		Medium
032419	CNMG190612E-2N	NL300	19,05	19,40	6,35	1,20	7,92		Medium
032420	CNMG190612E-2N	NL920	19,05	19,40	6,35	1,20	7,92		Medium
032421	CNMG190616E-2N	NL300	19,05	19,40	6,35	1,60	7,92		Medium
032422	CNMG190616E-2N	NL920	19,05	19,40	6,35	1,60	7,92		Medium

For Toolholders External: see pages 61 - 65 | Internal: see pages 66

Material Guide – Key to Recommended Inserts

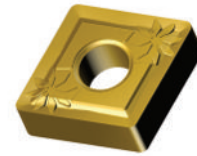
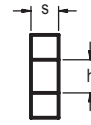
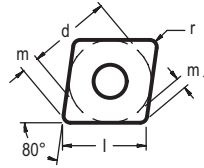
Material Designation

P Unalloyed Steels
 P Alloyed Steels
 M Stainless Steels
 M PH Stainless
 K Cast Irons
 N Aluminum & Alloys
 S High Temp. Alloys
 H Hard Materials

C Style

Turning Inserts

CNMG 3J Geometry



EDP	ISO Description	Grade	Dimensions (mm)					Material	Application
			d	l	s	r _e	h		
032423	CNMG120404E-3J	SP4019	12,70	12,90	4,76	0,40	5,16	◆◆◆	Medium
032424	CNMG120408E-3J	SP4019	12,70	12,90	4,76	0,80	5,16	◆◆◆	Medium
032425	CNMG120412E-3J	SP4019	12,70	12,90	4,76	1,20	5,16	◆◆◆	Medium
032426	CNMG120416E-3J	SP4019	12,70	12,90	4,76	1,60	5,16	◆◆◆	Medium
032427	CNMG160612E-3J	SP4019	15,88	16,10	6,35	1,20	6,35	◆◆◆	Medium
032428	CNMG160616E-3J	SP4019	15,88	16,10	6,35	1,60	6,35	◆◆◆	Medium
032429	CNMG190612E-3J	SP4019	19,05	19,40	6,35	1,20	7,92	◆◆◆	Medium
032430	CNMG190616E-3J	SP4019	19,05	19,40	6,35	1,60	7,92	◆◆◆	Medium

For Toolholders External: see pages 61 - 65 | Internal: see pages 66

Material Guide – Key to Recommended Inserts

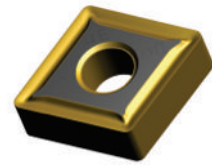
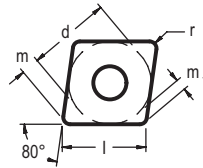
Material Designation

◆ P Unalloyed Steels
 ◆ P Alloyed Steels
 ◆ M Stainless Steels
 ◆ M PH Stainless
 ◆ K Cast Irons
 ◆ N Aluminum & Alloys
 ◆ S High Temp. Alloys
 ◆ H Hard Materials

C Style

Turning Inserts

CNMG 4E Geometry



EDP	ISO Description	Grade	Dimensions (mm)					Material	Application
			d	l	s	r _e	h		
030506	CNMG120404E-4E	SP0819	12,70	12,90	4,76	0,40	5,16		Medium-Roughing
032431	CNMG120404E-4E	NL400	12,70	12,90	4,76	0,40	5,16		Medium-Roughing
030507	CNMG120408E-4E	SP0819	12,70	12,90	4,76	0,80	5,16		Medium-Roughing
032432	CNMG120408E-4E	NL400	12,70	12,90	4,76	0,80	5,16		Medium-Roughing
030507	CNMG120408E-4E	SP0819	12,70	12,90	4,76	0,80	5,16		Medium-Roughing
032433	CNMG120412E-4E	NL400	12,70	12,90	4,76	1,20	5,16		Medium-Roughing
030508	CNMG120412E-4E	SP0819	12,70	12,90	4,76	1,20	5,16		Medium-Roughing
032434	CNMG160608E-4E	NL400	15,88	16,10	6,35	0,80	6,35		Medium-Roughing
030492	CNMG160608E-4E	SP0819	15,88	16,10	6,35	0,80	6,35		Medium-Roughing
030510	CNMG160612E-4E	SP0819	15,88	16,10	6,35	1,20	6,35		Medium-Roughing
032435	CNMG160612E-4E	NL400	15,88	16,10	6,35	1,20	6,35		Medium-Roughing
032436	CNMG160616E-4E	NL400	15,88	16,10	6,35	1,60	6,35		Medium-Roughing
030511	CNMG160616E-4E	SP0819	15,88	16,10	6,35	1,60	6,35		Medium-Roughing

For Toolholders External: see pages 61 - 65 | Internal: see pages 66

CNMG1906 See page 55

Material Guide – Key to Recommended Inserts

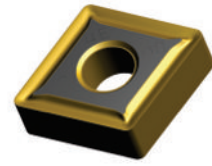
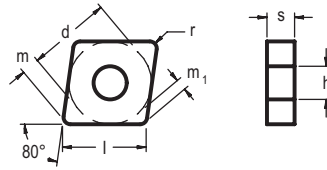
Material Designation

P Unalloyed Steels
 P Alloyed Steels
 M Stainless Steels
 M PH Stainless
 K Cast Irons
 N Aluminum & Alloys
 S High Temp. Alloys
 H Hard Materials

C Style

Turning Inserts

CNMG 4E Geometry



EDP	ISO Description	Grade	Dimensions (mm)					Material	Application
			d	l	s	r _e	h		
032437	CNMG190608E-4E	NL400	19,05	19,40	6,35	0,80	7,92	◆◆◆	Medium-Roughing
030512	CNMG190608E-4E	SP0819	19,05	19,40	6,35	0,80	7,92	◆◆◆	Medium-Roughing
030513	CNMG190612E-4E	SP0819	19,05	19,40	6,35	1,20	7,92	◆◆◆	Medium-Roughing
032438	CNMG190612E-4E	NL400	19,05	19,40	6,35	1,20	7,92	◆◆◆	Medium-Roughing
032480	CNMG190616E-4E	NL400	19,05	19,40	6,35	1,60	7,92	◆◆◆	Medium-Roughing
030514	CNMG190616E-4E	SP0819	19,05	19,40	6,35	1,60	7,92	◆◆◆	Medium-Roughing
032440	CNMG190624E-4E	NL400	19,05	19,40	6,35	2,40	7,92	◆◆◆	Medium-Roughing
030515	CNMG190624E-4E	SP0819	19,05	19,40	6,35	2,40	7,92	◆◆◆	Medium-Roughing

For Toolholders External: see pages 61 - 65 | Internal: see pages 66

Material Guide – Key to Recommended Inserts

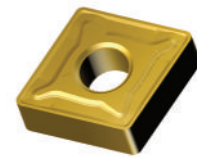
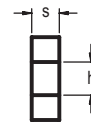
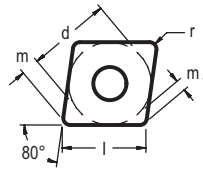
Material Designation

◆ P Unalloyed Steels
 ◆ P Alloyed Steels
 ◆ M Stainless Steels
 ◆ M PH Stainless
 ◆ K Cast Irons
 ◆ N Aluminum & Alloys
 ◆ S High Temp. Alloys
 ◆ H Hard Materials

C Style

Turning Inserts

CNMG 4T Geometry



EDP	ISO Description	Grade	Dimensions (mm)					Material	Application
			d	l	s	r _e	h		
032442	CNMG120404E-4T	NL250	12,70	12,90	4,76	0,40	5,16	◆◆◆◆	Roughing
032443	CNMG120404E-4T	NL300	12,70	12,90	4,76	0,40	5,16	◆◆◆◆	Roughing
032444	CNMG120404E-4T	NL400	12,70	12,90	4,76	0,40	5,16	◆◆◆◆	Roughing
032445	CNMG120404E-4T	NL920	12,70	12,90	4,76	0,40	5,16	◆◆◆◆	Roughing
032446	CNMG120408E-4T	NL250	12,70	12,90	4,76	0,80	5,16	◆◆◆◆	Roughing
032447	CNMG120408E-4T	NL300	12,70	12,90	4,76	0,80	5,16	◆◆◆◆	Roughing
032448	CNMG120408E-4T	NL400	12,70	12,90	4,76	0,80	5,16	◆◆◆◆	Roughing
032449	CNMG120408E-4T	NL920	12,70	12,90	4,76	0,80	5,16	◆◆◆◆	Roughing
032450	CNMG120412E-4T	NL250	12,70	12,90	4,76	1,20	5,16	◆◆◆◆	Roughing
032451	CNMG120412E-4T	NL300	12,70	12,90	4,76	1,20	5,16	◆◆◆◆	Roughing
032452	CNMG120412E-4T	NL400	12,70	12,90	4,76	1,20	5,16	◆◆◆◆	Roughing
032453	CNMG120412E-4T	NL920	12,70	12,90	4,76	1,20	5,16	◆◆◆◆	Roughing
032454	CNMG120416E-4T	NL250	12,70	12,90	4,76	1,60	5,16	◆◆◆◆	Roughing
032455	CNMG120416E-4T	NL300	12,70	12,90	4,76	1,60	5,16	◆◆◆◆	Roughing
032456	CNMG120416E-4T	NL400	12,70	12,90	4,76	1,60	5,16	◆◆◆◆	Roughing
032457	CNMG120416E-4T	NL920	12,70	12,90	4,76	1,60	5,16	◆◆◆◆	Roughing

For Toolholders External: see pages 61 - 65 | Internal: see pages 66

Material Guide – Key to Recommended Inserts

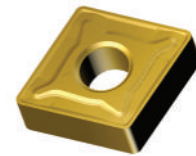
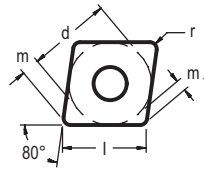
Material Designation

◆ P Unalloyed Steels
 ◆ P Alloyed Steels
 ◆ M Stainless Steels
 ◆ M PH Stainless
 ◆ K Cast Irons
 ◆ N Aluminum & Alloys
 ◆ S High Temp. Alloys
 ◆ H Hard Materials

C Style

Turning Inserts

CNMG 4T Geometry



EDP	ISO Description	Grade	Dimensions (mm)					Material	Application
			d	l	s	r _e	h		
032458	CNMG160608E-4T	NL250	15,88	16,10	6,35	0,80	6,35		Roughing
032459	CNMG160608E-4T	NL300	15,88	16,10	6,35	0,80	6,35		Roughing
032460	CNMG160608E-4T	NL400	15,88	16,10	6,35	0,80	6,35		Roughing
032461	CNMG160608E-4T	NL920	15,88	16,10	6,35	0,80	6,35		Roughing
032462	CNMG160612E-4T	NL250	15,88	16,10	6,35	1,20	6,35		Roughing
032463	CNMG160612E-4T	NL300	15,88	16,10	6,35	1,20	6,35		Roughing
032464	CNMG160612E-4T	NL400	15,88	16,10	6,35	1,20	6,35		Roughing
032465	CNMG160612E-4T	NL920	15,88	16,10	6,35	1,20	6,35		Roughing
032466	CNMG160616E-4T	NL250	15,88	16,10	6,35	1,60	6,35		Roughing
032467	CNMG160616E-4T	NL300	15,88	16,10	6,35	1,60	6,35		Roughing
032468	CNMG160616E-4T	NL400	15,88	16,10	6,35	1,60	6,35		Roughing
032469	CNMG160616E-4T	NL920	15,88	16,10	6,35	1,60	6,35		Roughing

For Toolholders External: see pages 61 - 65 | Internal: see pages 66

Material Guide – Key to Recommended Inserts

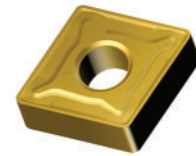
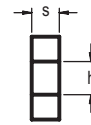
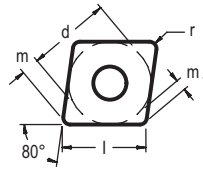
Material Designation

Unalloyed Steels
 Alloyed Steels
 Stainless Steels
 PH Stainless
 Cast Irons
 Aluminum & Alloys
 High Temp. Alloys
 Hard Materials

C Style

Turning Inserts

CNMG 4T Geometry



EDP	ISO Description	Grade	Dimensions (mm)					Material	Application
			d	l	s	r _e	h		
032470	CNMG190608E-4T	NL250	19,05	19,40	6,35	0,80	7,92		Roughing
032471	CNMG190608E-4T	NL300	19,05	19,40	6,35	0,80	7,92		Roughing
032472	CNMG190608E-4T	NL400	19,05	19,40	6,35	0,80	7,92		Roughing
032473	CNMG190608E-4T	NL920	19,05	19,40	6,35	0,80	7,92		Roughing
032474	CNMG190612E-4T	NL250	19,05	19,40	6,35	1,20	7,92		Roughing
032475	CNMG190612E-4T	NL300	19,05	19,40	6,35	1,20	7,92		Roughing
032476	CNMG190612E-4T	NL400	19,05	19,40	6,35	1,20	7,92		Roughing
032477	CNMG190612E-4T	NL920	19,05	19,40	6,35	1,20	7,92		Roughing
032478	CNMG190616E-4T	NL250	19,05	19,40	6,35	1,60	7,92		Roughing
032479	CNMG190616E-4T	NL300	19,05	19,40	6,35	1,60	7,92		Roughing
032439	CNMG190616E-4T	NL400	19,05	19,40	6,35	1,60	7,92		Roughing
032481	CNMG190616E-4T	NL920	19,05	19,40	6,35	1,60	7,92		Roughing
032482	CNMG250924E-4T	NL300	25,40	25,79	9,53	2,40	9,12		Roughing
032483	CNMG250924E-4T	NL400	25,40	25,79	9,53	2,40	9,12		Roughing
032484	CNMG250924E-4T	NL920	25,40	25,79	9,53	2,40	9,12		Roughing

For Toolholders External: see pages 61 - 65 | Internal: see pages 66

Material Guide – Key to Recommended Inserts

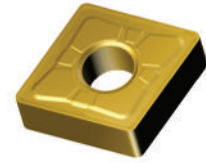
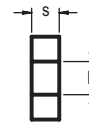
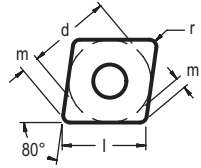
Material Designation

P Unalloyed Steels
 P Alloyed Steels
 M Stainless Steels
 M PH Stainless
 K Cast Irons
 N Aluminum & Alloys
 S High Temp. Alloys
 H Hard Materials

C Style

Turning Inserts

CNMG 4U Geometry



EDP	ISO Description	Grade	Dimensions (mm)					Material	Application
			d	l	s	r _e	h		
032485	CNMG120404E-4U	NL200	12,70	12,90	4,76	0,40	5,16		Roughing
032486	CNMG120408E-4U	NL200	12,70	12,90	4,76	0,80	5,16		Roughing
032487	CNMG120412E-4U	NL200	12,70	12,90	4,76	1,20	5,16		Roughing
032488	CNMG120416E-4U	NL200	12,70	12,90	4,76	1,60	5,16		Roughing
032489	CNMG160608E-4U	NL200	15,88	16,10	6,35	0,80	6,35		Roughing
032490	CNMG160612E-4U	NL200	15,88	16,10	6,35	1,20	6,35		Roughing
032491	CNMG160616E-4U	NL200	15,88	16,10	6,35	1,60	6,35		Roughing
032492	CNMG190612E-4U	NL200	19,05	19,40	6,35	1,20	7,92		Roughing
032493	CNMG190616E-4U	NL200	19,05	19,40	6,35	1,60	7,92		Roughing
032494	CNMG190624E-4U	NL200	19,05	19,40	6,35	2,40	7,92		Roughing

For Toolholders External: see pages 61 - 65 | Internal: see pages 66

Material Guide – Key to Recommended Inserts

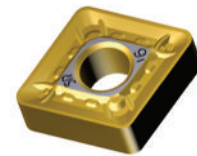
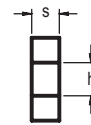
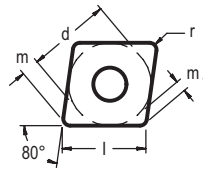
Material Designation

Unalloyed Steels
 Alloyed Steels
 Stainless Steels
 PH Stainless
 Cast Irons
 Aluminum & Alloys
 High Temp. Alloys
 Hard Materials

C Style

Turning Inserts

CNMM 5R Geometry



EDP	ISO Description	Grade	Dimensions (mm)					Material	Application
			d	l	s	r _e	h		
031684	CNMM160612E-5R	NL300	15,88	16,10	6,35	1,20	6,35	◆◆◆◆	Heavy Roughing
031668	CNMM160612E-5R	NL400	15,88	16,10	6,35	1,20	6,35	◆◆◆◆	Heavy Roughing
031685	CNMM160616E-5R	NL300	15,88	16,10	6,35	1,60	6,35	◆◆◆◆	Heavy Roughing
031669	CNMM160616E-5R	NL400	15,88	16,10	6,35	1,60	6,35	◆◆◆◆	Heavy Roughing
031686	CNMM160624E-5R	NL300	15,88	16,10	6,35	2,40	6,35	◆◆◆◆	Heavy Roughing
031670	CNMM160624E-5R	NL400	15,88	16,10	6,35	2,40	6,35	◆◆◆◆	Heavy Roughing
031687	CNMM190612E-5R	NL300	19,05	19,40	6,35	1,20	7,92	◆◆◆◆	Heavy Roughing
031671	CNMM190612E-5R	NL400	19,05	19,40	6,35	1,20	7,92	◆◆◆◆	Heavy Roughing
031688	CNMM190616E-5R	NL300	19,05	19,40	6,35	1,60	7,92	◆◆◆◆	Heavy Roughing
031672	CNMM190616E-5R	NL400	19,05	19,40	6,35	1,60	7,92	◆◆◆◆	Heavy Roughing
031689	CNMM190624E-5R	NL300	19,05	19,40	6,35	2,40	7,92	◆◆◆◆	Heavy Roughing
031673	CNMM190624E-5R	NL400	19,05	19,40	6,35	2,40	7,92	◆◆◆◆	Heavy Roughing
031683	CNMM250924E-5R	NL300	25,40	25,78	9,53	2,40	9,12	◆◆◆◆	Heavy Roughing
031682	CNMM250924E-5R	NL920	25,40	25,78	9,53	2,40	9,12	◆◆◆◆	Heavy Roughing

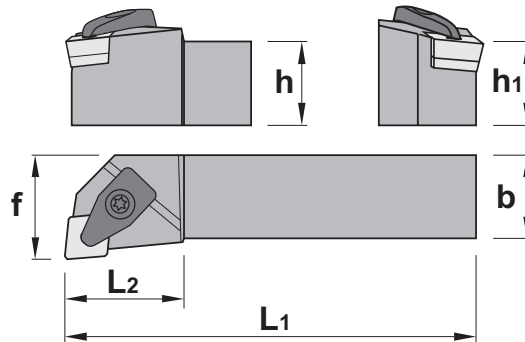
For Toolholders External: see pages 61 - 65 | Internal: see pages 66

Material Guide – Key to Recommended Inserts

Material Designation

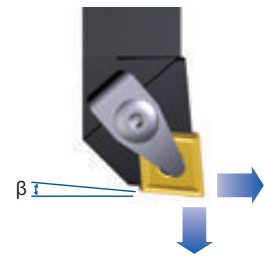
◆ P Unalloyed Steels
 ◆ P Alloyed Steels
 ◆ M Stainless Steels
 ◆ M PH Stainless
 ◆ K Cast Irons
 ◆ N Aluminum & Alloys
 ◆ S High Temp. Alloys
 ◆ H Hard Materials

DCLN 95°



DCLN LH & RH External Square Shank Toolholders

EDP	Item Description	Hand	Insert Sizes	Dimensions (mm)				
				h = h ₁	b	f	L ₁	L ₂
033245	DCLNL 2020 K12	LH	CN_1204	20	20	25	125	34
033246	DCLNL 2525 M12	LH	CN_1204	25	25	32	150	34
033247	DCLNL 3232 P12	LH	CN_1204	32	32	40	170	34
033248	DCLNR 2020 K12	RH	CN_1204	20	20	25	125	34
033249	DCLNR 2525 M12	RH	CN_1204	25	25	32	150	34
033250	DCLNR 3232 P12	RH	CN_1204	32	32	40	170	34
033251	DCLNL 2525 M16	LH	CN_1606	25	25	32	150	36
033252	DCLNL 3232 P16	LH	CN_1606	32	32	40	170	40
033253	DCLNR 2525 M16	RH	CN_1606	25	25	32	150	36
033254	DCLNR 3232 P16	RH	CN_1606	32	32	40	170	40
033255	DCLNL 3232 P19	LH	CN_1906	32	32	40	170	42
033256	DCLNL 4040 S19	LH	CN_1906	40	40	50	250	42
033257	DCLNR 3232 P19	RH	CN_1906	32	32	40	170	42
033258	DCLNR 4040 S19	RH	CN_1906	40	40	50	250	42



D style External Toolholder
for Negative Inserts:
CN_1204, CN_1606 & CN_1906
Application: Face and Turn O/D
Approach 95°
Axial -6°
Radial -6°
Profiling Clearance Angle $\beta = 0^\circ$
RH Holder Shown

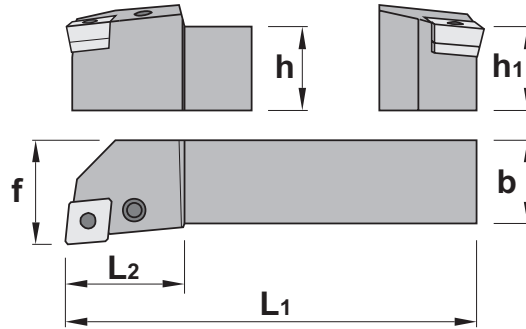
DCLNL/R Spare Parts

Item Description	Clamp Screw EDP	Clamp EDP	Clamp Spring EDP	Anvil EDP	Anvil Screw EDP	Clamp & Anvil Screw Key				
DCLNL/R 2020 K12	033710	1696	033707	DC2712	033712	ICSN442	033716	1766		
DCLNL/R 2525 M12										
DCLNL/R 3232 P12										
DCLNL/R 2525 M16			033719	4295	001685	ICSN533			018287	KH5004
DCLNL/R 3232 P16										
DCLNL/R 3232 P19										
DCLNL/R 4040 S19	033708	DC2719	001686	ICSN633	033717	1770				

C Style

External Toolholders

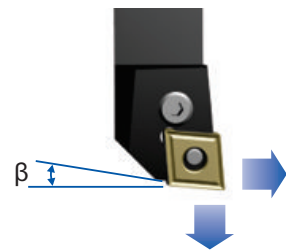
PCLN 95°



PCLN LH & RH External Square Shank Toolholders

EDP	Item Description	Hand	Insert Sizes	Dimensions (mm)				
				h = h ₁	b	f	L ₁	L ₂
033273	*PCLNL 4040 S25	LH	CN_2509	40	40	50	250	45
033274	*PCLNL 5050 T25	LH	CN_2509	50	50	60	300	50
033275	*PCLNR 4040 S25	RH	CN_2509	40	40	50	250	45
033276	*PCLNR 5050 T25	RH	CN_2509	50	50	60	300	50

* Non Stock Items, subject to extended delivery time

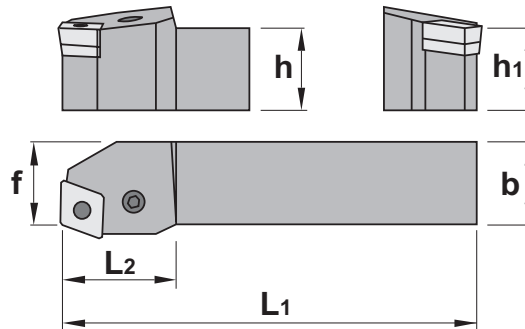


P Style External Toolholder
for Negative Inserts: CN_2509
Application: Face and Turn O/D
Approach 95°
Axial -6°
Radial -6°
Profiling Clearance Angle $\beta = 0^\circ$
RH Holder Shown

PCLNL/R Spare Parts

Item Description	Lever EDP	Lever Screw EDP	Anvil EDP	Anvil Clip EDP	Clip Punch EDP	Key EDP						
PCLNL/R 4040 S25	028408	PL8025	028409	PLS1612	034483	PA3625	028418	PC4125	034506	PCP0025	018285	KH5005
PCLNL/R 5050 T25												

PCBN 75°



PCBN LH & RH External Square Shank Toolholders

EDP	Item Description	Hand	Insert Sizes	Dimensions (mm)				
				h = h ₁	b	f	L ₁	L ₂
017118	PCBNL 2020 K12	LH	CN_1204	20	20	17	125	28
017120	PCBNL 2525 M12	LH	CN_1204	25	25	22	150	28
017119	PCBNR 2020 K12	RH	CN_1204	20	20	17	125	28
017121	PCBNR 2525 M12	RH	CN_1204	25	25	22	150	28
028373	PCBNL 3232 P16	LH	CN_1606	32	32	27	170	34
017127	PCBNR 3232 P16	RH	CN_1606	32	32	27	170	34



P Style External Toolholder
for Negative Inserts:
CN_1204 & CN_1606
Application: Turn O/D
Approach 75°
Axial -7,25°
Radial -4,25°
RH Holder Shown

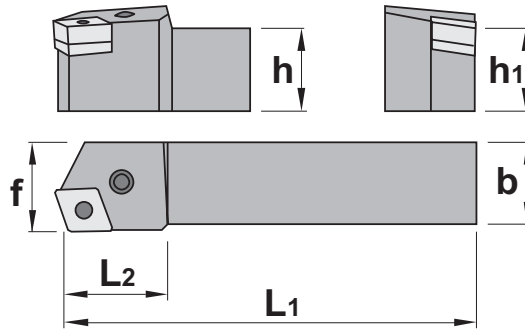
PCBNL/R Spare Parts

Item Description	Lever EDP	Lever Screw EDP	Anvil EDP	Anvil Clip EDP	Clip Punch EDP	Key EDP						
PCBNL/R 2020 K12	017443	PL8012	017448	PLS1608	017456	PA3612	017453	PC4112	028054	PCP0012	018286	KH5003
PCBNL/R 2525 M12												
PCBNL/R 3232 P16	017445	PL8016	017450	PLS1618	017457	PA3616	028051	PC4115	034505	PCP0015		

C Style

External Toolholders

PCKN 75°



PCKN LH & RH External Square Shank Toolholders

EDP	Item Description	Hand	Insert Sizes	Dimensions (mm)				
				h = h ₁	b	f	L ₁	L ₂
017130	PCKNL 2020 K 12	LH	CN_1204	20	20	25	125	28
017132	PCKNL 2525 M 12	LH	CN_1204	25	25	32	150	28
033280	PCKNL 3232 P 12	LH	CN_1204	32	25	32	170	28
017131	PCKNR 2020 K 12	RH	CN_1204	20	20	25	125	28
017133	PCKNR 2525 M 12	RH	CN_1204	25	25	32	150	28
033281	PCKNR 3232 P 12	RH	CN_1204	32	25	32	170	28

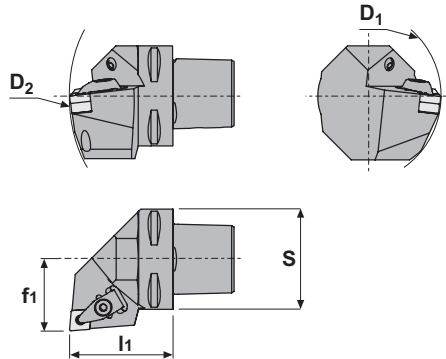


P Style External Toolholder
for Negative Inserts: CN_1204
Application: Facing
Approach 75°
Axial -6,5°
Radial -5,5°
RH Holder Shown

PCKNL/R Spare Parts

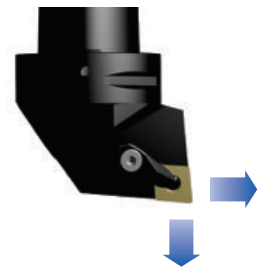
Item Description	Lever EDP	Lever Screw EDP	Anvil EDP	Anvil Clip EDP	Clip Punch EDP	Key EDP						
PCKNL/R 2020 K12	017443	PL8012	017448	PLS1608	017456	PA3612	017453	PC4112	028054	PCP0012	018286	KH5003
PCKNL/R 2525 M12												
PCKNL/R 3225 P12												

DCLN 95°



DCLN LH & RH External PSC Toolholders

EDP	Item Description	Hand	Insert Sizes	Dimensions (mm)				
				S	D1	D2	f1	l1
033691	C5-50-DCLNL35060-12	LH	CN_1204	50	110	165	35	60
033692	C5-50-DCLNR35060-12	RH	CN_1204	50	110	165	35	60
033693	C6-63-DCLNL45065-12	LH	CN_1204	63	110	190	45	65
033694	C6-63-DCLNR45065-12	RH	CN_1204	63	110	190	45	65
033695	C8-80-DCLNL55080-19	LH	CN_1906	80	125	250	55	80
033696	C8-80-DCLNR55080-19	RH	CN_1906	80	125	250	55	80



D Style External Toolholder for Negative Inserts:
 CN_1204 & CN_1906
 Application: External Face, Turn O/D
 Approach 95°
 Axial -5°
 Radial -6°
 Profiling Clearance Angle $\beta = 0^\circ$
 RH Holder Shown

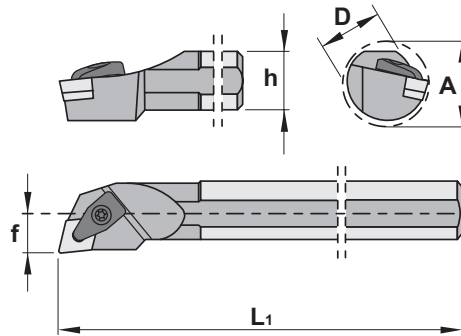
DCLNL/R Spare Parts

Item Description	Clamp EDP	Clamp Screw EDP	Anvil EDP	Anvil Screw EDP	Clamp Spring EDP	Screw Key EDP						
C5-50-DCLNL/R 35060-12	033707	2712	033710	1696	033712	ICSN442	033716	1766	033719	4295	018287	KH5004
C6-63-DCLNL/R 45065-12												
C8-80-DCLNL/R 55080-19	033708	2719	033710	1696	001686	ICSN633	033717	1770				

C Style

Internal Boring Bars

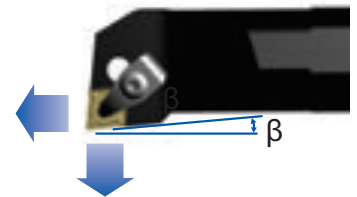
S..DCLN 95°



S..DCLN LH & RH Internal Boring Bars

EDP	Item Description	Hand	Insert Sizes	Dimensions (mm)					
				Min Bore Ø A	ØD	f	L1	h	Through Coolant
033286	S25T DCLNL 12	LH	CN_1204	31	25	17	300	23	⊘
033287	S32U DCLNL 12	LH	CN_1204	39	32	22	350	30	⊘
033288	S40V DCLNL 12	LH	CN_1204	48	40	27	400	37	⊘
033289	S25T DCLNR 12	RH	CN_1204	31	25	17	300	23	⊘
033290	S32U DCLNR 12	RH	CN_1204	39	32	22	350	30	⊘
033291	S40V DCLNR 12	RH	CN_1204	48	40	27	400	37	⊘
033292	*S40V DCLNL 16	LH	CN_1606	48	40	27	400	37	⊘
033293	*S50W DCLNL 16	LH	CN_1606	61	50	35	450	47	⊘
033294	*S40V DCLNR 16	RH	CN_1606	48	40	27	400	37	⊘
033295	*S50W DCLNR 16	RH	CN_1606	61	50	35	450	47	⊘

* Non Stock Items, subject to extended delivery time



D Style Internal Boring Bar for Negative Inserts:
 CN_1204 & CN_1606
 Application:- I/D Face and Bore
 Axial Approach 95°
 Axial -5°
 Radial -13,5°
 Profiling Clearance Angle $\beta = 0^\circ$
 RH Bar Shown

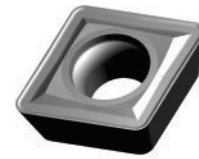
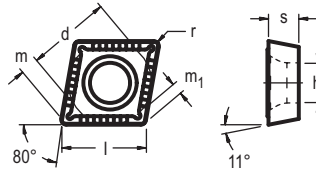
S..DCLNL/R Spare Parts

Item Description	Clamp Screw EDP	Clamp EDP	Clamp Spring EDP	Anvil EDP	Anvil Screw EDP	Clamp & Anvil Screw Key						
S25T DCLNL/R 12	033710	1696	033707	DC2712	033719	4295	017456	3612	029095	1765	018287	KH5004
S32U DCLNL/R 12							029079	ICCN432	034508	1161		
S40V DCLNL/R 12							034507	1160				
*S40V DCLNL/R 16			001685	ICSN-533	034509	1768						
*S50W DCLNL/R 16												

C Style

Turning Inserts

CPMT -73 Geometry



EDP	ISO Description	Grade	Dimensions (mm)					Material	Application
			d	l	s	r _e	h		
032496	CPMT060204E-73	SP4019	6,35	6,45	2,38	0,40	2,80		Medium
032497	CPMT080302E-73	SP4019	9,52	7,94	3,18	0,20	3,05		Medium
032498	CPMT080304E-73	SP4019	9,52	7,94	3,18	0,40	3,05		Medium
032499	CPMT080308E-73	SP4019	9,52	7,94	3,18	0,80	3,05		Medium

Material Guide – Key to Recommended Inserts

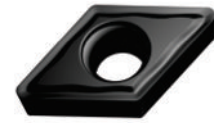
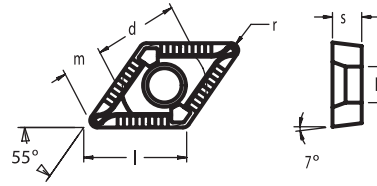
Material Designation

Unalloyed Steels
 Alloyed Steels
 Stainless Steels
 PH Stainless
 Cast Irons
 Aluminum & Alloys
 High Temp. Alloys
 Hard Materials

D Style

Turning Inserts

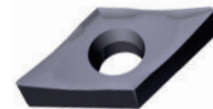
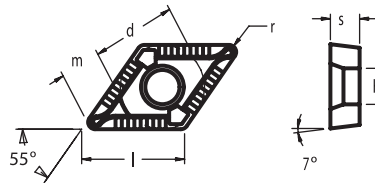
DCGT & DCGX -62 Geometry



EDP	ISO Description	Grade	Dimensions (mm)					Material	Application
			d	l	s	r _e	h		
031401	DCGX0702005E-62	SP4019	6,35	7,70	2,38	0,05	2,79	◆◆◆◆◆	Finishing
030577	DCGT070201E-62	SP4019	6,35	7,70	2,38	0,10	2,79	◆◆◆◆◆	Finishing
030578	DCGT070202E-62	SP4019	6,35	7,70	2,38	0,20	2,79	◆◆◆◆◆	Finishing
030579	DCGT070204E-62	SP4019	6,35	7,70	2,38	0,40	2,79	◆◆◆◆◆	Finishing
031402	DCGX11T3005E-62	SP4019	9,52	11,60	3,97	0,05	4,39	◆◆◆◆◆	Finishing
030581	DCGT11T301E-62	SP4019	9,52	11,60	3,97	0,10	4,39	◆◆◆◆◆	Finishing
030582	DCGT11T302E-62	SP4019	9,52	11,60	3,97	0,20	4,39	◆◆◆◆◆	Finishing
030583	DCGT11T304E-62	SP4019	9,52	11,60	3,97	0,40	4,39	◆◆◆◆◆	Finishing
030584	DCGT11T308E-62	SP4019	9,52	11,60	3,97	0,80	4,39	◆◆◆◆◆	Finishing

For Toolholders External: see pages 70 - 72 | Internal: see pages 73 - 75

DCGT -64 Geometry



EDP	ISO Description	Grade	Dimensions (mm)					Material	Application
			d	l	s	r _e	h		
034465	DCGT11T302F-64	GH1	9,52	11,60	3,97	0,20	4,39	◆	Finishing
014068	DCGT11T304F-64	GH1	9,52	11,60	3,97	0,40	4,39	◆	Finishing
014069	DCGT11T308F-64	GH1	9,52	11,60	3,97	0,80	4,39	◆	Finishing

For Toolholders External: see pages 70 - 72 | Internal: see pages 73 - 75

Material Guide – Key to Recommended Inserts

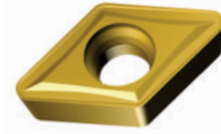
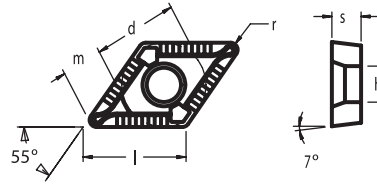
Material Designation

◆ P Unalloyed Steels
 ◆ P Alloyed Steels
 ◆ M Stainless Steels
 ◆ M PH Stainless
 ◆ K Cast Irons
 ◆ N Aluminum & Alloys
 ◆ S High Temp. Alloys
 ◆ H Hard Materials

D Style

Turning Inserts

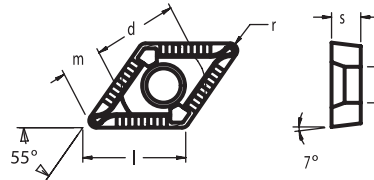
DCMT -73 Geometry



EDP	ISO Description	Grade	Dimensions (mm)					Material	Application
			d	l	s	r _e	h		
032501	DCMT070202E-73	SP4019	6,35	7,70	2,38	0,20	2,79		Medium
032502	DCMT070202E-73	NL300	6,35	7,70	2,38	0,20	2,79		Medium
032503	DCMT070204E-73	SP4019	6,35	7,70	2,38	0,40	2,79		Medium
032504	DCMT070204E-73	NL300	6,35	7,70	2,38	0,40	2,79		Medium
032285	DCMT11T304E-73	SP4019	9,52	11,60	3,97	0,40	4,39		Medium
032505	DCMT11T304E-73	NL300	9,52	11,60	3,97	0,40	4,39		Medium
032506	DCMT11T304E-73	NL920	9,52	11,60	3,97	0,40	4,39		Medium
032297	DCMT11T308E-73	SP4019	9,52	11,60	3,97	0,80	4,39		Medium
032507	DCMT11T308E-73	NL300	9,52	11,60	3,97	0,80	4,39		Medium
032508	DCMT11T308E-73	NL920	9,52	11,60	3,97	0,80	4,39		Medium

For Toolholders External: see pages 70 - 72 | Internal: see pages 73 - 75

DCMT M Geometry



EDP	ISO Description	Grade	Dimensions (mm)					Material	Application
			d	l	s	r _e	h		
032509	DCMT150404E-M	SP4019	12,70	15,50	4,76	0,40	5,16		Medium
032510	DCMT150404E-M	NL300	12,70	15,50	4,76	0,40	5,16		Medium
032511	DCMT150408E-M	SP4019	12,70	15,50	4,76	0,80	5,16		Medium
032512	DCMT150408E-M	NL300	12,70	15,50	4,76	0,80	5,16		Medium
032513	DCMT150408E-M	NL920	12,70	15,50	4,76	0,80	5,16		Medium

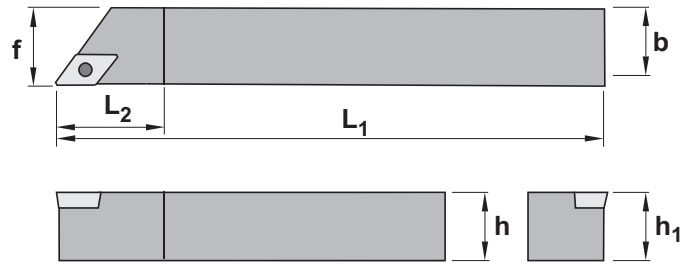
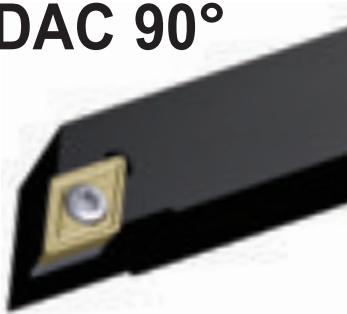
For Toolholders External: see pages 70 - 72 | Internal: see pages 73 - 75

Material Guide – Key to Recommended Inserts

Material Designation

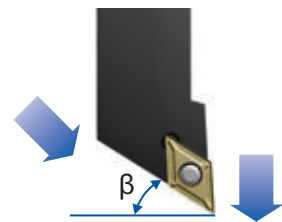
Unalloyed Steels
 Alloyed Steels
 Stainless Steels
 PH Stainless
 Cast Irons
 Aluminum & Alloys
 High Temp. Alloys
 Hard Materials

SDAC 90°







SDAC LH & RH External Square Shank Toolholders

EDP	Item Description	Hand	Insert Sizes	Dimensions (mm)				
				h = h ₁	b	f	L ₁	L ₂
025072	SDACL 1010 M07	LH	DC_0702	10	10	10	150	15
033486	SDACL 1212 M07	LH	DC_0702	12	12	12	150	15
025071	SDACR 1010 M07	RH	DC_0702	10	10	10	150	15
033487	SDACR 1212 M07	RH	DC_0702	12	12	12	150	15
025074	SDACL 1212 M11	LH	DC_11T3	12	12	12	150	19
025076	SDACL 1616 M11	LH	DC_11T3	16	16	16	150	19
025078	SDACL 2020 K11	LH	DC_11T3	20	20	20	125	20
025073	SDACR 1212 M11	RH	DC_11T3	12	12	12	150	19
025075	SDACR 1616 M11	RH	DC_11T3	16	16	16	150	19
025077	SDACR 2020 K11	RH	DC_11T3	20	20	20	125	20



S Style External Toolholder for Positive Inserts:
 DC_0702 and DC_11T3
 Application: O/D Profiling
 Approach 90°
 Axial 0°
 Radial 0°
 Profiling Clearance Angle $\beta = 32^\circ$
 RH Holder Shown

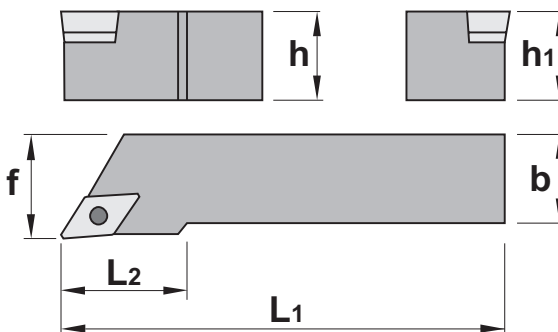
SDACL/R Spare Parts

Item Description	Insert Screw EDP		Insert Key EDP		Anvil EDP		Anvil Screw EDP	
SDACL/R 1010 M07	015061	F25007T	018488	T7	-	-	-	-
SDACL/R 1212 M07								
SDACL/R 1212 M11	015262	D4010T	015240	T15	-	-	-	-
SDACL/R 1616 M11								
SDACL/R 2020 K11								

D Style

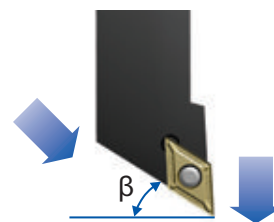
External Toolholders

SDJC 93°







SDJC LH & RH External Square Shank Toolholders

EDP	Item Description	Hand	Insert Sizes	Dimensions (mm)				
				h = h ₁	b	f	L ₁	L ₂
028462	SDJCL 1010 E07	LH	DC_0702	10	10	12	70	14
018001	SDJCL 1212 F07	LH	DC_0702	12	12	16	80	16
018469	SDJCR 1010 E07	RH	DC_0702	10	10	12	70	14
018010	SDJCR 1212 F07	RH	DC_0702	12	12	16	80	16
018002	SDJCL 1212 F11	LH	DC_11T3	12	12	16	80	20
028464	SDJCL 1616 H11	LH	DC_11T3	16	16	20	100	18
028465	SDJCL 2020 K11	LH	DC_11T3	20	20	25	125	22
028466	SDJCL 2525 M11	LH	DC_11T3	25	25	32	150	28
018011	SDJCR 1212 F11	RH	DC_11T3	12	12	16	80	20
028470	SDJCR 1616 H11	RH	DC_11T3	16	16	20	100	18
028471	SDJCR 2020 K11	RH	DC_11T3	20	20	25	125	22
028472	SDJCR 2525 M11	RH	DC_11T3	25	25	32	150	28



S Style External Toolholder for Positive Inserts:
 DC_0702 and DC_11T3
 Application: Facing and O/D Profiling
 Approach 93°
 Axial 0°
 Radial 0°
 Profiling Clearance Angle $\beta = 29^\circ$
 RH Holder Shown

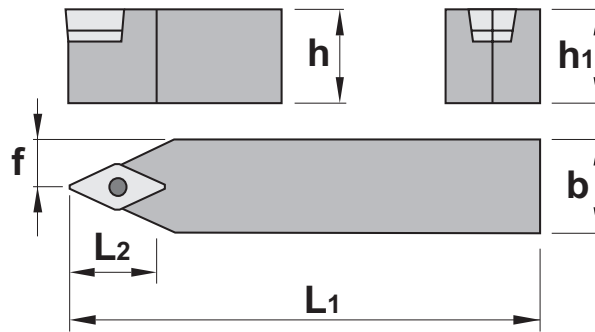
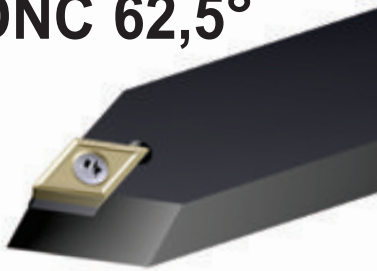
SDJCL/R Spare Parts

Item Description	Insert Screw EDP		Insert Key EDP		Anvil EDP		Anvil Screw EDP	
SDJCL/R 1010 E07	015061	F2507T	018488	T7	-	-	-	-
SDJCL/R 1212 F07								
SDJCL/R 1212 F11	015262	D4010T	015240	T15	-	-	-	-
SDJCL/R 1616 H11	034497	1335	028475	K5516	028477	SA3714	028478	SAS1750
SDJCL/R 2020 K11								
SDJCL/R 2525 M11								

D Style

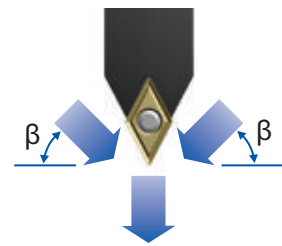
External Toolholders

SDNC 62,5°







SDNC Neutral External Square Shank Toolholders

EDP	Item Description	Hand	Insert Sizes	Dimensions (mm)				
				h = h ₁	b	f	L ₁	L ₂
028519	SDNC N 1010 E07	Neutral	DC_0702	10	10	5	70	16
028520	SDNC N 1212 F07	Neutral	DC_0702	12	12	6	80	16
028522	SDNC N 1616 H11	Neutral	DC_11T3	16	16	8	100	22
028523	SDNC N 2020 K11	Neutral	DC_11T3	20	20	10	125	22
028524	SDNC N 2525 M11	Neutral	DC_11T3	25	25	12,5	150	22



S Style External Toolholder
for Positive Inserts:
DC_0702, and DC_11T3
Application: Plunge and O/D Profiling
Approach 62,5°
Axial 0°
Radial 0°
Profiling Clearance Angle $\beta = 59,5^\circ$
Neutral Holder Shown

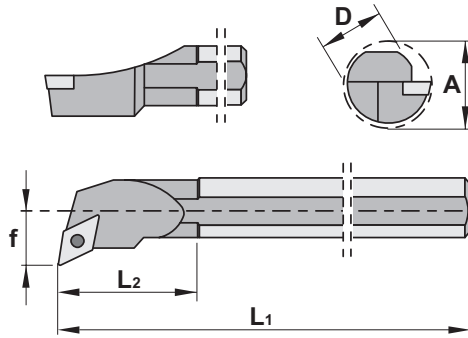
SDNC Spare Parts

Item Description	Insert Screw EDP		Insert Key EDP		Anvil EDP		Anvil Screw EDP	
SDNC N 1010 E07	015061	F2507T	018488	T7	-	-	-	-
SDNC N 1212 F07								
SDNC N 1010 E07	034497	1335	028475	K5516	028477	SA3714	028739	SAS1750
SDNC N 1212 F07								
SDJCL/R 2525 M11								

D Style

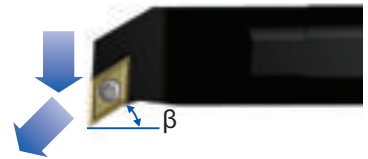
Internal Boring Bars

A.. SDUC 93°







A.. SDUC LH & RH Internal Boring Bars

EDP	Item Description	Hand	Insert Sizes	Dimensions (mm)					
				Min Bore Ø A	ØD	f	L1	L2	Through Coolant
018357	A12K SDUCL 07	LH	DC_0702	16	12	9	125	23	💧
018359	A16M SDUCL 07	LH	DC_0702	20	16	11	150	31	💧
018358	A12K SDUCR 07	RH	DC_0702	16	12	9	125	23	💧
018360	A16M SDUCR 07	RH	DC_0702	20	16	11	150	31	💧
018361	A20Q SDUCL 11	LH	DC_11T3	24	20	13	180	36	💧
017990	A25R SDUCL 11	LH	DC_11T3	31	25	17	200	42	💧
018363	A32S SDUCL 11	LH	DC_11T3	39	32	22	250	45	💧
018362	A20Q SDUCR 11	RH	DC_11T3	24	20	13	180	36	💧
017991	A25R SDUCR 11	RH	DC_11T3	31	25	17	200	42	💧
018364	A32S SDUCR 11	RH	DC_11T3	39	32	22	250	45	💧

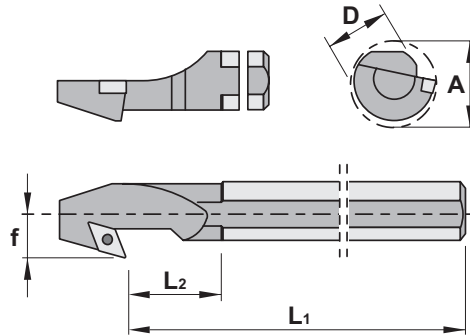


S Style Boring Bar
for Positive Inserts:
DC_0702, and DC_11T3
Application: I/D Profiling
Approach 93°
Axial 0°
Radial -6°
Profiling Clearance Angle β = 29°
RH Bar Shown

A.. SDUCL/R Spare Parts

Item Description	Insert Screw EDP		Insert Key EDP		Anvil EDP		Anvil Screw EDP	
A12K SDUCL/R 07	015061	F2507T	018488	T7	-	-	-	-
A16M SDUCL/R 07								
A20Q SDUCL/R 11	015262	D4010T	018488	T7	-	-	-	-
A25R SDUCL/R 11								
A32S SDUCL/R 11	034497	1335	028475	K5516	028477	SA3714	028478	SAS1750

A.. SDUC 93°-EX



A.. SDUC -EX LH & RH Internal Boring Bars

EDP	Item Description	Hand	Insert Sizes	Dimensions (mm)					
				Min Bore Ø A	ØD	f	L1	L2	Through Coolant
034596	A12K SDUCL 07-EX	LH	DC_0702	16	12	9	125	32	
034597	A16M SDUCL 07-EX	LH	DC_0702	20	16	11	150	40	
034598	A12K SDUCR 07-EX	RH	DC_0702	16	12	9	125	32	
034599	A16M SDUCR 07-EX	RH	DC_0702	20	16	11	150	40	
034600	A20Q SDUCL 11-EX	LH	DC_11T3	24	20	13	180	45	
034601	A25R SDUCL 11-EX	LH	DC_11T3	31	25	17	200	50	
034602	A20Q SDUCR 11-EX	RH	DC_11T3	24	20	13	180	45	
034603	A25R SDUCR 11-EX	RH	DC_11T3	31	25	17	200	50	



S Style Boring Bar
for Positive Inserts:
DC_0702, and DC_11T3
Application: Back Boring and Profiling
Approach 93°
Axial 0°
Radial -6°
Profiling Clearance Angle $\beta = 29^\circ$
RH Bar Shown

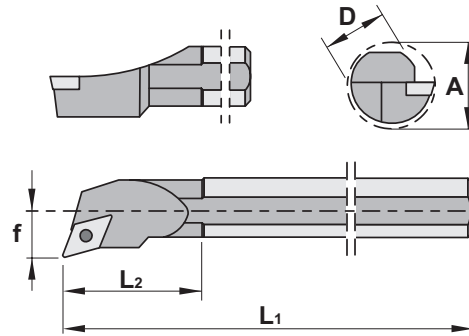
A.. SDUCL/R -EX Spare Parts

Item Description	Insert Screw EDP		Insert Key EDP		Anvil EDP		Anvil Screw EDP	
A12K SDUCL/R 07	015061	F2507T	018488	T7	-	-	-	-
A16M SDUCL/R 07								
A20Q SDUCL/R 11	034499	1440	015240	T15	-	-	-	-
A25R SDUCL/R 11	015262	D4010T						

D Style

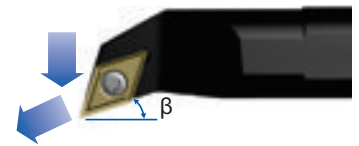
Internal Boring Bars

A.. SDQC 107,5°



A.. SDQC LH & RH Internal Boring Bars

EDP	Item Description	Hand	Insert Sizes	Dimensions (mm)					
				Min Bore Ø A	ØD	f	L1	L2	Through Coolant
033507	A12K SDQCL 07	LH	DC_0702	16	12	9	125	23	
033508	A16M SDQCL 07	LH	DC_0702	20	16	11	150	31	
033509	A12K SDQCR 07	RH	DC_0702	16	12	9	125	23	
033510	A16M SDQCR 07	RH	DC_0702	20	16	11	150	31	
033511	A20Q SDQCL 11	LH	DC_11T3	24	20	13	180	36	
033512	A25R SDQCL 11	LH	DC_11T3	31	25	17	200	42	
033513	A20Q SDQCR 11	RH	DC_11T3	24	20	13	180	36	
033514	A25R SDQCR 11	RH	DC_11T3	31	25	17	200	42	



S Style Boring Bar
for Positive Inserts:
DC_0702, and DC_11T3
Application: Face and I/D Profiling
Approach 107,5°
Axial: 0°
Radial -6°
Profiling Clearance Angle $\beta = 14,5^\circ$
RH Bar Shown

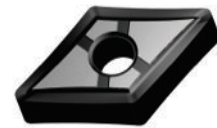
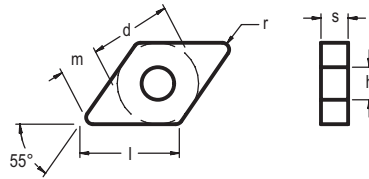
A.. SDQCL/R Spare Parts

Item Description	Insert Screw EDP		Insert Key EDP		Anvil EDP		Anvil Screw EDP	
A12K SDQCL/R 07	015061	F2507T	018488	T7	-	-	-	-
A16M SDQCL/R 07								
A20Q SDQCL/R 11	015262	D4010T	015240	T15	-	-	-	-
A25R SDQCL/R 11								

D Style

Turning Inserts

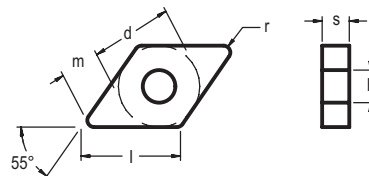
DNGG 3F Geometry



EDP	ISO Description	Grade	Dimensions (mm)					Material	Application
			d	l	s	r _e	h		
031561	DNGG150402F-3F	SP0819	12,70	15,50	4,76	0,20	5,16	◆◆◆	Medium
031562	DNGG150404F-3F	SP0819	12,70	15,50	4,76	0,40	5,16	◆◆◆	Medium
031563	DNGG150408F-3F	SP0819	12,70	15,50	4,76	0,80	5,16	◆◆◆	Medium
031564	DNGG150412F-3F	SP0819	12,70	15,50	4,76	1,20	5,16	◆◆◆	Medium
031547	DNGG150602F-3F	SP0819	12,70	15,50	6,35	0,20	5,16	◆◆◆	Medium
031548	DNGG150604F-3F	SP0819	12,70	15,50	6,35	0,40	5,16	◆◆◆	Medium
031565	DNGG150608F-3F	SP0819	12,70	15,50	6,35	0,80	5,16	◆◆◆	Medium
031566	DNGG150612F-3F	SP0819	12,70	15,50	6,35	1,20	5,16	◆◆◆	Medium

For Toolholders External: see pages 85 - 87 | Internal: see pages 88 - 89

DNMA Flat Top



EDP	ISO Description	Grade	Dimensions (mm)					Material	Application
			d	l	s	r _e	h		
032514	DNMA150408E	NL250	12,70	15,50	4,76	0,80	5,16	◆	Heavy-Roughing
034471	DNMA150412E	NL250	12,70	15,50	4,76	1,20	5,16	◆	Heavy-Roughing
032515	DNMA150608E	NL250	12,70	15,50	6,35	0,80	5,16	◆	Heavy-Roughing
032516	DNMA150612E	NL250	12,70	15,50	6,35	1,20	5,16	◆	Heavy-Roughing

For Toolholders External: see pages 85 - 87 | Internal: see pages 88 - 89

Material Guide – Key to Recommended Inserts

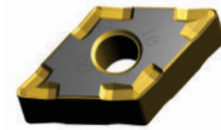
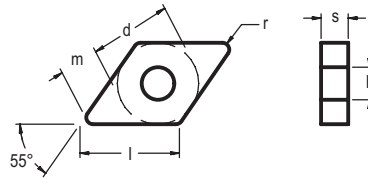
Material Designation

◆ P Unalloyed Steels
 ◆ P Alloyed Steels
 ◆ M Stainless Steels
 ◆ M PH Stainless
 ◆ K Cast Irons
 ◆ N Aluminum & Alloys
 ◆ S High Temp. Alloys
 ◆ H Hard Materials

D Style

Turning Inserts

DNMG 1B Geometry



EDP	ISO Description	Grade	Dimensions (mm)					Material	Application
			d	l	s	r _e	h		
032517	DNMG110404E-1B	NL250	9,52	11,00	4,76	0,40	4,39	◆◆◆◆	Finishing
030869	DNMG110404E-1B	SP0819	9,52	11,00	4,76	0,40	4,39	◆◆◆◆◆	Finishing
032518	DNMG110408E-1B	NL250	9,52	11,00	4,76	0,80	4,39	◆◆◆◆	Finishing
030870	DNMG110408E-1B	SP0819	9,52	11,00	4,76	0,80	4,39	◆◆◆◆◆	Finishing
032519	DNMG150404E-1B	NL250	12,70	15,50	4,76	0,40	5,16	◆◆◆◆	Finishing
030872	DNMG150404E-1B	SP0819	12,70	15,50	4,76	0,40	5,16	◆◆◆◆◆	Finishing
032520	DNMG150408E-1B	NL250	12,70	15,50	4,76	0,80	5,16	◆◆◆◆	Finishing
030873	DNMG150408E-1B	SP0819	12,70	15,50	4,76	0,80	5,16	◆◆◆◆◆	Finishing
030874	DNMG150412E-1B	SP0819	12,70	15,50	4,76	1,20	5,16	◆◆◆◆	Finishing
032521	DNMG150412E-1B	NL250	12,70	15,50	4,76	1,20	5,16	◆◆◆◆	Finishing
030875	DNMG150604E-1B	SP0819	12,70	15,50	6,35	0,40	5,16	◆◆◆◆◆	Finishing
032522	DNMG150604E-1B	NL250	12,70	15,50	6,35	0,40	5,16	◆◆◆◆	Finishing
032523	DNMG150608E-1B	NL250	12,70	15,50	6,35	0,80	5,16	◆◆◆◆	Finishing
030876	DNMG150608E-1B	SP0819	12,70	15,50	6,35	0,80	5,16	◆◆◆◆◆	Finishing
030471	DNMG150612E-1B	SP0819	12,70	15,50	6,35	1,20	5,16	◆◆◆◆◆	Finishing
032524	DNMG150612E-1B	NL250	12,70	15,50	6,35	1,20	5,16	◆◆◆◆	Finishing

For Toolholders External: see pages 85 - 87 | Internal: see pages 88 - 89

Material Guide – Key to Recommended Inserts

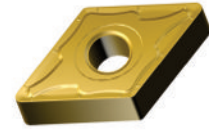
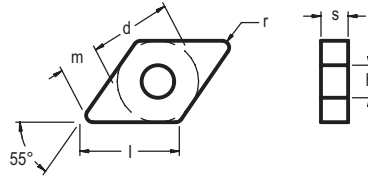
Material Designation

◆ P Unalloyed Steels
 ◆ P Alloyed Steels
 ◆ M Stainless Steels
 ◆ M PH Stainless
 ◆ K Cast Irons
 ◆ N Aluminum & Alloys
 ◆ S High Temp. Alloys
 ◆ H Hard Materials

D Style

Turning Inserts

DNMG 2N Geometry



EDP	ISO Description	Grade	Dimensions (mm)					Material	Application
			d	l	s	r _e	h		
032525	DNMG110404E-2N	NL250	9,52	11,00	4,76	0,40	4,39		Medium
032526	DNMG110404E-2N	NL300	9,52	11,00	4,76	0,40	4,39		Medium
032527	DNMG110404E-2N	NL920	9,52	11,00	4,76	0,40	4,39		Medium
032528	DNMG110408E-2N	NL250	9,52	11,00	4,76	0,80	4,39		Medium
032529	DNMG110408E-2N	NL300	9,52	11,00	4,76	0,80	4,39		Medium
032530	DNMG110408E-2N	NL920	9,52	11,00	4,76	0,80	4,39		Medium

For Toolholders External: see pages 85 - 87 | Internal: see pages 88 - 89

Material Guide – Key to Recommended Inserts

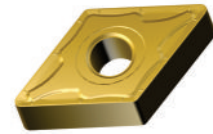
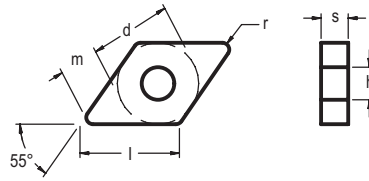
Material Designation

Unalloyed Steels
 Alloyed Steels
 Stainless Steels
 PH Stainless
 Cast Irons
 Aluminum & Alloys
 High Temp. Alloys
 Hard Materials

D Style

Turning Inserts

DNMG 2N Geometry



EDP	ISO Description	Grade	Dimensions (mm)					Material	Application
			d	l	s	r _e	h		
032531	DNMG150404E-2N	NL250	12,70	15,50	4,76	0,40	5,16	◆◆◆◆	Medium
032532	DNMG150404E-2N	NL300	12,70	15,50	4,76	0,40	5,16	◆◆◆◆	Medium
032533	DNMG150404E-2N	NL920	12,70	15,50	4,76	0,40	5,16	◆◆◆◆	Medium
032534	DNMG150408E-2N	NL250	12,70	15,50	4,76	0,80	5,16	◆◆◆◆	Medium
032535	DNMG150408E-2N	NL300	12,70	15,50	4,76	0,80	5,16	◆◆◆◆	Medium
032536	DNMG150408E-2N	NL920	12,70	15,50	4,76	0,80	5,16	◆◆◆◆	Medium
032537	DNMG150412E-2N	NL250	12,70	15,50	4,76	1,20	5,16	◆◆◆◆	Medium
034472	DNMG150412E-2N	NL300	12,70	15,50	4,76	1,20	5,16	◆◆◆◆	Medium
032538	DNMG433A-2N	NL250	12,70	15,50	4,76	1,20	5,16	◆◆◆◆	Medium
032539	DNMG150604E-2N	NL250	12,70	15,50	6,35	0,40	5,16	◆◆◆◆	Medium
032540	DNMG150604E-2N	NL300	12,70	15,50	6,35	0,40	5,16	◆◆◆◆	Medium
032541	DNMG150604E-2N	NL920	12,70	15,50	6,35	0,40	5,16	◆◆◆◆	Medium
032542	DNMG150608E-2N	NL250	12,70	15,50	6,35	0,80	5,16	◆◆◆◆	Medium
032543	DNMG150608E-2N	NL300	12,70	15,50	6,35	0,80	5,16	◆◆◆◆	Medium
032544	DNMG150608E-2N	NL920	12,70	15,50	6,35	0,80	5,16	◆◆◆◆	Medium
032545	DNMG150612E-2N	NL250	12,70	15,50	6,35	1,20	5,16	◆◆◆◆	Medium
032546	DNMG150612E-2N	NL300	12,70	15,50	6,35	1,20	5,16	◆◆◆◆	Medium
032547	DNMG150612E-2N	NL920	12,70	15,50	6,35	1,20	5,16	◆◆◆◆	Medium

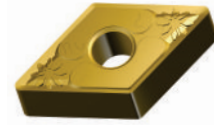
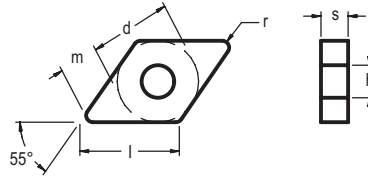
For Toolholders External: see pages 85 - 87 | Internal: see pages 88 - 89

Material Guide – Key to Recommended Inserts

Material Designation

◆ P Unalloyed Steels
 ◆ P Alloyed Steels
 ◆ M Stainless Steels
 ◆ M PH Stainless
 ◆ K Cast Irons
 ◆ N Aluminum & Alloys
 ◆ S High Temp. Alloys
 ◆ H Hard Materials

DNMG 3J Geometry



EDP	ISO Description	Grade	Dimensions (mm)					Material	Application
			d	l	s	r _e	h		
032548	DNMG110404E-3J	SP4019	9,52	11,00	4,76	0,40	4,39	◆◆◆	Medium
032549	DNMG110408E-3J	SP4019	9,52	11,00	4,76	0,80	4,39	◆◆◆	Medium
032550	DNMG150404E-3J	SP4019	12,70	15,50	4,76	0,40	5,16	◆◆◆	Medium
032551	DNMG150408E-3J	SP4019	12,70	15,50	4,76	0,80	5,16	◆◆◆	Medium
032552	DNMG150412E-3J	SP4019	12,70	15,50	4,76	1,20	5,16	◆◆◆	Medium
032553	DNMG150604E-3J	SP4019	12,70	15,50	6,35	0,40	5,16	◆◆◆	Medium
032554	DNMG150608E-3J	SP4019	12,70	15,50	6,35	0,80	5,16	◆◆◆	Medium
032555	DNMG150612E-3J	SP4019	12,70	15,50	6,35	1,20	5,16	◆◆◆	Medium

For Toolholders External: see pages 85 - 87 | Internal: see pages 88 - 89

Material Guide – Key to Recommended Inserts

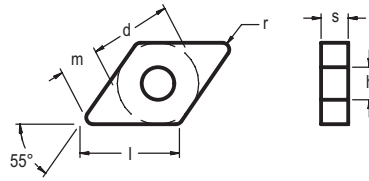
Material Designation

◆ P Unalloyed Steels
 ◆ P Alloyed Steels
 ◆ M Stainless Steels
 ◆ M PH Stainless
 ◆ K Cast Irons
 ◆ N Aluminum & Alloys
 ◆ S High Temp. Alloys
 ◆ H Hard Materials

D Style

Turning Inserts

DNMG 4E Geometry



EDP	ISO Description	Grade	Dimensions (mm)					Material	Application
			d	l	s	r _e	h		
030516	DNMG150404E-4E	SP0819	12,70	15,50	4,76	0,40	5,16		Medium-Roughing
030517	DNMG150408E-4E	SP0819	12,70	15,50	4,76	0,80	5,16		Medium-Roughing
032556	DNMG150408-4E	NL400	12,70	15,50	4,76	0,80	5,16		Medium-Roughing
030518	DNMG150412E-4E	SP0819	12,70	15,50	4,76	1,20	5,16		Medium-Roughing
032557	DNMG150412E-4E	NL400	12,70	15,50	4,76	1,20	5,16		Medium-Roughing
030524	DNMG150604E-4E	SP0819	12,70	15,50	6,35	0,40	5,16		Medium-Roughing
030525	DNMG150608E-4E	SP0819	12,70	15,50	6,35	0,80	5,16		Medium-Roughing
032558	DNMG150608E-4E	NL400	12,70	15,50	6,35	0,80	5,16		Medium-Roughing
030526	DNMG150612E-4E	SP0819	12,70	15,50	6,35	1,20	5,16		Medium-Roughing
032559	DNMG150612E-4E	NL400	12,70	15,50	6,35	1,20	5,16		Medium-Roughing

For Toolholders External: see pages 85 - 87 | Internal: see pages 88 - 89

Material Guide – Key to Recommended Inserts

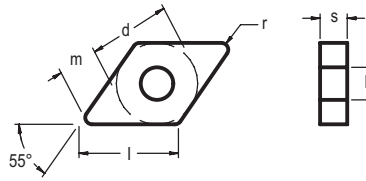
Material Designation

Unalloyed Steels
 Alloyed Steels
 Stainless Steels
 PH Stainless
 Cast Irons
 Aluminum & Alloys
 High Temp. Alloys
 Hard Materials

D Style

Turning Inserts

DNMG 4T Geometry



EDP	ISO Description	Grade	Dimensions (mm)					Material	Application
			d	l	s	r _e	h		
032560	DNMG150404E-4T	NL250	12,70	15,50	4,76	0,40	5,16	◆◆◆◆	Roughing
032561	DNMG150404E-4T	NL300	12,70	15,50	4,76	0,40	5,16	◆◆◆◆◆	Roughing
032562	DNMG150404E-4T	NL400	12,70	15,50	4,76	0,40	5,16	◆◆◆◆	Roughing
032563	DNMG150404E-4T	NL920	12,70	15,50	4,76	0,40	5,16	◆◆◆◆◆	Roughing
032564	DNMG150408E-4T	NL250	12,70	15,50	4,76	0,80	5,16	◆◆◆◆	Roughing
032565	DNMG150408E-4T	NL300	12,70	15,50	4,76	0,80	5,16	◆◆◆◆◆	Roughing
032566	DNMG150408E-4T	NL400	12,70	15,50	4,76	0,80	5,16	◆◆◆◆	Roughing
032567	DNMG150408E-4T	NL920	12,70	15,50	4,76	0,80	5,16	◆◆◆◆◆	Roughing
032568	DNMG150412E-4T	NL250	12,70	15,50	4,76	1,20	5,16	◆◆◆◆	Roughing
032569	DNMG150412E-4T	NL300	12,70	15,50	4,76	1,20	5,16	◆◆◆◆◆	Roughing
032570	DNMG150412E-4T	NL400	12,70	15,50	4,76	1,20	5,16	◆◆◆◆	Roughing
032571	DNMG150412E-4T	NL920	12,70	15,50	4,76	1,20	5,16	◆◆◆◆◆	Roughing
032572	DNMG150604E-4T	NL250	12,70	15,50	6,35	0,40	5,16	◆◆◆◆	Roughing
032573	DNMG150604E-4T	NL300	12,70	15,50	6,35	0,40	5,16	◆◆◆◆◆	Roughing
032574	DNMG150604E-4T	NL400	12,70	15,50	6,35	0,40	5,16	◆◆◆◆	Roughing
032575	DNMG150604E-4T	NL920	12,70	15,50	6,35	0,40	5,16	◆◆◆◆◆	Roughing
032576	DNMG150608E-4T	NL250	12,70	15,50	6,35	0,80	5,16	◆◆◆◆	Roughing
032577	DNMG150608E-4T	NL300	12,70	15,50	6,35	0,80	5,16	◆◆◆◆◆	Roughing
032578	DNMG150608E-4T	NL400	12,70	15,50	6,35	0,80	5,16	◆◆◆◆	Roughing
032579	DNMG150608E-4T	NL920	12,70	15,50	6,35	0,80	5,16	◆◆◆◆◆	Roughing

For Toolholders External: see pages 85 - 87 | Internal: see pages 88 - 89

Material Guide – Key to Recommended Inserts

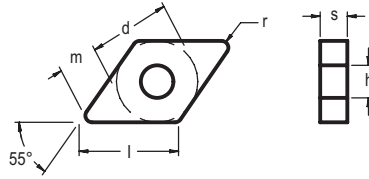
Material Designation

◆ P Unalloyed Steels
 ◆ P Alloyed Steels
 ◆ M Stainless Steels
 ◆ M PH Stainless
 ◆ K Cast Irons
 ◆ N Aluminum & Alloys
 ◆ S High Temp. Alloys
 ◆ H Hard Materials

D Style

Turning Inserts

DNMG 4T Geometry



EDP	ISO Description	Grade	Dimensions (mm)					Material	Application
			d	l	s	r _e	h		
032580	DNMG150612E-4T	NL250	12,70	15,50	6,35	1,20	5,16		Roughing
032581	DNMG150612E-4T	NL300	12,70	15,50	6,35	1,20	5,16		Roughing
032582	DNMG150612E-4T	NL400	12,70	15,50	6,35	1,20	5,16		Roughing
032583	DNMG150612E-4T	NL920	12,70	15,50	6,35	1,20	5,16		Roughing
032584	DNMG190608E-4T	NL250	15,88	19,40	6,35	0,80	6,35		Roughing
032585	DNMG190608E-4T	NL300	15,88	19,40	6,35	0,80	6,35		Roughing
032586	DNMG190608E-4T	NL400	15,88	19,40	6,35	0,80	6,35		Roughing
032587	DNMG190608E-4T	NL920	15,88	19,40	6,35	0,80	6,35		Roughing
032588	DNMG190612E-4T	NL250	15,88	19,40	6,35	1,20	6,35		Roughing
032589	DNMG190612E-4T	NL300	15,88	19,40	6,35	1,20	6,35		Roughing
032590	DNMG190612E-4T	NL400	15,88	19,40	6,35	1,20	6,35		Roughing
032591	DNMG190612E-4T	NL920	15,88	19,40	6,35	1,20	6,35		Roughing

For Toolholders External: see pages 85 - 87 | Internal: see pages 88 - 89

Material Guide – Key to Recommended Inserts

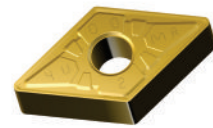
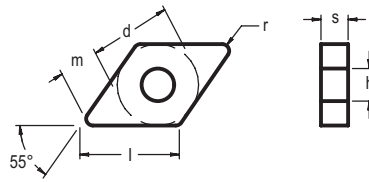
Material Designation

P Unalloyed Steels
 P Alloyed Steels
 M Stainless Steels
 M PH Stainless
 K Cast Irons
 N Aluminum & Alloys
 S High Temp. Alloys
 H Hard Materials

D Style

Turning Inserts

DNMG 4U Geometry



EDP	ISO Description	Grade	Dimensions (mm)					Material	Application
			d	l	s	r _e	h		
032592	DNMG150408E-4U	NL200	12,70	15,50	4,76	0,80	5,16		Roughing
032593	DNMG150412E-4U	NL200	12,70	15,50	4,76	1,20	5,16		Roughing
032594	DNMG150608E-4U	NL200	12,70	15,50	6,35	0,80	5,16		Roughing
032595	DNMG150612E-4U	NL200	12,70	15,50	6,35	1,20	5,16		Roughing

For Toolholders External: see pages 85 - 87 | Internal: see pages 88 - 89

Material Guide – Key to Recommended Inserts

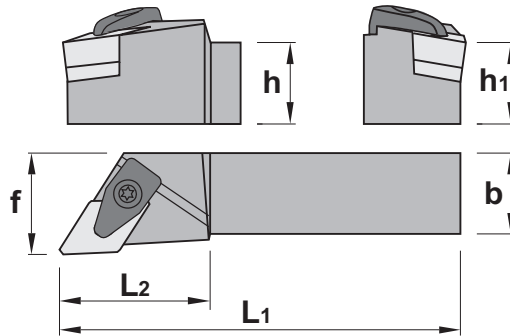
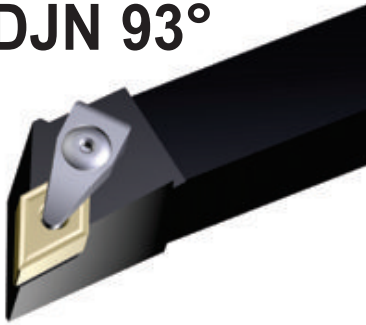
Material Designation

P Unalloyed Steels
 P Alloyed Steels
 M Stainless Steels
 M PH Stainless
 K Cast Irons
 N Aluminum & Alloys
 S High Temp. Alloys
 H Hard Materials

D Style

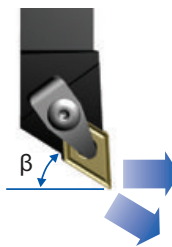
External Toolholders

DDJN 93°



DDJN LH & RH External Square Shank Toolholders

EDP	Item Description	Hand	Insert Sizes	Dimensions (mm)				
				h = h ₁	b	f	L ₁	L ₂
033306	DDJNL 2020 K 11	LH	DN_1104	20	20	25	125	34
033307	DDJNL 2525 M11	LH	DN_1104	25	25	32	150	34
033308	DDJNR 2020 K11	RH	DN_1104	20	20	25	125	34
033309	DDJNR 2525 M11	RH	DN_1104	25	25	32	150	34
033310	DDJNL 2020 K 15	LH	DN_1506	20	20	25	125	38
033311	DDJNL 2525 M15	LH	DN_1506	25	25	32	150	38
033312	DDJNL 3232 P15	LH	DN_1506	32	32	40	170	38
033313	DDJNR 2020 K15	RH	DN_1506	20	20	25	125	38
033314	DDJNR 2525 M15	RH	DN_1506	25	25	32	150	38
033315	DDJNR 3232 P15	RH	DN_1506	32	32	40	170	38



D Style External Toolholder
for Negative Inserts:
DN_1104 & DN_1506
Application: Turn and Profile
Axial Approach 93°
Axial -6,25
Radial -6,75
Profiling Clearance Angle $\beta = 29^\circ$
RH Holder Shown

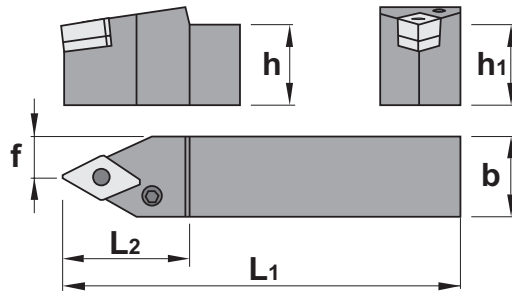
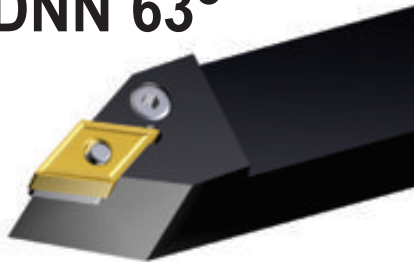
DDJNL/R Spare Parts

Item Description	Clamp Screw EDP	Clamp EDP	Clamp Spring EDP	Anvil EDP	Anvil Screw EDP	Clamp Anvil Screw Key						
DDJNL/R 2020 K11	033711	1695	033709	DC2708	033720	4294	034496	IDSN322	033718	1764	018286	KH5003
DDJNL/R 2525 M11	033710	1696	033707	DC2712	033719	4295	001689	IDSN433	033716	1766	018287	KH5004
DDJNL/R 2020 K15												
DDJNL/R 2525 M15												
DDJNL/R 3232 P15												

D Style

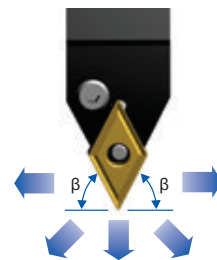
External Toolholders

PDNN 63°



PDNN External Square Shank Toolholders

EDP	Item Description	Hand	Insert Sizes	Dimensions (mm)				
				h = h ₁	b	f	L ₁	L ₂
017140	PDNN R/L/N 2020 K15	Neutral	DN_1506	20	20	10	125	34
017142	PDNN R/L/N 2525 M15	Neutral	DN_1506	25	25	12,5	150	34
017144	PDNN R/L/N 3232 P15	Neutral	DN_1506	32	32	16	170	34

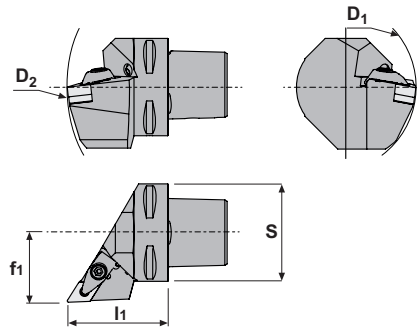


P Style External Toolholder
for Negative Inserts: DN_1506
Application: External Plunge, Turn & Profile
Axial Approach 63°
Axial -8°
Radial -2,5°
Profiling Clearance Angle $\beta = 59.5^\circ$
Neutral Holder Shown

PDNN Spare Parts

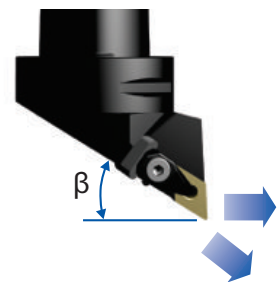
Item Description	Lever EDP	Lever Screw EDP	Anvil EDP	Anvil Clip EDP	Clip Punch EDP	Key EDP						
PDNN R/L/N 2020 K15	017444	PL8415	017499	PLS1638	017459	PA3715	017453	PC4112	028054	PCP0012	018286	KH5003
PDNN R/L/N 2525 M15												
PDNN R/L/N 3232 P15												

DDJN 93°



DDJN LH & RH External PSC Toolholders

EDP	Item Description	Hand	Insert Sizes	Dimensions (mm)				
				S	D1	D2	f1	l1
033697	C5-50-DDJNL35060-15	LH	DN_1506	50	110	165	35	60
033698	C5-50-DDJNR35060-15	RH	DN_1506	50	110	165	35	60
033699	C6-63-DDJNL45065-15	LH	DN_1506	63	110	190	45	65
033700	C6-63-DDJNR45065-15	RH	DN_1506	63	110	190	45	65



D Style External Toolholder
for Negative Inserts:
DN_1506
Application: External Profile Turn O/D
Approach 93
Axial -6°
Radial -7°
Profiling Clearance Angle $\beta=27^\circ$
RH Holder Shown

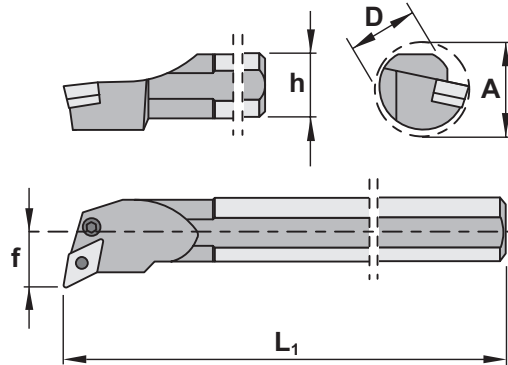
DDJNL/R Spare Parts

Item Description	Clamp EDP	Clamp Screw EDP	Anvil EDP	Anvil Screw EDP	Clamp Spring EDP	Screw Key EDP						
C5-50-DDJNL/R 35060-15	033707	2712	033710	1696	033713	IDSN432	033716	1766	033719	4295	018287	KH5004
C6-63-DDJNL/R 45065-15												

D Style

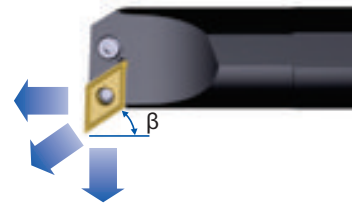
Internal Boring Bars

A..PDUN 93°



A..PDUN LH & RH Internal Boring Bars

EDP	Item Description	Hand	Insert Sizes	Dimensions (mm)					
				Min Bore Ø A	ØD	f	L ₁	h	Through Coolant
033334	A25R PDUNL 11	LH	DN_1104	31	25	17	200	23	
033335	A25R PDUNR 11	RH	DN_1104	31	25	17	200	23	
033336	A32S PDUNL 15	LH	DN_1506	39	32	22	250	30	
033337	A40T PDUNL 15	LH	DN_1506	48	40	27	300	37	
033338	A32S PDUNR 15	RH	DN_1506	39	32	22	250	30	
033339	A40T PDUNR 15	RH	DN_1506	48	40	27	300	37	



P Style Boring Bar
for Negative Inserts:
DN_1104 & DN_1506
Application: Bore and profile
Axial Approach 93°
Axial -6°
Radial -14°
Profiling Clearance Angle $\beta = 29^\circ$
RH Bar Shown

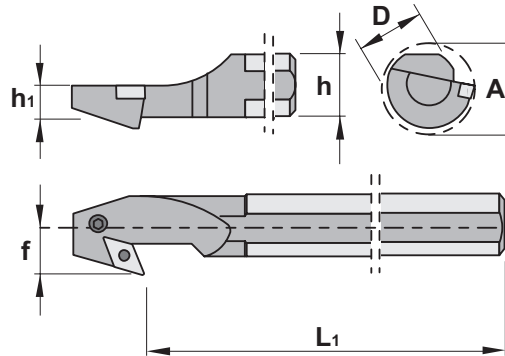
A..PDUNL/R Spare Parts

Item Description	Lever EDP	Lever Screw EDP	Anvil EDP	Anvil Clip EDP	Clip Punch EDP	Key EDP						
A25R PDUNL/R 11	017442	PL8009	017447	PLS1606	028375	PA3711	000000	PC4109	028053	PCP0009	018285	KH5025
A32S PDUNL/R 15	017444	PL8415	022625	PLS1648	017459	PA3715	017453	PC4112	028054	PCP0012	018286	KH5003
A40T PDUNL/R 15												

D Style

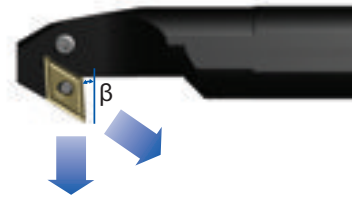
Internal Boring Bars

S..PDUN 93°-EX



S..PDUN LH & RH Internal Boring Bars

EDP	Item Description	Hand	Insert Sizes	Dimensions (mm)						
				Min Bore Ø A	ØD	f	L1	h	h1	Through Coolant
033346	S32U PDUNL 15-EX	LH	DN_1506	39	32	22	350	30	15	
033347	S40V PDUNL 15-EX	LH	DN_1506	48	40	27	400	37	18,5	
033348	S32U PDUNR 15-EX	RH	DN_1506	39	32	22	350	30	15	
033349	S40V PDUNR 15-EX	RH	DN_1506	48	40	27	400	37	18,5	



P Style Internal Boring Bar
 Negative Inserts: DN_1506
 Application: Internal Back Boring & Profiling
 Axial Approach 93°
 Profiling Clearance Angle $\beta = 29^\circ$
 RH Bar Shown

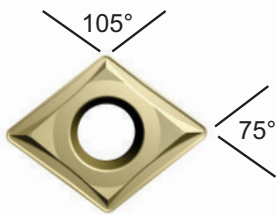
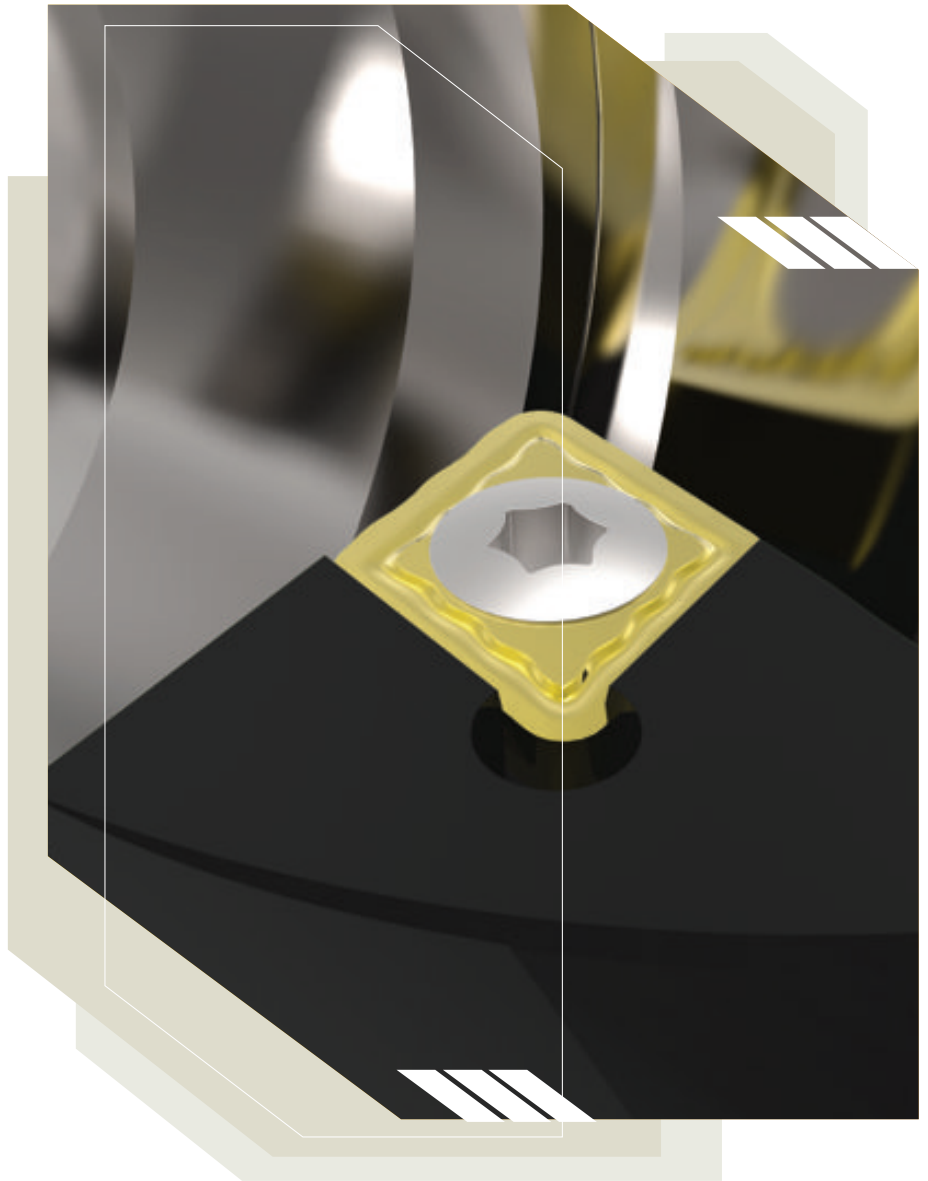
S..PDUNL/R -EX Spare Parts

Item Description	Lever EDP	Lever Screw EDP	Anvil EDP	Anvil Clip EDP	Clip Punch EDP	Key EDP
S32U PDUNL/R 15-EX	017444	PL8415	022625 PLS1648	-	-	018286 KH5003
S40V PDUNL/R 15-EX			017499 PLS1638	017459 PA3715	017453 PC4112	

ATI Stellram's Posicut® range of positive inserts and holders, along with the Poismatic® range for small part machining for medical and watchmaker components.

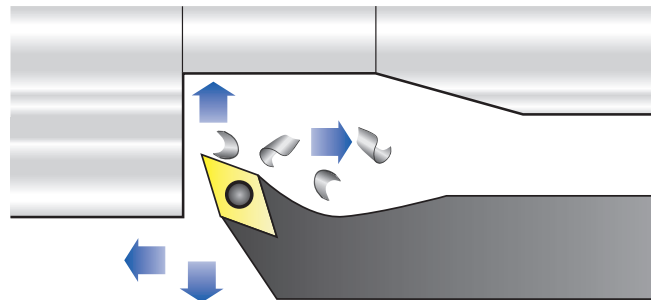
The "E" Style Program, developed exclusively by ATI Stellram:

With the 75° inclusive cutting angle this gives the "E" inserts an advantage over the "C" style inserts, allowing for greater radial clearance between the work piece and insert for profiling and chip evacuation. Also improves insert location with a more secure pocket design whilst not compromising insert edge strength.



ATI Stellram Posicut™
The worlds first, for screw-on inserts

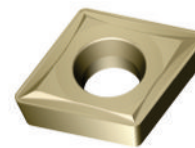
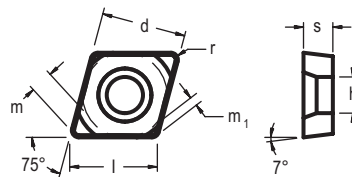
"E" Style Inserts in combination with the Stellram Boring Bar's give greater radial clearance, and with the improved design of Insert and Boring Bar, allows for greater profiling capability and chip evacuation.



E Style

Turning Inserts

ECMT -73 Geometry



EDP	ISO Description	Grade	Dimensions (mm)					Material	Application
			d	l	s	r _e	h		
034429	ECMT09T304E-73	NL300	9,52	9,85	3,97	0,40	4,40		Medium
034456	ECMT09T308E-73	NL300	9,52	9,85	3,97	0,80	4,40		Medium
032596	ECMT12T304E-73	SP4019	12,00	12,40	3,97	0,40	5,40		Medium
032598	ECMT12T304E-73	NL300	12,00	12,40	3,97	0,40	5,40		Medium
032599	ECMT12T304E-73	NL920	12,00	12,40	3,97	0,40	5,40		Medium
032296	ECMT12T308E-73	SP4019	12,00	12,40	3,97	0,80	5,40		Medium
032600	ECMT12T308E-73	NL300	12,00	12,40	3,97	0,80	5,40		Medium
032601	ECMT12T308E-73	NL920	12,00	12,40	3,97	0,80	5,40		Medium
032602	ECMT12T312E-73	NL300	12,00	12,40	3,97	1,20	5,40		Medium
032603	ECMT12T312E-73	NL920	12,00	12,40	3,97	1,20	5,40		Medium
032604	ECMT16M608E-73	NL300	15,88	16,40	6,00	0,80	6,40		Medium
032605	ECMT16M608E-73	NL920	15,88	16,40	6,00	0,80	6,40		Medium
032606	ECMT16M612E-73	NL300	15,88	16,40	6,00	1,20	6,40		Medium
032607	ECMT16M612E-73	NL920	15,88	16,40	6,00	1,20	6,40		Medium

For Toolholders External: see pages 97 - 102 | Internal: see pages 103 - 105

Material Guide – Key to Recommended Inserts

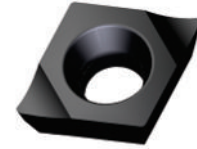
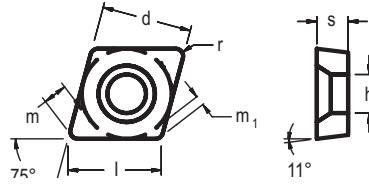
Material Designation

P Unalloyed Steels
 P Alloyed Steels
 M Stainless Steels
 M PH Stainless
 K Cast Irons
 N Aluminum & Alloys
 S High Temp. Alloys
 H Hard Materials

E Style

Turning Inserts

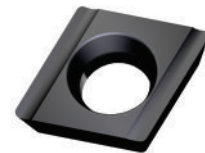
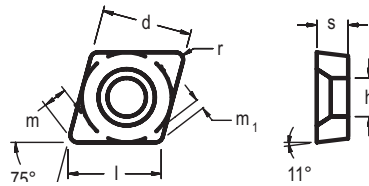
EPEX -15 Geometry



EDP	ISO Description	Grade	Dimensions (mm)					Material	Application
			d	l	s	r _e	h		
022212	EPEX040202F-15	GH1	4,76	4,93	2,38	0,20	2,30	◆	Finishing
032608	EPEX040202F-15	SP4019	4,76	4,93	2,38	0,20	2,30	◆◆◆◆	Finishing
032609	EPEX060202F-15	GH1	6,35	6,54	2,38	0,20	2,80	◆	Finishing
032610	EPEX060202F-15	SP4019	6,35	6,54	2,38	0,20	2,80	◆◆◆◆	Finishing

For Toolholders External: see pages 97 - 102 | Internal: see pages 103 - 105

EPEX



EDP	ISO Description	Grade	Dimensions (mm)					Material	Application
			d	l	s	r _e	h		
032611	EPEX060202FL	SP4019	6,35	6,54	2,38	0,20	2,80	◆◆◆	Medium
032612	EPEX060202FR	SP4019	6,35	6,54	2,38	0,20	2,80	◆◆◆	Medium
017378	EPEX060202FL	GH1	6,35	6,54	2,38	0,20	2,80	◆	Medium
018118	EPEX060202FR	GH1	6,35	6,54	2,38	0,20	2,80	◆	Medium
032613	EPEX060204FL	SP4019	6,35	6,54	2,38	0,40	2,80	◆◆◆	Medium
034460	EPEX060204FR	SP4019	6,35	6,54	2,38	0,40	2,80	◆◆◆	Medium
017280	EPEX060204FL	GH1	6,35	6,54	2,38	0,40	2,80	◆	Medium
017387	EPEX060204FR	GH1	6,35	6,54	2,38	0,40	2,80	◆	Medium

For Toolholders External: see pages 97 - 102 | Internal: see pages 103 - 105

Material Guide – Key to Recommended Inserts

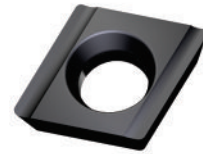
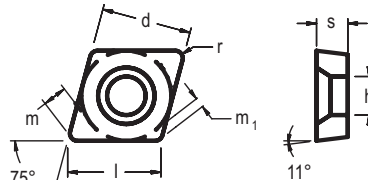
Material Designation

◆ P Unalloyed Steels
 ◆ P Alloyed Steels
 ◆ M Stainless Steels
 ◆ M PH Stainless
 ◆ K Cast Irons
 ◆ N Aluminum & Alloys
 ◆ S High Temp. Alloys
 ◆ H Hard Materials

E Style

Turning Inserts

EPEX



EDP	ISO Description	Grade	Dimensions (mm)					Material	Application
			d	l	s	r _e	h		
034592	EPEX08M3005FL	SP4019	8.00	8.20	3.00	0.05	4.20	◆◆◆	Medium
034593	EPEX08M3005FR	SP4019	8.00	8.20	3.00	0.05	4.20	◆◆◆	Medium
034594	EPEX08M3005FL	GH1	8.00	8.20	3.00	0.05	4.20	◆	Medium
034595	EPEX08M3005FR	GH1	8.00	8.20	3.00	0.05	4.20	◆	Medium
032310	EPEX08M301FL	SP4019	8.00	8.20	3.00	0.10	4.20	◆◆◆	Medium
032618	EPEX08M301FR	SP4019	8.00	8.20	3.00	0.10	4.20	◆◆◆	Medium
032619	EPEX08M301FL	GH1	8.00	8.20	3.00	0.10	4.20	◆	Medium
032620	EPEX08M301FR	GH1	8.00	8.20	3.00	0.10	4.20	◆	Medium
032306	EPEX08M302FL	SP4019	8.00	8.20	3.00	0.20	4.20	◆◆◆	Medium
032304	EPEX08M302FR	SP4019	8.00	8.20	3.00	0.20	4.20	◆◆◆	Medium
017853	EPEX08M302FL	GH1	8.00	8.20	3.00	0.20	4.20	◆	Medium
017854	EPEX08M302FR	GH1	8.00	8.20	3.00	0.20	4.20	◆	Medium
032312	EPEX08M304FL	SP4019	8.00	8.20	3.00	0.40	4.20	◆◆◆	Medium
032311	EPEX08M304FR	SP4019	8.00	8.20	3.00	0.40	4.20	◆◆◆	Medium

For Toolholders External: see pages 129 - 135 | Internal: see pages 136 - 139

Material Guide – Key to Recommended Inserts

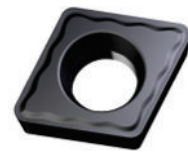
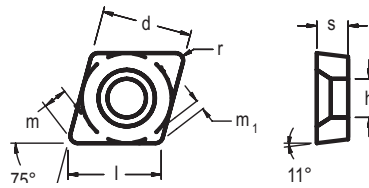
Material Designation

◆ P Unalloyed Steels
 ◆ P Alloyed Steels
 ◆ M Stainless Steels
 ◆ M PH Stainless
 ◆ K Cast Irons
 ◆ N Aluminum & Alloys
 ◆ S High Temp. Alloys
 ◆ H Hard Materials

E Style

Turning Inserts

EPGT -62 Geometry



EDP	ISO Description	Grade	Dimensions (mm)					Material	Application
			d	l	s	r _e	h		
031612	EPGT040201E-62	SP4019	4,76	4,93	2,38	0,10	2,30		Finishing
030585	EPGT040202E-62	SP4019	4,76	4,93	2,38	0,20	2,30		Finishing
030586	EPGT040204E-62	SP4019	4,76	4,93	2,38	0,40	2,30		Finishing
030587	EPGT060202E-62	SP4019	6,35	6,54	2,38	0,20	2,80		Finishing
030588	EPGT060204E-62	SP4019	6,35	6,54	2,38	0,40	2,80		Finishing
030590	EPGT08M301E-62	SP4019	8,00	8,20	3,00	0,10	4,20		Finishing
030591	EPGT08M302E-62	SP4019	8,00	8,20	3,00	0,20	4,20		Finishing
030592	EPGT08M304E-62	SP4019	8,00	8,20	3,00	0,40	4,20		Finishing
030593	EPGT08M308E-62	SP4019	8,00	8,20	3,00	0,80	4,20		Finishing
031403	EPGX08M3005E-62	SP4019	8,00	8,20	3,00	0,05	4,20		Finishing

For Toolholders External: see pages 97 - 102 | Internal: see pages 103 - 105

Material Guide – Key to Recommended Inserts

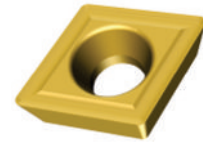
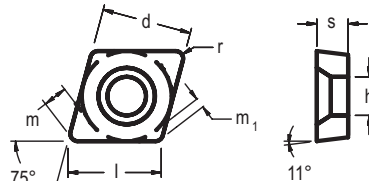
Material Designation

P Unalloyed Steels
 P Alloyed Steels
 M Stainless Steels
 M PH Stainless
 K Cast Irons
 N Aluminum & Alloys
 S High Temp. Alloys
 H Hard Materials

E Style

Turning Inserts

EPMT



EDP	ISO Description	Grade	Dimensions (mm)					Material	Application
			d	l	s	r _e	h		
032299	EPMT060202E	SP4019	6,35	6,54	2,38	0,20	2,80	◆◆◆◆	Medium
032622	EPMT060202E	NL300	6,35	6,54	2,38	0,20	2,80	◆◆◆◆	Medium
018135	EPMT060204E	GH1	6,35	6,54	2,38	0,40	2,80	◆	Medium
032274	EPMT060204E	SP4019	6,35	6,54	2,38	0,40	2,80	◆◆◆◆	Medium
032623	EPMT060204E	NL300	6,35	6,54	2,38	0,40	2,80	◆◆◆◆	Medium
034464	EPMT060204E	NL920	6,35	6,54	2,38	0,40	2,80	◆◆◆◆	Medium
018142	EPMT08M302E	GH1	8,00	8,20	3,00	0,20	4,20	◆	Medium
032286	EPMT08M302E	SP4019	8,00	8,20	3,00	0,20	4,20	◆◆◆◆	Medium
032624	EPMT08M302E	NL300	8,00	8,20	3,00	0,20	4,20	◆◆◆◆	Medium
017335	EPMT08M304E	GH1	8,00	8,20	3,00	0,40	4,20	◆	Medium
032275	EPMT08M304E	SP4019	8,00	8,20	3,00	0,40	4,20	◆◆◆◆	Medium
032625	EPMT08M304E	NL300	8,00	8,20	3,00	0,40	4,20	◆◆◆◆	Medium
032629	EPMT08M304E	NL920	8,00	8,20	3,00	0,40	4,20	◆◆◆◆	Medium
018156	EPMT08M308E	GH1	8,00	8,20	3,00	0,80	4,20	◆	Medium
032290	EPMT08M308E	SP4019	8,00	8,20	3,00	0,80	4,20	◆◆◆◆	Medium
032626	EPMT08M308E	NL300	8,00	8,20	3,00	0,80	4,20	◆◆◆◆	Medium
034590	EPMT08M308E	NL920	8,00	8,20	3,00	0,80	4,20	◆◆◆◆	Medium

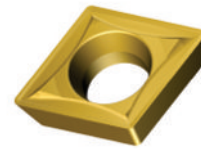
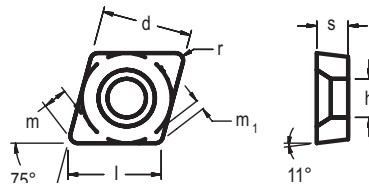
For Toolholders External: see pages 97 - 102 | Internal: see pages 103 - 105

Material Guide – Key to Recommended Inserts

Material Designation

◆ P Unalloyed Steels
 ◆ P Alloyed Steels
 ◆ M Stainless Steels
 ◆ M PH Stainless
 ◆ K Cast Irons
 ◆ N Aluminum & Alloys
 ◆ S High Temp. Alloys
 ◆ H Hard Materials

EPMT -73 Geometry



EDP	ISO Description	Grade	Dimensions (mm)					Material	Application
			d	l	s	r _e	h		
032279	EPMT08M302E-73	SP4019	8,00	8,20	3,00	0,20	4,20		Medium
032627	EPMT08M302E-73	NL300	8,00	8,20	3,00	0,20	4,20		Medium
032280	EPMT08M304E-73	SP4019	8,00	8,20	3,00	0,40	4,20		Medium
032628	EPMT08M304E-73	NL300	8,00	8,20	3,00	0,40	4,20		Medium
032629	EPMT08M304E-73	NL920	8,00	8,20	3,00	0,40	4,20		Medium
032287	EPMT08M308E-73	SP4019	8,00	8,20	3,00	0,80	4,20		Medium
032630	EPMT08M308E-73	NL300	8,00	8,20	3,00	0,80	4,20		Medium
032631	EPMT08M308E-73	NL920	8,00	8,20	3,00	0,80	4,20		Medium

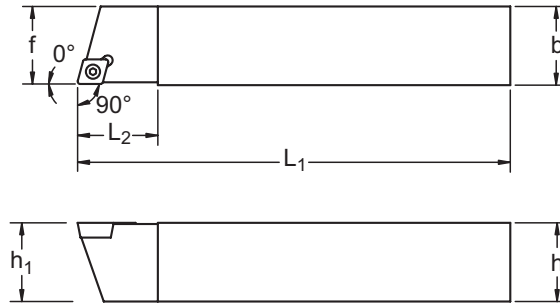
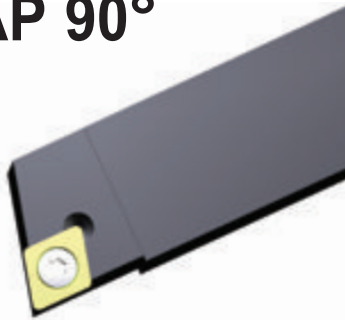
For Toolholders External: see pages 97 - 102 | Internal: see pages 103 - 105

Material Guide – Key to Recommended Inserts

Material Designation

Unalloyed Steels
 Alloyed Steels
 Stainless Steels
 PH Stainless
 Cast Irons
 Aluminum & Alloys
 High Temp. Alloys
 Hard Materials

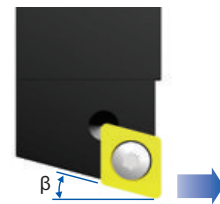
SEAP 90°



Inserts - EPGT08M3 & EPMT08M3





SEAP LH & RH External Square Shank Toolholders

EDP	Item Description	Hand	Insert Sizes	Dimensions (mm)				
				h = h ₁	b	f	L ₁	L ₂
018024	SEAPL 1010 M08	LH	EP_08M3	10	10	10	150	16
018025	SEAPL 1212 M08	LH	EP_08M3	12	12	12	150	16
025044	SEAPL 1616 M08	LH	EP_08M3	16	16	16	150	16
025046	SEAPL 2020 K08	LH	EP_08M3	20	20	20	125	16
018027	SEAPR 1010 M08	RH	EP_08M3	10	10	10	150	16
018028	SEAPR 1212 M08	RH	EP_08M3	12	12	12	150	16
025043	SEAPR 1616 M08	RH	EP_08M3	16	16	16	150	16
025045	SEAPR 2020 K08	RH	EP_08M3	20	20	20	125	16

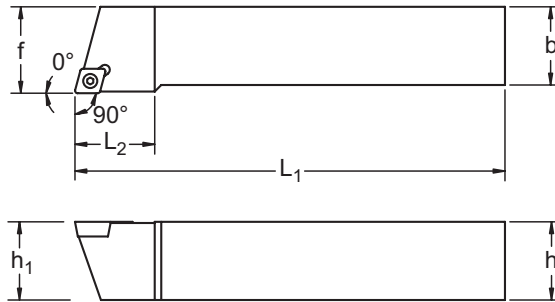
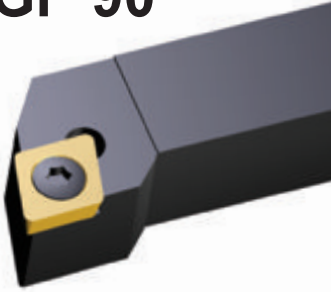


S Style External Toolholder
for Positive Inserts: EP_08M3
Application: Face, Turning and Profile
Approach 90°
Axial: 0°
Radial 0°
Profiling Clearance Angle $\beta = 12^\circ$
RH Holder Shown

SEAPL/R Spare Parts

Item Description	Insert Screw EDP		Insert Key EDP		Anvil EDP		Anvil Screw EDP	
SEAPL/R 1010 E06	017032	A3006T	013214	T9	-	-	-	-
SEAPL/R 1212 F09								
SEAPL/R 1616 H09								
SEAPL/R 2020 K09								

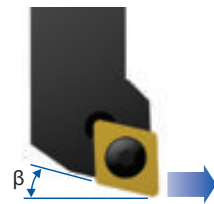
SEGP 90°



Inserts - EPGT08M3 & EPMT08M3





SEGP LH & RH External Square Shank Toolholders

EDP	Item Description	Hand	Insert Sizes	Dimensions (mm)				
				h = h ₁	b	f	L ₁	L ₂
018087	SEGPL 0808 F08	LH	EP_08M3	8	8	11	80	14
017987	SEGPL 1010 F08	LH	EP_08M3	10	10	12	80	14
018077	SEGPL 1212 F08	LH	EP_08M3	12	12	16	80	16
018078	SEGPR 0808 F08	RH	EP_08M3	8	8	11	80	14
018079	SEGPR 1010 F08	RH	EP_08M3	10	10	12	80	14
018080	SEGPR 1212 F08	RH	EP_08M3	12	12	16	80	16

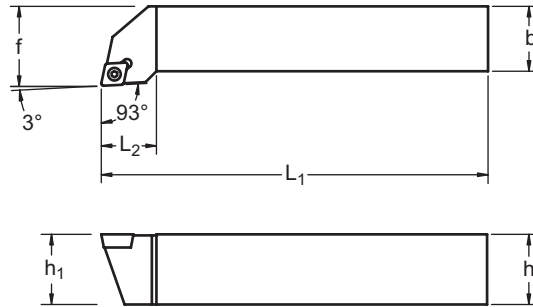
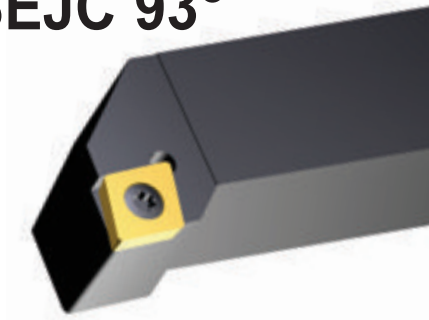


S Style External Toolholder
for Positive Inserts: EP_08M3
Application: Face, Turning and Profile
Approach 90°
Axial: 0°
Radial 0°
Profiling Clearance Angle $\beta = 12^\circ$
RH Holder Shown

SEGPL/R Spare Parts

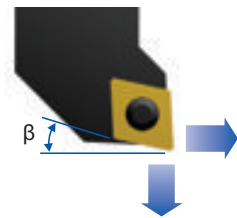
Item Description	Insert Screw EDP		Insert Key EDP		Anvil EDP		Anvil Screw EDP	
SEGPL/R 0808 F08	017032	A3006T	013214	T9	-	-	-	-
SEGPL/R 1010 F08								
SEGPL/R 1212 F08								

SEJC 93°







Inserts - EPMT16M6

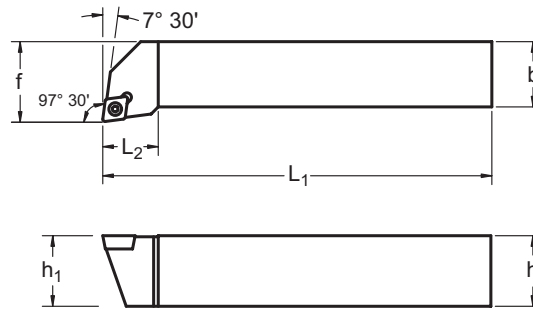
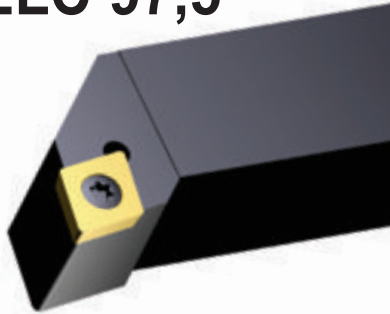
SEJC LH & RH External Square Shank Toolholders								
EDP	Item Description	Hand	Insert Sizes	Dimensions (mm)				
				h = h ₁	b	f	L ₁	L ₂
028581	SEJCL 2525 M16	LH	EC_16M6	25	25	32	150	28
028582	SEJCR 2525 M16	RH	EC_16M6	25	25	32	150	28



S Style External Toolholder
for Positive Inserts: EC_16M6
Application: Face, Turning and Profile
Approach 93°
Axial: 0°
Radial 0°
Profilling Clearance Angle $\beta = 9^\circ$
RH Holder Shown

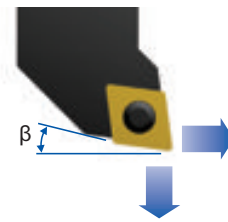
SEJCL/R Spare Parts (mm)								
Item Description	Insert Screw EDP		Insert Key EDP		Anvil EDP		Anvil Screw EDP	
SEJCL/R 2525 M16	023081	A5025T	015241	T20	-	-	-	-

SELC 97,5°







Inserts - ECMT12T3

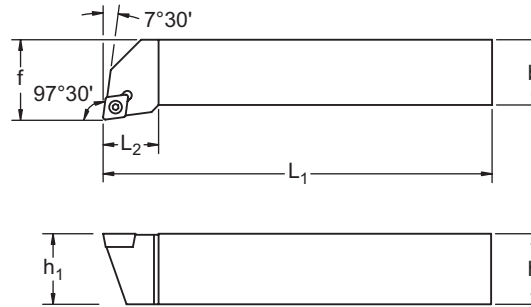
SELC LH & RH External Square Shank Toolholders								
EDP	Item Description	Hand	Insert Sizes	Dimensions (mm)				
				h = h ₁	b	f	L ₁	L ₂
018082	SELCL 2020 K12	LH	EC_12T3	20	20	25	125	22
018083	SELCL 2525 M12	LH	EC_12T3	25	25	32	150	28
018085	SELCR 2020 K12	RH	EC_12T3	20	20	25	125	22
018086	SELCR 2525 M12	RH	EC_12T3	25	25	32	150	28



S Style External Toolholder
 for Positive Inserts: EC_12T3
 Application: Face, Turning and Profile
 Approach 97,5°
 Axial: 0°
 Radial 0°
 Profiling Clearance Angle $\beta = 4,5^\circ$
 RH Holder Shown

SELCL/R Spare Parts								
Item Description	Insert Screw EDP		Insert Key EDP		Anvil EDP		Anvil Screw EDP	
SELCL/R 2020 K12	034500	1540	034577	K5517	029091	SA3712	028739	SAS1760
SELCL/R 2525 M12								

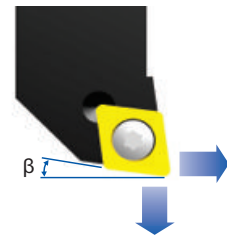
SELP 97,5°



Inserts - EPGT08M3 & EPMT08M3





SELP LH & RH External Square Shank Toolholders

EDP	Item Description	Hand	Insert Sizes	Dimensions (mm)				
				h = h ₁	b	f	L ₁	L ₂
018089	SELPL 1010 F08	LH	EP_08M3	10	10	12	80	14
018090	SELPL 1212 F08	LH	EP_08M3	12	12	16	80	16
018091	SELPL 1616 H08	LH	EP_08M3	16	16	20	100	18
018092	SELPL 2020 K08	LH	EP_08M3	20	20	25	125	22
018093	SELPL 2525 M08	LH	EP_08M3	25	25	32	150	28
018094	SELPR 1010 F08	RH	EP_08M3	10	10	12	80	14
018095	SELPR 1212 F08	RH	EP_08M3	12	12	16	80	16
018096	SELPR 1616 H08	RH	EP_08M3	16	16	20	100	18
018097	SELPR 2020 K08	RH	EP_08M3	20	20	25	125	22
018098	SELPR 2525 M08	RH	EP_08M3	25	25	32	150	28

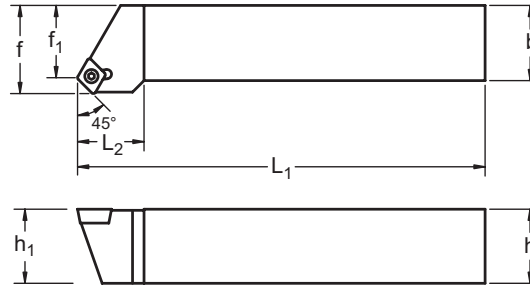


S Style External Toolholder
for Positive Inserts: EP_08M3
Application: Face, Turning and Profile
Approach 97,5°
Axial: 0°
Radial 0°
Profiling Clearance Angle $\beta = 4,5^\circ$
RH Holder Shown

SELPL/R Spare Parts

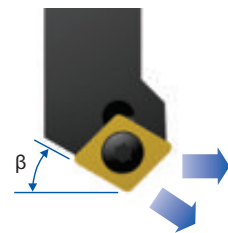
Item Description	Insert Screw EDP		Insert Key EDP		Anvil EDP		Anvil Screw EDP	
SELPL/R 1010 F08	017032	A3006T	013214	T9	-	-	-	-
SELPL/R 1212 F08								
SELPL/R 1616 H08								
SELPL/R 2020 K08								
SELPL/R 2525 M08								

SESP 45°







Inserts - EPGT08M3 & EPMT8M3

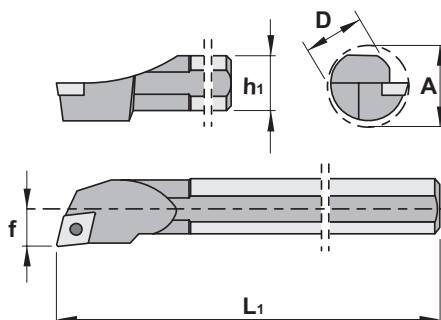
SESP LH & RH External Square Shank Toolholders								
EDP	Item Description	Hand	Insert Sizes	Dimensions (mm)				
				h = h ₁	b	f	L ₁	L ₂
018099	SESPL 1010 F08	LH	EP_08M3	10	10	13,6	80	14
018100	SESPL 1212 F08	LH	EP_08M3	12	12	16	80	16
018101	SESPR 1010 F08	RH	EP_08M3	10	10	13,6	80	14
018102	SESPR 1212 F08	RH	EP_08M3	12	12	16	80	16



S Style External Toolholder
 Positive Inserts: EP_08M3
 Application: Turning and Profile
 Approach 45°
 Axial: 0°
 Radial 0°
 Profiling Clearance Angle $\beta = 34^\circ$
 RH Holder Shown

SESPL/R Spare Parts								
Item Description	Insert Screw EDP		Insert Key EDP		Anvil EDP		Anvil Screw EDP	
SESPL/R 1010 F08	017032	A3006T	013214	T9	-	-	-	-
SESPL/R 1212 F08								

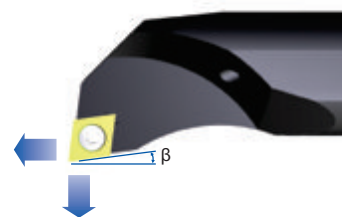
A.. SELP 97,5°



Inserts - EPEX0402, EPGT0402, EPEX0602, EPGT0602, EPMT0602, EPEX08M3, EPGT08M3 and EPMT8M3

A.. SELP LH & RH Internal Boring Bars

EDP	Item Description	Hand	Insert Sizes	Dimensions (mm)					Through Coolant
				Min Bore Ø A	ØD	f	L1	h1	
018408	S06F SELPL 04	LH	EP_0402	8	6	4	80	4,2	
018397	A08H SELPL 04	LH	EP_0402	11	8	6	100	4	
018322	S06F SELPR 04	RH	EP_0402	8	6	4	80	4,2	
018315	A08H SELPR 04	RH	EP_0402	11	8	6	100	4	
018398	A08H SELPL 06	LH	EP_0602	11	8	6	100	4	
018399	A10K SELPL 06	LH	EP_0602	13	10	7	125	5	
018316	A08H SELPR 06	RH	EP_0602	11	8	6	100	4	
018401	A10K SELPR 06	RH	EP_0602	13	10	7	125	5	
018400	A10K SELPL 08	LH	EP_08M3	13	10	7	125	5	
018318	A12K SELPL 08	LH	EP_08M3	16	12	9	125	6	
018320	A16M SELPL 08	LH	EP_08M3	20	16	11	150	8	
018402	A20Q SELPL 08	LH	EP_08M3	24	20	13	180	10	
018404	A25R SELPL 08	LH	EP_08M3	31	25	17	200	12,5	
018317	A10K SELPR 08	RH	EP_08M3	13	10	7	125	5	
018319	A12K SELPR 08	RH	EP_08M3	16	12	9	125	6	
018321	A16M SELPR 08	RH	EP_08M3	20	16	11	150	8	
018403	A20Q SELPR 08	RH	EP_08M3	24	20	13	180	10	
018405	A25R SELPR 08	RH	EP_08M3	31	25	17	200	12,5	

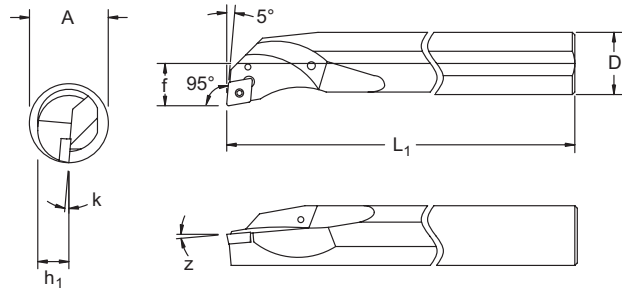


S Style Boring Bar for Positive Inserts:
EP_0402, EP_0602, and EP_08M3
Application: Facing and I/D part profiling
Approach 97,5°
Axial 5°
Radial 3° - 5°
Profiling Clearance Angle $\beta = 0^\circ$
RH Bar Shown

A.. SELPL/R Spare Part

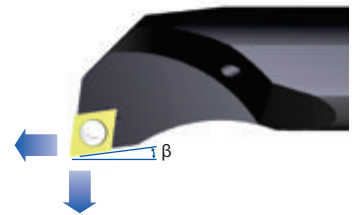
Item Description	Insert Screw EDP		Insert Key EDP		Anvil EDP		Anvil Screw EDP	
S06F SELPL/R 04	015059	F2004T	018487	T6	-	-	-	-
A08H SELPL/R 04								
A/D08H SELPL/R 06	015059	F2505T	018488	T7	-	-	-	-
A10K SELPL/R 06								
A/D10K SELPL/R 08	017032	A3006T	013214	T9	-	-	-	-
A/D12K SELPL/R 08								
A/D16M SELPL/R 08								
A/D20Q SELPL/R 08								
A/D25R SELPL/R 08								

D.. SELP 97,5° Anti-Vibration Bars



D.. SELP LH & RH Internal Boring Bars

EDP	Item Description	Hand	Insert Sizes	Dimensions (mm)					
				Min Bore Ø A	ØD	f	L1	h1	Through Coolant
023135	D08H SELPR 06	RH	EP_0602	11	8	6	100	4	
023137	D10K SELPR 08	RH	EP_08M3	13	10	7	125	5	
023139	D12K SELPR 08	RH	EP_08M3	16	12	9	125	6	
023141	D16M SELPR 08	RH	EP_08M3	20	16	11	150	8	
023143	D20Q SELPR 08	RH	EP_08M3	24	20	13	180	10	

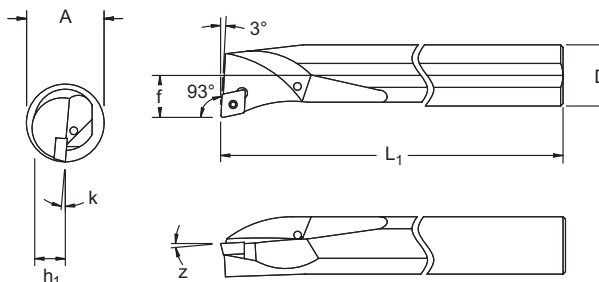


S Style Boring Bar
for Positive Inserts:
EP_0402, EP_0602, and EP_08M3
Application: Facing and I/D part profiling
Approach 97,5°
Axial 5°
Radial 3° - 5°
Profiling Clearance Angle $\beta = 0^\circ$
RH Bar Shown

A.. SELPL/R Spare Parts

Item Description	Insert Screw EDP		Insert Key EDP		Anvil EDP		Anvil Screw EDP	
S06F SELPL/R 04	015059	F2004T	018487	T6	-	-	-	-
A08H SELPL/R 04								
A/D08H SELPL/R 06	015059	F2505T	018488	T7	-	-	-	-
A10K SELPL/R 06								
A/D10K SELPL/R 08	017032	A3006T	013214	T9	-	-	-	-
A/D12K SELPL/R 08								
A/D16M SELPL/R 08								
A/D20Q SELPL/R 08								
A/D25R SELPL/R 08								

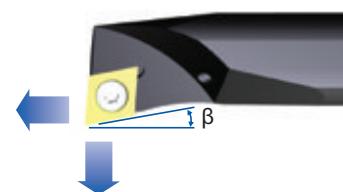
A.. SEUP 93°



Inserts - EPEX0402, EPGT0402, EPEX0602, EPGT0602, EPMT0602, EPEX08M3, EPGT08M3 and EPMT8M3

A.. SEUP LH & RH Internal Boring Bars

EDP	Item Description	Hand	Insert Sizes	Dimensions (mm)					
				Min Bore Ø A	ØD	f	L ₁	h ₁	Through Coolant
018324	S06F SEUPL 04	LH	EP_0402	8	6	4	80	4,2	
018325	S06F SEUPR 04	RH	EP_0402	8	6	4	80	4,2	
018409	A08H SEUPL 06	LH	EP_0602	11	8	6	100	4	
018410	A08H SEUPR 06	RH	EP_0602	11	8	6	100	4	
018412	A10K SEUPL 08	LH	EP_08M3	13	10	7	125	5	
018415	A12K SEUPL 08	LH	EP_08M3	16	12	9	125	6	
018414	A10K SEUPR 08	RH	EP_08M3	13	10	7	125	5	
018323	A12K SEUPR 08	RH	EP_08M3	16	12	9	125	6	



S Style Boring Bar
for Positive Inserts:
EP_0402, EP_0602, and EP_08M3
Application: Facing and I/D part profiling
Approach 93°
Axial 0° - 3°
Radial 5° - 10°
Profiling Clearance Angle $\beta = 9^\circ$
RH Bar Shown

A.. SEUPL/R Spare Parts

Item Description	Insert Screw EDP		Insert Key EDP		Anvil EDP		Anvil Screw EDP	
S06F SEUPL/R 04	015059	F2004T	018487	T6	-	-	-	-
A08H SEUPL/R 06	015059	F2505T	018488	T7	-	-	-	-
A10K SEUPL/R 08	017032	A3006T	013214	T9	-	-	-	-
A12K SEUPL/R 08								

R Style

Turning Inserts

RCGX Ceramics



EDP	ISO Description	Grade	Dimensions (mm)					Material	Application
			d	l	s	r _e	h		
032338	RCGX060400 E010	SA6609	6,35	-	4,76	0,00	-	◆	Roughing
032339	RCGX090700 E010	SA6609	9,52	-	7,94	0,00	-	◆	Roughing
032340	RCGX120700 E010	SA6609	12,70	-	7,94	0,00	-	◆	Roughing

Note: For edge condition refer to Grade page 31

Material Guide – Key to Recommended Inserts

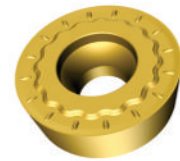
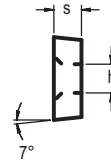
Material Designation

◆ P Unalloyed Steels
 ◆ P Alloyed Steels
 ◆ M Stainless Steels
 ◆ M PH Stainless
 ◆ K Cast Irons
 ◆ N Aluminum & Alloys
 ◆ S High Temp. Alloys
 ◆ H Hard Materials

R Style

Turning Inserts

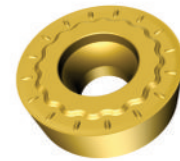
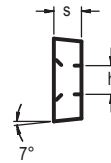
RCMT 2N Geometry



EDP	ISO Description	Grade	Dimensions (mm)					Material	Application
			d	l	s	r _e	h		
032632	RCMT190600E-2N	NL920	19,05	-	6,35	-	6,50		Medium

For Toolholders External: see pages 109 - 110

RCMT



EDP	ISO Description	Grade	Dimensions (mm)					Material	Application
			d	l	s	r _e	h		
032633	RCMT0602M0E	NL250	6,00	-	2,38	-	2,79		Medium
032634	RCMT0602M0E	NL920	6,00	-	2,38	-	2,79		Medium
032635	RCMT10T3M0E	NL250	10,00	-	3,97	-	4,39		Medium
032636	RCMT10T3M0E	NL400	10,00	-	3,97	-	4,39		Medium
032637	RCMT10T3M0E	NL920	10,00	-	3,97	-	4,39		Medium
032638	RCMT1204M0E	NL250	12,00	-	4,76	-	5,50		Medium
032639	RCMT1204M0E	NL400	12,00	-	4,76	-	5,50		Medium
032640	RCMT1204M0E	NL920	12,00	-	4,76	-	5,50		Medium
032641	RCMT1606M0E	NL300	15,88	-	6,35	-	5,51		Roughing
032642	RCMT1606M0E	NL400	15,88	-	6,35	-	5,51		Roughing
032643	RCMT1606M0E	NL920	15,88	-	6,35	-	5,51		Roughing

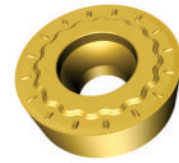
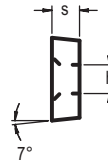
For Toolholders External: see pages 109 - 110

Material Guide – Key to Recommended Inserts

Material Designation

P Unalloyed Steels
 P Alloyed Steels
 M Stainless Steels
 M PH Stainless
 K Cast Irons
 N Aluminum & Alloys
 S High Temp. Alloys
 H Hard Materials

RCMT



EDP	ISO Description	Grade	Dimensions (mm)					Material	Application
			d	l	s	r _e	h		
032644	RCMT2006M0E	NL300	20,00	-	6,35	-	6,50		Roughing
032645	RCMT2006M0E	NL400	20,00	-	6,35	-	6,50		Roughing
032646	RCMT2006M0E	NL920	20,00	-	6,35	-	6,50		Roughing
032647	RCMT2507M0S	NL300	25,00	-	7,94	-	7,95		Roughing
032648	RCMT2507M0S	NL400	25,00	-	7,94	-	7,95		Roughing
032649	RCMT2507M0S	NL920	25,00	-	7,94	-	7,95		Roughing
032650	RCMT3209M0S	NL400	32,00	-	9,53	-	7,95		Roughing
032924	RCMT3209M0S	NL300	32,00	-	9,53	-	7,95		Roughing

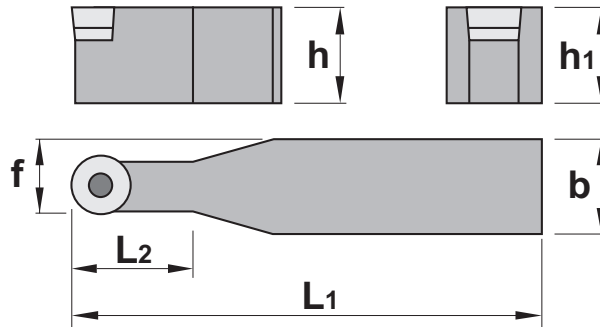
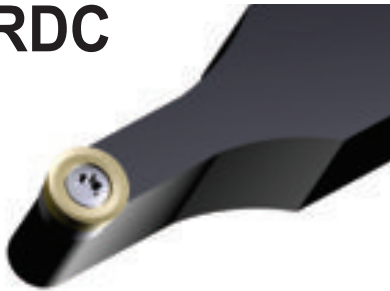
For Toolholders External: see pages 109 - 110

Material Guide – Key to Recommended Inserts

Material Designation

P Unalloyed Steels
 P Alloyed Steels
 M Stainless Steels
 M PH Stainless
 K Cast Irons
 N Aluminum & Alloys
 S High Temp. Alloys
 H Hard Materials

SRDC







Inserts - RCMT0602, 10T3, and 1204

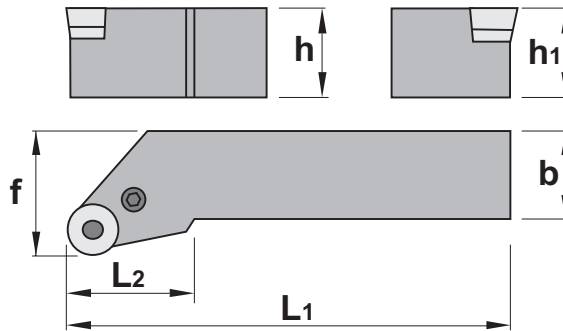
SRDC Neutral External Square Shank Toolholders								
EDP	Item Description	Hand	Insert Sizes	Dimensions (mm)				
				h = h ₁	b	f	L ₁	L ₂
018106	SRDC N 1616 H06	Neutral	RCMT_0602	16	16	11	100	20
018107	SRDC N 2020 K06	Neutral	RCMT_0602	20	20	13	125	20
018108	SRDC N 2020 K10	Neutral	RCMT_10T3	20	20	15	125	22
028594	SRDC N 2525 M10	Neutral	RCMT_10T3	25	25	17,5	150	22
033523	SRDC N 2020 K12	Neutral	RCMT_1204	20	20	16	125	22
018088	SRDC N 2525 M12	Neutral	RCMT_1204	25	25	18,5	150	28



S Style External Toolholder for Positive Inserts:
 RCMT06, 10, and 12
 Application: Turning, Plunge and Profile
 Approach Angle 0°
 Axial 0°
 Radial 0°
 Neutral Holder Shown

SRDC N Spare Parts								
Item Description	Insert Screw EDP		Insert Key EDP		Anvil EDP		Anvil Screw EDP	
SRDC N 1616 H06	015061	F2507T	018488	T7	-	-	-	-
SRDC N 2020 K06								
SRDC N 2020 K10	034497	1335	028475	K5516	034501	SA3811	028478	SAS1750
SRDC N 2525 M10								
SRDC N 2020 K12					034502	SA3814		
SRDC N 2525 M12								

PRSC



Inserts - RCMT10T3, 1204, 1606, 2006, & 2507

PRSC LH & RH External Square Shank Toolholders

EDP	Item Description	Hand	Insert Sizes	Dimensions (mm)				
				h = h ₁	b	f	L ₁	L ₂
033527	PRSC L 2020 K10	LH	RCMT_10T3	20	20	25	125	28
033528	PRSC L 2525 M10	LH	RCMT_10T3	25	25	32	150	28
033529	PRSC R 2020 K10	RH	RCMT_10T3	20	20	25	125	28
033530	PRSC R 2525 M10	RH	RCMT_10T3	25	25	32	150	28
033531	PRSC L 2020 K12	LH	RCMT_1204	20	20	25	125	28
033532	PRSC L 2525 M12	LH	RCMT_1204	25	25	32	150	28
033533	PRSC R 2020 K12	RH	RCMT_1204	20	20	25	125	28
033534	PRSC R 2525 M12	RH	RCMT_1204	25	25	32	150	28
033535	PRSC L 2525 M16	LH	RCMT_1606	25	25	32	150	34
033536	PRSC L 3225 P16	LH	RCMT_1606	32	25	32	170	34
033537	PRSC R 2525 M16	RH	RCMT_1606	25	25	32	150	34
033538	PRSC R 3225 P16	RH	RCMT_1606	32	25	32	170	34
033539	PRSC L 3232 P20	LH	RCMT_2006	32	32	40	170	42
033540	PRSC R 3232 P20	RH	RCMT_2006	32	32	40	170	42
033541	*PRSC L 4040 S25	LH	RCMT_2507	40	40	50	250	48
033542	*PRSC R 4040 S25	RH	RCMT_2507	40	40	50	250	48



P Style External Toolholder for Positive Inserts:
 RCMT10, 12, 16, 20 and 25
 Application: Turning, Plunge and Profile
 Approach Angle 0°
 Axial 0°
 Radial 0°
 RH Holder Shown

* Non Stock Items, subject to extended delivery time

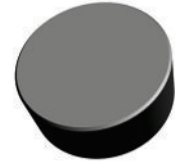
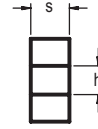
PRSC L/R Spare Parts

Item Description	Lever EDP	Lever Screw EDP	Anvil EDP	Anvil Clip EDP	Clip Punch EDP	Key EDP						
PRSC L/R 2020 K10	034475	PL8110	034480	PLS1705	034484	PA3810	028417	PC4110	028053	PCP0009	028578	KH5002
PRSC L/R 2525 M10												
PRSC L/R 2020 K12	034476	PL8112	017447	PLS1606	034485	PA3812	034504	PC4116	028054	PCP0012	018285	KH5025
PRSC L/R 2525 M12												
PRSC L/R 2525 M16	034477	PL8116	034481	PLS1706	034486	PA3816	028051	PC4115	034505	PCP0015	018286	KH5003
PRSC L/R 3232 P16												
PRSC L/R 3232 P20	034478	PL8120	028458	PLS1708	034487	PA3820	028051	PC4115	034505	PCP0015	018286	KH5003
*PRSC L/R 4040 S25	034479	PL8125	034482	PLS1710	034488	PA3825	017455	PC4119	028056	PCP0019	018287	KH5004

R Style

Turning Inserts

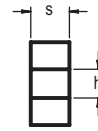
RNGN Ceramics



EDP	ISO Description	Grade	Dimensions (mm)					Material	Application
			d	l	s	r _e	h		
032324	RNGN090300 E010	SA6609	9,52	-	3,18	-	-	◆	Roughing
032325	RNGN090400 E010	SA6609	9,52	-	4,76	-	-	◆	Roughing
032326	RNGN120400 E010	SA6609	12,70	-	4,76	-	-	◆	Roughing
032327	RNGN120700 E010	SA6609	12,70	-	7,94	-	-	◆	Roughing
032328	RNGN120700 E030	SA6609	12,70	-	7,94	-	-	◆	Roughing
032329	RNGN150700 E010	SA6609	15,88	-	7,94	-	-	◆	Roughing
032330	RNGN190700 E010	SA6609	19,05	-	7,94	-	-	◆	Roughing

Note: For edge condition refer to Grade page 31

RNMG 4T Geometry



EDP	ISO Description	Grade	Dimensions (mm)					Material	Application
			d	l	s	r _e	h		
032651	RNMG250900E-4T	NL300	25,00	-	9,53	0,80	5,16	◆◆◆◆	Roughing
032652	RNMG250900E-4T	NL920	25,00	-	9,53	0,80	5,16	◆◆◆◆	Roughing

For Toolholders External: see page 113

Material Guide – Key to Recommended Inserts

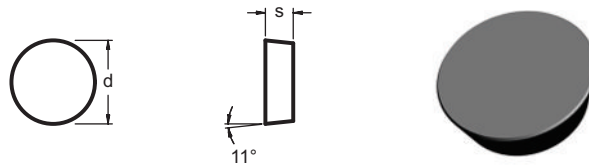
Material Designation

◆ P Unalloyed Steels
 ◆ P Alloyed Steels
 ◆ M Stainless Steels
 ◆ M PH Stainless
 ◆ K Cast Irons
 ◆ N Aluminum & Alloys
 ◆ S High Temp. Alloys
 ◆ H Hard Materials

R Style

Turning Inserts

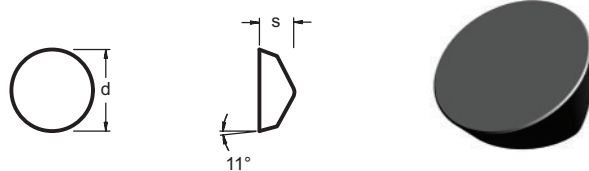
RPGN Ceramics



EDP	ISO Description	Grade	Dimensions (mm)					Material	Application
			d	l	s	r _e	h		
032336	RPGN090300 E010	SA6609	9,52	-	3,18	-	-	◆	Roughing
032337	RPGN120400 E010	SA6609	12,70	-	4,76	-	-	◆	Roughing

Note: For edge condition refer to Grade page 31

RPGX Ceramics



EDP	ISO Description	Grade	Dimensions (mm)					Material	Application
			d	l	s	r _e	h		
032341	RPGX060400 E010	SA6609	6,35	-	4,76	-	-	◆	Roughing
032342	RPGX090700 E010	SA6609	9,52	-	7,94	-	-	◆	Roughing
032343	RPGX120700 E010	SA6609	12,70	-	7,94	-	-	◆	Roughing

Note: For edge condition refer to Grade page 31

Material Guide – Key to Recommended Inserts

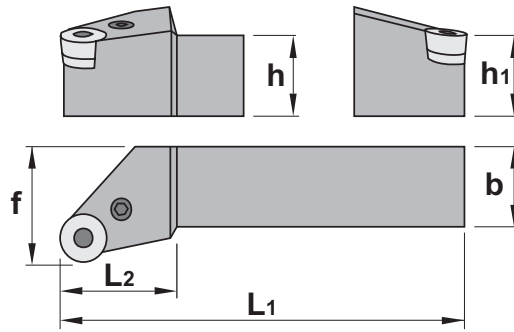
Material Designation

◆ P Unalloyed Steels
 ◆ P Alloyed Steels
 ◆ M Stainless Steels
 ◆ M PH Stainless
 ◆ K Cast Irons
 ◆ N Aluminum & Alloys
 ◆ S High Temp. Alloys
 ◆ H Hard Materials

R Style

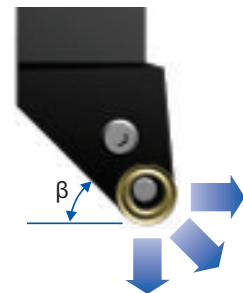
External Toolholders

PRSN



PRSN LH & RH External Square Shank Toolholders

EDP	Item Description	Hand	Insert Sizes	Dimensions (mm)				
				$h = h_1$	b	f	L1	L2
028392	PRSNL 4040 S25	LH	RN_2509	40	40	50	250	45
028396	PRSNR 4040 S25	RH	RN_2509	40	40	50	250	45



P Style External Toolholder
 for Negative Inserts: RN_2509
 Application: Turn, Face Plunge and Profile
 Axial Approach 0°
 Axial -6°
 Radial -6°
 Profiling Clearance Angle $\beta = 42^\circ$
 RH Holder Shown

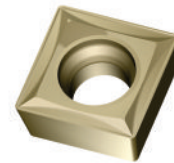
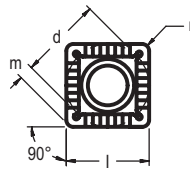
PRSNL/R Spare Parts

Item Description	Lever EDP	Lever Screw EDP	Anvil EDP	Anvil Clip EDP	Clip Punch EDP	Key EDP						
PRSNL/R 4040 S25	028408	PL8025	028409	PLS1612	034489	PA3925	028418	PC4125	034506	PCP0025	018288	KH5005

S Style

Turning Inserts

SCMT -73 Geometry



EDP	ISO Description	Grade	Dimensions (mm)					Material	Application
			d	l	s	r _e	h		
032653	SCMT09T304E-73	SP4019	9,53	9,53	3,97	0,40	4,40		Medium
032654	SCMT09T304E-73	NL300	9,53	9,53	3,97	0,40	4,40		Medium
032655	SCMT09T304E-73	NL920	9,53	9,53	3,97	0,40	4,40		Medium
030484	SCMT09T308E-73	SP4019	9,53	9,53	3,97	0,80	4,40		Medium
032656	SCMT09T308E-73	NL300	9,53	9,53	3,97	0,80	4,40		Medium
032657	SCMT09T308E-73	NL920	9,53	9,53	3,97	0,80	4,40		Medium
032658	SCMT12M504E-73	SP4019	12,70	12,70	5,00	0,40	5,50		Medium
032659	SCMT12M504E-73	NL300	12,70	12,70	5,00	0,40	5,50		Medium
032660	SCMT12M504E-73	NL920	12,70	12,70	5,00	0,40	5,50		Medium
032661	SCMT12M508E-73	SP4019	12,70	12,70	5,00	0,80	5,50		Medium
032662	SCMT12M508E-73	NL300	12,70	12,70	5,00	0,80	5,50		Medium
032663	SCMT12M508E-73	NL920	12,70	12,70	5,00	0,80	5,50		Medium

For Toolholders External: see page 115 | Internal: see page 116

Material Guide – Key to Recommended Inserts

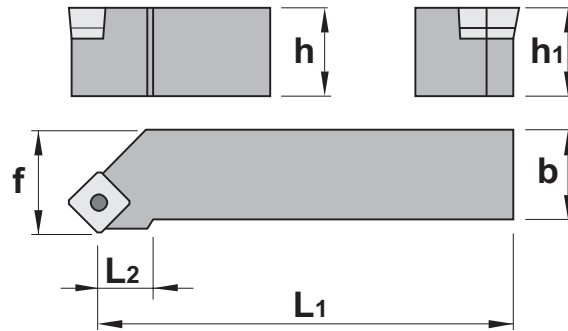
Material Designation

Unalloyed Steels
 Alloyed Steels
 Stainless Steels
 PH Stainless
 Cast Irons
 Aluminum & Alloys
 High Temp. Alloys
 Hard Materials

S Style

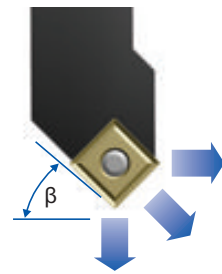
External Toolholders

SSSC 45°







Inserts - SCMT09T3 & 12M5

SSSC LH & RH External Square Shank Toolholders								
EDP	Item Description	Hand	Insert Sizes	Dimensions (mm)				
				h = h ₁	b	f	L ₁	L ₂
028605	SSSCL 1212 F09	LH	SCMT09T3	12	12	16	80	20
028606	SSSCL 1616 H09	LH	SCMT09T3	16	16	20	100	22
028609	SSSCR 1212 F09	RH	SCMT09T3	12	12	16	80	20
028610	SSSCR 1616 H09	RH	SCMT09T3	16	16	20	100	22
028607	SSSCL 2020 K12	LH	SCMT12M5	20	20	25	125	25
028608	SSSCL 2525 M12	LH	SCMT12M5	25	25	32	150	28
028611	SSSCR 2020 K12	RH	SCMT12M5	20	20	25	125	25
028612	SSSCR 2525 M12	RH	SCMT12M5	25	25	32	150	28



S Style External Toolholder
for Positive Inserts
SCMT09T3 & SCMT12M5
Application: Turning, Plunge and Profile
Approach Angle 45°
Axial 0°
Radial 0°
Profiling Clearance Angle $\beta = 42^\circ$
RH Holder Shown

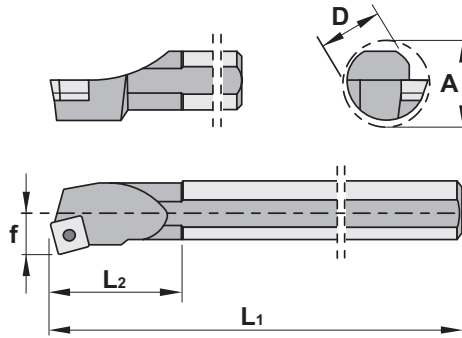
SSSCL/R Spare Parts

Item Description	Insert Screw EDP		Insert Key EDP		Anvil EDP		Anvil Screw EDP	
SSSCL/R 1212 F09	015262	D4010T	015240	T15	-	-	-	-
SSSCL/R 1616 H09								
SSSCL/R 2020 K12	034500	1540	034577	K5517	028738	SA3514	028739	SAS1760
SSSCL/R 2525 M12								

S Style

Internal Boring Bars

SSKC 75°



S.. SSKC LH & RH Internal Boring Bars





EDP	Item Description	Hand	Insert Sizes	Dimensions (mm)					
				Min Bore Ø A	ØD	f	L1	L2	Through Coolant
033549	S16R SSKCL 09	LH	SC_09T3	20	16	11	200	31	⊘
033550	S20S SSKCL 09	LH	SC_09T3	24	20	13	250	36	⊘
033551	S25T SSKCL 09	LH	SC_09T3	31	25	17	300	42	⊘
033552	S16R SSKCR 09	RH	SC_09T3	20	16	11	200	31	⊘
033553	S20S SSKCR 09	RH	SC_09T3	24	20	13	250	36	⊘
033554	S25T SSKCR 09	RH	SC_09T3	31	25	17	300	42	⊘
033555	S32U SSKCL 12	LH	SC_12M5	39	32	22	350	45	⊘
033556	*S40V SSKCL 12	LH	SC_12M5	48	40	27	400	50	⊘
033557	*S50W SSKCL 12	LH	SC_12M5	61	50	35	450	50	⊘
033558	S32U SSKCR 12	RH	SC_12M5	39	32	22	350	45	⊘
033559	*S40V SSKCR 12	RH	SC_12M5	48	40	27	400	50	⊘
033560	*S50W SSKCR 12	RH	SC_12M5	61	50	35	450	50	⊘

* Note these items are on an extended delivery time



S Style Internal Boring Bar for Positive Inserts:
SCMT09T3 & SCMT12M5
Application: I/D Boring
Axial Approach: 75°
Axial 0°
Radial -8°
Profiling Clearance Angle $\beta = 12^\circ$
RH Bar Shown

S.. SSKCL/R Spare Parts

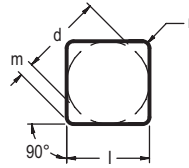
Item Description	Insert Screw EDP		Insert Key EDP		Anvil EDP		Anvil Screw EDP	
S16R SSKCL/R 09	034499	1440	015240	T15	-	-	-	-
S20S SSKCL/R 09	015262	D4010T						
S25T SSKCL/R 09								
S32U SSKCL/R 12	034500	1540	034577	K5517	028738	SA3514	028739	SAS1760
*S40V SSKCL/R 12								
*S50W SSKCL/R 12								

* Note these items are on an extended delivery time

S Style

Turning Inserts

SNGN
Ceramics



EDP	ISO Description	Grade	Dimensions (mm)					Material	Application
			d	l	s	r _e	h		
032331	SNGN120408 E010	SA6609	12,70	12,70	4,76	0,80	-	◆	Roughing
032332	SNGN120412 E010	SA6609	12,70	12,70	4,76	1,20	-	◆	Roughing
032333	SNGN120708 E010	SA6609	12,70	12,70	7,94	0,80	-	◆	Roughing
032334	SNGN120712 E010	SA6609	12,70	12,70	7,94	1,20	-	◆	Roughing
032335	SNGN190616 E010	SA6609	19,05	19,05	6,35	1,60	-	◆	Roughing

Note: For edge condition refer to Grade page 31

Material Guide – Key to Recommended Inserts

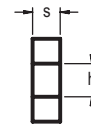
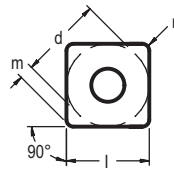
Material Designation

◆ P Unalloyed Steels
 ◆ P Alloyed Steels
 ◆ M Stainless Steels
 ◆ M PH Stainless
 ◆ K Cast Irons
 ◆ N Aluminum & Alloys
 ◆ S High Temp. Alloys
 ◆ H Hard Materials

S Style

Turning Inserts

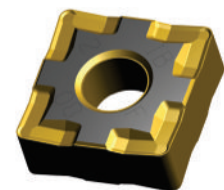
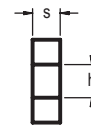
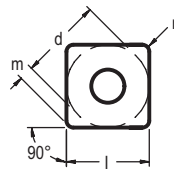
SNMA Flat Top



EDP	ISO Description	Grade	Dimensions (mm)					Material	Application
			d	l	s	r _e	h		
032664	SNMA120408E	NL250	12,70	12,70	4,76	0,80	5,16	◆	Heavy Roughing
032665	SNMA120412E	NL250	12,70	12,70	4,76	1,20	5,16	◆	Heavy Roughing
032666	SNMA120416E	NL250	12,70	12,70	4,76	1,60	5,16	◆	Heavy Roughing
032667	SNMA150612E	NL250	15,88	15,88	6,35	1,20	6,35	◆	Heavy Roughing
032668	SNMA190616E	NL250	19,05	19,05	6,35	1,60	7,94	◆	Heavy Roughing
032669	SNMA190632E	NL250	19,05	19,05	6,35	3,20	7,94	◆	Heavy Roughing

For Toolholders External: see pages 126 - 129 | Internal: see page 130

SNMG 1B Geometry



EDP	ISO Description	Grade	Dimensions (mm)					Material	Application
			d	l	s	r _e	h		
030878	SNMG120408E-1B	SP0819	12,70	12,70	4,76	0,80	5,16	◆◆◆◆◆	Finishing
032670	SNMG120408E-1B	NL250	12,70	12,70	4,76	0,80	5,16	◆◆◆◆◆	Finishing

For Toolholders External: see pages 126 - 129 | Internal: see page 130

Material Guide – Key to Recommended Inserts

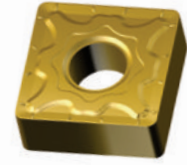
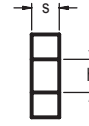
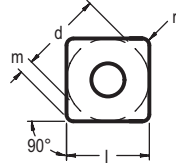
Material Designation

◆ P Unalloyed Steels
 ◆ P Alloyed Steels
 ◆ M Stainless Steels
 ◆ M PH Stainless
 ◆ K Cast Irons
 ◆ N Aluminum & Alloys
 ◆ S High Temp. Alloys
 ◆ H Hard Materials

S Style

Turning Inserts

SNMG 2N Geometry



EDP	ISO Description	Grade	Dimensions (mm)					Material	Application
			d	l	s	r _e	h		
032671	SNMG120408E-2N	NL250	12,70	12,70	4,76	0,80	5,16	◆◆◆◆	Medium
032672	SNMG120408E-2N	NL300	12,70	12,70	4,76	0,80	5,16	◆◆◆◆	Medium
032673	SNMG120408E-2N	NL920	12,70	12,70	4,76	0,80	5,16	◆◆◆◆	Medium
032674	SNMG120412E-2N	NL250	12,70	12,70	4,76	1,20	5,16	◆◆◆◆	Medium
032675	SNMG120412E-2N	NL300	12,70	12,70	4,76	1,20	5,16	◆◆◆◆	Medium
032676	SNMG120412E-2N	NL920	12,70	12,70	4,76	1,20	5,16	◆◆◆◆	Medium
032677	SNMG120416E-2N	NL250	12,70	12,70	4,76	1,60	5,16	◆◆◆◆	Medium
032678	SNMG120416E-2N	NL300	12,70	12,70	4,76	1,60	5,16	◆◆◆◆	Medium
032679	SNMG120416E-2N	NL920	12,70	12,70	4,76	1,60	5,16	◆◆◆◆	Medium
032680	SNMG150608E-2N	NL250	15,88	15,88	6,35	0,80	6,35	◆◆◆◆	Medium
032681	SNMG150608E-2N	NL300	15,88	15,88	6,35	0,80	6,35	◆◆◆◆	Medium
032682	SNMG150608E-2N	NL920	15,88	15,88	6,35	0,80	6,35	◆◆◆◆	Medium
032683	SNMG150612E-2N	NL250	15,88	15,88	6,35	1,20	6,35	◆◆◆◆	Medium
032684	SNMG150612E-2N	NL300	15,88	15,88	6,35	1,20	6,35	◆◆◆◆	Medium
032685	SNMG150612E-2N	NL920	15,88	15,88	6,35	1,20	6,35	◆◆◆◆	Medium
032686	SNMG150616E-2N	NL250	15,88	15,88	6,35	1,60	6,35	◆◆◆◆	Medium
032687	SNMG150616E-2N	NL300	15,88	15,88	6,35	1,60	6,35	◆◆◆◆	Medium
032688	SNMG190612E-2N	NL920	19,05	19,05	6,35	1,20	7,94	◆◆◆◆	Medium
032689	SNMG190616E-2N	NL300	19,05	19,05	6,35	1,60	7,94	◆◆◆◆	Medium
032690	SNMG190616E-2N	NL920	19,05	19,05	6,35	1,60	7,94	◆◆◆◆	Medium

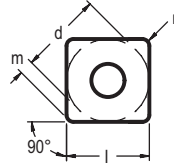
For Toolholders External: see pages 126 - 129 | Internal: see page 130

Material Guide – Key to Recommended Inserts

Material Designation

◆ P Unalloyed Steels
 ◆ P Alloyed Steels
 ◆ M Stainless Steels
 ◆ M PH Stainless
 ◆ K Cast Irons
 ◆ N Aluminum & Alloys
 ◆ S High Temp. Alloys
 ◆ H Hard Materials

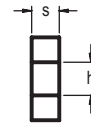
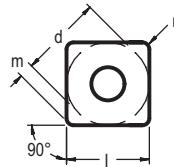
SNMG 3J Geometry



EDP	ISO Description	Grade	Dimensions (mm)					Material	Application
			d	l	s	r _e	h		
032691	SNMG120408E-3J	SP4019	12,70	12,70	4,76	0,80	5,16		Medium
032692	SNMG120412E-3J	SP4019	12,70	12,70	4,76	1,20	5,16		Medium
032693	SNMG120416E-3J	SP4019	12,70	12,70	4,76	1,60	5,16		Medium

For Toolholders External: see pages 126 - 129 | Internal: see page 130

SNMG 4E Geometry



EDP	ISO Description	Grade	Dimensions (mm)					Material	Application
			d	l	s	r _e	h		
031578	SNMG120408E-4E	SP0819	12,70	12,70	4,76	0,80	5,16		Roughing
032694	SNMG120408E-4E	NL400	12,70	12,70	4,76	0,80	5,16		Roughing
031658	SNMG120412E-4E	SP0819	12,70	12,70	4,76	1,20	5,16		Roughing
032695	SNMG120412E-4E	NL400	12,70	12,70	4,76	1,20	5,16		Roughing
031696	SNMG120416E-4E	SP0819	12,70	12,70	4,76	1,60	5,16		Roughing
032696	SNMG120416E-4E	NL400	12,70	12,70	4,76	1,60	5,16		Roughing

For Toolholders External: see pages 126 - 129 | Internal: see page 130

Material Guide – Key to Recommended Inserts

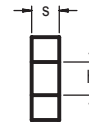
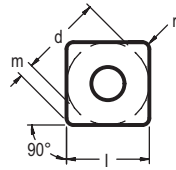
Material Designation

Unalloyed Steels
 Alloyed Steels
 Stainless Steels
 PH Stainless
 Cast Irons
 Aluminum & Alloys
 High Temp. Alloys
 Hard Materials

S Style

Turning Inserts

SNMG 4E Geometry



EDP	ISO Description	Grade	Dimensions (mm)					Material	Application
			d	l	s	r _e	h		
030527	SNMG150608E-4E	SP0819	15,88	15,88	6,35	0,80	6,35	◆◆◆	Medium-Roughing
032697	SNMG150608E-4E	NL400	15,88	15,88	6,35	0,80	6,35	◆◆◆	Medium-Roughing
030528	SNMG150612E-4E	SP0819	15,88	15,88	6,35	1,20	6,35	◆◆◆	Medium-Roughing
032698	SNMG150612E-4E	NL400	15,88	15,88	6,35	1,20	6,35	◆◆◆	Medium-Roughing
030529	SNMG150616E-4E	SP0819	15,88	15,88	6,35	1,60	6,35	◆◆◆	Medium-Roughing
032699	SNMG150616E-4E	NL400	15,88	15,88	6,35	1,60	6,35	◆◆◆	Medium-Roughing
030530	SNMG190608E-4E	SP0819	19,05	19,05	6,35	0,80	7,94	◆◆◆	Medium-Roughing
032700	SNMG190608E-4E	NL400	19,05	19,05	6,35	0,80	7,94	◆◆◆	Medium-Roughing
030531	SNMG190612E-4E	SP0819	19,05	19,05	6,35	1,20	7,94	◆◆◆	Medium-Roughing
032701	SNMG190612E-4E	NL400	19,05	19,05	6,35	1,20	7,94	◆◆◆	Medium-Roughing
032702	SNMG190616E-4E	NL400	19,05	19,05	6,35	1,60	7,94	◆◆◆	Medium-Roughing
030532	SNMG190616E-4E	SP0819	19,05	19,05	6,35	1,60	7,94	◆◆◆	Medium-Roughing
030533	SNMG190624E-4E	SP0819	19,05	19,05	6,35	2,40	7,94	◆◆◆	Medium-Roughing
032703	SNMG190624E-4E	NL400	19,05	19,05	6,35	2,40	7,94	◆◆◆	Medium-Roughing

For Toolholders External: see pages 126 - 129 | Internal: see page 130

Material Guide – Key to Recommended Inserts

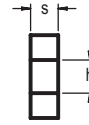
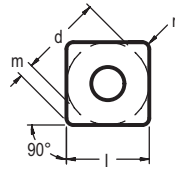
Material Designation

◆ P Unalloyed Steels
 ◆ P Alloyed Steels
 ◆ M Stainless Steels
 ◆ M PH Stainless
 ◆ K Cast Irons
 ◆ N Aluminum & Alloys
 ◆ S High Temp. Alloys
 ◆ H Hard Materials

S Style

Turning Inserts

SNMG 4T Geometry



EDP	ISO Description	Grade	Dimensions (mm)					Material	Application
			d	l	s	r _e	h		
032704	SNMG120404E-4T	NL250	12,70	12,70	4,76	0,40	5,16	◆◆◆◆	Roughing
032705	SNMG120404E-4T	NL300	12,70	12,70	4,76	0,40	5,16	◆◆◆◆	Roughing
032706	SNMG120404E-4T	NL400	12,70	12,70	4,76	0,40	5,16	◆◆◆◆	Roughing
032707	SNMG120404E-4T	NL920	12,70	12,70	4,76	0,40	5,16	◆◆◆◆	Roughing
032708	SNMG120408E-4T	NL250	12,70	12,70	4,76	0,80	5,16	◆◆◆◆	Roughing
032709	SNMG120408E-4T	NL300	12,70	12,70	4,76	0,80	5,16	◆◆◆◆	Roughing
032710	SNMG120408E-4T	NL400	12,70	12,70	4,76	0,80	5,16	◆◆◆◆	Roughing
032711	SNMG120408E-4T	NL920	12,70	12,70	4,76	0,80	5,16	◆◆◆◆	Roughing
032712	SNMG120412E-4T	NL250	12,70	12,70	4,76	1,20	5,16	◆◆◆◆	Roughing
032713	SNMG120412E-4T	NL300	12,70	12,70	4,76	1,20	5,16	◆◆◆◆	Roughing
032714	SNMG120412E-4T	NL400	12,70	12,70	4,76	1,20	5,16	◆◆◆◆	Roughing
032715	SNMG120412E-4T	NL920	12,70	12,70	4,76	1,20	5,16	◆◆◆◆	Roughing
032716	SNMG120416E-4T	NL250	12,70	12,70	4,76	1,60	5,16	◆◆◆◆	Roughing
032717	SNMG120416E-4T	NL300	12,70	12,70	4,76	1,60	5,16	◆◆◆◆	Roughing
032718	SNMG120416E-4T	NL400	12,70	12,70	4,76	1,60	5,16	◆◆◆◆	Roughing
032719	SNMG120416E-4T	NL920	12,70	12,70	4,76	1,60	5,16	◆◆◆◆	Roughing

For Toolholders External: see pages 126 - 129 | Internal: see page 130

Material Guide – Key to Recommended Inserts

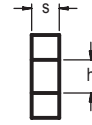
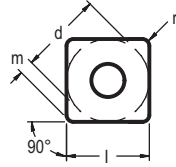
Material Designation

◆ P Unalloyed Steels
 ◆ P Alloyed Steels
 ◆ M Stainless Steels
 ◆ M PH Stainless
 ◆ K Cast Irons
 ◆ N Aluminum & Alloys
 ◆ S High Temp. Alloys
 ◆ H Hard Materials

S Style

Turning Inserts

SNMG 4T Geometry



EDP	ISO Description	Grade	Dimensions (mm)					Material	Application
			d	l	s	r _e	h		
032720	SNMG150608E-4T	NL250	15,88	15,88	6,35	0,80	6,35		Roughing
032721	SNMG150608E-4T	NL300	15,88	15,88	6,35	0,80	6,35		Roughing
032722	SNMG150608E-4T	NL400	15,88	15,88	6,35	0,80	6,35		Roughing
032723	SNMG150608E-4T	NL920	15,88	15,88	6,35	0,80	6,35		Roughing
032724	SNMG150612E-4T	NL250	15,88	15,88	6,35	1,20	6,35		Roughing
032725	SNMG150612E-4T	NL300	15,88	15,88	6,35	1,20	6,35		Roughing
032726	SNMG150612E-4T	NL400	15,88	15,88	6,35	1,20	6,35		Roughing
032727	SNMG150612E-4T	NL920	15,88	15,88	6,35	1,20	6,35		Roughing
032728	SNMG150616E-4T	NL250	15,88	15,88	6,35	1,60	6,35		Roughing
032729	SNMG150616E-4T	NL300	15,88	15,88	6,35	1,60	6,35		Roughing
032730	SNMG150616E-4T	NL400	15,88	15,88	6,35	1,60	6,35		Roughing
032731	SNMG150616E-4T	NL920	15,88	15,88	6,35	1,60	6,35		Roughing

For Toolholders External: see pages 126 - 129 | Internal: see page 130

Material Guide – Key to Recommended Inserts

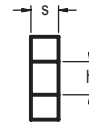
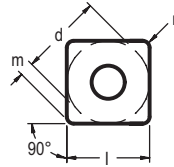
Material Designation

Unalloyed Steels
 Alloyed Steels
 Stainless Steels
 PH Stainless
 Cast Irons
 Aluminum & Alloys
 High Temp. Alloys
 Hard Materials

S Style

Turning Inserts

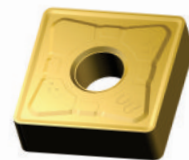
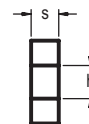
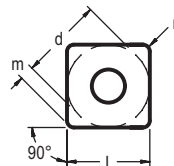
SNMG 4T Geometry



EDP	ISO Description	Grade	Dimensions (mm)					Material	Application
			d	l	s	r _e	h		
032732	SNMG190612E-4T	NL250	19,05	19,05	6,35	1,20	7,94	◆◆◆◆	Roughing
032733	SNMG190612E-4T	NL300	19,05	19,05	6,35	1,20	7,94	◆◆◆◆	Roughing
032734	SNMG190612E-4T	NL400	19,05	19,05	6,35	1,20	7,94	◆◆◆◆	Roughing
032735	SNMG190612E-4T	NL920	19,05	19,05	6,35	1,20	7,94	◆◆◆◆	Roughing
032736	SNMG190616E-4T	NL250	19,05	19,05	6,35	1,60	7,94	◆◆◆◆	Roughing
032737	SNMG190616E-4T	NL300	19,05	19,05	6,35	1,60	7,94	◆◆◆◆	Roughing
032738	SNMG190616E-4T	NL400	19,05	19,05	6,35	1,60	7,94	◆◆◆◆	Roughing
032739	SNMG190616E-4T	NL920	19,05	19,05	6,35	1,60	7,94	◆◆◆◆	Roughing
032740	SNMG250924E-4T	NL300	25,40	25,40	9,53	2,40	9,12	◆◆◆◆	Roughing
032741	SNMG250924E-4T	NL400	25,40	25,40	9,53	2,40	9,12	◆◆◆◆	Roughing
032742	SNMG250924E-4T	NL920	25,40	25,40	9,53	2,40	9,12	◆◆◆◆	Roughing

For Toolholders External: see pages 126 - 129 | Internal: see page 130

SNMG 4U Geometry



EDP	ISO Description	Grade	Dimensions (mm)					Material	Application
			d	l	s	r _e	h		
032743	SNMG120408E-4U	NL200	12,70	12,70	4,76	0,80	5,16	◆◆◆	Roughing
032744	SNMG120412E-4U	NL200	12,70	12,70	4,76	1,20	5,16	◆◆◆	Roughing

For Toolholders External: see pages 126 - 129 | Internal: see page 130

Material Guide – Key to Recommended Inserts

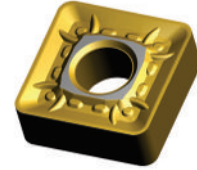
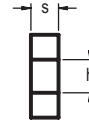
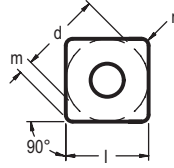
Material Designation

◆ P Unalloyed Steels
 ◆ P Alloyed Steels
 ◆ M Stainless Steels
 ◆ M PH Stainless
 ◆ K Cast Irons
 ◆ N Aluminum & Alloys
 ◆ S High Temp. Alloys
 ◆ H Hard Materials

S Style

Turning Inserts

SNMM 5R Geometry



EDP	ISO Description	Grade	Dimensions (mm)					Material	Application
			d	l	s	r _e	h		
031690	SNMM150612E-5R	NL300	15,88	15,88	6,35	1,20	6,35		Heavy Roughing
031674	SNMM150612E-5R	NL400	15,88	15,88	6,35	1,20	6,35		Heavy Roughing
031691	SNMM150616E-5R	NL300	15,88	15,88	6,35	1,60	6,35		Heavy Roughing
031675	SNMM150616E-5R	NL400	15,88	15,88	6,35	1,60	6,35		Heavy Roughing
031692	SNMM150624E-5R	NL300	15,88	15,88	6,35	2,40	6,35		Heavy Roughing
031676	SNMM150624E-5R	NL400	15,88	15,88	6,35	2,40	6,35		Heavy Roughing
031693	SNMM190612E-5R	NL300	19,05	19,05	6,35	1,20	7,94		Heavy Roughing
031677	SNMM190612E-5R	NL400	19,05	19,05	6,35	1,20	7,94		Heavy Roughing
031694	SNMM190616E-5R	NL300	19,05	19,05	6,35	1,60	7,94		Heavy Roughing
031678	SNMM190616E-5R	NL400	19,05	19,05	6,35	1,60	7,94		Heavy Roughing
031695	SNMM190624E-5R	NL300	19,05	19,05	6,35	2,40	7,94		Heavy Roughing
031679	SNMM190624E-5R	NL400	19,05	19,05	6,35	2,40	7,94		Heavy Roughing
031681	SNMM250924E-5R	NL300	25,40	25,40	9,53	2,40	9,12		Heavy Roughing
032750	SNMM250924E-5R	NL400	25,40	25,40	9,53	2,40	9,12		Heavy Roughing
031680	SNMM250924E-5R	NL920	25,40	25,40	9,53	2,40	9,12		Heavy Roughing

For Toolholders External: see pages 126 - 129 | Internal: see page 130

Material Guide – Key to Recommended Inserts

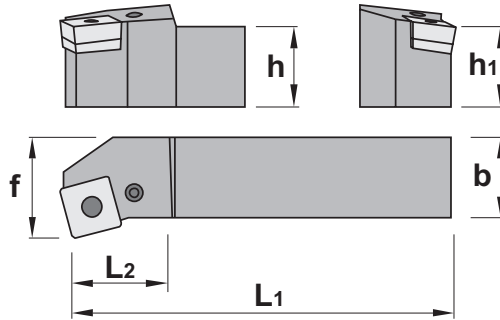
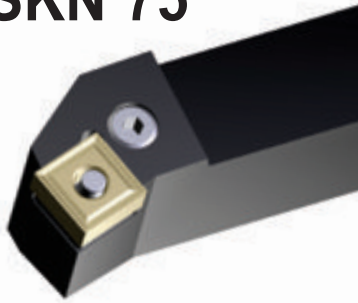
Material Designation

Unalloyed Steels
 Alloyed Steels
 Stainless Steels
 PH Stainless
 Cast Irons
 Aluminum & Alloys
 High Temp. Alloys
 Hard Materials

S Style

External Toolholders

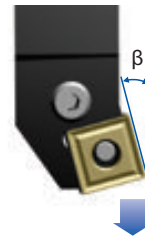
PSKN 75°



PSKN LH & RH External Square Shank Toolholders

EDP	Item Description	Hand	Insert Sizes	Dimensions (mm)				
				h = h ₁	b	f	L ₁	L ₂
017165	PSKNL 2020 K 12	LH	SN_1204	20	20	25	125	28
017167	PSKNL 2525 M12	LH	SN_1204	25	25	32	150	28
017169	PSKNL 3225 P12	LH	SN_1204	32	25	32	170	34
017166	PSKNR 2020 K 12	RH	SN_1204	20	20	25	125	28
017168	PSKNR 2525 M12	RH	SN_1204	25	25	32	150	28
017170	PSKNR 3225 P12	RH	SN_1204	32	25	32	170	34
024735	PSKNL 2525 M15	LH	SN_1506	25	25	32	150	34
028429	PSKNL 3232 P15	LH	SN_1506	32	32	40	170	42
024739	PSKNR 2525 M15	RH	SN_1506	25	25	32	150	34
023289	PSKNR 3232 P15	RH	SN_1506	32	32	40	170	42
024738	*PSKNL 4040 S19	LH	SN_1906	40	40	50	250	45
024741	*PSKNR 4040 S19	RH	SN_1906	40	40	50	250	45
033352	*PSKNL 5050 T25	LH	SN_2507	50	50	60	300	45
033353	*PSKNR 5050 T25	RH	SN_2507	50	50	60	300	45

* Non Stock Items, subject to extended delivery time



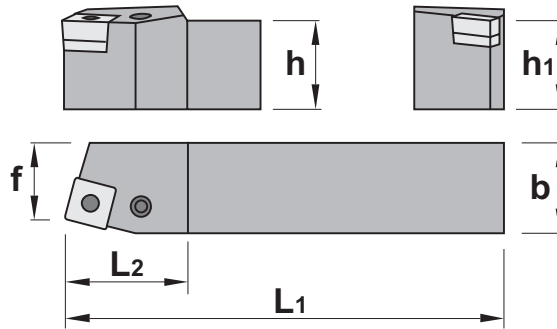
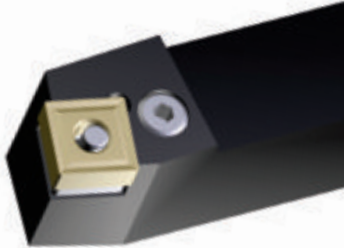
P Style External Toolholder
for Negative Inserts:
SN_1204, SN_1506, SN_1906 & SN_2507
Application: Facing
Axial Approach 75°
Axial -4,25°
Radial -7,25°
Profiling Clearance Angle $\beta = 0^\circ$
RH Holder Shown

PSKNL/R Spare Parts

Item Description	Lever EDP	Lever Screw EDP	Anvil EDP	Anvil Clip EDP	Clip Punch EDP	Key EDP						
PSKNL/R 2020 K 12	017443	8012	017448	1608	017460	PA3512	017453	PC4112	028054	PCP0012	018286	KH5003
PSKNL/R 2525 M12												
PSKNL/R 3225 P12												
PSKNL/R 2525 M15	017445	8016	017450	1618	017461	PA3515	028051	PC4115	034505	PCP0015	018287	KH5004
PSKNL/R 3232 P15												
*PSKNL/R 4040 S19	017446	8019	017451	1610	017462	PA3519	017455	PC4119	028056	PCP0019	018287	KH5004
*PSKNL/R 5050 T25	028408	8025	028409	1612	028416	PA3525	028418	PC4125	034506	PCP0025	018288	KH5005

* Non Stock Items, subject to extended delivery time

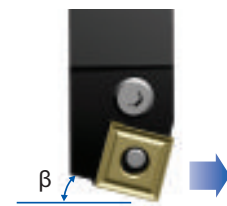
PSBN 75°



PSBN LH & RH External Square Shank Toolholders

EDP	Item Description	Hand	Insert Sizes	Dimensions (mm)				
				h = h ₁	b	f	L ₁	L ₂
017152	PSBNL 2020 K 12	LH	SN_1204	20	20	17	125	28
017154	PSBNL 2525 M12	LH	SN_1204	25	25	22	150	28
028399	PSBNL 3225 P12	LH	SN_1204	32	25	22	170	28
017153	PSBNR 2020 K 12	RH	SN_1204	20	20	17	125	28
017155	PSBNR 2525 M12	RH	SN_1204	25	25	22	150	28
028405	PSBNR 3225 P12	RH	SN_1204	32	25	22	170	28
028400	PSBNL 2525 M15	LH	SN_1506	25	25	22	150	34
028401	PSBNL 3232 P15	LH	SN_1506	32	32	27	170	34
017159	PSBNR 2525 M15	RH	SN_1506	25	25	22	150	34
028406	PSBNR 3232 P15	RH	SN_1506	32	32	27	170	34
018466	*PSBNL 4040 S19	LH	SN_1906	40	40	35	250	48
018467	*PSBNR 4040 S19	RH	SN_1906	40	40	35	250	48
033356	*PSBNL 5050 T25	LH	SN_2507	50	50	43	300	50
033357	*PSBNR 5050 T25	RH	SN_2507	50	50	43	300	50

* Non Stock Items, subject to extended delivery time



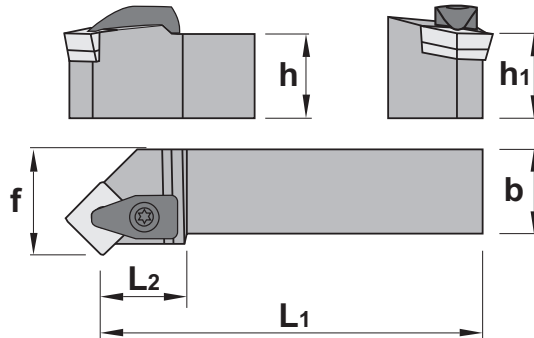
P Style External Toolholder
for Negative Inserts:
SN_1204, SN_1506, SN_1906 & SN_2507
Application: Turn O/D
Axial Approach 75°
Axial -7,25°
Radial -4,25°
Profiling Clearance Angle $\beta = 12^\circ$
RH Holder Shown

PSBNL/R Spare Parts

Item Description	Lever EDP	Lever Screw EDP	Anvil EDP	Anvil Clip EDP	Clip Punch EDP	Key EDP						
PSBNL/R 2020 K 12	017443	PL8012	017448	PLS1608	017460	PA3512	017453	PC4112	028054	PCP0012	018286	KH5003
PSBNL/R 2525 M12												
PSBNL/R 3225 P12												
PSBNL/R 2525 M15	017445	PL8016	017450	PLS1618	017461	PA3515	028051	PC4115	034505	PCP0015	018287	KH5004
PSBNL/R 3232 P15												
PSBNL/R 4040 S19	017446	PL8019	017451	PLS1610	017462	PA3519	017455	PC4119	028056	PCP0019	018287	KH5004
*PSBNL/R 5050 T25	028408	PL8025	028409	PLS1612	028416	PA3525	028418	PC4125	034506	PCP0025	018288	KH5005

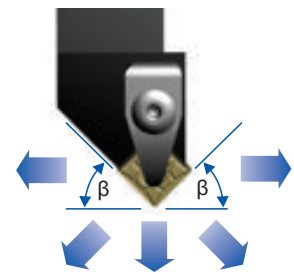
* Non Stock Items, subject to extended delivery time

DSSN 45°



DSSN LH & RH External Square Shank Toolholders

EDP	Item Description	Hand	Insert Sizes	Dimensions (mm)				
				h = h ₁	b	f	L ₁	L ₂
033358	DSSNL 2020 K12	LH	SN_1204	20	20	25	125	37
033359	DSSNL 2525 M12	LH	SN_1204	25	25	32	150	37
033360	DSSNL 3225 P12	LH	SN_1204	32	25	32	170	37
033361	DSSNR 2020 K12	RH	SN_1204	20	20	25	125	37
033362	DSSNR 2525 M12	RH	SN_1204	25	25	32	150	37
033363	DSSNR 3225 P12	RH	SN_1204	32	25	32	170	37
033364	DSSNL 2525 M15	LH	SN_1506	25	25	32	150	36
033365	DSSNL 3232 P15	LH	SN_1506	32	32	40	170	40
033366	DSSNR 2525 M15	RH	SN_1506	25	25	32	150	36
033367	DSSNR 3232 P15	RH	SN_1506	32	32	40	170	40
033368	DSSNL 3232 P19	LH	SN_1906	32	32	40	170	45
033369	*DSSNL 4040 S19	LH	SN_1906	40	40	50	250	45
033370	DSSNR 3232 P19	RH	SN_1906	32	32	40	170	45
033371	*DSSNR 4040 S19	RH	SN_1906	40	40	50	250	45



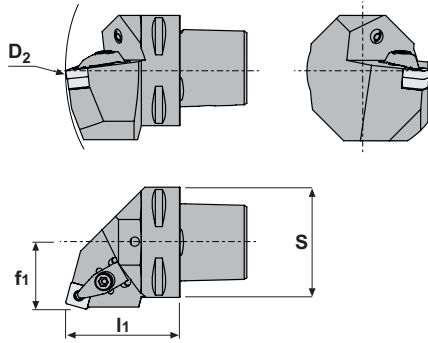
D Style External Toolholder for Negative Inserts:
 SN_1204, SN_1506 & SN_1906
 Application: Turn O/D & Plunge Profile
 Axial Approach 45°
 Axial -5,75°
 Radial -5,75°
 Profiling Clearance Angle $\beta = 42^\circ$
 RH Holder Shown

* Non Stock Items, subject to extended delivery time

DSSNL/R Spare Parts

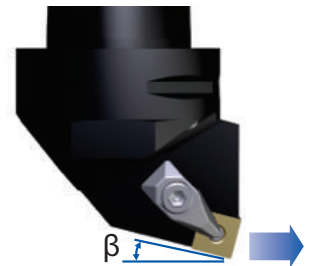
Item Description	Clamp Screw EDP	Clamp EDP	Clamp Spring EDP	Anvil EDP	Anvil Screw EDP	Clamp & Anvil Screw Key				
DSSNL/R 2020 K12	033710	1696	033719	4295	001704	ISSN433	033716	1766	018287	KH5004
DSSNL/R 2525 M12										
DSSNL/R 3225 P12										
DSSNL/R 2525 M15										
DSSNL/R 3232 P15										
DSSNL/R 3232 P19										
DSSNL/R 4040 S19	034495	DC2716	001707	ISSN533	034509	1768				
	033708	DC2719	001709	ISSN633	033717	1770				

DSRN 75°



DSRN LH & RH External PSC Toolholders

EDP	Item Description	Hand	Insert Sizes	Dimensions (mm)				
				S	D1	D2	f1	l1
033705	C6-63-DSRNL35065-12	LH	SN_1204	63	-	190	35	65
033706	C6-63-DSRNR35065-12	RH	SN_1204	63	-	190	35	65



D Style External Toolholder
 for Negative Inserts: SN_1204
 Application: External Face and Turn O/D
 Approach Angle 75°
 Axial -6°
 Radial -6°
 Profiling Clearance Angle $\beta = 12^\circ$
 RH Holder Shown

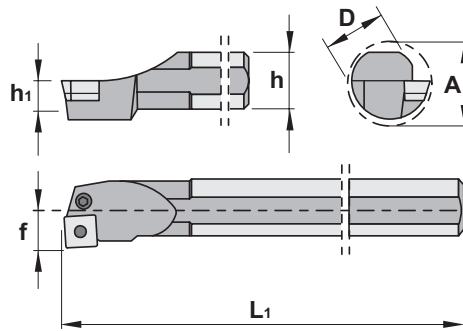
C.. DSRNL/R Spare Parts

Item Description	Clamp EDP	Clamp Screw EDP	Anvil EDP	Anvil Screw EDP	Clamp Spring EDP	Screw Key EDP						
C6-63-DSRNL/R 35065-12	033707	2712	033710	1696	033715	ISSN442	033716	1766	033719	4295	018287	KH5004

S Style

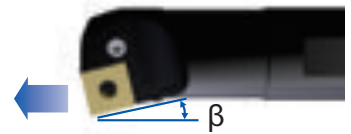
Internal Boring Bars

A..PSKN 75°



A..PSKN LH & RH Internal Boring Bars

EDP	Item Description	Hand	Insert Sizes	Dimensions (mm)						
				Min Bore Ø A	ØD	f	L1	h	h1	Through Coolant
028724	A25R PSKNL 12	LH	SN_1204	31	25	17	200	23	11,5	💧
028725	A32S PSKNL 12	LH	SN_1204	39	32	22	250	30	15,0	💧
028726	A40T PSKNL 12	LH	SN_1204	48	40	27	300	37	18,5	💧
028727	A25R PSKNR 12	RH	SN_1204	31	25	17	200	23	11,5	💧
028728	A32S PSKNR 12	RH	SN_1204	39	32	22	250	30	15,0	💧
028729	A40T PSKNR 12	RH	SN_1204	48	40	27	300	37	18,5	💧



P Style Internal Boring Bar
for Negative Inserts: SN_1204
Application: Boring
Axial Approach 75°
Axial -3°
Radial -11°
Profiling Clearance Angle $\beta = 12^\circ$
RH Bar Shown

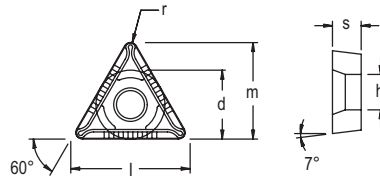
A..PSKNL/R Spare Parts

Item Description	Lever EDP	Lever Screw EDP	Anvil EDP	Anvil Clip EDP	Clip Punch EDP	Key EDP						
A25R PSKNL/R 12	028742	PL8212	028743	PLS1626	-	-	018285	KH5025				
A32S PSKNL/R 12	028047	PL8312	022625	PLS1648	017460	PA3512	017453	PC4112	028054	PCP0012	018286	KH5003
A40T PSKNL/R 12	017443	PL8012	017448	PLA1608								

T Style

Turning Inserts

TCMT -73 Geometry



EDP	ISO Description	Grade	Dimensions (mm)					Material	Application
			d	l	s	r _e	h		
032751	TCMT110202E-73	SP4019	6,35	11,00	2,38	0,20	2,80		Medium
032752	TCMT110202E-73	NL300	6,35	11,00	2,38	0,20	2,80		Medium
032753	TCMT110204E-73	SP4019	6,35	11,00	2,38	0,40	2,80		Medium
032754	TCMT110204E-73	NL300	6,35	11,00	2,38	0,40	2,80		Medium
032755	TCMT110204E-73	NL920	6,35	11,00	2,38	0,40	2,80		Medium
032302	TCMT16T304E-73	SP4019	9,53	16,50	3,97	0,40	4,40		Medium
032756	TCMT16T304E-73	NL300	9,53	16,50	3,97	0,40	4,40		Medium
032757	TCMT16T304E-73	NL920	9,53	16,50	3,97	0,40	4,40		Medium
032294	TCMT16T308E-73	SP4019	9,53	16,50	3,97	0,80	4,40		Medium
032758	TCMT16T308E-73	NL300	9,53	16,50	3,97	0,80	4,40		Medium
032759	TCMT16T308E-73	NL920	9,53	16,50	3,97	0,80	4,40		Medium
032760	TCMT22M508E-73	NL920	12,70	22,00	5,00	0,80	5,50		Medium

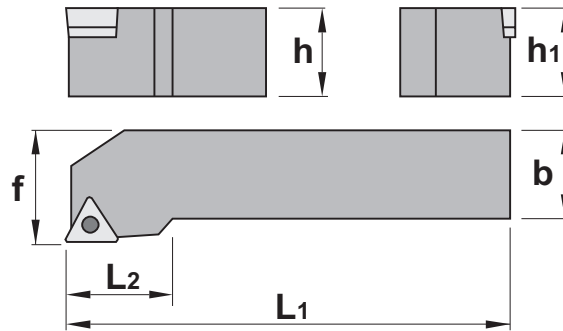
For Toolholders External: see page 132 | Internal: see page 133

Material Guide – Key to Recommended Inserts

Material Designation

Unalloyed Steels
 Alloyed Steels
 Stainless Steels
 PH Stainless
 Cast Irons
 Aluminum & Alloys
 High Temp. Alloys
 Hard Materials

STJC 93°







STJC LH & RH External Square Shank Toolholders

EDP	Item Description	Hand	Insert Sizes	Dimensions (mm)				
				h = h ₁	b	f	L ₁	L ₂
028625	STJCL 1212 F11	LH	TCMT1102	12	12	16	80	16
028626	STJCL 1616 H11	LH	TCMT1102	16	16	20	100	18
028630	STJCR 1212 F11	RH	TCMT1102	12	12	16	80	16
028631	STJCR 1616 H11	RH	TCMT1102	16	16	20	100	18
028627	STJCL 1616 H16	LH	TCMT16T3	16	16	20	100	18
028628	STJCL 2020 K16	LH	TCMT16T3	20	20	25	125	22
028629	STJCL 2525 M16	LH	TCMT16T3	25	25	32	150	28
028632	STJCR 1616 H16	RH	TCMT16T3	16	16	20	100	18
028633	STJCR 2020 K16	RH	TCMT16T3	20	20	25	125	22
028634	STJCR 2525 M16	RH	TCMT16T3	25	25	32	150	28



S Style External Toolholder for Positive Inserts:
 TCMT1102 and TCMT16T3
 Application: O/D Turning
 Approach Angle 93°
 Axial 0°
 Radial 0°
 Profiling Clearance Angle $\beta = 0^\circ$
 RH Holder Shown

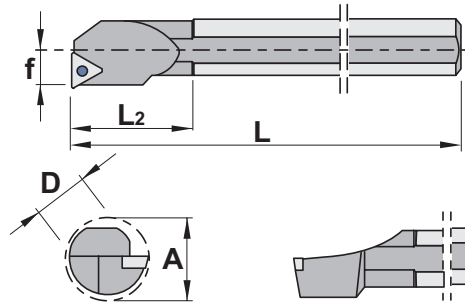
STJCL/R Spare Parts

Item Description	Insert Screw EDP		Insert Key EDP		Anvil EDP		Anvil Screw EDP	
STJCL/R 1212 F11	015061	F2507T	018488	T7	-	-	-	-
STJCL/R 1616 H11								
STJCL/R 1616 H16	034497	1335	028475	K5516	028580	SA3414	028478	SA1750
STJCL/R 2020 K16								
STJCL/R 2525 M16								

T Style

Internal Boring Bars

A..STFC 90°







A.. STFC LH & RH Internal Boring Bars

EDP	Item Description	Hand	Insert Sizes	Dimensions (mm)					
				Min Bore Ø A	ØD	f	L1	L2	Through Coolant
033573	A12K STFCL 11	LH	TCMT1102	16	12	9	125	23	☹
033574	A16M STFCL 11	LH	TCMT1102	20	16	11	150	31	☹
033575	A20Q STFCL 11	LH	TCMT1102	24	20	13	180	36	☹
033576	A12K STFCL 11	RH	TCMT1102	16	12	9	125	23	☹
033577	A16M STFCL 11	RH	TCMT1102	20	16	11	150	31	☹
033578	A20Q STFCL 11	RH	TCMT16T3	24	20	13	180	36	☹
033579	A25R STFCL 16	LH	TCMT16T3	31	25	17	200	42	☹
033580	A32S STFCL 16	LH	TCMT16T3	39	32	22	250	45	☹
033581	A25R STFCL 16	RH	TCMT16T3	31	25	17	200	42	☹
033582	A32S STFCL 16	RH	TCMT16T3	39	32	22	250	45	☹



S Style Internal Boring Bar for Positive Inserts:
 TCMT1102 and TCMT16T3
 Application: I/D Boring
 Axial Approach: 90°
 Axial 0°
 Radial -6°
 Profiling Clearance Angle $\beta = 0^\circ$
 RH Bar Shown

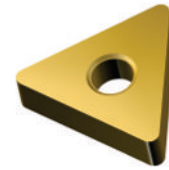
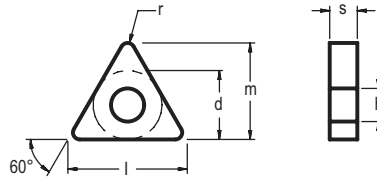
A.. STFCL/R Spare Parts

Item Description	Insert Screw EDP		Insert Key EDP		Anvil EDP		Anvil Screw EDP	
A12K STFCL/R 11	015061	F2507T	018488	T7	-	-	-	-
A16M STFCL/R 11								
A20Q STFCL/R 11								
A25R STFCL/R 16	015262	D4010T	015240	T15	-	-	-	-
A32S STFCL/R 16	034497	1335	028475	K5516	028580	SA3414	028478	SAS1750

T Style

Turning Inserts

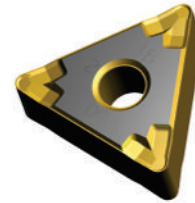
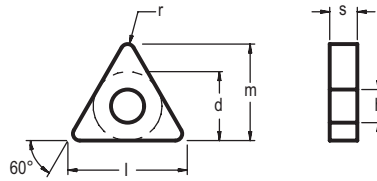
TNMA Flat Top



EDP	ISO Description	Grade	Dimensions (mm)					Material	Application
			d	l	s	r _e	h		
032761	TNMA160408E	NL250	9,53	16,50	4,76	0,80	3,81	◆	Heavy Roughing
032762	TNMA160412E	NL250	9,53	16,50	4,76	1,20	3,81	◆	Heavy Roughing
032763	TNMA220408E	NL250	12,70	22,00	4,76	0,80	5,16	◆	Heavy Roughing
032764	TNMA220412E	NL250	12,70	22,00	4,76	1,20	5,16	◆	Heavy Roughing
032765	TNMA220416E	NL250	12,70	22,00	4,76	1,60	5,16	◆	Heavy Roughing
032766	TNMA270616E	NL250	15,88	27,50	6,35	1,60	6,35	◆	Heavy Roughing

For Toolholders External: see pages 141 - 142 | Internal: see page 143

TNMG 1B Geometry



EDP	ISO Description	Grade	Dimensions (mm)					Material	Application
			d	l	s	r _e	h		
032767	TNMG160404E-1B	NL250	9,53	16,50	4,76	0,40	3,81	◆◆◆◆	Finishing
030879	TNMG160404E-1B	SP0819	9,53	16,50	4,76	0,40	3,81	◆◆◆◆◆	Finishing
032768	TNMG160408E-1B	NL250	9,53	16,50	4,76	0,80	3,81	◆◆◆◆	Finishing
030880	TNMG160408E-1B	SP0819	9,53	16,50	4,76	0,80	3,81	◆◆◆◆◆	Finishing
032769	TNMG160412E-1B	SP0819	9,53	16,50	4,76	1,20	3,81	◆◆◆◆◆	Finishing
032770	TNMG160412E-1B	NL250	9,53	16,50	4,76	1,20	3,81	◆◆◆◆	Finishing

For Toolholders External: see pages 141 - 142 | Internal: see page 143

Material Guide – Key to Recommended Inserts

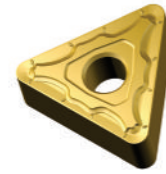
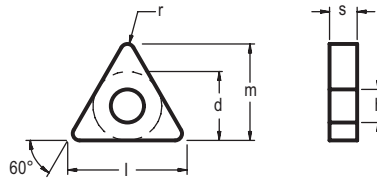
Material Designation

◆ P Unalloyed Steels
 ◆ P Alloyed Steels
 ◆ M Stainless Steels
 ◆ M PH Stainless
 ◆ K Cast Irons
 ◆ N Aluminum & Alloys
 ◆ S High Temp. Alloys
 ◆ H Hard Materials

T Style

Turning Inserts

TNMG 2N Geometry



EDP	ISO Description	Grade	Dimensions (mm)					Material	Application
			d	l	s	r _ε	h		
032771	TNMG160404E-2N	NL250	9,53	16,50	4,76	0,40	3,81	◆◆◆◆	Medium
032772	TNMG160404E-2N	NL300	9,53	16,50	4,76	0,40	3,81	◆◆◆◆	Medium
032773	TNMG160404E-2N	NL920	9,53	16,50	4,76	0,40	3,81	◆◆◆◆	Medium
032774	TNMG160408E-2N	NL250	9,53	16,50	4,76	0,80	3,81	◆◆◆◆	Medium
032775	TNMG160408E-2N	NL300	9,53	16,50	4,76	0,80	3,81	◆◆◆◆	Medium
032776	TNMG160408E-2N	NL920	9,53	16,50	4,76	0,80	3,81	◆◆◆◆	Medium
032777	TNMG160412E-2N	NL250	9,53	16,50	4,76	1,20	3,81	◆◆◆◆	Medium
032778	TNMG160412E-2N	NL300	9,53	16,50	4,76	1,20	3,81	◆◆◆◆	Medium
032779	TNMG160412E-2N	NL920	9,53	16,50	4,76	1,20	3,81	◆◆◆◆	Medium
032780	TNMG220404E-2N	NL250	12,70	22,00	4,76	0,40	5,16	◆◆◆◆	Medium
032781	TNMG220404E-2N	NL300	12,70	22,00	4,76	0,40	5,16	◆◆◆◆	Medium
032782	TNMG220404E-2N	NL920	12,70	22,00	4,76	0,40	5,16	◆◆◆◆	Medium
032783	TNMG220408E-2N	NL250	12,70	22,00	4,76	0,80	5,16	◆◆◆◆	Medium
032784	TNMG220408E-2N	NL300	12,70	22,00	4,76	0,80	5,16	◆◆◆◆	Medium
032785	TNMG220408E-2N	NL920	12,70	22,00	4,76	0,80	5,16	◆◆◆◆	Medium
032786	TNMG220412E-2N	NL250	12,70	22,00	4,76	1,20	5,16	◆◆◆◆	Medium
032787	TNMG220412E-2N	NL300	12,70	22,00	4,76	1,20	5,16	◆◆◆◆	Medium
032788	TNMG220412E-2N	NL920	12,70	22,00	4,76	1,20	5,16	◆◆◆◆	Medium
032789	TNMG270616E-2N	NL920	15,88	27,50	6,35	1,60	6,35	◆◆◆◆	Medium

For Toolholders External: see pages 141 - 142 | Internal: see page 143

Material Guide – Key to Recommended Inserts

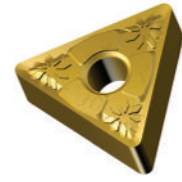
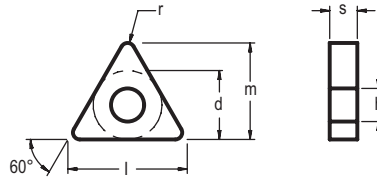
Material Designation

◆ P Unalloyed Steels
 ◆ P Alloyed Steels
 ◆ M Stainless Steels
 ◆ M PH Stainless
 ◆ K Cast Irons
 ◆ N Aluminum & Alloys
 ◆ S High Temp. Alloys
 ◆ H Hard Materials

T Style

Turning Inserts

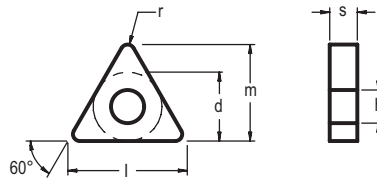
TNMG 3J Geometry



EDP	ISO Description	Grade	Dimensions (mm)					Material	Application
			d	l	s	r _e	h		
032790	TNMG160404E-3J	SP4019	9,53	16,50	4,76	0,40	3,81		Medium
032791	TNMG160408E-3J	SP4019	9,53	16,50	4,76	0,80	3,81		Medium
032792	TNMG160412E-3J	SP4019	9,53	16,50	4,76	1,20	3,81		Medium
032793	TNMG220408E-3J	SP4019	12,70	22,00	4,76	0,80	5,16		Medium
032794	TNMG220412E-3J	SP4019	12,70	22,00	4,76	1,20	5,16		Medium
032795	TNMG220416E-3J	SP4019	12,70	22,00	4,76	1,60	5,16		Medium

For Toolholders External: see pages 141 - 142 | Internal: see page 143

TNMG 4E Geometry



EDP	ISO Description	Grade	Dimensions (mm)					Material	Application
			d	l	s	r _e	h		
030534	TNMG160404E-4E	SP0819	9,53	16,50	4,76	0,40	3,81		Medium-Roughing
032926	TNMG160404E-4E	NL400	9,53	16,50	4,76	0,40	3,81		Medium-Roughing
030535	TNMG160408E-4E	SP0819	9,53	16,50	4,76	0,80	3,81		Medium-Roughing
032927	TNMG160408E-4E	NL400	9,53	16,50	4,76	0,80	3,81		Medium-Roughing
030536	TNMG160412E-4E	SP0819	9,53	16,50	4,76	1,20	3,81		Medium-Roughing
032928	TNMG160412E-4E	NL400	9,53	16,50	4,76	1,20	3,81		Medium-Roughing

For Toolholders External: see pages 141 - 142 | Internal: see page 143

Material Guide – Key to Recommended Inserts

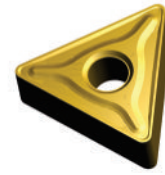
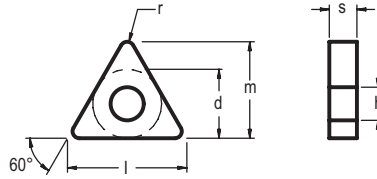
Material Designation

Unalloyed Steels
 Alloyed Steels
 Stainless Steels
 PH Stainless
 Cast Irons
 Aluminum & Alloys
 High Temp. Alloys
 Hard Materials

T Style

Turning Inserts

TNMG 4T Geometry



EDP	ISO Description	Grade	Dimensions (mm)					Material	Application
			d	l	s	r _e	h		
032796	TNMG160304E-4T	NL300	9,53	16,50	3,18	0,40	3,81	◆◆◆◆	Roughing
032797	TNMG160304E-4T	NL400	9,53	16,50	3,18	0,40	3,81	◆◆◆◆	Roughing
032798	TNMG160304E-4T	NL920	9,53	16,50	3,18	0,40	3,81	◆◆◆◆	Roughing
032799	TNMG160308E-4T	NL300	9,53	16,50	3,18	0,80	3,81	◆◆◆◆	Roughing
032800	TNMG160308E-4T	NL400	9,53	16,50	3,18	0,80	3,81	◆◆◆◆	Roughing
032801	TNMG160308E-4T	NL920	9,53	16,50	3,18	0,80	3,81	◆◆◆◆	Roughing
032802	TNMG160404E-4T	NL250	9,53	16,50	4,76	0,40	3,81	◆◆◆◆	Roughing
032803	TNMG160404E-4T	NL300	9,53	16,50	4,76	0,40	3,81	◆◆◆◆	Roughing
032804	TNMG160404E-4T	NL400	9,53	16,50	4,76	0,40	3,81	◆◆◆◆	Roughing
032805	TNMG160404E-4T	NL920	9,53	16,50	4,76	0,40	3,81	◆◆◆◆	Roughing
032806	TNMG160408E-4T	NL250	9,53	16,50	4,76	0,80	3,81	◆◆◆◆	Roughing
032807	TNMG160408E-4T	NL300	9,53	16,50	4,76	0,80	3,81	◆◆◆◆	Roughing
032808	TNMG160408E-4T	NL400	9,53	16,50	4,76	0,80	3,81	◆◆◆◆	Roughing
032809	TNMG160408E-4T	NL920	9,53	16,50	4,76	0,80	3,81	◆◆◆◆	Roughing
032810	TNMG160412E-4T	NL250	9,53	16,50	4,76	1,20	3,81	◆◆◆◆	Roughing
032811	TNMG160412E-4T	NL300	9,53	16,50	4,76	1,20	3,81	◆◆◆◆	Roughing
032812	TNMG160412E-4T	NL400	9,53	16,50	4,76	1,20	3,81	◆◆◆◆	Roughing
032813	TNMG160412E-4T	NL920	9,53	16,50	4,76	1,20	3,81	◆◆◆◆	Roughing

For Toolholders External: see pages 141 - 142 | Internal: see page 143

Material Guide – Key to Recommended Inserts

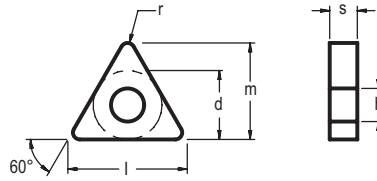
Material Designation

◆ P Unalloyed Steels
 ◆ P Alloyed Steels
 ◆ M Stainless Steels
 ◆ M PH Stainless
 ◆ K Cast Irons
 ◆ N Aluminum & Alloys
 ◆ S High Temp. Alloys
 ◆ H Hard Materials

T Style

Turning Inserts

TNMG 4T Geometry



EDP	ISO Description	Grade	Dimensions (mm)					Material	Application
			d	l	s	r _e	h		
032814	TNMG220404E-4T	NL250	12,70	22,00	4,76	0,40	5,16	◆◆◆◆	Roughing
032815	TNMG220404E-4T	NL300	12,70	22,00	4,76	0,40	5,16	◆◆◆◆	Roughing
032816	TNMG220404E-4T	NL400	12,70	22,00	4,76	0,40	5,16	◆◆◆◆	Roughing
032817	TNMG220404E-4T	NL920	12,70	22,00	4,76	0,40	5,16	◆◆◆◆	Roughing
032818	TNMG220408E-4T	NL250	12,70	22,00	4,76	0,80	5,16	◆◆◆◆	Roughing
032819	TNMG220408E-4T	NL300	12,70	22,00	4,76	0,80	5,16	◆◆◆◆	Roughing
032820	TNMG220408E-4T	NL400	12,70	22,00	4,76	0,80	5,16	◆◆◆◆	Roughing
032821	TNMG220408E-4T	NL920	12,70	22,00	4,76	0,80	5,16	◆◆◆◆	Roughing
032822	TNMG220412E-4T	NL250	12,70	22,00	4,76	1,20	5,16	◆◆◆◆	Roughing
032823	TNMG220412E-4T	NL300	12,70	22,00	4,76	1,20	5,16	◆◆◆◆	Roughing
032824	TNMG220412E-4T	NL400	12,70	22,00	4,76	1,20	5,16	◆◆◆◆	Roughing
032825	TNMG220412E-4T	NL920	12,70	22,00	4,76	1,20	5,16	◆◆◆◆	Roughing
032826	TNMG220416E-4T	NL250	12,70	22,00	4,76	1,60	5,16	◆◆◆◆	Roughing
032827	TNMG220416E-4T	NL300	12,70	22,00	4,76	1,60	5,16	◆◆◆◆	Roughing
032828	TNMG220416E-4T	NL400	12,70	22,00	4,76	1,60	5,16	◆◆◆◆	Roughing
032829	TNMG220416E-4T	NL920	12,70	22,00	4,76	1,60	5,16	◆◆◆◆	Roughing
032830	TNMG220432E-4T	NL300	12,70	22,00	4,76	3,20	5,16	◆◆◆◆	Roughing

For Toolholders External: see pages 141 - 142 | Internal: see page 143

Material Guide – Key to Recommended Inserts

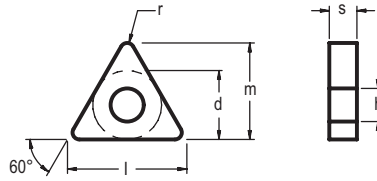
Material Designation

◆ P Unalloyed Steels
 ◆ P Alloyed Steels
 ◆ M Stainless Steels
 ◆ M PH Stainless
 ◆ K Cast Irons
 ◆ N Aluminum & Alloys
 ◆ S High Temp. Alloys
 ◆ H Hard Materials

T Style

Turning Inserts

TNMG 4T Geometry



EDP	ISO Description	Grade	Dimensions (mm)					Material	Application
			d	l	s	r _e	h		
032831	TNMG270608E-4T	NL250	15,88	27,50	6,35	0,80	6,35	◆◆◆◆	Roughing
032832	TNMG270608E-4T	NL300	15,88	27,50	6,35	0,80	6,35	◆◆◆◆	Roughing
032833	TNMG270608E-4T	NL400	15,88	27,50	6,35	0,80	6,35	◆◆◆◆	Roughing
032834	TNMG270608E-4T	NL920	15,88	27,50	6,35	0,80	6,35	◆◆◆◆	Roughing
032835	TNMG270612E-4T	NL250	15,88	27,50	6,35	1,20	6,35	◆◆◆◆	Roughing
032836	TNMG270612E-4T	NL300	15,88	27,50	6,35	1,20	6,35	◆◆◆◆	Roughing
032837	TNMG270612E-4T	NL400	15,88	27,50	6,35	1,20	6,35	◆◆◆◆	Roughing
032838	TNMG270612E-4T	NL920	15,88	27,50	6,35	1,20	6,35	◆◆◆◆	Roughing
032839	TNMG270616E-4T	NL250	15,88	27,50	6,35	1,60	6,35	◆◆◆◆	Roughing
032840	TNMG270616E-4T	NL300	15,88	27,50	6,35	1,60	6,35	◆◆◆◆	Roughing
032841	TNMG270616E-4T	NL400	15,88	27,50	6,35	1,60	6,35	◆◆◆◆	Roughing
032842	TNMG270616E-4T	NL920	15,88	27,50	6,35	1,60	6,35	◆◆◆◆	Roughing
032843	TNMG270632E-4T	NL300	15,88	27,50	6,35	3,20	6,35	◆◆◆◆	Roughing
032844	TNMG330924E-4T	NL300	19,05	33,50	9,53	2,40	7,92	◆◆◆◆	Roughing
032845	TNMG330924E-4T	NL400	19,05	33,50	9,53	2,40	7,92	◆◆◆◆	Roughing
032846	TNMG330924E-4T	NL920	19,05	33,50	9,53	2,40	7,92	◆◆◆◆	Roughing

For Toolholders External: see pages 141 - 142 | Internal: see page 143

Material Guide – Key to Recommended Inserts

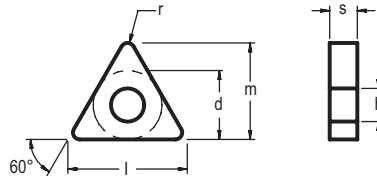
Material Designation

◆ P Unalloyed Steels
 ◆ P Alloyed Steels
 ◆ M Stainless Steels
 ◆ M PH Stainless
 ◆ K Cast Irons
 ◆ N Aluminum & Alloys
 ◆ S High Temp. Alloys
 ◆ H Hard Materials

T Style

Turning Inserts

TNMG 4U Geometry



EDP	ISO Description	Grade	Dimensions (mm)					Material	Application
			d	l	s	r _e	h		
032847	TNMG160408E-4U	NL200	9,53	16,50	4,76	0,80	3,81		Roughing
032848	TNMG160412E-4U	NL200	9,53	16,50	4,76	1,20	3,81		Roughing
032849	TNMG220408E-4U	NL200	12,70	22,00	4,76	0,80	5,16		Roughing
032850	TNMG220412E-4U	NL200	12,70	22,00	4,76	1,20	5,16		Roughing
032851	TNMG220416E-4U	NL200	12,70	22,00	4,76	1,60	5,16		Roughing

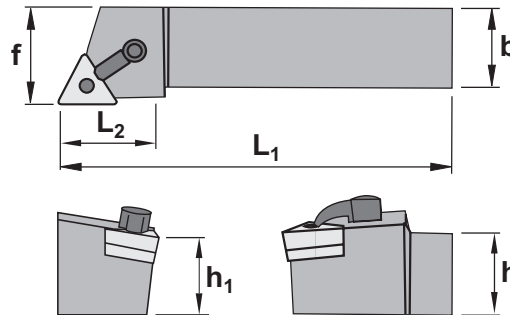
For Toolholders External: see pages 141 - 142 | Internal: see page 143

Material Guide – Key to Recommended Inserts

Material Designation

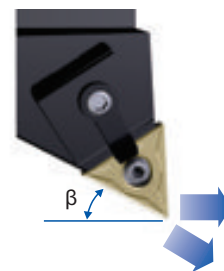
P Unalloyed Steels
 P Alloyed Steels
 M Stainless Steels
 M PH Stainless
 K Cast Irons
 N Aluminum & Alloys
 S High Temp. Alloys
 H Hard Materials

MTJN 93°



MTJN LH & RH External Square Shank Toolholders

EDP	Item Description	Hand	Insert Sizes	Dimensions (mm)				
				h = h ₁	b	f	L ₁	L ₂
028557	MTJNL 2020 K 16-S	LH	TN_1604	20	20	25	125	28
028558	MTJNL 2525 M16-S	LH	TN_1604	25	25	32	150	28
028563	MTJNR 2020 K16-S	RH	TN_1604	20	20	25	125	28
028564	MTJNR 2525 M16-S	RH	TN_1604	25	25	32	150	28
028560	MTJNL 2525 M22-S	LH	TN_2204	25	25	32	150	34
028562	MTJNL 3232 P22-S	LH	TN_2204	32	32	40	170	34
028566	MTJNR 2525 M22-S	RH	TN_2204	25	25	32	150	34
028568	MTJNR 3232 P22-S	RH	TN_2204	32	32	40	170	34

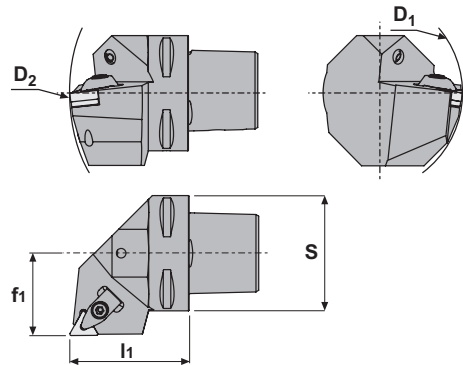


M Style External Toolholder
 Negative Inserts: TN_1604, & TN_2204
 Application:- Turn O/D
 Axial Approach 93°
 Axial -6°
 Radial -6°
 Profiling Clearance Angle $\beta = 24^\circ$
 RH Holder Shown

MTJNL/R Spare Parts

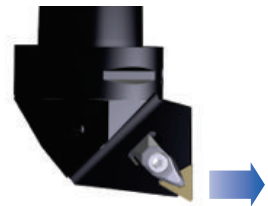
Item Description	Clamp Screw EDP	Clamp EDP	Clamp Key EDP	Lock Pin EDP	Lock Pin Key EDP	Anvil EDP						
MTJNL/R 2020 K16-S	028575	1086	034490	CL2613	018286	KH5003	034511	1665	028578	KH5002	001714	ITSN323
MTJNL/R 2525 M16-S												
MTJNL/R 2525 M22-S												
MTJNL/R 3232 P22-S												

DTGN 90°



DTGN LH & RH External PSC Toolholders

EDP	Item Description	Hand	Insert Sizes	Dimensions (mm)				
				S	D1	D2	f1	l1
033701	C5-50-DTGNL35060-16	LH	TN_1604	50	110	165	35	60
033702	C5-50-DTGNR35060-16	RH	TN_1604	50	110	165	35	60
033703	C6-63-DTGNL45065-16	LH	TN_1604	63	110	190	45	65
033704	C6-63-DTGNR45065-16	RH	TN_1604	63	110	190	45	65



D Style External Toolholder
for Negative Inserts:
TN_1604
Application: External Turn O/D
Approach 90°
Axial -6°
Radial -6°
Profiling Clearance Angle $\beta = 0^\circ$
RH Holder Shown

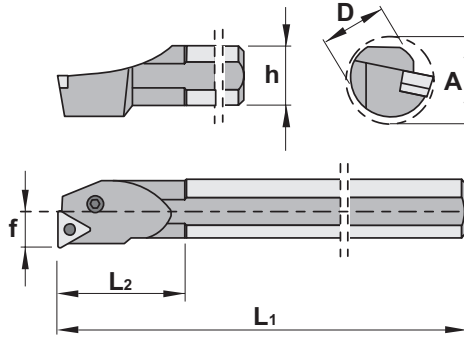
C, DTGNL/R Spare Parts

Item Description	Clamp EDP	Clamp Screw EDP	Anvil EDP	Anvil Screw EDP	Clamp Spring EDP	Screw Key EDP						
C5-50-DTGNL/R 35060-16	033709	2708	033711	1695	033714	ITSN342	033718	1764	033720	4294	018286	KH5003
C6-63-DTGNL/R 45065-16												

T Style

Internal Boring Bar

A..PTFN 90°



A..PTFN LH & RH Internal Boring Bars

EDP	Item Description	Hand	Insert Sizes	Dimensions (mm)						
				Min Bore Ø A	ØD	f	L1	L2	h	Through Coolant
028710	A25R PTFNL 16	LH	TN_1604	31	25	17	200	42	23	
028711	A32S PTFNL 16	LH	TN_1604	39	32	22	250	45	30	
028713	A25R PTFNR 16	RH	TN_1604	31	25	17	200	42	23	
028714	A32S PTFNR 16	RH	TN_1604	39	32	22	250	45	30	
028712	A40T PTFNL 22	LH	TN_2204	48	40	27	300	50	37	
028715	A40T PTFNR 22	RH	TN_2204	48	40	27	300	50	37	



P Style Internal Boring Bar for Negative Inserts:
 TN_1604 & TN_2204
 Application: I/D Boring
 Axial Approach = 90°
 Axial -6°
 Radial -11°
 Profiling Clearance Angle $\beta = 0^\circ$
 RH Bar Shown

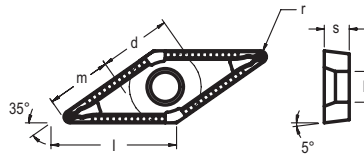
A..PTFNL/R Spare Parts

Item Description	Lever EDP	Lever Screw EDP	Anvil EDP	Anvil Clip EDP	Clip Punch EDP	Key EDP						
A25R PTFNL/R 16	022652	PL8216	028741	PLS1605	-	-	028578	KH5002				
A32S PTFNL/R 16	017442	PL8009	017447	PLS1606	017463	PA3416	034503	PC4109	028053	PCP0009	018285	KH5025
A40T PTFNL/R 22	017443	PL8012	017448	PLS1608	017464	PA3422	017453	PC4112	028054	PCP0012	018286	KH5003

V Style

Turning Inserts

VBGT -62 Geometry



EDP	ISO Description	Grade	Dimensions (mm)					Material	Application
			d	l	s	r _e	h		
031665	VBGT160402E-62	SP4019	9,53	16,60	6,35	0,20	4,40		Finishing
031666	VBGT160404E-62	SP4019	9,53	16,60	6,35	0,40	4,40		Finishing
031667	VBGT160408E-62	SP4019	9,53	16,60	6,35	0,80	4,40		Finishing

For Toolholders External: see pages 148 - 153 | Internal: see pages 154 - 156

Material Guide – Key to Recommended Inserts

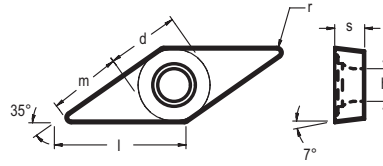
Material Designation

P Unalloyed Steels
 P Alloyed Steels
 M Stainless Steels
 M PH Stainless
 K Cast Irons
 N Aluminum & Alloys
 S High Temp. Alloys
 H Hard Materials

V Style

Turning Inserts

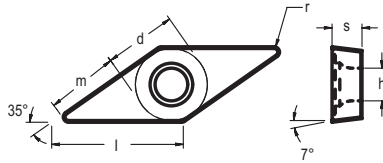
VCGT M Geometry



EDP	ISO Description	Grade	Dimensions (mm)					Material	Application
			d	l	s	r _e	h		
032852	VCGT130301F-M	GH1	7,94	13,80	3,97	0,10	3,40	◆◆◆	Medium
034463	VCGT130301E-M	SP4019	7,94	13,80	3,97	0,10	3,40	◆◆◆◆◆	Medium
032854	VCGT130302F-M	GH1	7,94	13,80	3,97	0,20	3,40	◆◆◆	Medium
034461	VCGT130302E-M	SP4019	7,94	13,80	3,97	0,20	3,40	◆◆◆◆◆	Medium
032856	VCGT130304F-M	GH1	7,94	13,80	3,97	0,40	3,40	◆◆◆	Medium
034462	VCGT130304E-M	SP4019	7,94	13,80	3,97	0,40	3,40	◆◆◆◆◆	Medium

For Toolholders External: see pages 148, 151 - 153 | Internal: see pages 155 - 156

VCGT & VCGX -62 Geometry



EDP	ISO Description	Grade	Dimensions (mm)					Material	Application
			d	l	s	r _e	h		
031608	VCGX1103005E-62	SP4019	6,35	10,07	3,18	0,05	2,80	◆◆◆◆◆	Finishing
031609	VCGT110301E-62	SP4019	6,35	10,07	3,18	0,10	2,80	◆◆◆◆◆	Finishing
031610	VCGT110302E-62	SP4019	6,35	10,07	3,18	0,20	2,80	◆◆◆◆◆	Finishing
031611	VCGT110304E-62	SP4019	6,35	10,07	3,18	0,40	2,80	◆◆◆◆◆	Finishing
030594	VCGT130301E-62	SP4019	7,94	13,80	3,18	0,10	3,40	◆◆◆◆◆	Finishing
030595	VCGT130302E-62	SP4019	7,94	13,80	3,18	0,20	3,40	◆◆◆◆◆	Finishing
030596	VCGT130304E-62	SP4019	7,94	13,80	3,18	0,40	3,40	◆◆◆◆◆	Finishing

For Toolholders External: see pages 148, 151 - 153 | Internal: see pages 155 - 156

Material Guide – Key to Recommended Inserts

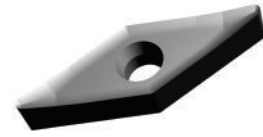
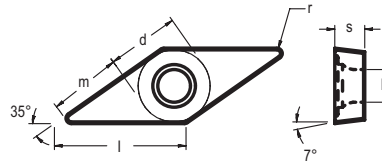
Material Designation

◆ P Unalloyed Steels
 ◆ P Alloyed Steels
 ◆ M Stainless Steels
 ◆ M PH Stainless
 ◆ K Cast Irons
 ◆ N Aluminum & Alloys
 ◆ S High Temp. Alloys
 ◆ H Hard Materials

V Style

Turning Inserts

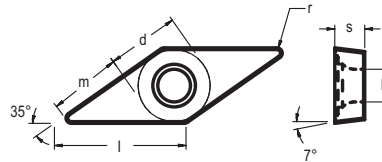
VCGT -64 Geometry



EDP	ISO Description	Grade	Dimensions (mm)					Material	Application
			d	l	s	r _e	h		
014071	VCGT160408F-64	GH1	9,53	16,60	4,76	0,80	4,40	◆	Finishing

For Toolholders External: see pages 148, 151 - 153 | Internal: see pages 155 - 156

VCGT -66 Geometry



EDP	ISO Description	Grade	Dimensions (mm)					Material	Application
			d	l	s	r _e	h		
027453	VCGT130302F-66	GH1	7,94	13,80	3,18	0,20	3,40	◆◆◆	Finishing
027454	VCGT130304F-66	GH1	7,94	13,80	3,18	0,40	3,40	◆◆◆	Finishing
027455	VCGT130308F-66	GH1	7,94	13,80	3,18	0,80	3,40	◆◆◆	Finishing

For Toolholders External: see pages 148, 151 - 153 | Internal: see pages 155 - 156

Material Guide – Key to Recommended Inserts

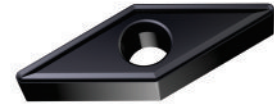
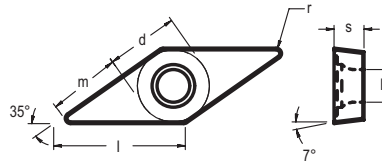
Material Designation

◆ P Unalloyed Steels
 ◆ P Alloyed Steels
 ◆ M Stainless Steels
 ◆ M PH Stainless
 ◆ K Cast Irons
 ◆ N Aluminum & Alloys
 ◆ S High Temp. Alloys
 ◆ H Hard Materials

V Style

Turning Inserts

VCMT M Geometry



EDP	ISO Description	Grade	Dimensions (mm)					Material	Application
			d	l	s	r _e	h		
032858	VCMT160404E-M	GH1	9,53	16,60	4,76	0,40	4,40		Medium
032276	VCMT160404E-M	SP4019	9,53	16,60	4,76	0,40	4,40		Medium
032859	VCMT160408E-M	GH1	9,53	16,60	4,76	0,80	4,40		Medium
032282	VCMT160408E-M	SP4019	9,53	16,60	4,76	0,80	4,40		Medium

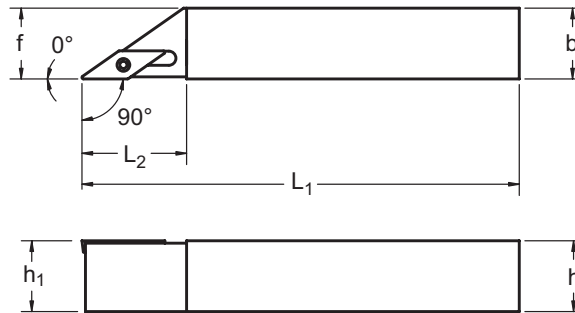
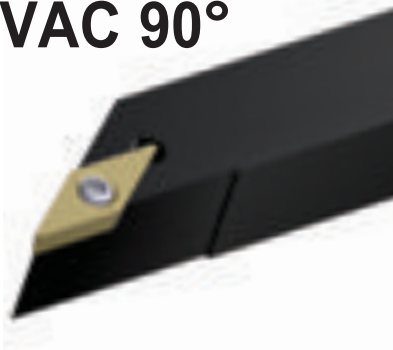
For Toolholders External: see pages 148, 151 - 153 | Internal: see pages 155 - 156

Material Guide – Key to Recommended Inserts

Material Designation

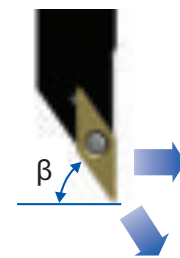
Unalloyed Steels
 Alloyed Steels
 Stainless Steels
 PH Stainless
 Cast Irons
 Aluminum & Alloys
 High Temp. Alloys
 Hard Materials

SVAC 90°







SVAC LH & RH External Square Shank Toolholders

EDP	Item Description	Hand	Insert Sizes	Dimensions (mm)				
				h = h ₁	b	f	L ₁	L ₂
033593	SVACL 1010 M11	LH	VC_1103	10	10	10	150	-
033594	SVACL 1212 M11	LH	VC_1103	12	12	12	150	-
033595	SVACL 1616 M11	LH	VC_1103	16	16	16	150	-
033596	SVACR 1010 M11	RH	VC_1103	10	10	10	150	-
033597	SVACR 1212 M11	RH	VC_1103	12	12	12	150	-
033598	SVACR 1616 M11	RH	VC_1103	16	16	16	150	-
025092	SVACL 1010 M13	LH	VC_1303	10	10	10	150	30
025094	SVACL 1212 M13	LH	VC_1303	12	12	12	150	30
025096	SVACL 1616 M13	LH	VC_1303	16	16	16	150	30
025098	SVACL 2020 K13	LH	VC_1303	20	20	20	125	30
025091	SVACR 1010 M13	RH	VC_1303	10	10	10	150	30
025093	SVACR 1212 M13	RH	VC_1303	12	12	12	150	30
025095	SVACR 1616 M13	RH	VC_1303	16	16	16	150	30
025097	SVACR 2020 K13	RH	VC_1303	20	20	20	125	30

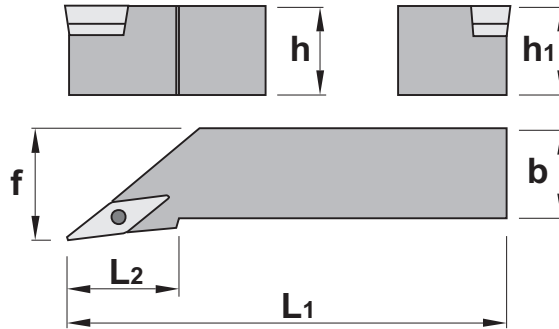
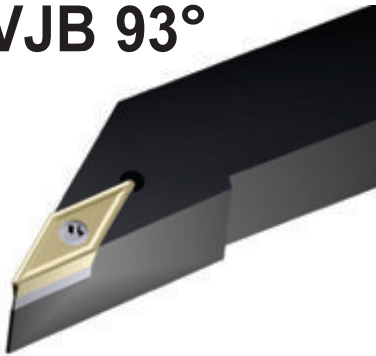


S Style External Toolholder
 Positive Inserts VC_1103, and VC_1303
 Application: O/D Profiling
 Approach 90°
 Axial 0°
 Radial 0°
 Profiling Clearance Angle $\beta = 52^\circ$
 RH Holder Shown

SVACL/R Spare Parts

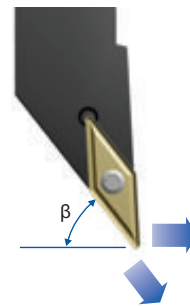
Item Description	Insert Screw EDP		Insert Key EDP		Anvil EDP		Anvil Screw EDP	
SVACL/R 1010 M11	15061	F2507T	18488	T7	-	-	-	-
SVACL/R 1212 M11								
SVACL/R 1616 M11								
SVACL/R 1010 M13	15063	F3008T	013214	T9	-	-	-	-
SVACL/R 1212 M13								
SVACL/R 1616 M13								
SVACL/R 2020 K13								

SVJB 93°







SVJB LH & RH External Square Shank Toolholders

EDP	Item Description	Hand	Insert Sizes	Dimensions (mm)				
				$h = h_1$	b	f	L1	L2
028641	SVJBL 2020 K16	LH	VB_1604	20	20	25	125	34
028642	SVJBL 2525 M16	LH	VB_1604	25	25	32	150	34
028644	SVJBR 2020 K16	RH	VB_1604	20	20	25	125	34
028645	SVJBR 2525 M16	RH	VB_1604	25	25	32	150	34



S Style External Toolholder
for Positive Inserts: VB_1604
Application: O/D Profiling
Approach 93°
Axial 0°
Radial 0°
Profiling Clearance Angle $\beta = 49^\circ$
RH Holder Shown

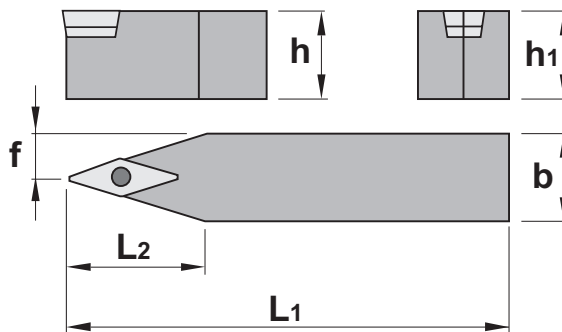
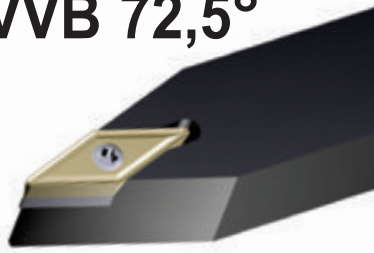
SVJBL/R Spare Parts

Item Description	Insert Screw EDP		Insert Key EDP		Anvil EDP		Anvil Screw EDP	
SVJBL/R 2020 K16	034497	1335	028475	K5516	028740	SA3718	028478	SAS1750
SVJBL/R 2525 M16								

V Style

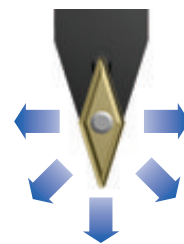
External Toolholders

SVVB 72,5°







SVVB Neutral External Square Shank Toolholders

EDP	Item Description	Hand	Insert Sizes	Dimensions (mm)				
				h = h ₁	b	f	L ₁	L ₂
033603	SVVBN 2020 K16	Neutral	VB_1604	20	20	10	125	-
033604	SVVBN 2525 M16	Neutral	VB_1604	25	25	12,5	150	-

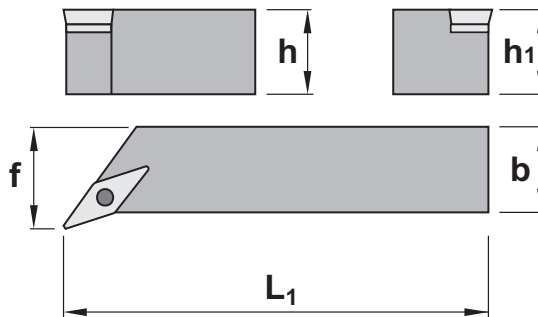


S Style External Toolholder
 for Positive Inserts: VB_1604
 Application: O/D Profiling
 Approach 72,5°
 Axial 0°
 Radial 0°
 Profiling Clearance Angle $\beta = 69,5^\circ$
 Neutral Holder Shown

SVVBL N Spare Parts

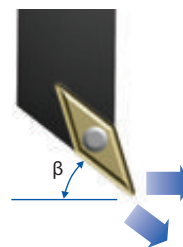
Item Description	Insert Screw EDP		Insert Key EDP		Anvil EDP		Anvil Screw EDP	
SVVBN 2020 K16	034497	1335	028475	K5516	028740	SA3718	028478	SAS1750
SVVBN 2525 M16								

SVHC 107,5°







SVHC LH & RH External Square Shank Toolholders

EDP	Item Description	Hand	Insert Sizes	Dimensions (mm)				
				h = h ₁	b	f	L ₁	L ₂
028635	SVHCL 2020 K16	LH	VC_1604	20	20	25	125	-
028636	SVHCL 2525 M16	LH	VC_1604	25	25	32	150	-
033607	SVHCL 3225 P16	LH	VC_1604	32	25	32	170	-
028638	SVHCR 2020 K16	RH	VC_1604	20	20	25	125	-
028639	SVHCR 2525 M16	RH	VC_1604	25	25	32	150	-
033608	SVHCR 3225 P16	RH	VC_1604	32	25	32	170	-



S Style External Toolholder
 for Positive Inserts: VC_1604
 Application: O/D and Face Profiling
 Approach 107,5°
 Axial 0°
 Radial 0°
 Profiling Clearance Angle $\beta = 44,5^\circ$
 RH Holder Shown

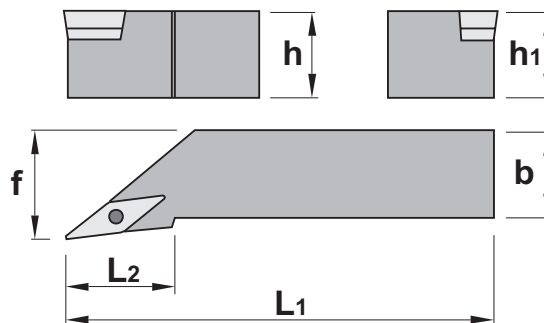
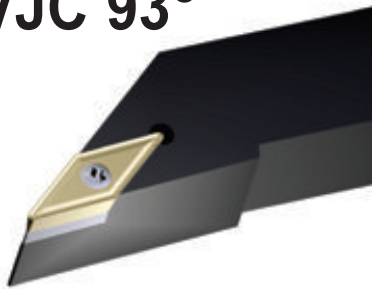
SVHCL/R Spare Parts

Item Description	Insert Screw EDP		Insert Key EDP		Anvil EDP		Anvil Screw EDP	
SVHCL/R 2020 K16	034497	1335	028475	K5516	028740	SA3718	028478	SAS1750
SVHCL/R 2525 M16								
SVHCL/R 3232 P16								

V Style

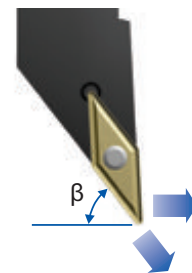
External Toolholders

SVJC 93°







SVJC LH & RH External Square Shank Toolholders

EDP	Item Description	Hand	Insert Sizes	Dimensions (mm)				
				h = h ₁	b	f	L ₁	L ₂
033615	SVJCL 1010 M11	LH	VC_1103	10	10	10	150	-
033616	SVJCL 1212 M11	LH	VC_1103	12	12	12	150	-
033617	SVJCL 1616 M11	LH	VC_1103	16	16	16	150	-
033618	SVJCL 2020 K11	LH	VC_1103	20	20	25	125	25
033619	SVJCR 1010 M11	RH	VC_1103	10	10	10	150	-
033620	SVJCR 1212 M11	RH	VC_1103	12	12	12	150	-
033621	SVJCR 1616 M11	RH	VC_1103	16	16	16	150	-
033622	SVJCR 2020 K11	RH	VC_1103	20	20	25	125	25
018330	SVJCL 1212 F13	LH	VC_1303	12	12	16	80	26
018331	SVJCL 1616 H13	LH	VC_1303	16	16	20	100	30
018333	SVJCL 2020 K13	LH	VC_1303	20	20	25	125	30
018337	SVJCR 1212 F13	RH	VC_1303	12	12	16	80	26
018338	SVJCR 1616 H13	RH	VC_1303	16	16	20	100	30
018340	SVJCR 2020 K13	RH	VC_1303	20	20	25	125	30
028648	SVJCL 2020 K16	LH	VC_1604	20	20	25	125	34
028649	SVJCL 2525 M16	LH	VC_1604	25	25	32	150	34
028651	SVJCR 2020 K16	RH	VC_1604	20	20	25	125	34
028652	SVJCR 2525 M16	RH	VC_1604	25	25	32	150	34

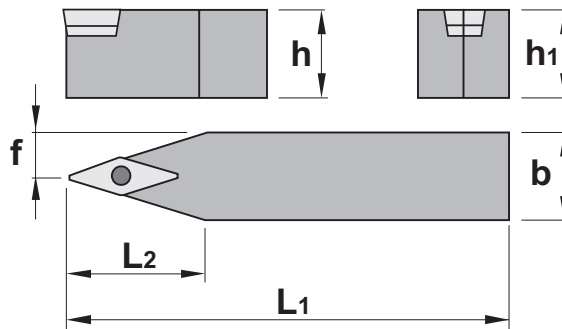


S Style External Toolholder for Positive Inserts:
 VC_1103, VC_1303, and VC_1604
 Application: O/D Profiling
 Approach 93°
 Axial 0°
 Radial 0°
 Profiling Clearance Angle $\beta = 49^\circ$
 RH Holder Shown

SVJCL/R Spare Parts

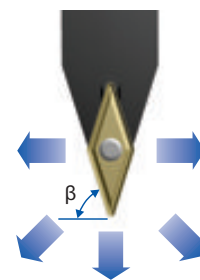
Item Description	Insert Screw EDP		Insert Key EDP		Anvil EDP		Anvil Screw EDP	
SVJCL/R 1010 M11	015061	F2507T	18488	T7	-	-	-	-
SVJCL/R 1212 M11								
SVJCL/R 1616 M11								
SVJCL/R 2020 K11								
SVJCL/R 1212 F13	015063	F3008T	013214	T9	-	-	-	-
SVJCL/R 1616 H13								
SVJCL/R 2020 K13								
SVJCL/R 2020 K16	034497	1335	028475	K5516	028740	SA3718	028478	SAS1750
SVJCL/R 2525 M16								

SVVC 72,5°







SVVC Neutral External Square Shank Toolholders

EDP	Item Description	Hand	Insert Sizes	Dimensions (mm)				
				h = h ₁	b	f	L ₁	L ₂
033639	SVVCN 1212 M11	Neutral	VC_1103	12	12	6	150	-
033640	SVVCN 1616 M11	Neutral	VC_1103	16	16	8	150	-
033641	SVVCN 2020 K11	Neutral	VC_1103	20	20	10	125	-
018344	SVVCN 1212 F13	Neutral	VC_1303	12	12	6	150	28
018345	SVVCN 1616 H13	Neutral	VC_1303	16	16	8	150	28
018346	SVVCN 2020 K13	Neutral	VC_1303	20	20	10	125	28
028653	SVVCN 2020 K16	Neutral	VC_1604	20	20	10	125	-
028654	SVVCN 2525 M16	Neutral	VC_1604	25	25	12,5	150	-



S Style External Toolholder for Positive Inserts:
 VC_1103, VC_1303 and VC_1604
 Application: O/D Profiling
 Approach 72,5°
 Axial 0°
 Radial 0°
 Profiling Clearance Angle $\beta = 69,5^\circ$
 Neutral Holder Shown

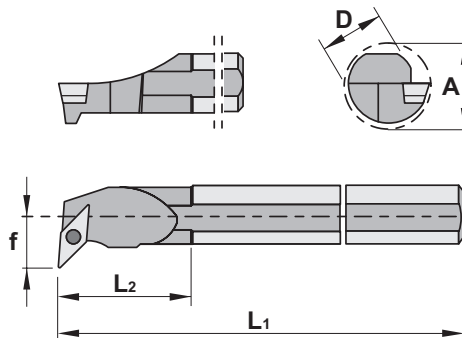
SVVC N Spare Parts

Item Description	Insert Screw EDP		Insert Key EDP		Anvil EDP		Anvil Screw EDP	
SVVCN 1212 M11	015061	F2507T	018488	T7	-	-	-	-
SVVCN 1616 M11								
SVVCN 2020 K11								
SVVCN 1212 F13	015063	F3008T	013214	T9	-	-	-	-
SVVCN 1616 H13								
SVVCN 2020 K13								
SVVCN 2020 K16	034497	1335	028475	K5516	028740	SA3718	028478	SAS1750
SVVCN 2525 M16								

V Style

Internal Boring Bars

SVUB 93°



S.. SVUB LH & RH Internal Boring Bars

EDP	Item Description	Hand	Insert Sizes	Dimensions (mm)					
				Min Bore Ø A	ØD	f	L1	L2	Through Coolant
033642	S25R SVUBL 16	LH	VB_1604	31	25	17	300	42	
033643	S32S SVUBL 16	LH	VB_1604	39	32	22	350	45	
033644	S25R SVUBR 16	RH	VB_1604	31	25	17	300	42	
033645	S32S SVUBR 16	RH	VB_1604	39	32	22	350	45	



S Style Boring Bar
for Positive Inserts: VB_1604
Application: I/D Profiling
Approach 93°
Axial 0°
Radial -6°
Profiling Clearance Angle $\beta = 49^\circ$
RH Bar Shown

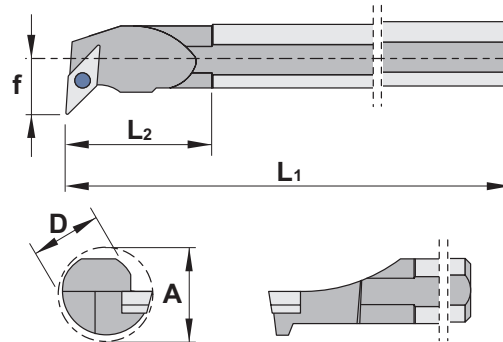
S.. SVUBL/R Spare Parts

Item Description	Insert Screw EDP		Insert Key EDP		Anvil EDP		Anvil Screw EDP	
S25R SVUBL/R 16	015262	D4010T	015240	T15	-	-	-	-
S32S SVUBL/R 16	034497	1335	028475	K5516	028740	SA3718	028478	SAS1750

V Style

Internal Boring Bars

SVUC 93°







A.. SVUC LH & RH Internal Boring Bars

EDP	Item Description	Hand	Insert Sizes	Dimensions (mm)					
				Min Bore Ø A	ØD	f	L1	L2	Through Coolant
033650	A16M SVUCL 11	LH	VC_1103	20	16	11	150	31	💧
033651	A20Q SVUCL 11	LH	VC_1103	25	20	13	180	36	💧
033652	A16M SVUCR 11	RH	VC_1103	20	16	11	150	31	💧
033653	A20Q SVUCR 11	RH	VC_1103	25	20	13	180	36	💧
018443	A20Q SVUCL 13	LH	VC_1303	24	20	13	180	-	💧
018445	A25S SVUCL 13	LH	VC_1303	31	25	17	259	-	💧
018444	A20Q SVUCR 13	RH	VC_1303	24	20	13	180	-	💧
018446	A25S SVUCR 13	RH	VC_1303	31	25	17	259	-	💧
033654	A25R SVUCL 16	LH	VC_1604	31	25	17	200	42	💧
033655	A32S SVUCL 16	LH	VC_1604	39	32	22	250	45	💧
033656	A25R SVUCR 16	RH	VC_1604	31	25	17	200	42	💧
033657	A32S SVUCR 16	RH	VC_1604	39	32	22	250	45	💧

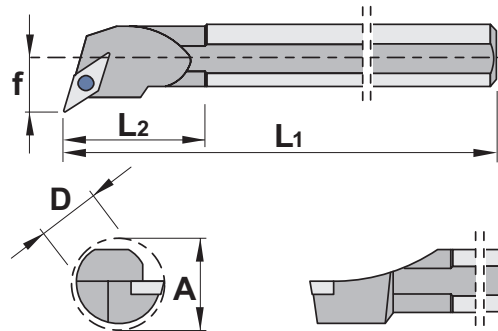


S Style Boring Bar
for Positive Inserts:
VC_1103, VC_1303, and VC_1604
Application: I/D Profiling
Approach 93°
Axial 0°
Radial -6°
Profiling Clearance Angle $\beta = 49^\circ$
RH Bar Shown

A.. SVUCL/R Spare Parts

Item Description	Insert Screw EDP		Insert Key EDP		Anvil EDP		Anvil Screw EDP	
A16M SVUCL/R 11	015061	F2507T	018488	T7	-	-	-	-
A20Q SVUCL/R 11								
A20Q SVUCL/R 13								
A25S SVUCL/R 13	015063	F3008T	013214	T9	-	-	-	-
A25R SVUCL/R 16	034497	1335	028475	K5516	028740	SA3718	028478	SAS1750
A32S SVUCL/R 16								

SVQC 107,5°



S.. SVQC LH & RH Internal Boring Bars

EDP	Item Description	Hand	Insert Sizes	Dimensions (mm)					
				Min Bore Ø A	ØD	f	L1	L2	Through Coolant
033668	S16R SVQCL 11	LH	VC_1103	20	16	11	200	31	
033669	S20S SVQCL 11	LH	VC_1103	24	20	13	250	36	
033670	S16R SVQCR 11	RH	VC_1103	20	16	11	200	31	
033671	S20S SVQCR 11	RH	VC_1103	24	20	13	250	36	
033672	S16R SVQCL 13	LH	VC_1303	20	16	11	200	31	
033673	S20S SVQCL 13	LH	VC_1303	24	20	13	250	36	
033674	S16R SVQCR 13	RH	VC_1303	20	16	11	200	31	
033675	S20S SVQCR 13	RH	VC_1303	24	20	13	250	36	
033676	S25T SVQCL 16	LH	VC_1604	31	25	17	300	42	
033677	S25T SVQCR 16	RH	VC_1604	31	25	17	300	42	



S Style Boring Bar
for Positive Inserts:
VC_1103, VC_1303 and VC_1604
Application: I/D Profiling
Approach 107,5°
Axial 0°
Radial -6°
Profiling Clearance Angle $\beta = 34,5^\circ$
RH Bar Shown

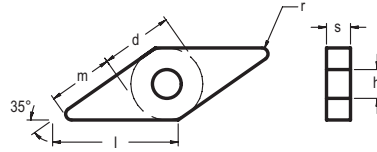
S.. SVQCL/R Spare Parts

Item Description	Insert Screw EDP		Insert Key EDP		Anvil EDP		Anvil Screw EDP	
S16R SVQCL/R 11	015061	F2507T	018488	T7	-	-	-	-
S20S SVQCL/R 11								
S16R SVQCL/R 13	015063	F3008T	013214	T9	-	-	-	-
S20S SVQCL/R 13								
S25T SVQCL/R 16	034497	1335	028475	K5516	028740	SA3718	028478	SAS1750

V Style

Turning Inserts

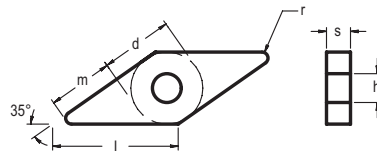
VNGG 3F Geometry



EDP	ISO Description	Grade	Dimensions (mm)					Material	Application
			d	l	s	r _e	h		
031549	VNGG160402F-3F	SP0819	9,53	16,60	4,76	0,20	3,81		Medium
031550	VNGG160404F-3F	SP0819	9,53	16,60	4,76	0,40	3,81		Medium
031551	VNGG160408F-3F	SP0819	9,53	16,60	4,76	0,80	3,81		Medium

For Toolholders External: see pages 160 - 162 | Internal: see page 163

VNMG 1B Geometry



EDP	ISO Description	Grade	Dimensions (mm)					Material	Application
			d	l	s	r _e	h		
030882	VNMG160404E-1B	SP0819	9,53	16,60	4,76	0,40	3,81		Finishing
032860	VNMG160404E-1B	NL250	9,53	16,60	4,76	0,40	3,81		Finishing
032861	VNMG160408E-1B	NL250	9,53	16,60	4,76	0,80	3,81		Finishing
030883	VNMG160408E-1B	SP0819	9,53	16,60	4,76	0,80	3,81		Finishing

For Toolholders External: see pages 160 - 162 | Internal: see page 163

Material Guide – Key to Recommended Inserts

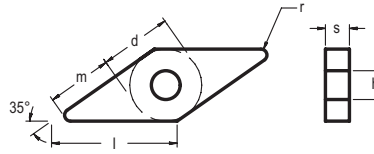
Material Designation

P Unalloyed Steels
 P Alloyed Steels
 M Stainless Steels
 M PH Stainless
 K Cast Irons
 N Aluminum & Alloys
 S High Temp. Alloys
 H Hard Materials

V Style

Turning Inserts

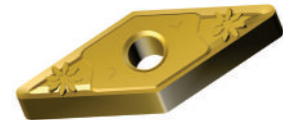
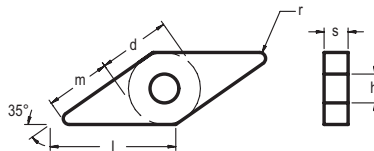
VNMG 2N Geometry



EDP	ISO Description	Grade	Dimensions (mm)					Material	Application
			d	l	s	r _e	h		
032864	VNMG160404E-2N	NL250	9,53	16,60	4,76	0,40	3,81		Medium
032865	VNMG160404E-2N	NL300	9,53	16,60	4,76	0,40	3,81		Medium
032866	VNMG160404E-2N	NL920	9,53	16,60	4,76	0,40	3,81		Medium
032867	VNMG160408E-2N	NL250	9,53	16,60	4,76	0,80	3,81		Medium
032868	VNMG160408E-2N	NL300	9,53	16,60	4,76	0,80	3,81		Medium
032869	VNMG160408E-2N	NL920	9,53	16,60	4,76	0,80	3,81		Medium

For Toolholders External: see pages 160 - 162 | Internal: see page 163

VNMG 3J Geometry



EDP	ISO Description	Grade	Dimensions (mm)					Material	Application
			d	l	s	r _e	h		
032873	VNMG160404E-3J	SP4019	9,53	16,60	4,76	0,40	3,81		Medium
032874	VNMG160408E-3J	SP4019	9,53	16,60	4,76	0,80	3,81		Medium

For Toolholders External: see pages 160 - 162 | Internal: see page 163

Material Guide – Key to Recommended Inserts

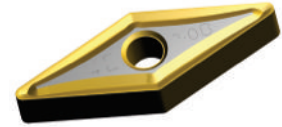
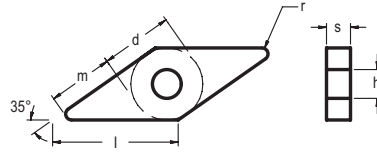
Material Designation

P Unalloyed Steels
 P Alloyed Steels
 M Stainless Steels
 M PH Stainless
 K Cast Irons
 N Aluminum & Alloys
 S High Temp. Alloys
 H Hard Materials

V Style

Turning Inserts

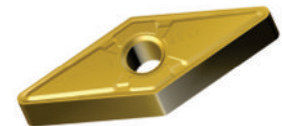
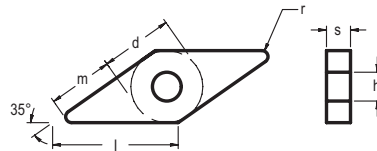
VNGG 4E Geometry



EDP	ISO Description	Grade	Dimensions (mm)					Material	Application
			d	l	s	r _e	h		
030537	VNMG160404E-4E	SP0819	9,53	16,60	4,76	0,40	3,81		Medium-Roughing
030538	VNMG160408E-4E	SP0819	9,53	16,60	4,76	0,80	3,81		Medium-Roughing

For Toolholders External: see pages 160 - 162 | Internal: see page 163

VNMG 4U Geometry



EDP	ISO Description	Grade	Dimensions (mm)					Material	Application
			d	l	s	r _e	h		
032875	VNMG160404E-4U	NL200	9,53	16,60	4,76	0,40	3,81		Roughing
032876	VNMG160408E-4U	NL200	9,53	16,60	4,76	0,80	3,81		Roughing

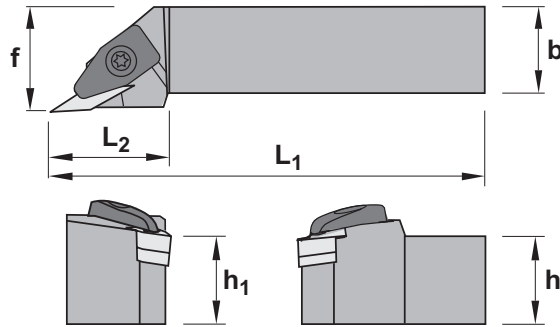
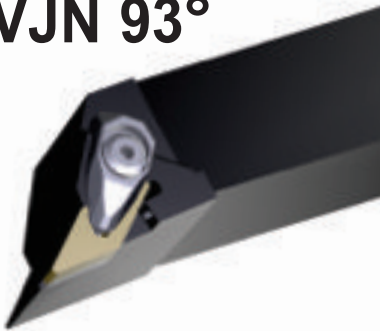
For Toolholders External: see pages 160 - 162 | Internal: see page 163

Material Guide – Key to Recommended Inserts

Material Designation

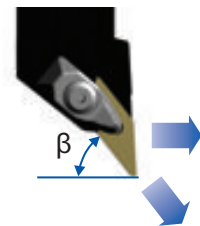
Unalloyed Steels
 Alloyed Steels
 Stainless Steels
 PH Stainless
 Cast Irons
 Aluminum & Alloys
 High Temp. Alloys
 Hard Materials

DVJN 93°



DVJN LH & RH External Square Shank Toolholders







EDP	Item Description	Hand	Insert Sizes	Dimensions (mm)				
				h = h ₁	b	f	L ₁	L ₂
033401	DVJNL 2020 K16	LH	VN_1604	20	20	25	125	38
033402	DVJNL 2525 M16	LH	VN_1604	25	25	32	150	38
033403	*DVJNL 3225 P16	LH	VN_1604	32	25	32	170	38
033404	DVJNR 2020 K16	RH	VN_1604	20	20	25	125	38
033405	DVJNR 2525 M16	RH	VN_1604	25	25	32	150	38
033406	*DVJNR 3225 P16	RH	VN_1604	32	25	32	170	38



D Style External Toolholder for Negative Inserts: VN_1604
 Application: O/D Turn and Profile
 Axial Approach 93°
 Axial -6°
 Radial -6°
 Profiling Clearance Angle $\beta = 49^\circ$
 RH Holder Shown

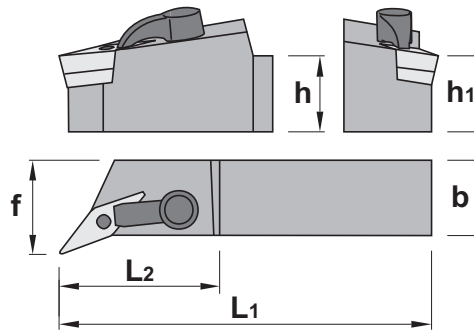
* Non Stock Items, subject to extended delivery time

DVJNL/R Spare Parts

Item Description	Clamp Screw EDP 	Clamp EDP 	Clamp Spring EDP 	Anvil EDP 	Anvil Screw EDP 	Clamp & Anvil Screw Key 						
DVJNL/R 2020 K16	033711	1695	033709	DC2708	033720/	4294	001695	IVSN322	033718	1764	018286	KH5003
DVJNL/R 2525 M16												
*DVJNL/R 3225 P16												

* Non Stock Items, subject to extended delivery time

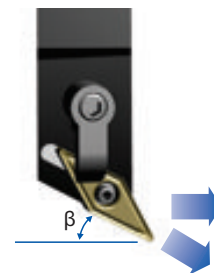
MVQN 117,5°



MVQN LH & RH External Square Shank Toolholders

EDP	Item Description	Hand	Insert Sizes	Dimensions (mm)				
				h = h ₁	b	f	L ₁	L ₂
033413	MVQNL 2020 K16	LH	VN_1604	20	20	25	125	42
033414	MVQNL 2525 M16	LH	VN_1604	25	25	32	150	42
033415	*MVQNL 3225 P16	LH	VN_1604	32	25	32	170	42
033416	MVQNR 2020 K16	RH	VN_1604	20	20	25	125	42
033417	MVQNR 2525 M16	RH	VN_1604	25	25	32	150	42
033418	*MVQNR 3225 P16	RH	VN_1604	32	25	32	170	42

* Non Stock Items, subject to extended delivery time



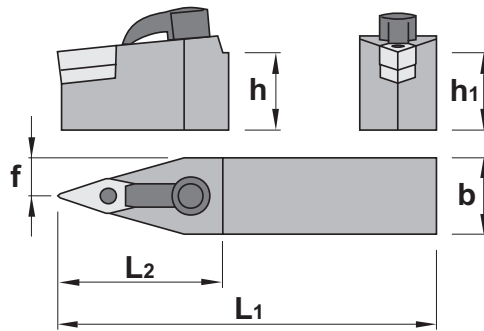
M Style External Toolholder
for Negative Inserts: VN_1604
Application: Face and Profile Turn
Axial Approach 117,5°
Axial -8°
Radial -10°
Profiling Clearance Angle $\beta = 36,5^\circ$
RH Holder Shown

MVQNL/R Spare Parts

Item Description	Clamp Screw EDP	Clamp EDP	Clamp Key EDP	Lock Pin EDP	Lock Pin Key EDP	Anvil EDP						
MVQNL/R 2020 K16	028575	1086	034492	CL2616	018286	KH5003	034511	1665	028578	KH5002	001695	IVSN322
MVQNL/R 2525 M16												
*MVQNL/R 3225 Q16												

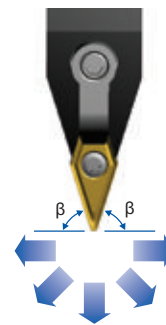
* Non Stock Items, subject to extended delivery time

MVVNN 72,5°



MVVNN Neutral External Square Shank Toolholders

EDP	Item Description	Hand	Insert Sizes	Dimensions (mm)				
				h = h ₁	b	f	L ₁	L ₂
028549	MVVNN 2020 K16	Neutral	VN_1604	20	20	10	125	42
028550	MVVNN 2525 M16	Neutral	VN_1604	25	25	12,5	150	42



M Style External Toolholder
for Negative Inserts: VN_1604
Application: O/D Plunge and Profile
Axial Approach 72,5°
Axial -6°
Radial 0°
Profiling Clearance Angle $\beta = 69,5^\circ$
Neutral Holder Shown

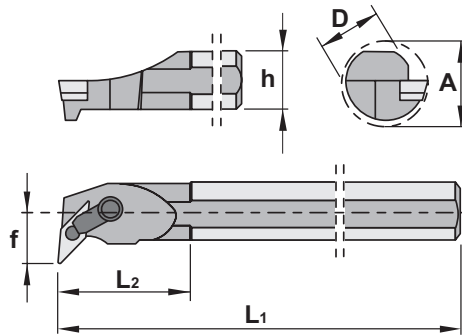
MVVNNL/R Spare Parts

Item Description	Clamp Screw EDP	Clamp EDP	Clamp Key EDP	Lock Pin EDP	Lock Pin Key EDP	Anvil EDP						
MVVNN 2020 K16	028575	1086	034492	CL2616	018286	KH5003	034511	1665	028578	KH5002	001695	IVSN322
MVVNN 2525 M16												

V Style

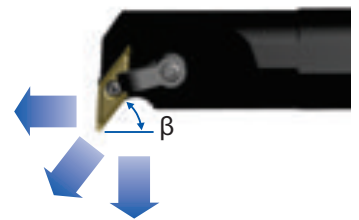
Internal Boring Bars

S..MVUN 93°



S..MVUN LH & RH Internal Boring Bars

EDP	Item Description	Hand	Insert Sizes	Dimensions (mm)						
				Min Bore Ø A	ØD	f	L1	L2	h	Through Coolant
033471	S25T MVUNL 16	LH	VN_1604	31	25	17	300	42	23	
033472	S32U MVUNL 16	LH	VN_1604	39	32	22	350	45	30	
033473	S40V MVUNL 16	LH	VN_1604	48	40	27	400	50	37	
033474	S25T MVUNR 16	RH	VN_1604	31	25	17	300	42	23	
033475	S32U MVUNR 16	RH	VN_1604	39	32	22	350	45	30	
033476	S40V MVUNR 16	RH	VN_1604	48	40	27	400	50	37	



M Style External Toolholder
for Negative Inserts: VN_1604
Application: Internal I/D Boring and Profile
Axial Approach 93°
Axial -5°
Radial -15°
Profiling Clearance Angle $\beta = 51^\circ$
RH Bar Shown

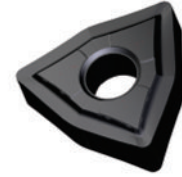
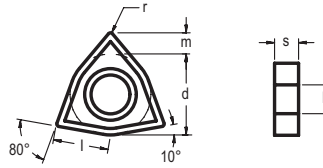
S.. MVUNL/R Spare Parts

Item Description	Clamp Screw EDP	Clamp EDP	Clamp Key EDP	Lock Pin EDP	Lock Pin Key EDP	Anvil EDP						
S25T MVUNL/R 16	034493	1186	034491	CL2614	018286	KH5003	034511	1665	028578	KH5002	001695	IVSN322
S32U MVUNL/R 16	028575	1086										
S40V MVUNL/R 16												

W Style

Turning Inserts

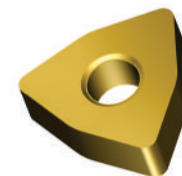
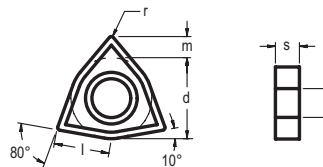
WNGG 3F Geometry



EDP	ISO Description	Grade	Dimensions (mm)					Material	Application
			d	l	s	r _ε	h		
031552	WNGG080402F-3F	SP0819	12,70	8,69	4,76	0,20	5,16		Medium
031553	WNGG080404F-3F	SP0819	12,70	8,69	4,76	0,40	5,16		Medium
031554	WNGG080408F-3F	SP0819	12,70	8,69	4,76	0,80	5,16		Medium

For Toolholders External: see page 170 | Internal: see page 171

WNMA Flat Top



EDP	ISO Description	Grade	Dimensions (mm)					Material	Application
			d	l	s	r _ε	h		
032877	WNMA080408E	NL250	12,70	8,69	4,76	0,80	5,16		Heavy Roughing
032878	WNMA080412E	NL250	12,70	8,69	4,76	1,20	5,16		Heavy Roughing

For Toolholders External: see page 170 | Internal: see page 171

Material Guide – Key to Recommended Inserts

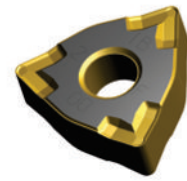
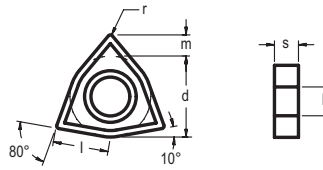
Material Designation

Unalloyed Steels
 Alloyed Steels
 Stainless Steels
 PH Stainless
 Cast Irons
 Aluminum & Alloys
 High Temp. Alloys
 Hard Materials

W Style

Turning Inserts

WNMG 1B Geometry



EDP	ISO Description	Grade	Dimensions (mm)					Material	Application
			d	l	s	r _e	h		
030884	WNMG060404E-1B	SP0819	9,53	6,52	4,76	0,40	3,81		Finishing
032879	WNMG060408E-1B	NL250	9,53	6,52	4,76	0,80	3,81		Finishing
030885	WNMG060408E-1B	SP0819	9,53	6,52	4,76	0,80	3,81		Finishing
032880	WNMG080404E-1B	NL250	12,70	8,69	4,76	0,40	5,16		Finishing
030886	WNMG080404E-1B	SP0819	12,70	8,69	4,76	0,40	5,16		Finishing
032881	WNMG080408E-1B	NL250	12,70	8,69	4,76	0,80	5,16		Finishing
030887	WNMG080408E-1B	SP0819	12,70	8,69	4,76	0,80	5,16		Finishing
032882	WNMG080412E-1B	NL250	12,70	8,69	4,76	1,20	5,16		Finishing
030888	WNMG080412E-1B	SP0819	12,70	8,69	4,76	1,20	5,16		Finishing

For Toolholders External: see page 170 | Internal: see page 171

Material Guide – Key to Recommended Inserts

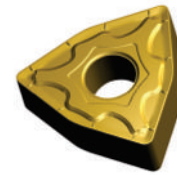
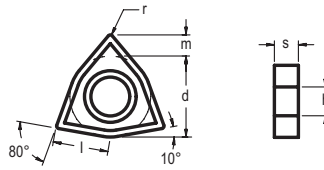
Material Designation

Unalloyed Steels
 Alloyed Steels
 Stainless Steels
 PH Stainless
 Cast Irons
 Aluminum & Alloys
 High Temp. Alloys
 Hard Materials

W Style

Turning Inserts

WNMG 2N Geometry



EDP	ISO Description	Grade	Dimensions (mm)					Material	Application
			d	l	s	r _e	h		
032884	WNMG060404E-2N	NL250	9,53	6,52	4,76	0,40	3,81	◆◆◆◆	Medium
032885	WNMG060408E-2N	NL300	9,53	6,52	4,76	0,80	3,81	◆◆◆◆	Medium
032886	WNMG060408E-2N	NL920	9,53	6,52	4,76	0,80	3,81	◆◆◆◆	Medium
032887	WNMG080404E-2N	NL250	12,70	8,69	4,76	0,40	5,16	◆◆◆◆	Medium
032888	WNMG080404E-2N	NL300	12,70	8,69	4,76	0,40	5,16	◆◆◆◆	Medium
032889	WNMG080404E-2N	NL920	12,70	8,69	4,76	0,40	5,16	◆◆◆◆	Medium
032890	WNMG080408E-2N	NL250	12,70	8,69	4,76	0,80	5,16	◆◆◆◆	Medium
032891	WNMG080408E-2N	NL300	12,70	8,69	4,76	0,80	5,16	◆◆◆◆	Medium
032892	WNMG080408E-2N	NL920	12,70	8,69	4,76	0,80	5,16	◆◆◆◆	Medium
032893	WNMG080412E-2N	NL250	12,70	8,69	4,76	1,20	5,16	◆◆◆◆	Medium
032894	WNMG080412E-2N	NL300	12,70	8,69	4,76	1,20	5,16	◆◆◆◆	Medium
032895	WNMG080412E-2N	NL920	12,70	8,69	4,76	1,20	5,16	◆◆◆◆	Medium
032896	WNMG080416E-2N	NL250	12,70	8,69	4,76	1,60	5,16	◆◆◆◆	Medium
032897	WNMG080416E-2N	NL300	12,70	8,69	4,76	1,60	5,16	◆◆◆◆	Medium
032898	WNMG080416E-2N	NL920	12,70	8,69	4,76	1,60	5,16	◆◆◆◆	Medium

For Toolholders External: see page 170 | Internal: see page 171

Material Guide – Key to Recommended Inserts

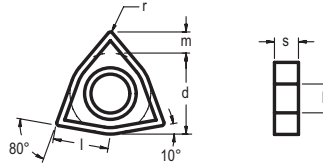
Material Designation

◆ P Unalloyed Steels
 ◆ P Alloyed Steels
 ◆ M Stainless Steels
 ◆ M PH Stainless
 ◆ K Cast Irons
 ◆ N Aluminum & Alloys
 ◆ S High Temp. Alloys
 ◆ H Hard Materials

W Style

Turning Inserts

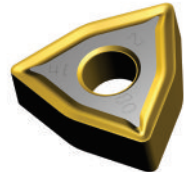
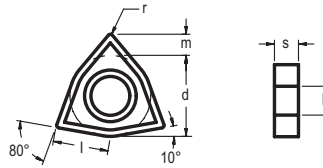
WNMG 3J Geometry



EDP	ISO Description	Grade	Dimensions (mm)					Material	Application
			d	l	s	r _e	h		
032899	WNMG060404E-3J	SP4019	9,53	6,52	4,76	0,40	3,81		Medium
032900	WNMG060408E-3J	SP4019	9,53	6,52	4,76	0,80	3,81		Medium
032901	WNMG080404E-3J	SP4019	12,70	8,69	4,76	0,40	5,16		Medium
032902	WNMG080408E-3J	SP4019	12,70	8,69	4,76	0,80	5,16		Medium
032903	WNMG080412E-3J	SP4019	12,70	8,69	4,76	1,20	5,16		Medium

For Toolholders External: see page 170 | Internal: see page 171

WNMG 4E Geometry



EDP	ISO Description	Grade	Dimensions (mm)					Material	Application
			d	l	s	r _e	h		
030519	WNMG060404E-4E	SP0819	9,53	6,52	4,76	0,40	3,81		Medium-Roughing
030520	WNMG060408E-4E	SP0819	9,53	6,52	4,76	0,80	3,81		Medium-Roughing
031183	WNMG060412E-4E	SP0819	9,53	6,52	4,76	1,20	3,81		Medium-Roughing
030521	WNMG080404E-4E	SP0819	12,70	8,69	4,76	0,40	5,16		Medium-Roughing
032904	WNMG080404E-4E	NL400	12,70	8,69	4,76	0,40	5,16		Medium-Roughing
030522	WNMG080408E-4E	SP0819	12,70	8,69	4,76	0,80	5,16		Medium-Roughing
032905	WNMG080408E-4E	NL400	12,70	8,69	4,76	0,80	5,16		Medium-Roughing
032906	WNMG080412E-4E	NL400	12,70	8,69	4,76	1,20	5,16		Medium-Roughing
030523	WNMG080412E-4E	SP0819	12,70	8,69	4,76	1,20	5,16		Medium-Roughing

For Toolholders External: see page 170 | Internal: see page 171

Material Guide – Key to Recommended Inserts

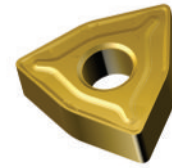
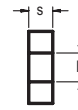
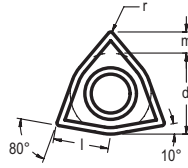
Material Designation

Unalloyed Steels
 Alloyed Steels
 Stainless Steels
 PH Stainless
 Cast Irons
 Aluminum & Alloys
 High Temp. Alloys
 Hard Materials

W Style

Turning Inserts

WNMG 4T Geometry



EDP	ISO Description	Grade	Dimensions (mm)					Material	Application
			d	l	s	r _e	h		
034458	WNMG060408E-4T	NL300	9,53	6,52	4,76	0,80	3,81		Roughing
034459	WNMG060408E-4T	NL920	9,53	6,52	4,76	0,80	3,81		Roughing
032909	WNMG060412E-4T	NL300	9,53	6,52	4,76	1,20	3,81		Roughing
032910	WNMG060412E-4T	NL920	9,53	6,52	4,76	1,20	3,81		Roughing
032911	WNMG080408E-4T	NL250	12,70	8,69	4,76	0,80	5,16		Roughing
032912	WNMG080408E-4T	NL300	12,70	8,69	4,76	0,80	5,16		Roughing
032913	WNMG080408E-4T	NL400	12,70	8,69	4,76	0,80	5,16		Roughing
032914	WNMG080408E-4T	NL920	12,70	8,69	4,76	0,80	5,16		Roughing
032915	WNMG080412E-4T	NL250	12,70	8,69	4,76	1,20	5,16		Roughing
032916	WNMG080412E-4T	NL300	12,70	8,69	4,76	1,20	5,16		Roughing
032917	WNMG080412E-4T	NL400	12,70	8,69	4,76	1,20	5,16		Roughing
032918	WNMG080412E-4T	NL920	12,70	8,69	4,76	1,20	5,16		Roughing
062919	WNMG080416E-4T	NL300	12,70	8,69	4,76	1,60	5,16		Roughing
032920	WNMG080416E-4T	NL400	12,70	8,69	4,76	1,60	5,16		Roughing
032921	WNMG080416E-4T	NL920	12,70	8,69	4,76	1,60	5,16		Roughing

For Toolholders External: see page 170 | Internal: see page 171

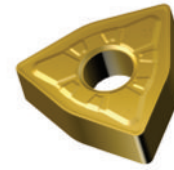
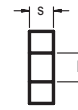
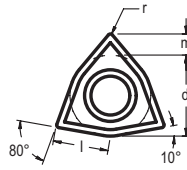
Material Guide – Key to Recommended Inserts

Material Designation

W Style

Turning Inserts

WNMG 4U Geometry



EDP	ISO Description	Grade	Dimensions (mm)					Material	Application
			d	l	s	r _e	h		
032922	WNMG080408E-4U	NL200	12,70	8,69	4,76	0,80	5,16		Roughing
032923	WNMG080412E-4U	NL200	12,70	8,69	4,76	1,20	5,16		Roughing

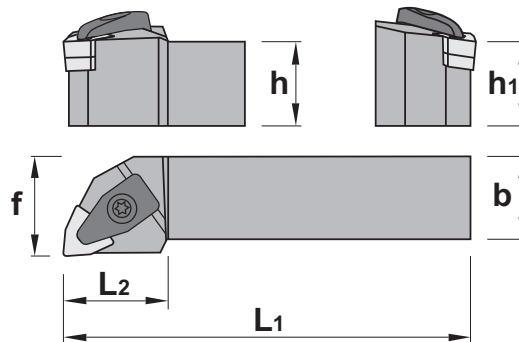
For Toolholders External: see page 170 | Internal: see page 171

Material Guide – Key to Recommended Inserts

Material Designation

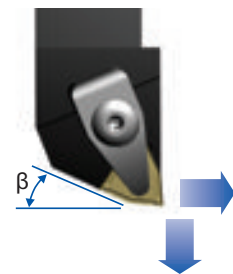
P Unalloyed Steels
 P Alloyed Steels
 M Stainless Steels
 M PH Stainless
 K Cast Irons
 N Aluminum & Alloys
 S High Temp. Alloys
 H Hard Materials

DWLNL 95°



DWLN LH & RH External Square Shank Toolholders

EDP	Item Description	Hand	Insert Sizes	Dimensions (mm)				
				h = h ₁	b	f	L ₁	L ₂
033430	DWLNL 2020 K06	LH	WN_0604	20	20	25	125	25
033431	DWLNL 2525 M06	LH	WN_0604	25	25	32	150	25
033432	DWLNLR 2020 K06	RH	WN_0604	20	20	25	125	25
033433	DWLNLR 2525 M06	RH	WN_0604	25	25	32	150	25
033434	DWLNL 2020 K08	LH	WN_0804	20	20	25	125	34
033435	DWLNL 2525 M08	LH	WN_0804	25	25	32	150	34
033436	DWLNL 3232 P08	LH	WN_0804	32	32	40	170	34
033437	DWLNLR 2020 K08	RH	WN_0804	20	20	25	125	34
033438	DWLNLR 2525 M08	RH	WN_0804	25	25	32	150	34
033439	DWLNLR 3232 P08	RH	WN_0804	32	32	40	170	34



D Style External Toolholder
for Negative Inserts:
WN_0604, & WN_0804
Application: O/D Face and Turn
Axial Approach 95°
Axial -6°
Radial -6°
Profiling Clearance Angle $\beta = 0^\circ$
RH Holder Shown

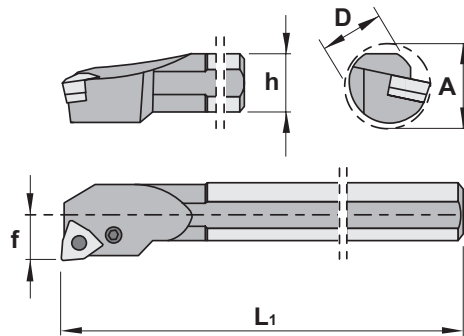
DWLNL/R Spare Parts

Item Description	Clamp Screw EDP	Clamp EDP	Clamp Spring EDP	Anvil EDP	Anvil Screw EDP	Clamp & Anvil Screw Key						
DWLNL/R 2020 K06	033711	1695	033709	DC2708	033720	4294	030973	IWSN323	033718	1764	018286	KH5003
DWLNL/R 2525 M06												
DWLNL/R 2020 K08	033710	1696	033707	DC2712	033719	4295	009251	IWSN433	033716	1766	018287	KH5004
DWLNL/R 2525 M08												
DWLNL/R 3232 P08												

W Style

Internal Boring Bars

S..PWLNL 95°



S..PWLNL LH & RH Internal Boring Bars

EDP	Item Description	Hand	Insert Sizes	Dimensions (mm)					Through Coolant
				Min Bore Ø A	ØD	f	L1	h	
033450	S16R PWLNL 06	LH	WN_06	20	16	11	200	15	⊘
033451	S20S PWLNL 06	LH	WN_06	27	20	13	250	18	⊘
033452	S25T PWLNL 06	LH	WN_06	31	25	17	300	23	⊘
033453	S16R PWLNR 06	RH	WN_06	20	16	11	200	15	⊘
033454	S20S PWLNR 06	RH	WN_06	27	20	13	250	18	⊘
033455	S25T PWLNR 06	RH	WN_06	31	25	17	300	23	⊘
033456	S25T PWLNL 08	LH	WN_08	31	25	17	300	23	⊘
033457	S32U PWLNL 08	LH	WN_08	39	32	22	350	30	⊘
034457	*S40V PWLNL 08	LH	WN_08	48	40	27	400	37	⊘
033458	S25T PWLNR 08	RH	WN_08	31	25	17	300	23	⊘
033459	S32U PWLNR 08	RH	WN_08	39	32	22	350	30	⊘
033460	*S40V PWLNR 08	RH	WN_08	48	40	27	400	37	⊘

* Non Stock Items, subject to extended delivery time



P Style External Toolholder
for Negative Inserts:
WN_0604 & WN_0804
Application:- O/D Face and Turn
Axial Approach 95°
Axial -6°
Raial -13,5°
Profiling Clearance Angle $\beta = 0^\circ$
RH Bar Shown

S..PWLNL/R Spare Parts

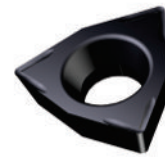
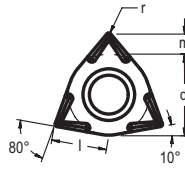
Item Description	Lever EDP	Lever Screw EDP	Anvil EDP	Anvil Clip EDP	Clip Punch EDP	Key EDP
S16R PWLNL/R 06	022652	PL8216	028741	PLS1605	-	028578
S20S PWLNL/R 06	017442	PL8009	017447	PLS1606	028460	018285
S25T PWLNL/R 06	028047	PL8312	022625	PLS1648	-	018286
S25T PWLNL/R 08	017443	PL8012	017448	PLS1608	028461	018286
S32U PWLNL/R 08					PA3007	
*S40V PWLNL/R 08					PA3008	

* Non Stock Items, subject to extended delivery time

W Style

Turning Inserts

WPMT 61 Geometry



EDP	ISO Description	Grade	Dimensions (mm)					Material	Application
			d	l	s	r _e	h		
032293	WPMT020102E-61	SP4019	3,97	2,92	1,59	0,20	1,95		Finishing
032291	WPMT050304E-61	SP4019	7,94	5,43	3,18	0,40	3,40		Finishing

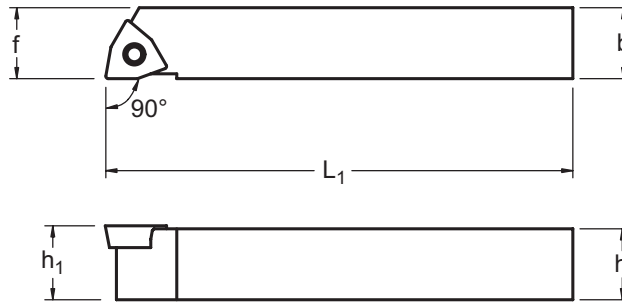
For Toolholders External: see page 173 | Internal: see page 174

Material Guide – Key to Recommended Inserts

Material Designation

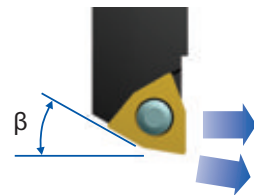
Unalloyed Steels
 Alloyed Steels
 Stainless Steels
 PH Stainless
 Cast Irons
 Aluminum & Alloys
 High Temp. Alloys
 Hard Materials

SWAP 90°







SWAP LH & RH External Square Shank Toolholders

EDP	Item Description	Hand	Insert Sizes	Dimensions (mm)				
				h = h ₁	b	f	L ₁	L ₂
025257	SWAPL 1212 M08	LH	WP_05	12	12	12,5	80	-
025256	SWAPR 1212 M08	RH	WP_05	12	12	12,5	80	-



S Style External Toolholder
for Positive Inserts: WPMT_0503
Application: Face & Turn O/D
Approach Angle 90°
Axial 0°
Radial 0°
Profiling Clearance Angle $\beta = 7^\circ$
RH Holder Shown

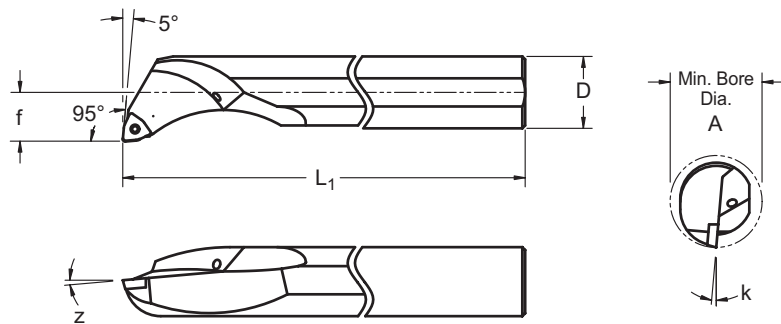
SWAPL/R Spare Parts

Item Description	Insert Screw EDP		Insert Key EDP		Anvil EDP		Anvil Screw EDP	
SEAPL/R 1212 F09	017032	A3006T	013214	T9	-	-	-	-

W Style

Internal Boring Bars

SWLP 95°



A.. SWLP LH & RH Internal Boring Bars

EDP	Item Description	Hand	Insert Sizes	Dimensions (mm)					
				Min Bore Ø A	ØD	f	L ₁	L ₂	Through Coolant
033688	S06F SWLPL 02	LH	WP_0201	7,50	6,00	3,20	80,00	-	
018450	A08H SWLPL 02	LH	WP_0201	11,00	8,00	6,00	100,00	-	
018451	A10H SWLPL 02	LH	WP_0201	13,00	10,00	7,00	100,00	-	
033689	S06F SWLPR 02	RH	WP_0201	7,50	6,00	3,20	80,00	-	
018327	A08H SWLPR 02	RH	WP_0201	11,00	8,00	6,00	100,00	-	
018328	A10H SWLPR 02	RH	WP_0201	13,00	10,00	7,00	100,00	-	
018453	A12K SWLPL 05	LH	WP_0503	16,00	12,00	9,00	125,00	-	
033690	A12K SWLPR 05	RH	WP_0503	16,00	12,00	9,00	125,00	-	

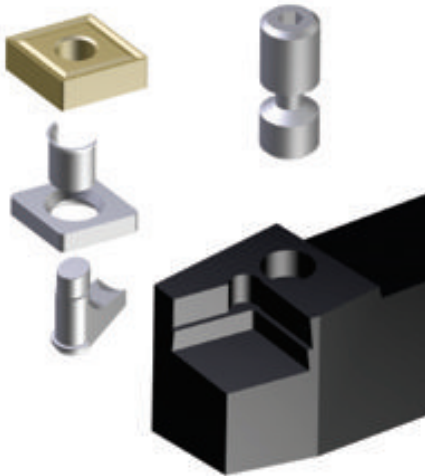


S Style Boring Bar
for Positive Inserts:
WP0503 & WP0201
Application: Facing and Profiling
Approach Angle 95°
Axial 0°
Radial 5°
Profiling Clearance Angle $\beta = 0^\circ$
RH Boring Bar Shown

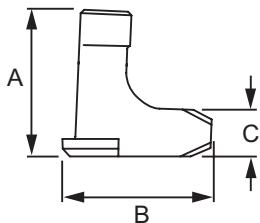
SWLPL/R Spare Parts

Item Description	Insert Screw EDP		Insert Key EDP		Anvil EDP		Anvil Screw EDP	
S06F SWLPL/R 02	018489	55F1803T	018487	T6	-	-	-	-
A08H SWLPL/R 02								
A10H SWLPL/R 02								
A12K SWLPL/R 05	017032	A3006T	013214	T9	-	-	-	-

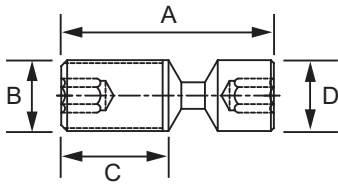
P - Lever Lock (Negative Inserts)



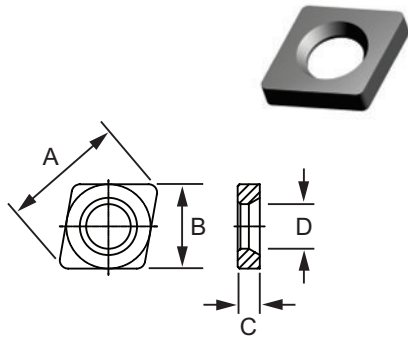
This system has a pivoted lever which tilts when the clamping screw is adjusted pulling the insert back against the pocket walls, for a strong location for the insert, with no obstruction to the chip flow. Also only one key is needed to facilitate the installation and removal of the insert.



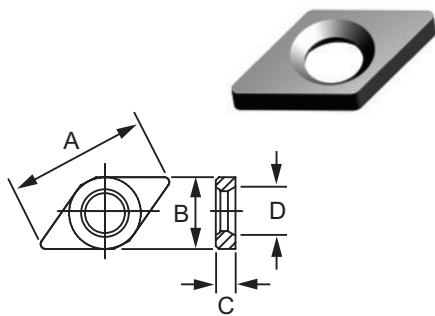
Lever Lock				
EDP	Item Description	Dimensions (mm)		
		A	B	C
017442	PL8009	12	10,2	3,4
017443	PL8012	13,1	13,5	4,2
017445	PL8016	17,1	16,5	5,4
017446	PL8019	20,8	20,4	7,3
028408	PL8025	25,2	25,7	8,2
034475	PL8110	11,7	11	4
034476	PL8112	13,3	13	4,4
034477	PL8116	18	18,6	6,7
034478	PL8120	18,7	20,4	6,7
034479	PL8125	23	24	7,5
028742	PL8212	12,1	13,4	4,7
022652	PL8216	9,5	10,1	3,4
028047	PL8312	13,2	13,5	4,2
017444	PL8415	14,7	16,2	5,1



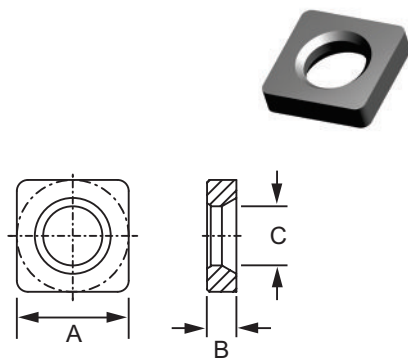
Lever Screws					
EDP	Item Description	Dimensions (mm)			
		A	B	C	D
028741	PLS1605	12	M5x0,8	6,10	M5x0,8
017447	PLS1606	16,7	M6x1	8,65	M6x1
017448	PLS1608	20,7	M8x1	8,75	M8x1
028409	PLS1612	36	M12x1	17,30	M12x1
017450	PLS1618	22,5	M8X1	11,25	M8X1
017499	PLS1638	21,1	M8X1	10,35	M8X1
022625	PLS1648	17	M8X1	9,1	M8X1
017451	PLS1610	27,2	M10x1	13,35	M10x1
028743	PLS1626	13,4	M6x1	8	M6x1
034480	PLS1705	14	M5x0,8	8,1	M5x0,8
034481	PLS1706	20,7	M6x1	12,65	M6x1
028458	PLS1708	23,5	M8X1	11,25	M8X1
034482	PLS1710	30,4	M10x1	16,35	M10x1



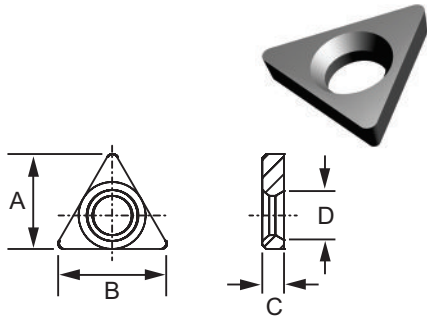
Anvils C-Style					
EDP	Item Description	Dimensions (mm)			
		A	B	C	D
017456	PA3612	17,16	11,68	3,18	6,8
017457	PA3616	20,9	10,94	4,76	9,5
034483	PA3625	36	24,9	6,6	12,8



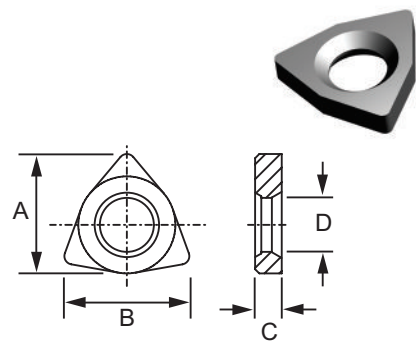
Anvils D-Style					
EDP	Item Description	Dimensions (mm)			
		A	B	C	D
028375	PA3711	17	8,5	2,7	4,9
017459	PA3715	23,4	11,6	3,18	6,4



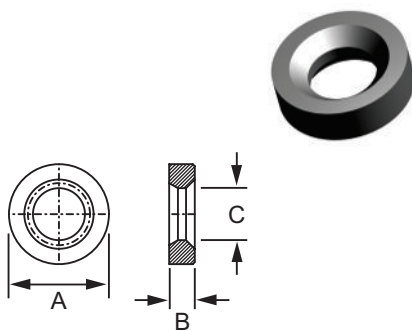
Anvils S-Style				
EDP	Item Description	Dimensions (mm)		
		A	B	C
017460	PA3512	11,66	3,18	6,35
017461	PA3515	14,5	4,76	7,9
017462	PA3519	18,1	4,76	7,9
028416	PA3525	24,6	6,4	13



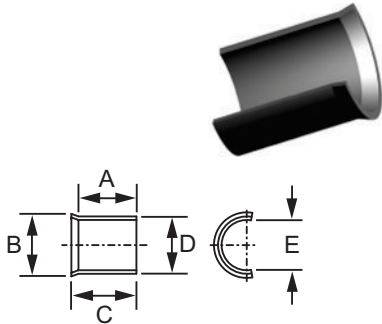
Anvils T-Style					
EDP	Item Description	Dimensions (mm)			
		A	B	C	D
017463	3416	11,98	13,52	2,76	4,9
017464	3422	16,6	18,92	3,18	6,4



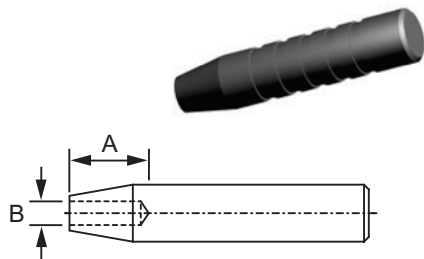
Anvils W-Style					
EDP	Item Description	Dimensions (mm)			
		A	B	C	D
028460	3007	10,85	11,3	3,18	6,4
028461	3008	15,2	15,88	3,18	6,4



Anvils R-Style				
EDP	Item Description	Dimensions (mm)		
		A	B	C
034484	PA3810	8,34	3,18	4,9
034485	PA3812	9,9	3,18	4,9
034486	PA3816	13,55	4,76	6,4
034487	PA3820	17,25	4,76	8,05
034488	PA3825	21,9	6,35	9,6
034489	PA3925	24,8	6,35	12,9
001670	IRS84	25,15	6,35	14,5



Clips						
EDP	Item Description	Dimensions (mm)				
		A	B	C	D	E
034503	PC4109	4,6	5,76	5,2	4,9	4,4
028417	PC4110	6,1	5,6	6,8	4,9	3,8
017453	PC4112	5,2	7	5,8	6,6	5,5
028051	PC4115	7,7	9	8,7	8,2	7
034504	PC4116	8,5	6,82	9,1	6,5	5,4
017455	PC4119	9,8	10,57	11	9,7	8,5
028418	PC4125	9,7	14,7	11,8	13,2	10,5

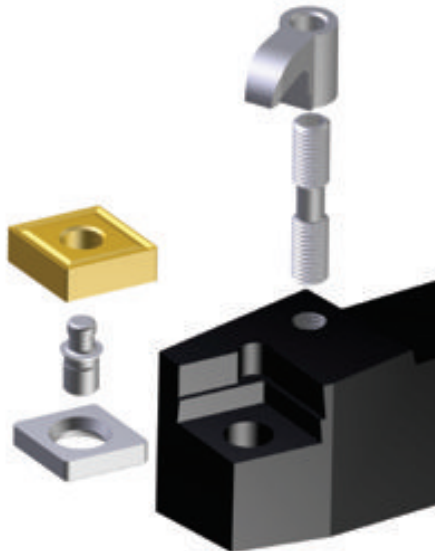


Clip Fixing Pin			
EDP	Item Description	Dimensions (mm)	
		A	B
028053	PCP009	9	4
028054	PCP0012	9	4,750
034505	PCP0015	12	6,5
028056	PCP0019	12	8
034506	PCP0025	20	12,5

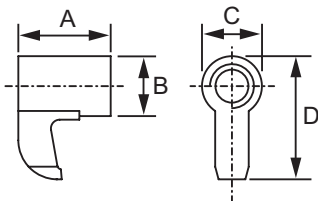
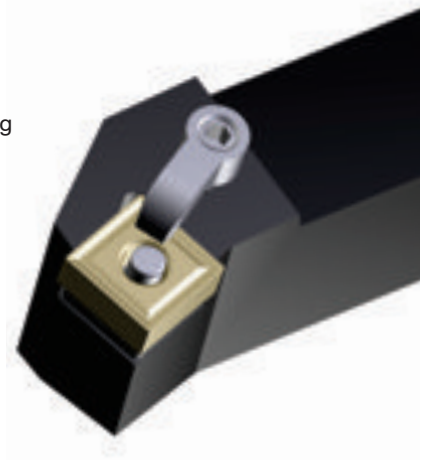


Keys		
EDP	Item Description	mm
028578	KH5002	2
018286	KH5003	3
018287	KH5004	4
018288	KH5005	5
018285	KH5025	2,5

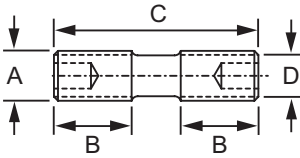
M - Clamp Lock (Negative Inserts)



The combination of lock pin and top clamp makes this one of the most secure clamping systems available. The lock pin locates the insert against the pocket wall while the top clamp secures the insert down.

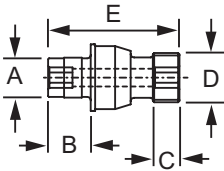


M Style Clamps					
EDP	Item Description	Dimensions (mm)			
		A	B	C	D
030974	CL6	10,90	3,99	7,62	14,73
029071	CL12	16,6	5,99	10,77	22,50
028996	CL20	13	5,31	9,35	18,34
029072	CL22	13,36	5,99	9,35	21,74
029073	CL30	16,84	5,84	10,74	24,64
034490	CL2613	13,5	-	9,5	18,5
034491	CL2614	13,5	-	9,5	21,7
034492	CL2616	13,5	-	9,5	24



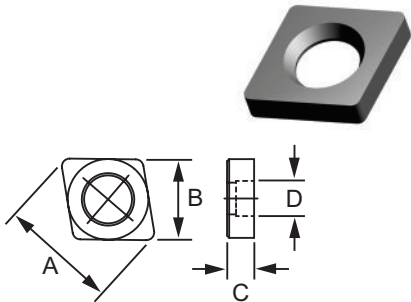
Clamp Screws

EDP	Item Description	Dimensions (mm)			
		A	B	C	D
029074	XNS36	-	6,99	19,17	-
029075	XNS47	-	6,78	20,5	-
028997	XNS48	-	4,6	25,4	-
029076	XNS510	-	5,31	31,7	-
028575	1086	M6x1 (LH)	11,4	29,4	M6x1 (RH)
034493	1186	M6x1 (LH)	7,11	20,50	M6x1 (RH)

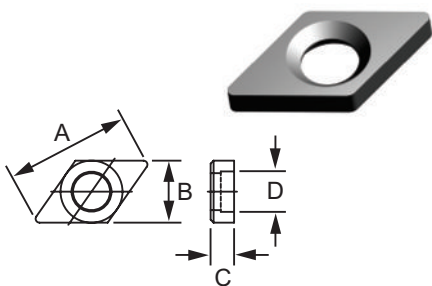


NL Pins

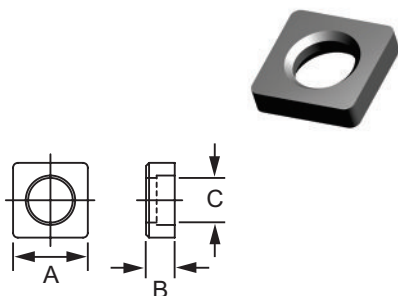
EDP	Item Description	A	B	C	D	E
		mm	mm	mm	mm	Thread Form
004703	NL33L	5,00	14,71	5,21	6,71	8-32 UNC
004705	NL34L	3,66	13,13	5	2,69	10-32L
004707	NL44	5	13,2	5,4	3,2	1/4-28 UNC
004708	NL46	5	13,2	5,4	3,2	1/4-28 UNC
004710	NL58	6,25	22	6,9	5,3	5/16-24 UNC
004713	NL68	6,25	22	6,9	4,8	3/8-24
004716	NL810	9	29,69	9,8	5,58	7/16-20
034511	1665	3,68	13	5	2,3	M5X0,8



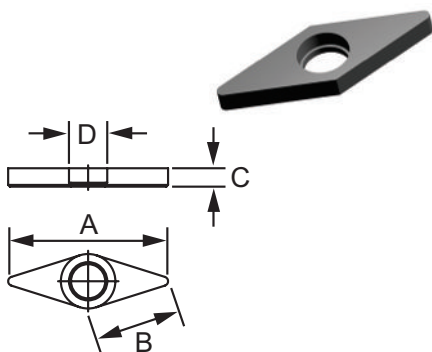
Anvils C-Style					
EDP	Item Description	Dimensions (mm)			
		A	B	C	D
029079	ICSN432	18,39	12,45	4,75	7,44
001685	ICSN533	22,94	15,62	4,75	9,78



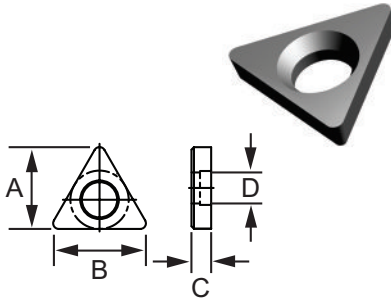
Anvils D-Style					
EDP	Item Description	Dimensions (mm)			
		A	B	C	D
001689	IDSN433	25,07	12,57	4,76	7,47



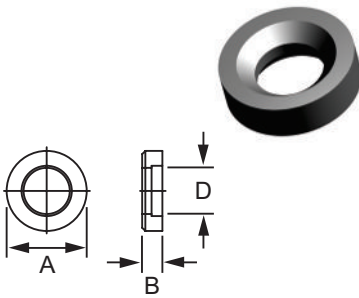
Anvils S-Style				
EDP	Item Description	Dimensions (mm)		
		A	B	C
001704	ISSN433	12,45	4,75	7,49
001707	ISSN533	15,65	4,75	9,83
001709	ISSN633	18,72	4,75	11,38



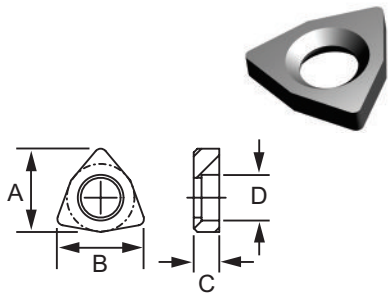
Anvils V-Style					
EDP	Item Description	Dimensions (mm)			
		A	B	C	D
001695	IVSN322	28,70	9,19	3,18	5,99



Anvils T-Style					
EDP	Item Description	Dimensions (mm)			
		A	B	C	D
001714	ITSN323	12,9	14,6	3,18	5,9
001718	ITSN433	17,3	19,7	4,76	7,4



Anvils R-Style				
EDP	Item Description	Dimensions (mm)		
		A	B	C
001670	IRSN84	25,15	6,35	14,5

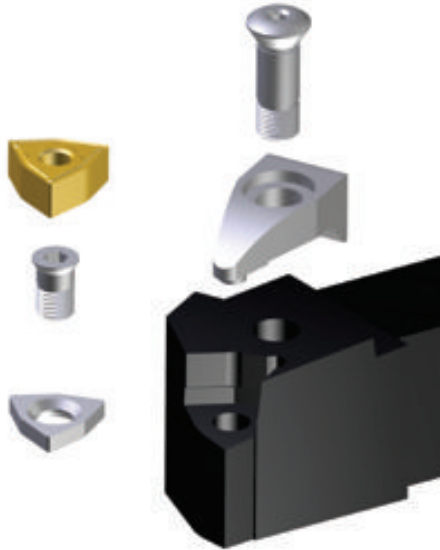


Anvils W-Style					
EDP	Item Description	Dimensions (mm)			
		A	B	C	D
009251	IWSN433	15,34	16,00	4,76	7,416



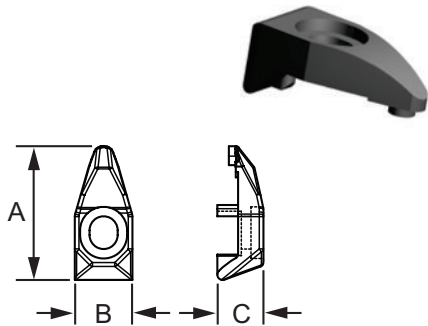
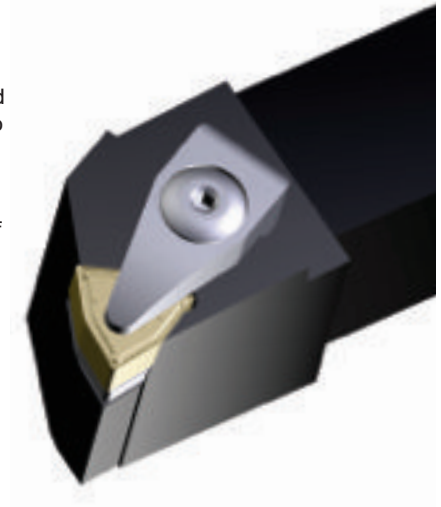
Keys		
EDP	Item Description	mm
028578	KH5002	2
018286	KH5003	3
018285	KH5025	2,5

D - Dimple Lock (Negative Inserts)

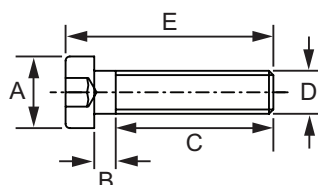


This system combines a pull back pin and top clamp in one, using a wedge action to locate the insert into the pocket, with the clamp screw pulling down on the insert. This clamping method provides a strong and rigid set-up, with the added benefit of only one key for replacement of inserts.

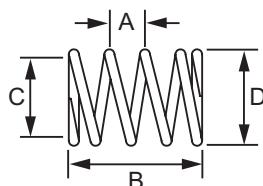
The "D" clamping system ensures zero insert movement during high feed or heavy interrupted machining, due to its accurate positioning that holds the insert securely clamped.



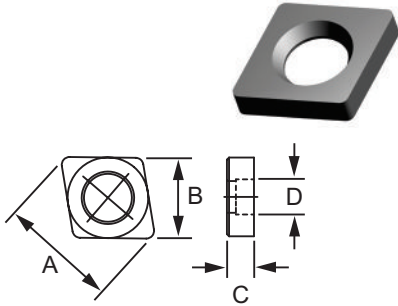
D Style Clamps				
EDP	Item Description	Dimensions (mm)		
		A	B	C
034494	DC 2312	28,90	14,00	12,00
033709	DC 2708	24,90	10,90	9,20
033707	DC 2712	29,00	12,50	10,00
034495	DC 2716	33,80	13,00	10,50
033708	DC 2719	35,20	13,50	10,50



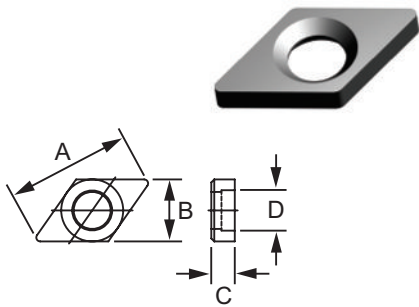
Clamp Screws						
EDP	Item Description	Dimensions (mm)				
		A	B	C	D	E
033711	1695	8,4	-	20	M5x0,8	23,5
033710	1696	9,8	-	25	M6x1	29
034512	1907	10,7	10,6	14	M7X0,75	27,5



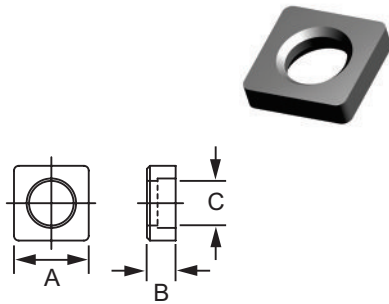
Clamp Spring					
EDP	Item Description	Dimensions (mm)			
		A	B	C	D
033720	4294	3	11,20	5	6,50
033719	4295	3,50	13	7	9,50



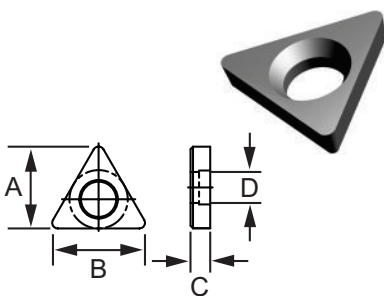
Anvils C-Style					
EDP	Item Description	Dimensions (mm)			
		A	B	C	D
017456	PA3612	17,17	11,68	3,18	6,81
029079	ICSN432	18,39	12,45	4,75	7,44
033712	ICSN442	18,39	12,45	6,35	7,44
001685	ICSN533	22,94	15,62	4,75	9,78
001686	ICSN633	25,527	18,8	4,76	11,3



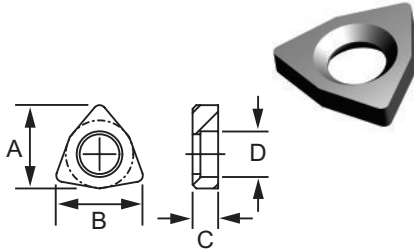
Anvils D-Style					
EDP	Item Description	Dimensions (mm)			
		A	B	C	D
034496	IDSN-322	18,72	9,40	3,18	6,48
001689	IDSN-433	25,66	12,57	4,76	7,40



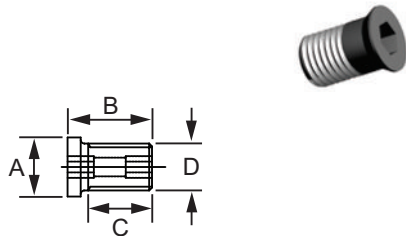
Anvils S-Style				
EDP	Item Description	Dimensions (mm)		
		A	B	C
001704	ISSN433	12,45	4,75	7,49
033715	ISSN442	12,45	6,35	7,49
001707	ISSN533	15,65	4,76	9,83
001709	ISSN633	18,72	4,76	11,38



Anvils T-Style					
EDP	Item Description	Dimensions (mm)			
		A	B	C	D
033714	ITSN342	12,93	14,63	3,18	5,99



Anvils W-Style					
EDP	Item Description	Dimensions (mm)			
		A	B	C	D
030973	IWSN323	11,32	11,82	3,18	5,89
009251	IWSN433	15,35	15,95	4,76	7,4



Anvil Screw					
EDP	Item Description	Dimensions (mm)			
		A	B	C	D
034507	1160	8	13,5	9,5	M6x1
034508	1161	8	10,5	6,5	M6x1
033718	1764	6,20	9,00	7,60	M5x0,8
029095	1765	7,5	10	6	M6x0,75
033716	1766	7,8	13,0	10,6	1/4 -26
034509	1768	10,5	15,5	13,3	M8x1
033717	1770	11,90	15,00	12,80	3/8 -24

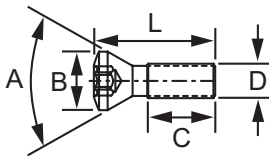


Keys		
EDP	Item Description	mm
018287	KH5004	4
018285	KH5025	2,5
018286	KH5003	3

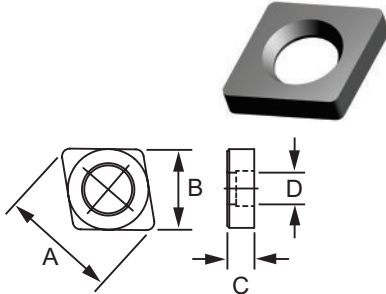
S - Screw Lock (Positive Inserts)



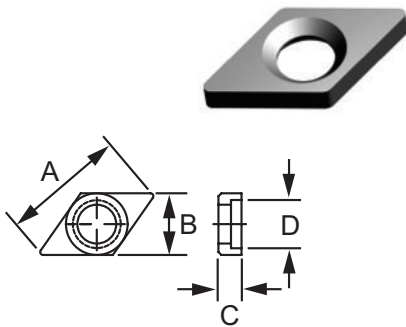
This innovated system was first introduced into the marketplace by Stellram as Posicut® S - Style. Its benefits are secure clamping, repeatability, minimal number of spare parts and no obstruction of the chip flow. Which make this ideal for internal boring bars and places where accessibility is limited.



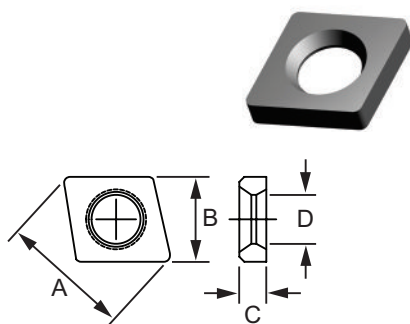
Insert Screws						
EDP	Item Description	Dimensions (mm)				
		A	B	C	L	D
017032	A3006T	48°	4,4	4	6	M3x0,5
023081	A5025T	43°	6,6	6,9	25	M5x0,8
015059	F2004T	43°	3	2,50	4,50	M2x0,4
015060	F2505T	43°	3,8	3,5	5	M2,5x0,45
015061	F2507T	43°	3,8	4	7	M2,5x0,45
015262	D4010T	43°	5,1	5,1	10	M4x0,7
034497	1335	55°	5,30	10,20	15	M3,5x0,6
034498	1425	55°	3,30	3	5,50	M2,5x0,45
034499	1440	55°	5,30	4	7	M4x0,7
034500	1540	60°	6,80	7,90	14,10	M4x0,7
015063	F3008T	48°	4,4	5	8	M3x0,5
018489	55F1803T	55°	2,75	1,60	3,30	M1,8x0,2



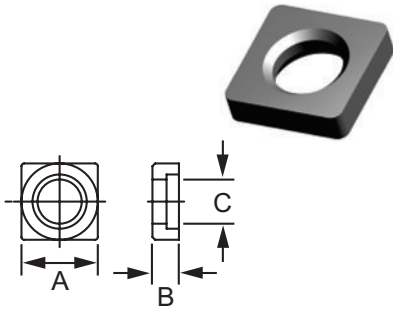
Anvils C-Style					
EDP	Item Description	Dimensions (mm)			
		A	B	C	D
028571	SA3614	17,40	11,40	39,50	6,50



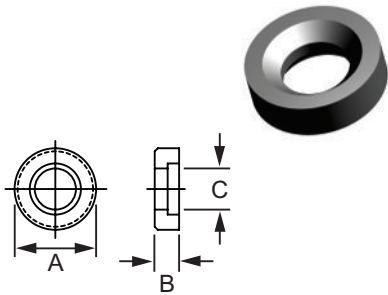
Anvils D-Style					
EDP	Item Description	Dimensions (mm)			
		A	B	C	D
028477	SA3714	17,48	8,50	3,18	6,60



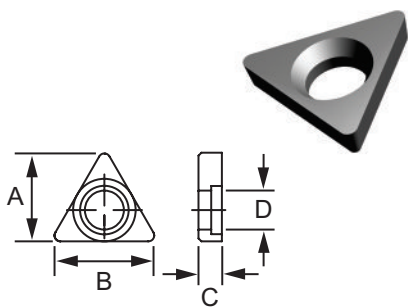
Anvils E-Style					
EDP	Item Description	Dimensions (mm)			
		A	B	C	D
029091	SA3712	16,9	11,0	3,18	6,5



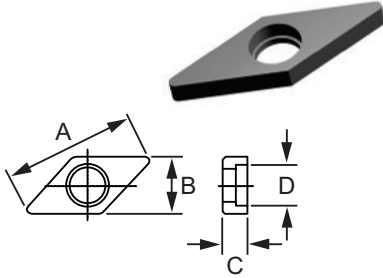
Anvils S-Style				
EDP	Item Description	Dimensions (mm)		
		A	B	C
028738	SA3514	11,40	3,96	8,10



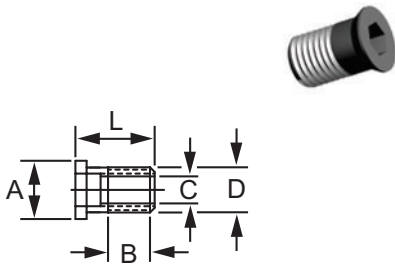
Anvils R-Style				
EDP	Item Description	Dimensions (mm)		
		A	B	C
034501	SA3811	8,80	3,18	6,60
034502	SA3814	10,60	3,18	6,60



Anvils T-Style					
EDP	Item Description	Dimensions (mm)			
		A	B	C	D
028580	SA3414	11,95	13,55	3,18	6,60



Anvils V-Style					
EDP	Item Description	Dimensions (mm)			
		A	B	C	D
028740	SAS3718	26,4	8,4	3,18	5,5



Anvil Screw						
EDP	Item Description	Dimensions (mm)				
		A	B	L	C	D
028478	SAS1750	6,25	5	8,5	M3,5x0,6	M5x0,5
028739	SAS1760	7,60	5,5	10	M4x0,5	M6x0,75
029095	1765	7,5	6	10	M4x0,5	M6x0,75



Torx Driver		
EDP	Item Description	Torx Number
018487	T6	T6
018488	T7	T7
013214	T9	T9
015240	T15	T15
028475	K5516	T16
034577	K5517	T17
015241	T20	T20

Turning



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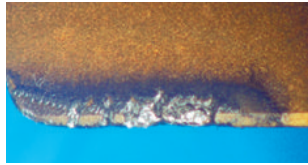
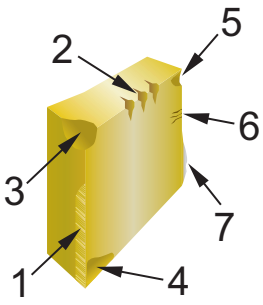
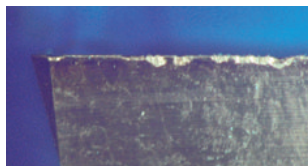
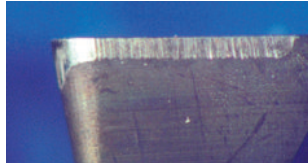


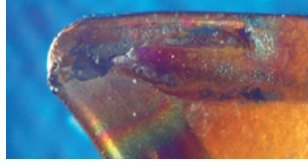



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SVIZZERA ITALIANA	TEL: 0800 807 722	FAX: 0800 807 701

Cause	Correction	Failure																				
Intermittent heating of the cutting edge. High V_C and high volume metal removal.	<p>A Use a heat resistant grade increased TaC.</p> <p>B Use positive rake tools.</p> <p>C Increase nose radius.</p> <p>D Reduce in the following order: surface speed, feed or depth of cut.</p> <p>E Avoid use of coolant.</p>	 <p>Thermal Cracking</p>	<table border="1"> <thead> <tr> <th>N°</th> <th>Failure type</th> <th></th> </tr> </thead> <tbody> <tr> <td>1</td> <td>Flank wear</td> <td rowspan="3">Physical</td> </tr> <tr> <td>2</td> <td>Chipping</td> </tr> <tr> <td>3</td> <td>Partial fracture</td> </tr> <tr> <td>4</td> <td>Crater wear</td> <td rowspan="4">Chemical</td> </tr> <tr> <td>5</td> <td>Deformation</td> </tr> <tr> <td>6</td> <td>Thermal Crack</td> </tr> <tr> <td>7</td> <td>Built up edge</td> </tr> </tbody> </table> 	N°	Failure type		1	Flank wear	Physical	2	Chipping	3	Partial fracture	4	Crater wear	Chemical	5	Deformation	6	Thermal Crack	7	Built up edge
N°	Failure type																					
1	Flank wear	Physical																				
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3	Partial fracture																					
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5	Deformation																					
6	Thermal Crack																					
7	Built up edge																					
Cutting tool excessively brittle. Tool too hard for application conditions.	<p>A Use a tougher grade.</p> <p>B Use negative rake angle inserts.</p> <p>C Increase nose radius.</p> <p>D Use increased edge land.</p> <p>E Increase cutting speed.</p>	 <p>Chipping</p>																				
Grade not hard enough for application. High surface speed.	<p>A Use a harder, more wear resistant grade.</p> <p>B Decrease surface speed.</p> <p>C Increase feed.</p> <p>D Use coolant.</p>	 <p>Excessive Flank Wear</p>																				
Notching occurs at depth of cut line. Usually due to work hardened surface, scale or abrasion.	<p>A Increase approach angle to maximum.</p> <p>B Increase nose radius for shallow cuts.</p> <p>C Reduce V_C surface speed and feed.</p> <p>D Vary the depth of cut.</p>	 <p>Notching</p>																				
Surface speed too low for material being machined.	<p>A Increase surface speed.</p> <p>B Use inserts that reduce friction. i.e. TiAlN PVD Coated</p> <p>C Use high lubricity coolant.</p>	 <p>Built-Up-Edge</p>																				
Heavy feed or high surface speed.	<p>A Reduce surface speed.</p> <p>B Reduce feed.</p> <p>C Use a harder grade.</p> <p>D Use a more heat resistant grade.</p>	 <p>Deformation</p>																				
Excessive heat and pressure causing chip to weld to rake angle.	<p>A Use a harder grade.</p> <p>B Reduce surface speed.</p> <p>C Reduce feed.</p> <p>D Increase the rake angle.</p>	 <p>Crater Wear</p>																				

Formula

$$V_c = \frac{D_m \times \pi \times n}{1000} \quad \text{Cutting speed (m/min)}$$

$$n = \frac{V_c \times 1000}{D_m \times \pi} \quad \text{Spindle speed (rev/min)}$$

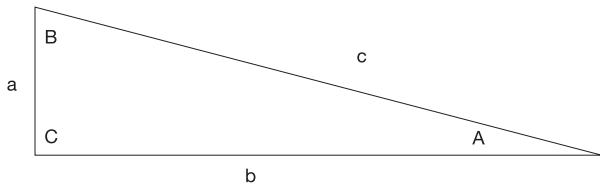
$$P_c = \frac{V_c \times a_p \times f_n \times k_c}{60 \times 1000 \times \eta} \quad \text{Power demand (kW)}$$

$$Q_z = V_c \times f_n \times a_p \quad \text{Metal removal (cm}^3\text{/min)}$$

$$T_c = \frac{l_m}{f_n \times n} \quad \text{Period of engagement (min)}$$

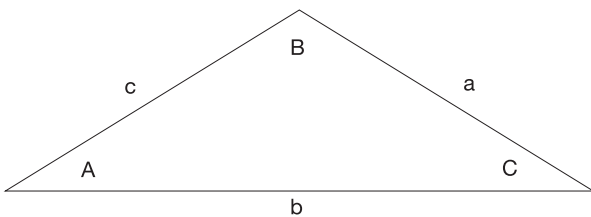
Terminology

D_m	=	Machined diameter	mm
V_c	=	Cutting speed	m/min
n	=	Spindle speed	rev/min
T_c	=	Period of engagement	min
Q_z	=	Metal removal	cm ³ /min
l_m	=	Machined length	mm
P_c	=	Power demand	kW
K_c	=	Specific cutting force	N/mm ²
f_n	=	Feed per revolution	mm/rev
k_r	=	Cutting edge angle	degree
R max	=	Profile depth	μm
r_ϵ	=	Insert nose radius	mm
a_p	=	Depth of cut	mm
η	=	Efficiency	



Trigonometrical Equivalents

Dimension Given	Part to be Found				
	A	B	a	b	c
a & c	$\sin A = a \div c$	$\cos B = a \div c$		$b = \sqrt{c^2 - a^2}$	
a & b	$\tan A = a \div b$	$\cos B = a \div b$			$c = \sqrt{a^2 + b^2}$
c & b	$\cos A = b \div c$	$\sin B = b \div c$	$a = \sqrt{c^2 - b^2}$		
A & a		$B = 90^\circ - A$		$b = a \times \cot A$	$c = a \div \sin A$
A & b		$B = 90^\circ - A$	$a = b \times \tan A$		$c = b \div \cos A$
A & c		$B = 90^\circ - A$	$a = c \times \sin A$	$b = c \times \cos A$	



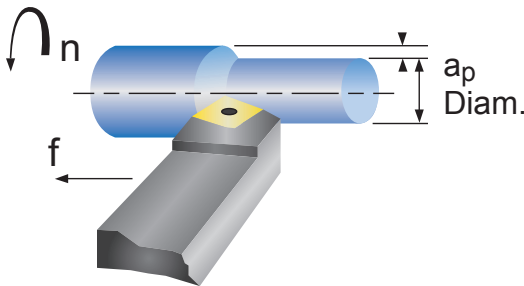
Trigonometrical Equivalents

Dimension Given	Parts to be Found	Formula
a b c	A	$\cos A = \frac{b^2 + c^2 - a^2}{2bc}$
a b A	B	$\sin B = \frac{b \times \sin A}{a}$
a b A	C	$C = 180 - (A + B)$
a A B	b	$b = \frac{a \times \sin B}{\sin A}$
a A B	c	$c = \frac{a \times \sin C}{\sin A}$
a b C	B	$B = 180 - (A + C)$

Cutting Data

In the turning operation we can distinguish three important elements:

- Work piece' s rotation at a determined speed of the spindle, "n"
- linear movement of the tool at a determined feed, "f"
- Cut depth, a_p



Terminology

V_c - Indicated in meters/min. It refers to the speed at the insert edge removing the material at the periphery of the work piece. The cutting speed is related to the diameter of the work piece.

F - Defined in mm/rev and it is the distance covered by the tool during every rotation of the work piece. "f"- refers to the distance covered by the tool in a one minute, that is the feed v_f (mm/min)

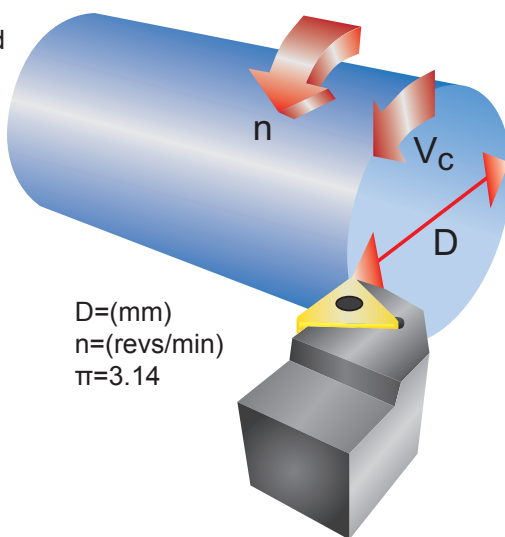
- a_p - Depth of Cut

Cutting Parameters

The spindle speed n is the number of rotations the work piece rotates in one minute and it is indicated in revolutions/minute.

The Surface Speed can be calculated with the following formula:

D=Diameter
 n =Spindle speed
 π =Constant



D=(mm)
 n =(revs/min)
 π =3.14

Formula

Volume "Q": Metal Removal Rate

This value takes into consideration

V_c , A_p and feed to calculate the amount of material removed.

$$Q \text{ in } 3/\text{min} = V_c \times f_p \times a_r$$

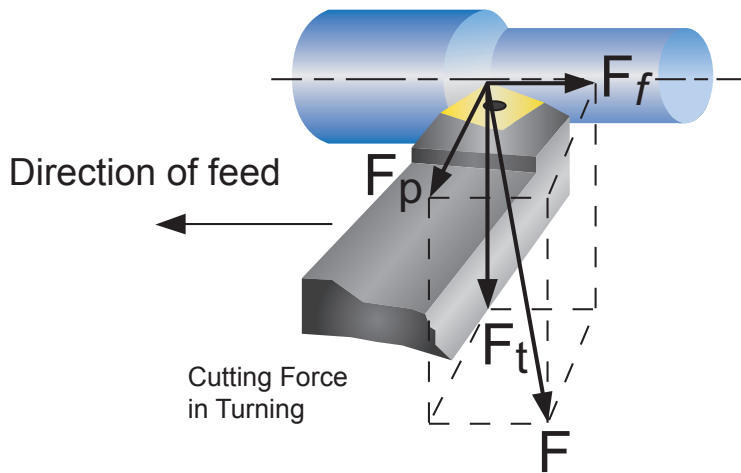
$$Q \text{ in } 3/\text{min} = 12 \times a_r \times f \times v_c = 1$$

$$Q \text{ in } 3/\text{min} = n \times \text{IPR} \times \text{Doc} = 4248 \text{ (3)}$$

Metric

$$V_c = \frac{D \times \pi \times n}{1000} \quad (\text{m/min})$$

Calculations of Cutting Forces



* The specific cutting force (k_c) is constant for each material. It is unique for each material and it refers to the material machinability. See catalog page 198.

Calculations of Power

The availability for the power calculation for the material removal is particularly important for roughing, so it is necessary to verify if the machine's power is enough for the application.

The parameters for the power calculation are v_c and F_c .

The machine efficiency η , is also a factor to be considered referring to the energy loss because of the drive and the motor efficiency. This value is between 0,7-0,9 depending on the machine.

Terminology

The main force F can be split into 3 different forces:

$F_t(N)$ = Tangential force, downward and usually the largest

$F_f(N)$ = Axial force or feed force, toward the longitudinal axis of the workpiece

$F_p(N)$ = Radial force on the perpendicular of the centre line of the workpiece

Formula

Values F_f and F_p are affected by the approach angle, the cutting depth and the nose radius of the tool. The following formula can be used for the tangential cutting force:

$$F_c = K_c \times a_r \times f$$

in which:

K_c = Specific cutting force(N/mm²)*

a_r = Cutting depth (mm)

f = Feed (mm/rev)

Formula

The formula for the net cutting power calculation is:

$$P = \frac{V_c \times F_c}{E \times 60 \times 1000} \quad (\text{KW})$$

$$\text{Where } F_c = a_p \times f \times K_c$$

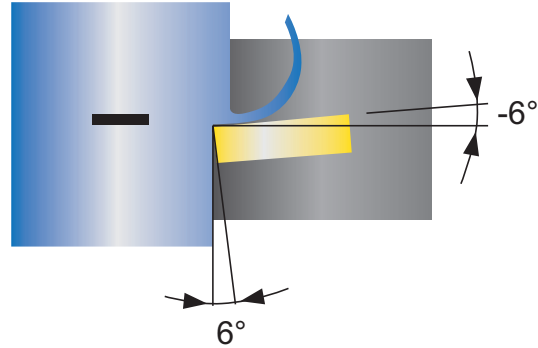
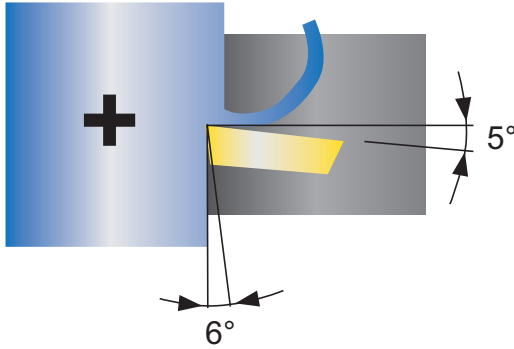
$$\text{then } P = \frac{V_c \times a_p \times f \times K_c}{E \times 60 \times 1000} \quad (\text{KW})$$

KW to HP conversion: 1 KW = 1.34102209 hp

ISO	Materials	Rm	Kc:N/mm ²
P	Unalloyed Steel	400-600 N/mm ² 120-180 HBN	2050
		600-950 N/mm ² 180-200 HBN	2300
	Alloyed Steel	700-950 N/mm ² 200-280 HBN	2599
		950-1200 N/mm ² 280-355 HBN	2851
		1200-1400 N/mm ² 355-415 HBN	3172
Tool Steel	1200-1400 N/mm ² 355-415 HBN	3895	
M	Stainless Steel	Austenitic + Ferritic 300 series	1847
		Martensitic 400 series	2599
	PH Stainless	Refractory P.H.	3199
K	Cast Iron	Grey GG-Ft	1200
		Spheroidal-Ductile GGG-FGS	1500
		Nodular GGNi - L - N	1600
		Malleable GTS - MN/MP	1050
N	Aluminium & Alloys	Aluminium & Alloys < 16% 116 HBN	827
		Aluminium + Silicon > 16% 92 HBN	965
S	High Temperature Alloys	Iron Based	2999
		Cobalt Based	3799
		Nickel Based	3500
		Titanium Based 425-456 HBN	1500

Top Rake

Positive: Produces low shearing stress and may eliminate vibration during finish machining, machining of long workpieces, or poor workholding.

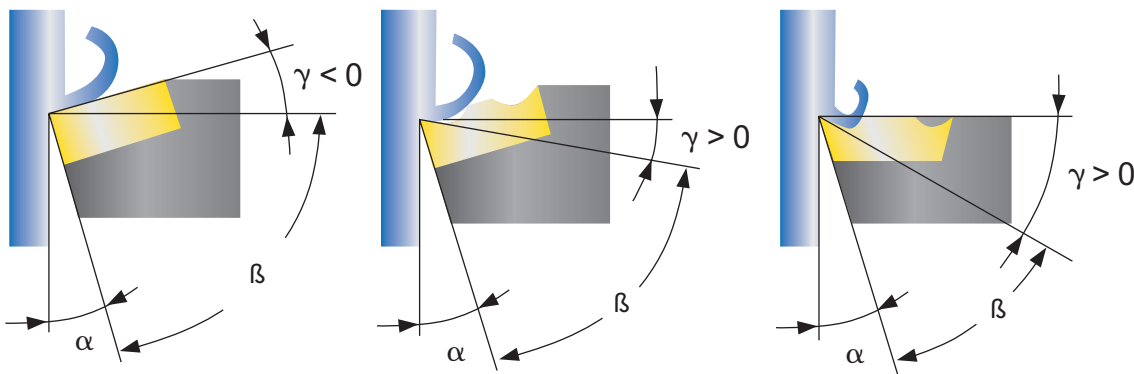


Negative: Produces larger shearing stress which causes a high chip strain. It is much stronger in comparison to the positive rake and requires good workpiece and tool stability.

Effective Cutting Angle

The position of the insert seat determines the cutting rake:

- This can be negative or 0°.
- The effective cutting angle is also determined by the insert geometry located on the seat, as this could be flat face or a chip breaker and it could change the effective cutting angle.
- The effective cutting angle is the sum of the angle in the insert seat and the geometry of the seated inserts.



The approach angle or attack angle is very important because it influences the tool life.

In the first picture we can see how it affects the chip thickness.

$h = f$
 $K_r = 90^\circ$

$h = f \cdot \sin [K_r]$
 $K_r > 90^\circ$

$h = 2f \cdot \text{Root} [(a_p/2R) \cdot (1 - a_p/2R)]$
 $K_r = \cos^{-1} [1 - a_p/R]$

- h is the same as the feed f when the entering angle is 90° or equal to the sin of the approach angle * f
- A 45° approach angle will produce a lower chip thickness with a higher feed

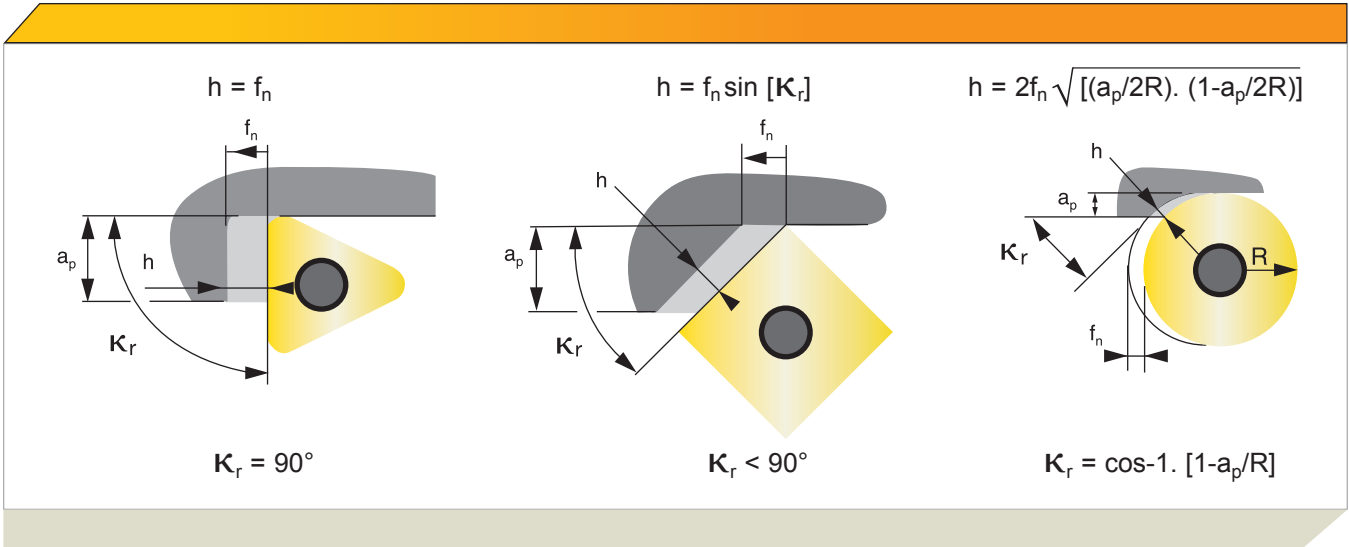
In the second picture we can see the effect on cutting the force distribution.

$K_r = 95^\circ$

$K_r = 45^\circ$

- In the first case the first contact is between the workpiece and the insert point, and it is focused on the radius making the situation difficult
- On the second case, the approach angle on the workpiece is softer and the cutting forces, are distributed in a more uniform way, and not directly on the insert point.

When deciding on the maximum depth of cut (a_p) for a given insert, the angle of the principal edge plays a significant role in the type of the chip formed. For an angle close to 90° , the thickness of the chip will be equal to the feed. In the other cases, it will be necessary to calculate it.



The type of insert used plays a significant role in the rigidity of the cutting edge. A cutting edge angle of 75° or 45° allows for difficult machining operations, i.e. interrupted and heavy roughing, but reduces the capacity to machine profiles. The most robust insert shape is round and the most fragile standard insert is the 35° diamond (V).

The size and type of insert determines the maximum depth of cut. In general, it is advisable to select a cutting edge length in relation to the maximum depth of cut to be machined.

Cutting Edge Length for a given depth of cut (a_p) and K_r angle

A low depth of cut can still generate a large edge engagement

K_r/a_p	1,00	2,00	3,00	4,00	5,00	6,00	7,00	8,00	9,00	10,00
90	1,00	2,00	3,00	4,00	5,00	6,00	7,00	8,00	9,00	10,00
75	1,04	2,06	3,10	4,14	5,18	6,20	7,24	8,28	9,32	10,34
60	1,14	2,31	3,45	4,62	5,77	6,93	8,08	9,25	10,39	11,56
45	1,42	2,82	4,24	5,66	7,06	8,48	9,91	11,30	12,73	14,15
30	2,00	4,00	6,00	8,00	10,00	12,00	14,00	16,00	18,00	20,00

Radius Value / Surface Finish

The radius of the insert has a significant role to play in the quality of the surface finish, which is directly in relation to the feed rate (f_n). With a larger radius, better surface finishes can be maintained at higher feeds. The use of a larger radius gives a larger surface contact area and causes an increase in power and cutting force.

For roughing operations, it is preferable to choose a large radius to ensure corner strength of the insert. However, for some materials it is preferable to use a smaller radius to maintain a softer cut. The insert is more fragile but can qualify for operations that are sensitive to vibration.

Generally an insert is used with a maximum feed equal to half its radius. The minimum feed is related to edge preparation or to the start of its chip control. An increase in cutting speed can also contribute to surface quality.

Formula

The formula to calculate the feed rate:

$$f_n = \sqrt{\frac{R_{max} \times 8 r_\epsilon}{10^6}}$$

$$R_{max} = \frac{f_n \times 10^6}{8 \times r_\epsilon}$$

The mean value R_a , can be calculated with following formula:

$$R_a = \frac{f_n^2 \times 50}{r_\epsilon}$$

Average value of feed for each radius

Radius (mm)	0,4	0,8	1,2	1,6	2,4
f (mm/turn)	0,12-0,25	0,25-0,5	0,36-0,7	0,5-1	0,7-1,6

R_{max} = profile depth

r_ϵ = nose radius

f_n = feed

In finishing operations the insert radius and the feed effect the superficial roughness and the dimensional accuracy.

Surface finishing		Radius of insert				
Ra	Rt	0,4	0,8	1,2	1,6	2,4
μm	μm	f mm/r				
0,60	2	0,07	0,10	0,12	0,14	0,17
1,60	4	0,11	0,15	0,19	0,22	0,26
3,20	10	0,17	0,24	0,29	0,34	0,42
6,30	16	0,22	0,30	0,37	0,43	0,53
8,00	25	0,27	0,38	0,47	0,54	0,66

Summary: Value of R_a & R_t based on the radius value and feed.

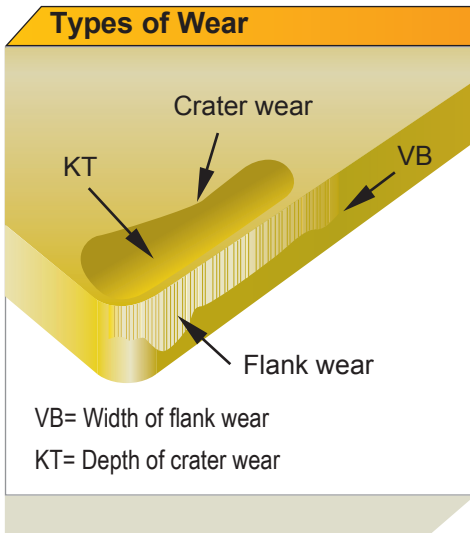
Surface finishing		Diameter of round inserts				
Ra	Rt	10	12	16	20	25
μm	μm	f mm/r				
0,60	2	0,25	0,28	0,32	0,36	0,40
1,60	4	0,40	0,44	0,51	0,57	0,63
3,20	10	0,63	0,69	0,80	0,89	1,00
6,30	16	0,80	0,83	1,01	1,13	1,26
8,00	25	1,00	1,10	1,26	1,42	1,51

Conversion Value Chart for Surface Finishing					
R _{max}	R _a = CLA = AA		RMS		Operation
	µm	µinch	µm	µinch	
1,6	0,30	11.8	0,33	13.1	
1,8	0,35	13.8	0,39	15.3	
2,0	0,40	15.7	0,44	17.4	
2,2	0,44	17.5	0,49	19.4	
2,4	0,49	19.2	0,54	21.3	
2,6	0,53	20.8	0,59	23.1	
2,8	0,58	22.7	0,64	25.2	
3,0	0,63	24.6	0,70	27.3	
3,5	0,71	27.8	0,79	30.9	
4,0	0,80	31.4	0,89	34.8	
4,5	0,90	35.2	1,00	39.1	
5,0	0,99	38.8	1,10	43.1	
6,0	1,20	47.2	1,30	52.4	
7,0	1,40	55.1	1,50	61.2	
8,0	1,60	63.0	1,80	70.0	
9,0	1,80	71.0	2,00	78.8	
10,0	2,00	79.0	2,20	87.7	
15,0	3,20	126.0	3,10	140.0	
20,0	4,40	173.0	4,90	192.0	
25,0	5,80	238.0	6,40	264.0	
27,0	6,30	247.0	7,00	274.0	
30,0	7,40	292.0	8,20	324.0	
35,0	8,80	346.0	9,80	384.0	
40,0	10,70	422.0	11,00	468.0	
45,0	12,50	485.0	13,90	538.0	
50,0	14,00	552.0	15,50	613.0	

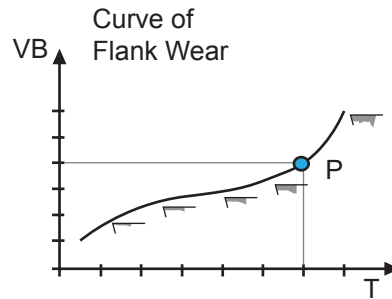
Difference of hardness (HBN):

When the hardness of a workpiece is different from the value shown in the grade speed charts, multiply the cutting speed you have obtained by the factor below to calculate a new cutting speed.

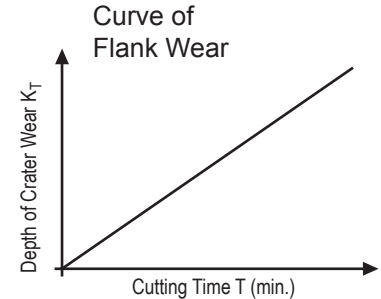
Workpiece Hardness and Cutting Speeds												
ISO/ANSI	120HBN	140HBN	160HBN	180HBN	200HBN	220HBN	240HBN	260HBN	280HBN	300HBN	320HBN	340HBN
P	1,42	1,25	1,13	1,0	0,93	0,86	0,75	0,71	0,66	-	-	-
M	1,40	1,22	1,10	1,0	0,93	0,86	0,80	0,70	0,69	-	-	-
K	1,40	1,34	1,30	1,25	1,20	1,10	1,05	1,0	0,94	0,90	0,85	0,82



Trend of Crater and Flank Wear Based on Cutting Time



P= Point where sudden wear starts and the limit of normal and safe use



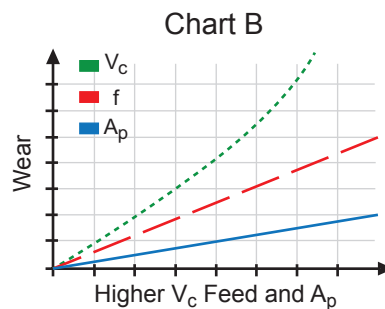
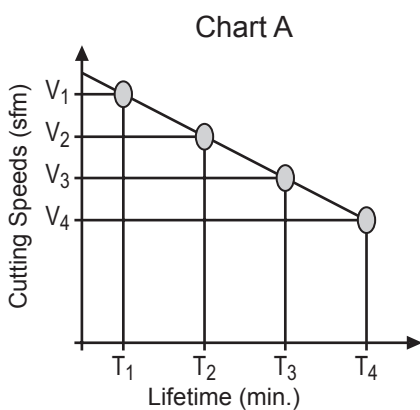
Crater wear is more progressive and does not have a sudden breakdown

Factors that could Influence the Tool Life

Tool life depends on many factors, including the type of clamp, type of coolant, (percentage of mix) and type of machine tool. Following, you will see how the surface speed and other data can influence tool life.

Chart "A" below, shows how a different surface speed (V_c) can influence the tool life of the insert. The higher the V_c , the lower the acceptable time life is where $V_1 > V_2 > V_3 > V_4$ you can see respectively that $T_4 > T_3 > T_2 > T_1$.

Chart "B" shows how the wear is influenced by the higher machining data.



Tool Life Criteria

We change the insert when

- It does not create the requested finish or tolerances.
- When the wear under the cutting edge line is too high, causing premature failure
- When the crater depth on the insert face is excessive, causing premature failure
- When the power consumption increases suddenly during the cut

Tensile strength	Vickers	Brinell	Rockwell	
			HRC	HRB
N/mm ²	HV	HBN		
255	80	76,0	-	-
270	85	80,7	-	41,0
285	90	85,5	-	48,0
305	95	90,2	-	52,0
320	100	95,0	-	56,2
350	110	105	-	62,3
385	120	114	-	66,7
415	130	124	-	71,2
450	140	133	-	75,0
480	150	143	-	78,7
510	160	152	-	81,7
545	170	162	-	85,0
575	180	171	-	87,5
610	190	181	-	89,5
640	200	190	-	91,5
660	205	195	-	92,5
675	210	199	-	93,5
690	215	204	-	94,0
705	220	209	-	95,0
720	225	214	-	96,0
740	230	219	-	96,7
770	240	228	20,3	98,1
800	250	238	22,2	99,5
820	255	242	23,1	-
835	260	247	24,0	(101)
850	265	252	24,8	-
865	270	257	25,6	(102)
900	280	266	27,1	-
930	290	276	28,5	(105)
950	295	280	29,2	-
965	300	285	29,8	-
995	310	295	31,0	-

Tensile strength	Vickers	Brinell	Rockwell
			HRC
N/mm ²	HV	HBN	
1030	320	304	32,2
1060	330	314	33,3
1095	340	323	34,4
1125	350	333	35,5
1155	360	342	36,6
1190	370	352	37,7
1220	380	361	38,8
1255	390	371	39,8
1290	400	380	40,8
1320	410	390	41,8
1350	420	399	42,7
1385	430	409	43,6
1420	440	418	44,5
1485	460	437	46,1
1555	480	450	47,7
1595	490	457	48,4
1630	500	465	49,1
1665	510	474	49,8
1700	520	482	50,5
1740	530	489	51,1
1775	540	496	51,7
1810	550	503	52,3
1845	560	511	53,0
1880	570	520	53,6
1920	580	527	54,1
1955	590	533	54,7
1995	600	538	55,2
2030	610	543	55,7
2070	620	549	56,3
2105	630	555	56,8
2145	640	561	57,3
2180	650	568	57,8

HV = Vickers hardness
HBN = Brinell hardness

HRC = Rockwell hardness, C scale
HRB = Rockwell hardness, B scale

Threading

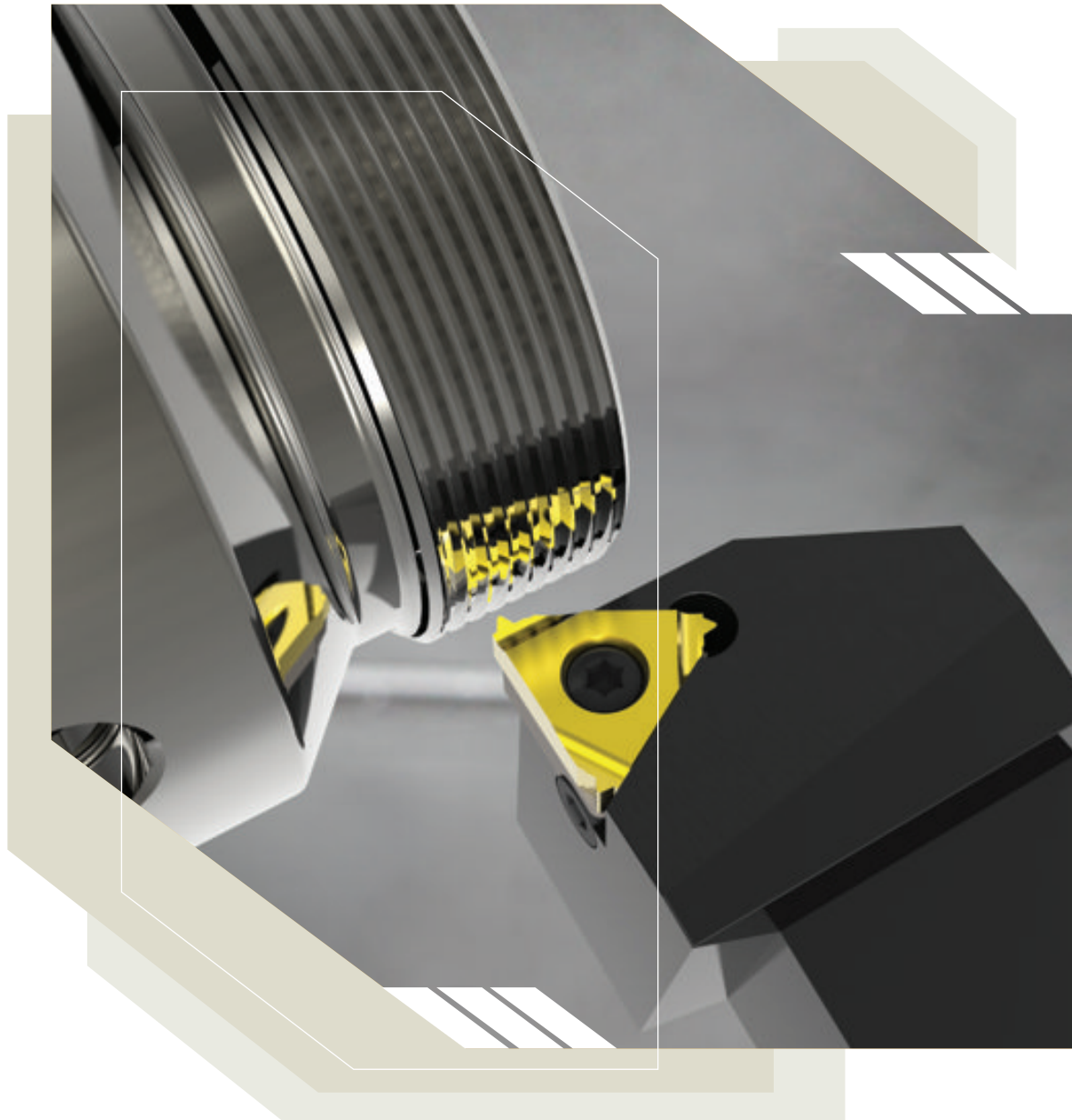


All Stellram's products are supported by a confident and technical sales team backed by an extensive customer care policy.

ATstellram.com

ATImetals.com

Threading



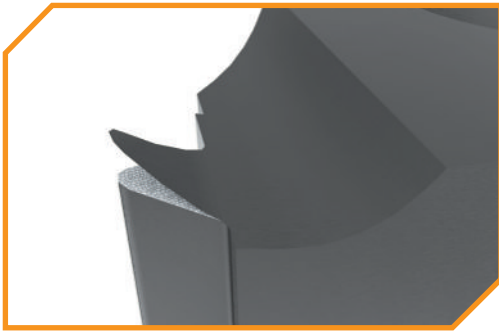
Stellram's comprehensive threading program is available in a wide range of thread forms. Partial and full profile inserts are offered for thread turning.

Stellram offers high performance grades suitable for all machining applications, in a wide range of materials, for maximum productivity.

Stellram offers both external toolholders and internal bars with through coolant. Internal holders to a minimum bore of 6,0mm. Anti vibration holders are also available for difficult applications.

Threading Grade Descriptions

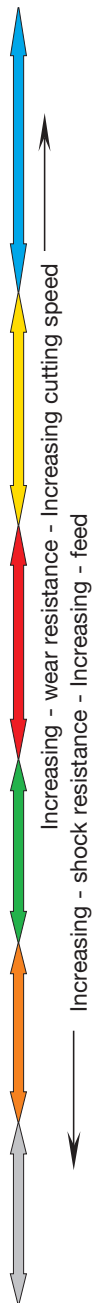
SP4066 has the perfect balance between wear resistance and toughness enabling multiple applications to be covered by one insert. This new grade also allows for longer tool life and is ideal for machining a variety of materials at elevated cutting speeds.



Cutting Speed v_c			
ISO	Materials	Rm and Hardness	SP4066
			m/min
			min. - max.
P	Unalloyed Steel	<600 N/mm ² <180 HBN	230 - 485
		<950 N/mm ² <280 HBN	150 - 315
	Alloyed Steel	700-950 N/mm ² 200-280 HBN	135 - 290
		950-1200 N/mm ² 280-355 HBN	115 - 240
M	Stainless Steel	1200-1400 N/mm ² 355-415 HBN	75 - 165
		Austenitic + Ferritic 300 series	155 - 330
	PH Stainless	Martensitic 400 series	160 - 340
K	Cast Iron	Refractory P.H.	80 - 175
		Grey GG-Ft	225 - 480
		Spheroidal-Ductile GGG-FGS	195 - 415
S	High Temperature Alloys	Malleable GTS - MN/MP	130 - 280
		Iron Based	35 - 70
		Cobalt Based	30 - 60
		Nickel Based	30 - 60
H	Hard Materials	Titanium Based	45 - 95

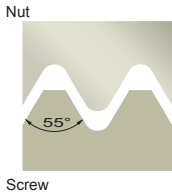
Optimum Grade Performance

Grade Classifications			
	Materials	Code	PVD Coated
			SP4066
P	Unalloyed and Alloyed Steels	P01	
		P05	
		P10	
		P15	
		P20	
		P25	
		P30	
		P35	
		P40	
		P45	
		P50	
M	Stainless Steels	M01	
		M05	
		M10	
		M15	
		M20	
		M25	
		M30	
		M35	
		M40	
		M45	
K	Cast Irons	K01	
		K05	
		K10	
		K15	
		K20	
		K25	
		K30	
		K35	
		K40	
		K45	
N	Aluminum & Alloys	N01	
		N05	
		N10	
		N15	
		N20	
		N25	
		N30	
		N35	
		N40	
		N45	
S	High Temperature Alloys	S01	
		S05	
		S10	
		S15	
		S20	
		S25	
		S30	
		S35	
		S40	
		S45	
H	Hard Materials	H01	
		H05	
		H10	
		H15	
		H20	
		H25	
H30			



Thread Form Index

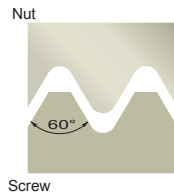
Partial Profile 55°



W, BSPT

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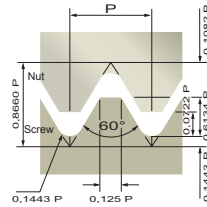
Partial Profile 60°



ISO, UN

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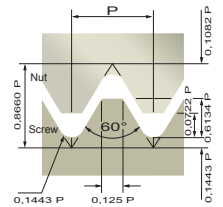
ISO Metric



ISO

PAGES 217 - 221

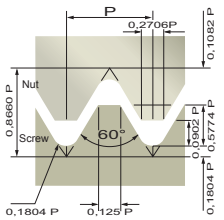
American Unified



UN

PAGES 222 - 224

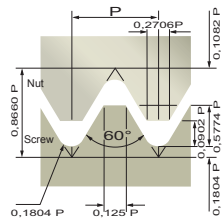
Unified J Form



UNJ

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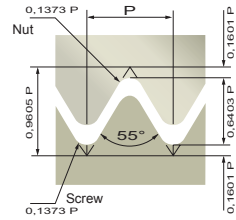
Metric J Form



MJ

PAGE 226

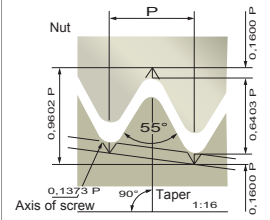
British Standard Whitworth



W

PAGES 227 - 228

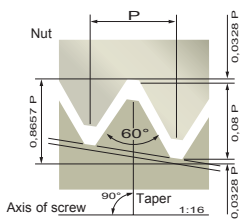
British Standard Pipe Taper Thread



BSPT

PAGE 229

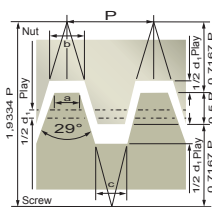
National Taper Pipe Thread



NPT

PAGE 230

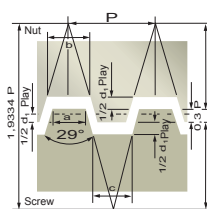
ACME



ACME

PAGE 231

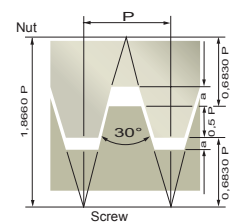
STUB ACME



STUBACME

PAGE 232

Trapezoidal (DIN 103)

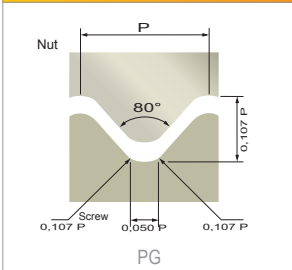


TR

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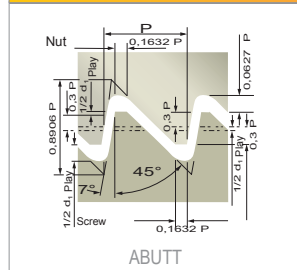
Thread Form Index

Panzer Gewinde (DIN 40431)



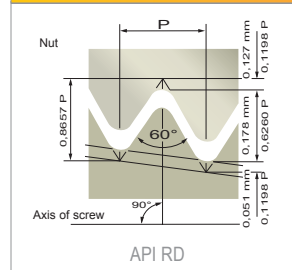
PAGE 234

American Buttress 45/7°



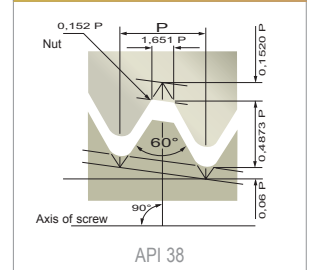
PAGES 235 - 236

API Casing & Tubing Round



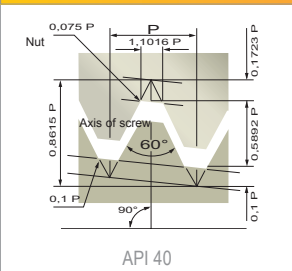
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API V0.038



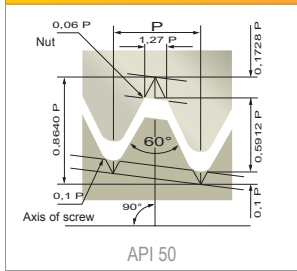
PAGES 238 - 239

API V0.040



PAGES 238 - 239

API V0.050



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NOTE: Other thread forms available by quotation.

Threading Insert Designation

16

1

E

2

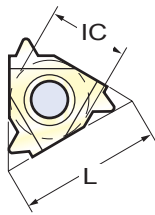
R

3

20

4

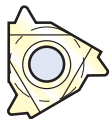
1 Size



L mm	IC Inch
06	5/32
08	3/16
11	1/4
16	3/8
22	1/2
22U	1/2U
27	5/8
27U	5/8U

2 Utilisation

E



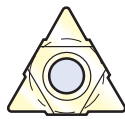
External

I



Internal

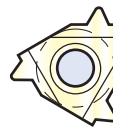
U



Neutral

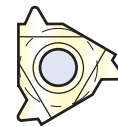
3 Design

L



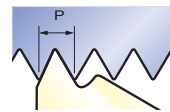
Left Hand

R



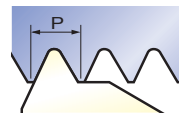
Right Hand

4 Thread Pitch or TPI



Partial Profile 60° or 55°

	mm		Thread Pitch		TPI	
A	0,5	- 1,5	48	-	16	
G	1,75	- 3	14	-	8	
AG	0,5	- 3	48	-	8	
N	3,5	- 5	7	-	5	
Q	5,5	- 6	4 1/2	-	4	
U (22)	5,5	- 8	4 1/2	-	3 1/4	
U (27)	6,5	- 9	2 3/4	-	4	



Full Profile

0,35 to 8,0 mm (72-3 TPI)

Pitch sizes stated on all thread form part numbers

Threading Insert Designation

UN

5

-

6

GRADE

7

5 Thread Form

Partial Profile



60°

60

Full Profile



60°

MJ



55°

55



60°

NPT

Full Profile



45°/17°

ABUTT



60°

PAC



29°

ACME



80°

PG



60°

API RD



30°

RD



60°

API



3°/30°

SAGE



47,5°

BA



29°

STACME



45°/17°

BBUTT



30°

TR



55°

BSPT



60°

UN



3°/10°

BUTT



60°

UNJ



12°

ELC



3°/10°

VAM



60°

ISO



55°

W

6 Other

SC



Swarf control style

M



Multi-tooth style and number of teeth

T



Z



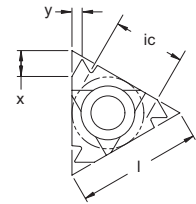
7 Type of Grade

For grade descriptions, refer to page: **209**

55° Partial Profile

External Partial Profile 55° Form

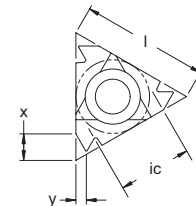
For British Standard Whitworth & British Standard Parallel Pipe



External Right Hand		Partial Profile 55°		Pitch Range	TPI Range	Nose Radius	X	Y
EDP	L (mm)	Description	Grade	mm		mm	mm	mm
033826	16	16ERA55	SP4066	0,5 - 1,5	48 - 16	0,07	0,80	0,90
033828	16	16ERAG55	SP4066	0,5 - 3,0	48 - 8	0,07	1,20	1,70
033830	16	16ERG55	SP4066	1,75 - 3,0	14 - 8	0,25	1,20	1,70

Internal Partial Profile 55° Form

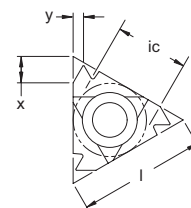
For British Standard Whitworth & British Standard Parallel Pipe



Internal Right Hand		Partial Profile 55°		Pitch Range	TPI Range	Nose Radius	X	Y
EDP	L (mm)	Description	Grade	mm		mm	mm	mm
033763	8	08IRA55	SP4066	0,5 - 1,5	48 - 16	0,07	0,60	0,70
032048	11	11IRA55	SP4066	0,5 - 1,5	48 - 16	0,07	0,80	0,90
033865	16	16IRAG55	SP4066	0,5 - 3,0	48 - 8	0,07	1,20	1,70
033867	16	16IRG55	SP4066	1,75 - 3,0	14 - 8	0,13	1,20	1,70

60° Partial Profile

External Partial Profile 60° Form
For Unified & ISO metric thread forms

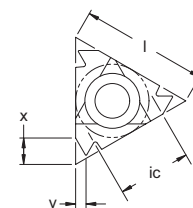


External Right Hand		Partial Profile 60°		Pitch Range	TPI Range	Nose Radius	X	Y
EDP	L (mm)	Description	Grade	mm		mm	mm	mm
033827	16	16ERA60	SP4066	0,5 - 1,5	48 - 16	0,09	1,20	1,70
033829	16	16ERAG60	SP4066	0,5 - 3,0	48 - 8	0,10	1,20	1,70
033831	16	16ERG60	SP4066	1,75 - 3,0	14 - 8	0,15	1,20	1,70
033884	22	22ERN60	SP4066	3,5 - 5,0	7 - 5	0,48	1,70	2,50

External Left Hand		Partial Profile 60°		Pitch Range	TPI Range	Nose Radius	X	Y
EDP	L (mm)	Description	Grade	mm		mm	mm	mm
033772	16	16ELAG60	SP4066	0,5 - 3,0	48 - 8	0,10	1,20	1,70

60° Partial Profile

Internal Partial Profile 60° Form
For Unified & ISO metric thread forms



Internal Right Hand		Partial Profile 60°		Pitch Range	TPI Range	Nose Radius	X	Y
EDP	L (mm)	Description	Grade	mm		mm	mm	mm
033739	6	061RA60	SP4066	0,5 - 1,25	48 - 20	0,70	0,60	0,80
033764	8	081RA60	SP4066	0,5 - 1,5	48 - 16	0,09	0,60	0,70
032045	11	111RA60	SP4066	0,5 - 1,5	48 - 16	0,15	0,80	0,90
033864	16	161RA60	SP4066	0,5 - 1,5	48 - 16	0,10	1,20	1,70
033866	16	161RAG60	SP4066	0,5 - 3,0	48 - 8	0,10	1,20	1,70
033868	16	161RG60	SP4066	1,75 - 3,0	14 - 8	0,15	1,20	1,70
033899	22	221RN60	SP4066	3,5 - 5,0	7 - 5	0,32	1,70	2,50

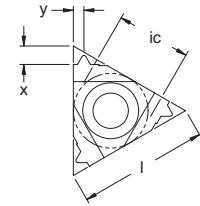
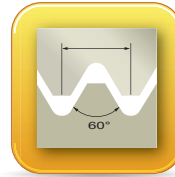
Internal Left Hand		Partial Profile 60°		Pitch Range	TPI Range	Nose Radius	X	Y
EDP	L (mm)	Description	Grade	mm		mm	mm	mm
033766	11	111LA60	SP4066	0,5 - 1,5	48 - 16	0,15	0,80	0,90

ISO Metric

External ISO Metric

Standard reference: ISO 262 (DIN 13)

Tolerance class: 6g / 6H



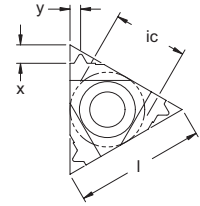
External Right Hand		ISO Metric		Pitch	TPI Range	Nose Radius	X	Y
EDP	L (mm)	Description	Grade	mm		mm	mm	mm
033773	16	16ER0.35ISO	SP4066	0,35	-	0,06	0,80	0,40
033775	16	16ER0.4ISO	SP4066	0,40	-	0,07	0,70	0,40
033774	16	16ER0.45ISO	SP4066	0,45	-	0,08	0,70	0,40
033776	16	16ER0.5ISO	SP4066	0,50	-	0,08	0,60	0,60
033777	16	16ER0.6ISO	SP4066	0,60	-	0,09	0,60	0,60
033779	16	16ER0.7ISO	SP4066	0,70	-	0,10	0,60	0,60
033778	16	16ER0.75ISO	SP4066	0,75	-	0,10	0,60	0,60
033780	16	16ER0.8ISO	SP4066	0,80	-	0,13	0,60	0,60
031999	16	16ER1.0ISO	SP4066	1,00	-	0,14	0,70	0,70
032000	16	16ER1.25ISO	SP4066	1,25	-	0,18	0,80	0,90
032001	16	16ER1.5ISO	SP4066	1,50	-	0,22	0,80	1,00
032002	16	16ER1.75ISO	SP4066	1,75	-	0,25	0,90	1,20
032003	16	16ER2.0ISO	SP4066	2,00	-	0,29	1,00	1,30
033799	16	16ER2.5ISO	SP4066	2,50	-	0,36	1,10	1,50
033813	16	16ER3.0ISO	SP4066	3,00	-	0,46	1,20	1,60
033814	16	16ER3.5ISO	SP4066	3,50	-	0,53	1,60	2,30

ISO Metric

External ISO Metric

Standard reference: ISO 262 (DIN 13)

Tolerance class: 6g / 6H



External Right Hand		ISO Metric		Pitch	TPI Range	Nose Radius	X	Y
EDP	L (mm)	Description	Grade	mm		mm	mm	mm
033870	16	22ER3.5ISO	SP4066	3,50	-	0,53	1,60	2,30
033871	16	22ER4.0ISO	SP4066	4,00	-	0,61	1,60	2,30
033872	16	22ER4.5ISO	SP4066	4,50	-	0,68	1,70	2,40
033877	16	22ER5.0ISO	SP4066	5,00	-	0,76	1,70	2,50
033880	16	22ER6.0ISO	SP4066	6,00	-	0,89	1,80	2,70

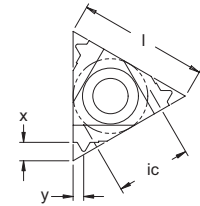
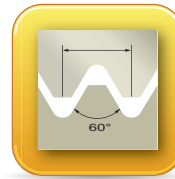
External Left Hand		ISO Metric		Pitch	TPI Range	Nose Radius	X	Y
EDP	L (mm)	Description	Grade	mm		mm	mm	mm
033767	16	16EL1.0ISO	SP4066	1,00	-	0,14	0,70	0,70
033768	16	16EL1.5ISO	SP4066	1,50	-	0,22	0,80	1,00
033770	16	16EL2.5ISO	SP4066	2,50	-	0,36	1,10	1,50

ISO Metric

Internal ISO Metric

Standard reference: ISO 262 (DIN 13)

Tolerance class: 6g / 6H



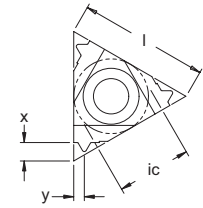
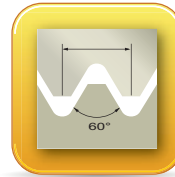
Internal Right Hand		ISO Metric		Pitch	TPI Range	Nose Radius	X	Y
EDP	L (mm)	Description	Grade	mm		mm	mm	mm
033735	6	06IR0.5ISO	SP4066	0,50	-	0,04	0,60	0,50
033736	6	06IR0.75ISO	SP4066	0,75	-	0,06	0,60	0,50
033737	6	06IR1.0ISO	SP4066	1,00	-	0,80	0,60	0,60
033738	6	06IR1.25ISO	SP4066	1,25	-	0,10	0,60	0,70
033741	8	08IR0.5ISO	SP4066	0,50	-	0,04	0,60	0,50
033742	8	08IR0.75ISO	SP4066	0,75	-	0,06	0,60	0,50
033743	8	08IR1.0ISO	SP4066	1,00	-	0,11	0,60	0,60
033744	8	08IR1.25ISO	SP4066	1,25	-	0,10	0,60	0,70
033745	8	08IR1.5ISO	SP4066	1,50	-	0,11	0,60	1,00
033746	8	08IR1.75ISO	SP4066	1,75	-	0,13	0,60	1,00
032067	11	11IR0.4ISO	SP4066	0,40	-	0,04	0,80	0,40
032064	11	11IR0.5ISO	SP4066	0,50	-	0,04	0,60	0,60
032057	11	11IR0.75ISO	SP4066	0,75	-	0,06	0,60	0,60
032042	11	11IR1.0ISO	SP4066	1,00	-	0,08	0,60	0,70
032043	11	11IR1.5ISO	SP4066	1,50	-	0,11	0,80	1,00
032062	11	11IR1.75ISO	SP4066	1,75	-	0,13	0,80	1,00
032051	11	11IR2.0ISO	SP4066	2,00	-	0,14	0,80	1,10
032059	11	11IR2.5ISO	SP4066	2,50	-	0,18	0,80	1,30

ISO Metric

Internal ISO Metric

Standard reference: ISO 262 (DIN 13)

Tolerance class: 6g / 6H



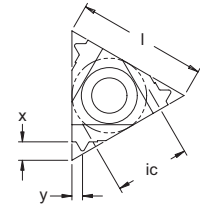
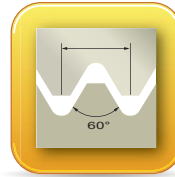
Internal Right Hand		ISO Metric		Pitch	TPI Range	Nose Radius	X	Y
EDP	L (mm)	Description	Grade	mm		mm	mm	mm
033833	16	16IR0.5ISO	SP4066	0,50	-	0,04	0,60	0,60
033834	16	16IR0.6ISO	SP4066	0,60	-	0,05	0,60	0,60
033836	16	16IR0.7ISO	SP4066	0,70	-	0,06	0,60	0,60
033835	16	16IR0.75ISO	SP4066	0,75	-	0,06	0,60	0,60
033837	16	16IR0.8ISO	SP4066	0,80	-	0,06	0,60	0,60
032004	16	16IR1.0ISO	SP4066	1,00	-	0,08	0,60	0,70
032005	16	16IR1.25ISO	SP4066	1,25	-	0,10	0,80	0,90
032006	16	16IR1.5ISO	SP4066	1,50	-	0,11	0,80	1,00
032007	16	16IR1.75ISO	SP4066	1,75	-	0,13	0,90	1,20
032008	16	16IR2.0ISO	SP4066	2,00	-	0,14	1,00	1,30
033849	16	16IR2.5ISO	SP4066	2,50	-	0,18	1,10	1,50
033856	16	16IR3.0IRISO	SP4066	3,00	-	0,23	1,10	1,50
033857	16	16IR3.5ISO	SP4066	3,50	-	0,25	1,20	1,80

ISO Metric

Internal ISO Metric

Standard reference: ISO 262 (DIN 13)

Tolerance class: 6g / 6H



Internal Right Hand		ISO Metric		Pitch	TPI Range	Nose Radius	X	Y
EDP	L (mm)	Description	Grade	mm		mm	mm	mm
033885	22	22IR3.5ISO	SP4066	3,50	-	0,25	1,60	2,30
033886	22	22IR4.0ISO	SP4066	4,00	-	0,33	1,60	2,30
033887	22	22IR4.5ISO	SP4066	4,50	-	0,36	1,60	2,40
033892	22	22IR5.0ISO	SP4066	5,00	-	0,39	1,60	2,60

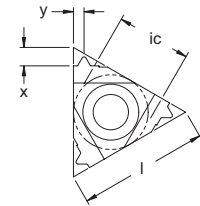
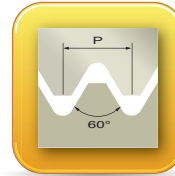
Internal Left Hand		ISO Metric		Pitch	TPI Range	Nose Radius	X	Y
EDP	L (mm)	Description	Grade	mm		mm	mm	mm
033740	8	08IL1.0ISO	SP4066	1,00	-	0,11	0,60	0,60
033832	16	16IL1.5ISO	SP4066	1,50	-	0,11	0,80	1,00

American Unified (UN)

External American Unified (UN)

Standard reference: ANSI B1.1:74

Tolerance class: 2A / 2B



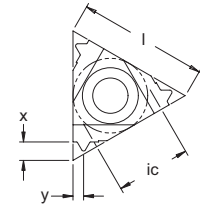
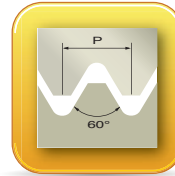
External Right Hand		American Unified (UN)		Pitch	TPI Range	Nose Radius	X	Y
EDP	L (mm)	Description	Grade	mm		mm	mm	mm
031995	16	16ER8UN	SP4066	3,18	8	0,48	1,20	1,60
033824	16	16ER9UN	SP4066	2,82	9	0,38	1,20	1,70
033782	16	16ER10UN	SP4066	2,54	10	0,38	1,10	1,50
033784	16	16ER11UN	SP4066	2,31	11	0,33	1,10	1,50
031996	16	16ER12UN	SP4066	2,12	12	0,29	1,10	1,40
033787	16	16ER13UN	SP4066	1,95	13	0,28	1,00	1,30
033788	16	16ER14UN	SP4066	1,81	14	0,25	1,00	1,20
033793	16	16ER16UN	SP4066	1,59	16	0,22	0,90	1,10
033796	16	16ER18UN	SP4066	1,41	18	0,20	0,80	1,00
033802	16	16ER20UN	SP4066	1,27	20	0,18	0,80	0,90
033805	16	16ER24UN	SP4066	1,06	24	0,17	0,70	0,80
033809	16	16ER27UN	SP4066	0,94	27	0,15	0,70	0,80
033810	16	16ER28UN	SP4066	0,91	28	0,14	0,60	0,70
033815	16	16ER32UN	SP4066	0,79	32	0,13	0,60	0,60
034611	16	16ER36UN	SP4066	0,71	36	0,11	0,60	0,60
033819	16	16ER40UN	SP4066	0,64	40	0,09	0,60	0,60
033879	22	22ER5UN	SP4066	5,08	5	0,76	1,70	2,50
033882	22	22ER6UN	SP4066	4,23	6	0,64	1,60	2,30
033883	22	22ER7UN	SP4066	3,63	7	0,53	1,60	2,30

American Unified (UN)

Internal American Unified (UN)

Standard reference: ANSI B1.1:74

Tolerance class: 2A / 2B



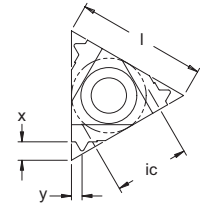
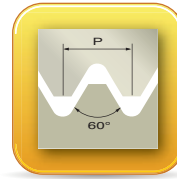
Internal Right Hand		American Unified (UN)		Pitch	TPI Range	Nose Radius	X	Y
EDP	L (mm)	Description	Grade	mm		mm	mm	mm
033747	08	08IR14UN	SP4066	1,81	14	0,15	0,60	0,80
033748	08	08IR16UN	SP4066	1,59	16	0,11	0,60	0,70
033751	08	08IR18UN	SP4066	1,41	18	0,11	0,60	0,70
033754	08	08IR20UN	SP4066	1,27	20	0,11	0,60	0,70
033756	08	08IR24UN	SP4066	1,06	24	0,09	0,60	0,60
033761	08	08IR28UN	SP4066	0,91	28	0,09	0,60	0,60
032056	11	11IR32UN	SP4066	0,79	32	0,09	0,60	0,60
032068	11	11IR28UN	SP4066	0,91	28	0,09	0,60	0,70
032055	11	11IR27UN	SP4066	0,94	27	0,09	0,70	0,80
032060	11	11IR24UN	SP4066	1,06	24	0,09	0,70	0,80
032044	11	11IR20UN	SP4066	1,27	20	0,10	0,80	0,90
032049	11	11IR18UN	SP4066	1,41	18	0,11	0,80	1,00
032053	11	11IR16UN	SP4066	1,59	16	0,11	0,09	1,10
032058	11	11IR12UN	SP4066	2,12	12	0,18	0,90	1,10

American Unified (UN)

Internal American Unified (UN)

Standard reference: ANSI B1.1:74

Tolerance class: 2A / 2B



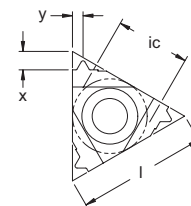
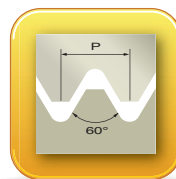
External Right Hand		Partial Profile 55°		Pitch Range	TPI Range	Nose Radius	X	Y
EDP	L (mm)	Description	Grade	mm		mm	mm	mm
031997	16	16IR8UN	SP4066	3,18	8	0,24	1,10	1,50
033863	16	16IR9UN	SP4066	2,82	9	0,20	1,20	1,70
033839	16	16IR10UN	SP4066	2,54	10	0,20	1,10	1,50
033840	16	16IR11UN	SP4066	2,31	11	0,18	1,10	1,50
031998	16	16IR12UN	SP4066	2,12	12	0,18	1,10	1,40
033842	16	16IR13UN	SP4066	1,95	13	0,17	1,00	1,30
033843	16	16IR14UN	SP4066	1,81	14	0,15	0,90	1,10
033846	16	16IR16UN	SP4066	1,59	16	0,11	0,90	1,10
033848	16	16IR18UN	SP4066	1,41	18	0,11	0,80	1,00
033852	16	16IR20UN	SP4066	1,27	20	0,10	0,80	0,90
033853	16	16IR24UN	SP4066	1,06	24	0,09	0,70	0,80
033855	16	16IR28UN	SP4066	0,91	28	0,09	0,60	0,60
033858	16	16IR32UN	SP4066	0,79	32	0,06	0,60	0,60
033859	16	16IR36UN	SP4066	0,71	36	0,05	0,60	0,60
033860	16	16IR40UN	SP4066	0,64	40	0,05	0,60	0,60
033895	22	22IR5UN	SP4066	5,08	5	0,37	1,60	2,30
033897	22	22IR6UN	SP4066	4,23	6	0,33	1,60	2,30
033898	22	22IR7UN	SP4066	3,63	7	0,29	1,60	2,30

Unified J Form (UNJ)

External Unified J Form (UNJ)

Standard reference: MIL-S8879C

Tolerance class: 3A / 3B



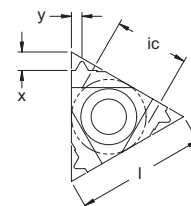
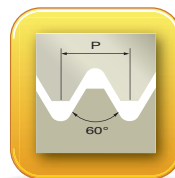
External Right Hand		Unified J Form (UNJ)		Pitch	TPI	X	Y
EDP	L (mm)	Description	Grade	mm		mm	mm
032345	16	16ER32UNJ	SP4066	0,79	32	0,60	0,60
032346	16	16ER28UNJ	SP4066	0,91	28	0,60	0,60
032347	16	16ER24UNJ	SP4066	1,06	24	0,70	0,80
032348	16	16ER20UNJ	SP4066	1,27	20	0,80	0,90
032349	16	16ER18UNJ	SP4066	1,41	18	0,80	1,00
032350	16	16ER16UNJ	SP4066	1,59	16	0,80	1,00
032351	16	16ER14UNJ	SP4066	1,81	14	1,00	1,20
032352	16	16ER12UNJ	SP4066	2,12	12	1,10	1,40

Metric J Form (MJ)

External Unified J Form (UNJ)

Standard reference: ISO 5855

Tolerance class: 4h/6h - 4H/5H

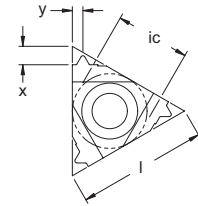
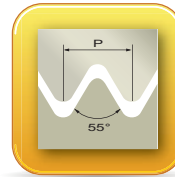


External Right Hand		Metric J Form (MJ)		Pitch	TPI	X	Y
EDP	L (mm)	Description	Grade	mm		mm	mm
032353	16	16ER0.8MJ	SP4066	0,80	-	0,60	0,70
032354	16	16ER1.0MJ	SP4066	1,00	-	0,60	0,70
032355	16	16ER1.25MJ	SP4066	1,25	-	0,70	0,90
032356	16	16ER1.5MJ	SP4066	1,50	-	0,80	1,00
032357	16	16ER2.0MJ	SP4066	2,00	-	1,00	1,30
032358	16	16ER2.5MJ	SP4066	2,50	-	1,10	1,50
032359	16	16ER3.0MJ	SP4066	3,00	-	1,20	1,60

British Standard Whitworth (W)

External British Standard Whitworth (W)

Standard reference: ISO 228/1: 1982,
B.S. 84:1956, DIN 259
Tolerance class: Medium Class A



External Right Hand		British Standard Whitworth (W)		Pitch	TPI	X	Y
EDP	L (mm)	Description	Grade	mm		mm	mm
033823	16	16ER8W	SP4066	3,18	8	1,20	1,50
033825	16	16ER9W	SP4066	2,82	9	1,20	1,70
033783	16	16ER10W	SP4066	2,54	10	1,10	1,50
031982	16	16ER11W	SP4066	2,31	11	1,10	1,50
033786	16	16ER12W	SP4066	2,12	12	1,10	1,40
031981	16	16ER14W	SP4066	1,81	14	1,00	1,20
033794	16	16ER16W	SP4066	1,59	16	0,90	1,10
033797	16	16ER18W	SP4066	1,41	18	0,80	1,00
031980	16	16ER19W	SP4066	1,34	19	0,80	1,00
033803	16	16ER20W	SP4066	1,27	20	0,80	0,90
033804	16	16ER22W	SP4066	1,15	22	0,80	0,90
033806	16	16ER24W	SP4066	1,06	24	0,70	0,80
033807	16	16ER26W	SP4066	0,98	26	0,70	0,80
031979	16	16ER28W	SP4066	0,91	28	0,60	0,70
033816	16	16ER32W	SP4066	0,79	32	0,60	0,60
033818	16	16ER36W	SP4066	0,71	36	0,60	0,60
033820	16	16ER40W	SP4066	0,64	40	0,60	0,60

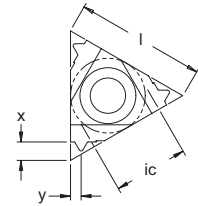
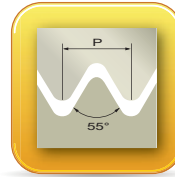
British Standard Whitworth (W)

Internal British Standard Whitworth (W)

Standard reference: ISO 228/1: 1982,

B.S. 84:1956, DIN 259

Tolerance class: Medium Class A



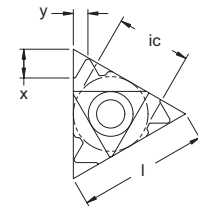
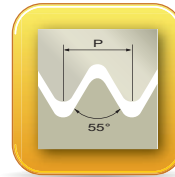
Internal Right Hand		British Standard Whitworth (W)		Pitch	TPI	X	Y
EDP	L (mm)	Description	Grade	mm		mm	mm
033749	08	08IR16W	SP4066	1,59	16	0,60	0,70
033752	08	08IR18W	SP4066	1,41	18	0,60	0,70
033753	08	08IR19W	SP4066	1,34	19	0,60	0,70
033755	08	08IR20W	SP4066	1,27	20	0,60	0,70
033757	08	08IR24W	SP4066	1,06	24	0,60	0,70
033759	08	08IR26W	SP4066	0,98	26	0,60	0,60
033762	08	08IR28W	SP4066	0,91	28	0,60	0,60
<hr/>							
032069	11	11IR28W	SP4066	0,91	28	0,60	0,70
032063	11	11IR26W	SP4066	0,98	26	0,70	0,80
032046	11	11IR19W	SP4066	1,34	19	0,80	1,00
032047	11	11IR14W	SP4066	1,81	14	0,90	1,10
032066	11	11IR11W	SP4066	2,31	11	0,90	1,20
<hr/>							
031983	16	16IR28W	SP4066	0,91	28	0,60	0,70
031984	16	16IR19W	SP4066	1,34	19	0,80	1,00
031985	16	16IR14W	SP4066	1,81	14	1,00	1,20
031986	16	16IR11W	SP4066	2,31	11	1,10	1,50

British Standard Pipe Taper Thread (BSPT)

External British Standard Pipe Taper Thread (BSPT)

Standard reference: B.S 21: 1985

Tolerance class: Standard BSPT

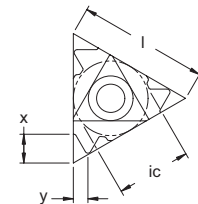


External Right Hand		British Standard Pipe Taper Thread (BSPT)		Pitch	TPI	X	Y
EDP	L (mm)	Description	Grade	mm		mm	mm
031987	16	16ER28BSPT	SP4066	0,91	28	0,70	0,80
031988	16	16ER19BSPT	SP4066	1,34	19	0,80	1,00
031989	16	16ER14BSPT	SP4066	1,81	14	0,90	1,20
031990	16	16ER11BSPT	SP4066	2,31	11	1,10	1,50

Internal British Standard Pipe Taper Thread (BSPT)

Standard reference: B.S 21: 1985

Tolerance class: Standard BSPT



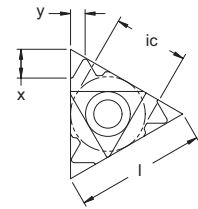
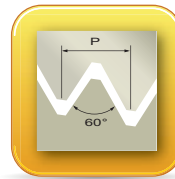
Internal Right Hand		British Standard Pipe Taper Thread (BSPT)		Pitch	TPI	X	Y
EDP	L (mm)	Description	Grade	mm		mm	mm
032050	11	11IR19BSPT	SP4066	1,34	19	0,80	1,00
032061	11	11IR14BSPT	SP4066	1,81	14	0,80	1,00
031991	16	16IR28BSPT	SP4066	0,91	28	0,70	0,80
031992	16	16IR19BSPT	SP4066	1,34	19	0,80	1,00
031993	16	16IR14BSPT	SP4066	1,81	14	0,90	1,20
031994	16	16IR11BSPT	SP4066	2,31	11	1,10	1,50

National Taper Thread (NPT)

External National Taper Thread (NPT)

Standard reference: USAS B2:1: 1968

Tolerance class: Standard NPT

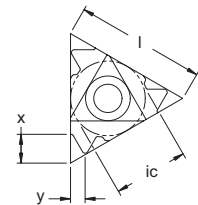


Internal Right Hand		National Taper Thread (NPT)		Pitch	TPI	X	Y
EDP	L (mm)	Description	Grade	mm		mm	mm
031971	16	16ER18NPT	SP4066	1,41	18	0,80	1,00
031972	16	16ER14NPT	SP4066	1,81	14	0,90	1,20
031973	16	16ER11,5NPT	SP4066	2,21	11,5	1,10	1,50
031974	16	16ER8NPT	SP4066	3,18	8	1,30	1,80

Internal National Taper Thread (NPT)

Standard reference: USAS B2:1: 1968

Tolerance class: Standard NPT



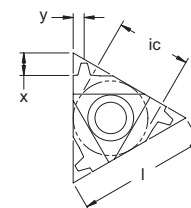
Internal Right Hand		National Taper Thread (NPT)		Pitch	TPI	X	Y
EDP	L (mm)	Description	Grade	mm		mm	mm
033760	08	08IR27NPT	SP4066	0,94	27	0,60	0,60
033750	08	08IR18NPT	SP4066	1,41	18	0,60	0,60
032054	11	11IR18NPT	SP4066	1,41	18	0,80	1,00
032052	11	11IR14NPT	SP4066	1,81	14	0,80	1,00
031975	16	16IR18NPT	SP4066	1,41	18	0,80	1,00
031976	16	16IR14NPT	SP4066	1,81	14	0,90	1,20
031977	16	16IR11.5NPT	SP4066	2,21	11,5	1,10	1,50
031978	16	16IR8NPT	SP4066	3,18	8	1,30	1,80

ACME

External ACME

Standard reference: ANSI B 1.5: 1988

Tolerance class: 3G

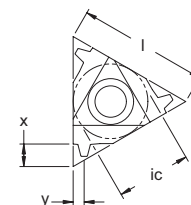


External Right Hand		ACME		Pitch	TPI	X	Y
EDP	L (mm)	Description	Grade	mm		mm	mm
032011	16	16ER12ACME	SP4066	2,12	12	1,10	1,20
032010	16	16ER10ACME	SP4066	2,54	10	1,30	1,30
032009	16	16ER8ACME	SP4066	3,18	8	1,50	1,50
032022	22	22ER6ACME	SP4066	4,23	6	1,80	2,10
032021	22	22ER5ACME	SP4066	5,08	5	2,00	2,30
032029	27	27ER4ACME	SP4066	6,35	4	2,30	2,70

Internal ACME

Standard reference: ANSI B 1.5: 1988

Tolerance class: 3G



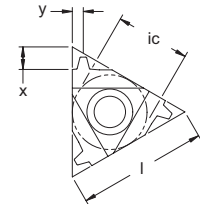
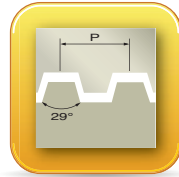
Internal Right Hand		ACME		Pitch	TPI	X	Y
EDP	L (mm)	Description	Grade	mm		mm	mm
032014	16	16IR12ACME	SP4066	2,12	12	1,10	1,20
032013	16	16IR10ACME	SP4066	2,54	10	1,30	1,30
032012	16	16IR8ACME	SP4066	3,18	8	1,50	1,50
032024	22	22IR6ACME	SP4066	4,23	6	1,80	2,10
032023	22	22IR5ACME	SP4066	5,08	5	2,00	2,30
032031	27	27IR4ACME	SP4066	6,35	4	2,30	2,70

Stub ACME (STACME)

External Stub ACME (STACME)

Standard reference: ANSI B1.8:1988

Tolerance class: 2G

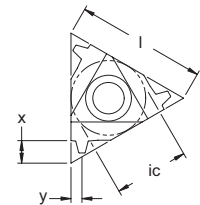


External Right Hand		Stub ACME (STACME)		Pitch	TPI	X	Y
EDP	L (mm)	Description	Grade	mm		mm	mm
032017	16	16ER12STACME	SP4066	2,12	12	1,20	1,20
032016	16	16ER10STACME	SP4066	2,54	10	1,30	1,30
032015	16	16ER8STACME	SP4066	3,18	8	1,50	1,50
033821	16	16ER6STACME	SP4066	4,23	6	1,50	1,80
032026	22	22ER6STACME	SP4066	4,23	6	1,80	1,80
032025	22	22ER5STACME	SP4066	5,08	5	2,00	2,30
032030	27	27ER4STACME	SP4066	6,35	4	2,30	2,40

Internal Stub ACME (STACME)

Standard reference: ANSI B1.8:1988

Tolerance class: 2G



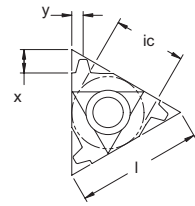
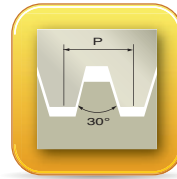
Internal Right Hand		ACME		Pitch	TPI	X	Y
EDP	L (mm)	Description	Grade	mm		mm	mm
032020	16	16IR12STACME	SP4066	2,12	12	1,20	1,20
032019	16	16IR10STACME	SP4066	2,54	10	1,30	1,30
032018	16	16IR8STACME	SP4066	3,18	8	1,50	1,50
033861	16	16IR6STACME	SP4066	4,23	6	1,50	1,80
032028	22	22IR6STACME	SP4066	4,23	6	1,80	1,80
032027	22	22IR5STACME	SP4066	5,08	5	2,00	2,30
032032	27	27IR4STACME	SP4066	6,35	4	2,30	2,40

Trapezoidal (TR)

External Trapezoidal (TR)

Standard reference: DIN 103

Tolerance class: 7e/7H

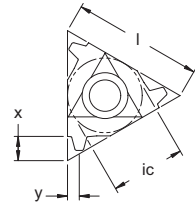


External Right Hand		Trapezoidal (TR)		Pitch	TPI	X	Y
EDP	L (mm)	Description	Grade	mm		mm	mm
033876	22	22ER4TR	SP4066	4,00	-	1,80	1,90
033878	22	22ER5TR	SP4066	5,00	-	2,00	2,40
033881	22	22ER6TR	SP4066	6,00	-	2,10	2,70

Internal Trapezoidal (TR)

Standard reference: DIN 103

Tolerance class: 7e/7H



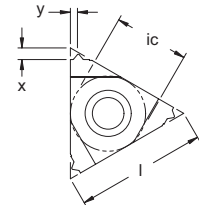
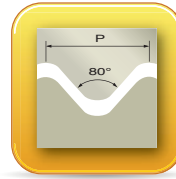
Internal Right Hand		Trapezoidal (TR)		Pitch	TPI	X	Y
EDP	L (mm)	Description	Grade	mm		mm	mm
033891	22	22IR4TR	SP4066	4,00	-	1,80	1,90
033894	22	22IR5TR	SP4066	5,00	-	2,00	2,40
033896	22	22IR6TR	SP4066	6,00	-	2,10	2,70

Panzer Gerwinde (PG) DIN40431

External Panzer Gerwinde (PG)

Standard reference: DIN 40430

Tolerance class: Standard



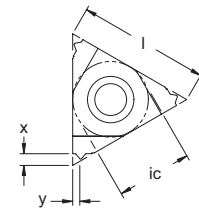
External Right Hand		Panzer Gerwinde (PG) DIN40431		Pitch	TPI	Nose Radius	X	Y
EDP	L (mm)	Description	Grade	mm		mm	mm	mm
033792	16	16ER16PG	SP4066	1,59	16	Pg 21-29-36-42-48	0,80	1,00
033795	16	16ER18PG	SP4066	1,41	18	Pg 9-11-13.5-16	0,80	0,90
033801	16	16ER20PG	SP4066	1,27	20	Pg 7	0,70	0,80

External Left Hand		Panzer Gerwinde (PG) DIN40431		Pitch	TPI	Nose Radius	X	Y
EDP	L (mm)	Description	Grade	mm		mm	mm	mm
033769	16	16EL16PG	SP4066	1,59	16	Pg 21-29-36-42-48	0,80	1,00

Internal Panzer Gerwinde (PG)

Standard reference: DIN 40430

Tolerance class: Standard



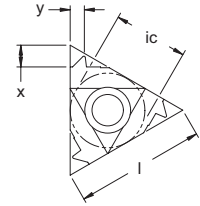
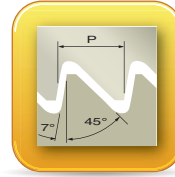
Internal Right Hand		Panzer Gerwinde (PG) DIN40431		Pitch	TPI	Nose Radius	X	Y
EDP	L (mm)	Description	Grade	mm		mm	mm	mm
032065	11	11IR18PG	SP4066	1,41	18	Pg 9-11-13.5-16	0,80	0,90
033845	16	16IR16PG	SP4066	1,59	16	Pg 21-29-36-42-48	0,80	1,00
033847	16	16IR18PG	SP4066	1,41	18	Pg 9-11-13.5-16	0,80	0,90
033851	16	16IR20PG	SP4066	1,27	20	Pg 7	0,70	0,80

American Buttress

External American Buttress

Standard reference: ANSI B1.9 :1973

Tolerance class: Class 2



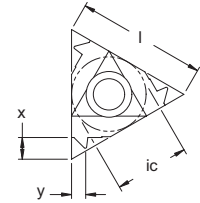
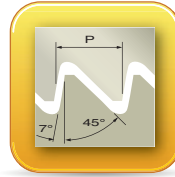
External Right Hand		American Buttress		Pitch	TPI	X	Y
EDP	L (mm)	Description	Grade	mm		mm	mm
034604	16	16ER10ABUTT	SP4066	2,54	10	1,50	2,30
033785	16	16ER12ABUTT	SP4066	2,12	12	1,40	2,00
033791	16	16ER16ABUTT	SP4066	1,59	16	1,00	1,50
033800	16	16ER20ABUTT	SP4066	1,27	20	1,00	1,30
034605	22	22ER8ABUTT	SP4066	3,18	8	2,10	3,30
034606	22	22ER12ABUTT	SP4066	2,12	12	1,60	2,10

American Buttress

Internal American Buttress

Standard reference: ANSI B1.9 :1973

Tolerance class: Class 2



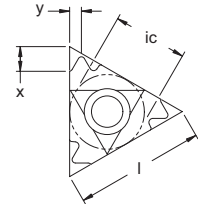
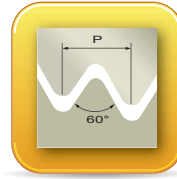
Internal Right Hand		American Buttress		Pitch	TPI	X	Y
EDP	L (mm)	Description	Grade	mm		mm	mm
034608	16	16IR10ABUTT	SP4066	2,54	10	1,50	2,30
033841	16	16IR12ABUTT	SP4066	2,12	12	1,40	2,00
033844	16	16IR16ABUTT	SP4066	1,59	16	1,00	1,30
033850	16	16IR20ABUTT	SP4066	1,27	20	1,00	1,30
034609	22	22IR8ABUTT	SP4066	3,18	8	2,10	3,30
034610	22	22IR12ABUTT	SP4066	2,12	12	1,60	2,10

API Round (APIRD)

External API Round (APIRD)

Standard reference: API Standard 5B :1979

Tolerance class: Standard API Round

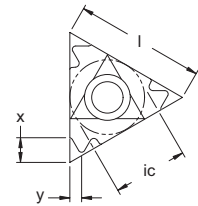


External Right Hand		API Round (APIRD)		Pitch	TPI	X	Y
EDP	L (mm)	Description	Grade	mm		mm	mm
033822	16	16ER8APIRD	SP4066	3,18	8	1,30	1,50
033781	16	16ER10APIRD	SP4066	2,54	10	1,20	1,40
032035	22	22ER8APIRD	SP4066	3,18	8	1,60	2,10

Internal API Round (APIRD)

Standard reference: API Standard 5B :1979

Tolerance class: Standard API Round



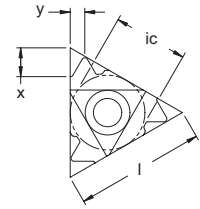
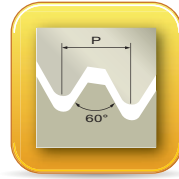
Internal Right Hand		API Round (APIRD)		Pitch	TPI	X	Y
EDP	L (mm)	Description	Grade	mm		mm	mm
033862	16	16IR8APIRD	SP4066	3,18	8	1,30	1,50
033838	16	16IR10APIRD	SP4066	2,54	10	1,20	1,40
032036	22	22IR8APIRD	SP4066	3,18	8	1,60	2,10

API (Oilfield)

External API (Oilfield)

Standard reference: API Specification 7: 1990

Tolerance class: Standard API



External Right Hand		API (Oilfield)		Pitch Range	TPI	Taper		X	Y
EDP	L (mm)	Description	Grade	mm		IPF	Angle	mm	mm
032039	22	22ER5API403	SP4066	5,08	5	3	7° - 1'	1,80	2,50
032034	22	22ER4API383	SP4066	6,35	4	3	7° - 1'	2,10	2,80
032033	22	22ER4API382	SP4066	6,35	4	2	4° - 43'	2,10	2,80
033874	22	22ER4API502	SP4066	6,35	4	2	4° - 43'	2,00	3,00
033875	22	22ER4API503	SP4066	6,35	4	3	7° - 1'	2,00	3,00
032037	27	27ER4API382	SP4066	6,35	4	2	4° - 43'	2,10	2,80
032038	27	27ER4API383	SP4066	6,35	4	3	7° - 1'	2,10	2,80
032040	27	27ER4API502	SP4066	6,35	4	2	4° - 43'	2,00	3,00
032041	27	27ER4API503	SP4066	6,35	4	3	7° - 1'	2,00	2,00

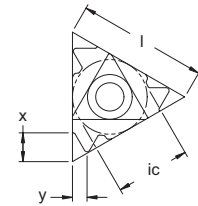
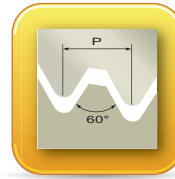


API (Oilfield)

Internal API (Oilfield)

Standard reference: API Specification 7: 1990

Tolerance class: Standard API



Internal Right Hand		API (Oilfield)		Pitch Range	TPI	Taper		X	Y
EDP	L (mm)	Description	Grade	mm		IPF	Angle	mm	mm
033132	22	22IR5API403	SP4066	5,08	5	3	7° - 1'	1,80	2,50
033133	22	22IR4API383	SP4066	6,35	4	3	7° - 1'	2,10	2,80
033134	22	22IR4API382	SP4066	6,35	4	2	4° - 43'	2,10	2,80
033888	22	22IR4API502	SP4066	6,35	4	2	4° - 43'	2,00	3,00
033889	22	22IR4API503	SP4066	6,35	4	3	7° - 1'	2,00	3,00
033135	27	27IR4API382	SP4066	6,35	4	2	4° - 43'	2,10	2,80
033136	27	27IR4API383	SP4066	6,35	4	3	7° - 1'	2,10	2,80
033137	27	27IR4API502	SP4066	6,35	4	2	4° - 43'	2,00	3,00
033138	27	27IR4API503	SP4066	6,35	4	3	7° - 1'	2,00	2,00

OILFIELD CONNECTORS

Reference to Part Number	TPI	Taper IPF	Connector No. or size
API V 0.038R	4	2	NC23, NC28, NC31, NC35, NC38, NC40, NC44, NC46 NC50, 4 FH, 2 3/8" IF, 3 1/2" IF, 4 1/2" IF, 5 1/2" IF
API V 0.038R	4	3	NC56, NC61, NC70, NC77
API V 0.040	5	3	2 3/8" REG, 2 7/8" REG, 3 1/2" REG, 4 1/2" REG 3 1/2" FH, 4 1/2" FH
API V 0.050	4	3	5 1/2" REG, 7 5/8" REG, 8 5/8" REG
API V 0.050	4	2	6 5/8" REG, 5 1/2" FH, 6 5/8" FH
API V 0.055	6	1.5	NC10, NC12, NC13, NC16
API V 0.065	4	2	Superceded by API V 0.038R

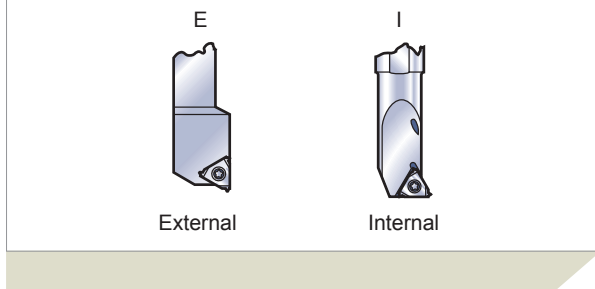
API Rotary Connections

API Rotary Connections					
API Connections	TPI	TPF	API Code	Stellram Part Number	Catalog Page Number
API Number					
NC10 - NC16	6.0	1.5	V-0.055	6API551.5	-
NC23 - NC50	4.0	2.0	V-0.038R	4API382	238 - 239
NC56 - NC77	4.0	3.0	V-0.038R	4API383	238 - 239
API Regular					
2 3/8 REG - 4 1/2 REG	5.0	3.0	V-0.040	5API403	238 - 239
5 1/2 REG - 7 5/8 REG, 8 5/8 REG	4.0	3.0	V-0.050	4API503	238 - 239
6 5/8 REG	4.0	2.0	V-0.050	4API502	238 - 239
Internal Flush					
2 3/8 IF - 6 5/8 IF	4.0	2.0	V-0.038R	4API382	238 - 239
Full Hole					
3 1/2 FH, 4 1/2 FH	5.0	3.0	V-0.040	5API403	238 - 239
4FH	4.0	2.0	V-0.038R	4API382	238 - 239
5 1/2 FH, 6 5/8 FH	4.0	2.0	V-0.050	4API502	238 - 239
Hughes External Flush					
2 3/8, 2 7/8	6.0	2.0	Drawing On Request		-
3 1/2, 4 1/2	4.0	2.0	V-0.038R	4API382	238 - 239
Hughes Xtra Hole					
2 7/8 -5	4.0	2.0	V-0.038R	4API382	238 - 239
Hughes Slim Hole					
2 3/8 - 4 1/2	4.0	2.0	V-0.038R	4API382	238 - 239
Hughes Double Streamline					
3 1/2 - 5 1/2	4.0	2.0	V-0.038R	4API382	238 - 239
Hughes H90					
3 1/2 - 6 5/8	3.5	2.0	Drawing On Request		-
7 - 8 5/8	3.5	3	Drawing On Request		-
Hughes Slimline H90					
2 3/8 - 3 1/2	3.0	1.25	Drawing On Request		-
PAC					
2 3/8 PAC - 2 7/8 PAC	4.0	1.5	-	4 PAC	-

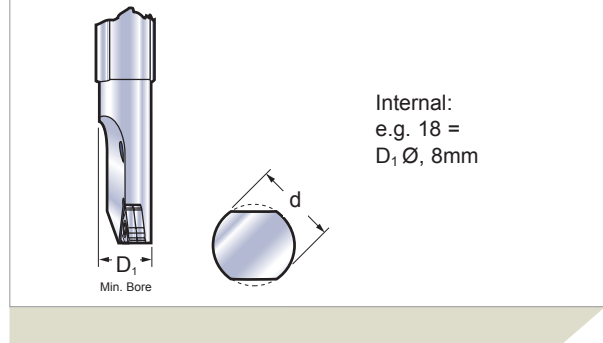
Threading Toolholder Designation

External	E	R	-	20	20	K	16	-
	1	2	3	4	5	6	7	8
Internal	I	R	N	16	18	M	16	-

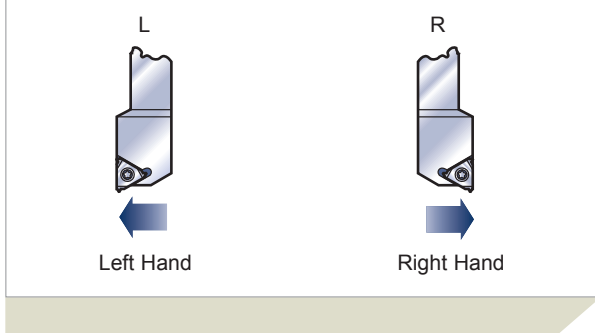
1 Utilisation



5 Minimum Bore Size (Internal)



2 Hand



6 Tool Length

D = 60	Q = 180
F = 80	R = 200
H = 100	S = 250
K = 125	T = 300
L = 140	U = 350
M = 150	V = 400
P = 170	

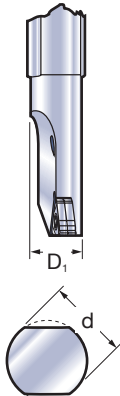


3 Option

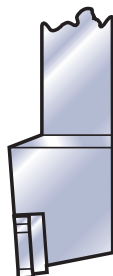
N = No Anvil

4 Shank Size or Tool Diameter

4. Internal Shank Diameter
e.g. 16 = d 16 mm

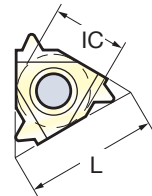


4 & 5. External Square Shank
e.g. 2020 = 20 x 20mm

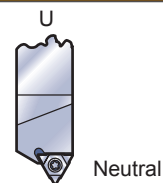


7 Insert Size

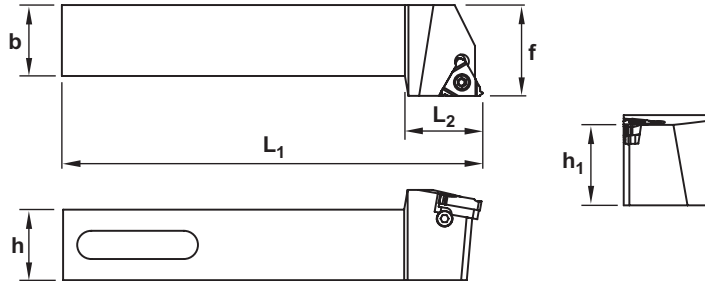
L mm	IC Inch
06	5/32
08	3/16
08U	3/16
11	1/4
16	3/8
22	1/2
22U	1/2U
27	5/8
27U	5/8U



8 Option



ER/EL 90°



LH & RH External Square Shank Tool Holder										
EDP	Item Description	Hand	Insert Sizes & Types	Dimensions (mm)					Anvil Type	
				h = h1	b	f	L1	L2	Anvil	Anvil Hand
021548	ERNM1010H11	RH	ER11	10	10	14	100	13	-	-
025179	ERN1010M16	RH	ER16	10	10	13	150	19	-	-
021361	EL1212F16	LH	EL16	12	12	16	80	22	Y13	LH
021363	EL1616H16	LH	EL16	16	16	20	100	22		
021365	EL2020K16	LH	EL16	20	20	25	125	27		
021367	EL2525M16	LH	EL16	25	25	32	150	27		
021369	EL3232Q16	LH	EL16	32	32	40	180	27		
021362	ER1212F16	RH	ER16	12	12	16	80	22	YE3	RH
021364	ER1616H16	RH	ER16	16	16	20	100	22		
021366	ER2020K16	RH	ER16	20	20	25	125	27		
021368	ER2525M16	RH	ER16	25	25	32	150	27		
021370	ER3232Q16	RH	ER16	32	32	40	180	27		
021371	EL2525M22	LH	EL22	25	25	32	150	30	Y14	LH
021373	EL3232Q22	LH	EL22	32	32	40	180	30		
021375	EL4040R22	LH	EL22	40	40	50	200	30		
021372	ER2525M22	RH	ER22	25	25	32	150	30	YE4	RH
021374	ER3232Q22	RH	ER22	32	32	40	180	30		
021376	ER4040R22	RH	ER22	40	40	50	200	30		
021381	EL3232Q27	LH	EL27	32	32	40	180	35	Y15	LH
021383	EL4040R27	LH	EL27	40	40	50	200	35		
021382	ER3232Q27	RH	ER27	32	32	40	180	35	YE5	RH
021384	ER4040R27	RH	ER27	40	40	50	200	35		

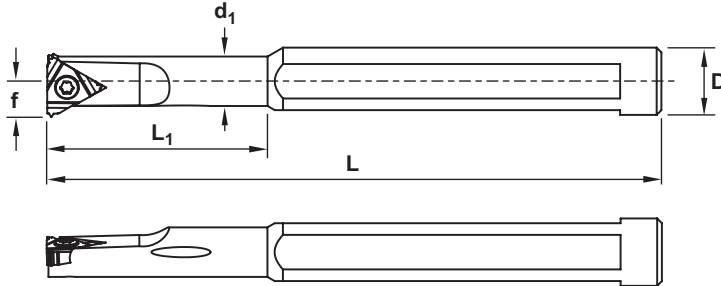
Right Hand Toolholders and Inserts, Specify R = RH | Left Hand Toolholders and Inserts, Specify L = LH



ER/EL 90° L/R Spare Parts

Item Description	Insert Screw EDP		Insert Key EDP		Anvil EDP		Anvil Screw EDP	
ERNM1010H11	015558	SN2T	015554	T8F	-	-	-	-
ERN1010M16	015560	SA3T	023379	T10F	-	-	-	-
EL 1212F16	015560	SA3T	023379	T10F	015389	YI3	015551	SY3T
EL 1616H16								
EL 2020K16								
EL 2525M16								
EL 3232Q16								
ER 1212F16	015560	SA3T	023379	T10F	015447	YE3	015551	SY3T
ER 1616H16								
ER 2020K16								
ER 2525M16								
ER 3232Q16								
EL2525M22	015561	SA4T	015556	T20F	015483	YI4	015552	SY4T
EL3232Q22								
EL4040R22								
ER2525M22	015561	SA4T	015556	T20F	015463	YE4	015552	SY4T
ER3232Q22								
ER4040R22								
EL3232Q27	015562	SA5T	015557	T25F	015523	YI5	015553	SY5T
EL4040R27								
ER3232Q27								
ER4040R27	015562	SA5T	015557	T25F	015503	YE5	015553	SY5T

IR 90°







IR LH & RH Internal Boring Bars										
EDP	Item Description	Hand	Insert Sizes & Types	Dimensions (mm)						
				Min Bore Thread Ø A	ØD	d ₁	f	L	L ₁	Through Coolant
021394	IRN1206H06	IR	06IR	6	12	5,80	4,20	100	13	☰
021396	IRN1608K08	IR	08IR	8	16	6,30	5,10	125	17	☰
021400	IRN1610K08	IR	08IR	10	16	7,80	6	125	17	☰
021402	IRN1013K11	IR	11IR	13	10	9,50	7,30	125	25	☰
023231	IRN2013M11	IR	11IR	13	20	10	7,30	150	25	☰
021406	IRN1616M11	IR	11IR	16	16	12,50	8,90	150	40	☰
021408	IRN1618M16	IR	16IR	18	16	12	9,40	150	40	☰
021410	IRN2021Q16	IR	16IR	21	20	15,80	12,40	180	40	☰
021412	IR2024Q16	IR	16IR	24	20	18,50	13	180	50	☰
021414	IR2529R16	IR	16IR	29	25	24	16	200	60	☰
021416	IR3236S16	IR	16IR	36	32	31,50	19,60	250	60	☰
021418	IR4044T16	IR	16IR	44	40	40	23,80	300	-	☒
021422	IRN2027Q22	IR	22IR	27	20	20	15,60	180	-	☰
021424	IR2532R22	IR	22IR	32	25	24,50	17,80	200	-	☰
021426	IR3239S22	IR	22IR	39	32	32	21,50	250	-	☰
021428	IR4047T22	IR	22IR	47	40	40	25,80	300	-	☒
021446	IR3240S27	IR	27IR	40	32	32	22,40	250	-	☰
021448	IR4048T27	IR	27IR	48	40	40	26,40	300	-	☒

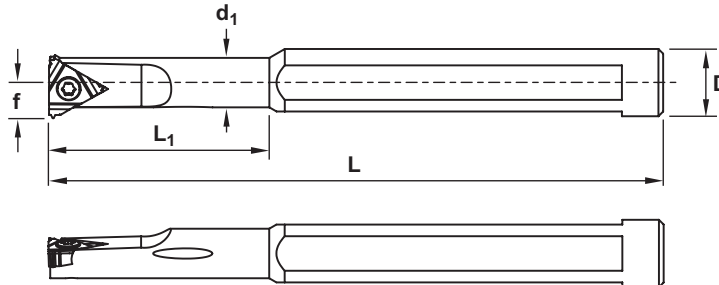
IL = Left Hand Tooling is available on request



IR 90° L/R Spare Parts

Item Description	Insert Screw EDP		Insert Key EDP		Anvil EDP		Anvil Screw EDP	
IR1206H06	015563	S6T	018487	T6	-	-	-	-
IRN1608K08	015564	S8T	018487	T6	-	-	-	-
IRN1610K08								
IRN1013K11	015558	SN2T	015554	T8F	-	-	-	-
IRN2013M11								
IRN1616M11								
IRN1618M16	015560	SA3T	023379	T10F	-	-	-	-
IRN2021Q16								
IR2024Q16	015560	SA3T	023379	T10F	015389	Y13	015551	SY3T
IR2529R16								
IR3236S16								
IR4044T16								
IRN2027Q22	015561	SA4T	015556	T20F	015483	Y14	015552	SY4T
IR2532R22								
IR3239S22								
IR4047T22								
IR3240S27								
IR4048T27	015562	SA5T	015557	T25F	015523	Y15	015553	SY5T

IR 90° CF Anti Vibration



IR LH & RH Internal Boring Bars										
EDP	Item Description	Hand	Insert Sizes & Types	Dimensions (imm)						
				Min Bore Thread Ø A	ØD	d ₁	f	L	L ₁	Through Coolant
021540	IRN1206H06CF	IR	06IR	6	12	5.80	4.20	100	18	
021498	IRN1608H08CF	IR	08IR	8	16	6.30	5.10	100	23	
021502	IRN1610H08CF	IR	08IR	10	16	8.10	6	100	23	
021504	IRN1013H11CF	IR	11IR	13	10	9.50	7.30	100	33	
021506	IRN1616M11CF	IR	11IR	16	16	12.50	8.90	150	53	
021508	IRN1618M16CF	IR	16IR	18	16	12	9.40	150	53	
021510	IRN2021M16CF	IR	16IR	21	20	15.80	12.40	150	53	
021512	IR2024R16CF	IR	16IR	24	20	18.50	13	200	67	

IL = Left Hand Tooling is available on request | CF = Chatter Free

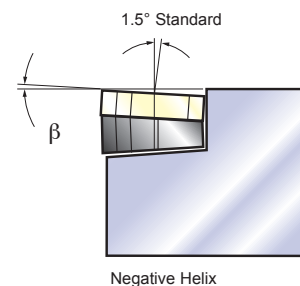
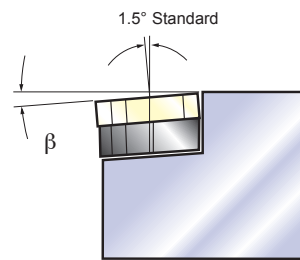
IR 90° CF Spare Parts								
Item Description	Insert Screw EDP		Insert Key EDP		Anvil EDP		Anvil Screw EDP	
IRN1206H06CF	015563	S6T	018487	T6	-	-	-	-
IRN1608H08CF	015564	S8T	018487	T6	-	-	-	-
IRN1610H08CF								
IRN1013H11CF	015558	SN2T	015554	T8F	-	-	-	-
IRN1616M11CF								
IRN1618M16CF	015560	SA3T	023379	T10F	-	-	-	-
IRN2021M16CF								
IR2024R16CF	015560	SA3T	023379	T10F	015389	YI3	015551	SY3T

With the Stellram threading system, a wide range of thread helix angles can be obtained without changing or modifying toolholders. This is obtained by simply changing the carbide anvil.

Most toolholders are produced with 1.5° helix machined into the body. These tools are supplied with this angle as standard.

Interchangeable anvils allow helix variations between +4.5° and -1.5° with the insert cutting edge remaining constant.

Negative helix angles are used for producing right hand threads with left hand holders or left hand threads with right hand holders.



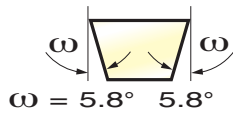
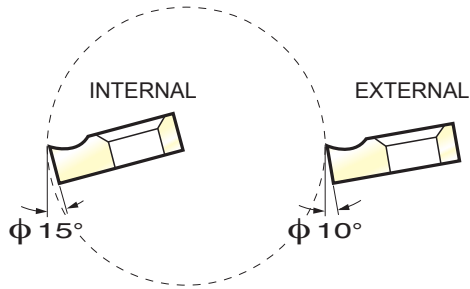
Insert size		Toolholder	β Helix Angle							
			4.5°	3.5°	2.5°	1.5°	0.5°	0°	-0.5°	-1.5°
mm	Inch		Anvil Part Numbers							
16	3/8"	EX RH / IN LH	YE33P	YE32P	YE31P	YE3	YE31N	YE31.5N	YE32N	YE33N
		EX LH / IN RH	YI33P	YI32P	YI31P	YI3	YI31N	YI31.5N	YI32N	YI33N
22	1/2"	EX RH / IN LH	YE43P	YE42P	YE41P	YE4	YE41N	YE41.5N	YE42N	YE43N
		EX LH / IN RH	YI43P	YI42P	YI41P	YI4	YI41N	YI41.5N	YI42N	YI43N
22U	1/2"	EX RH / IN LH	YE4U3P	YE4U2P	YE4U1P	YE4U	YE4U1N	YE4U1.5N	YE4U2N	YE4U3N
		EX LH / IN RH	YI4U3P	YI4U2P	YI4U1P	YI4U	YI4U1N	YI4U1.5N	YI4U2N	YI4U3N
27	5/8"	EX RH / IN LH	YE53P	YE52P	YE51P	YE5	YE51N	YE51.5N	YE52N	YE53N
		EX LH / IN RH	YI53P	YI52P	YI51P	YI5	YI51N	YI51.5N	YI52N	YI53N
27U	5/8"	EX RH / IN LH	YE5U3P	YE5U2P	YE5U1P	YE5U	YE5U1N	YE5U1.5N	YE5U2N	YE5U3N
		EX LH / IN RH	YI5U3P	YI5U2P	YI5U1P	YI5U	YI5U1N	YI5U1.5N	YI5U2N	YI5U3N

Note: Standard toolholders are supplied with 1.5° helix angle as standard.

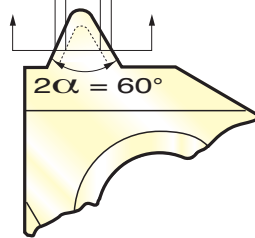
Calculation of thread helix angle for a given thread

$$\text{Helix angle} - \tan^{-1} \theta = \frac{\text{Lead of the Thread}}{\text{Pitch/Effective Diameter} \times \pi}$$

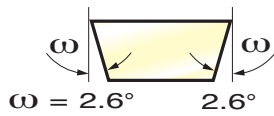
Flank Clearance Angle Selection



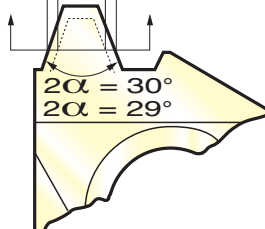
$\omega = 8.8^\circ \quad 8.8^\circ$



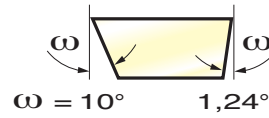
ISO
UN
PARTIAL 60°
NPT



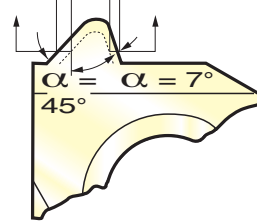
$\omega = 4^\circ \quad 4^\circ$



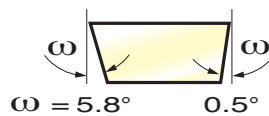
TRAPEZOIDAL
ACME
STUB ACME



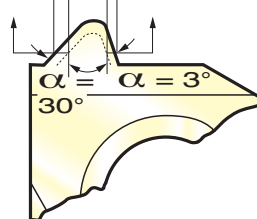
$\omega = 1.5^\circ \quad 1.9^\circ$



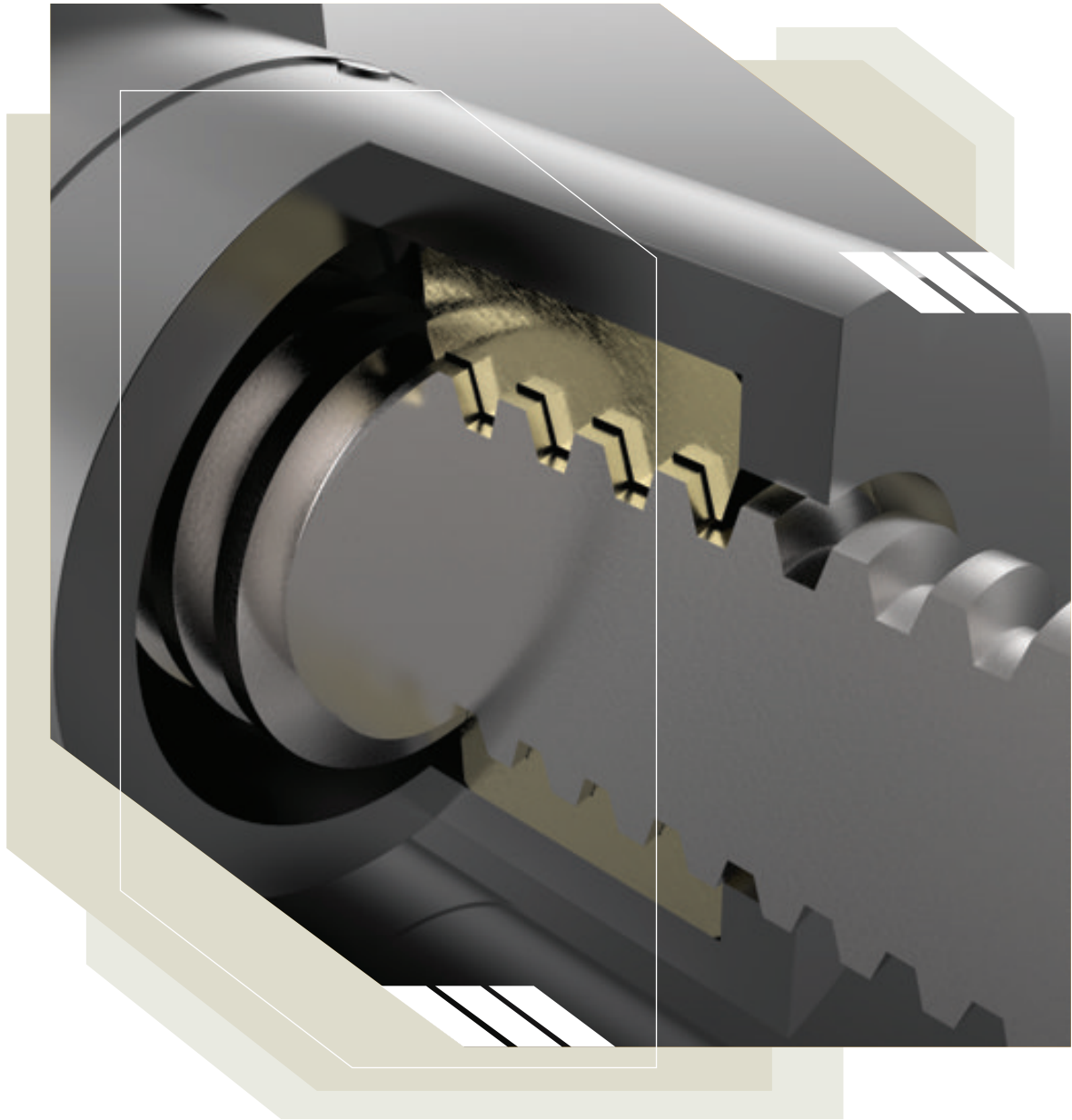
AMERICAN BUTTRESS



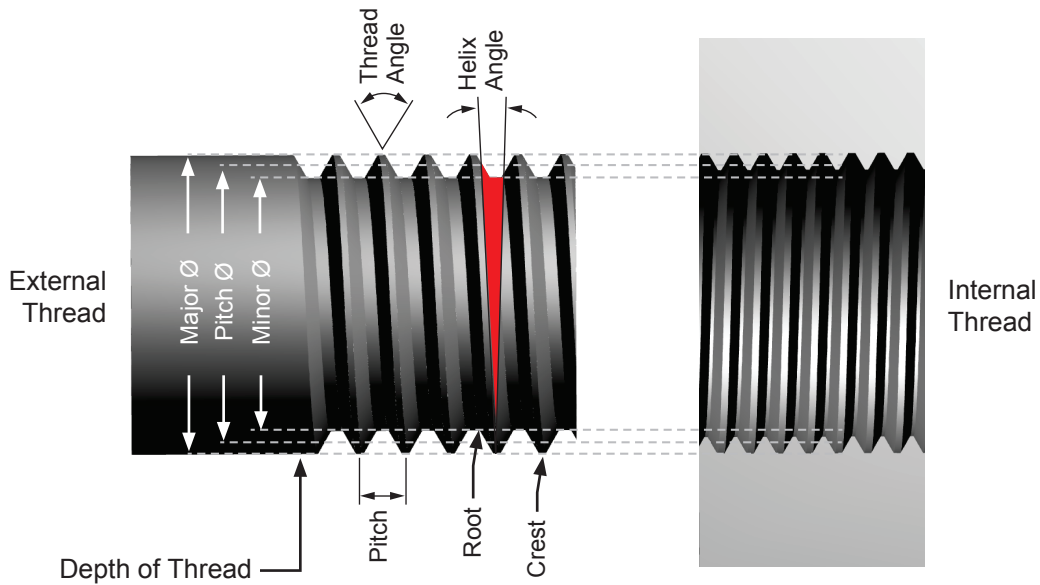
$\omega = 8.8^\circ \quad 0.8^\circ$



SAGE (DIN 513)



Depth of Thread



Depth of Thread

The distance between the Crest and Root.

Pitch

The distance between two thread form peaks, defined as TPI (thread per inch) in millimeters or as an inch decimal.

Pitch or Effective Diameter

Is where the theoretical cylinder diameter cuts the thread form, when the thread form width and groove depth are equal, applies to parallel/straight threads forms only.

Helix Angle: (Parallel/Straight Thread Forms)

Where the lead of the thread and the pitch diameter cylinder form a right angle triangle. The helix angle is the angle opposite the lead.

Major Diameter

The largest diameter of the thread form.

Minor or Root Diameter

The smallest diameter of the thread form.

Thread Angle

The included angle between the individual flanks.

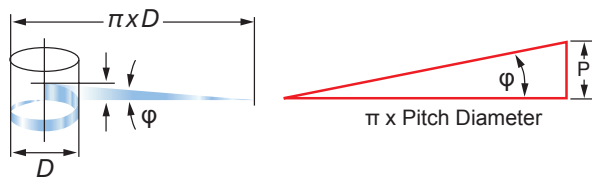
Root

The inner most surface of the thread, connecting the flanks.

Crest

The outer most surface of the thread, connecting the flanks.

Helix Angle

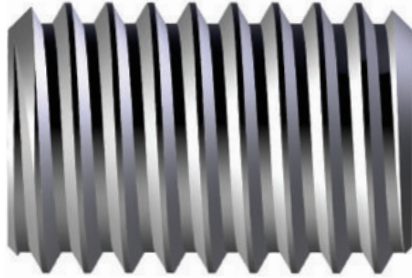


D = Pitch/Effective Diameter

P = Pitch or Lead

ϕ = Helix Angle

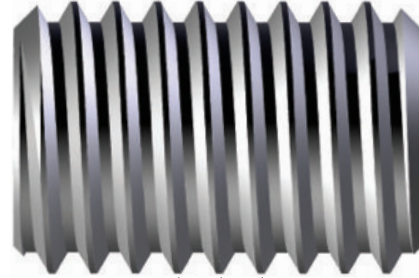
Pitch & Lead with Multi Start Thread



Pitch

Pitch =

Axial distance from one thread point to the corresponding point on the next form



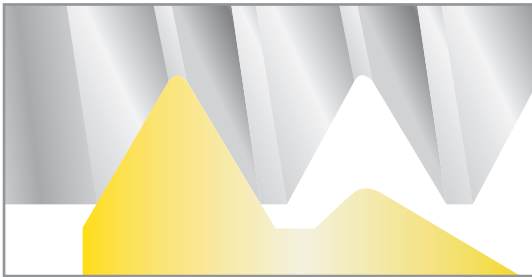
Pitch
Lead

Lead =

Pitch x Number of starts
Or the distance travelled in one rotation of the work-piece

Example for two start thread

Threading Insert Profile Types

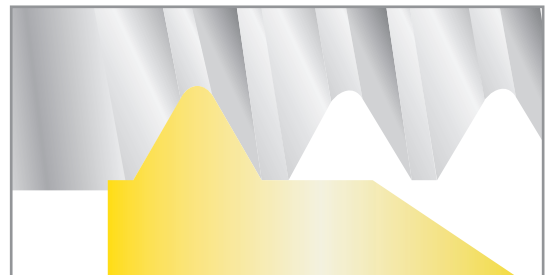


Partial Profile

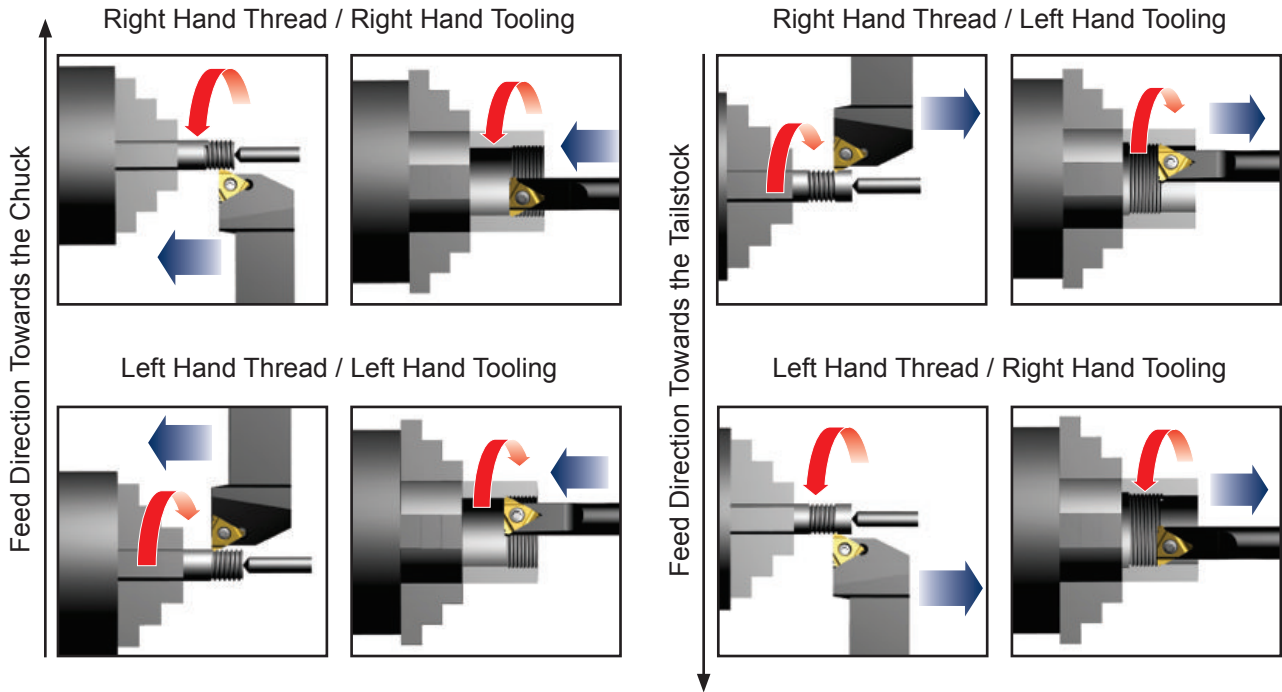
The partial profile insert does not crest or top the outer diameter of the thread profile but, can be used on multi thread pitches with the same thread angle.

Full Profile

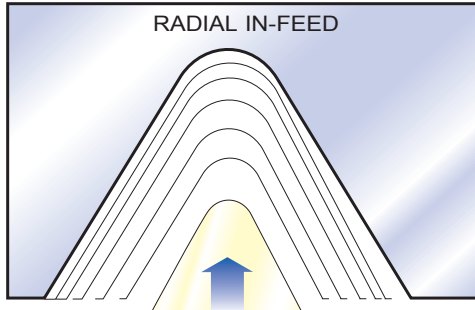
The full form insert controls the complete thread profile by cresting/topping the form. A different insert is required for each pitch.



Direction of cut using LH & RH Tooling

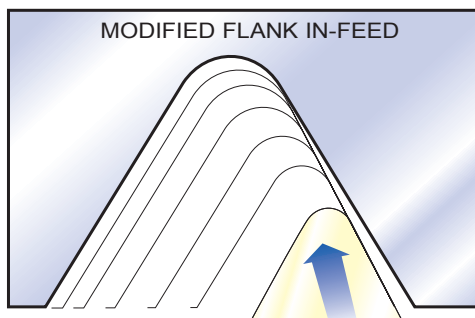


Radial In-Feed



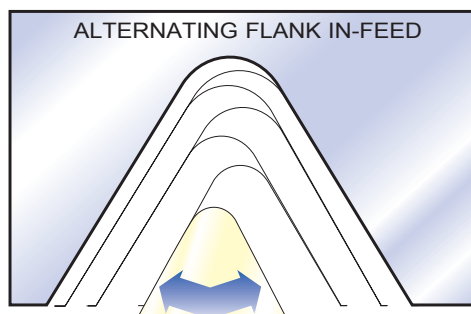
- Most commonly used method on manual lathes.
- Equal wear on leading and trailing edge.
- Good surface finish on trailing edge.
- Use on work hardening materials.
- Use on short chipping materials.
- For pitches of less than 1,5mm or 16 T.P.I.

Modified Flank In-Feed



- For threads greater than 1,5mm or 16 T.P.I.
- Reduced cutting pressure on larger pitches.
- Reduced chatter.
- Directs chip away from the cutting edge.
- Displaced in-feed angle improves surface finish.
- First choice for internal threading.

Alternating Flank In-Feed



- Recommended for large pitches, square ACME and trapezoidal forms.
- Recommended for long chipping materials.
- Method divides the work between both flanks.
- Results in equal wear.
- Less cutting pressure.
- Not available on all lathes.

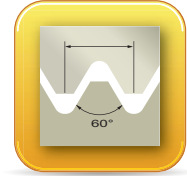
Helix Angle Calculation (mm)									
Outside Diameter mm	Pitch								
	1	1,25	1,5	1,75	2	3	4	5	6
Helix Angles (Degrees and Minutes)									
5	3° - 38'	4° - 33'	5° - 27'	-	-	-	-	-	-
6	3° - 2'	3° - 48'	4° - 33'	5° - 18'	6° - 33'	-	-	-	-
8	2° - 17'	2° - 51'	3° - 25'	3° - 59'	4° - 33'	6° - 49'	-	-	-
10	1° - 49'	2° - 16'	2° - 44'	3° - 11'	3° - 39'	5° - 27'	-	-	-
12	1° - 31'	1° - 54'	2° - 17'	2° - 39'	3° - 2'	4° - 33'	-	-	-
14	1° - 18'	1° - 38'	1° - 57'	2° - 17'	2° - 36'	3° - 54'	-	-	-
16	1° - 8'	1° - 42'	1° - 42'	2° - 0'	2° - 17'	3° - 25'	-	-	-
18	1° - 1'	1° - 16'	1° - 31'	1° - 46'	2° - 2'	3° - 2'	4° - 3'	-	-
20	55'	1° - 8'	1° - 22'	1° - 36'	1° - 49'	2° - 44'	3° - 39'	-	-
25	44'	55'	1° - 6'	1° - 16'	1° - 28'	2° - 11'	2° - 55'	-	-
30	36'	46'	55'	1° - 4'	1° - 13'	1° - 49'	2° - 26'	3° - 2'	3° - 39'
35	31'	39'	47'	55'	1° - 3'	1° - 33'	2° - 5'	2° - 36'	3° - 8'
40	27'	34'	41'	48'	55'	-	1° - 49'	2° - 17'	2° - 44'
45	24'	30'	36'	43'	48'	1° - 13'	1° - 37'	2° - 2'	2° - 26'
50	-	-	-	38'	44'	1° - 6'	1° - 28'	1° - 49'	2° - 11'
60	-	-	-	-	36'	55'	1° - 13'	1° - 31'	1° - 49'
70	-	-	23'	-	31'	47'	1° - 3'	1° - 18'	1° - 34'
80	-	-	-	-	-	41'	55'	1° - 8'	1° - 22'
90	-	-	-	21'	24'	36'	48'	1° - 1'	1° - 13'
100	-	-	17'	19'	-	33'	-	55'	1° - 6'

Calculation of thread helix angle for a given Thread

$$\text{Helix angle} - \tan^{-1} \theta = \frac{\text{Lead of the Thread}}{\text{Pitch} / \text{Effective Diameter} \times \pi}$$

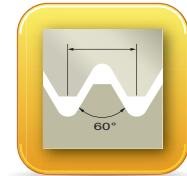
Threading

The table below provides recommendations for depths of cut for the different passes. These recommendations are intended as starting values for machining in steel and include stock 0,020mm - 0,075mm above crest. The suitable number of passes must be determined by optimum trials.



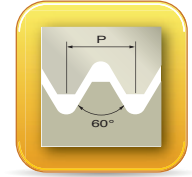
I.S.O Metric (ISO) 60°, External (mm)																	
Number of Passes	Pitch (mm)																
	0,5	0,75	0,8	1,0	1,25	1,5	1,75	2,0	2,5	3,0	3,5	4,0	4,5	5,0	5,5	6,0	
Radial in-feed per pass (mm)																	
1	0,102	0,178	0,178	0,178	0,178	0,229	0,229	0,254	0,279	0,279	0,330	0,330	0,381	0,406	0,432	0,457	
2	0,102	0,152	0,152	0,178	0,178	0,203	0,203	0,229	0,254	0,254	0,305	0,330	0,330	0,381	0,406	0,432	
3	0,076	0,102	0,127	0,127	0,152	0,178	0,152	0,178	0,203	0,203	0,254	0,254	0,279	0,330	0,330	0,356	
4	0,076	0,076	0,076	0,102	0,127	0,152	0,152	0,152	0,178	0,178	0,203	0,229	0,229	0,279	0,279	0,305	
5	0,356	0,508	0,533	0,076	0,102	0,127	0,127	0,152	0,152	0,152	0,178	0,178	0,229	0,229	0,229	0,279	
6				0,660	0,076	0,076	0,102	0,127	0,127	0,152	0,178	0,178	0,203	0,229	0,229	0,229	
7					0,813	0,965	0,102	0,102	0,127	0,127	0,152	0,152	0,178	0,203	0,203	0,229	
8							0,076	0,076	0,102	0,127	0,152	0,152	0,178	0,178	0,178	0,203	
9								1,143	1,270	0,102	0,127	0,152	0,152	0,152	0,178	0,178	0,203
10										0,076	0,102	0,127	0,127	0,152	0,178	0,178	0,178
11										1,600	0,102	0,102	0,127	0,152	0,152	0,152	0,178
12											0,076	0,076	0,127	0,127	0,152	0,152	0,152
13											1,880	2,210	0,102	0,127	0,127	0,127	0,152
14													0,076	0,102	0,102	0,127	0,152
15													2,515	2,819	3,124	0,127	0,127
16																0,102	0,102
																3,429	3,734

Last pass equals total depth of thread.



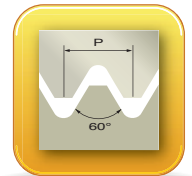
I.S.O Metric (ISO) 60°, Internal (mm)																	
Number of Passes	Pitch (mm)																
	0,5	0,75	1,0	1,25	1,5	1,75	2,0	2,5	3,0	3,5	4,0	4,5	5,0	5,5	6,0		
Radial in-feed per pass (mm)																	
1	0,102	0,178	0,178	0,203	0,254	0,229	0,254	0,279	0,279	0,305	0,330	0,356	0,381	0,381	0,406		
2	0,102	0,127	0,152	0,178	0,203	0,203	0,229	0,229	0,229	0,279	0,305	0,330	0,356	0,356	0,406		
3	0,076	0,102	0,102	0,127	0,152	0,152	0,178	0,178	0,203	0,229	0,229	0,279	0,305	0,305	0,356		
4	0,076	0,076	0,102	0,102	0,102	0,127	0,152	0,152	0,152	0,203	0,203	0,229	0,254	0,254	0,279		
5	0,356	0,483	0,076	0,102	0,102	0,102	0,127	0,152	0,152	0,178	0,178	0,203	0,229	0,229	0,229		
6			0,610	0,076	0,076	0,102	0,102	0,127	0,152	0,152	0,152	0,178	0,203	0,203	0,229		
7				0,787	0,889	0,102	0,102	0,102	0,127	0,152	0,152	0,152	0,178	0,178	0,203		
8						0,076	0,076	0,102	0,102	0,152	0,152	0,152	0,152	0,178	0,178		
9							1,092	1,219	0,102	0,102	0,127	0,127	0,152	0,152	0,178		
10									0,076	0,102	0,102	0,127	0,152	0,152	0,152	0,152	
11									1,499	0,102	0,102	0,102	0,127	0,152	0,152	0,152	
12										0,076	0,076	0,102	0,127	0,152	0,152	0,152	
13											1,778	2,057	0,102	0,102	0,127	0,152	0,152
14													0,076	0,102	0,102	0,127	0,152
15													2,337	2,642	2,896	0,127	0,127
16																0,102	0,102
																3,200	3,454

Last pass equals total depth of thread.



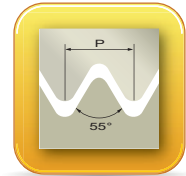
UNIFIED (UN) 60°, External (mm)																			
Number of Passes	T.P.I.																		
	32	28	24	20	18	16	14	13	12	11	10	9	8	7	6	5	4		
	Radial in-feed per pass (mm)																		
1	0,178	0,178	0,178	0,203	0,229	0,229	0,229	0,254	0,279	0,279	0,279	0,279	0,305	0,356	0,356	0,432	0,406	0,483	
2	0,152	0,152	0,178	0,178	0,203	0,203	0,229	0,229	0,229	0,254	0,229	0,229	0,254	0,330	0,330	0,406	0,381	0,432	
3	0,127	0,127	0,152	0,152	0,152	0,152	0,178	0,178	0,203	0,203	0,203	0,203	0,229	0,254	0,254	0,330	0,330	0,356	
4	0,076	0,102	0,127	0,127	0,152	0,152	0,152	0,152	0,152	0,178	0,178	0,178	0,178	0,229	0,229	0,279	0,279	0,330	
5	0,533	0,076	0,076	0,102	0,127	0,127	0,127	0,152	0,152	0,152	0,152	0,152	0,178	0,178	0,203	0,229	0,254	0,305	
6		0,635	0,711	0,076	0,076	0,102	0,102	0,127	0,152	0,152	0,152	0,152	0,152	0,178	0,178	0,229	0,229	0,254	
7				0,838	0,940	0,076	0,102	0,102	0,127	0,127	0,152	0,152	0,152	0,152	0,178	0,203	0,203	0,229	
8						1,041	0,076	0,076	0,076	0,102	0,127	0,127	0,152	0,152	0,152	0,178	0,203	0,229	
9							1,194	1,270	1,372	0,076	0,102	0,127	0,127	0,152	0,152	0,178	0,178	0,229	
10										1,499	0,076	0,102	0,127	0,127	0,152	0,178	0,178	0,203	
11											1,651	0,076	0,102	0,102	0,152	0,178	0,152	0,178	
12												1,778	0,076	0,076	0,127	0,152	0,152	0,178	
13													2,032	2,286	0,102	0,127	0,152	0,152	
14															0,102	0,102	0,152	0,152	
15																2,667	3,200	0,152	0,127
16																		0,127	0,102
																		3,531	3,937

Last pass equals total depth of thread.



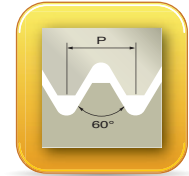
UNIFIED (UN) 60°, Internal (mm)																			
Number of Passes	T.P.I.																		
	32	28	24	20	18	16	14	13	12	11	10	9	8	7	6	5	4		
	Radial in-feed per pass (mm)																		
1	0,178	0,178	0,178	0,203	0,229	0,229	0,229	0,254	0,279	0,279	0,279	0,279	0,305	0,330	0,356	0,406	0,406	0,457	
2	0,152	0,152	0,152	0,178	0,178	0,178	0,203	0,229	0,229	0,229	0,229	0,229	0,279	0,305	0,330	0,356	0,406	0,432	
3	0,102	0,102	0,152	0,127	0,152	0,152	0,152	0,152	0,178	0,178	0,152	0,178	0,203	0,229	0,229	0,305	0,330	0,356	
4	0,076	0,102	0,102	0,102	0,127	0,127	0,152	0,152	0,152	0,152	0,152	0,152	0,178	0,203	0,203	0,254	0,254	0,305	
5	0,508	0,076	0,076	0,102	0,102	0,102	0,102	0,127	0,127	0,152	0,152	0,152	0,152	0,178	0,178	0,229	0,229	0,254	
6		0,610	0,660	0,076	0,076	0,102	0,102	0,102	0,102	0,127	0,127	0,152	0,152	0,152	0,203	0,203	0,229	0,229	
7				0,787	0,864	0,076	0,102	0,102	0,102	0,102	0,102	0,127	0,127	0,152	0,152	0,178	0,178	0,229	
8						0,940	0,076	0,076	0,076	0,102	0,102	0,102	0,102	0,152	0,152	0,178	0,178	0,178	
9							1,118	1,194	1,245	0,076	0,102	0,102	0,102	0,127	0,152	0,152	0,178	0,178	
10										1,397	0,076	0,102	0,102	0,102	0,127	0,152	0,152	0,178	
11											1,499	0,076	0,102	0,102	0,127	0,152	0,152	0,178	
12												1,651	0,076	0,076	0,102	0,152	0,152	0,152	
13													1,880	2,134	0,102	0,127	0,152	0,152	
14															0,102	0,102	0,127	0,152	
15																2,464	2,946	0,127	0,127
16																		0,102	0,102
																		3,277	3,658

Last pass equals total depth of thread.



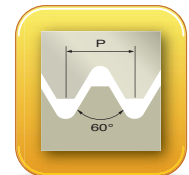
Whitworth (mm)																	
Number of Passes	T.P.I.																
	28	26	20	19	18	16	14	12	11	10	9	8	7	6	5	4.5	4
Radial in-feed per pass (mm)																	
1	0,203	0,203	0,203	0,229	0,229	0,203	0,254	0,279	0,279	0,305	0,279	0,305	0,356	0,356	0,381	0,406	0,457
2	0,178	0,152	0,203	0,203	0,203	0,203	0,229	0,254	0,254	0,254	0,229	0,279	0,305	0,305	0,381	0,406	0,432
3	0,127	0,152	0,152	0,152	0,178	0,152	0,178	0,203	0,203	0,203	0,229	0,229	0,279	0,279	0,356	0,356	0,356
4	0,102	0,102	0,127	0,127	0,152	0,152	0,152	0,178	0,178	0,178	0,203	0,203	0,229	0,254	0,305	0,305	0,330
5	0,076	0,076	0,102	0,127	0,127	0,127	0,127	0,152	0,152	0,152	0,178	0,178	0,203	0,203	0,279	0,279	0,330
6	0,635	0,686	0,076	0,076	0,102	0,127	0,127	0,152	0,152	0,127	0,152	0,152	0,203	0,203	0,254	0,254	0,279
7			0,864	0,914	0,076	0,102	0,102	0,127	0,127	0,127	0,152	0,152	0,178	0,203	0,229	0,229	0,279
8					1,067	0,076	0,076	0,076	0,127	0,127	0,127	0,152	0,152	0,178	0,203	0,229	0,254
9						1,143	1,245	1,422	0,076	0,127	0,127	0,127	0,152	0,152	0,203	0,203	0,254
10									1,549	0,076	0,127	0,127	0,152	0,152	0,203	0,178	0,229
11										1,676	0,076	0,127	0,127	0,152	0,178	0,178	0,203
12											1,880	0,076	0,076	0,152	0,152	0,152	0,203
13												2,108	2,413	0,127	0,127	0,152	0,178
14														0,102	0,102	0,152	0,152
15														2,819	3,353	0,147	0,127
16																0,102	0,102
																3,708	4,166

Last pass equals total depth of thread.



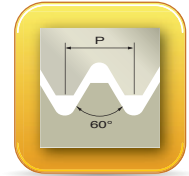
UNIFIED "J" for Aircraft (UNJ), External (mm)										
Number of Passes	T.P.I.									
	32	28	24	20	18	16	14	12	10	8
	Radial in-feed per pass (mm)									
1	0,178	0,178	0,178	0,203	0,229	0,229	0,229	0,279	0,279	0,305
2	0,152	0,152	0,152	0,178	0,203	0,203	0,203	0,229	0,229	0,279
3	0,127	0,102	0,152	0,152	0,152	0,152	0,152	0,203	0,203	0,203
4	0,076	0,102	0,102	0,102	0,127	0,127	0,127	0,152	0,152	0,178
5	0,533	0,076	0,076	0,102	0,102	0,102	0,127	0,152	0,152	0,152
6		0,610	0,660	0,076	0,076	0,102	0,102	0,102	0,127	0,152
7				0,813	0,889	0,076	0,102	0,102	0,127	0,127
8						0,991	0,076	0,076	0,102	0,127
9							1,118	1,295	0,102	0,127
10									0,076	0,102
11									1,549	0,102
12										0,076
										1,930

Last pass equals total depth of thread.



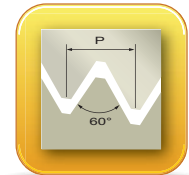
Metric "J" for Aircraft (MJ), External (mm)				
Number of Passes	Pitch (mm)			
	1,0	1,5	1,75	2,0
	Radial in-feed per pass (mm)			
1			0,2286	0,254
2			0,2032	0,2286
3			0,1524	0,1778
4			0,1524	0,1524
5			0,127	0,127
6			0,0762	0,127
7			0,9398	0,1016
8				0,0762
				1,2446

Last pass equals total depth of thread.



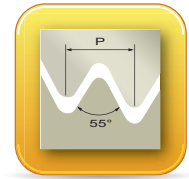
National Pipe Taper Dryseal (NPTF) External and Internal (mm)					
Number of Passes	T.P.I.				
	27	18	14	11.5	8
Radial in-feed per pass (mm)					
1	0,178	0,229	0,254	0,254	0,254
2	0,152	0,203	0,229	0,254	0,229
3	0,127	0,152	0,152	0,203	0,229
4	0,102	0,127	0,152	0,152	0,203
5	0,102	0,102	0,127	0,152	0,178
6	0,076	0,102	0,127	0,127	0,152
7	0,737	0,102	0,102	0,102	0,152
8		0,076	0,102	0,102	0,152
9		1,092	0,102	0,102	0,127
10			0,076	0,102	0,127
11			1,422	0,102	0,127
12				0,076	0,127
13				1,727	0,102
14					0,102
15					0,102
16					0,102
					2,464

Last pass equals total depth of thread.



National Pipe Taper (NPT) External & Internal (mm)					
Number of Passes	T.P.I.				
	27	18	14	11.5	8
Radial in-feed per pass (mm)					
1	0,203	0,229	0,229	0,229	0,254
2	0,152	0,178	0,203	0,203	0,229
3	0,127	0,152	0,178	0,178	0,203
4	0,102	0,152	0,152	0,152	0,203
5	0,102	0,127	0,152	0,152	0,178
6	0,076	0,127	0,127	0,152	0,178
7	0,762	0,102	0,127	0,152	0,178
8		0,076	0,102	0,127	0,178
9		1,143	0,102	0,127	0,152
10			0,076	0,102	0,152
11			1,448	0,102	0,152
12				0,076	0,127
13				1,753	0,127
14					0,102
15					0,076
					2,489

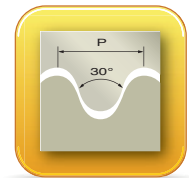
Last pass equals total depth of thread.



British Standard Pipe Taper (BSPT) External & Internal (mm)

Number of Passes	T.P.I.				
	27	18	14	11.5	8
Radial in-feed per pass (mm)					
1	0,178	0,229	0,254	0,254	0,279
2	0,152	0,203	0,203	0,229	0,279
3	0,127	0,152	0,178	0,203	0,229
4	0,102	0,127	0,152	0,178	0,203
5	0,076	0,127	0,127	0,152	0,178
6	0,660	0,076	0,127	0,152	0,152
7		0,914	0,102	0,127	0,152
8			0,076	0,127	0,152
9			1,219	0,076	0,127
10				1,499	0,127
11					0,127
12					0,076
					2,083

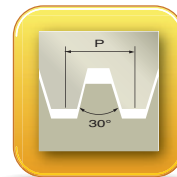
Last pass equals total depth of thread.



Round DIN 405, External & Internal (mm)

Number of Passes	T.P.I.			
	10	8	6	4
Radial in-feed per pass (mm)				
1	0,229	0,229	0,279	0,356
2	0,229	0,229	0,254	0,330
3	0,203	0,203	0,229	0,305
4	0,203	0,203	0,229	0,279
5	0,152	0,178	0,203	0,279
6	0,127	0,152	0,203	0,254
7	0,102	0,152	0,178	0,254
8	0,076	0,127	0,152	0,229
9	1,321	0,102	0,152	0,203
10		0,076	0,127	0,178
11		1,651	0,102	0,152
12			0,076	0,127
13			2,184	0,127
14				0,102
				3,200

Last pass equals total depth of thread.



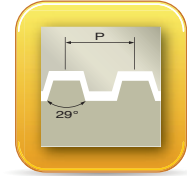
Trapezoidal DIN 103 (mm)								
Number of Passes	Pitch (mm)							
	1,5	2	3	4	5	6	7	8
	Radial in-feed per pass (mm)							
1	0,229	0,254	0,279	0,279	0,305	0,356	0,356	0,381
2	0,203	0,229	0,229	0,229	0,305	0,330	0,330	0,330
3	0,152	0,178	0,203	0,229	0,254	0,305	0,305	0,330
4	0,127	0,152	0,152	0,203	0,229	0,279	0,279	0,330
5	0,102	0,127	0,152	0,178	0,203	0,254	0,254	0,279
6	0,076	0,127	0,127	0,178	0,203	0,254	0,254	0,279
7	0,889	0,102	0,127	0,152	0,203	0,203	0,254	0,254
8		0,076	0,102	0,152	0,203	0,203	0,229	0,254
9		1,245	0,102	0,152	0,178	0,203	0,203	0,229
10			0,102	0,152	0,152	0,203	0,203	0,229
11			0,102	0,127	0,152	0,178	0,203	0,229
12			0,076	0,127	0,127	0,152	0,203	0,203
13			1,753	0,102	0,127	0,152	0,178	0,203
14				2,261	0,102	0,152	0,178	0,178
15					2,743	0,152	0,178	0,178
16						0,127	0,127	0,178
17						3,505	3,734	0,152
18								0,152
19								0,127
								4,496

Last pass equals total depth of thread.



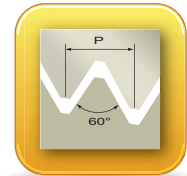
ACME (mm)									
Number of Passes	T.P.I.								
	16	14	12	10	8	6	5	4	3
	Radial in-feed per pass (mm)								
1	0,229	0,229	0,254	0,254	0,279	0,330	0,356	0,356	0,381
2	0,203	0,203	0,203	0,229	0,254	0,279	0,330	0,330	0,356
3	0,178	0,178	0,178	0,203	0,203	0,229	0,254	0,305	0,330
4	0,152	0,152	0,152	0,178	0,178	0,203	0,229	0,279	0,279
5	0,127	0,127	0,127	0,152	0,152	0,178	0,229	0,254	0,279
6	0,076	0,102	0,127	0,127	0,127	0,178	0,203	0,254	0,279
7	0,965	0,076	0,102	0,127	0,127	0,152	0,203	0,203	0,279
8		1,067	0,102	0,102	0,127	0,152	0,203	0,203	0,254
9			1,245	0,102	0,127	0,152	0,178	0,203	0,229
10				0,102	0,102	0,152	0,152	0,178	0,229
11				1,575	0,102	0,152	0,152	0,178	0,229
12					0,102	0,127	0,152	0,152	0,203
13					1,880	0,102	0,127	0,152	0,203
14						2,515	0,102	0,152	0,178
15							2,845	0,152	0,178
16								0,127	0,178
17								3,480	0,178
18									0,152
19									0,127
									4,521

Last pass equals total depth of thread.



STUB-ACME (mm)									
Number of Passes	T.P.I.								
	16	14	12	10	8	6	5	4	3
Radial in-feed per pass (mm)									
1	0,203	0,229	0,229	0,229	0,254	0,279	0,279	0,305	0,356
2	0,152	0,178	0,178	0,203	0,203	0,203	0,254	0,279	0,279
3	0,127	0,152	0,152	0,178	0,203	0,203	0,203	0,254	0,279
4	0,102	0,127	0,127	0,152	0,178	0,178	0,203	0,203	0,229
5	0,102	0,102	0,102	0,152	0,152	0,152	0,178	0,203	0,203
6	0,686	0,787	0,102	0,127	0,152	0,152	0,152	0,178	0,203
7			0,889	0,102	0,127	0,152	0,152	0,152	0,203
8				1,143	0,102	0,127	0,152	0,152	0,203
9					1,372	0,102	0,127	0,152	0,178
10						1,549	0,102	0,127	0,152
11							1,803	0,102	0,127
12								0,102	0,127
13								2,184	0,127
14									0,102
15									0,102
									3,099

Last pass equals total depth of thread.



API Thread Forms (mm)																
API Thread Forms	Total In-Feed	No. of passes/radial in-feed per pass (mm)														
		Passes														
		1	2	3	4	5	6	7	8	9	10	11	12	13	14	15
API Rd																
16ER10APIRD	1,448	0,279	0,203	0,152	0,152	0,127	0,127	0,127	0,102	0,102	0,076	-	-	-	-	-
16IR10APIRD																
16ER8APIRD	1,854	0,279	0,229	0,203	0,152	0,152	0,152	0,127	0,127	0,127	0,127	0,102	0,076	-	-	-
16IR8APIRD																
API-V-0.038R																
22ER4API382	3,175	0,457	0,381	0,381	0,330	0,305	0,305	0,254	0,254	0,203	0,127	0,102	0,076	-	-	-
22IR4API382																
22ER4API383	3,175	0,457	0,381	0,381	0,330	0,305	0,305	0,254	0,254	0,203	0,127	0,102	0,076	-	-	-
22IR4API383																
API-V-0.050																
27ER4API502	3,861	0,457	0,381	0,356	0,330	0,305	0,305	0,279	0,254	0,254	0,229	0,203	0,203	0,127	0,102	0,076
27IR4API502																
27ER4API503	3,835	0,457	0,381	0,356	0,330	0,305	0,279	0,279	0,254	0,254	0,229	0,203	0,203	0,127	0,102	0,076
27IR4API503																
API-V-0.040																
22ER5API403	3,073	0,432	0,381	0,381	0,330	0,279	0,279	0,254	0,254	0,178	0,127	0,102	0,076	-	-	-
22IR5API403																

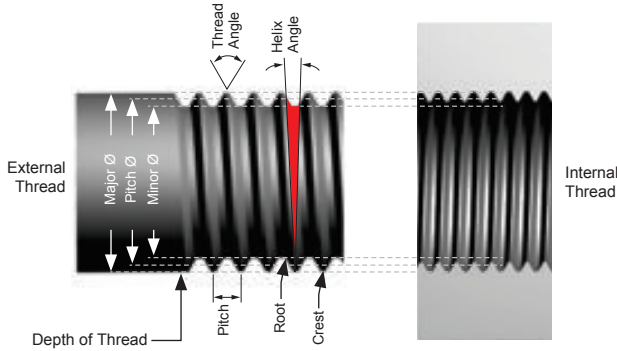
Multi-Tooth Inserts (mm)														
External	Metric 60° (I.S.O) Pitch (mm)					Unified 60° (UN) T.P.I.					Whitworth (W) T.P.I.			NPT T.P.I.
	1,0	1,5	2,0	2,5	3,0	20	18	16	14	12	19	14	11	11,5
Number of Passes	Radial in-feed per pass (mm)					Radial in-feed per pass (mm)					Radial in-feed per pass (mm)			
1	0,356	0,356	0,483	0,457	0,559	0,432	0,483	0,381	0,432	0,533	0,483	0,483	0,457	0,508
2	0,330	0,330	0,483	0,432	0,533	0,381	0,432	0,356	0,406	0,483	0,432	0,432	0,432	0,019
3	0,686	0,279	0,330	0,406	0,483	0,813	0,914	0,279	0,330	0,356	0,914	0,330	0,381	0,432
4		0,965	1,295	0,279	0,330			1,016	1,168	1,372		1,245	0,279	0,254
				1,575	1,905								1,549	1,676

Internal	Metric 60° (I.S.O) Pitch (mm)					Unified 60° (UN) T.P.I.					Whitworth (W) T.P.I.			NPT T.P.I.
	1,0	1,5	2,0	2,5	3,0	20	18	16	14	12	19	14	11	11,5
Number of Passes	Radial in-feed per pass (inch)					Radial in-feed per pass (inch)					Radial in-feed per pass (inch)			
1	0,330	0,330	0,457			0,356	0,483				0,356	0,483	0,457	0,508
2	0,305	0,305	0,432			0,330	0,432				0,305	0,432	0,432	0,483
3	0,635	0,254	0,330			0,254	0,330				0,254	0,330	0,381	0,432
4		0,889	1,219			0,940	1,245				0,914	1,245	0,279	0,254
													1,549	1,676

Last pass equals total depth of thread.

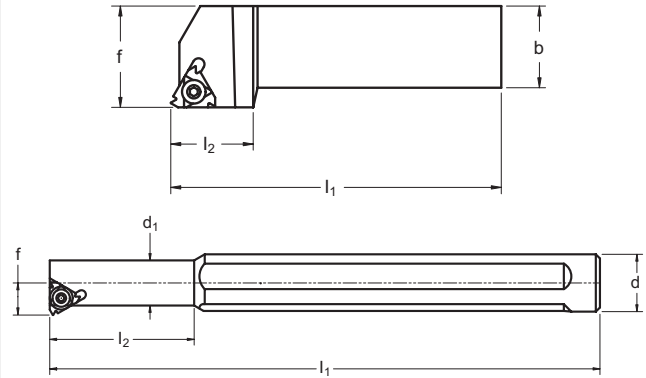
1 What's the Application

- A) Internal or External
- B) Type of thread form
- C) Material being machined



3 Select Tooling

- F) External
- G) Internal

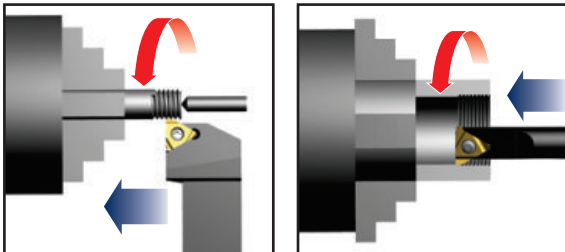


See pages 242 – 246

2 Machine Set-Up

- D) LH or RH thread form
- E) Machine Set-Up

Right Hand Thread / Right Hand Tooling



See page 252

4 Check Helix Angle

Note: The 1.5°

Calculation of thread helix angle for a given thread

$$\text{Helix angle} - \tan^{-1} \theta = \frac{\text{Lead of the Thread}}{\text{Pitch/Effective Diameter} \times \pi}$$

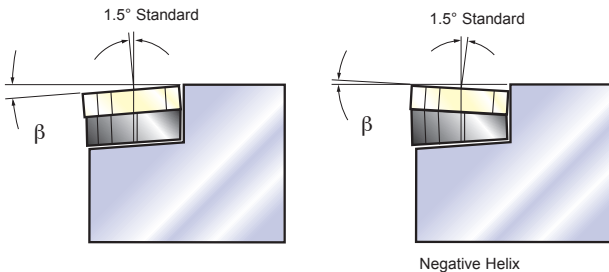
Helix Angle Calculation (mm)

Outside Diameter mm	Helix A			
	1	1,25	1,5	1,75
5	3° - 38'	4° - 33'	5° - 27'	-
6	3° - 2'	3° - 48'	4° - 33'	5° - 18'
8	2° - 17'	2° - 51'	3° - 25'	3° - 59'
10	1° - 49'	2° - 16'	2° - 44'	3° - 11'
12	1° - 31'	1° - 54'	2° - 17'	2° - 39'
14	1° - 18'	1° - 38'	1° - 57'	2° - 17'
16	1° - 8'	1° - 42'	1° - 42'	2° - 0'

See page 254

5 Select Anvil

Note: The 1.5° angle is Standard with all toolholders



Insert size		Toolholder	β Helix Angle				Anvil Part Numbers
mm	Inch		4.5°	3.5°	2.5°	1.5°	
16	3/8"	EX RH / IN LH	YE33P	YE32P	YE31P	YE3	Y
		EX LH / IN RH	YI33P	YI32P	YI31P	YI3	
22	1/2"	EX RH / IN LH	YE43P	YE42P	YE41P	YE4	Y
		EX LH / IN RH	YI43P	YI42P	YI41P	YI4	
22U	1/2"	EX RH / IN LH	YE4U3P	YE4U2P	YE4U1P	YE4U	Y
		EX LH / IN RH	YI4U3P	YI4U2P	YI4U1P	YI4U	
27	5/8"	EX RH / IN LH	YE53P	YE52P	YE51P	YE5	Y
		EX LH / IN RH	YI53P	YI52P	YI51P	YI5	
27U	5/8"	EX RH / IN LH	YE5U3P	YE5U2P	YE5U1P	YE5U	Y
		EX LH / IN RH	YI5U3P	YI5U2P	YI5U1P	YI5U	

Note: Standard toolholders are supplied with 1.5° helix angle as standard.

See page 247

6 Select Cutting Speed

Speed vc (feet/min)			
ISO	Materials	Rm	HBN
P	Unalloyed Steel	400-600 N/mm ²	120-180 HBN
		600-950 N/mm ²	180-200 HBN
	Alloyed Steel	700-950 N/mm ²	200-280 HBN
		950-1200 N/mm ²	280-355 HBN
		1200-1400 N/mm ²	355-415 HBN
	Tool Steel	1200-1400 N/mm ²	355-415 HBN
M	Stainless Steel	Austenitic + Ferritic 300 series	
		Martensitic 400 series	
	PH Stainless	Refractory P.H.	

See page 209

7 Select number and depth of passes

I.S.O Metric (ISO) 60°, External (mm)							
Number of Passes	0,5	0,75	0,8	1,0	1,25	1,5	1,75
	1	0,102	0,178	0,178	0,178	0,178	0,229
2	0,102	0,152	0,152	0,178	0,178	0,203	0,203
3	0,076	0,102	0,127	0,127	0,152	0,178	0,152
4	0,076	0,076	0,076	0,102	0,127	0,152	0,152
5	0,356	0,508	0,533	0,076	0,102	0,127	0,127
6				0,660	0,076	0,076	0,102
7					0,813	0,965	0,102
8							0,076
9							1,143
10							
11							
12							
13							

See pages 255 – 263

Threading



All Stellram's products are supported by a confident and technical sales team backed by an extensive customer care policy.

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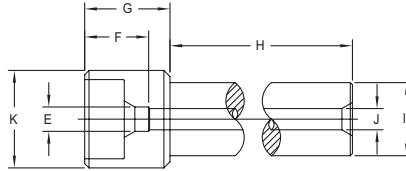
Landis® CNC EZ Roller™ Thread Rolling Tools



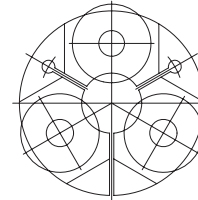
ATI Stellram – Landis Threading Systems offers a line of thread rolling tools designed especially for CNC style machines. The Landis® CNC EZ Roller™ thread rolling tools offer a low cost, small tool envelope, alternative to the conventional opening style rolling heads. When married to CNC machines that run a Rigid or Synchronous tapping cycle to roll-on/roll-off, savings can be achieved by eliminating the extraneous moves necessary to reset the rolling head. Six sizes of CNC EZ Roller™ tools cover a standard thread range of M1,6 through M30 diameters. They can be furnished with plain cylindrical shanks in both inch and metric diameters, or other mountings available include CAT, BT, VDI, Morse Taper and Tap drive. Thread rolls are available in several die materials and thread leads to suit the application.



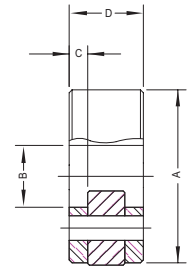
Die Holder



Die Body



Front View



Side View

#1.5 Tooling Dimensions

Dimensions	mm
A	20,61
B	see thread size chart
C	2,38
D	10,32
E	6,50
F	16,50
G	22,50
H	50,00
I*	20,00
J	6,00
K	26,00

Components

Part #	Description	Quantity
L0C143453	Die Holder - Metric	1
L0E059614	Thread Roll Shaft	3
L0E069852	Thread Roll Shaft - "A", "AA", "B"	3
L0E143454	Adjusting Screw	1
LFA001056	Set Screw	4
LGD001105	2mm Hex Wrench	1

Thread Size	Sub-Assembly Shank EDP	Die Body EDP	Die Body Size	B - Dimension	Thread Roll EDP
	mm			mm	
#0-80 UNF	LSB143535	L0B063650	A - 4°-35'	3,2	L0C063633
#1-64 UNC	LSB143536	L0B063645	AA - 4°-25'	4	L0C065380
#1-72 UNF	LSB143536	L0B063645	AA - 4°-25'	4	L0C063644
#2-56 UNC	LSB143537	L0B063312	B - 4°-25'	5,2	L0C063315
#2-64 UNF	LSB143538	L0B118675	BF - 3°-45'	5,2	L0C063314
#3-48 UNC	LSB143537	L0C063312	B - 4°-25'	5,2	L0C063317
#3-56 UNF	LSB143538	L0B118675	BF - 3°-45'	5,2	L0C063316

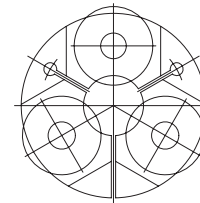
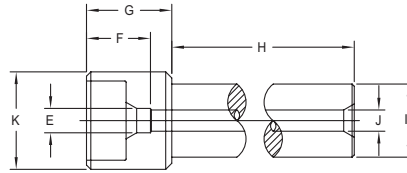
Threading

Thread Size	Sub-Assembly Shank EDP	Die Body EDP	Die Body Size	B - Dimension	Thread Roll EDP
	mm			mm	
#4-40 UNC	LSB143539	LOB059611	C - 4°-45'	6,7	LOC059613
#4-48 UNF	LSB143540	LOB118676	CF - 4°-0'	6,7	LOC063318
#5-40 UNC	LSB143539	LOB059611	C - 4°-45'	6,7	LOC063320
#5-44 UNF	LSB143540	LOB118676	CF - 4°-0'	6,7	LOC063319
#6-32 UNC	LSB143539	LOB059611	C - 4°-45'	6,7	LOC059612
#6-40 UNF	LSB143540	LOB118676	CF - 4°-0'	6,7	LOC063321
#8-32 UNC	LSB143541	LOB059624	D - 4°-45'	8	LOC063323
#8-36 UNF	LSB143542	LOB109833	DF - 3°-30'	8	LOC063322
#10-24 UNC	LSB143541	LOB059624	D - 4°-45'	8	LOC063324
#10-32 UNF	LSB143542	LOB109833	DF - 3°-30'	8	LOC062473
#12-24 UNC	LSB143541	LOB059624	D - 4°-45'	8	LOC063332
#12-28 UNF	LSB143542	LOB109833	DF - 3°-30'	8	LOC063348
M1,6 X ,35 ISO	LSB143535	LOB063650	A - 4°-35'	3,2	LOC141599
M1,8 X ,35 ISO	LSB143536	LOB063645	AA - 4°-25'	4	LOC141600
M2 X ,4 ISO	LSB143537	LOB063312	B - 4°-25'	5,2	LOC065218
M2,2 X ,45 ISO	LSB143537	LOB063312	B - 4°-25'	5,2	LOC141608
M2,5 X ,45 ISO	LSB143538	LOB118675	BF - 3°-45'	5,2	LOC121521
M3 X ,5 ISO	LSB143543	LOB106668	CX - 3°-30'	6,7	LOC063998
M3,5 X ,6 ISO	LSB143543	LOB106668	CX - 3°-30'	6,7	LOC065953
M4 X ,7 ISO	LSB143543	LOB106668	CX - 3°-30'	6,7	LOC064998
M4,5 X ,75 ISO	LSB143542	LOB109833	DF - 3°-30'	8	LOC115099
M5 X ,8 ISO	LSB143542	LOB109833	DF - 3°-30'	8	LOC065200

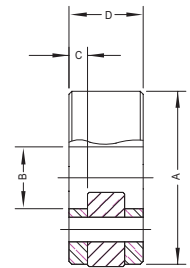


Die Holder

Die Body



Front View



Side View

#3 Tooling Dimensions

Dimensions	mm
A	33,30
B	see thread size chart
C	3,17
D	14,28
E	13,50
F	24,00
G	29,00
H	63,50
I*	25,00
J	10,50
K	42,00

Components

Part #	Description	Quantity
L0C143455	Die Holder - Metric	1
L0E062987	Thread Roll Shaft	3
LFA001057	Set Screw	5
LGD001106	2,5mm Hex Wrench	1

Thread Size	Sub-Assembly Shank EDP	Die Body EDP	Die Body Size	B - Dimension	Thread Roll EDP
	mm			mm	
#8 - 32 UNC	LSB143573	L0B141720	FX - 4°-0'	12	L0B141721
#10 - 24 UNC	LSB143544	L0B062984	F - 4°-45'	12	L0C118886
#10 - 32 UNF	LSB143545	L0B129458	FX - 3°-30'	12	L0B122271
#12 - 24 UNC	LSB143573	L0B141720	FX - 4°-0'	12	L0B140426
#12 - 28 UNF	LSB143545	L0B129458	FX - 3°-30'	12	L0B063313
1/4 - 20 UNC	LSB143544	L0B062984	F - 4°-45'	12	L0B063326
1/4 - 28 UNF	LSB143546	L0B068825	FF - 3°-0'	12	L0B063325

Threading

Thread Size	Sub-Assembly Shank EDP	Die Body EDP	Die Body Size	B - Dimension	Thread Roll EDP
	mm			mm	
5/16 - 18 UNC	LSB143547	LOB062988	G - 3°-45'	14	LOB063328
5/16 - 24 UNF	LSB143548	LOB109834	GF - 2°-45'	14	LOB063327
3/8 - 16 UNC	LSB143547	LOB062988	G - 3°-45'	14	LOB063330
3/8 - 24 UNF	LSB143548	LOB109834	GF - 2°-45'	14	LOB063329
M5 x 0,8	LSB143545	LOB129458	FX - 3°-30'	12	LOB141885
M6 x 1,0	LSB143545	LOB129458	FX - 3°-30'	12	LOB064254
M7 x 1,0	LSB143546	LOB068825	FF - 3°-0'	12	LOB064965
M8 x 1,0	LSB143548	LOB109834	GF - 2°-45'	14	LOB059144
M8 x 1,25	LSB143549	LOB141511	GX - 3°-15'	14	LOB064966
M10 x 1,25	LSB143548	LOB109834	GF - 2°-45'	14	LOB059145
M10 x 1,5	LSB143549	LOB141511	GX - 3°-15'	14	LOB064270

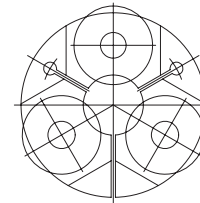
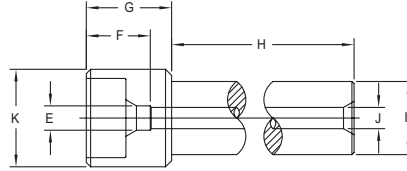
Threading

Landis™ #3.5 CNC EZ Roller™

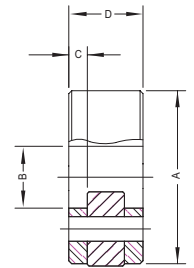


Die Holder

Die Body



Front View



Side View

#3.5 Tooling Dimensions

Dimensions	mm
A	68,26
B	see thread size chart
C	4,76
D	28,58
E	--
F	Thru Bore
G	35,00
H	63,50
I*	25,00
J	13,50
K	83,00

Components

Part #	Description	Quantity
L0B143456	Die Holder - Metric	1
L0D142295	Thread Roll Shaft	3
LFA001058	Adjusting & Retaining Screws	5
LGD001107	3mm Hex Wrench	1

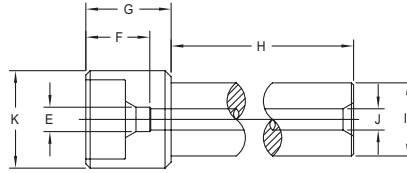
Thread Size	Sub-Assembly Shank EDP	Die Body EDP	Die Body Size	B - Dimension	Thread Roll EDP
	mm			mm	
1/4 - 20 UNC	LSB143551	L0B142296	T - 4°-15'	15,1	L0B142326
1/4 - 28 UNF	LSB143552	L0B142299	TF - 2°-40'	15,1	L0B142328
5/16 - 18 UNC	LSB143553	L0B142297	U - 3°-20'	22,6	L0B118808
5/16 - 24 UNF	LSB143554	L0B142300	UF - 2°-40'	22,6	L0B118812
3/8 - 16 UNC	LSB143555	L0B142298	V - 3°-10'	22,6	L0B118809
3/8 - 24 UNF	LSB143556	L0B142301	VF - 2°-0'	22,6	L0B118813

Threading

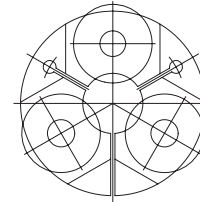
Thread Size	Sub-Assembly Shank EDP	Die Body EDP	Die Body Size	B - Dimension	Thread Roll EDP
	mm			mm	
7/16 - 14 UNC	LSB143555	LOB142298	V - 3°-10'	22,6	LOB118810
7/16 - 20 UNF	LSB143556	LOB142301	VF - 2°-0'	22,6	LOB118814
1/2 - 13 UNC	LSB143555	LOB142298	V - 3°-10'	22,6	LOB118853
1/2 - 20 UNF	LSB143556	LOB142301	VF - 2°-0'	22,6	LOB140479
M6 x 1,0	LSB143557	LOB142302	TX - 3°-20'	15,1	LOB142330
M6 X 0,75	LSB143552	LOB142299	TF - 2°-40'	15,1	LOB142332
M7 x 1,0	LSB143553	LOB142297	U - 3°-20'	22,6	LOB121074
M8 x 1,0	LSB143554	LOB142300	UF - 2°-40'	22,6	LOB140480
M8 x 1,25	LSB143553	LOB142297	U - 3°-20'	22,6	LOB121075
M10 x 1,0	LSB143556	LOB142301	VF - 2°-0'	22,6	LOB140481
M10 x 1,5	LSB143555	LOB142298	V - 3°-10'	22,6	LOB119706
M12 X 1,0	LSB143556	LOB142301	VF - 2°-0'	22,6	LOB142274
M12 x 1,75	LSB143555	LOB142298	V - 3°-10'	22,6	LOB121076



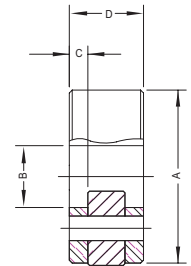
Die Holder



Die Body



Front View



Side View

#5 Tooling Dimensions

Dimensions	mm
A	85,73
B	see thread size chart
C	4,76
D	28,58
E	-
F	Thru Bore
G	35,00
H	63,50
I*	25,00
J	17,50
K	99,00

Components

Part #	Description	Quantity
L0B143457	Die Holder - Metric	1
L0D141679	Thread Roll Shaft	3
LFA001055	Set Screw	1
LFA001053	Socket Head Cap Screw	1
LFA001054	Retaining Screw	3
LGD001108	4mm Hex Wrench	1
LGD001109	5mm Hex Wrench	1

Thread Size	Sub-Assembly Shank EDP	Die Body EDP	Die Body Size	B - Dimension	Thread Roll EDP
	mm			mm	
5/16 - 18 UNC	LSB143558	L0B141738M	H - 3°-20'	22,6	L0B118891
5/16 - 24 UNF	LSB143559	L0B141740M	HF - 2°-30'	22,6	L0B118897
3/8 - 16 UNC	LSB143558	L0B141738M	H - 3°-20'	22,6	L0B118892
3/8 - 24 UNF	LSB143559	L0B141740M	HF - 2°-30'	22,6	L0B118898
7/16 - 14 UNC	LSB143558	L0B141738M	H - 3°-20'	22,6	L0B118893
7/16 - 20 UNF	LSB143559	L0B141740M	HF - 2°-30'	22,6	L0B118584

Threading

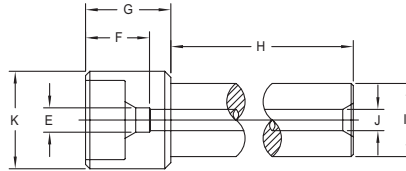
Thread Size	Sub-Assembly Shank EDP	Die Body EDP	Die Body Size	B - Dimension	Thread Roll EDP
	mm			mm	
1/2 - 13 UNC	LSB143560	L0B141739M	I - 2°-45'	22,6	L0B118894
1/2 - 20 UNF	LSB143561	L0B141741M	IF - 1°-50'	22,6	L0B118577
9/16 - 12 UNC	LSB143560	L0B141739M	I - 2°-45'	22,6	L0B118895
9/16 - 18 UNF	LSB143561	L0B141741M	IF - 1°-50'	22,6	L0B118899
5/8 - 11 UNC	LSB143560	L0B141739M	I - 2°-45'	22,6	L0B141745
5/8 - 18 UNF	LSB143561	L0B141741M	IF - 1°-50'	22,6	L0B118585
M8 x ,75	LSB143562	L0B141744M	HMF - 1°-45'	22,6	L0B140460
M8 x 1,0	LSB143559	L0B141740M	HF - 2°-30'	22,6	L0B140461
M8 x 1,25	LSB143558	L0B141738M	H - 3°-20'	22,6	L0B140605
M10 x ,75	LSB143562	L0B141744M	HMF - 1°-45'	22,6	L0B142462
M10 x 1,0	LSB143562	L0B141744M	HMF - 1°-45'	22,6	L0B142077
M10 x 1,5	LSB143558	L0B141738M	H - 3°-20'	22,6	L0B120613
M12 x 1,25	LSB143562	L0B141744M	HMF - 1°-45'	22,6	L0B128899
M12 x 1,5	LSB143559	L0B141740M	HF - 2°-30'	22,6	L0B140463
M12 x 1,75	LSB143560	L0B141739M	I - 2°-45'	22,6	L0B125521
M14 x 2,0	LSB143560	L0B141739M	I - 2°-45'	22,6	L0B120614
M16 x 1,5	LSB143561	L0B141741M	IF - 1°-50'	22,6	L0B140464
M16 x 2,0	LSB143560	L0B141739M	I - 2°-45'	22,6	L0B139490

Threading

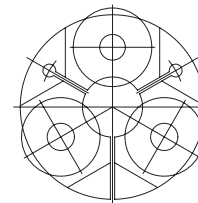
Landis™ #7 CNC EZ Roller™



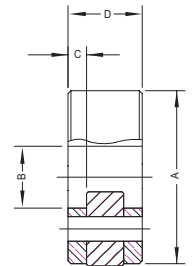
Die Holder



Die Body



Front View



Side View

#7 Tooling Dimensions

Dimensions	mm
A	98,43
B	see thread size chart
C	9,53
D	44,45
E	--
F	Thru Bore
G	54,00
H	63,50
I*	38,00
J	27,00
K	115,00

Components

Part #	Description	Quantity
LOB143458	Die Holder - Metric	1
LOD142222	Thread Roll Shaft	3
LFA001055	Set Screw - Size Adjustment	1
LFA001053	Socket Head Cap Screw	1
LFA001054	Retaining Screw - Oval Point	3
LGD001108	4mm Hex Wrench	1
LGD001109	5mm Hex Wrench	1

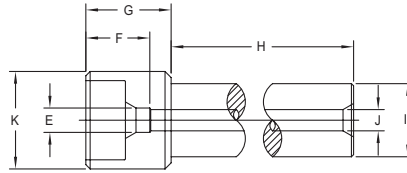
Thread Size	Sub-Assembly Shank EDP	Die Body EDP	Die Body Size	B - Dimension	Thread Roll EDP
	mm			mm	
7/16 - 14 UNC	LSB143563	LOB142216M	J - 3°-20'	33,4	LOB118563
7/16 - 20 UNF	LSB143564	LOB142218M	JF - 2°-15'	33,4	LOB116060
1/2 - 13 UNC	LSB143563	LOB142216M	J - 3°-20'	33,4	LOB115752
1/2 - 20 UNF	LSB143564	LOB142218M	JF - 2°-15'	33,4	LOB116061
9/16 - 12 UNC	LSB143563	LOB142216M	J - 3°-20'	33,4	LOB118562
9/16 - 18 UNF	LSB143564	LOB142218M	JF - 2°-15'	33,4	LOB116062

Threading

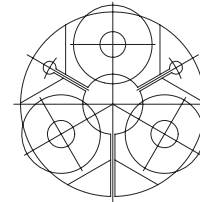
Thread Size	Sub-Assembly Shank EDP	Die Body EDP	Die Body Size	B - Dimension	Thread Roll EDP
	mm			mm	
5/8 - 11 UNC	LSB143565	L0B142217M	K - 2°-45'	33,4	L0B118567
5/8 - 18 UNF	LSB143566	L0B142219M	KF - 1°-40'	33,4	L0B112092
3/4 - 10 UNC	LSB143565	L0B142217M	K - 2°-45'	33,4	L0B112091
3/4 - 16 UNF	LSB143566	L0B142219M	KF - 1°-40'	33,4	L0B115236
7/8 - 9 UNC	LSB143565	L0B142217M	K - 2°-45'	33,4	L0B118568
7/8 - 14 UNF	LSB143566	L0B142219M	KF - 1°-40'	33,4	L0B112566
1 - 8 UNC	LSB143567	L0B142220M	L - 2°-30'	33,4	L0B142231
1 - 12 UNF	LSB143568	L0B142221M	LF - 1°-30'	33,4	L0B142232
1 - 14 UN	LSB143568	L0B142221M	LF - 1°-30'	33,4	L0B142233
M12 x 1,75	LSB143563	L0B142216M	J - 3°-20'	33,4	L0B129043
M12 x 1,25	LSB143564	L0B142218M	JF - 2°-15'	33,4	L0B133928
M14 x 2,0	LSB143563	L0B142216M	J - 3°-20'	33,4	L0B115468
M14 x 1,5	LSB143564	L0B142218M	JF - 2°-15'	33,4	L0B134223
M16 x 2,0	LSB143565	L0B142217M	K - 2°-45'	33,4	L0B112592
M16 x 1,5	LSB143566	L0B142219M	KF - 1°-40'	33,4	L0B132163
M20 x 2,5	LSB143565	L0B142217M	K - 2°-45'	33,4	L0B123573
M20 x 1,5	LSB143566	L0B142219M	KF - 1°-40'	33,4	L0B131276
M22 x 2,5	LSB143565	L0B142217M	K - 2°-45'	33,4	L0B068827
M22 x 1,5	LSB143566	L0B142219M	KF - 1°-40'	33,4	L0B131211
M24 x 3,0	LSB143567	L0B142220M	L - 2°-30'	33,4	L0B142237
M24 x 1,5	LSB143568	L0B142221M	LF - 1°-30'	33,4	L0B142239



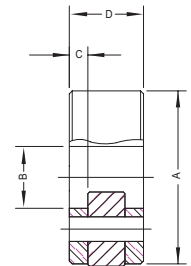
Die Holder



Die Body



Front View



Side View

#10 Tooling Dimensions

Dimensions	mm
A	174,62
B	see thread size chart
C	9,53
D	50,80
E	--
F	see thread size chart
G	67,00
H	83,00
I*	50,00
J	34,00
K	197,00

Components

Part #	Description	Quantity
L0A143477	Die Holder - Metric	1
L0D142162	Thread Roll Shaft	3
LFA001060	Set Screw - Size Adjustment	1
LFA001059	Socket Head Cap Screw	1
LFA001054	Retaining Screw - Oval Point	3
LGD001109	5mm Hex Wrench	1

Thread Size	Sub-Assembly Shank EDP	Die Body EDP	Die Body Size	B - Dimension	Thread Roll EDP
	mm			mm	
5/8 - 11 UNC	LSB143569	L0B142192M	Q - 2°-45'	59,5	L0B118560
5/8 - 18 UNF	LSB143570	L0B142194M	QF - 1°-40'	59,5	L0B118624
3/4 - 10 UNC	LSB143569	L0B142192M	Q - 2°-45'	59,5	L0B118586
3/4 - 16 UNF	LSB143570	L0B142194M	QF - 1°-40'	59,5	L0B118570
7/8 - 9 UNC	LSB143569	L0B142192M	Q - 2°-45'	59,5	L0B118571
7/8 - 14 UNF	LSB143570	L0B142194M	QF - 1°-40'	59,5	L0B118572

Threading

Thread Size	Sub-Assembly Shank EDP	Die Body EDP	Die Body Size	B - Dimension	Thread Roll EDP
	mm			mm	
1 - 8 UNC	LSB143571	LOB142193M	R - 2°-25'	59,5	LOB118550
1 - 12 UNF	LSB143572	LOB142195M	RF - 1°-20'	59,5	LOB118561
1-1/8 7 UNC	LSB143571	LOB142193M	R - 2°-25'	59,5	LOB118548
1-1/8 - 12 UNF	LSB143572	LOB142195M	RF - 1°-20'	59,5	LOB114092
1-1/4 - 7 UNC	LSB143571	LOB142193M	R - 2°-25'	59,5	LOB118547
1-1/4 - 12 UNF	LSB143572	LOB142195M	RF - 1°-20'	59,5	LOB118559
M16 x 2,0	LSB143569	LOB142192M	Q - 2°-45'	59,5	LOB139598
M20 x 2,5	LSB143569	LOB142192M	Q - 2°-45'	59,5	LOB132225
M24 x 3,0	LSB143569	LOB142192M	Q - 2°-45'	59,5	LOB067483
M24 x 2,0	LSB143570	LOB142194M	QF - 1°-40'	59,5	LOB135232
M30 x 3,5	LSB143571	LOB142193M	R - 2°-25'	59,5	LOB132298
M30 x 2,0	LSB143572	LOB142195M	RF - 1°-20'	59,5	LOB118782

Oil and Gas Industry Threads

Sucker Rod Size	Sucker Rod Thread	Sub-Assembly Standard Shank EDP	Thread Rolls* EDP	Die Bodies EDP	Die Body Size	B-Dimension
						mm
5/8	15/16 - 10 API		LOB136461	LOA142208	SR - 2°-0'	59,5
3/4	1-1/16 - 10 API	LSB142159	LOB135883	LOA142161	SR - 1°-40'	59,5
7/8	1-3/16 - 10 API	LSB142159	LOB142293	LOA142161	SR - 1°-40'	59,5
1	1-3/8 - 10 API	LSB142159	LOB136463	LOA142161	SR - 1°-40'	59,5
1-1/8	1-9/16 - 10 API	LSB142159	LOB136464	LOA142161	SR - 1°-40'	59,5

* Sucker Rod Thread Rolls have Truncated Progressive Long Throats

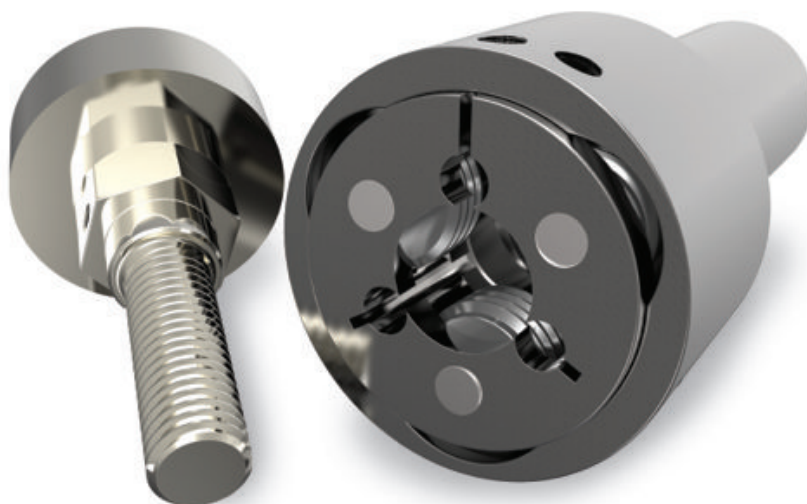
Using the Landis EZ Roller™ thread rolling tool begins with the application to the machine on which threads are to be rolled. They are ideally suited for use on CNC style machines that have a Rigid or Synchronous Tapping Cycle as part of their program selection. This cycle, normally used for tapping an internal thread, is a thread-on/thread-off operation that retracts the tap back out of the hole. It synchronizes the feed pitch to the spindle rotation, so that when the tool reaches its end-point, the feed matches the spindle speed as the spindle slows down to a stop and then reverses. This feature eliminates the old-style floating holder. So, applying an EZ Roller™ thread rolling tool to the same Rigid tapping cycle permits an external thread to be rolled in a similar manner. By utilizing this cycle, it allows for a simplified rolling tool design with no moving parts or mechanisms. Cycle times can be reduced by the elimination of extra turret movements in order to reset opening style thread cutting and rolling heads. All EZ Roller™ thread rolling tools can be furnished with inch or metric shanks for use in standard tool holders, which allows the tool to be applied to CNC machines with automatic tool changers.

While considerable time can be saved in the overall cycle when threading a part with an EZ Roller™ thread rolling tool, it may not be practical to do so if the length of the thread is excessively long. At some point, the cycle time to thread-on and thread-off will be longer than that time required to move and reset an opening style rolling head.

This determination will need to be made as part of the overall part run. Landis typically suggests that the thread length be limited to 2 to 3 times the thread diameter, however, longer length threads can be run under certain conditions.

Another feature of the EZ Roller™ thread rolling tool is its capacity to be pre-set for a thread size off the machine. Spare or extra Die Bodies and Thread Rolls can be used for the same or additional sizes and then exchanged with the used one. With the #1.5, #3 and the #3.5, the unit cost is low enough to possibly justify exchanging the entire pre-set tool. Conversely, on the #5, #7 and #10 where the Die Body and Rolls are independent of the Die Holder, a Die Body unit can be exchanged without removing the Die Holder from the machine, in just a matter of minutes. Pre-setting the EZ Roller™ thread rolling tools on the bench can be accomplished by using either a thread set-gage or a master part, if one is available.

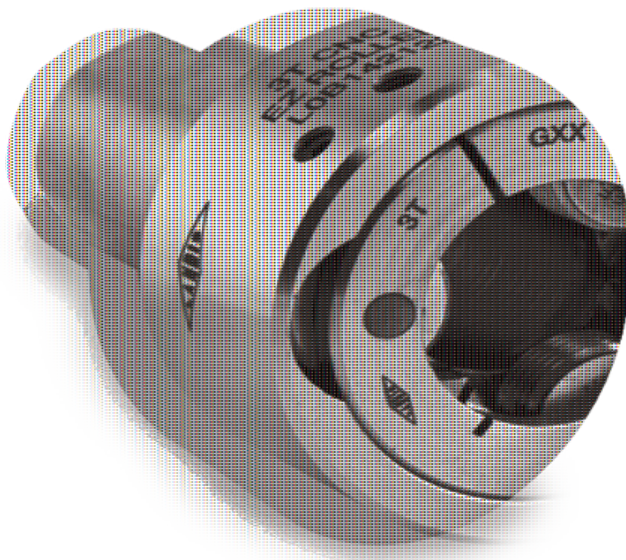
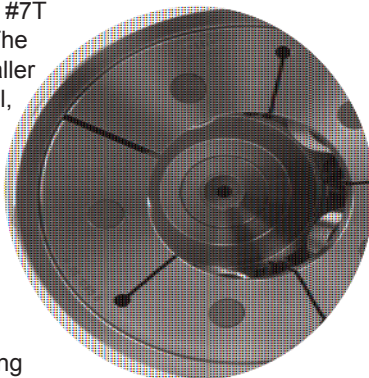
Or, on the smaller sizes, a plug gage equal to the thread minor diameter can be used by inserting it in between the Thread Rolls. In using either method of pre-setting, the tool is sized to just finger-tight on the gage. All 6 sizes of EZ Roller™ thread rolling tools are designed with enough size adjustment capacity to permit adjustment thru the Pitch Diameter tolerance ranges of all UN and Metric threads.



The Landis EZ ROLLER™ thread rolling tool is one of the most versatile thread rolling tools for CNC threading operations being made today. The refined design, that has eliminated all moving components, combined with a standardization of manufacturing processes, offers the flexibility to tailor the EZ Roller™ thread rolling tool to meet the customers' workpiece requirements and still fit within the machines tooling envelope.

For this purpose, Landis has developed the "T" version of the EZ Roller™ thread rolling tool. Landis can design a tool to fit your product and machine requirements. To illustrate the concept of the "T" version, we outlined two examples of tools that were designed and built for specific purposes.

- The #7T EZ Roller™ thread rolling tool, designed to thread roll a M33 x 3,0 thread on an automotive axle housing. The application was to a special-built CNC machine. This #7T utilizes 5 Thread Rolls per set. The Thread Roll is based on the smaller #5 EZ Roller™ thread rolling tool, in order to help keep the overall tool size to a minimum, yet still provide sufficient roll diameter for long life. The 5-roll design minimizes arch-length which helps insure stability during the rolling cycle.
- The #3T EZ Roller™ thread rolling tool was designed to thread roll a M20 X 1,5 ISO thread on a hex fitting. In this case, the tool envelop of the CNC machine dictated the size of the tool. The thread was to be rolled close to the hex shoulder, so thread rolls from a #3CNC were used in a tailor-made Die Body that would clear the hex. The Holder was then sized to fit within that required tooling envelope.



APPLICATIONS OF EZ ROLLER™ THREAD ROLLING TOOLS

Being round, the majority of threading operations are naturally done on lathes. However, in some instances, parts that are not round may also have a thread on them.

Eliminate the secondary threading operation by installing a Landis EZ Roller on your machining center using a direct-mount V-flange shank. With the EZ Roller, there is no resetting operation needed, so the machine cycle can index the tool into the spindle, roll the thread, and then index out. Landis can supply any size CAT or BT style shank on our full range of EZ Rollers.

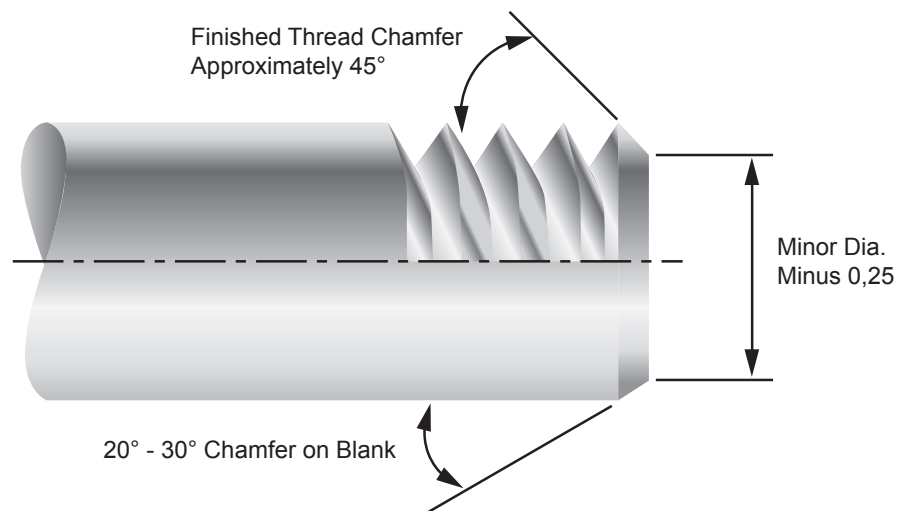
The Landis® CNC EZ roller can be supplied with specialized tool adaption systems such as the VDI system as well as those with through coolant.

Preparing and Controlling Blank Diameters

- The process of maintaining a properly sized blank diameter within specific limits is critical to forming a functionally correct thread
- Compressing excess material between thread rolls increases pressure on the roll thread form (over rolling). Causing roll breakage and/or oversized threads.
- Compressing little material causes thread to be incorrectly formed.
- To help eliminate these issues, Landis provides recommended starting blank diameter for both inch and metric threads
- Depending on the material and metallurgical makeup the final blank diameter must be established by actual rolling.

Preparing the blank

- Rolled Threads have a seam which results from material flowing from the root area up to and folded in at the crest. Seams will be more visible on some threads than others.
- Starting with the minimum acceptable blank diameter will increase roll life and result in a larger seam
- Seams have no bearing on thread strength but sometimes they are aesthetically objectionable. If this is the case, they can be rolled tighter if the decreased roll life is acceptable, or the thread can be rolled with an oversized addendum that can be ground away to remove the seam.
- Starting at minimum blank diameter also allows for blank growth due to tool wear and longer run times before the maximum allowable blank diameter is reached.



Blank Diameters for Parallel Rolled Metric Threads

Size		Steels						Brass & Bronze	Aluminum Alloys	
		10-50 C Soft	30-50 C Soft	30-50 C or Alloy 15-25 RC	30-50 C or Alloy 26-32 RC	Stainless Chrome Nickel 300 Series	Stainless Chrome 400 Series		Soft	Hard
Size	Pitch	Min. - Max.	Min. - Max.	Min. - Max.	Min. - Max.	Min. - Max.	Min. - Max.	Min. - Max.	Min. - Max.	Min. - Max.
3	0,35	2,743 - 2,756	2,751 - 2,764	2,756 - 2,769	2,758 - 2,771	2,766 - 2,779	2,758 - 2,771	2,751 - 2,764	2,756 - 2,769	2,751 - 2,764
3	0,5	2,639 - 2,652	2,647 - 2,659	2,652 - 2,664	2,654 - 2,667	2,662 - 2,675	2,654 - 2,667	2,647 - 2,659	2,652 - 2,664	2,647 - 2,659
3,5	0,35	3,244 - 3,256	3,249 - 3,261	3,254 - 3,266	3,256 - 3,269	3,264 - 3,277	3,256 - 3,269	3,249 - 3,261	3,254 - 3,266	3,249 - 3,261
3,5	6	3,071 - 3,084	3,081 - 3,094	3,084 - 3,096	3,089 - 3,101	3,096 - 3,109	3,089 - 3,101	3,081 - 3,094	3,084 - 3,096	3,081 - 3,094
4	0,5	3,64 - 3,653	3,647 - 3,660	3,65 - 3,663	3,655 - 3,668	3,663 - 3,675	3,655 - 3,668	3,647 - 3,660	3,650 - 3,663	3,647 - 3,660
4	0,7	3,505 - 3,52	3,513 - 3,528	3,518 - 3,533	3,523 - 3,538	3,533 - 3,548	3,523 - 3,538	3,513 - 3,528	3,518 - 3,533	3,513 - 3,528
4,5	0,5	4,14 - 4,153	4,648 - 4,161	4,15 - 4,663	4,155 - 4,168	4,163 - 4,176	4,155 - 4,168	4,148 - 4,161	4,15 - 4,163	4,148 - 4,161
5	0,5	4,638 - 4,651	4,148 - 4,661	4,651 - 4,1630	4,653 - 4,666	4,663 - 4,676	4,653 - 4,666	4,648 - 4,661	4,6510 - 4,663	4,648 - 4,661
5	0,8	4,437 - 4,455	4,448 - 4,463	4,453 - 4,468	4,458 - 4,473	4,465 - 4,483	4,463 - 4,473	4,468 - 4,448	4,4630 - 4,453	4,447 - 4,448
6	0,75	5,469 - 5,484	5,479 - 5,494	5,484 - 5,499	5,489 - 5,504	5,496 - 5,512	5,489 - 5,504	5,479 - 5,494	5,484 - 5,499	5,479 - 5,494
6	1	5,293 - 5,314	5,306 - 5,326	5,314 - 5,334	5,319 - 5,339	5,331 - 5,352	5,319 - 5,339	5,306 - 5,326	5,314 - 5,334	5,306 - 5,326
7	0,75	6,469 - 6,485	6,48 - 6,495	6,485 - 6,500	6,49 - 6,505	6,497 - 6,513	6,49 - 6,505	6,48 - 6,495	6,4890 - 6,500	6,4800 - 6,495
7	1	6,294 - 6,314	6,307 - 6,327	6,314 - 6,335	6,32 - 6,340	6,332 - 6,353	6,32 - 6,340	6,307 - 6,327	6,314 - 6,335	6,307 - 6,327
8	1	7,295 - 7,315	7,308 - 7,328	7,315 - 7,336	7,32 - 7,341	7,333 - 7,353	7,320 - 7,341	7,308 - 7,328	7,315 - 7,336	7,308 - 7,328
8	1,25	7,13 - 7,150	7,142 - 7,163	7,148 - 7,168	7,155 - 7,179	7,168 - 7,188	7,155 - 7,176	7,142 - 7,163	7,1480 - 7,168	7,142 - 7,163
9	1	8,293 - 8,313	8,306 - 8,326	8,313 - 8,334	8,319 - 8,339	8,331 - 8,352	8,319 - 8,339	8,306 - 8,326	8,1310 - 8,334	8,306 - 8,326
9	1,25	8,131 - 8,151	8,143 - 8,164	8,148 - 8,169	8,156 - 8,176	8,169 - 8,189	8,156 - 8,176	8,143 - 8,164	8,148 - 8,169	8,143 - 8,164
10	1	9,294 - 9,314	9,307 - 9,327	9,314 - 9,335	9,319 - 9,340	9,332 - 9,352	9,319 - 9,34	9,307 - 9,327	9,314 - 9,335	9,307 - 9,327
10	1,5	8,956 - 8,984	8,971 - 8,999	8,979 - 9,007	8,989 - 9,014	9,004 - 9,030	8,989 - 9,014	8,971 - 8,999	8,979 - 9,007	8,971 - 8,999

Blank Diameters for Parallel Rolled Metric Threads

Size		Steels						Brass & Bronze	Aluminum Alloys	
		10-50 C Soft	30-50 C Soft	30-50 C or Alloy 15-25 RC	30-50 C or Alloy 26-32 RC	Stainless Chrome Nickel 300 Series	Stainless Chrome 400 Series		Soft	Hard
Size	Pitch	Min. - Max.	Min. - Max.	Min. - Max.	Min. - Max.	Min. - Max.	Min. - Max.	Min. - Max.	Min. - Max.	Min. - Max.
11	1,5	9,954 - 9,982	9,97 - 9,997	9,977 - 10,005	9,987 - 10,012	10,003 - 10,027	9,987 - 10,012	9,97 - 9,997	9,977 - 10,005	9,97 - 9,997
12	1,5	10,955 - 10,983	10,97 - 10,998	10,978 - 11,006	10,988 - 11,013	11,003 - 11,029	10,988 - 11,013	10,97 - 10,998	10,978 - 11,006	10,97 - 10,998
12	1,75	10,785 - 10,818	10,803 - 10,836	10,81 - 10,843	10,82 - 10,853	10,838 - 10,871	10,82 - 10,853	10,803 - 10,836	10,81 - 10,843	10,803 10,836
14	1,5	12,954 - 12,982	12,969 - 12,997	12,977 - 13,005	12,987 - 13,012	13,002 - 13,028	12,987 - 13,012	12,969 - 12,997	12,977 - 13,005	12,969 - 12,997
14	2	12,614 - 12,647	12,631 - 12,664	12,642 - 12,675	12,652 - 12,685	12,672 - 12,705	12,652 - 12,685	12,631 - 12,664	12,642 - 12,657	12,631 - 12,664
16	1,5	14,956 - 14,983	14,971 - 14,999	14,987 - 15,006	14,989 - 15,014	15,004 - 15,029	14,989 - 15,014	14,971 - 14,999	14,978 - 15,006	14,971 - 14,999
16	2	14,615 - 14,648	14,633 - 14,666	14,643 - 14,676	14,653 - 14,686	14,674 - 14,707	14,653 - 14,686	14,633 - 14,666	14,643 - 14,676	14,633 - 14,666
18	1,5	16,955 - 16,982	16,97 - 16,998	16,977 - 17,005	16,988 - 17,013	17,003 - 17,028	16,988 - 17,013	16,97 - 16,998	16,977 - 17,005	16,97 - 16,998
18	2,5	16,274 - 16,312	16,297 - 16,335	16,307 - 16,345	16,32 - 16,358	16,342 - 16,380	16,320 - 16,358	16,297 - 16,335	16,307 - 16,345	16,297 - 16,335
20	1,5	18,956 - 18,984	18,971 - 18,999	18,979 - 19,007	18,989 - 19,014	19,004 - 19,030	18,989 - 19,014	18,971 - 18,999	18,979 - 19,007	18,971 - 18,999
20	2,5	18,275 - 18,313	18,298 - 18,336	18,308 - 18,346	18,321 - 18,359	18,344 - 18,382	18,321 - 18,359	18,298 - 18,336	18,308 - 18,346	18,298 - 18,336
22	1,5	20,955 - 20,983	20,97 - 20,998	20,978 - 21,006	20,988 - 21,013	21,003 - 21,029	20,988 - 21,013	20,97 - 20,998	20,978 - 21,006	20,970 - 20,998
22	2,5	20,274 - 20,312	20,297 - 20,335	20,307 - 20,345	20,32 - 20,358	20,343 - 20,381	20,320 - 20,358	20,297 - 20,335	20,307 - 20,345	20,297 - 20,335
24	2	22,614 - 22,647	22,631 - 22,664	22,642 - 22,675	22,652 - 22,685	22,672 - 22,705	22,652 - 22,685	22,631 - 22,664	22,642 - 22,675	22,631 - 22,664
24	3	21,930 - 21,979	21,958 - 22,004	21,971 - 22,017	21,984 - 22,029	22,007 - 22,055	21,984 - 22,029	21,958 - 22,004	21,971 - 22,017	21,958 - 22,004
27	2	25,613 - 25,646	15,631 - 25,664	25,641 - 25,674	25,651 - 25,684	25,672 - 25,705	25,651 - 25,684	25,631 - 25,664	25,641 - 25,674	25,631 - 25,664
27	3	24,933 - 24,981	24,961 - 25,006	24,973 - 25,019	24,986 - 25,032	25,011 - 25,060	24,986 - 25,032	24,961 - 25,006	24,973 - 25,109	24,961 - 25,006

Blank Diameters for Parallel Rolled Metric Threads

Size		Steels						Brass & Bronze	Aluminum Alloys	
		10-50 C Soft	30-50 C Soft	30-50 C or Alloy 15-25 RC	30-50 C or Alloy 26-32 RC	Stainless Chrome Nickel 300 Series	Stainless Chrome 400 Series		Soft	Hard
Size	Pitch	Min. - Max.	Min. - Max.	Min. - Max.	Min. - Max.	Min. - Max.	Min. - Max.	Min. - Max.	Min. - Max.	Min. - Max.
30	2	28,613 - 28,646	28,631 - 28,664	28,641 - 28,679	28,651 - 28,684	28,672 - 28,705	28,651 - 28,684	28,631 - 28,664	28,641 - 28,674	28,631 - 28,664
30	3,5	27,595 - 27,643	27,623 - 27,763	27,638 - 27,689	27,653 - 27,704	27,683 - 27,732	27,653 - 27,704	27,623 - 27,673	27,638 - 27,689	27,623 - 27,673
33	2	31,615 - 31,648	31,633 - 31,666	31,643 - 31,676	31,653 - 31,687	31,674 - 31,707	31,653 - 31,687	31,633 - 31,666	31,643 - 31,676	31,633 - 31,666
33	3,5	30,594 - 30,643	30,622 - 30,673	30,637 - 30,688	30,653 - 30,704	30,683 - 30,731	30,653 - 30,704	30,622 - 30,673	30,637 - 30,688	30,622 - 30,673
36	3	33,925 - 33,973	33,953 - 34,001	33,967 - 34,016	33,981 - 34,029	34,009 - 34,057	33,981 - 34,029	33,953 - 34,001	33,967 - 34,015	33,953 - 34,001
36	4	33,265 - 33,316	33,295 - 33,346	33,311 - 33,361	33,326 - 33,377	33,356 - 33,407	33,326 - 33,377	33,295 - 33,346	33,311 - 33,361	33,295 - 33,346
39	3	36,925 - 36,973	36,953 - 37,001	36,967 - 37,015	36,981 - 37,029	37,009 - 37,057	36,981 - 37,029	36,953 - 37,001	36,967 - 37,015	36,953 - 37,001
39	4	36,265 - 36,316	36,295 - 36,346	36,311 - 36,361	36,326 - 36,377	36,356 - 36,407	36,326 - 36,377	36,295 - 36,346	36,311 - 36,361	36,295 - 36,346
42	3	39,923 - 39,971	39,951 - 39,999	39,966 - 40,014	39,98 - 40,028	40,008 - 40,056	39,980 - 40,028	39,951 - 39,999	39,966 - 40,014	39,951 - 39,999
42	4,5	38,928 - 38,987	38,9613 - 39,02	38,978 - 9,036	38,994 - 39,053	39,027 - 39,086	38,994 - 39,053	38,961 - 39,020	38,978 - 39,036	38,961 - 39,020
45	3	42,923 - 42,971	42,951 - 42,999	42,966 - 43,014	42,98 - 43,028	43,008 - 43,056	42,980 - 43,028	42,951 - 42,999	42,966 - 43,014	42,951 - 42,999
45	4,5	41,928 - 41,987	41,961 - 42,020	41,978 - 42,036	41,994 - 42,053	42,027 - 42,086	41,994 - 42,053	41,961 - 42,02	41,978 - 42,036	41,961 - 42,020
48	3	45,921 - 45,971	45,950 - 46,000	45,964 - 46,015	45,979 - 46,029	46,008 - 46,058	45,979 - 46,029	45,950 - 46,000	45,964 - 46,015	45,950 - 46,000
48	5	44,592 - 44,655	44,628 - 44,691	44,645 - 44,709	44,663 - 44,727	44,699 - 44,762	44,663 - 44,727	44,628 - 44,691	44,645 - 44,709	44,628 - 44,691
52	3	49,918 - 49,969	49,948 - 49,999	49,963 - 50,013	49,977 - 50,028	50,007 - 50,058	49,977 - 50,028	49,948 - 49,999	49,963 - 50,013	49,948 - 49,999
52	5	48,592 - 48,643	48,628 - 48,678	48,645 - 48,696	48,663 - 48,714	48,699 - 48,749	48,663 - 48,714	48,628 - 48,678	48,645 - 48,696	48,628 - 48,678

Grooving

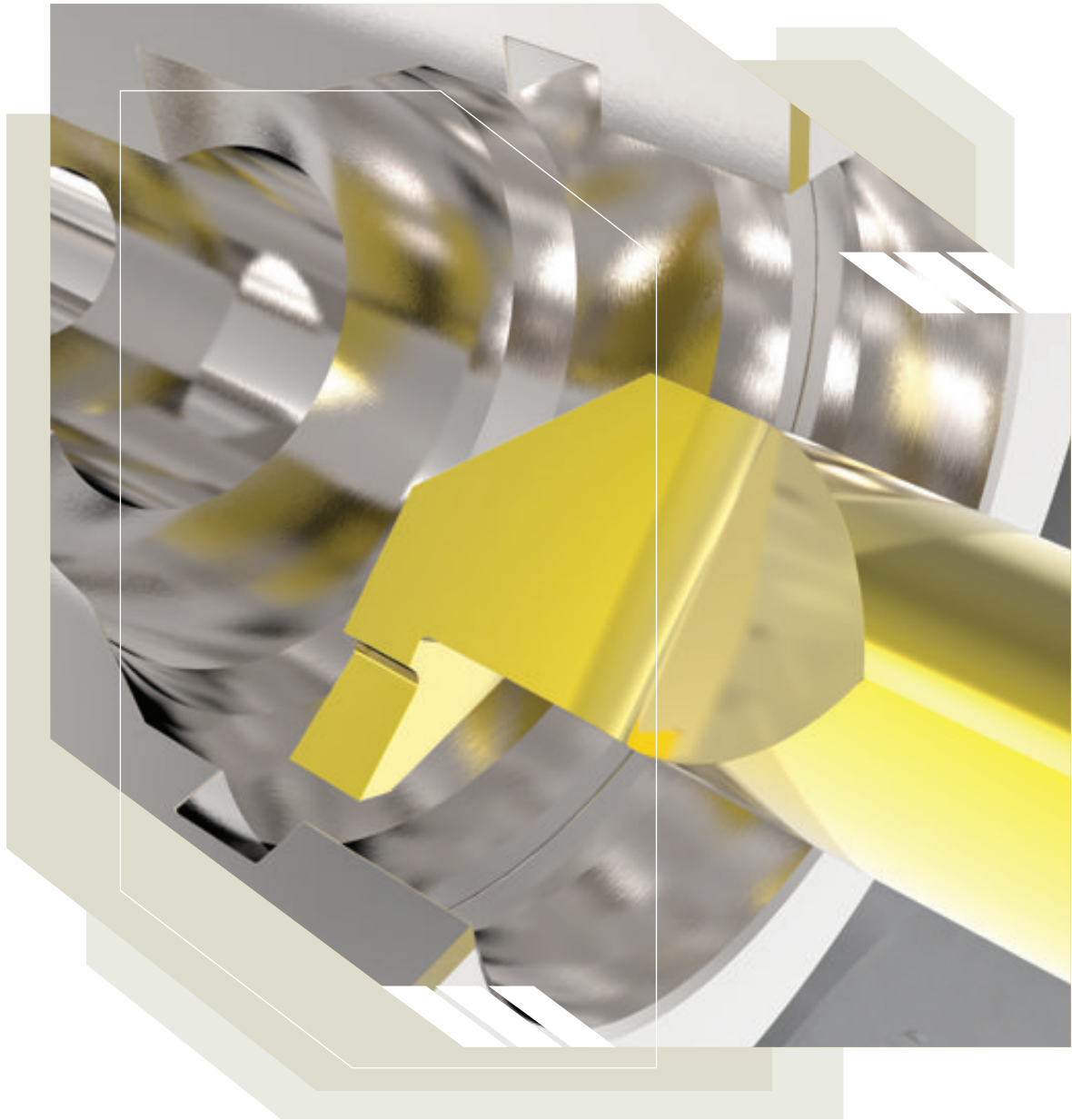


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Grooving



Grooving Grades

SP4030 and SP0436 are PVD coated grades with a micrograin substrate for machining at higher speeds with lower feed. Ideal for Stainless Steels and Ductile materials.

Cutting Speed v_c				
ISO	Materials	Rm and Hardness	SP4030	SP4036
			m/min	m/min
			min. - max.	min. - max.
P	Unalloyed Steel	<600 N/mm ² <180 HBN	135 - 271	162 - 325
		<950 N/mm ² <280 HBN	88 - 176	105 - 211
	Alloyed Steel	700-950 N/mm ² 200-280 HBN	80 - 161	97 - 193
		950-1200 N/mm ² 280-355 HBN	73 - 146	88 - 176
M	Stainless Steel	Austenitic + Ferritic 300 series	107 - 229	128 - 274
		Martensitic 400 series	102 - 220	123 - 263
	PH Stainless	Refractory P.H.	57 - 122	68 - 146
K	Cast Iron	Grey GG-Ft	134 - 268	161 - 322
		Spheroidal-Ductile GGG-FGS	116 - 232	139 - 278
		Malleable GTS - MN/MP	78 - 156	94 - 187
N	Aluminium & Alloys	Aluminium & Alloys < 16% 116 HB	366 - 915	439 - 1098
		Aluminium + Silicon > 16% 92 HB	244 - 610	293 - 732
S	High Temperature Alloys	Iron Based	20 - 39	23 - 47
		Cobalt Based	16 - 32	19 - 38
		Nickel Based	17 - 34	20 - 41
		Titanium Based	27 - 54	32 - 64

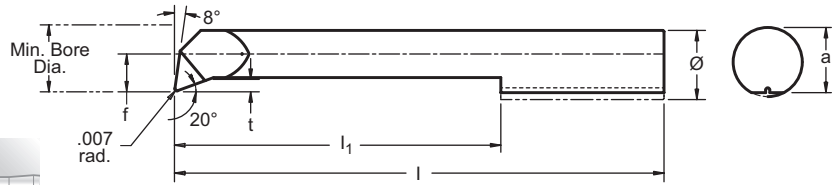
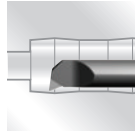
Optimum Grade Performance

Grade Classifications				
Materials	Code	PVD Coated		
		SP4030	SP4036	
P Unalloyed and Alloyed Steels	P01			↑ Increasing cutting speed
	P05			
	P10			
	P15			
	P20			
	P25			
	P30			
	P35			
	P40			
	P45			
	P50			
M Stainless Steels	M01			↑ Increasing resistance - Increasing cutting speed
	M05			
	M10			
	M15			
	M20			
	M25			
	M30			
	M35			
	M40			
	M45			
	M50			
K Cast Irons	K01			↑ Increasing resistance - wear resistance - Increasing - feed
	K05			
	K10			
	K15			
	K20			
	K25			
	K30			
	K35			
	K40			
	K45			
	N Aluminum & Alloys	N01		
N05				
N10				
N15				
N20				
N25				
N30				
S High Temperature Alloys	S01			↑ Increasing - shock resistance - Increasing - feed
	S05			
	S10			
	S15			
	S20			
	S25			
	S30			

Grooving

Ultra-Mini Grooving & Boring Inserts

050...

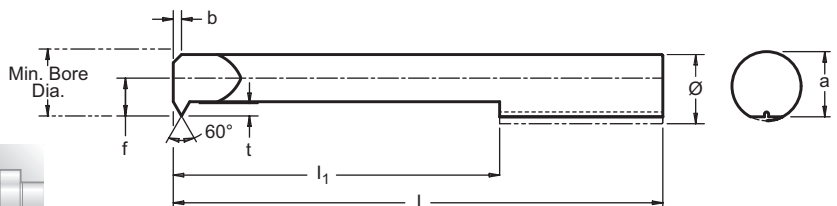
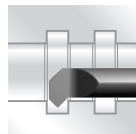


Type 050... Boring and Profiling Operation

EDP	Description	Grade	Dimensions (mm)								Toolholder
			b	f	a	l	l ₁	t	D min	Ø	
026360	R050205	SP4030	-	-	3,5	19	5	0,1	2	4	645...
026364	R050210			-	3,5	24	10	0,1	2	4	
026368	R050215			-	3,5	29	15	0,1	2	4	
026372	R050310			0,6	3,5	24	10	0,2	2,8	4	
026376	R050316			0,6	3,5	30	16	0,2	2,8	4	
026380	R050320			0,6	3,5	34	20	0,2	2,8	4	
026384	R050410			1,5	3,5	24	10	0,3	4	4	
026388	R050416			1,5	3,5	30	16	0,3	4	4	
026392	R050420			1,5	3,5	34	20	0,3	4	4	
026396	R050510			1,9	4,4	25	10	0,5	5	5	
026400	R050515			1,9	4,4	30	15	0,5	5	5	
026404	R050520			1,9	4,4	35	20	0,5	5	5	
026407	R050525			1,9	4,4	40	25	0,5	5	5	
026411	R050530			1,9	4,4	45	30	0,5	5	5	
026414	R050615			2,3	5,3	30	15	0,5	6	6	
026418	R050622			2,3	5,3	37	22	0,5	6	6	
026422	R050625			2,3	5,3	40	25	0,5	6	6	
026426	R050630			2,3	5,3	45	30	0,5	6	6	
026430	R050720			2,7	6,3	35	20	0,6	6,8	7	
026434	R050725			2,7	6,3	40	25	0,6	6,8	7	
026438	R050730	2,7	6,3	45	30	0,6	6,8	7			
										676...	

For Toolholders See page 293

060...

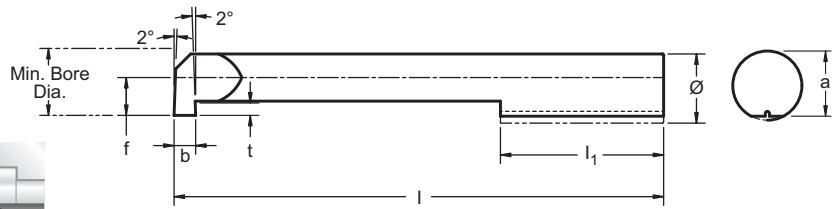
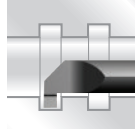


Type 060... Boring, Profiling and Chamfering Operation

EDP	Description	Grade	Dimensions (mm)								Toolholder
			b	f	a	l	l ₁	t	D min	Ø	
026446	R060520	SP4030	0,2	1,9	4,4	35	20	0,7	5	5	645...
026450	R060720			2,8	6,3				6,8	7	676...

For Toolholders See page 293

004...

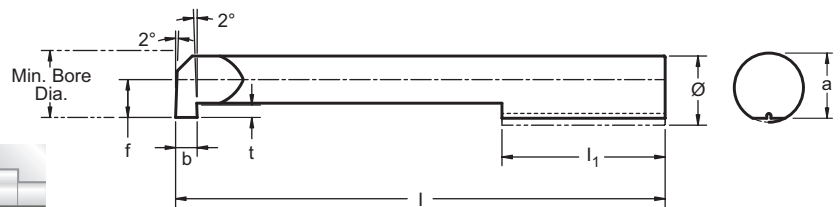
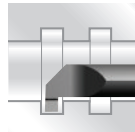


Type 004... Grooving Internal Boring Operation

EDP	Description	Grade	Dimensions (mm)								Toolholder
			b	f	a	l	l ₁	t	D min	Ø	
026168	R004010010	SP4030	1	1,5	3,5	24	10	0,8	4	4	645...
026172	R004010016					30	16				
026176	R004010020					34	20				

For Toolholders See page 293

005...

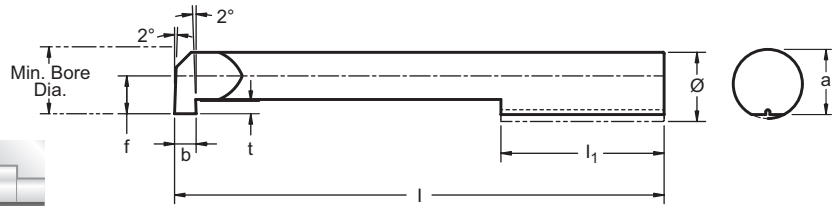
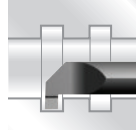


Type 005... Grooving Internal Boring Operation

EDP	Description	Grade	Dimensions (mm)								Toolholder
			b	f	a	l	l ₁	t	D min	Ø	
026180	R005010010	SP4030	1	1,9	4,4	25	10	1	5	5	645...
026184	R005010015		1			30	15				
026188	R005010020		1			35	20				
026192	R005010025		1			40	25				
026204	R005015015		1,5	30	15	1	5	5	645...		
026208	R005015020		1,5	35	20						
026220	R005020010		2	25	10						
026224	R005020015		2	30	15						
026228	R005020020		2	35	20						
026232	R005020025		2	40	25						
023301	R005051015		2	45	30						

For Toolholders See page 293

006...

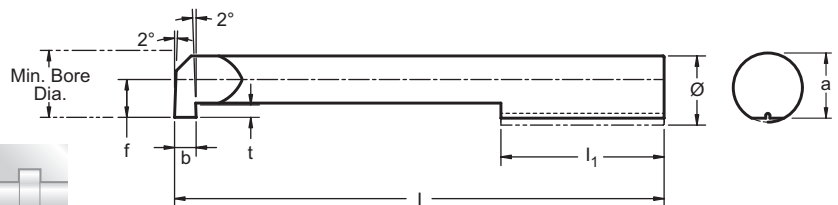
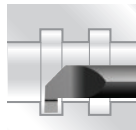


Type 006... Grooving Internal Boring Operation

EDP	Description	Grade	Dimensions (mm)								Toolholder
			b	f	a	l	l ₁	t	D min	Ø	
026240	R006010010	SP4030	1	2,3	5,3	25	10	1,8	6	6	676...
026244	R006010015		1			30	15				
026248	R006010022		1			37	22				
026252	R006010025		1			40	25				
026260	R006015010		1,5			25	10				
026264	R006015015		1,5			30	15				
026268	R006015022		1,5			37	22				
026272	R006015025		1,5			40	25				
026280	R006020010		2			25	10				
026284	R006020015		2			30	15				
026292	R006020025		2			40	25				

For Toolholders See page 293

007...

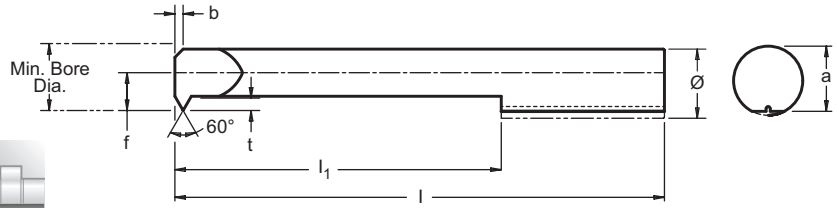
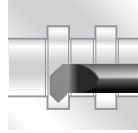


Type 007... Grooving Internal Boring Operation

EDP	Description	Grade	Dimensions (mm)								Toolholder
			b	f	a	l	l ₁	t	D min	Ø	
026300	R007010010	SP4030	1	2,7	6,3	25	10	2,5	6,8	7	676...
026304	R007010015		1			30	15				
026312	R007010025		1			40	25				
026320	R007015010		1,5			25	10				
026324	R007015015		1,5			30	15				
026332	R007015025		1,5			40	25				
026336	R007015030		1,5			45	30				
026340	R007020010		2			25	10				
026344	R007020015		2			30	15				
026352	R007020025		2			40	25				
026356	R007020030		2			45	30				

For Toolholders See page 293

004/5/6/7...

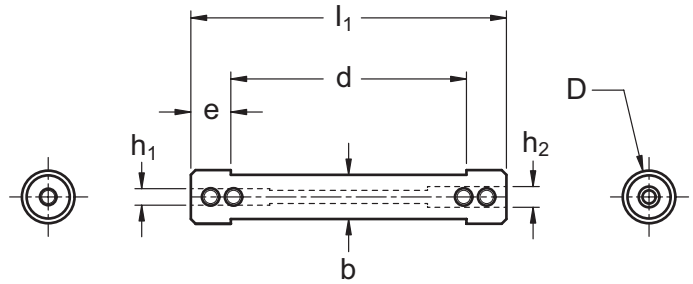


Type 004/5/6/7... Metric ISO Thread Partial Profile 60°

EDP	Description	Grade	Dimensions (mm)									
			Pitch	e	f	a	l	l ₁	t	D min	Ø	Toolholder
Standard pitch												
026467	R006051015	SP4030	1	0.55	1.9	4.4	30	15	0.55	4.8	5	645...
026469	R006061215		1.25	0.65	2.3	5.3			0.68	6	6	
026471	R006081515		1.5	0.75	2.3	5.3			0.81	6	6	
026473	R007081515		1.5	0.75	2.7	6.3			0.81	7	7	
Fine pitch												
026460	R004020515	SP4030	0.5	0.35	1.5	3.5	30	15	0.27	4	4	645...
026462	R005020515		0.5	0.35	1.9	4.4			0.27	5	5	
026464	R005040715		0.75	0.45	1.9	4.4			0.4	5	5	

For Toolholders See page 293

645 - 676



Toolholder for Ultra Mini

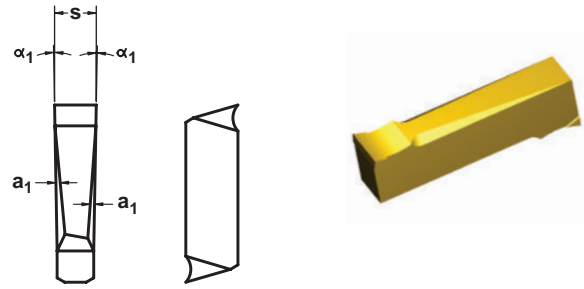
EDP	Description	Dimensions (mm)						
		D	b	d	e	l ₁	h ₁	h ₂
026475	6450012D	12	10,3	55	10	75	4	5
026476	6450016D	16	14	55		75	4	5
026477	6450020D	20	18	70		90	4	5
026478	6760016D	16	14	55		75	6	7
026479	6760020D	20	18	70		90	6	7

For Inserts See pages 289 - 292

Spare Parts

Description	EDP	Screw
6450012D to 6760020D	024516	110645

G217

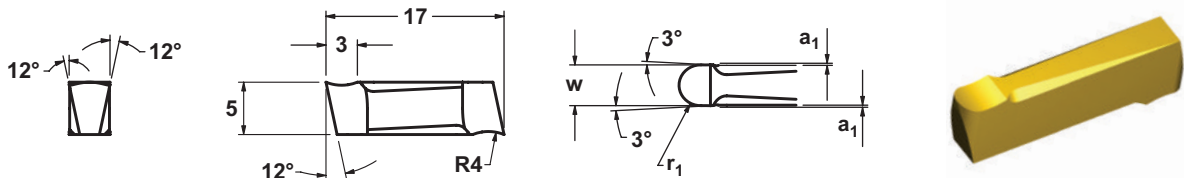


G217 Standard Groove Widths

EDP	Description	Grade	Dimensions (mm)			Grooving Width
			s	α_1	a_1	
026530	G217005000	SP4036	0,57	1°	0,06	1
026532	G217006000		0,67			
026534	G217007000		0,77			
026536	G217008000		0,87			
026538	G217009000		0,97			
026540	G217010000		1,07			
026542	G217011000		1,24			
026544	G217013000		1,44	3°	1	2
026546	G217016000		1,74			
026548	G217018500		1,99			
026550	G217021500		2,29			
026552	G217026500		2,79			
026554	G217031500		3,29			
026556	G217041500		4,29			
026558	G217051500	5,29	4			

For Toolholders See page 295 - 296

G217 Full Radius

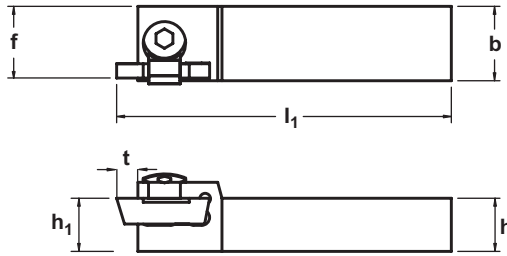
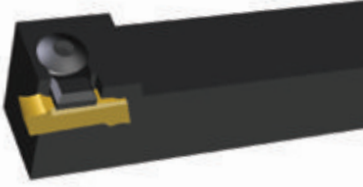


G217 Full Radius Inserts

EDP	Description	Grade	Dimensions (mm)				Toolholder Width
			w	r_1	a_1	t max	
034397	G217001020	SP4036	2	1,00	0,2	3 or 4*	2
034398	G217001530		3	1,50			3
034399	G217002040		4	2,00			4

* In combination with toolholder, 3mm for internal operation and 4mm for external operation

GR240



External Toolholder GR240 for Insert Type G217

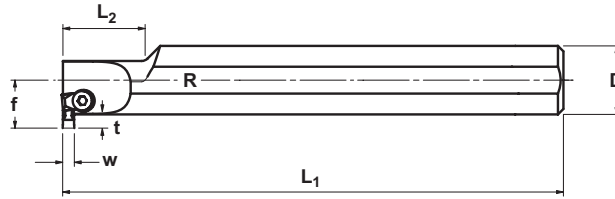
EDP	Version	Description	Dimensions (mm)						Grooving Width
			b	h	h ₁	l ₁	f	t	
025124	Left hand	GL2401212M01	12	12	12	150	11,50	4	0,50 - 1,74
025123	Right hand	GR2401212M01							
025126	Left hand	GL2401212M02	12	12	12	150	11,50	4	1,74 - 2,74
025125	Right hand	GR2401212M02							
025132	Left hand	GL2401616M01	16	16	16	150	14,50	4	0,50 - 1,74
025131	Right hand	GR2401616M01							
025134	Left hand	GL2401616M02	16	16	16	150	14,50	4	1,74 - 2,74
025133	Right hand	GR2401616M02							
025136	Left hand	GL2401616M03	16	16	16	150	14,50	4	2,74 - 3,74
025135	Right hand	GR2401616M03							
025140	Left hand	GL2402020K01	20	20	20	125	18,50	4	0,50 - 1,74
025139	Right hand	GR2402020K01							
025142	Left hand	GL2402020K02	20	20	20	125	18,50	4	1,74 - 2,74
025141	Right hand	GR2402020K02							
025144	Left hand	GL2402020K03	20	20	20	125	18,50	4	2,74 - 3,74
025143	Right hand	GR2402020K03							
025146	Left hand	GL2402020K04	20	20	20	125	18,50	4	3,74 - 5,29
025145	Right hand	GR2402020K04							

For Inserts See page 294

Spare Parts for External GR240 Toolholder

Description	EDP	Screw	EDP	Clamp	Insert Type
G_2401212M0... To G_2401616M0	025385	SN135	025387	SG24083	G217
G_2402020M0...			025388	SG24084	

GR233/GR253



Internal Toolholder GR233/GR253 for Insert Type G217

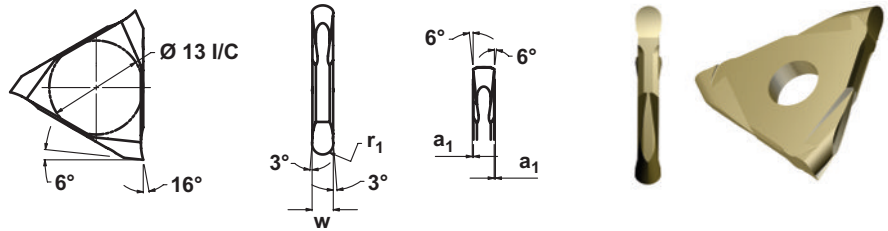
EDP	Description	Dimensions (mm)					Grooving Width W
		D	L ₂	L ₁	f	t max	
024170	GR233002001	20	25	130	13,30	3,00	0,50 - 1,74
024171	GR233002002	20	25	130	13,30	3,00	1,74 - 2,74
034424	GR233002003	20	25	130	13,30	3,00	2,74 - 3,74
024172	GR253002501	25	30	150	17,50	4,70	0,50 - 1,74
034425	GR253002502	25	30	150	17,50	4,70	1,74 - 2,74
024173	GR253002503	25	30	150	17,50	4,70	2,74 - 3,74
034426	GR253002504	25	30	150	17,50	4,70	3,74 - 5,29
034427	GR253003202	32	30	150	21,00	4,70	1,74 - 2,74
024686	GR253003203	32	30	150	21,00	4,70	2,74 - 3,74
034428	GR253003204	32	30	150	21,00	4,70	3,74 - 5,29

For Inserts See page 294

Spare parts for Internal GR233/GR253 Toolholder

Description	EDP	Screw	EDP	Clamp	Insert Type
GR233.. 01-03	025387	SG24083	025385	SN135	G217
GR253.. 01-03					
GR253.. 04					

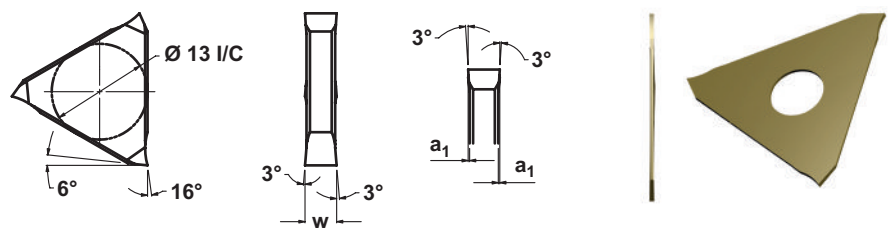
G312



G312 Inserts Full Radius

EDP	Description	Grade	Dimensions (mm)				Toolholder Type
			w	r ₁	a ₁	t max*	
034401	G312001020	SP4030	2	1,00	0,3	6*	G360...02
024174	G312001530		3	1,50	0,3	6*	G360...03
024175	G312002040		4	2,00	0,3	6*	G360...04

* In combination with toolholder See page 298

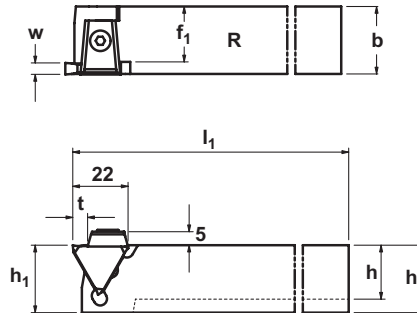


G312 Inserts for Grooving to DIN 471/472 and DIN 983/894

EDP	Description	Grade	Nominal Width of Groove	Dimensions (mm)			Toolholder Type
				w	a ₁	t max*	
034402	G312005000	SP4030	0,50	0,57	0,06	4*	G360...01
024176	G312006000		0,60	0,67	0,06	4*	
024177	G312007000		0,70	0,77	0,08	4*	
034392	G312008000		0,80	0,87	0,08	4*	
034393	G312009000		0,90	0,97	0,08	4*	
024178	G312010000		1,00	1,07	0,09	4*	
024179	G312011000		1,10	1,24	0,20	4*	
024180	G312013000		1,30	1,44	0,22	4*	
024181	G312016000		1,60	1,74	0,22	4*	
034394	G312018500		1,85	1,99	0,22	6*	
034395	G312021500		2,15	2,30	0,22	6*	G360...02
024182	G312026500		2,65	2,80	0,22	6*	
024183	G312031500		3,15	3,29	0,22	6*	
034396	G312041500		4,15	4,30	0,22	6*	G360...04

* In combination with toolholder See page 298

GR/L360



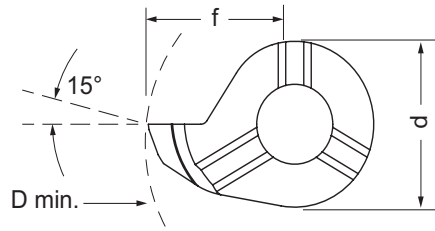
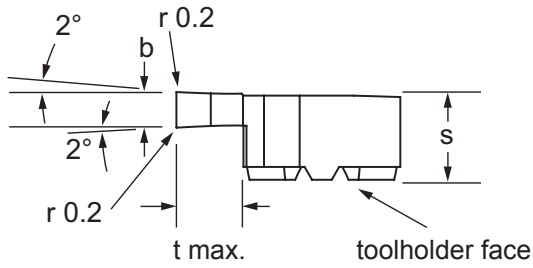
External Toolholder GR360 for Insert Type G312

EDP	Description	Dimensions (mm)						Grooving Width W
		b	h	h ₁	l ₁	f ₁	t	
034403	GL360121201	12	12	12	100	10,50	4	0,5 - 1,74
024184	GR360121201							
034404	GL360121202	12	12	12	100	9,50	6	1,74 - 2,74
034405	GR360121202							
034406	GL360121203	12	12	12	100	8,50	6	2,74 - 3,74
024186	GR360121203							
034407	GL360161601	16	16	16	125	14,50	4	0,5 - 1,74
034408	GR360161601							
034409	GL360161602	16	16	16	125	13,50	6	1,74 - 2,74
034410	GR360161602							
034411	GL360161603	16	16	16	125	12,50	6	2,74 - 3,74
034412	GR360161603							
034413	GL360161604	16	16	16	125	11,50	6	3,74 - 5,29
034414	GR360161604							
034415	GL360202001	20	20	20	125	18,50	4	0,5 - 1,74
024187	GR360202001							
034416	GL360202002	20	20	20	125	17,50	6	1,74 - 2,74
024188	GR360202002							
034417	GL360202003	20	20	20	125	16,50	6	2,74 - 3,74
024189	GR360202003							
034418	GL360202004	20	20	20	125	15,50	6	3,74 - 5,29
024190	GR360202004							
024191	GL360252501	25	25	25	150	23,50	4	0,5 - 1,74
024192	GR360252501							
034419	GL360252502	25	25	25	150	22,50	6	1,74 - 2,74
024193	GR360252502							
034420	GL360252503	25	25	25	150	21,50	6	2,74 - 3,74
034421	GR360252503							
034422	GL360252504	25	25	25	150	19,80	6	3,74 - 5,29
034423	GR360252504							

For Inserts See page 297

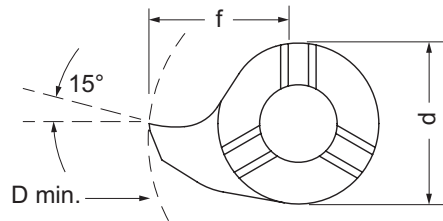
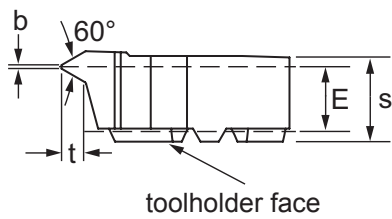
Spare parts for External GR360 Toolholder

Description	EDP	Screw	EDP	Clamp	Insert Type
G_360121201/02/03	025385	G113	034391	6-25	G312
G_360161601/02/03					
G_360161604	034390	G134			
G_360202001/02/03/04					
G_360252501/02/03/04	024522	G164			



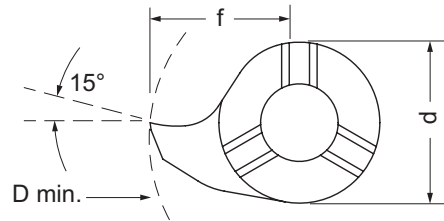
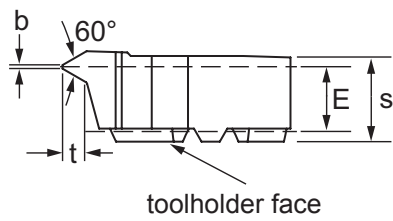
Mini-Cut Groove & Profile

EDP	Description	Grade	Dimensions						Type of Holder
			b	f	s	d	t max	D min.	
034433	LS0815002	SP4036	1,50	4,80	3,30	6,00	1,00	8,00	8,00
034434	LS1115002		1,50	6,70	4,20	8,00	2,30	11,00	8,00
034435	LS1420002		2,00	9,00	5,30	9,00	4,00	14,00	11,00
034430	RS0815002	SP4036	1,50	4,80	3,30	6,00	1,00	8,00	14 - 17
034431	RS1115002		1,50	6,70	4,20	8,00	2,30	11,00	14 - 17
034432	RS1420002		2,00	9,00	5,30	9,00	4,00	14,00	14 - 17



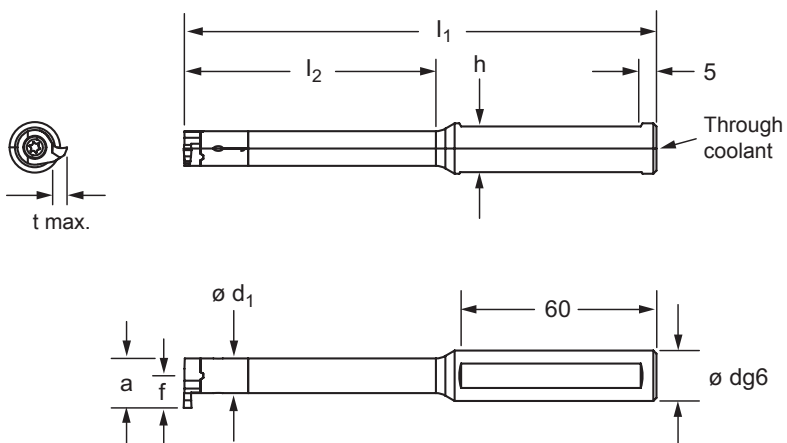
Mini-Cut 60° Threading Partial Profile

EDP	Description	Grade	Dimensions								Type of Holder
			Pitch	t	b	f	s	d	E	D min.	
034446	LS08081501	SP4036	1,5 - 1,75	0,95	0,18	4,80	3,50	6,00	2,50	8,00	608
034447	LS11102001		2	1,08	2,25	6,70	4,30	8,00	3,00	11,00	611
034448	LS14102001		2	1,08	0,25	9,00	5,40	9,00	4,20	14,00	614
034449	LS14132501		2,5	1,35	0,31	9,00	5,40	9,00	4,70	14,00	614
034450	LS08020501		0,5 - 0,75	0,43	0,06	4,80	3,50	6,00	2,70	8,00	608
034451	LS08051001		1,0 - 1,25	0,55	0,12	4,80	3,50	6,00	2,70	8,00	608
034452	LS11051001		1,0 - 1,25	0,55	0,12	6,70	4,30	8,00	3,50	11,00	611
034453	LS11081501		1,5 - 1,75	0,81	0,18	6,70	4,30	8,00	3,50	11,00	611
034454	LS14051001		1,0 - 1,25	0,55	0,12	9,00	5,40	9,00	4,70	14,00	614
034455	LS14081501		1,5 - 1,75	0,81	0,18	9,00	5,40	9,00	4,50	14,00	614



Mini-Cut 60° Threading Partial Profile

EDP	Description	Grade	Dimensions								Type of Holder
			Pitch	t	b	f	s	d	E	D min.	
034436	RS08081501	SP4036	1,5 - 1,75	0,95	0,18	4,80	3,50	6,00	2,50	8,00	608
034437	RS11102001		2	1,08	2,25	6,70	4,30	8,00	3,00	11,00	611
034438	RS14102001		2	1,08	0,25	9,00	5,40	9,00	4,20	14,00	614
034439	RS14132501		2,5	1,35	0,31	9,00	5,40	9,00	4,70	14,00	614
034440	RS08020501		0,5 - 0,75	0,43	0,06	4,80	3,50	6,00	2,70	8,00	608
034441	RS08051001		1,0 - 1,25	0,55	0,12	4,80	3,50	6,00	2,70	8,00	608
034442	RS11051001		1,0 - 1,25	0,55	0,12	6,70	4,30	8,00	3,50	11,00	611
034443	RS11081501		1,5 - 1,75	0,81	0,18	6,70	4,30	8,00	3,50	11,00	611
034444	RS14051001		1,0 - 1,25	0,55	0,12	9,00	5,40	9,00	4,70	14,00	614
034445	RS14081501		1,5 - 1,75	0,81	0,18	9,00	5,40	9,00	4,50	14,00	614



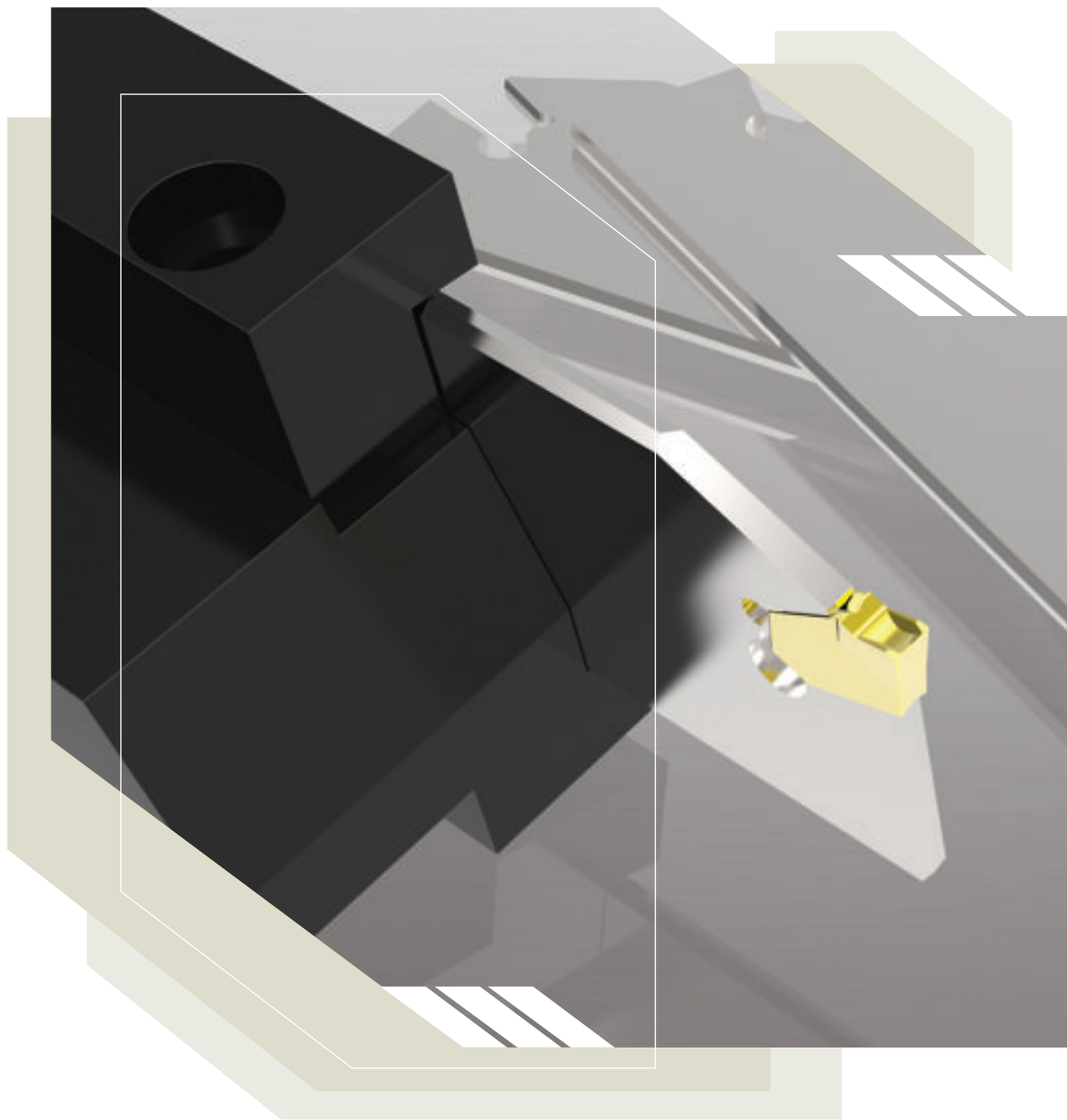
Mini-Cut Carbide Toolholders

EDP	Description	Dimensions									
		$\varnothing dg6$	d_1	l_1	l_2	f	a	h	Insert Type	t_{max}	Min Bore
034466	GHM60800122	12,00	6,00	90,00	30,00	4,80	7,80	11,00	R/L S08	1,00	8,00
034467	GHM60800124		6,00	115,00	50,00	4,80	7,80	11,00	R/L S08	1,00	8,00
034468	GHM61100123		8,00	120,00	56,00	6,70	10,70	10,50	R/L S11	2,30	11,00
034469	GHM61400162	16,00	9,5 - 11	110,00	45,00	*	*	14,50	R/L S14	4,0 - 6,5	14 - 17
034470	GHM61400164		9,5 - 11	145,00	75,00	*	*	15,00	R/L S14	4,0 - 6,5	14 - 17

For Inserts See pages 299 - 301

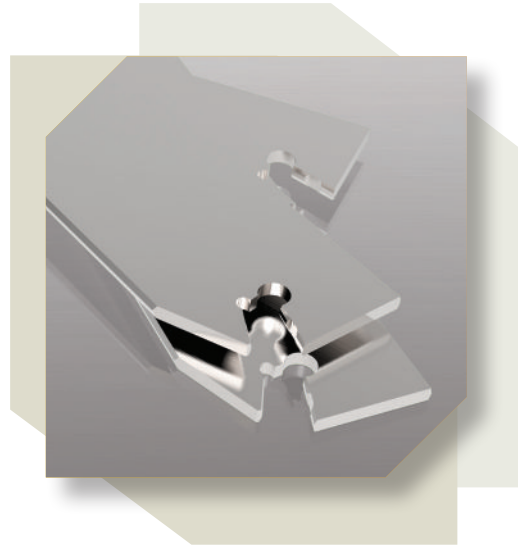
* dimension as per insert

Part-Off



Part-Off Grade Description

MP91M CVD Coated grade offering good wear, and shock resistance. Ideal for Steels and Cast Irons



Cutting Speed v_c			
ISO	Materials	Rm and Hardness	CVD
			MP91M
			m/min
			min. - max.
P	Unalloyed Steel	<600 N/mm ² <180 HBN	140 - 345
		<950 N/mm ² <280 HBN	125 - 300
	Alloyed Steel	700-950 N/mm ² 200-280 HBN	105 - 270
		950-1200 N/mm ² 280-355 HBN	80 - 205
K	Cast Iron	1200-1400 N/mm ² 355-415 HBN	50 - 130
		Grey GG-Ft	145 - 365
		Spheroidal-Ductile GGG-FGS	115 - 285
H	Hard Materials	Malleable GTS - MN/MP	105 - 260
		Hard Steel >1400 N/mm ² >415 HBN	50 - 80
		Chilled Cast Iron ² 1400 N/mm ² 400 HBN	40 - 65

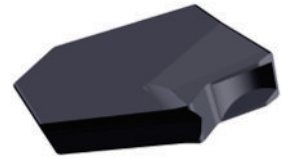
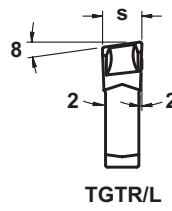
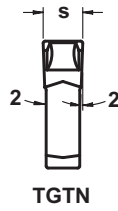


Optimum Grade Performance

Grade Classifications					
	Materials	Code	CVD Coated MP91M		
P	Unalloyed and Alloyed Steels	P01			
		P05			
		P10			
		P15			
		P20			
		P25			
		P30			
		P35			
		P40			
		P45			
		P50			
		K	Cast Irons	K01	
				K05	
				K10	
				K15	
K20					
K25					
K30					
K35					
H	Hard Materials	H01			
		H05			
		H10			
		H15			
		H20			
		H25			
		H30			

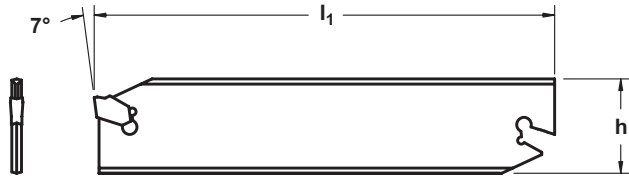
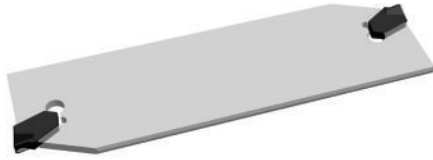
Increasing - wear resistance
 Increasing - shock resistance

TGT Inserts



TGT Inserts			
EDP	Description	Grade	Dimensions
			s (mm)
012958	TGTN2	MP91M	2,21
012959	TGTN2,4	MP91M	2,39
012960	TGTN3	MP91M	3,1
012961	TGTN4	MP91M	4,09
012962	TGTN4,8	MP91M	4,78
012963	TGTN5	MP91M	5,08
012964	TGTN6	MP91M	6,35
014091	TGTR38	MP91M	3,1
014092	TGTL38	MP91M	3,1

Hardened Steel Blades



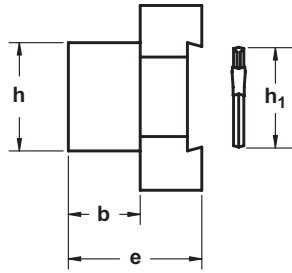
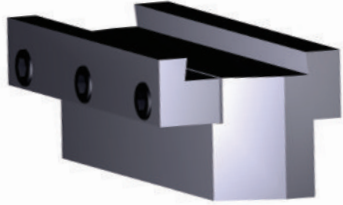
Blade

EDP	Description	Dimensions (mm)			
		h	l ₁	Ø Max	Inserts
015199	SGIH26.2PSHD	26	110	75	TGT 2/2,4
015200	SGIH26.3PSHD	26	110	75	TGT 3
015201	SGIH26.4PSHD	26	110	75	TGT 4
017232	SGIH26.5PSHD	26	110	75	TGT 4,8/5
015202	SGIH32.3PSHD	32	150	100	TGT 3
015203	SGIH32.4PSHD	32	150	100	TGT 4
017234	SGIH32.5PSHD	32	150	125	TGT 4,8/5
017235	SGIH32.6PSHD	32	150	125	TGT 6

Spare Part

Extracting Key	Description	EDP
SGIH26.2PSHD - SGIH32.6PSHD	E219EXTKEY	017031

Tool Blocks



Block								
EDP	Description	Dimensions (mm)			Spare Parts			
		h1	b	h	EDP	Screw	EDP	Key
030659	SGTB2620	26	20	20	034612	1076	018288	K5005
030660	SGTB2625	26	25	25				
030661	SGTB3220	32	20	20				
030662	SGTB3225	32	25	25				
030663	SGTB3232	32	32	32				

Materials Cross Reference Chart

Unalloyed Steels

Commercial Name	ATI Allvac ATI Allegheny Ludlum ATI WahChang	UNS Number	UK: BS,EN	Suède: SS	USA: AISI/SAE	Germany: Wnr	Germany: DIN	France: AFNOR	Italy: UNI	Spain: UNF	Japan: JIS
Unalloyed Steels											
1006 / Fd5	1006			1160	1006	1.0201	St36	Fd5			
1010 / XC10	1010		045M10	1265	1010	1.1121	Ck10	XC10	C10	F.1510	
1015 / CC12	1015		080M15	1350	1015	1.0401	C15	CC12	C15C16	F.111	
1020 / CC20			050A20	1450	1020	1.0402	C22	CC20	C20C21	F.112	
1022 / 20M5	1022		120M19	1410	1022	1.1133	GS.20Mn5	20M5	G22Mn3	F.1515	
1025 /	1025				1025	1.1158	Ck25				S25C
1035 / CC35	1035		060A35	1550	1035	1.0501	C35	CC35	C35	F.113	
1035 / XC38TS	1035		060A35	1572	1035	1.1183	Ck35	XC38TS	C36		S35C
1039 / 35M5	1039		150M36		1039	1.1157	40Mn4	35M5			
1040 / 1C40			080M40		1040	1.0511	C40	1C40/AF60C40	C40/1C40	F.114.A	
1043 / CC45	1043							CC45			
1045 / CC45	1045		080M46	1650	1045	1.0503	C45	CC45	C45	F.114	
1045 / XC42	1045		080M46	1672	1045	1.1191	Ck45	XC42	C45	C45K	S45C
1049 / XC42H1			080M46	1660	1049	1.1201	Cm45	3C45/XC42H1/XC48H1		F.1145.C45k-1/F.1147-C48k-1	S50C
1049 / XC48H1			080M50		1049/1050	1.1206	Ck50	2C50/XC48H1			
1050 / XC48TS	1050		060A52	1674	1050	1.1213	Cf53	XC48TS	C53		S50C
1055 / XC55	1055		070M55		1055	1.1203	Ck55	XC55	C50	C55K	S55C
105WC13			BO1	2140	O1	1.2510	105WC6	105WC13	10WCr6-107WCr5KU	105WCr5	SKS31-SKS2-SKS3
1060 / CC55	1060		080A62		1060	1.0601	C60	CC55	C60		
1070 / XC68	1070		070A72	1770	1070	1.1231	Ck67	XC68	C70	F.5103	
1080 / XC75	1080		060A78	1774	1080	1.1248	Ck75	XC75		F.5107	
1086 / XC90					1086	1.1269	Ck85	XC90	C90		
1095 / XC100	1095		060A96	1870	1095	1.1274	Ck101	XC100		F.5117	SUP4
10PbF2						1.0722	10SPb20	10PbF2	CF10SPb20	10SPb20	
1108 / 10F1			(210M15)		1108/1109	1.0721	10S20	10F1	CF10S20	F.2121-10S20	
1140 / 35MF4			212M36	1957	1140	1.0726	35S20	35MF4		F210G	
1151 / 45MF4	1151		212M44	1973	1151	1.0727	45S20	45MF4			
120WV10			BF1			1.2516	120WV4	120WV10	110W4KU		
1213 / S250			230M07	1912	1213	1.0715	9SMn28	S250	CF9SMn28	11SMn28	SUM22
1215 / S300			240M07		1215	1.0736	9SMn36	S300	CF9SMn36	12SMn35	
12L13 / S250Pb				1914	12L13	1.0718	9SMnPb28	S250Pb	CF9SMnPb28	11SMnPb28	SUM22L
12L14 / S300Pb				1926	12L14	1.0737	9SMnPb36	S300Pb	CF9SMnPb36	12SMnP35	
18NCD6			820A16			1.6587	17CrNiMo6	18NCD6		14NiCrMo13	
20MC5						1.7139	16MnSCr5	20MC5	20MnCr5	F.150.D	SMnC420H
2515 / Z18N5					2515	1.5680	12Ni19	Z18N5			
30CD12			722M24	2240		1.8515	32CrMo12	30CD12	32CrMo12	F.124.A	
3115 / 16NC6					3115	1.5919	15CrNi6	16NC6			
3415 / 12NC15			655M13-655A12		3415-3310	1.5752	14NiCr14	12NC15			SNC815(H)
38C2						1.7003	38Cr2	38C2/38Cr2	38Cr2/41Cr2KB	F.1200-38Cr3	
40CrMnNiMo8						1.2738	40CrMnNiMo8				
4130 / 25CD4			1717CDS110	2225	4130	1.7218	25CrMo4	25CD4	25CrMo4(KB)	55Cr3AM-26CrMo4	SCM420-SCM430

Material Guide – Key to Recommended Inserts

Material Designation

◆ Unalloyed Steels
 ◆ Alloyed Steels
 ◆ Stainless Steels
 ◆ PH Stainless
 ◆ Cast Irons
 ◆ Aluminum & Alloys
 ◆ High Temp. Alloys
 ◆ Hard Materials

Materials Cross Reference Chart

Unalloyed Steels

Hardness HRB HRC HB	Rm N/mm ²	Fe	Ni	Cr	Co	Mo	W	Si	Mn	C	Al	Ti	Li	P	S	Mg	Zn	Cu	Others
Unalloyed Steels																			
390																			
390																			
590-780																			
500-650																			
500-650																			
550-750																			
540-730																			
690-930																			
580-800																			
630-800																			
630-800																			
630-800																			
620-850																			
650-900																			
640-830																			
640-830																			
750-850																			
750-900																			
810																			
630																			
670																			
1000-1100																			
390-710																			
350-780																			
510-740																			
650																			
775																			
410-710																			
430-740																			
410-710																			
430-740																			
980-1320																			
480-640																			
510-710																			
980-1420																			
500-850																			
880-1230																			
800-950																			
785																			
650-950																			

Material Guide – Key to Recommended Inserts

Material Designation

- ◆ P Unalloyed Steels
- ◆ P Alloyed Steels
- ◆ M Stainless Steels
- ◆ M PH Stainless
- ◆ K Cast Irons
- ◆ N Aluminum & Alloys
- ◆ S High Temp. Alloys
- ◆ H Hard Materials

Materials Cross Reference Chart

Unalloyed Steels

Commercial Name	ATI Allvac ATI Allegheny Ludlum ATI WahChang	UNS Number	UK: BS,EN	Suède: SS	USA: AISI/SAE	Germany: Wnr	Germany: DIN	France: AFNOR	Italy: UNI	Spain: UNF	Japan: JIS
Unalloyed Steels											
4137-4135 / 35CD4		708A37		2234	4137-4135	1.7220	34CrMo4	35CD4	35CrMo4	34CrMo4	SCM432;SCCRM3
4140 / 42CD4		708M40		2244	4140	1.7225	42CrMo4	42CD4	42CrMo4	42CrMo4	SCM440(H)
4140 / 42CD4(HT)		708M40		2244	4140	1.7225	42CrMo4	42CD4	42CrMo4	42CrMo4	SCM440(H)
4140-4142 / 42CD4TS		708M40		2244	4140-4142	1.7223	41CrMo4	42CD4TS	41CrMo4	42CrMo4	SCM440
4150 / 50CrMo4		708A47			4150	1.7228	50CrMo4	50CrMo4	50CrMo4		SCM445(H)
4340 / 35NCD6		817M40		2541	4340	1.6582	35CrNiMo6	35NCD6	35NiCrMo6(KB)	F.1280	
4419 /		1503-243-430		2512	4419	1.5419	22Mo4		G20Mo5/G22Mo5		SCPH11
5015 / 12C3		523M15			5015	1.7015	15Cr3	12C3			SCr415(H)
5045 / 45Cr2					5045-5046	1.7006	46Cr2	42C2/46Cr2	45Cr2		
5130 /		530A30			5130	1.7030	28Cr4				
5132 / 32C4		530A32			5132	1.7033	34Cr4	32C4			
5135 / 37Cr4		530A36/530H36			5135	1.7034	37Cr4	37Cr4/38C4	36CrMn4/36CrMn5/38Cr4KB/38CrMn4KB	F.1210-38Cr4DF/ F.1201-38Cr4	SCr435H
5140 / 42C4		530M40			5140	1.7035	41Cr4	42C4	41Cr4	42Cr4	SCr440(H)
5155 / 55C3		524A60		2253	5155	1.7176	55Cr3	55C3			SUP9(A)
55NCDV6						1.2711	54NiCrMoV6	55NCDV6			
57NiCrMoV77						1.2744	57NiCrMoV77				
6150 / 50CV4		735A50		2230	6150	1.8159	50CrV4	50CV4	50CrV4	51CrV4	SUP10
6F3 / 55NCDV7					6F3	1.2714	56NiCrMoV7	55NCDV7			
6F5 / 55NC10					6F5	1.2718	55NiCr10	55NC10			
75CrMoNiW67						1.2762	75CrMoNiW67				
8620 / 20NCD2		805M20		2506	8620	1.6523	21NiCrMo2	20NCD2	20NiCrMo2	20NiCrMo2	SNCM220(H)
90MnCrV8		BO2			2	1.2842	90MnCrV8	90MnCrV8	90MnCr8KU		
9310 / 16NCD13		832H13/832M13/S157			9310	1.6657	14NiCrMo134	16NCD13	15NiCrMo13	F.1560- 14NiCrMo13/F.1569- 14NiCrMo131	
A105 / A48CP		K03501			A105		C22-8	A48CP			
A106GB / TUE250B							P235GH	TUE250B			
A182 / 12CD9		1501-622		2218	ASTMA182F22	1.7380	10CrMo910	12CD9.10	12CrMo910	TU.H	
A182 / 15CD3.5		1501-620Gr27			ASTMA182F11-F12	1.7335	13CrMo44	15CD3.5-15CD4.5	14CrMo45	14CrMo45	
A204Gr.A / 15D3		1501-240		2912	ASTMA204Gr.A	1.5415	15Mo3	15D3	16Mo3KW	16Mo3	
A234WPB / AE250B								AE250B			
A234WPL6 / 42BT		K03006						42BT			
A27 65.35 / E23.45M		A1		1305	A27 65.35	1.0443	GS.45	E23.45M		F.221	
A33		Fe310-0/144915HR,HS		1300		1.0035	Fe310.0 (St33)	A33	Fe320	A310-0/FE310-0	
A333G6 / TU42BT							P265GH	TU42BT			
A34-2						1.0028	Ust34-2	A34-2	Fe330Fe/330BFU		SS330
A34-2NE		144934/20HR,HS,CR,CS				1.0034	RSI34-2	A34-2NE	Fe330BFN		
A350LF2 / A48FP		K03504						A48FP			
A36 / E28					A36			E28			
A515.65 / A37CP		1501 161		1330	A515 65	1.0345	H 1	A37CP		F.1110	
A516 / A48CP					A516Gr.70	1.0481	17Mn4/ A515Gr.70/ A414Gr.F	A48CP	Fe510-1KG;KT;KW/ Fe510-2KG;KT;KW	A47RCI/RAII	SG365/SGV410/ SGV450/SGV480
A516G60 / E24-2							P265GH	E24-2			
A516G70 / E36-4							P295GH	E36-4			

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 ◆ H Hard Materials

Materials Cross Reference Chart

Unalloyed Steels

Hardness HRB HRC HB	Rm N/mm ²	Fe	Ni	Cr	Co	Mo	W	Si	Mn	C	Al	Ti	Li	P	S	Mg	Zn	Cu	Others	
Unalloyed Steels																				
	750-1100																			
	740-1080																			
	800-1200																			
	750-1100																			
	1100-1300																			
241-277HB	890																			
	440-590																			
	690-880																			
	900-1100																			
	530-860																			
	700-950																			
	950-1150																			
	700-750																			
	1050-1100																			
	800																			
	850																			
	780-1180																			
	850																			
	800																			
	705																			
	510-710																			
	740																			
	560-1200																			
187HB	600		0.4	0.3		0.12		0.15-0.35	0.6-1.05	0.35				0.035	0.04			0.4	Nb 0.4	
			0.4	0.4		0.15		0.10 min	0.29-1.06	0.3				0.048	0.058			0.4	Nb 0.4	
	440-590																			
	440-590																			
	440-570																			
197HB	660		0.4	0.4		0.15		0.10 min	0.29-1.06	0.3				0.05	0.058			0.4	Nb 0.4	
			0.4	0.3				0.10 min	0.6-1.35	0.3				0.035	0.04			0.4		
	750																			
	290-540																			
				0.4				0.10 min	0.29-1.06	0.3				0.025	0.025					
	300-500																			
	460-500																			
197HB	660		0.4	0.3		0.12		0.15-0.30	0.6-1.35	0.3				0.035	0.04			0.4	Nb 0.4	
	750																			
	750																			
	460-580																			
								0.1-0.35	1.4	0.2				0.05	0.05					
								0.1-0.35	1.6	0.22				0.04	0.04					

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Materials Cross Reference Chart

Unalloyed Steels /
Alloyed Steels

Commercial Name	ATI Allvac ATI Allegheny Ludlum ATI WahChang	UNS Number	UK: BS,EN	Suède: SS	USA: AISI/SAE	Germany: Wnr	Germany: DIN	France: AFNOR	Italy: UNI	Spain: UNF	Japan: JIS
Unalloyed Steels											
A537 / A52CP				2101/2102	A537Cl.1/ A414Gr.G/A612	1.0473	19Mn6	A52CP		A52RCI/RAIL	SGV410/SGV450/ SGV480
A570 / A50-2			Fe490-2FN/4360-50B	1550/2172	A570Gr.50/ A572Gr.50	1.0050	Fe490-2 (St50-2)	A50-2	Fe490	A490-2/Fe490-2FN	SS490
A570 / E24-2			Fe360B/4360-40B	1311/1312	A570Gr.33.36	1.0036	Fe360B (Ust37-2)	E24-2	Fe360BFU	AE235B/Fe360B	
A570 / E28-2			Fe430BFN/144943/25HR, HS/4360-43B	1411/1412	A570Gr.40	1.0044	Fe430B (St44-2)	E28-2	FE430B/Fe430BFN	AE275B/Fe430BFN	SM400A,B,C
A570.36 / E24.2Ne			4360 40 C	1311	A570 36	1.0038	RSi37.2	E24.2Ne			
A572 / A60-2			Fe590-2FN/4360-55E;55C	1650	A572Gr.65	1.0060	Fe590-2 (St60-2)	A60-2	Fe60-2/Fe590	A590-2/Fe590-2FN	SM570
A572.60 / E36								E36			
A573 / E38-3			Fe430D1FF/4360-43C;43D	1411/1412/1414	A573Gr.70/ A611Gr.D	1.0144	Fe430D1 (St44-3)	E28-3/E28-4	Fe430B/Fe430C(FN)/ Fe430D(FF)	AE275D/ Fe430D1FF	SM400A,B,C
A573.81.65 / E24.U				1312	A573.81 65	1.0116	Si37.3	E24.U	Fe37.3		
A619			14493CR		A619(1008)	1.0347	RRSi3	E	FeP02		
A633 / FeE355KGN			A588		A633Gr.C	1.0562	StE355	FeE355KGN/ E335R/FP	FeE355KG;KW	AE355KG;DD	SM490A,B,C;YA,YB
A70-2			Fe690-2FN	1655		1.0070	Fe690-2 (St70-2)	A70-2	Fe70-2/Fe690	A690-2/Fe690-2FN	
A738 / A52FP			Fe510D2FF/1501Gr.224- 460/1501Gr.224-490		A738	1.0577	Fe510D2 (Ast52)	A52FP		A52RBII	
C25			070M26		(M)1025	1.0406	C25	C25/1C25	C25/1C25		
E24-2			Fe360B/144937/23HR	1311		1.0037	Fe360B (Si37-2)	E24-2	Fe360B;C;D	AE235B/Fe360B	STKM12A;C
E36-3			Fe510D1FF/144950/35HR, HS/4360-50D	2132/2133/2134		1.0570	Fe510D1 (St52-3)	E36-3/E36-4	Fe510CFN/ Fe510S10B;C;D/ Fe510BFN	AE355D/ Fe510D1FF	SM490A,B,C;YA,YB
L6 / 55NCDV07	L6			2550	L6	1.2713	55NiCrMoV6	55NCDV7		F.520.S	SKT4
P2 / 20MC5					P2	1.2162	21MnCr5	20MC5			SCR420H
P20 / 40CMD8			P20		P20	1.2311	40CrMnMo7	40CMD8			
P20+S / 40CMD8+S			P20+S		P20+S	1.2312	40CrMnMoS86	40CMD8+S			
S1 / 55WC20	S1		BS1	2710	S1	1.2542	45WCrV7	55WC20	45WCrV8KU	45WCrSi8	
S4					S4	1.2826	60MnSiCr4				
W110 / Y1105								Y1105			
W112 / Y2120					W112	1.1663	C125W	Y2120	C120KU	C120	SK2
W210 / Y1105V			BW2		W210	1.2833	100V1	Y1105V	102V2KUSKS43		
Alloyed Steels											
12CD4			1501620	2216	A38712-2	1.7262	15CrMo5	12CD4	12CrMo910	12CrMo4	SCM415(H)
1330 / 20M5			150M28		1330	1.1170	28Mn6	20M5	C28Mn		SCMn1
1335 / 40M5				2120	1335	1.1167	36Mn5	40M5		36Mn5	SMn438(H)
20AP											
22CMSD4								22CMS4			
3135 / 35NC6			640A35		3135	1.5710	36NiCr6	35NC6			SNC236
3415 / 14NC11					3415	1.5732	14NiCr10	14NC11	16NiCr11	15NiCr11	SNC415(H)
35NCD14								35NCD14			
40CMD8								40CMD8			
420 / Z40C14				2314	420	1.2083	X42Cr13	Z40C14			SUS420J2
429					429						
4340 / 35NCD6					4340			35NCD6			
440C / Z100CD17					440C	1.4125	X105CrMo17	Z100CD17			
4520					4520						

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Hardness HRB HRC HB	Rm N/mm ²	Fe	Ni	Cr	Co	Mo	W	Si	Mn	C	Al	Ti	Li	P	S	Mg	Zn	Cu	Others
Unalloyed Steels																			
	480-650																		
	470-800																		
	340-690																		
	410-790																		
	750																		
	570-920																		
	750																		
	790																		
	750																		
	210-690																		
	490-800																		
	670-1000																		
	450-680																		
	470-650																		
	340-690																		
	490-800																		
	800-850																		
	705																		
	790																		
	790																		
	750-800																		
	740																		
	640-830																		
	650-750																		
	675																		
Alloyed Steels																			
	640-1080																		
	640-840																		
	600																		
	720-950							0.3	0.25-0.50	1				0.035	0.045				Pb0.2
255-300HB	970																		
	690-930																		
	830-1180																		
	1100-1350																		
	1100-1300																		
	770																		
	600																		
	900-1200																		
	870																		
	450-590																		

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Alloyed Steels											
45NCD17 / 6F7			EN30B		6F7	1.2767	X45NiCrMo4	45NCD17	KV		
5115 / 16MC5			527M20	2511	5115	1.7131	16MnCr5	16MC5	16MnCr5	16MnCr5	
5120 / 20MC5			150M19	2172	5120	1.0841	S152-3	20MC5	Fe52BFN/Fe52CFN	F.431	
5140 / 42C4 (HT)			530M40		5140	1.7035	41Cr4	42C4	41Cr4	42Cr4	SCr440(H)
52100 / 100C6			534A99	2258	52100	1.3505	100Cr6	100C6	100Cr6	F.131	SUJ2
55MnSi4-4								55MS4-4			
55W1								XC55			
8630					8630						
8740 / 40NiCrMo22			311Type7		8740	1.6546	40NiCrMo22		40NiCrMo2(KB)	40NiCrMo2	SNM240
9255 / 55S7			250A53	2090	9254	1.0904	55Si7	55S7	55Si8	F.144	
9262 / 60SC7					9262	1.0961	60SiCr7	60SC7	60SiCr8	60SiCr8	
9840 / 40NCD3			816M40		9840	1.6511	36CrNiMo4	40NCD3	38NiCrMo4(KB)	35NiCrMo4	
A128.75 / Z120M12			BW10	2183	A12875	1.3401	GX120Mn12	Z120M12	XG120Mn12	X120Mn12	
A2 / Z100CDV5	A2		BA2	2260	A2	1.2363	X100CrMoV51	Z100CDV5	X100CrMoV51KU	X100CrMoV5F5227	SKD12
A350LF5 / 16N6					ASTMA350LF5	1.5622	14Ni6	16N6	14Ni6	15Ni6	
A355A / 40CAD06.12					A335A			40CAD0612			
A6	A6				A6						
A7	A7				A7						
Aermet 100		UNSK92580									
Aermet 310											
Aermet 340											
D2 / Z160CDV12	D2		BD2	2310	D2	1.2601	X165CrMoV12	Z160CDV12	X165CrMoV12KU	X160CrMoV12	
D2 / Z210CW12			BD2		D2	1.2379	X155CrV12.1	Z210CW12			
D3 / Z200Cr12			BD3		D3	1.2080	X210Cr12	Z200Cr12	X210Cr13KU / X250Cr12KU	X210Cr12	SKD1
D4(D6) / Z200CD12			BD6	2312	D4(D6)	1.2436	X210CrW12	Z200CD12	X215CrW121KU	X210CrW12	SKD2
FV535	ATIFV535™										
H10 / 30CDV12-28			BH10		H10	1.2365	X32CrMoV33	30CDV12-28	30CrMoV1227KU	F.5313	
H10A / 30CKDV28			BH10A		H10A	1.2885	X32CrMoCoV33.3	30CKDV28			
H11 / Z38CDV5			BH11		H11	1.2343	X38CrMoV51	Z38CDV5	X37CrMoV51KU	F.5137	SKD6
H13 / Z40CDV5	H13		BH13	2242	H13	1.2344	X40CrMoV51	Z40CDV5	X35CrMoV05KU / X40CrMoV511KU	X40CrMoV5	SKD61
H21 / Z30WCV9-3			BH21		H21	1.2581	X30WCV93	Z30WCV9-3	X30WCV93KU	F.5323	SKD5
Hardox400											
HardoxHiTuf											
HW3 / Z45CS9			401S45		HW3	1.4718	X45GrSi93	Z45CS9	X45GrSi8	F.322	SUH1
L1					L1						
L3 / Y100C6	L3		BL3		L3	1.2067	100C6	Y100C6		100C6	
M2 / Z85WDCV06050402	M2				M2			Z85WDCV06050402			
M3	M3				M3						
M35 / Z85WDKCV				2723	M35	1.3243	S6/5/2/5	Z85WDKCV	HS6.5.2.5	F.5613	SKH55
M7 / Z100WCV09040202								Z100WCV09040202			
O1	O1				O1						
P21					P21	1.2764	X19NiCrMo4				
P4					P4	1.2341	X6CrMo4				
S7	S7				S7						
T1 / Z80WCV180401			BT1		T1	1.3355	S18.0.1	Z80WCV180401	X75W18KU	HS18.0.1	SKH2

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Alloyed Steels																			
	880																		
	640-1080																		
	650																		
	800-1100																		
	650-750																		
269-302HB	970																		
248-285HB	900																		
	690-930																		
	690-930																		
	950-1050																		
	1050-1100																		
	800-1100																		
	780-1080																		
	750-850																		
	490-640																		
	700																		
	720-775																		
	795-910																		
40HRC	1250	71	11.1	3	13.4	1.2				0.23									
40HRC	1250	70	11	2.4	15	1.4				0.25									
37-42HRC	1330	68	12	2.25	15.6	1.85				0.33									
	850-900																		
	850																		
	850-900																		
	850-900																		
34HRC	1070		0.2-0.8	9.8-11.2		0.5-1.0	0.7	0.1-0.7	0.6-1.15	0.06-0.11									
	770																		
	770																		
	770																		
	1180-1620																		
	850																		
400HBW	1300																		
350HBW	1130																		
	970																		
	630																		
	750-850																		
	775-990																		
	795-870																		
	775-990																		
	775-990																		
	640-670																		
	850																		
	400																		
	640-720																		
	800-1050																		

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Alloyed Steels											
T4 / Z80WKCV18050401			BT4		T4	1.3255	S18.1.2.5	Z80WKCV18050401	X78WCo1805KU	HS18.1.1.5	SKH3
Z2NKDT18-10-5						1.2709	X3NiCoMoTi18.9.5	Z2NKDT18-10-5			
Z38CDV5-3						1.2367	X40CrMoV53	Z38CDV5-3	Z155CVD12-1		
Stainless Steels											
50	ATI 50™	UNS S20910									
202			284S16		202	1.4371	X3CrMnNiN18-8-7	Z8CMN18.08.05			
215											
284											
301	ATI 301™			2331	301	1.4310	X12CrNi17-7	Z12CN17.07	X12CrNi17 07	F.3517	SUS301
302	ATI 302™		302S31	2330	302	1.4319	X12CrNi18-9	Z10CN18.09	X10CrNi18 09	F.314	
303	ATI 303™		303S21, 58M	2346	303	1.4305	X8CrNiS18-9	Z10CNF18.09	X10CrNiS 18.09	F.3508	SUS303
304	ATI 304™		304S31, 58E	2332/2333	304	1.4350	X5CrNi18-9	Z6CN18.09	X5CrNi18 10	F.3551;F.3541;F.3504	SUS304
305	ATI 305™		305S19		305	1.4312	X8CrNi18-12		X8CrNi1910	F.3503	
311											
315											
316	ATI 316™		316S33, 58J	2343	316	1.4401	X5CrNiMo17-13-3	Z6CND19.12.03	X5CrNiMo1713	F.3543	SUS316
317	AL 317L		317S16		317	1.4449	X5CrNiMo17-13				
318					318	1.4583	X10CrNiMoNb18-12	Z6CNDNb17.13B	X6CrNiMoNb17 13		
320											
321	ATI 321™	UNS S32100	321S12, 58B	2337	321	1.4541	X10CrNiTi18-9	Z6CNT18.10	X6CrNiTi18 11	F.3553;F.3523	SUS321
325											
326											
329				2324	329	1.4460	X8CrNiMo27-5	Z5CND27.05AZ			SUS329L
331											
332	ATI 332™										
334	ATI 334™				70334		X8CrNiAlTi20-20				
347	ATI 347™	UNS S34700	347S17, 58F	2338	347	1.4550	X10CrNiNb18-9	Z6CNNb18.10	X6CrNiNb18 11	F.3552;F.3524	SUS347
348	ATI 348™	UNS S34800				1.4546	X5CrNiNb18-10	Z10CrNiNb18 10			
394											
403	ATI 403™		403S17	2301	403	1.4000	X7Cr13	Z6C13	X6Cr13	F.3110	SUS403
409			409S19		409	1.4510	X6CrTi12	Z6CT12	X6CrTi12		
410	ATI 410™		410S21, 56A	2302	410	1.4006	X10Cr13	Z10C14	X12Cr13	F.3401	SUS410
416	ATI 416™		416S21	2380	41600	1.4005	X12CrS13	Z11CF13	X12CrS13	F.3411	SUS416
420	ATI 420™		420S37	2303	420	1.4021	X20Cr13	Z20C13	X20Cr13	F.5261	
425											
430	ATI 430™		430S15, 60	2320	430	1.4016	X8Cr17	Z8C17	X8Cr17	F.3113	SUS430
431			431S29, 57	2321	431	1.4057	X22CrNi17	Z15CNI16.02	X16CrNi16	F.3427	SUS431
433	ATI 433™										
434	AL 434™		434S17	2325	434	1.4113	X6CrMo17	Z8CD17.01	X8CrMo17		SUS434
441											
444	ATI 444™	UNS S44400		2326	444	1.4521		Z3CDT18 02			
452											
455	ATI 455™	UNS S45500									

Material Guide – Key to Recommended Inserts

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 ◆ M PH Stainless
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 ◆ S High Temp. Alloys
 ◆ H Hard Materials

Materials Cross Reference Chart

Alloyed Steels /
Stainless Steels

Hardness HRB HRC HB	Rm N/mm ²	Fe	Ni	Cr	Co	Mo	W	Si	Mn	C	Al	Ti	Li	P	S	Mg	Zn	Cu	Others
Alloyed Steels																			
	820-1050																		
	1125																		
	785																		
Stainless Steels																			
		63.7	6	21					9										
			4.0/6.0	17.0/19.0		-		1	7.5/10.0	0.15				0.06	0.03				
			9.0/11.0	14.0/16.0		0.08/1.20		0.20/1.00	5.50/7.00	0.06/0.15				0.04	0.03				
			4.00/6.50	16.5/18.5		-		1	7.00/10.0	0.07				0.06	0.03				
	700-950		7.00	17.00				1.00	2.00	0.14				0.05	0.03				
			6.0/10.0	17.0/22.0		1.5		2	2	0.2/0.4				0.05	0.05				
	500-700		10.50	19.50		0.60		2.00	1.50	0.16				0.04	0.30				
	500-700		9.00	19.50				2.00	1.50	0.08				0.04	0.04				
	490-690		11.50	18.00				1.00	2.00	0.12				0.04	0.03				
			23.0/28.0	17.0/23.0		1.5		3	2	0.5				0.05	0.05				
			9.0/11.0	16.5/18.5		1.25/1.75		1	2	0.07				0.045	0.03				
	510-710		13.00	17.00		1.50		0.75	2.00	0.08				0.04	0.03				Cu 0.5
	490-690		13.00	19.00		3.50		1.00	1.00	0.02				0.02	0.02				
	490-740		9.0 min	17.0/21.0		2.0/3.0		1.5	2	0.08				0.04	0.04				
			10.5/13.5	16.5/18.5		2.00/2.50		1	2	0.08			5C/0.80	0.045	0.03				
	500-730		9.50	18.00				1.00	2.00	0.08			0.40	0.04	0.03				
			8.0/11.0	17.0/19.0		0.7		1	2	0.12			5C/0.90	0.06	0.15/0.35				
			10.0/13.0	16.5/18.5		2.25/3.00		1	2	0.12				0.06	0.06				
	640-900		3.50	25.50		1.00				0.10				0.04	0.03				
			36.0/46.0	15.0/25.0		1.5		3	2	0.75				0.05	0.05				
			4.0/7.00	21.0/27.0		1.75/3.00		1.5	1.5	0.08				0.04	0.04				
			55.0/65.0	10.0/20.0		1.5		3	2	0.75				0.05	0.05				
	510-740		9.0/13.0	17.0/19.0				0.75	2.00	0.08				0.05	0.03				
	510-740		9.0/13.0	17.0/19.0	0.2			0.75	2.00	0.08				0.05	0.03				Ta 0.10
			8.0/10.5	17.0/19.0		-		1	2	0.07				0.045	0.03				Cu 3.00/4.00
	400-600		0.50	12.00				0.50	0.50	0.15				0.02	0.01				
			1	10.5/12.5		-		1	1	0.08			6C/1.0	0.04	0.03				
	450-650		1.00	12.00		0.50		0.50	0.50	0.15				0.02	0.01				Cu 0.5
	590-780		1.00	13.00		0.60		1.00	1.25	0.15				0.07	0.07				
	750-950		1.00	12.50				1.00	1.00	0.20				0.04	0.04				
			3.5/4.5	11.5/14.0		0.40/1.0		1	1	0.06				0.04	0.03				
	450-650		1.00	16.00				1.00	1.00	0.08				0.04	0.03				
	950		2.00	16.00				1.00	1.00	0.20				0.04	0.03				
79HRB	510	78	0.25	20.00				0.39	0.30	0.01				0.02	0.00			0.50	Nb 0.8
	450-650		1.00	17.00		0.75				0.08									
			2.0/3.0	15.0/18.0		0.6		1	1.5	0.12/0.20				0.04	0.03				
80HRB	500		0.5	18.2		1.9		0.45	0.3	0.013		0.13		0.03	0.002				
			4	25.0/30.0		1.5		2	1	1.0/2.0				0.05	0.05				
40-49HRC	1270-1650		7.5/9.5	11.0/12.5		0.5		0.5	0.5	0.05		0.8/1.4		0.04	0.03			1.5/2.5	

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Materials Cross Reference Chart

Stainless Steels

Commercial Name	ATI Allvac ATI Allegheny Ludlum ATI WahChang	UNS Number	UK: BS,EN	Suède: SS	USA: AISI/SAE	Germany: Wnr	Germany: DIN	France: AFNOR	Italy: UNI	Spain: UNF	Japan: JIS
Stainless Steels											
610	ATI 610™	UNS S30600									
611	ATI 611™	UNS S30601									
0Cr19Ni9											
1Cr12Ni3Mo2VN-5											
201LN	ATI 201LN™-MIL	UNS S20153									
304 L	ATI 304L™		304S11	2352	304L	1.4306		Z2CN1810	X2CrNi18 11		
304 LN			304S62	2371	304LN	1.4311	X2CrNiN18-10	Z2CN18.10	X2CrNiN1811		SUS304LN
316 L	ATI 316L™	UNS S31603 & S31673	316S13	2348	316L	1.4404	X2CrNiMo18-12	Z2CND17.12	X2CrNiMo17 12		SCS16;SUS316L
316 LN	ATI 316LN™		316S63	2375	316LN	1.4429	X2CrNiMoN18-13	Z2CND17.13			SUS316LN
316 LXN	AL 316LXN					1.4429	X2CrNiMoN17-13-3	Z2CND17 13	X2CrNiMoN17-13-3		
316 Ti	ATI 316Ti™		320S31		316Ti	1.4571	X8CrNiMoTi17-12-2		X6CrNiTi18 11	F.3535	
316L (S+Cu)							X2CrNiMo17-12-2+S+Cu				
316L Decolletage							X2CrNiMo17-12-2 improved				
317 L	ATI 317L™	UNS S31703	317S12	2367	317L	1.4438	X2CrNiMo18-16	Z2CND19.15	X2CrNiMo18 16		SUS317L
321 H							X8CrNiTi18-10				
403Cb					403Cb						
403Cb+						1.4914	X19CrMoVNb11-1	Z20CDNbV11			SUH600
409 Cb	ATI 409Cb™										
409 HP	ATI 409HP™	UNS S40930									
410 S	ATI 410S™	UNS S41008									
420 F		UNS S42020	420S45	2304	420F	1.4028	X30Cr13	Z29CF13 / Z40C14	X40Cr14	F.3404 / X40Cr13	SUS420J2
430 F				2383	430F	1.4104	X12CrMoS17	Z10CF17	X10CrS17	F.3117	SUS430F
431 (HT)					431	1.4057	X17CrNi16-2				
436 S	ATI 436S™										
439 HP	ATI 439 HP™	UNS S43035									
440 A	ATI 440A™					1.4109	X70CrMo15				
440 C	ATI 440C™				440C		X105CrMo17	Z100CD17	X102CrMo17KU		SUS 440C
441 HP	ATI 441 HP™										
904 L	ATI 904L™	UNS N08904		2562		1.4539	X1CrNiMoCu25-20-5				
A286	A286 Alltemp®	UNS S66286	HR5152		ASTM 638		X5NiCrTi26-15	Z06NCT25			
AL 29-4C	AL 29-4C®	UNS S44735									
AL-6XN	AL-6XN®	UNS N08367									
AL-6XN Plus	AL-6XN Plus®	UNS N08367									
AM 350	AM 350®										
Bioline 4C27A					420F						
CF-8			304C15	2333	CF-8	1.4308	X6CrNi18-9	Z6CN18.10M			SCS13
CF-8M			316C6 ANC4B	2343	CF-8M	1.4408	X6CrNiMo18-10		X2CrNiMoN17-12	F.8414-AM-X7CrNi-Mo20-10	SCS14
Custom 465											
Datalloy 2	ATI Datalloy 2®										
Duplex 2003	ATI 2003®	UNS S32003									
Duplex 2102	ATI 2102®	UNS S80211									

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Materials Cross Reference Chart

Stainless Steels

Hardness HRB HRC HB	Rm N/mm ²	Fe	Ni	Cr	Co	Mo	W	Si	Mn	C	Al	Ti	Li	P	S	Mg	Zn	Cu	Others
Stainless Steels																			
HRB86	560	58.9/65.3	14/15.5	17/18.5		2		3.7/4.3	2	0.018				0.02	0.02			0.5	
HRB91	620	58/60	17/18	17/18.5		0.2		5.0/5.6	0.5/0.8	0.015				0.03	0.013			0.35	
			9.00	19.00															
			3.00	12.00		2.00													
217-241HB	840	67.7	5.5	18				1	7.5	0.15				0.06	0.03				
	460-680		10.00	19.00				0.50	1.00	0.02				0.02	0.02				
	550-760		10.00	18.00				1.00	2.00	0.03				0.05	0.03				
	490-690		12.00	17.00		2.50		0.50	1.00	0.02				0.02	0.02				
	490-600		12.00	17.00		2.50		0.50	1.00	0.02				0.02	0.02				Nitrogene 0.14
	580-800		13.00	17.50		2.75		1.00	2.00	0.03				0.05	0.03				
	500-730		12.00	17.50		2.25		1.00	2.00	0.08		5.00		0.05	0.03				
	600-980																		
	600-980																		
HB217	900	63	11.0/15.0	18.0/20.0		3.0/4.0		0.75	2.00	0.03				0.04	0.03				
			9.0/12.0	17.0/19.0		-		1	2	0.04/0.10		5C/0.80		0.04	0.03				
	800-950		0.50	12.00				0.35	0.50	0.14									Nb 0.18
	930-1080		0.55	11.10		0.60		0.35	0.70	0.17									V 0.3 Nb 0.28
84-97HRB	700	86	0.25	12.3		0.04		0.35	0.35	0.15	0.1	0.005		0.025	0.005				Nb 0.45
71HRB	430																		
75HRB	450	87	0.60	12.00				1.00	1.00	0.08				0.04	0.03				
300-500HB	1050-1300			12/14		0.60		1.00	1.25	0.15				0.06	0.15				
	640-840		1.00	17.00		0.50		1.00	1.25	0.12				0.06	0.15				
45/56HRc	1270-1650																		
			-	16.0/18.0		0.75/1.25		1	1	0.12				0.04	0.03				
	568-818	81	0.23	17.0/19.0				0.55	0.45	0.012		0.4		0.02	0.001				
31-54HRC	1000-1800	81	0.5	16.0/18.0		0.75		1	1	0.07				0.04	0.03				
		82		16.5						1									
HRB82	520	79	0.3	18				0.34	0.35	0.009	0.05	0.29		0.023	0.002				Nb 0.71
	620		24.50	20.50		4.50		0.50	1.60	0.02				0.04					Cu 1.5
	620		25.00	14.50		1.25		0.20	0.20	0.04		2.10		0.02	0.00				
90HRB	610	65	0.3	29		4		0.35	0.5	0.02				0.03	0.01				Nb 0.6
183HB	600	48	24	20.5		6.3		0.4	0.4	0.02								0.2	N 0.22
183HB	600	45	25.3	21.8		6.7		0.3	0.3	0.02				0.02				0.2	N 0.24
	1175		4.30	16.50		2.80		0.30	0.80	0.09				0.02					
350-575HV	1130-1860	82.4	< 0.8	13		1.2		0.6	1.6	0.22				0.03	0.18				
	440-640																		
	440-640																		
	1300-1700		10.8/11.3	11/12		0.8/1.2						1.5/1.8							
300-350HB	1100		2.30	15.30				0.30	15.10	0.03									N 0.4
31HRC	1000	73.8	3.5	21		1.7													
246HB	800		1.5	22		0.55		0.75	2.5	0.03				0.04	0.02			0.4	

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Commercial Name	ATI Allvac ATI Allegheny Ludlum ATI WahChang	UNS Number	UK: BS,EN	Suède: SS	USA: AISI/SAE	Germany: Wnr	Germany: DIN	France: AFNOR	Italy: UNI	Spain: UNF	Japan: JIS
Stainless Steels											
Duplex 2205	ATI 2205™	UNS S31803 & S32205			ASTM A240						
Duplex 2304	ATI 2304™	UNS S32304									
Duplex 255	ATI 255™	UNS S32550									
Duplex F51			318S13	2377	F51	1.4462	X2CrNiMoN22-5-3	Z2CND22.05.03			
Duplex F55											
Duplex LDX2101											
E-Brite Alloy	ATI E-BRITE®				ASTM B625						
FV607	ATI FV607™										
H46	ATI H-46™										
Jethete M152	ATI Jethete™ M152	UNS S64152			5718.9	1.4939	X12CrNiMoV12-3	Z12CND12			
Jethete M448											
Jethete X19							X19CrMoNbVN11-1				
Jethete X20						1.4923	X21CrMoV12-1	Z21CDV12			
Nitronic 50											
Nitronic 60											
REX 734	ATI REX 734™	UNS S31675			ASTM F1586						
S240	ATI S240®										
Staballoy AG17	ATI Staballoy® AG17®										
Staybrite® 4435NCu							X2CrNi18-13-3				
Super duplex 2507							X2CrNiMoCuN25-6-3				
Super Duplex 4565	ATI 4565™	UNS S34565									
Super Duplex Zeron 100	Zeron® 100				ASTM 32760						
Uranus 35N		UNS S32304					X2CrNiN23-4				
Uranus 45N+		UNS S31803		2377		1.4462	X2CrNiMoN22-5-3	Z3CND2205Az			
Uranus 45N2CrMo							X2CrNiMoN22-5-3				
Uranus 47N+							X2CrNiMoN25-6-3				
Uranus 52N+							X2CrNiMoCuN25-6-3				
Uranus 65							X1CrNi25-21				
Uranus B25 6Mo							X1NiCrMoCuN20-18-7				
Uranus B26 6Mo		UNS N08926					X1NiCrMoCuN25-20-7				
Uranus B28		UNS N08028					X1NiCrMoCu31-27-4				
Uranus B6	ATI 904L™	UNS N08904		2562		1.4539	X1NiCrMoCuN25-20-5				
Uranus B66							X1NiCrMoCu22-24-6				
Uranus S1 4%Si		UNS S30600					X1CrNiSi18-15-4				
X12CrNiMoS18-11						1.4427	X12CrNiMoS18-11	Z3CND17.13			
X12CrNiWTi16-3							X12CrNiWTi16-3				
X17CrNi16-02						1.4057	X17CrNi16-02				
X20CrNi17-2							X20CrNi17-2				
X20CrNiMo22-5-3							X20CrNiMo22-5-3				
X20CrNiMoS13-1							X20CrNiMoS13-1				
X22CrMoV12.1	ATI FV448™				ASTM A437-76 Grade B4B		X22CrMoV12-1 = ST12T				
X2CrNiMo18-15-3							X2CrNiMo18-15-3				
X30Cr13							X30Cr13				
X30CrMoN15-1			420S45	2304		1.4028	X30CrMoN15-1	Z33C13			
X3CrNiCuTiNb12-9							X3CrNiCuTiNb12-9				

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Stainless Steels																			
	1000	68.9	5.8	22		3.3													
	950		4.50	22.50				1.00	2.00	0.03				0.04	0.02				
HRC32	1000	57.0/64.0	4.5/6.5	24.0/27.0		2.9/3.9		1	1.5	0.04				0.04	0.03			1.5/2.5	
225-290HB	900	72.6	4.5/6.5	21.0/23.0		2.50/3.5		1	2	0.03				0.035	0.015				
335HB	1100	58.7	4.5/6.5	24.0/26.0		3.0/4.0	0.08/0.2	1	2	0.03				0.03	0.02				N 2.5/3.5
248HB	850																		
	550			26.00		1.00				0.00									
290-349HV	930-1130		0.62	11.6		0.89		0.4	0.77	0.13									
304HB	1050	86	0.60	11.00		0.75		0.45	0.65	0.16				0.01	0.01			0.20	
	1100		2.60	16.80		1.80		0.18	0.70	0.12				0.03	0.02				
	> 930		1.00	10.50		0.60		0.40	1.00	0.13									Nb 0.4
	980		0.40	10.80		0.70		0.30	0.60	0.20									
			0.60	11.80		1.00		0.30	0.60	0.20									
260HB	860		13.50	23.50		3.00		1.00	6.00	0.06									
260HB	860		9.00	18.00		0.75		4.50	9.00	0.10									
22HRC	780	62	10.00	20.80		2.50		0.38	3.12	0.04				0.01	0.01			0.12	
32-34HRC	1070	69.2	10.75	12.5		1.75	1.5	0.25	0.25	0.03	1.5	0.7		0.01	0.01			1.5	
			0.50	17.00		0.05		0.30	20.00	0.03									N 0.5
	490-690		13	18		2.5		0.7	1.3	0.02								0.5	N 0.12
			7.50	25.00		4.00		0.70	2.00	0.03					0.02			2.50	
180HB	600		16.0/18.0	23.0/25.0		4.0/5.0			5.0/7.0	0.03									
284HB	1000		7	25		3.5		0.75	1	0.05				0.03	0.01			0.75	W 0.75
220HB	770	69.5	3.5/5.5	22.0/24.0		0.10/0.60		1	2	0.03				0.035	0.015				Cu 0.10/0.60
225HB	800	67.8	6	22.6		3.4				0.02					0.001				
225HB	800	72.6	4	23		2		1	2	0.03				0.035	0.015				
28HRC	1000	64.6	6.5	25		3.6				0.03									
28HRC	1000	63	6.5	25		3.5				0.03								1.5	
155HB	600	52.5	20.5	25		0.3			2	0.015									
230HV	810	55	18	20		6.1				0.01					0.001			0.7	
220HV	800	47	25	20.5		6.3				0.01					0.001			1	
300HB	1050	37.4	31	27		3.5		0.7	2	0.02				0.03	0.01			1	
200HB	620		24.50	20.50		4.50		0.50	1.60	0.02				0.04				1.5	
240HB	840	41.1	22	24		6	2		3									1.5	
		64.5	14.5	17				4		0.015									
	750-1000																		
			13.50	16.00				0.50	1.00	0.15		0.50		0.05	0.03				
296HB	950		1.5-2.5	16				1	1.5	0.12-0.22				0.04	0.03				
	750-950		2.00	17.00				0.80	0.80	0.20				0.04	0.03				
			5.00	22.00		3.00													
	1500																		
	980		0.60	11.80		1.00		0.30	0.60	0.21				0.04	0.04				
	900-1150																		
	1000		1	13				1	1	0.26-0.35				0.04	0.03				
53-57HRc																			
	1300-1700																		

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 ◆ H Hard Materials

Materials Cross Reference Chart

Stainless Steels /
Refractory PH Steels

Commercial Name	ATI Allvac ATI Allegheny Ludlum ATI WahChang	UNS Number	UK: BS,EN	Suède: SS	USA: AISI/SAE	Germany: Wnr	Germany: DIN	France: AFNOR	Italy: UNI	Spain: UNF	Japan: JIS
Stainless Steels											
X40CrMoVN16-2			420S25		ASTM F899	1.4123	X40CrMoVN16-2	Z40CDV16.02			
X46CrS13							X46CrS13				
X4CrNiMo16-5-1						1.4418	X4CrNiMo16-5-1	Z8CND17.04			
X8CrCoNiMo10-6	ATI FV535™										
X8CrMnMoN23-21-1							X8CrMnMoN23-21-1				
X8CrNiCu18-9							X8CrNiCu18-9				
X90CrMoV18							X90CrMoV18				
XM19	ATI XM-19™	UNS S20910			ASTM F1314						
Stainless Steel Refractory PH											
13-8PH	ATI 13-8Mo™	UNS S13800									
15-5PH	ATI 15-5™	UNS S15500				1.454	X4CrNiCuNb16.4	Z6CNU15.05			
15-7PH	ATI 15-7™					1.4532	X7CrNiMoAl15.7	Z8CND15.07			
17-4PH	ATI 17-4™	UNS S17400				1.4542	X5CrNiCuNb17-4 = 0Cr17Ni4Cu4Nb	Z6CNU17.04			
17-7PH	ATI 17-7™		316S111		177PH	1.4568/1.4504	X7CrNiAl17.7	Z8CNA17.07	X2CrNiMo17 12		
309	ATI 309™		309S24		309	1.4828	X15CrNiSi20-12	Z15CNS20.12			SUH309
309 S			309S24		309 S	1.4833	X7CrNi23-14	Z20CN24-13	X6CrNi23-14		SUS309S
310 S	ATI 310S™		310S24	2361	310S	1.4845	X12CrNi25-20	Z12CN25.20	X6CrNi25 20	F.331	SUH310
314			314		30314	1.4841	X15CrNiSi25-20				
330			NA17		330	1.4864	X12NiCrSi36-16	Z12NCS35.16			SUH330
405	AL 405		405S17		405	1.4724	X10CrAl13	Z10C13	X6CrAl112	F.311	SUS405
446				2322	446	1.4762	X10CrAl24	Z10CAS24	X16Cr26		SUH446
B163			NA15(H)		B163	1.4876	X10NiCrAlTi32-20	Z10NC32.21		F.3314-X10Ni- CrAlTi32-20	NCF800(TP)
EV8			349S54		EV8	1.4871	X53CrMnNiN21-9	Z52CMN21.09	X53CrMnNiN21-9		SUH35 / SUH36
HK			310C40 / 310C45		HK	1.4848	X40CrNiSi25-20		GX40CrNi26-20	F.8452-AM- X40CrNi2520	SCH21 / SCH22
HNV3			401S45		HNV3	1.4718	X45CrSi9-3	Z45CS9	X45CrSi8	F.3220-X45CrSi09-03	SUH1
X10CrAl18						1.4742	X10CrAl18	Z10CAS18	X8Cr17	F.3153-X10CrAl18	SUH21
X40CrSiMo10-2						1.4731	X40CrSiMo10-2	Z40CSD10		F.3221-X40CrSi- Mo10-02	SUH3
X40NiCrSi38-18			330C11 / 330C40 / 331C40			1.4865	X40NiCrSi38-18		GX50NiCr39-19		SCH15 / SCH16
X45CrNiW18-9						1.4873	X45CrNiW18-9	Z35CNWS14.14	X45CrNiW18-9	F.3211- X45CrNiSiW18-09	SUH31

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Materials Cross Reference Chart

Stainless Steels /
Refractory PH Steels

Hardness HRB HRC HB	Rm N/mm ²	Fe	Ni	Cr	Co	Mo	W	Si	Mn	C	Al	Ti	Li	P	S	Mg	Zn	Cu	Others
Stainless Steels																			
58HRc																			
55HRc	1200		6.00	15.50		1.50		1.00	1.50	0.05				0.04	0.02				
34HRC	1070		0.2-0.8	9.8-11.2		0.5-1.0	0.7	0.1-0.7	0.6-1.15	0.06-0.11									
	1300																		
	500-700																		
60HRC																			
90HRB	600	57	12.00	22.00		2.30		0.50	5.00	0.03				0.02	0.02				
Stainless Steel Refractory PH																			
	1300		8.00	13.00		2.20		0.10	0.20	0.05				0.01	0.01				
	<1400		4.50	14.80				0.50	0.50	0.03				0.02	0.02			3.50	
	<1620		7.00	15.00		2.50		0.50	0.50	0.05				0.02	0.02				
	<1380		4.00	16.30				0.50	0.50	0.04				0.02	0.02			4.00	
	<1560		7.00	17.00				0.50	0.50	0.05				0.02	0.02				
	500-750		14.00	23.50				2.00	1.50	0.20				0.04	0.04				
	500-700																		
	500-750		20.50	25.00				0.75	2.00	0.15				0.05	0.03				
			19.0/22.0	23.0/26.0		-		1.50/3.00	2.5	0.25				0.045	0.03				
	390-590		38.00	18.80				1.75	1.00	0.40				0.05	0.03				
	450-650		0.50	12.00				0.50	1.00	0.08				0.04	0.03				
	520-720			25.00				1.00	1.00	0.12				0.04	0.03				
	450-680																		
	950-1300																		
	440-640																		
	900-1100																		
	500-700																		
	130-1100																		
	400-600																		
	800-1300																		

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Materials Cross Reference Chart

Cast Irons

Commercial Name	ATI Allvac ATI Allegheny Ludlum ATI WahChang	UNS Number	UK: BS,EN	Suède: SS	USA: AISI/SAE	Germany: Wnr	Germany: DIN	France: AFNOR	Italy: UNI	Spain: UNF	Japan: JIS
Gray Iron											
GG-30 / EN-GJL-300			Grade 300	130-00	A48-45B	0.6030	GG-30	Ft30D	G30	FG30	FC30
GG-35 / EN-GJL-350			Grade 350	135-00	A48-50B	0.6035	GG-35	Ft35D	G35	FG35	FC35
GG-40 / EN-GJL-400			Grade 400	140-00	A48-55B	0.6040	GG-40	Ft40D			
GG10 / EN-GJL-100			Grade 100	110-00	A48-20B	0.6010	GG10	Ft10D	G10	FG10	FC10
GG15 / EN-GJL-150			Grade 150	115-00	A48-25B	0.6015	GG15	Ft15D	G15	FG15	FC15
GG20 / EN-GJL-200			Grade 200	120-00	A48-30B	0.6020	GG20	Ft20D	G20	FG20	FC20
GG25 / EN-GJL-250			Grade 250	125-00	A48-35B	0.6025	GG25	Ft25D	G25	FG25	FC25
Spheroidal-Ductile Iron											
GGG-40Mo0.5			500/7	0727-02	65-45-12	0.7050	GGG-50	FGS 500-7	GS 500/7	FGE 50-7	FCD 50
GGG-SIM3.08											
GGG-SIM4.10											
GGG-SIM5.10											
GGG-35.3 / EN-GJS350-22				0717-15		0.7033	GGG-35.3				
GGG-40 / EN-GJS400-1			420/12	0717-02	60-40-18	0.7040	GGG-40	FGS 400-12	GS 400-12	FGE 38-17	FCD 40
GGG-50 / EN-GJS500-7											
GGG-60 / EN-GJS600-3			600/3	0732-03	80-55-06	0.7060	GGG-60	FGS 600-3	GS 600/3		FCD 60
GGG-70 / EN-GJS700-2			700/2	0737-01	100-70-03	0.7070	GGG-70	FGS 700-2	GS 700-2	FGS 70-2	FCD 70
GGG-80 / EN-GJS800-2			800/2		120-90-02	0.7080	GGG-80	FGS 800-2	GS 800-2		
GGG-Ni22 / EN-GJSAXNi22			S-Ni 22		A 439 Type D-2C	0.7670	GGG-Ni22	S-N 22			
GGG-Ni35 / EN-GJSAXNi35			S-Ni 35		A 439 Type D-5	0.7683	GGG-Ni35	S-N 35			
GGG-NiCr20.3			S-NiCr 20 3		A 439 Type D-2B	0.7661	GGG-NiCr20.3	S-NC 20 3			
GGG-NiCr202 / EN-GJSAXNiCr20-2			S-NiCr 20 2		A 439 Type D-2	0.7660	GGG-NiCr20.2	S-NC 20 2			
GGG-NiCr30.1			S-NiCr 30 1		A 439 Type D-3A	0.7677	GGG-NiCr30.1	S-NC 30 1			
GGG-NiCr303 / EN-GJSAXNiCr30-3			S-NiCr 30 3		A 439 Type D-3	0.7676	GGG-NiCr30.3	S-NC 30 3			
GGG-NiCr353 / EN-GJSAXNiCr35-3			S-NiCr 35 3		A 439 Type D-5B	0.7685	GGG-NiCr35.3	S-NC 35 3			
GGG-NiCrNb20.2						0.7659	GGG-NiCrNb20.2				
GGG-NiMn13.7			S-NiMn 13 7			0.7652	GGG-NiMn13.7	S-NM 13 7			
GGG-NiMn234 / EN-GJSAXNiMn23-4			S-NiMn 23 4		A 571 Type D-2M	0.7673	GGG-NiMn23.4	S-NM 23 4			
GGG-NiSi3055 / EN-GJSAXNiSiCr30-5.5			S-NiSiCr 30 5 5		A 439 Type D-4	0.7680	GGG-NiSiCr30.5.5	S-NSC 30 5 5			
GGG-NiSiCr20.5.2			S-NiSiCr 20 5 2			0.7665	GGG-NiSiCr20.5.2	S-NSC 20 5 2			
GGG-NiSiCr30.5.2						0.7679	GGG-NiSiCr30.5.2				
GGG-NiSiCr35.5.2						0.7688	GGG-NiSiCr35.5.2				
Malleable Iron											
GTS-35-10 / MN35-10			B 340/12	815	32510	0.8135	GTS-35-10	MN 35-10			
GTS-45-06 / MN450-6							GTS-45-06	MN450-6			
GTS-55-04 / MP50-5								MP50-5			
GTS-65-02 / MN650-3			P 570/3	858	70003	0.8165	GTS-65-02	MN650-3			
GTS-70-02 / MN700-2			P 690/2	862	A220-80002	0.8170	GTS-70-02	MN700-2	GMN 70		
GTW-35-04						0.8035	GTW-35-04				
GTW-40-05						0.8040	GTW-40-05				
GTW-45-07						0.8045	GTW-45-07				

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Materials Cross Reference Chart

Cast Irons

Hardness HRB HRC HB	Rm N/mm ²	Fe	Ni	Cr	Co	Mo	W	Si	Mn	C	Al	Ti	Li	P	S	Mg	Zn	Cu	Others
Gray Iron																			
230HB	760																		
235HB	770																		
250HB	810																		
175HB	570																		
185HB	620																		
205HB	660																		
220HB	730																		
Spheroidal-Ductile Iron																			
150-200HB	660																		
200-250HB	810																		
200-250HB	810																		
200-250HB	810																		
150-180HB	600																		
155-220HB	730																		
190-255HB	820																		
200-260HB	840																		
240-300HB	970																		
265-300HB	970																		
130-170HB	570																		
130-180HB	600																		
	390																		
140-200HB	660																		
	370																		
140-200HB	660																		
140-190HB	630																		
	370																		
	390																		
120-170HB	570																		
170-240HB	780																		
	370																		
	380																		
	370																		
Malleable Iron																			
150HB	350-500																		
175HB	580																		
205HB	670																		
230HB	650-880																		
265HB	700-950																		
	340-740																		
	360-740																		
	400-740																		

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Materials Cross Reference Chart

Aluminum & Alloys

Hardness HRB HRC HB	Rm N/mm ²	Fe	Ni	Cr	Co	Mo	W	Si	Mn	C	Al	Ti	Li	P	S	Mg	Zn	Cu	Others
Aluminum & Alloys <16% Si																			
105	0.4	-	-	-	-	-	-	0.25	0.5	-	99.50min	-	-	-	-	0.05	0.05	0.05	-
100	0.25	-	-	-	-	-	-	0.25	0.03	-	rem	0.03	-	-	-	0.03	0.04	0.04	-
100	0.15	-	-	-	-	-	-	0.25	0.02	-	rem	0.03	-	-	-	0.02	0.03	0.03	-
90	Si+Fe1.0max	-	-	-	-	-	-	0.05	-	-	99.00min	-	-	-	-	-	0.1	0.05-0.20	-
310	0.7	-	-	-	-	-	-	0.4	-	-	rem	-	-	-	-	-	0.3	50-60	Pb,Bi 0.2-0.6
430	0.7	-	0.1	-	-	-	-	0.5-1.2	0.4-1.2	-	rem	0.15	-	-	-	0.2-0.8	0.25	3.9-5.0	-
390	0.7	-	0.1	-	-	-	-	0.2-0.8	0.4-1.0	-	rem	0.15	-	-	-	0.4-0.8	0.25	3.5-4.5	-
465	0.5	-	0.1	-	-	-	-	0.5	0.3-0.9	-	rem	0.15	-	-	-	1.2-1.8	0.25	3.8-4.9	-
296	0.7	-	0.1	-	-	-	-	0.8	0.2	-	rem	-	-	-	-	0.2-0.5	0.25	2.2-3.0	-
331	1	1.7-2.3	0.1	-	-	-	-	0.9	0.2	-	rem	-	-	-	-	1.2-1.8	0.25	3.5-4.5	-
	0.15	-	0.1	-	-	-	-	0.12	0.30-0.9	-	rem	0.15	-	-	-	1.2-1.8	0.25	3.8-4.4	-
140	0.7	-	-	-	-	-	-	0.6	1.0-1.5	-	rem	-	-	-	-	-	0.1	0.05-0.20	-
200	0.7	-	-	-	-	-	-	0.3	0.51-1.0	-	rem	-	-	-	-	0.8-1.3	0.25	0.25	-
165	0.7	-	0.1	-	-	-	-	0.6	1.0-1.5	-	rem	0.1	-	-	-	0.2-0.6	0.25	0.3	-
	0.7	-	0.1	-	-	-	-	0.5	0.9-1.5	-	rem	0.1+Zr	-	-	-	0.3	0.2	0.1	-
175	0.7	-	0.2	-	-	-	-	0.6	0.3-0.8	-	rem	0.1	-	-	-	0.2-0.8	0.4	0.3	-
159	0.7	-	0.1	-	-	-	-	0.3	0.2	-	rem	-	-	-	-	0.5-1.1	0.25	0.2	-
260	0.4	-	0.15-0.35	-	-	-	-	0.25	0.1	-	rem	-	-	-	-	2.2-2.8	0.1	0.1	-
300	0.4	-	0.05-0.20	-	-	-	-	0.3	0.05-0.20	-	rem	-	-	-	-	4.5-5.6	0.1	0.1	-
335	0.4	-	0.05-0.25	-	-	-	-	0.4	0.4-1.0	-	rem	0.15	-	-	-	4.0-4.9	0.25	0.1	-
300	0.5	-	0.05-0.25	-	-	-	-	0.4	0.20-0.7	-	rem	0.15	-	-	-	3.5-4.5	0.25	0.1	-
269	0.4	-	-	-	-	-	-	0.45	0.1	-	rem	-	-	-	-	3.1-3.9	0.2	0.1	-
	0.7	-	0.1	-	-	-	-	0.5	0.2-0.7	-	rem	0.1	-	-	-	1.6-2.2	0.25	0.25	-
276	0.4	-	0.05-0.2	-	-	-	-	0.25	0.5-1.0	-	rem	0.05-0.2	-	-	-	2.4-3.0	0.25	0.1	-
193	0.1	-	-	-	-	-	-	0.08	0.03	-	rem	-	-	-	-	0.6-1.0	-	0.1	-
	0.4	-	0.3	-	-	-	-	0.4	0.5	-	rem	0.15	-	-	-	2.6-3.6	0.2	0.1	-
300	0.7	-	0.04-0.35	-	-	-	-	0.4-0.8	0.15	-	rem	0.15	-	-	-	0.8-1.2	0.25	0.15-0.40	-
200	0.35	-	0.1	-	-	-	-	0.2-0.6	0.1	-	rem	0.1	-	-	-	0.45-0.9	0.1	0.1	-
379	0.5	-	0.1	-	-	-	-	1.0-1.7	0.40-1.0	-	rem	0.15	-	-	-	0.50-1.2	0.25	0.15-0.40	-
	1	-	0.15-0.35	-	-	-	-	0.6-1.2	0.2	-	rem	0.15	-	-	-	0.45-0.8	0.25	0.35	-
400	0.7	-	0.04-0.14	-	-	-	-	0.4-0.8	0.15	-	rem	0.15	-	-	-	0.8-1.2	0.25	0.15-0.40	Pb, Bi 0.40-0.7
310	0.5	-	-	-	-	-	-	0.7-1.3	0.4-0.8	-	rem	0.2	-	-	-	0.40-0.8	0.2	0.1	-
241	0.15	-	-	-	-	-	-	0.20-0.6	0.05	-	rem	-	-	-	-	0.45-0.9	0.05	0.2	-
	0.4	-	0.18-0.35	-	-	-	-	0.35	0.2	-	rem	0.2	-	-	-	2.6-3.4	6.8-8.0	1.6-2.6	-
400	0.35	-	0.2	-	-	-	-	0.3	0.3	-	rem	0.2	-	-	-	0.50-1.0	5.0-6.5	0.2	Zr0.05-0.25
	0.4	-	0.1-0.35	-	-	-	-	0.35	0.05-0.5	-	rem	-	-	-	-	1.0-1.4	4.0-5.0	0.2	Zr0.08-0.2
	0.5	-	0.1-0.3	-	-	-	-	0.5	0.1-0.4	-	rem	-	-	-	-	2.6-3.7	4.3-5.2	0.5-1.0	-
530	0.15	-	0.04	-	-	-	-	0.12	0.1	-	rem	0.06	-	-	-	1.9-2.6	5.7-6.7	2.0-2.6	Zr0.08-0.15
570	0.5	-	0.18-0.28	-	-	-	-	0.4	0.3	-	rem	0.2	-	-	-	2.1-2.9	5.1-6.1	1.2-2.0	-
590	0.2	-	0.18-0.28	-	-	-	-	0.15	0.1	-	rem	0.1	-	-	-	2.1-2.9	5.1-6.1	1.2-2.0	-
600	0.5	-	0.18-0.35	-	-	-	-	0.4	0.3	-	rem	0.2	-	-	-	2.4-3.1	6.3-7.3	1.6-2.4	-
565	0.12	-	0.18-0.25	-	-	-	-	0.1	0.06	-	rem	0.06	-	-	-	1.9-2.6	5.2-6.2	1.2-1.9	-
50/90HB	250	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Aluminum & Alloys >16% Si																			
379	1	0.5-1.3	0.1	-	-	-	-	11.0-13.5	-	-	rem	-	-	-	-	0.8-1.3	0.25	0.5-1.3	-

Material Guide – Key to Recommended Inserts

Material Designation

- ◆ Unalloyed Steels
- ◆ Alloyed Steels
- ◆ Stainless Steels
- ◆ PH Stainless
- ◆ Cast Irons
- ◆ Aluminum & Alloys
- ◆ High Temp. Alloys
- ◆ Hard Materials

Materials Cross Reference Chart

Aluminum & Alloys

Commercial Name	ATI Allvac ATI Allegheny Ludlum ATI WahChang	UNS Number	UK: BS,EN	Suède: SS	USA: AISI/SAE	Germany: Wnr	Germany: DIN	France: AFNOR	Italy: UNI	Spain: UNF	Japan: JIS
Aluminum & Alloys <16% Si											
1050			1B			3.0255	Al99,5	A5	4507		
1070						3.0275	Al99,7		4508		
1080			1A			3.0128	Al99,8	A8	4509		
1100											
2011			FC1		2011	3.1655	AlCuBiPb	A-U5PbBi	6362		
2014			H15			3.1255	AlCuSiMn	A-U4SG	3581		
2017					2017	3.1325	AlCuMg1	A-U4G	3579		
2024			L97		2024	3.1355	AlCuMg2	A-U4G1			
2117											
2218							AlCuMgNi2				
2224											
3003						3.0517	AlMnCu	A-M1	3568		
3004						3.0526	AlMn1Mg1	A-M1G			
3005						3.0525	AlMn1Mg0,5	A-MG0,5			
3103			N3			3.0515	AlMn1		7780		
3105											
5005			N41		5005	3.3315	AlMg1	A-G0,6	5764-66		
5052			2L56		5052	3.3523	AlMg2,5	A-G2,5C	4574		
5056			N6		5056	3.3555	AlMg5	A-G5	3576		
5083			N8		5083	3.3547	ASiMg4,5Mn	A-G4,5MC	7790		
5086						3.3545	AlMg4Mn				
5154			N5			3.3535	AlMg3,5	A-G3	3575		
5251			N4			3.3525	AlMg2Mo3	A-G2M	3574		
5454			N51		5454	3.3537	AlMg2,5Mn	A-G2,5MC	7789		
5657							AlMg0,8Si				
5754			N5		5754	3.3535	AlMg3	A-G3M	3575		
6061			H20					A-GSUC	6170		
6063			H9		6063	3.3206	AlMgSi0,5	A-GS	3569		
6070											
6151											
6262											
6351			H30		6351	3.2315	AlMgSi1	A-SGM0,7	3571		
6463			91E			3.3207	EAlMgSi0,5		3570		
7001											
7003											
7020			H17			3.4335	AlZn4,5Mg1	A-Z5G	7791		
7022						3.4345	AlZnMgCu0,5				
7050											
7075			DTD5074		7075	3.4365	AlZnMgCu1,5	A-Z5GU	3735		
7175								ASSU3			
7178											
7475											
AS7G							AlSi7Mg				
Aluminum & Alloys >16% Si											
4032											

Material Guide – Key to Recommended Inserts

Material Designation

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 ◆ M PH Stainless
 ◆ K Cast Irons
 ◆ N Aluminum & Alloys
 ◆ S High Temp. Alloys
 ◆ H Hard Materials

Materials Cross Reference Chart

Aluminum & Alloys /
High Temp. Alloys

Commercial Name	ATI Allvac ATI Allegheny Ludlum ATI WahChang	UNS Number	UK: BS,EN	Suède: SS	USA: AISI/SAE	Germany: Wnr	Germany: DIN	France: AFNOR	Italy: UNI	Spain: UNF	Japan: JIS
Aluminum Lithium											
2050											
2090											
2091											
2094											
2095											
2097											
2098											
2099											
2195											
2196											
2197											
2198											
2199											
2297											
2397											
8017											
8024											
8090											
8091											
8093											
HTA Iron Based Alloys											
20CB-3	AL 20				ASTM B463						
21-6-9	AL 40				ASTM A666						
AL 4750	AL 4750				ASTM B753						
Armco 18											
Armco 20-45-5											
RA 330					5592, 5716						
Crucible A-286	ATI A286™	UNS S66286	HR 5152		ASTM 368	1.4980	X5NiCrTi2515	Z06 NCT 25			
Discaloy 16/25/6					5725			Z3NCT25			
Discaloy 24					ASTM A638			Z3NCT25			
Greek Ascology	AL 418™				5508						
Haynes 556					5768		X12CrCoNi2120	Z12CKND- WNB21.20.20			
Incoloy 800	ATI 800™	UNS N08800	3082.76		ASME SB409		X10NiCrAlTi3220	Z10NC3221			
Incoloy 801		UNS N08801			5552	1.4868	G.X50CrNi3030	Z5NCT3220			
Incoloy 802								Z4NC3221			
Incoloy 803											
Incoloy DS			3072.76				X12NiCrSi3616				
Invar 36	ATI 36™	UNS K93600 K93603			ASTM F1684						
Invar 42	AL 42™				ASTM F30						
Maraging C200	ATI VascoMax® C-200	UNS K92810									
Maraging C250	ATI VascoMax® C-250	UNS K92890			6501, 6512, 6520			Z2NKD18.8			
Maraging C300	ATI VascoMax® C-300	UNS K93120			6514						
Maraging C350	ATI VascoMax® C-350										
Maraging T200	ATI VascoMax® T-200										

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Materials Cross Reference Chart

Aluminum & Alloys /
High Temp. Alloys

Hardness HRB HRC HB	Rm N/mm ²	Fe	Ni	Cr	Co	Mo	W	Si	Mn	C	Al	Ti	Li	P	S	Mg	Zn	Cu	Others
Aluminum & Alloys >16% Si																			
	520			0.05				0.08	0.20-0.50		rem	0.1	0.70-1.30			0.20-0.60	0.25	3.20-3.90	Zr0.25
	510			0.05				0.1	0.05		rem	0.15	1.90-2.60			0.25	0.1	2.40-3.0	Zr0.08-0.15
	400			0.1				0.2	0.1		rem	0.1	1.70-2.3			1.10-1.90	0.25	1.80-2.50	Zr0.04-0.16
								0.12	0.25		rem	0.1	0.70-1.40			0.25-0.80	0.25	4.40-5.20	Zr0.04-0.18
								0.12	0.25		rem	0.1	0.70-1.40			0.25-0.80	0.25	3.90-4.60	Zr0.04-0.18
								0.12	0.10-0.60		rem	0.15	1.20-1.80			0.35	0.35	2.50-3.10	Zr0.08-0.16
								0.12	0.35		rem	0.1	0.80-1.30			0.25-0.80	0.35	3.20-3.80	Zr0.04-0.18
								0.05	0.10-0.50		rem	0.1	1.60-2.00			0.10-0.50	0.40-1.00	2.40-3.00	Zr0.05-0.12
								0.12	0.25		rem	0.1	0.08-0.16			0.25-0.80	0.25	3.70-4.30	Zr0.08-0.16
								0.12	0.35		rem	0.1	1.40-2.10			0.25-0.80	0.35	2.50-3.30	Zr0.04-0.18
								0.1	0.10-0.50		rem	0.12	1.20-1.70			0.25	0.05	2.50-3.10	Zr0.08-0.15
				0.05				0.08	0.5		rem	0.1	0.80-1.10			0.25-0.80	0.35	2.90-3.50	Zr0.04-0.18
								0.05	0.10-0.50		rem	0.1	1.40-1.80			0.050-0.40	0.20-0.90	2.30-2.90	Zr0.05-0.12
								0.1	0.10-0.50		rem	0.12	1.10-1.70			0.25	0.05	2.50-3.10	Zr0.08-0.15
								0.1	0.10-0.50		rem	0.12	1.10-1.70			0.25	0.05-0.15	2.50-3.10	Zr0.08-0.15
								0.1	0.01-0.05		rem		0.003				0.05	0.10-0.20	
								0.1			rem		3.40-4.20						Zr0.08-0.25
	450			0.1				0.2	0.1		rem	0.1	2.20-2.70			0.60-1.30	0.25	1.00-1.60	Zr0.04-0.16
				0.1				0.3	0.1		rem	0.1	2.40-2.80			0.50-1.20	0.25	1.60-2.20	Zr0.08-0.16
				0.1				0.1	0.1		rem	0.1	1.90-2.60			0.90-1.60	0.25	1.00-1.60	Zr0.04-0.14
HTA Iron Based Alloys																			
95HRB	690	41.0	33.0	20.0		2.2		1	2	0.07									Cu 3.3
93HRB	660	62.0	6.5	21.0				1	9	0.08									No 0.3
55HRB	350	50.0	48.0	0.1	0.5	0.3			0.3	0.01					0.03	0.01			Cu 0.3
		66.0	3.7	17.2				0.47	12.5	0.06									
		25.6	46.0	20.0		2.3		1	5	0.08									Nb 0.4
		43.8	35.5	18.5				1.13	1	0.04					0.01	0.01			Cu 0.5
250HB	810	56.0	25.0	14.5		1.3		0.2	0.2	0.05	0.2	2.1							
290HB	930	50.1	25.0	16.0		6.0		0.7	1.35	0.12		0.3							Nb 0.4
280HB	900	54.3	26.0	13.5		2.7		0.8	0.9	0.04	0.1	1.7							
300HB	970	80.0	2.0	12.0		0.2	2.5	0.3	0.4	0.15									
260HB	840	29.0	20.0	21.0	20.0	3.0	2.5	0.4	1.5	0.1	0.3								Nb + Ta
184HB	630	44.5	32.5	21.0				0.5	0.75	0.05	0.37	0.37			0.007				Cu 0.37
180HB	600	45.1	32.0	20.5				0.5	0.8	0.05		1.1							
180HB	600	44.4	32.5	21.5				0.4	0.8	0.4									
		39.0	35.0	25.0						0.08	0.15	0.15							
180HB	600	41.7	37.0	18.0				2.3	1	0.06									
75HRB	460	62.0	36.0		0.4	0.0		0.15	0.3	0.008	0.03				0.001				
55HRB	350	58.0	41.0	0.2	0.0				0.2	0.01	0.001				0.01	0.007			
43-48HRC	1360	69.0	18.5		8.5	3.3		0.05	0.05	0.01		0.2			0.005	0.005			
48-52HRC	1590	68.0	18.5		7.8	4.8		0.05	0.05	0.02	0.1	0.4			0.005	0.005			
50-55HRC	1700	67.0	18.5		8.8	4.8		0.05	0.05	0.02	0.1	0.73			0.005	0.005			
55-60HRC	2010	63.0	18.5		12.0	4.8		0.05	0.05	0.02	0.1	1.4			0.005	0.005			
43-47HRC	1400	77.6	18.5			3.0		0.05	0.05	0.01		0.7			0.005	0.005			

Material Guide – Key to Recommended Inserts

Material Designation

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Materials Cross Reference Chart

High Temp. Alloys

Commercial Name	ATI Allvac ATI Allegheny Ludlum ATI WahChang	UNS Number	UK: BS,EN	Suède: SS	USA: AISI/SAE	Germany: Wnr	Germany: DIN	France: AFNOR	Italy: UNI	Spain: UNF	Japan: JIS
HTA Iron Based Alloys											
Maraging T250	ATI VascoMax® T-250				6518, 6519, 6591						
Maraging T300	ATI VascoMax® T-300										
Marval 18											
Marval X12											
Multimet N-155					5768	1.4971		Z12CNKDW20			
Multimet N-156											
S 590					5533		X40CoCrNi2020	Z42CKNDW			
Sanicro 30							X2NiCrAlTi3220				
Super Invar 32-5											
Udimet B-250											
Udimet B-300											
W-545					AISI:665			Z8NCTDA2613			
HTA Cobalt Based Alloys											
F 1537	ATI TJA-1537 ®	UNS R31537 & R31538			ASTM F1537			CoCr28Mo			
Fe50Co50											
HS 21			3531		ASTM F-75		CoCr28Mo	KC27D5NFe			
HS 25					AISI 670		CoCr20W15Ni	KC20WN			
HS 30					5380		CoCr26Ni14Mo				
HS 31			3146		ASTM A567		CoCr25NiW	KC25NW			
HS 36							CoCr19W14NiB				
Jetalloy 209											
K13C20N126		UNS R3003 & R3008			ASTM F1058		K13C20N126Fe15D7	K13C20N126Fe15D7			
L 251											
L 605	ATI L-605™	UNS R30605			5759	2.4964	CoCr20W15Ni	KC20WN			
M 203											
M 204											
M 205											
MAR-M 247											
MAR-M 302							CoCrW10TaZrB	KC21W10Ta9			
MAR-M 322							CoCr22W9TaZrNb	KC21W9Ta			
MAR-M 509			3146.3				CoCr24Ni10W1TaZrB	KC23N10W7Ta			
MAR-M 905								KC20N20Ta7			
MAR-M 918							CoCr20Ni20Ta	KC20N20Ta7			
MP159		UNS R30159									
MP35N	ATI 35N™	UNS R30035									
S 816	ALTEMP ® S 816				5534	2.4979	CoCr20Ni20W				
Stellite 1								KC33W13			
Stellite 100											
Stellite 12								KC28W8			
Stellite 151											
Stellite 188	ATI 188™							KC22N22W14Fe			
Stellite 19											
Stellite 20											
Stellite 21											
Stellite 23											

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Materials Cross Reference Chart

High Temp. Alloys

Hardness HRB HRC HB	Rm N/mm ²	Fe	Ni	Cr	Co	Mo	W	Si	Mn	C	Al	Ti	Li	P	S	Mg	Zn	Cu	Others
HTA Iron Based Alloys																			
49-52HRC	1600	76.8	18.5			3.0		0.03	0.05	0.02	0.1	1.4		0.005	0.005				
52-55HRC	1800	76.8	18.5			3.0		0.03	0.05	0.02	0.1	1.4		0.005	0.005				
50HRC	1700	68.0	18.0		8.5	5.0		0.1		0.01	0.1	0.5							
32HRC	1000	75.0	9.4	12.0		2.0		0.05	0.02	0.01	0.7	0.3							
266HB	850	32.0	20.0	21.0	20.0	3.0				0.1									
260HB	840	19.7	33.0	17.0	24.0	3.0	2.0			0.33									
270HB	870	24.9	20.0	21.0	20.0	4.0	4.0	1.25	0.4	0.43									
150HB	510	14.6	34.0	22.0				0.55	0.55	0.03	0.3	0.5							Cu 0.1
	600	62.0	31.8	0.03	5.4			0.09	0.39	0.05	0.07						.08		
470HB	1590	68.6	18.0		7.9	4.9		0.1	0.1	0.08	0.1								
470HB	1590	67.0	18.0		9.0	5.0		0.1	0.1	0.08	0.1								
280HB	900	53.0	26.0	13.3		1.8		0.8	1.5	0.08	0.15								
HTA Cobalt Based Alloys																			
41HRC	1290	0.3	0.2	28.0	64.0	6.0		0.5	0.5	0.1									N 0.2
1050HV		1.0	3.0	27.0	62.0	5.0		0.6	0.6	0.2		0.3							
		3.0	10.0	20.0	48.0		15.0	2.0	1.5			0.1							
		1.0	16.0	24.0	51.4	6.0		0.6	0.6			0.4							
		1.5	10.0	25.0	54.0		8.0	0.8	0.6			0.4							
		2.0	10.0	18.0	53.1		15.0		1.5			0.4							
180/230HB		1.0	10.0	20.0	52.0		15.0				2.0	0.0							
500/700HV	1450-1650																		
		1.0	10.0	19.0	55.6		14.0					0.4							
80HRB	510	0.5	10.0	20.0	52.0		15.0		1.7	0.1									
		1.0	24.5	19.5	38.0		12.0	1.0	0.8	2.2	0.7	0.1							
			24.5	18.5	43.0		12.0	1.0	1.0			0.1							
			24.5	18.5	42.0		12.0			2.8		0.1							
	800	0.5	59.0	8.3	10.0	0.7	10.0				5.5	1.0							Ta 3.0
				21.5	57.0		10.0					0.9							Ta 9.0
				21.5	60.0		9.0	0.1	0.1	1.0	0.8	1.0							Ta 4.5, Zr 2.25
		1.0	10.0	21.5	50.0		7.0	0.1	0.1		0.2	0.6							Ta 3.5, Zr 0.5
			20.0	20.0	55.0					0.5	0.1								Ta 7.5, Zr 0.1
		0.5	20.0	20.0	50.0			0.1	0.1			0.1							Ta 7.5, Zr 0.1
		9.0	25.5	19.0	35.7	7.0					0.2	3.0							Zr 0.6
28HRC	900		35.0	20.0	35.0	9.8				0.013									
		4.0	20.0	20.0	46.0	4.0	4.0	0.4	1.2			0.4							
				33.0	50.0					2.5									
				34.0	43.0					2.0									
463HB	1560	2.0	3.0	29.0	59.0		9.0			1.8									
		2.0	1.0	20.0	65.0		13.0			0.5									
		3.0	22.0	22.0	37.0		14.0			0.1									
52HRC	1800	3.0	3.0	31.0	52.0		10.5			1.7									
				33.0	45.0		18.0			2.5									
		3.0	2.5	27.0	60.0	5.5				0.3									
		2.0	1.5	25.0	65.0		5.0			0.4									

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HTA Cobalt Based Alloys											
Stellite 25 (L605)					5759	2.4964	CoCr20W15Ni	KC20WN			
Stellite 3											
Stellite 30											
Stellite 31 (X40)			3146.2		ASTMA567		CoCr25NiW	KC25N10W7Fe			
Stellite 4											
Stellite 45											
Stellite 6								KC26NW			
Stellite 7											
Stellite 8 (F75)											
V-36							CoCr25Ni20MoWNB	KC25N20DFeWNB			
WI-52							CoCr21Mo11W	KC21W11ANbT			
X 40			3146.2		ASTMA567		CoCr25NiW	KC25N10W7Fe			
X 45								KC25N10W7Fe			
X 50											
X 63											
HTA Nickel Based Alloys											
200	ATI 200™	UNS N02200									
201	ATI 201™	UNS N02201									
718 Plus	ATI 718 Plus®										
Allcorr	Allcorr®										
Astroloy	ATI Astroloy™	UNS N13017						NK17C15D5AT			
Duraloy 22H											
Duraloy Super 22H											
GMR 235					AISI 686			NC15Fe10D5AT			
GMR 235-D							NiCr16MoAl	NC15D5FeAT			
Hastelloy B	ATI HB				5396A	2.48	S.NiMo30	ND27FeV			
Hastelloy B-2	ATI HB-2™	UNS N10665									
Hastelloy C		UNS N10002			5388C		NiCr17Mo17FeW	NC17DWY			
Hastelloy C-22											
Hastelloy C-276		UNS N10276				2.4819	G-NiMo30	NC15D14KFe			
Hastelloy C-4		UNS N06455									
Hastelloy G		UNS N06007						NC22Fe19D6kTa			
Hastelloy G-3		UNS N06985				2.4619					
Hastelloy N	ATI HN™	UNS N10003									
Hastelloy R235											
Hastelloy S		UNS N06635						NC15D14KFe			
Hastelloy W	ATI HW™	UNS N10004									
Hastelloy X	ATI HX™	UNS N06002	HR6, 204		5536	2.4603	NiCr22FeMo	NC22FeD			
Haynes 188	ATI 188™	UNS R30188			5772			KC22N22W14Fe			
Haynes 25		UNS R30605			5759		LW2.4964	KC20WN			
Haynes 263	ATI C-263™	UNS N07263						NC20K20D6T			
Haynes 600	ATI 600™	UNS N06600			5540	2.4816	NiCr15Fe				
Haynes 601	ATI 601™	UNS N06601			5715	2.4851					
Haynes 625	ATI 625™	UNS N06625			ASME SB443	2.4856	NiCr22Mo9Nb	NC22FeDNB			
Haynes 690	ATI 690™	UNS N06690				2.4642	NiCr29Fe	NC30Fe			
Haynes 75											
Haynes X-750	X-750 Nickelvac®	UNS N07750			5542	2.4669		NC15TNbA			

Material Guide – Key to Recommended Inserts

Material Designation

◆ Unalloyed Steels
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 ◆ Stainless Steels
 ◆ PH Stainless
 ◆ Cast Irons
 ◆ Aluminum & Alloys
 ◆ High Temp. Alloys
 ◆ Hard Materials

Materials Cross Reference Chart

High Temp. Alloys

Hardness HRB HRC HB	Rm N/mm ²	Fe	Ni	Cr	Co	Mo	W	Si	Mn	C	Al	Ti	Li	P	S	Mg	Zn	Cu	Others	
HTA Cobalt Based Alloys																				
350HB	1130	2.0	10.0	20.0	52.0		15.0			0.2										
450HB	1490			30.0	52.0		13.0			2.4										
		2.0	15.0	26.0	50.0	6.0				0.5										
			10.0	25.0	56.0		7.0			0.3										
47HRC	1560	3.0	3.0	31.0	53.0		14.0			1.0										
		2.0	10.5	25.0	56.0	0.5	7.5			0.3										
300HB	970	3.0	3.0	26.0	66.0		5.0			1.0									Nb 6.0	
				26.0	66.0		5.0			0.4										
				20.0	63.0	6.0				0.2										
		3.0	20.0	25.0	43.2	4.0	2.0	0.4	1.0			0.3							Nb 2.0	
		2.0	1.0	21.0	62.6		11.0	0.3	0.3		0.3	0.5							Nb 2.0	
		2.0	10.5	25.5	53.0		7.5	0.8	0.8			0.5								
		2.0	10.5	25.5	54.7		7.0		0.7			0.3							B 0.01	
		4.0	20.5	22.5	40.3		12.0					0.8								
		1.0	10.0	25.0	57.6	6.0														
HTA Nickel Based Alloys																				
45HRB	310	0.4	99.8					0.35	0.35	0.15					0.01				0.25	
45HRB	310	0.4	99.9					0.35	0.35	0.2					0.01				0.25	
42HRC	1330	9.0	53.0	19.0	9.0	2.8	1	0.01	0.35	0.06	1.6	0.75		0.02	0.01					
85HRB	550		56.0	31.0			2			0.02	0.25	0.25							Nb 0.4	
40HRC	1270		55.4	15.0	17.0	5.25				0.06	4	3.5								
			50.0	30.0																
			48.0	28.0	3.0															
	620	10.0	63.3	15.5		5.2		0.4	0.2	0.15	3	2								
	620	4.5	63.0	15.5		5				0.15	3.5	2.5								
90HRB	600	5.0	62.0	1.5	2.5	28		0.05	0.5	0.02									V 0.4	
90HRB	600	1.0	81.0	0.5	0.5	16		0.05	0.5	0.01				0.02	0.015					
200HB	660	6.0	54.1	15.0	2.0	17	5			0.04										
94HRB	660	3.0	56.0	22.0	2.5															
191HV	630	5.5	56.0	15.0	2.5															
	750	3.0	58.0	16.0	2.0															
		20.0	46.0	22.0	2.5															
		20.0	40.0	22.0	5.0															
80HRB	510	4.0	72.5	7.0		16.5				0.02										
		10.0	61.0	15.5	2.5	5.5				0.15	2	2.5								
61HRA	780	3.0	67.0	16.0	2.0															
94HRB	660	4.0	66.5	5.0	1.3	24.5				0.02										
80HRB	510	18.5	48.6	21.8	1.5	9	0.6			0.1										
		3.0	22.0	22.0	37.0															
	1000	3.0	10.0	20.0	bal		15		1.5	0.1										
		0.7	51.4	20.0	20.0	6				0.06	1	1.5								
85HRB	550	8.0	72.0	15.5						0.08										
65HRB	430	14.0	60.5	23.0																
95HRB	660	5.0	61.4	21.5		9				0.1										
88HRB	570	9.0	58.0	29.0				0.2	0.2	0.25					0.007				Cu 0.2	
		5.0	73.7	20.0						0.12	0.25	0.4								Cu 0.5
		7.0	74.9	16.0						0.08	0.8	0.25								

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 ◆ Hard Materials

Materials Cross Reference Chart

High Temp. Alloys

Commercial Name	ATI Allvac ATI Allegheny Ludlum ATI WahChang	UNS Number	UK: BS,EN	Suède: SS	USA: AISI/SAE	Germany: Wnr	Germany: DIN	France: AFNOR	Italy: UNI	Spain: UNF	Japan: JIS
HTA Nickel Based Alloys											
IN100		UNS N13100			5397	2.4674	NiCo15Cr10MoAlTi	NK15CAT			
Incoloy 020					ASTM B463	2.4660		20CB-3			
Incoloy 804								NC29Fe25			
Incoloy 825	ATI 825™	UNS N08825	3072.76		ASME SB163	2.4858	NiCr21Mo	NC21FeDU			
Incoloy 901	ATI 901™	UNS N09901			5660	2.4662	NiFe35Cr14MoTi	Z8NCDT42			
Incoloy 903		UNS N19903					NiFe42K15Nb	Z3NK28			
Incoloy 925	ATI 925™	UNS N09925									
Inconel alloy 050											
Inconel alloy 182											
Inconel alloy 22					ASME SB575			NiMo16Cr15			
Inconel alloy 230											
Inconel alloy 600	ATI 600™	UNS N06600	3072.76		5540	2.4640	NiCr15Fe	NC15Fe			
Inconel alloy 600SP											
Inconel alloy 601	ATI 601™	UNS N06601			5715	2.4851		NC23Fe14A			
Inconel alloy 601GC											
Inconel alloy 603XL											
Inconel alloy 604											
Inconel alloy 606											
Inconel alloy 613											
Inconel alloy 617	ATI 617	UNS N06617				2.4663	NiCr23Co12Mo	NC22K12D9A			
Inconel alloy 62											
Inconel alloy 622						2.4602					
Inconel alloy 625	ATI 625™	UNS N06625			ASME SB443.4	2.4856	NiCr22Mo9Nb	NC22FeDNB			
Inconel alloy 625LCF		UNS N06626									
Inconel alloy 657											
Inconel alloy 671											
Inconel alloy 672											
Inconel alloy 686											
Inconel alloy 690	ATI 690™	UNS N06690				2.4642		NC30Fe			
Inconel alloy 691											
Inconel alloy 693											
Inconel alloy 702					5550			NC15A			
Inconel alloy 706	ATI 706™	UNS N09706			AMS 5702			NFe10C16NbT			
Inconel alloy 718	ATI 718™	UNS N07718	HR8		5383	2.4668	NiCr19Fe19NbMo	NC19FeNb			
Inconel alloy 718 DA	ATI 718-DA®										
Inconel alloy 718 OP	ATI 718-OP®	UNS N07718									
Inconel alloy 720	ATI 720™										
Inconel alloy 721								NC16Fe8TM			
Inconel alloy 722	ATI W-722™	UNS N07722			5541		NiCr16FeTi	NC16FeTi			
Inconel alloy 725											
Inconel alloy 725HS											
Inconel alloy 738											
Inconel alloy 740											
Inconel alloy 783		UNS R30783									
Inconel alloy 800	AL 800										
Inconel alloy 800H	ATI 800H™	UNS N08810									

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Materials Cross Reference Chart

High Temp. Alloys

Hardness HRB HRC HB	Rm N/mm ²	Fe	Ni	Cr	Co	Mo	W	Si	Mn	C	Al	Ti	Li	P	S	Mg	Zn	Cu	Others
HTA Nickel Based Alloys																			
			61.6	10.0	15.0	3				0.18	5.5	4.7							V 1.0
		38.0	34.0	20.0	2.5														Nb 0.6 Cu 3.5
		25.4	41.0	29.5				0.5	0.75	0.06	0.25	0.6							Cu 0.4
80HRB	510	29.5	42.0	21.5			3	0.5	0.65	0.03	0.2	0.9							Cu 2.25
180-300HB	600-970	34.0	44.3	12.5		6.2		0.22	0.48	0.05		2.5							
380HB	1250	41.0	39.0		15.0						0.7	1.4							Nb 3.0
32HRC	1000	25.4	45.0	21.0		3					0.3	2.1							Cu 1.8
36HRC	1130	18.0	50.0	20.0	3.0														
		7.5	66.0	16.0															
90HRB	600	2.5	58.0	22.0															
		1.0	60.0	22.0	1.0														
85HRB	550	8.0	76.0	16.0						0.075									
		8.0	77.0	15.0															
65HRB	400	14.0	61.0	24.0				0.2	0.5	0.05	1.3				0.008				Cu 0.5
77HRB	480	14.0	61.0	24.0															
			73.0	22.0															
		8.0	72.0	16.0				0.2	0.2	0.04									
		1.0	73.0	20.0															
		6.0	76.0	16.0															
180HB	600	1.0	53.0	22.0	13.0	9				0.07	1								
		8.0	74.0	15.0															
100HRB	780	2.5	58.0	22.0		14.2	3.2												
95HRB	690	4.0	61.0	22.0		9				0.05	0.3	0.3							Cb 3.7
		4.0	61.0	22.0															
		0.5	47.5	50.0															
			51.5	48.0															
			54.0	45.0															
90HRB	600	1.0	58.0	21.0															
85HRB	550	9.0	62.0	29.0				0.2	0.2	0.25					0.007				
		9.0	59.0	30.0															
		5.0	60.0	30.0															
		1.0	79.0	16.0				0.2	0.05	0.04	3.4	0.7							
40HRC	1270	37.0	42.0	16.0						0.03		1.8							Cb 2.9
42HRC	1330	18.0	54.0	18.0		3.1				0.02	0.5	0.9							Cb 5.2
40-47HRC	1560	bal	50-55	17-21	1.0	2.8-3.3		0.35	0.35	0.08	2-8	.65-1.15		0.015	0.015				Cb+Ta 5-5.5
38HRC	1200	18.0	54.0	18.0		3.1				0.02	0.5	0.9							Cb 5.2
43HRC	1380	14.7	58.0	18.0	14.7	3	1.25				2.5	5							
		7.0	71.0	16.0				0.15	2.25	0.07	0.1	3							Cu 0.2
34HRC	1070	7.0	74.0	16.0						0.04	0.7	2.4							
37HRC	1170	9.0	58.0	21.0		8					0.3	1.5							Nb 3.5
		9.0	58.0	21.0															
		0.5		16.0	8.5	1.8	2.6	0.3	0.2	0.17	3.4	3.4							Nb 0.9 Ta 1.8 Zr 0.1
		1.0	48.0	25.0	20.0														
34HRC	1070	26.0	28.5	3.0	34.0						5.4	0.1							Nb 0.3
86HRB	550	46.0	31.0	21.0															
70HRB	450	44.0	32.0	21.0				0.35	1	0.08	0.4	0.4		0.02	0.01			0.3	

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Materials Cross Reference Chart

High Temp. Alloys

Commercial Name	ATI Allvac ATI Allegheny Ludlum ATI WahChang	UNS Number	UK: BS,EN	Suède: SS	USA: AISI/SAE	Germany: Wnr	Germany: DIN	France: AFNOR	Italy: UNI	Spain: UNF	Japan: JIS
HTA Nickel Based Alloys											
Inconel alloy 82											
Inconel alloy 939											
Inconel alloy C-276	ATI C-276™	UNS N10276									
Inconel alloy G											
Inconel alloy G-3											
Inconel alloy HX	ATI HX™	UNS N06002					NiCr22Fe18Mo	NC22FeD			
Inconel alloy MA 6000											
Inconel alloy MA754		UNS N07754									
Inconel alloy MA758											
Inconel alloy X-750	ATI X-750™	UNS N07750			5542	2.4669	NiCr16FeTi	NC15FeTNb			
Inconel alloy X-751		UNS N07751									
Jessop G81							NiCr20Co18Ti				
M-252	ATI M-252™	UNS N07252			5551		G-NiCr19Co				
Monel 400	ATI 400™	UNS N04400	3072.76		4544	2.4360	NiCu30Fe	NU30			
Monel K500	ATI K-500™	UNS N05500	3072.76		4676	2.4375	NiCu30Al				
Monel R405		UNS N04405			4674						
Nimocast 713			HC203		5391A		G.NiCr13Al16MoNb	NC13AD			
Nimocast 80			3146								
Nimocast 90											
Nimocast PD16							NiFe33Cr17Mo				
Nimocast PE10			HC202					NC20N13			
Nimocast PK24											
Nimonic 101											
Nimonic 105			HR3			2.4634	NiCo20Cr15MoAlTi	NCKD20ATV			
Nimonic 115			HR401, 601			2.4636	NiCo15Cr15MoAlTi	NCVK15ATD			
Nimonic 75		UNS N06075	HR5, 203.4			2.4630	NiCr20Ti	NC20T			
Nimonic 80A	ATI 80A™	UNS N07080	HR401, 601			2.4631	NiCr20TiAl	NC20TA			
Nimonic 86											
Nimonic 90	ATI N-90™	UNS N07090	HR2, 202			2.4632	NiCr20Co18Ti	Nc20ATV			
Nimonic 901	ATI 901™	UNS N09901			5660, 5661	2.4662	NiCr15MoTi	Z8NCDT42			
Nimonic 91											
Nimonic 95								NC19K18Fe5TA			
Nimonic C22	ATI 22™	UNS N06022			ASME SB575						
Nimonic C263	ATI 263™	UNS N07263	HR10			2.4650	NiCr20CoMoTi	NCK20D			
Nimonic C276	ATI 276™	UNS N10276			ASME SB575	2.4819		NiMo16Cr15			
Nimonic PE13			HR6, 204		5536E		NiCr22Fe18Mo	NC22FeD			
Nimonic PE16			HR207				NiFe33Cr17Mo	NW11AC			
Nimonic PK25					5751A	2.4666	NiCr18CoMo	NKCD20ATU			
Nimonic PK31											
Nimonic PK33			5057				NiCr20Co16MoTi	NC19KDUN			
R-235					AISI 686						
Refractaloy 26					AISI 690			Z6NKCDT38			
René 100						2.4674	NiCo15Cr10MoAlTi	NK15C10A5T			
René 104											
René 125								NK10C8W7ATaTD			
René 41	ATI René™ 41	UNS N07041			5712, 5713	2.4973	NiCr19Co11MoTi	NC19KDT			
René 63								NK15C14D6AWT			

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Materials Cross Reference Chart

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Hardness HRB HRC HB	Rm N/mm ²	Fe	Ni	Cr	Co	Mo	W	Si	Mn	C	Al	Ti	Li	P	S	Mg	Zn	Cu	Others
HTA Nickel Based Alloys																			
		2.0	72.0	19.0															
			48.0	22.5	19.0														
90HRB	600	5.0	59.0	15.5	0.5	16	3.5			0.01									
		20.0	44.0	22.0	1.0														
		20.0	44.0	22.0	3.0														
90HRB	600	18.0	47.0	22.0	1.5	9	0.6												
			55.0	15.0	15.0														
29HRC	930	1.0	77.5	20.0							0.3	0.5							
320HV	1050		68.0	30.0															
32HRC	1000	7.0	72.0	16.0															
35HRC	1100	7.0	73.0	15.0				0.2	0.5	0.05	1.2	2.3			0.005				Cb 1.1 Cu 0.2
		0.5	79.3	20.0	13.0			0.2	0.5	0.08	1.5	2.5							
27-30HRC	900			18.0-20.0	9.0-11.0	9.0-10.5		0.5	0.5	0.15	0.75-1.25	2.25-2.75			0.015				
70HRB	440	1.2	66.0					0.25		0.15					0.01				
27HRC	860	1.0	66.0					0.25	0.7	0.1	2.7	0.6			0.01				
150HB	510	1.3	63.0					0.25	1	0.15									Cu 31.5
			72.6	13.5		4.5				0.12	6	0.9							
		5.0	69.9	20.0	2.0														
		5.0	52.9	20.0	18.0														
		34.0	43.8	16.5						0.06	1.2	1.2							
			56.4	20.0		6	2.5			0.03									
			61.1	9.5	15.5	9				0.17	5.5	4.7							
			48.0	24.2	19.7	1.5					1.4	3							Nb 1
320HB	1040	1.0	54.0	15.0	20.0	5		0.5	0.5	0.1	4.7	1.2							
350HB	1130	1.0	59.0	15.0	14.0	4				0.16	5	4							
170HB	570	4.0	76.0	20.0				0.45	0.45	0.45	0.1	0.35							
350HB	1130	1.5	70.0	19.5	1.0			0.2	0.55	0.08	1.4	2.4							
			65.0	25.0		10													Ca 0.03
28HRC	870	0.3	58.3	19.5	18.0					0.065	1.4	2.4							
36HRC	1130	35.6	43.0	12.5		6				0.05		2.8							B 0.015
			48.0	29.0	20.0														
		5.0	49.9	19.5	18.0			1	1	0.1	2	3.5							
85HRB	550	4.0	57.0	21.2	1.2	13.5	3	0.04	0.2	0.07					0.01				V 0.17
28HRC	870	0.7	54.9	20.0	20.0	5.85				0.06	0.45	2.15							
80HRB	510	5.0	59.5	15.5	0.5	16	3.5			0.01									
		18.5	49.0	21.8	1.5	9	0.6	0.5	0.5	0.1									
250HB	810	1.2	43.0	16.0	2.0	3.5				0.05	1.2	1.2							
			49.9	19.0	19.5	4		0.75	0.75	0.08	2.9	2.9							B 0.01
			53.0	20.0	14.0	4.5				0.4	2.3								Nb 5.0
350HB	1130	1.0	55.0	18.0	14.0	7		0.25	0.25	0.05	2.1	2							
		10.0	63.3	15.0	1.2	5.5		0.3	0.1	0.12	20	2.5							
		16.0	38.0	19.0	20.0	3.2		1	0.8	0.03	0.2	2.8							
			60.6	10.0	15.0	3				0.18	5.5	4.7							V 1.0
			52.4	11.0	20.5	3.7	2			0.04	3.4	3.6							Nb 0.9 Ta 2.4 B 0.03
			60.0	8.9	10.0	2	7			0.1	4.7	2.5							Hf 1.05 Ta 3.0
36HRC	1130	3.0	52.5	19.0	11.0	9.75				0.06	1.6	2.5							B 0.007
		3.5	54.4	14.0	15.0	6	3.5	0.2	0.1	0.05	3.8	2.5							

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HTA Nickel Based Alloys											
René 77								NC15K15ADT			
René 80								NC14K9T5DWA			
René 95								NC14K8			
Stelloy HS27							NiCo32Cr26Mo	KC20WN			
TRW VIA							NiTa9Co8W6CrAl	NTa9K7C6W5A5DT			
Udimet 500		UNS N07500			AISI 684	2.4983	NiCr18CoMoAlTi	NCK19DAT			
Udimet 520	ATI 520™										
Udimet 630							NiCr19NbMo	NC18Fe18Nb6DWT			
Udimet 700					AISI 687	2.4636	NiCo15Cr15MoAlTi	NCKD20AT			
Udimet 710								NCK18TDA			
Udimet 718			HR8		5383	2.4668	NiCr19Fe19NbMo	NC19FeNb			
Udimet 720								NC18K15TDA			
Waspaloy®	ATI Waspaloy	UNS N07001			5544	2.4654	NiCr20Co14MoTi	NC20K14			
HTA Titanium Based Alloys											
Ti-10.2.3	ATI 10-2-3™										
Ti-11.5Mo-6Zr-4.5Sn											
Ti-12Mo-6Zr-2Fe (TMZF)											
Ti-13Nb-13Zr											
Ti-13V-11Cr-3Al	13-11-3				4917		TiV13Cr11Al3				
Ti-15-333	ATI 15-333™	UNS R58153									
Ti-15Mo (Alpha + Beta)	ATI 15Mo™ (Alpha + Beta)										
Ti-15Mo (Beta)	ATI 15Mo™ (Beta)										
Ti-15Mo-3Nb-3Al-0.2Si					ASTM Grade 21						
Ti-3Al-2.5V	ATI 3-2.5-MIL™	UNS R56320			4943, 4944						
Ti-3Al-8V-6Cr-4Mo-4Zr	ATI 38-644™	UNS R58640									
Ti-425	ATI 425®										
Ti-425 MIL	ATI 425®-MIL										
Ti-45Nb	ATI 45Nb™										
Ti-48Al-2Cr-2Nb											
Ti-4Al-4Mo-2Sn-0.5Si	ATI 4-4-2™		5103				TiAl4Mo4Sn2Si0.5	T-A4DE			
Ti-4Al-4Mo-4Sn-0.5Si			5203				TiAl4Mo4Sn4Si0.5				
Ti-5Al-2.5Fe (Tikrutan)											
Ti-5Al-2.5Sn	ATI Grade 6	UNS R54520	TA 14,17		ASTM B 265	3.7115	TiAl5Sn2	T-A5E			
Ti-5Al-2Sn-2Zr-4Cr-4Mo	ATI 17™	UNS R58650			4995		Ti5Al2Sn2Zr4Cr4Mo				
Ti-5Al-5Mo-5V-1Cr-1Fe											TC18
Ti-5Al-5V-5Mo-3Cr	ATI 5-5-5-3 PM™										
Ti-6-2-4-6	ATI 6-2-4-6™	UNS R56260			4981						
Ti-6-7	ATI 6-7™	UNS R56700									
Ti-6Al-2Sn-2Zr-2Mn-2Cr-0.2Si	ATI 6-222™										
Ti-6Al-4V	ATI 6-4™	UNS R56400	TA10 TA11 TA12 TA13 TA28 TA56		4906, 4920, 4928, 4965, 4967		TiAl6V4	T.A6V;AIR:9183			TC4
Ti-6Al-4V ELI	ATI 6-4 ELI™	UNS R56401			4907, 4930, 4931						
Ti-6Al-4V MIL	ATI 6-4-MIL™	UNS R56400	TA10 TA11 TA12 TA13 TA28 TA56		4906, 4920, 4928, 4965, 4967		TiAl6V4	T.A6V;AIR:9183			
Ti-6Al-4V MIL (HT)	ATI 6-4-MIL™	UNS R56400	TA10 TA11 TA12 TA13 TA28 TA56		4906, 4920, 4928, 4965, 4967		TiAl6V4	T.A6V;AIR:9183			

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Material Designation

◆ P Unalloyed Steels
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 ◆ M PH Stainless
 ◆ K Cast Irons
 ◆ N Aluminum & Alloys
 ◆ S High Temp. Alloys
 ◆ H Hard Materials

Materials Cross Reference Chart

High Temp. Alloys

Hardness HRB HRC HB	Rm N/mm ²	Fe	Ni	Cr	Co	Mo	W	Si	Mn	C	Al	Ti	Li	P	S	Mg	Zn	Cu	Others
HTA Nickel Based Alloys																			
		0.4	58.0	15.0	15.0	4.2		0.1	0.1	0.17	4.3	3.3							
			61.0	14.0	9.5	4				0.15		4							
		0.3	64.5	14.0	8.0	3.5				0.15		2.5							
		2.0	30.0	25.0	30.0														
			70.5	6.0	7.5	2	5.8			0.13	5.4	1							
		4.0	52.0	19.0	18.0	4		0.1	0.1	0.07	3	3							
40HRC	1270		56.9	19.0	12.0	6	1				2	3							
		18.0	51.0	19.0	18.0	3				0.04	0.6	1.1							
		1.0	53.0	15.0	19.0					0.1	4.4	3.4							
		0.5	55.0	18.0	15.0	1.5				0.07	2.5	5							
42HRC	1330	19.0	54.0	18.0		3				0.05	0.6	1							
	1600		55.0	18.0	14.8	3	1.2			0.035	2.5	5							
38HRC	1200	1.0	57.7	19.5	13.0	4.3				0.05	1.4	3							Zr 0.07
HTA Titanium Based Alloys																			
HRC35	1100																		
	1037	0.085																	Nb 13.18 Zr 13.49
HRC40	1270																		
HRC32	1000	0.12		3						0.02	3								V 15.0
HRC38	1200	0.1				15													
HRC24	820	0.1				15													
	930	< 0.4				15					3	76.0/80.8							Nb 3.0
HRC24	820	0.13									3								V 2.5
HRC32	1000	0.35		6.5		4.5				0.05	4								V 8.5 Zr 4.5
HRC36	1130	1.5									4								V 2.5 O 0.25
HRC36	1130	1.2/1.8									4.5								V 2.5 O 0.25
													55						Nb 45
HRC22	800			2							48.03	47.97							Nb 2
HRC35	1100																		
	1020	2.5									5								
HRC36	1130																		
HRC38	1200	0.3		3.5/4.5		3.5/4.5					4.5/5.5								Sn 1.5/2.5 Zr 1.5/2.5
HRC40	1270																		
HRC40	1270																		
HRC36	1130																		
HRC32	1000	0.15									6								Nb 7
				2				0.2	2		6								Sn 2 Zr 2
HRC30-34	1130	0.3								0.1	5.5/6.75								V 4
HRC32	1000	0.25								0.08	5.5/6.75								V 3.5/4.5 O 0.13
HRC30-34	1130	0.3								0.1	5.5/6.75								V 3.5/4.5 O 0.2
HRC35-39	1200	0.3								0.1	5.5/6.75								V 3.5/4.5 O 0.2

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Materials Cross Reference Chart

High Temp. Alloys /
Hard Materials

Commercial Name	ATI Allvac ATI Allegheny Ludlum ATI WahChang	UNS Number	UK: BS,EN	Suède: SS	USA: AISI/SAE	Germany: Wnr	Germany: DIN	France: AFNOR	Italy: UNI	Spain: UNF	Japan: JIS
HTA Titanium Based Alloys											
Ti-6Al-4Zr-2Mo-2Sn	ATI 6-2-4-2 PM™	UNS R54620									
Ti-6Al-4Zr-2Mo-2Sn-0.2Si	ATI 6-2-4-2-Si PM™	UNS R54620 modified			4919, 4975, 4976		TiAl6Zr4Mo2Sn2				
Ti-6Al-5Zr-0.5Mo-0.25Si							TiA6Zr5Mo0.5Si0.25	T.AGZ.50			
Ti-6Al-5Zr-4Mo-Cu-0.2Si			M201				TiAl6Zr5Mo4CuSi0.2				
Ti-6Al-6V-2Sn	ATI 6-6-2™	UNS R56620			4971		TiAl16V6Sn2				
Ti-6Al-7Nb							TiAl7Nb				
Ti-7Al-4Mo					ASTM B381		TiAl7Mo4				
Ti-8Al-1Mo-1V	ATI 8-1-1™	UNS R54810			4915, 4933, 4972		TiAl8Mo1V1				
Ti-8Mo-8V-2Fe-3Al											
Ti-99.5	ATI CP Grade 4	UNS R50700			ASTM Grade 1 B381F4		Ti-99.5	AIR:9182T60			
Ti-99.6	ATI CP Grade 3	UNS R50550	TA2, TA3, TA4, TA5		ASTM Grade 2 B381F3		Ti-99.6	AIR:9182T50			
Ti-99.7	ATI CP Grade 2	UNS R50400	TA2.5		ASTM Grade 3 B381F2		Ti-99.7	AIR:9182T40			
Ti-99.8	ATI CP Grade 1	UNS R50250	TA6, TA7, TA8, TA9		ASTM Grade 4 B381F1		Ti-99.8	AIR:9182T35			
Hard Steel >1400Mpa											
500	ATI 500-MIL®										
521	ATI 521™										
600	ATI 600-MIL®										
60SPb20											
70SPb20											
A100											
A2 / Z100CDV5 (HT)	A2		BA2	2260	A2	1.2363	X100CrMoV5 1 X2NiCoMoTi180905	Z100CDV5 Z2NKD180905	X100CrMoV51KU	X100CrMoV5 F5227	SKD12
Durimphy											
Ferrium® S53®											
H10											
H11											
H12											
H19											
H21 / Z30WCV9											
Hardox 450											
Hardox 500											
Hardox 550											
Hardox 600											
K12	ATI K12®-MIL										
K12 (HT)	ATI K12®-MIL										
L6 / 55NCDV07 (HT)											
Mn97+Pb											
Z38CDV5											
Chilled Cast Iron 1400Mpa											
GGG120B / EN-GJS-1200-2											
GGG140B / EN-GJS-1400-1											
GGG80B / EN-GJS-800-8											
GGG90B / EN-GJS-1000-5											

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 ◆ Cast Irons
 ◆ Aluminum & Alloys
 ◆ High Temp. Alloys
 ◆ Hard Materials

Materials Cross Reference Chart

High Temp. Alloys /
Hard Materials

Hardness HRB HRC HB	Rm N/mm ²	Fe	Ni	Cr	Co	Mo	W	Si	Mn	C	Al	Ti	Li	P	S	Mg	Zn	Cu	Others
HTA Titanium Based Alloys																			
HRC28	900																		
HRC28	900	0.05				2		0.12		0.1	6								Zr 4.0
HRC35	1100	0.5								0.05	5.5							0.5	V 5.5 Sn 2 O 0.2
	1000										6	84.5/88.0							Nb 7.0
HRC35	1100	0.13				1					8								V 1 O 0.12
HRB100	780	0.5								0.1									O 0.4
HRB90	600	0.3								0.1									O 0.35
HRB80	510	0.3								0.1									O 0.25
HRB70	430	0.2								0.1									O 0.18
Hard Steel >1400Mpa																			
447-534HB	1490-1730	91.6	4	2		0.37		0.45	1.2	0.32				0.02	0.005				
470-550HB	1590-1800	91.4	4	2		0.5		0.5	1.2	0.32				0.025	0.005				
574-634HB	> 2060	91.8	4.25	1.5		0.37		0.5	1	0.52				0.02	0.005				
55/61HRc																			
63/65HRc																			
64/67HRc																			
55/64HRc																			
54HRC	1040-2000		5.5	10	14	2	1			0.21				0.02	0.005				V 0.3
	1930																		
	1180-1670																		
	1180-1570																		
	1080-1270																		
	1270-1670																		
	1180-1770																		
450HBW	1500																		
500HBW	1730																		
550HBW	1950																		
600HBW	>2000																		
48-54HRC	1590-1930																		
58-64HRC																			
	1200-1700																		
64/66HRC																			
	1400-1500																		
Chilled Cast Iron 1400Mpa																			
341-444HB	1490																		
444-555HB	2010																		
269-321HB	1040																		
302-363HB	1150																		

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034507	1160		187	032064	11IR0.5ISO	SP4066	219	032002	16ER1.75ISO	SP4066	217
034508	1161		187	032057	11IR0.75ISO	SP4066	219	034604	16ER10ABUTT	SP4066	235
034493	1186		181	032042	11IR1.0ISO	SP4066	219	032010	16ER10ACME	SP4066	231
034497	1335		188	032043	11IR1.5ISO	SP4066	219	033781	16ER10APIRD	SP4066	237
034498	1425		188	032062	11IR1.75ISO	SP4066	219	032016	16ER10STACME	SP4066	232
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034512	1907		185	032054	11IR18NPT	SP4066	230	033785	16ER12ABUTT	SP4066	235
				032065	11IR18PG	SP4066	234	032011	16ER12ACME	SP4066	231
				032049	11IR18UN	SP4066	223	032017	16ER12STACME	SP4066	232
				032050	11IR19BSPT	SP4066	229	031996	16ER12UN	SP4066	222
				032046	11IR19W	SP4066	228	032352	16ER12UNJ	SP4066	225
				032051	11IR2.0ISO	SP4066	219	033786	16ER12W	SP4066	227
				032059	11IR2.5ISO	SP4066	219	033787	16ER13UN	SP4066	222
				032044	11IR20UN	SP4066	223	031989	16ER14BSPT	SP4066	229
				032060	11IR24UN	SP4066	223	031972	16ER14NPT	SP4066	230
				032063	11IR26W	SP4066	228	033788	16ER14UN	SP4066	222
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				032069	11IR28W	SP4066	228	033791	16ER16ABUTT	SP4066	235
				032056	11IR32UN	SP4066	223	033792	16ER16PG	SP4066	234
				032048	11IRA55	SP4066	214	033793	16ER16UN	SP4066	222
				032045	11IRA60	SP4066	216	032350	16ER16UNJ	SP4066	225
				033711	1695		185	033794	16ER16W	SP4066	227
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				033767	16EL1.0ISO	SP4066	218	033795	16ER18PG	SP4066	234
				033768	16EL1.5ISO	SP4066	218	033796	16ER18UN	SP4066	222
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033824	16ER9UN	SP4066	222	033852	16R20UN	SP4066	224	033884	22ERN60	SP4066	215
033825	16ER9W	SP4066	227	033853	16R24UN	SP4066	224	034610	22IR12ABUTT	SP4066	236
033826	16ERA55	SP4066	214	031991	16R28BSPT	SP4066	229	033885	22IR3.5ISO	SP4066	221
033827	16ERA60	SP4066	215	033855	16R28UN	SP4066	224	033886	22IR4.0ISO	SP4066	221
033828	16ERAG55	SP4066	214	031983	16R28W	SP4066	228	033887	22IR4.5ISO	SP4066	221
033829	16ERAG60	SP4066	215	033856	16R3.0IRISO	SP4066	220	033134	22IR4API382	SP4066	239
033830	16ERG55	SP4066	214	033857	16R3.5ISO	SP4066	220	033133	22IR4API383	SP4066	239
033831	16ERG60	SP4066	215	033858	16R32UN	SP4066	224	033888	22IR4API502	SP4066	239
033832	16IL1.5ISO	SP4066	221	033859	16R36UN	SP4066	224	033889	22IR4API503	SP4066	239
033833	16IR0.5ISO	SP4066	220	033860	16R40UN	SP4066	224	033891	22IR4TR	SP4066	233
033834	16IR0.6ISO	SP4066	220	033861	16R6STACME	SP4066	232	033892	22IR5.0ISO	SP4066	221
033835	16IR0.75ISO	SP4066	220	032012	16R8ACME	SP4066	231	032023	22IR5ACME	SP4066	231
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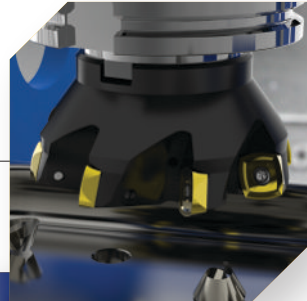
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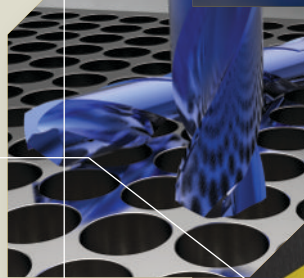
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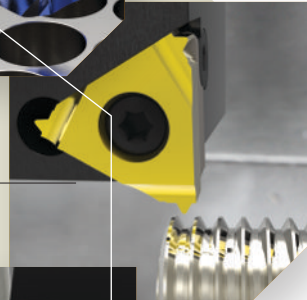
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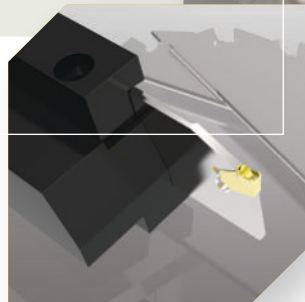
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