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Cutting Tools

Taizhou Cassar Precision Tools Co., Ltd



Company Profile

Tai Zhou Cassar Precision Tools Co.,Ltd , Founded in 2011, the company currently has 230 employees with the ability for large-scale production and possesses international advanced CNC production equipment. As a manufacturer primarily focused on CNC cutting tools, the company has upheld the craftsman spirit of "a good worker must first sharpen his tools" for many years, continuously researching and developing thread cutting tools (metric, imperial, and American), slotting and cutting tools, non-standard and special-shaped tools. The company has the ability for large-scale production and has gradually gained recognition from the market.

We can accurately and quickly develop, design, and provide the most suitable products for processing for every customer in fields such as aerospace, mold manufacturing, automobile manufacturing, medical equipment, etc. The company has introduced advanced CNC tool manufacturing equipment, technology, and talents from abroad, thus achieving stable product quality that meets international advanced levels. The company possesses various advanced CNC production equipment, precision testing instruments, and produces nearly 2 million various CNC blades per year. It is one of the excellent suppliers for thread turning tools, thread milling cutters, and slotting and cutting tools in China.

The company takes improving technical services and pragmatic innovation as its responsibility, continuously developing new products, improving product quality to meet the needs of domestic and foreign customers, and can become a good partner for friends from all walks of life.

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Grooving and cut-off inserts process **B1-B19**

Small parts process **C1-C15**

Threading parts process **D1-D44**

1. Introduction

The following information is intended to be read before using the tool so that you can use the product correctly and safely. Before handling and using all carbide tools and carbide materials, please read through this manual carefully well before using them correctly. Also, please make sure that the actual operator understands correctly what is written in this book.

2. Basic characteristics of carbide tool materials

2-1. Technical terms

Carbide tool materials: general term for tool materials such as carbide, cermets, ceramics, CBN and PCD (diamond)
Carbide: tool materials with WC (tungsten carbide) as the main component
Superhard: Abbreviation for superhard tool material. Also used in a narrower sense as short for cemented carbide.
Cemented carbide tools: A general term for tools using carbide materials.

2-2. Composition

Tungsten, aluminium, silicon, silver, boron carbides, nitrides, carbonitrides, oxides and materials with added metal components such as drill, nickel, chromium and platinum.

3. Precautions for using carbide tool materials

Cutting tool materials are very hard, but at the same time fragile. They can break due to impact or over-tightening. Due to their high specific gravity, carbide materials should be handled with care during transport and storage. When welding cutting tool materials, use the appropriate temperature; otherwise, welding at too high or too low a temperature may result in fracture or breakage. The strength of carbide material will be reduced when corroded by grinding fluid, lubricating fluid or other moisture etc. Please take care to keep it clean and dry when storing it.

4. Precautions when machining carbide tools

Carbide tools can deteriorate rapidly in strength due to surface condition. When finishing carbide tools, it is important that the surface is smooth and dust is generated when grinding. Large amounts can be harmful to the body if inhaled, so be sure to protect yourself by using protective tools such as a mask. In case of accidental contact with the eyes, rinse immediately with water. When grinding carbide tools, please ensure that the waste fluid contains heavy metals. When resharpening carbide tools, please ensure that there are no cracks after resharpening. Cracks may occur if the carbide material or product is marked with a laser or electric pen. Please avoid marking areas where stress is generated. The surface of the carbide material may be cracked after electrical discharge machining, which may reduce the strength.

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Catalogue

A

ThreadING milling
THERADING
MILLING

Model description	A2
ISO Metric Standard	A3
UN US Unified Standard	A4
W imperial Whitworth straight Pipe	A5
BSPT imperial tube	A5
NPT Tube	A6
NPTF Sealed Conical Pipe	A6

Threading Milling Insert Ordering code System

1. Insert Size

12 — L=12MM
14 — L=14MM
21 — L=21MM
30 — L=30MM
40 — L=40MM



2. Type of inserts

E — External
I — Internal
— Universal (internal and external threaded)

21

E

1.50

ISO

GR958

3. Pitch

mm TPJ
0.5-6 48-4

5. Grade

GR520C
Machining of copper, steel parts

GR520
Machining steel parts, stainless steel
general purpose

GR920
Machining stainless steel, 42CR etc.
Hardness :40° and above

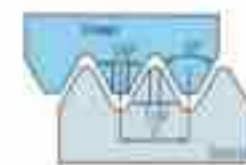
GR958
Machining of titanium alloys,
nickel-containing alloys, etc.
Hardness: to 50° or more

4. Threading Standard

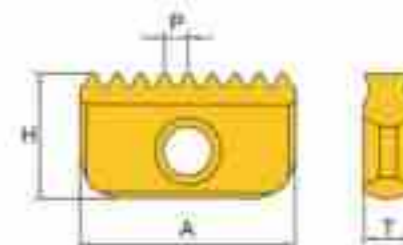
Whitworth W (BSW, BSP) straight pipe threading
British BSPT conical pipe threading
US NPT tapered pipe threading
US NPTF tapered pipe threading
German TR threading
American ACME threading
American short tooth ACME threading
German PG threading

Metric ISO threading
US UN Straight Pipe Threading
US UNJ threading

ISO 60° threading milling inserts



Standard: R262 (DIN13)
Revised No. R262
Accuracy class: 9G/9h
Tolerances class: Ag/ah

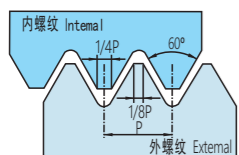


Pitch mm		Insert Size				
		A=12mm	A=14mm	A=21mm	A=30mm	A=40mm
0.50	外Exit					
	内Int	*12I 0.5 ISO	14I 0.5 ISO			
0.75	外Exit		14E 0.75 ISO			
	内Int	*12I 0.75 ISO	14I 0.75 ISO			
1.00	外Exit		14E 1.0 ISO	21E 1.0 ISO		
	内Int	*12I 1.0 ISO	14I 1.0 ISO	21I 1.0 ISO		
1.25	外Exit		14E 1.25 ISO			
	内Int	*12I 1.25 ISO	14I 1.25 ISO			
1.50	外Exit		14E 1.5 ISO	21E 1.5 ISO	30E 1.5 ISO	40E 1.5 ISO
	内Int	*12I 1.5 ISO	14I 1.5 ISO	21I 1.5 ISO	30I 1.5 ISO	40I 1.5 ISO
1.75	外Exit		14E 1.75 ISO			
	内Int		14I 1.75 ISO	21I 1.75 ISO		
2.00	外Exit		14E 2.0 ISO	21E 2.0 ISO	30E 2.0 ISO	40E 2.0 ISO
	内Int		14I 2.0 ISO	21I 2.0 ISO	30I 2.0 ISO	40I 2.0 ISO
2.50	外Exit		14E 2.5 ISO	21E 2.5 ISO		
	内Int		14I 2.5 ISO	21I 2.5 ISO		
3.00	外Exit			21E 3.0 ISO	30E 3.0 ISO	40E 3.0 ISO
	内Int			21I 3.0 ISO	30I 3.0 ISO	40I 3.0 ISO
3.50	外Exit				30E 3.5 ISO	
	内Int			21I 3.5 ISO	30I 3.5 ISO	40I 3.5 ISO
4.00	外Exit				30E 4.0 ISO	40E 4.0 ISO
	内Int				30I 4.0 ISO	40I 4.0 ISO
4.50	外Exit					
	内Int				30I 4.5 ISO	40I 4.5 ISO
5.00	外Exit					40E 5.0 ISO
	内Int				30I 5.0 ISO	40I 5.0 ISO
5.50	外Exit					
	内Int					40I 5.5 ISO
6.00	外Exit					40E 6.0 ISO
	内Int					40I 6.0 ISO
H		6.3	7.5	12	16	20
T		2.9	3.1	4.7	5.5	6.3

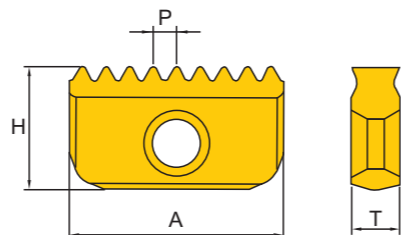
带“”刀片只有单面刃

*Insert with one cutting edge.

UN-60° US Threading Milling inserts



Standards : ANSI B 1. 1 : 74
 Defined by: ANSI B 1. 1 : 74
 Accuracy class : 2A/2B
 Tolerance class : 2A/2B

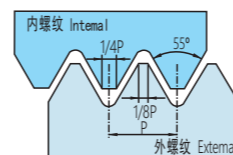


Pitch	TPI	Insert Size				
		A=12mm	A=14mm	A=21mm	A=30mm	A=40mm
32	外Exit		14E 32 UN			
	内Int	*12I 32 UN	14I 32 UN			
28	外Exit		14E 28 UN			
	内Int	*12I 28 UN	14I 28 UN			
27	外Exit		14E 27 UN			
	内Int		14I 27 UN			
24	外Exit		14E 24 UN	21E 24 UN		
	内Int	*12I 24 UN	14I 24 UN	21I 24 UN		
20	外Exit		14E 20 UN	21E 20 UN	30E 20 UN	
	内Int	*12I 20 UN	14I 20 UN	21I 20 UN	30I 20 UN	
18	外Exit		14E 18 UN	21E 18 UN	30E 18 UN	
	内Int	*12I 18 UN	14I 18 UN	21I 18 UN	30I 18 UN	
16	外Exit		14E 16 UN	21E 16 UN	30E 16 UN	40E 16 UN
	内Int	*12I 16 UN	14I 16 UN	21I 16 UN	30I 16 UN	40I 16 UN
14	外Exit		14E 14 UN	21E 14 UN	30E 14 UN	40E 14 UN
	内Int		14I 14 UN	21I 14 UN	30I 14 UN	40I 14 UN
12	外Exit		14E 12 UN	21E 12 UN	30E 12 UN	40E 12 UN
	内Int		14I 12 UN	21I 12 UN	30I 12 UN	40I 12 UN
10	外Exit			21E 10 UN	30E 10 UN	40E 10 UN
	内Int			21I 10 UN	30I 10 UN	40I 10 UN
8	外Exit				30E 8 UN	40E 8 UN
	内Int			21I 8 UN	30I 8 UN	40I 8 UN
6	外Exit				30E 6 UN	40E 6 UN
	内Int				30I 6 UN	40I 6 UN
4.5	外Exit					40E 4.5 UN
	内Int					40I 4.5 UN
4	外Exit					40E 4 UN
	内Int					40I 4 UN
H		6.3	7.5	12	16	20
T		2.9	3.1	4.7	5.5	6.3

带“”刀片只有单面刃

*Insert with one cutting edge.

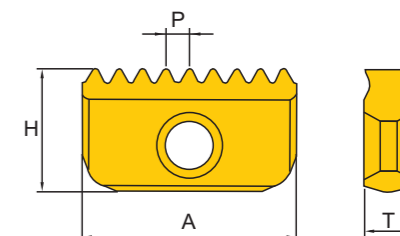
UN-60° US Thread Milling inserts



Standards : B.S.84:1956, DIN259, ISO 228/1:1982
 Defined by: B.S.84:1956, DIN259, ISO 228/1:1982
 Accuracy class : Medium class A
 Tolerance class: Medium class A



Use the same insert for internal and external threads

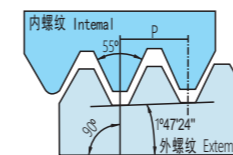


Pitch	TPI	Insert Size				
		A=12mm	A=14mm	A=21mm	A=30mm	A=40mm
24			14-24W			
20			14-20W	21-20W		
19		*12E 19W, 12I 19W	14-19W	21-19W		
16			14-16W	21-16W	30-16W	
14			14-14W	21-14W	30-14W	
11				21-11W	30-11W	40-11W
8						40-8W
H		6.3	7.5	12	16	20
T		2.9	3.1	4.7	5.5	6.3

带“”刀片只有单面刃

*Insert with one cutting edge.

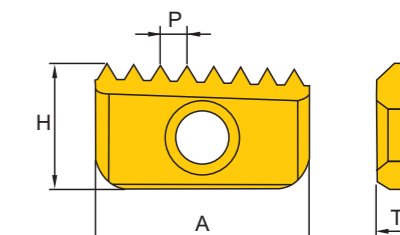
BSPT-55° British Standard Tapered Pipe Thread Cutter inserts



Standards : B.S.21:1985
 Defined by: B.S.21:1985
 Accuracy class : Standard BSPT
 Tolerance class: Standard BSPT



Tapered pipe thread milling cutter with single-sided inserts only.
 Can machine both internal and external threads

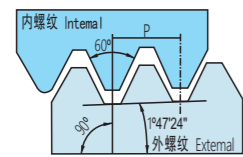


Pitch	TPI	Insert Size				
		A=12mm	A=14mm	A=21mm	A=30mm	A=40mm
19		*12E 19BSPT, 12I 19BSPT	14-19BSPT			
14			14-14BSPT	21-14BSPT		
11				21-11BSPT	30-11BSPT	40-11BSPT
H		6.3	7.5	12	16	20
T		2.9	3.1	4.7	5.5	6.3

带“”刀片只有单面刃

*Insert with one cutting edge.

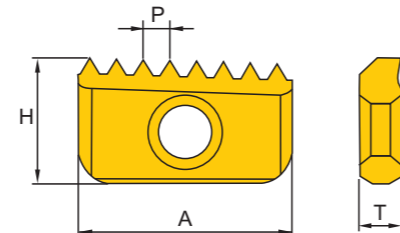
NPT-60° UN Standard Conical Pipe Threading inserts



Standards : USAS B2. 1 : 1968
Defined by : USAS B2. 1 : 1968
Accuracy class : Standard NPT
Tolerance class : Standard NPT



Tapered pipe thread milling cutter with single-sided inserts only.
Can machine both internal and external threads

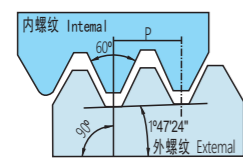


Pitch	Insert Size				
	A=12mm	A=14mm	A=21mm	A=30mm	A=40mm
TPI					
18	*12E 18NPT, 12I 18NPT	14-18NPT			
14		14-14NPT	21-14NPT		
11.5			21-11.5NPT	30-11.5NPT	40-11.5NPT
8				30-8NPT	40-8NPT
H	6.3	7.5	12	16	20
T	2.9	3.1	4.7	5.5	6.3

带“”刀片只有单面刃

*Insert with one cutting edge.

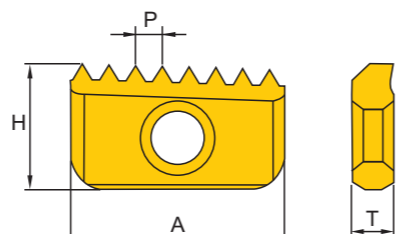
NPTF-60° UN Standard dry seal Conical Pipe Threading inserts



标准 : USAS B2. 1 : 1968
Defined by : USAS B2. 1 : 1968
精度等级 : Standard NPT
Tolerance class : Standard NPT



Tapered pipe thread milling cutter with single-sided inserts only.
Can machine both internal and external threads



Pitch	Insert Size				
	A=12mm	A=14mm	A=21mm	A=30mm	A=40mm
TPI					
18	*12E 18NPTF, 12N 18NPTF	14-18NPTF			
14		14-14NPTF	21-14NPTF		
11.5			21-11.5NPTF	30-11.5NPTF	40-11.5NPTF
8				30-8NPTF	40-8NPT
H	6.3	7.5	12	16	20
T	2.9	3.1	4.7	5.5	6.3

带“”刀片只有单面刃

*Insert with one cutting edge.

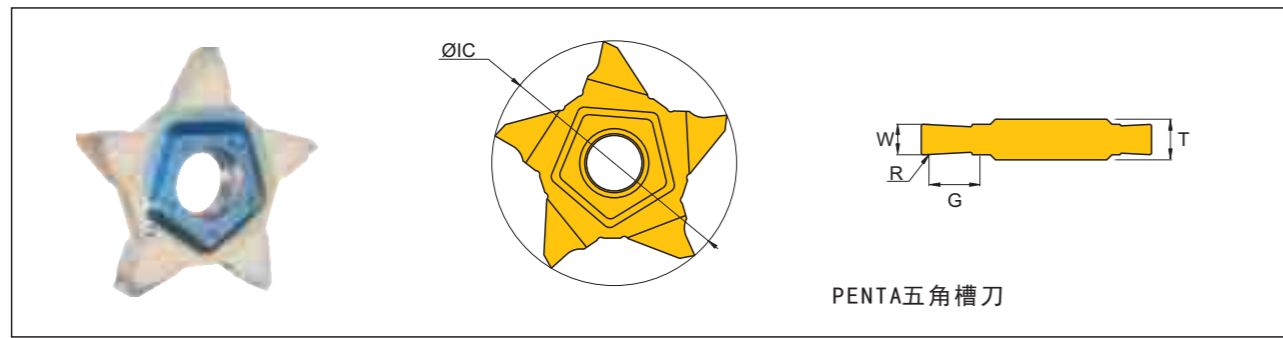
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B >>>>>>>>>> GROOVE CUT-OFF

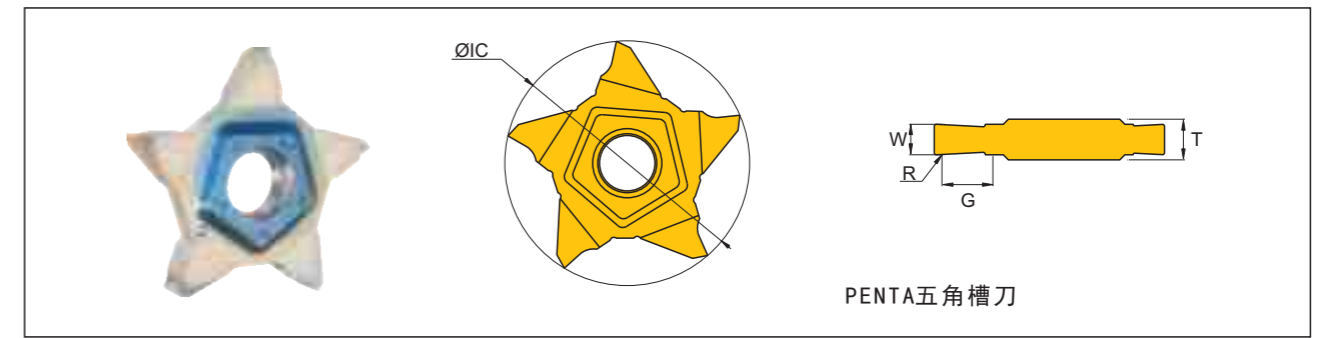
PENTA five-point star grooving cut-off	B2-B3
TQJ four-corner grooving cut-off	B4
MB Solid Carbide head for grooving	B5
GER grooving Carbide turning insert	B6-B7
6/7/8/9GR grooving Carbide turning insert	B8-B9
TGR/L Vertical shallow grooving insert cut-off	B10-B12
FGV end face grooving cut-off	B13
TER/TNR grooving cut-off	B14-B15
MGG grooving inserts	B16
MRAG grooving inserts	B17
MGMN grooving inserts	B18
MRMN grooving inserts	B19

PENTA five-point star grooving cut-off



Code	Size					Grade		Holder
	W	G	IC	R	T	GR928	GR958	
PENTA 24N050P005	0.50	2.6	24	0.05	4			PCHR/L-24
PENTA 24N070P005	0.70							
PENTA 24N075P005	0.75							
PENTA 24N080P005	0.80							
PENTA 24N090P005	0.90							
PENTA 24N095P005	0.95							
PENTA 24N100P005	1.00	3.6		0.05				
PENTA 24N110P005	1.10							
PENTA 24N115P005	1.15							
PENTA 24N120P005	1.20							
PENTA 24N125P005	1.25							
PENTA 24N130P005	1.30							
PENTA 24N140P005	1.40	5.2		0.05				
PENTA 24N145P005	1.45							
PENTA 24N150P005	1.50							
PENTA 24N160P005	1.60							
PENTA 24N170P005	1.70							
PENTA 24N175P005	1.75							
PENTA 24N180P005	1.80	6.6		0.05				
PENTA 24N190P005	1.90							
PENTA 24N200P005	2.00							
PENTA 24N220P005	2.20							
PENTA 24N225P005	2.25							
PENTA 24N240P005	2.40							
PENTA 24N250P005	2.50							
PENTA 24N300P005	3.00							
PENTA 24N310P005	3.10							
PENTA 24N315P005	3.15							

PENTA five-point star grooving cut-off

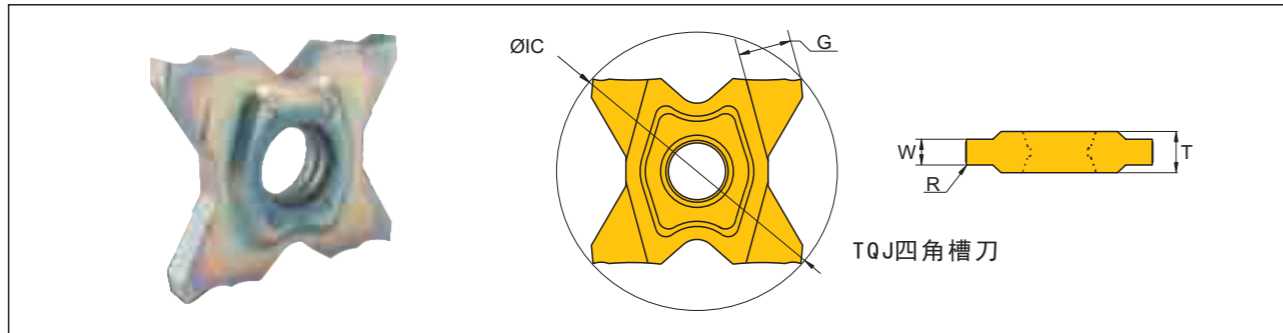


Code	Size					Grade		Holder
	W	G	IC	R	T	GR928	GR958	
PENTA 24N050P020	0.50	2.6	24	0.20	4			PCHR/L-24
PENTA 24N075P020	0.75							
PENTA 24N080P020	0.80							
PENTA 24N100P020	1.00	3.6		0.20				
PENTA 24N120P020	1.20							
PENTA 24N140P020	1.40							
PENTA 24N150P020	1.50	5.2		0.20				
PENTA 24N185P020	1.85							
PENTA 24N195P020	1.95							
PENTA 24N200P020	2.00							
PENTA 24N205P020	2.05							
PENTA 24N230P020	2.30							
PENTA 24N250P020	2.50	6.6		0.20				
PENTA 24N300P020	3.00							
PENTA 24N315P020	3.15							

PENTA five-point star grooving cut-off(circular)

Code	Size					Grade		Holder
	W	G	IC	R	T	GR928	GR958	
PENTA 24N050P025	0.50	2.6	24	0.25	4			PCHR/L-24
PENTA 24N100P050	1.00	3.6		0.50				
PENTA 24N120P060	1.20							
PENTA 24N150P075	1.50			5.2		0.75		
PENTA 24N200P100	2.00	6.6		1.00				
PENTA 24N250P125	2.50							
PENTA 24N300P150	3.00							

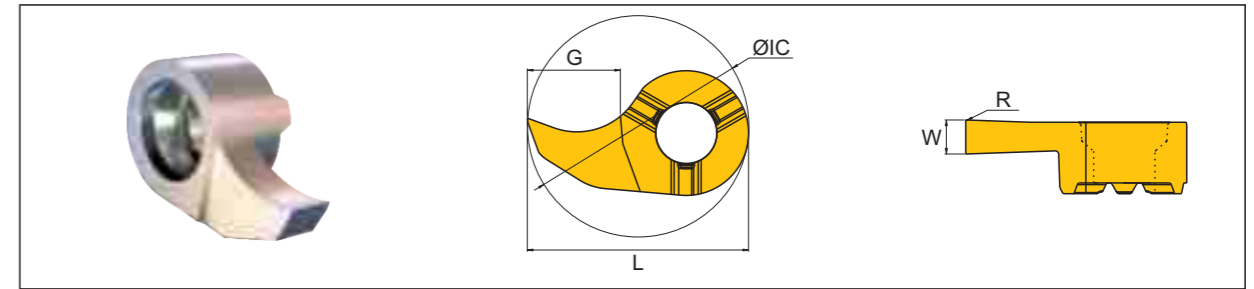
TQ.J four-corner grooving cut-off



Code	Size					Grade		Holder
	W	G	IC	R	T	GR928	GR958	
TQJ27-050-005	0.50	2.7	27	0.05	4			TQJHR-27
TQJ27-075-005	0.75			0.05				
TQJ27-100-005	1.00	3.7		0.05				
TQJ27-120-005	1.20			0.05				
TQJ27-150-005	1.50	5.7		0.05				
TQJ27-175-005	1.75			0.05				
TQJ27-180-005	1.80			0.05				
TQJ27-200-005	2.00			0.05				
TQJ27-220-005	2.20			0.05				
TQJ27-250-005	2.50			0.05				
TQJ27-285-005	2.85	0.05						
TQJ27-300-005	3.00	0.05						

Code	Size					Grade		Holder
	W	G	IC	R	T	GR928	GR958	
TQJ27-050-020	0.50	2.7	27	0.20	4			TQJHR-27
TQJ27-075-020	0.75			0.20				
TQJ27-100-020	1.00	3.7		0.20				
TQJ27-120-020	1.20			0.20				
TQJ27-150-020	1.50	5.7		0.20				
TQJ27-175-020	1.75			0.20				
TQJ27-180-020	1.80			0.20				
TQJ27-200-020	2.00			0.20				
TQJ27-220-020	2.20			0.20				
TQJ27-250-020	2.50			0.20				
TQJ27-285-020	2.85	0.20						
TQJ27-300-020	3.00	0.20						

MB Solid Carbide head for grooving

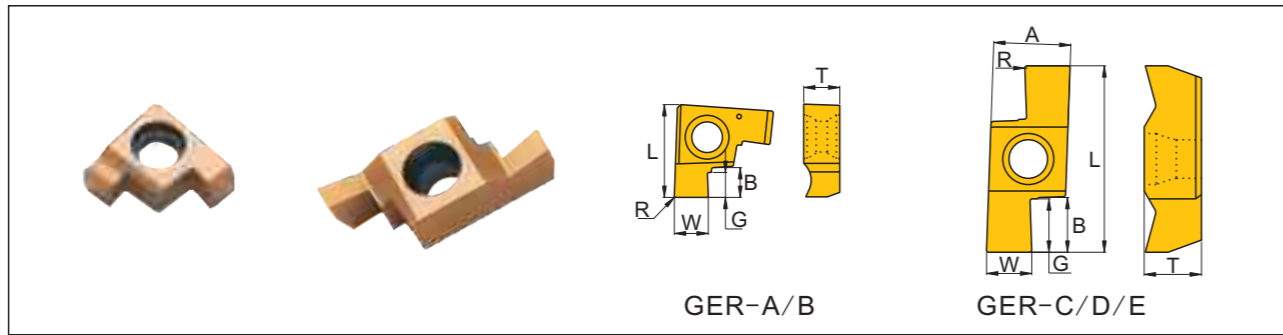


Code	Size					Grade		Holder
	W	G	L	Dmin	R	GR928	GR958	
MB-07GR075-2.0D10	0.75	2.20	9.5	10	0.05			
MB-07GR100-2.0D10	1.00							
MB-07GR150-2.0D10	1.50							
MB-07GR200-2.0D10	2.00							
MB-07GR300-2.0D10	3.00	3.20	10.5	11	0.05			
MB-07GR100-3.0D11	1.00							
MB-07GR150-3.0D11	1.50							
MB-07GR200-3.0D11	2.00							
MB-07GR300-3.0D11	3.00	3.70	11.0	12	0.05			
MB-07GR100-3.5D12	1.00							
MB-07GR150-3.5D12	1.50							
MB-07GR200-3.5D12	2.00							
MB-07GR300-3.5D12	3.00							

Code	Size					Grade		Holder
	W	G	L	Dmin	R	GR928	GR958	
MB-09GR150-4.0D14	1.50	4.20	13.5	14	0.05			
MB-09GR200-4.0D14	2.00							
MB-09GR250-4.0D14	2.50							
MB-09GR300-4.0D14	3.00							
MB-09GR150-5.5D16	1.50	5.70	15.0	16	0.05			
MB-09GR200-5.5D16	2.00							
MB-09GR250-5.5D16	2.50							
MB-09GR300-5.5D16	3.00							
MB-09GR150-6.5D17	1.50	6.70	16.0	17	0.05			
MB-09GR200-6.5D17	2.00							
MB-09GR250-6.5D17	2.50							
MB-09GR300-6.5D17	3.00							
MB-09GR400-6.5D17	4.00							

Code	Size					Grade		Holder
	W	G	L	Dmin	R	GR928	GR958	
MB-11GR150-8.0D20	1.50	8.20	19.5	20	0.05			
MB-11GR200-8.0D20	2.00							
MB-11GR250-8.0D20	2.50							
MB-11GR300-8.0D20	3.00							
MB-11GR350-8.0D20	3.50							
MB-11GR400-8.0D20	4.00							

GER grooving Carbide turning insert

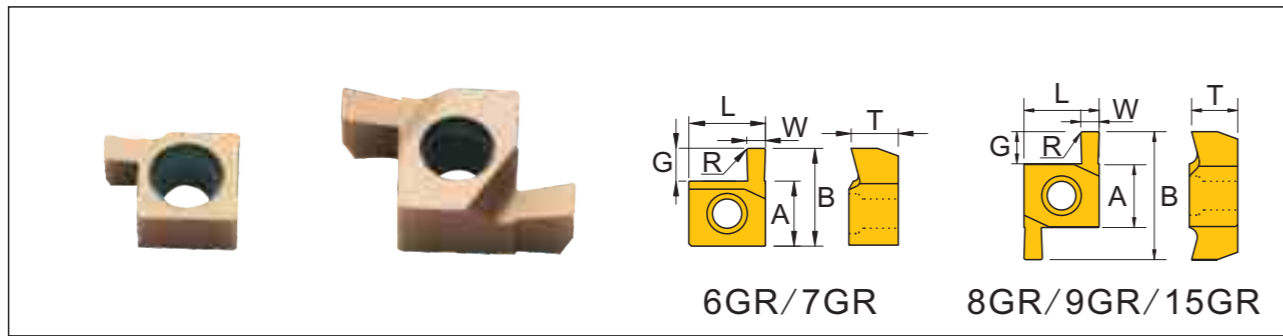


Code	A	L	T
GER/L -A	6.69	6.5	2.58
GER/L -AR			
GER/L -B	8.46	8.2	3.18
GER/L -BR			
GER/L -C	5.8	11.48	4.05
GER/L -CR			
GER/L -D	6.8	16.44	5.05
GER/L -DR			
GER/L -E	9.54	21.66	5.55

Code	Size				Grade		Holder
	W	G	B	R	GR928	GR958	
GER/L 100-005E	1.00	2.5	6.8	0.50			SIGER-E
GER/L 150-010E	1.50						
GER/L 170-010E	1.70	3.0	0.10				
GER/L 185-010E	1.85						
GER/L 195-010E	1.95	3.2	0.20				
GER/L 200-010E	2.00						
GER/L 225-010E	2.25	4.5	0.20				
GER/L 230-020E	2.30						
GER/L 250-020E	2.50	5.5	0.20				
GER/L 275-020E	2.75						
GER/L 280-020E	2.80	6.5	0.20				
GER/L 300-020E	3.00						
GER/L 330-020E	3.30	5.0	0.20				
GER/L 350-020E	3.50						
GER/L 400-020E	4.00	6.5	0.20				
GER/L 430-020E	4.30						
GER/L 450-020E	4.50	6.5	0.20				
GER/L 460-020E	4.60						
GER/L 500-020E	5.00						

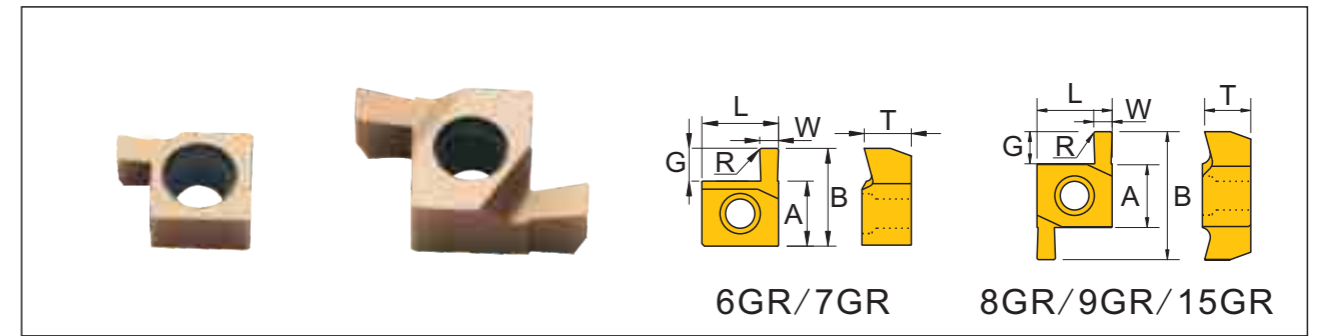
Code	Size				Grade		Holder
	W	G	B	R	GR928	GR958	
GER/L 100-005A	1.00	1.5	1.8	0.05			SIGER-A
GER/L 120-005A	1.20						
GER/L 125-005A	1.25	1.5	1.8	0.10			
GER/L 150-010A	1.50						
GER/L 200-010A	2.00	1.5	1.8	0.50			
GER/L 100-050AR	1.00						
GER/L 200-100AR	2.00	2.2	2.6	0.05			SIGER-B
GER/L 100-005B	1.00						
GER/L 120-005B	1.20	2.2	2.6	0.10			
GER/L 125-005B	1.25						
GER/L 145-010B	1.45	2.2	2.6	0.05			
GER/L 150-010B	1.50						
GER/L 200-010B	2.00	2.2	2.6	0.50			
GER/L 250-020B	2.50						
GER/L 300-020B	3.00	2.2	2.6	1.00			
GER/L 100-050BR	1.00						
GER/L 200-100BR	2.00	2.5	2.7	0.05			SIGER-C
GER/L 100-005C	1.00						
GER/L 120-005C	1.20						
GER/L 125-005C	1.25						
GER/L 140-005C	1.40						
GER/L 145-010C	1.45						
GER/L 150-010C	1.50						
GER/L 170-010C	1.70						
GER/L 185-010C	1.85						
GER/L 195-010C	1.95						
GER/L 200-010C	2.00						
GER/L 250-020C	2.50				2.5	2.7	
GER/L 300-020C	3.00						
GER/L 350-020C	3.50	2.5	2.7	0.50			
GER/L 100-050CR	1.00						
GER/L 200-100CR	2.00	2.5	2.7	1.00			
GER/L 300-150CR	3.00						
GER/L 100-005D	1.00	2.5	2.7	0.05			SIGER-D
GER/L 140-005D	1.40						
GER/L 145-010D	1.45	2.5	2.7	0.10			
GER/L 150-010D	1.50						
GER/L 170-010D	1.70	3.0	2.7	0.10			
GER/L 185-010D	1.85						
GER/L 195-010D	1.95	3.0	2.7	0.10			
GER/L 200-010D	2.00						
GER/L 225-010D	2.25	3.2	2.7	0.10			
GER/L 230-020D	2.30						
GER/L 250-020D	2.50	3.2	2.7	0.20			
GER/L 275-020D	2.75						
GER/L 280-020D	2.80	3.2	2.7	0.20			
GER/L 300-020D	3.00						
GER/L 330-020D	3.30	4.5	2.7	0.20			
GER/L 350-020D	3.50						
GER/L 400-020D	4.00	4.5	2.7	0.20			
GER/L 100-050DR	1.00						
GER/L 200-100DR	2.00	4.5	2.7	0.50			
GER/L 300-150DR	3.00						
GER/L 400-200DR	4.00	4.5	2.7	2.00			
GER/L 100-050DR	1.00						

6/7/8/9GR grooving Carbide turning insert



Code	Size							Grade		Holder	
	W	槽深	A	B	T	L	R	GR928	GR958		
6GR/L 100	1.00	1.5	4.76	6.44	2.34	5.56	0.20			SNGR-06	
6GR/L 150	1.50										
6GR/L 200	2.00										
7GR/L 100	1.00		5.56	7.36	3.08				SNGR-07		
7GR/L 150	1.50										
7GR/L 200	2.00										
8GR/L 100	1.00	2	5.56	10.16	3.87	6.15					SNGR-08
8GR/L 150	1.50										
8GR/L 200	2.00										
8GR/L 250	2.50										
8GR/L 300	3.00										
8GR/L 350	3.50										
8GR/L 400	4.00										
9GR/L 100	1.00	1.5	6.35	12.95	4.66	7.74				SNGR-09	
9GR/L 150	1.50	2									
9GR/L 200	2.00	3									
9GR/L 250	2.50										
9GR/L 300	3.00										
9GR/L 350	3.50										
9GR/L 400	4.00										
15GR/L 100	1.00	1.5	9.2	20.80	5.10	10.80			SNGR-15		
15GR/L 150	1.50	2									
15GR/L 200	2.00	3									
15GR/L 250	2.50										
15GR/L 300	3.00										
15GR/L 350	3.50	4									
15GR/L 400	4.00										
15GR/L 450	4.50										
15GR/L 500	5.00	5									

6/7/8/9GR grooving Carbide turning insert(circular)

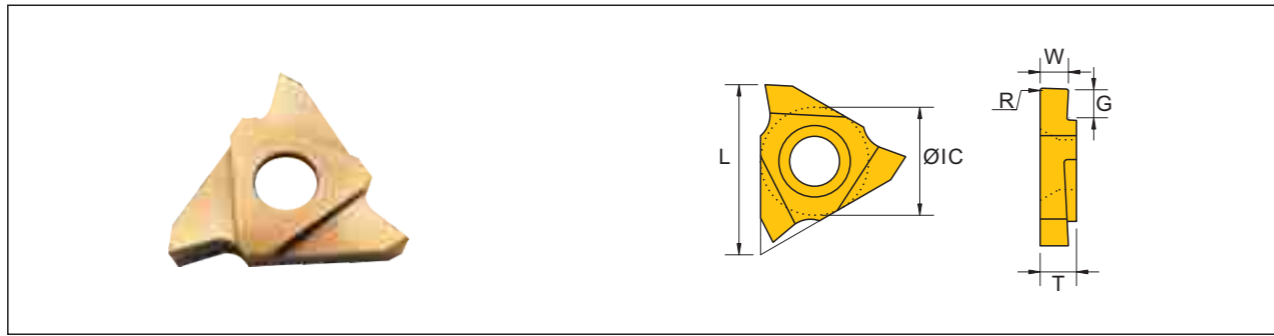


Code	Size							Grade		Holder	
	W	槽深	A	B	T	L	R	GR928	GR958		
6GR/L 100-0.5R	1.00	1.5	4.76	6.44	2.34	5.56	0.20			SNGR-06	
6GR/L 150-0.75R	1.50										
6GR/L 200-1.0R	2.00										
7GR/L 100-0.5R	1.00		5.56	7.36	3.08				SNGR-07		
7GR/L 150-0.75R	1.50										
7GR/L 200-1.0R	2.00										
8GR/L 100-0.5R	1.00	2	5.56	10.16	3.87	6.15					SNGR-08
8GR/L 150-0.75R	1.50										
8GR/L 200-1.0R	2.00										
8GR/L 250-1.25R	2.50										
8GR/L 300-1.5R	3.00										
9GR/L 100-0.5R	1.00							1.5	6.35	12.95	
9GR/L 150-0.75R	1.50	2									
9GR/L 200-1.0R	2.00	3									
9GR/L 250-1.25R	2.50										
9GR/L 300-1.5R	3.00										
9GR/L 400-2.0R	4.00										
15GR/L 100-0.5R	1.00	1.5	9.2	20.80	5.10	10.80			SNGR-15		
15GR/L 150-0.75R	1.50	2									
15GR/L 200-1.0R	2.00	3									
15GR/L 250-1.25R	2.50										
15GR/L 300-1.5R	3.00										
15GR/L 400-2.0R	4.00	4									
15GR/L 500-2.5R	5.00						5				

6/7/8/9GR grooving Carbide turning insert

6/7/8/9GR grooving Carbide turning insert

TGR/L43 Vertical shallow grooving insert cut-off

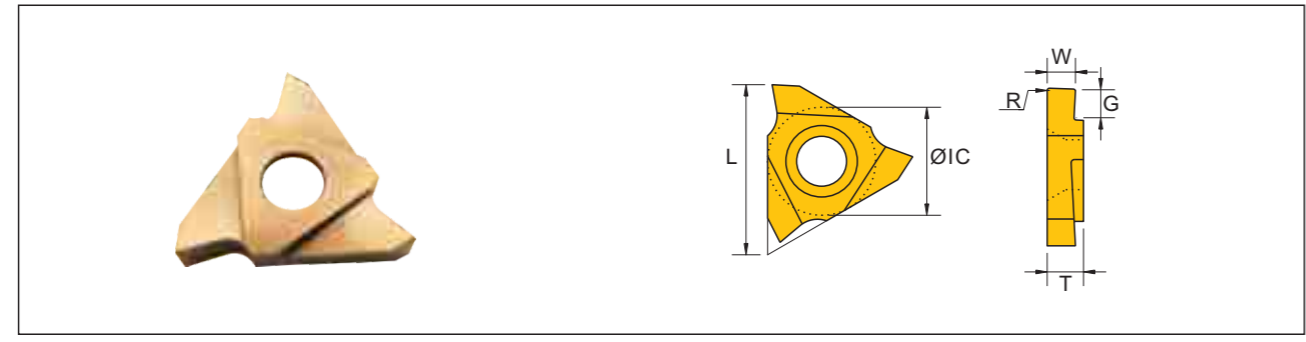


Code	Size						Grade			Holder		
	W	L	G	R	IC	T	GR520	GR928	GR958			
TGR/L 43100	1.00	22	2.6	0.2	12.7	4.8				CGBR-22		
TGR/L 43120	1.20											
TGR/L 43125	1.25											
TGR/L 43140	1.40											
TGR/L 43145	1.45											
TGR/L 43150	1.50											
TGR/L 43170	1.70											
TGR/L 43175	1.75											
TGR/L 43185	1.85											
TGR/L 43195	1.95											
TGR/L 43200	2.00		4.1	0.3								
TGR/L 43210	2.10											
TGR/L 43220	2.20											
TGR/L 43230	2.30											
TGR/L 43250	2.50											
TGR/L 43275	2.75											
TGR/L 43280	2.80											
TGR/L 43300	3.00											
TGR/L 43320	3.20											
TGR/L 43330	3.30						5.2					
TGR/L 43345	3.45											
TGR/L 43350	3.50											
TGR/L 43375	3.75											
TGR/L 43395	3.95											
TGR/L 43400	4.00											
TGR/L 43420	4.20											
TGR/L 43450	4.50											

TGR/L32 Vertical shallow grooving insert cut-off

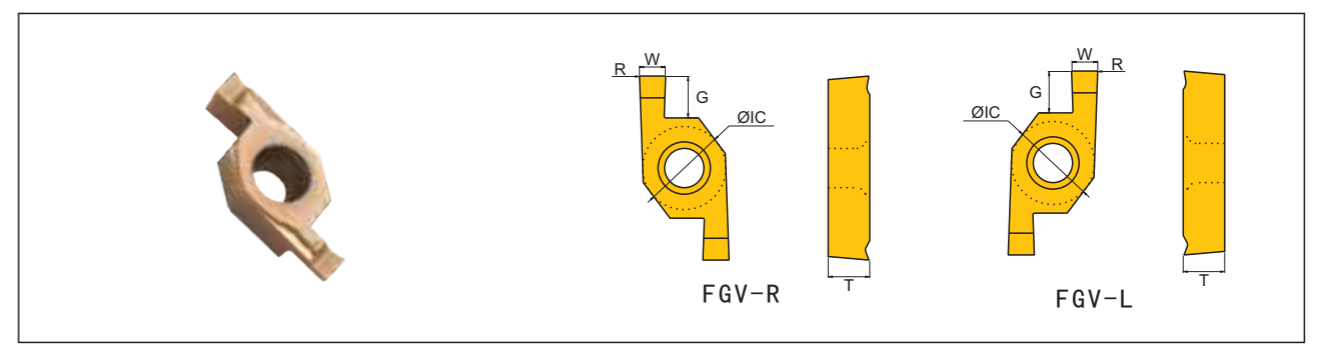
Code	Size						Grade			Holder
	W	L	G	R	IC	T	GR520	GR928	GR958	
TGR/L 3030	0.30	16	0.9	0.05	9.53	3.18				CGBR-16
TGR/L 3040	0.40		1.3	0.05						
TGR/L 3050	0.50			0.05						
TGR/L 3060	0.60			0.05						
TGR/L 3065	0.65			0.05						
TGR/L 3070	0.70			0.05						
TGR/L 3075	0.75			1.9			0.05			
TGR/L 3080	0.80						0.05			
TGR/L 3085	0.85						0.05			
TGR/L 3090	0.90						0.05			
TGR/L 3095	0.95						0.05			
TGR/L 3100	1.00		2.3				0.05			
TGR/L 3110	1.10						0.05			
TGR/L 3115	1.15						0.05			
TGR/L 3120	1.20						0.05			
TGR/L 3125	1.25						0.05			
TGR/L 3130	1.30			0.05						
TGR/L 3135	1.35			0.05						
TGR/L 3140	1.40			2.8			0.05			
TGR/L 3145	1.45						0.05			
TGR/L 3150	1.50						0.05			
TGR/L 3155	1.55		0.05							
TGR/L 3160	1.60		0.05							
TGR/L 3165	1.65		0.05							
TGR/L 3170	1.70		0.05							
TGR/L 3175	1.75		0.05							
TGR/L 3180	1.80		0.05							
TGR/L 3190	1.90		2.8				0.05			
TGR/L 3195	1.95			0.05						
TGR/L 3200	2.00			0.05						
TGR/L 3210	2.10	0.05								
TGR/L 3215	2.15	0.05								
TGR/L 3220	2.20	0.05								
TGR/L 3225	2.25	0.05								
TGR/L 3230	2.30	0.05								
TGR/L 3240	2.40	0.05								
TGR/L 3245	2.45	0.05								
TGR/L 3250	2.50	0.05								
TGR/L 3260	2.60	0.05								
TGR/L 3270	2.70	0.05								
TGR/L 3280	2.80	0.05								
TGR/L 3290	2.90	0.05								
TGR/L 3300	3.00	0.05								

TGR/L Vertical shallow grooving insert cut-off (circular)



Code	Size						Grade			Holder					
	W	L	G	R	IC	T	GR520	GR928	GR958						
TGR/L 3050-0.25R	0.50	16	1.3	0.25	9.53	3.18				CGBR-16					
TGR/L 3100-0.5R	1.00			0.50											
TGR/L 3120-0.6R	1.20			0.60											
TGR/L 3150-0.75R	1.50			0.75											
TGR/L 3180-0.9R	1.80			0.90											
TGR/L 3200-1.0R	2.00		2.8	1.00											
TGR/L 3250-1.25R	2.50			1.25											
TGR/L 3300-1.5R	3.00			1.50											
TGR/L 43100-0.5R	1.00			22			2.6	0.50	12.7		4.8				CGBR-22
TGR/L 43120-0.6R	1.20							0.60							
TGR/L 43200-1.0R	2.00	4.1	1.00												
TGR/L 43300-1.5R	3.00		1.50												
TGR/L 43400-2.0R	4.00		5.2		2.00										

FGV end face grooving cut-off

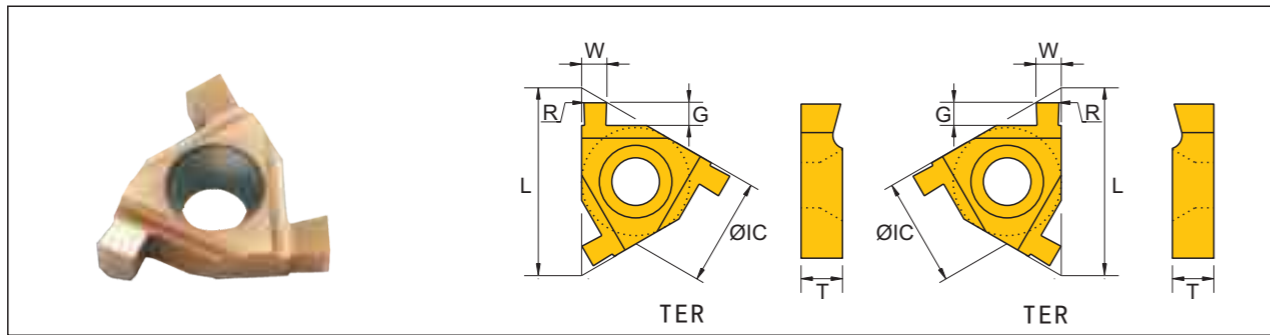


Code	Size					Grade		Holder
	W	G	IC	R	T	GR928	GR958	
FGV100R/LB05D10	0.50	3.00	9.53	0.05	4.76			
FGV150R/LB05D10	0.75	3.00		0.05				
FGV200R/LB05D10	1.00	3.50		0.05				
FGV250R/LB05D10	1.20	3.50		0.05				
FGV300R/LB05D10	1.50	4.80		0.05				

FGV end face grooving cut-off (Circular)

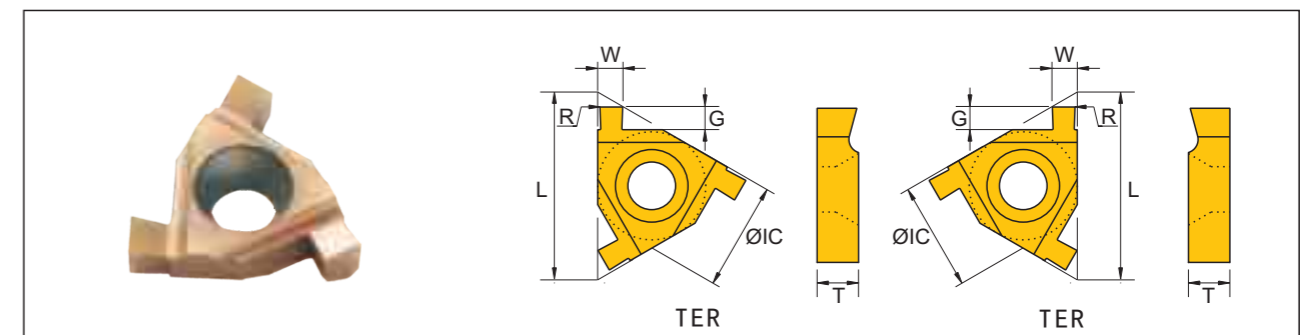
Code	Size					Grade		Holder
	W	G	IC	R	T	GR928	GR958	
FGV100R/LB50D10	0.50	3.00	9.53	0.05	4.76			
FGV150R/LB75D10	0.75	3.00		0.05				
FGV200R/LB100D10	1.00	3.50		0.05				
FGV250R/LB125D10	1.20	3.50		0.05				
FGV300R/LB150D10	1.50	4.80		0.05				

TER/TNR grooving cut-off



Code	Size						Grade			Holder
	W	L	G	R	IC	T	GR520	GR928	GR958	
TER/NR 11080	0.80	11	1.2	0.05	6.35	3.2				SER/NR-11
TER/NR 11085	0.85			0.05						
TER/NR 11090	0.90			0.05						
TER/NR 11100	1.00			0.05						
TER/NR 11110	1.10			0.05						
TER/NR 11120	1.20			0.05						
TER/NR 11125	1.25			0.05						
TER/NR 11130	1.30			0.05						
TER/NR 11140	1.40			0.05						
TER/NR 11150	1.50			0.05						
TER/NR 11200	2.00			0.05						
TER/NR 16080	0.80	16	1.4	0.05	9.53	3.6				SER/NR-16
TER/NR 16090	0.90			0.05						
TER/NR 16100	1.00			0.05						
TER/NR 16105	1.05			0.05						
TER/NR 16110	1.10			0.05						
TER/NR 16120	1.20		0.05							
TER/NR 16125	1.25		0.05							
TER/NR 16130	1.30		1.8	0.05						
TER/NR 16135	1.35			0.05						
TER/NR 16140	1.40			0.05						
TER/NR 16145	1.45			0.05						
TER/NR 16150	1.50	0.05								
TER/NR 16155	1.55	0.05								
TER/NR 16160	1.60	2.0	0.05							
TER/NR 16165	1.65		0.05							
TER/NR 16170	1.70		0.05							
TER/NR 16175	1.75		0.05							
TER/NR 16180	1.80		0.05							
TER/NR 16185	1.85		0.05							
TER/NR 16190	1.90	0.05								
TER/NR 16200	2.00	0.05								

TER/NR flush-mounted grooving insters

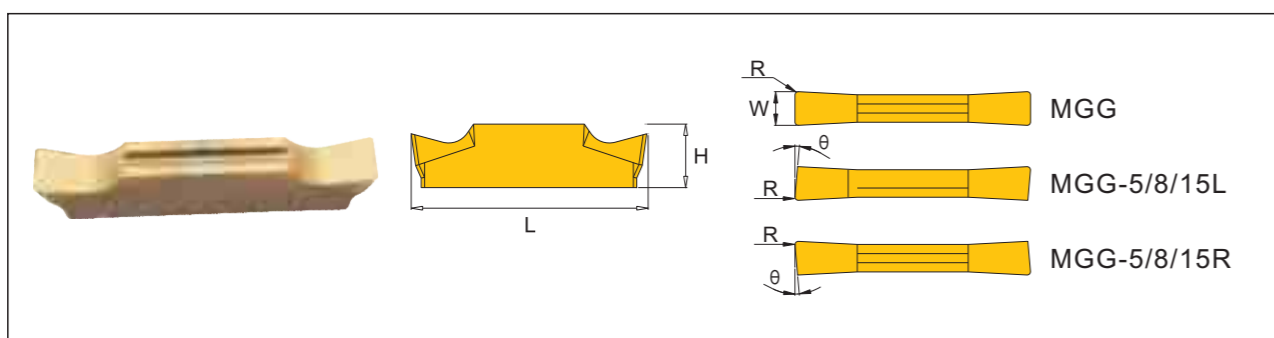


Code	Size						Grade			Holder
	W	L	G	R	IC	T	GR520	GR928	GR958	
TER/NR 16205	2.05	16	2.2	0.05	9.53	3.6				SER/NR-16
TER/NR 16210	2.10			0.05						
TER/NR 16215	2.15			0.05						
TER/NR 16220	2.20			0.05						
TER/NR 16225	2.25			0.05						
TER/NR 16230	2.30			0.05						
TER/NR 16240	2.40		2.0	0.05						
TER/NR 16250	2.50			0.05						
TER/NR 16255	2.55			0.05						
TER/NR 16260	2.60			0.05						
TER/NR 16270	2.70			0.05						
TER/NR 16280	2.80	0.05								
TER/NR 16290	2.90	0.05								
TER/NR 16300	3.00	0.05								

TER/TNR grooving cut-off

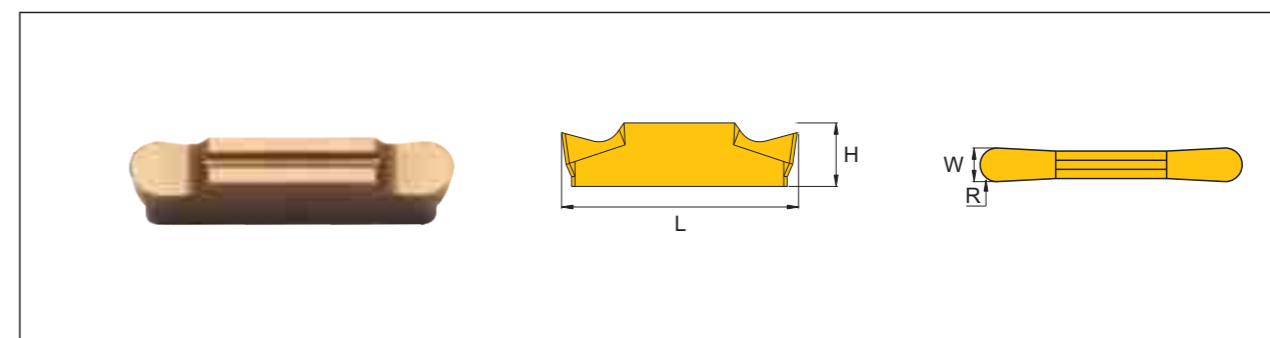
TER/TNR grooving cut-off

MGG grooving inserts



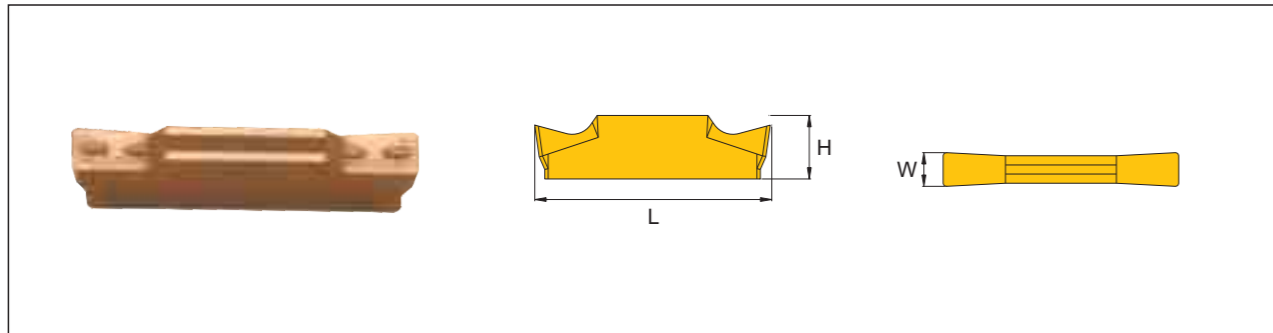
Code	Size				Grade			Holder
	W	H	L	R	GR528	GR928	GR958	
MGG 150	1.50	3.50	16.0	0.10				MGEHR/L-150 MGIVR/L-150
MGG 150-5R/L		3.50	16.0	0.20				
MGG 150-8R/L		3.50	16.0	0.20				
MGG 150-15R/L		3.50	16.0	0.20				
MGG 200	2.00	3.50	16.0	0.20				MGEHR/L-200 MGIVR/L-200
MGG 200-5R/L		3.50	16.0	0.20				
MGG 200-8R/L		3.50	16.0	0.20				
MGG 200-15R/L		3.50	16.0	0.20				
MGG 250	2.50	3.85	18.5	0.20				MGEHR/L-250 MGIVR/L-250
MGG 250-5R/L		3.85	18.5	0.20				
MGG 250-8R/L		3.85	18.5	0.20				
MGG 250-15R/L		3.85	18.5	0.20				
MGG 300	3.00	4.80	21.0	0.30				MGEHR/L-300 MGIVR/L-300
MGG 300-5R/L		4.80	21.0	0.30				
MGG 300-8R/L		4.80	21.0	0.30				
MGG 300-15R/L		4.80	21.0	0.30				
MGG 400	4.00	4.80	21.0	0.30				MGEHR/L-400 MGIVR/L-400
MGG 400-5R/L		4.80	21.0	0.30				
MGG 400-8R/L		4.80	21.0	0.30				
MGG 400-15R		4.80	21.0	0.30				
MGG 500	5.00	5.80	26.0	0.70				MGEHR/L-500 MGIVR/L-500
MGG 500-5R/L		5.80	26.0	0.70				
MGG 500-8R/L		5.80	26.0	0.70				
MGG 500-15R/L		5.80	26.0	0.70				
MGG 600	6.00	5.80	26.0	0.70				MGEHR/L-600 MGIVR/L-600
MGG 600-5R/L		5.80	26.0	0.70				
MGG 600-8R/L		5.80	26.0	0.70				
MGG 600-15R/L		5.80	26.0	0.70				

MRAG grooving inserts (circular)



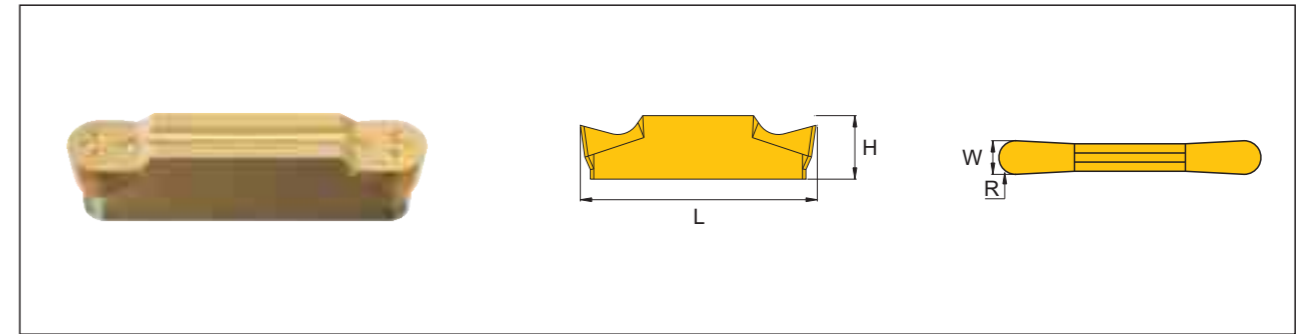
Code	Size				Grade			Holder
	W	H	L	R	GR528	GR928	GR958	
MRGG 150	1.50	3.50	16.0	0.75				MGEHR/L-150 MGIVR/L-150
MRGG 200	2.00	3.50	16.0	1.00				MGEHR/L-200 MGIVR/L-200
MRGG 250	2.50	3.85	18.5	1.25				MGEHR/L-250 MGIVR/L-250
MRGG 300	3.00	4.80	21.0	1.50				MGEHR/L-300 MGIVR/L-300
MRGG 400	4.00	4.80	21.0	2.00				MGEHR/L-400 MGIVR/L-400
MRGG 500	5.00	5.80	26.0	2.50				MGEHR/L-500 MGIVR/L-500
MRGG 600	6.00	5.80	26.0	3.00				MGEHR/L-600 MGIVR/L-600

MGMN grooving insters



Code	Size				Grade			Holder
	W	H	L	R	GR528	GR928	GR958	
MGMN 150-G	1.50	3.50	16.0	0.15				MGEHR/L-150 MGIVR/L-150
MGMN 200-G	2.00	3.50	16.0	0.20				MGEHR/L-200 MGIVR/L-200
MGMN 200-M		3.50	16.0	0.20				
MGMN 250-G	2.50	3.85	18.5	0.20				MGEHR/L-250 MGIVR/L-250
MGMN 250-M		3.85	18.5	0.20				
MGMN 300-G	3.00	4.80	21.0	0.40				MGEHR/L-300 MGIVR/L-300
MGMN 300-M		4.80	21.0	0.40				
MGMN 400-G	4.00	4.80	21.0	0.40				MGEHR/L-400 MGIVR/L-400
MGMN 400-M		4.80	21.0	0.40				
MGMN 500-M	5.00	5.80	26.0	0.80				MGEHR/L-500 MGIVR/L-500
MGMN 600-M	6.00	5.80	26.0	0.80				MGEHR/L-600 MGIVR/L-600
MGMN 800-M	8.00	6.50	31.0	0.8				MGEHR/L-800 MGIVR/L-800

MRMN grooving inserts



Code	Size				Grade			Holder
	W	H	L	R	GR528	GR928	GR958	
MRMN 150-G	1.50	3.50	16.0	0.75				MGEHR/L-150 MGIVR/L-150
MRMN 200-G	2.00	3.50	16.0	1.00				MGEHR/L-200 MGIVR/L-200
MRMN 200-M		3.50	16.0	1.00				
MRMN 250-G	2.50	3.85	18.5	1.25				MGEHR/L-250 MGIVR/L-250
MRMN 250-M		3.85	18.5	1.25				
MRMN 300-G	3.00	4.80	21.0	1.50				MGEHR/L-300 MGIVR/L-300
MRMN 300-M		4.80	21.0	1.50				
MRMN 400-G	4.00	4.80	21.0	2.00				MGEHR/L-400 MGIVR/L-400
MRMN 400-M		4.80	21.0	2.00				
MRMN 500-M	5.00	5.80	26.0	2.50				MGEHR/L-500 MGIVR/L-500
MRMN 600-M	6.00	5.80	26.0	3.00				MGEHR/L-600 MGIVR/L-600
MRMN 800-M	8.00	6.50	31.0	4.00				MGEHR/L-800 MGIVR/L-800

Description of front-turning inserts code

Code	Inserts Shape
H	Hexagonal
O	Positive octagonal
P	Square pentagon
S	Square
T	Square triangle
C	Rhombus top angle 30°
D	Rhombus top angle 55°
E	Rhombus top angle 75°
F	Rhombus top angle 90°
M	Rhombus apex 80°
V	Rhombus top angle 20°
W	Equilateral unequal trapezoid
L	Rectangle
A	Faceting top angle 40°
B	Faceting top angle 60°
R	Faceting top angle 80°
K	Round
X	Special shapes

1. Shape Code

3. Accuracy code			Reference length of W class accuracy 1 by shape and size							
Code	Top to height accuracy (mm)	Inscribed circle tolerance (mm)	Tolerance of top tip height (mm)							
A	±0.020	±0.025	±0.020	8.50	±0.08	±0.08	±0.08	±0.17	±0.18	—
F	±0.025	±0.031	±0.025	9.225	±0.08	±0.08	±0.08	±0.15	±0.16	—
C	±0.014	±0.025	±0.020	12.70	±0.10	±0.10	±0.10	±0.18	—	—
H	±0.012	±0.012	±0.020	16.875	±0.10	±0.10	±0.10	±0.18	—	—
E	±0.025	±0.025	±0.020	19.00	±0.10	±0.10	±0.10	±0.18	—	—
S	±0.025	±0.025	±0.15	20.40	—	±0.10	—	—	—	—
J	±0.050	±0.05	±0.15	21.75	—	±0.20	—	—	—	—
K*	±0.014	±0.05	±0.15	—	—	—	—	—	—	—
L*	±0.025	±0.05	±0.15	—	—	—	—	—	—	—
M*	±0.08	±0.10	±0.05	±0.10	—	—	—	—	—	—
N*	±0.08	±0.10	±0.05	±0.15	—	—	—	—	—	—
U*	±0.15	±0.20	±0.05	±0.12	—	—	—	—	—	—

Vered * indicates inserts whose sides are not ground

3. Accuracy code

T N G G

Code	Back angle degree
A	2°
B	5°
C	7°
D	10°
E	20°
F	25°
G	30°
N	0°
P	11°
O	Other rear corners

The back angle is the normal back angle to the main cutting edge

4. Slot hole designation									
Code	With or without chamfer	Hole shape	With or without chamfer	Inserts profile	Code	With or without chamfer	Hole shape	With or without chamfer	Inserts profile
W	YES	cylindrical hole	NO		A	YES	cylindrical hole	NO	
T	YES	single insert hole	one-sided		M	YES	cylindrical hole	one-sided	
Q	YES	cylindrical hole	NO		G	YES	cylindrical hole	Double chamfer	
U	YES	Double chamfer chamfering hole	Beckle chamfer		N	NO	—	NO	
B	YES	cylindrical hole	NO		R	NO	—	one-sided	
H	YES	single insert hole	one-sided		F	NO	—	Double chamfer	
C	YES	cylindrical hole	NO		X	—	—	—	special
J	YES	Double chamfer chamfering hole	Beckle chamfer						

Description of front-turning inserts code

inserts shape							inscribed circle
01	02	03	04	05	06	07	
01	02	03	04	05	06	07	3.37
08	09	10	11	12	13	14	4.78
15	16	17	18	19	20	21	5.50
22	23	24	25	26	27	28	6.25
29	30	31	32	33	34	35	6.95
36	37	38	39	40	41	42	7.94
43	44	45	46	47	48	49	8.20
50	51	52	53	54	55	56	9.20
57	58	59	60	61	62	63	10.00
64	65	66	67	68	69	70	10.70
71	72	73	74	75	76	77	11.70
78	79	80	81	82	83	84	12.70
85	86	87	88	89	90	91	13.70
92	93	94	95	96	97	98	14.70
99	100	101	102	103	104	105	15.70
106	107	108	109	110	111	112	16.70
113	114	115	116	117	118	119	17.70
120	121	122	123	124	125	126	18.70
127	128	129	130	131	132	133	19.70
134	135	136	137	138	139	140	20.70
141	142	143	144	145	146	147	21.70
148	149	150	151	152	153	154	22.70
155	156	157	158	159	160	161	23.70
162	163	164	165	166	167	168	24.70
169	170	171	172	173	174	175	25.70
176	177	178	179	180	181	182	26.70
183	184	185	186	187	188	189	27.70
190	191	192	193	194	195	196	28.70
197	198	199	200	201	202	203	29.70
204	205	206	207	208	209	210	30.70
211	212	213	214	215	216	217	31.70
218	219	220	221	222	223	224	32.70
225	226	227	228	229	230	231	33.70
232	233	234	235	236	237	238	34.70
239	240	241	242	243	244	245	35.70
246	247	248	249	250	251	252	36.70
253	254	255	256	257	258	259	37.70
260	261	262	263	264	265	266	38.70
267	268	269	270	271	272	273	39.70
274	275	276	277	278	279	280	40.70
281	282	283	284	285	286	287	41.70
288	289	290	291	292	293	294	42.70
295	296	297	298	299	300	301	43.70
302	303	304	305	306	307	308	44.70
309	310	311	312	313	314	315	45.70
316	317	318	319	320	321	322	46.70
323	324	325	326	327	328	329	47.70
330	331	332	333	334	335	336	48.70
337	338	339	340	341	342	343	49.70
344	345	346	347	348	349	350	50.70
351	352	353	354	355	356	357	51.70
358	359	360	361	362	363	364	52.70
365	366	367	368	369	370	371	53.70
372	373	374	375	376	377	378	54.70
379	380	381	382	383	384	385	55.70
386	387	388	389	390	391	392	56.70
393	394	395	396	397	398	399	57.70
400	401	402	403	404	405	406	58.70
407	408	409	410	411	412	413	59.70
414	415	416	417	418	419	420	60.70
421	422	423	424	425	426	427	61.70
428	429	430	431	432	433	434	62.70
435	436	437	438	439	440	441	63.70
442	443	444	445	446	447	448	64.70
449	450	451	452	453	454	455	65.70
456	457	458	459	460	461	462	66.70
463	464	465	466	467	468	469	67.70
470	471	472	473	474	475	476	68.70
477	478	479	480	481	482	483	69.70
484	485	486	487	488	489	490	70.70
491	492	493	494	495	496	497	71.70
498	499	500	501	502	503	504	72.70
505	506	507	508	509	510	511	73.70
512	513	514	515	516	517	518	74.70
519	520	521	522	523	524	525	75.70
526	527	528	529	530	531	532	76.70
533	534	535	536	537	538	539	77.70
540	541	542	543	544	545	546	78.70
547	548	549	550	551	552	553	79.70
554	555	556	557	558	559	560	80.70
561	562	563	564	565	566	567	81.70
568	569	570	571	572	573	574	82.70
575	576	577	578	579	580	581	83.70
582	583	584	585	586	587	588	84.70
589	590	591	592	593	594	595	85.70
596	597	598	599	600	601	602	86.70
603	604	605	606	607	608	609	87.70
610	611	612	613	614	615	616	88.70
617	618	619	620	621	622	623	89.70
624	625	626	627	628	629	630	90.70
631	632	633	634	635	636	637	91.70
638	639	640	641	642	643	644	92.70
645	646	647	648	649	650	651	93.70
652	653	654	655	656	657	658	94.70
659	660	661	662	663	664	665	95.70
666	667	668	669	670	671	672	96.70
673	674	675	676	677	678	679	97.70
680	681	682	683	684	685	686	98.70
687	688	689	690	691	692	693	99.70
694	695	696	697	698	699	700	100.70

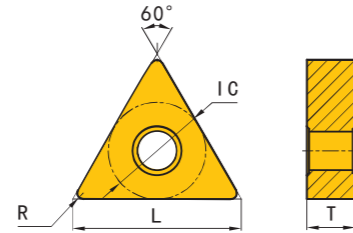
5. Cutting edge length code and inscribed circle code



16 04 02 - R-F

1. Tool nose arc code	
Code name	Tool nose arc radius (mm)
00	0.00
V3	0.03
V0	0.05
01	0.1
02	0.2
04	0.4
08	0.8
12	1.2
16	1.6
20	2.0
25	2.4
30	2.8
32	3.2

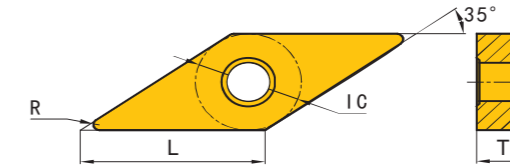
Code name	Insert thickness (mm)
01	1.20
02	1.50
03	1.70
04	2.20
05	2.50
06	2.70
07	3.10
08	3.50
09	3.80
10	4.20
11	4.50
12	4.70
13	5.20
14	5.50
15	5.70
16	6.20
17	6.50
18	7.00
19	7.50
20	8.00
21	8.50
22	9.00
23	9.50
24	10.00
25	10.50
26	11.00
27	11.50
28	12.00
29	12.50
30	13.00
31	13.50
32	14.00
33	14.50
34	15.00
35	15.50
36	16.00
37	16.50
38	17.00
39	17.50
40	18.00
41	18.50
42	19.00
43	19.50
44	20.00
45	20.50
46	21.00
47	21.50
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51	23.50
52	24.00
53	24.50
54	25.00
55	25.50
56	26.00
57	26.50
58	27.00
59	27.50
60	28.00
61	28.50
62	29.00
63	29.50
64	30.00
65	30.50
66	31.00
67	31.50



TNGG turning inserts







inserts	Code	Size				Degree θ	Grade		
		IC	L	T	R		GR528	GR928	GR958
 Semi-finishing	TNGG160401L/R-S	9.53	16	4.76	0.1	60°			
	TNGG160402L/R-S				0.2				
	TNGG160404L/R-S				0.4				
 Semi-finishing	TNGG160401L/R-2G	9.53	16	4.76	0.1	60°			
	TNGG160402L/R-2G				0.2				
	TNGG160404L/R-2G				0.4				

VCGT/VBGT turning inserts

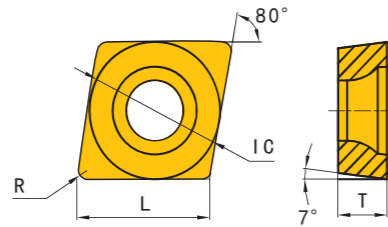




inserts	Code	Size				Degree θ	Grade		
		IC	L	T	R		GR528	GR928	GR958
 Semi-finishing	VCGT1103005L/R-Y	6.35	11	3.18	0.05	35°			
	VCGT110301L/R-Y				0.1				
	VCGT110302L/R-Y				0.2				
	VCGT110304L/R-Y				0.4				
 Semi-finishing	VCGT1103005L/R-F	6.35	11	3.18	0.05	35°			
	VCGT110301L/R-F				0.1				
	VCGT110302L/R-F				0.2				
	VCGT110304L/R-F				0.4				



inserts	Code	Size				Degree θ	Grade		
		IC	L	T	R		GR528	GR928	GR958
 Semi-finishing	VBGT1103005L/R-Y	6.35	11	3.18	0.05	35°			
	VBGT110301L/R-Y				0.1				
	VBGT110302L/R-Y				0.2				
	VBGT110304L/R-Y				0.4				
 Semi-finishing	VBGT1103005L/R-F	6.35	11	3.18	0.05	35°			
	VBGT110301L/R-F				0.1				
	VBGT110302L/R-F				0.2				
	VBGT110304L/R-F				0.4				

inserts	Code	Size				Degree θ	Grade		
		IC	L	T	R		GR528	GR928	GR958
 Semi-finishing	VBGT1103005L/R-Y	6.35	11	3.18	0.05	35°			
	VBGT110301L/R-Y				0.1				
	VBGT110302L/R-Y				0.2				
	VBGT110304L/R-Y				0.4				
 Semi-finishing	VBGT1103005L/R-F	6.35	11	3.18	0.05	35°			
	VBGT110301L/R-F				0.1				
	VBGT110302L/R-F				0.2				
	VBGT110304L/R-F				0.4				

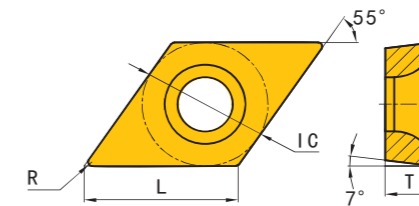
CCGT







inserts	Code	Size				Degree θ	Grade		
		IC	L	T	R		GR528	GR928	GR958
 半精加工	CCGT060201ER/L-U	6.35	06	2.38	0.1	80°			
	CCGT060202ER/L-U				0.2				
	CCGT060204ER/L-U				0.4				
 半精加工	CCGT060201R/L-F	6.35	06	2.38	0.1	80°			
	CCGT060202R/L-F				0.2				
	CCGT060204R/L-F				0.4				

inserts	Code	Size				Degree θ	Grade		
		IC	L	T	R		GR528	GR928	GR958
 半精加工	CCGT09T301ER/L-U	9.53	09	3.97	0.1	80°			
	CCGT09T302ER/L-U				0.2				
	CCGT09T304ER/L-U				0.4				
 半精加工	CCGT09T301R/L-F	9.53	09	3.97	0.1	80°			
	CCGT09T302R/L-F				0.2				
	CCGT09T304R/L-F				0.4				

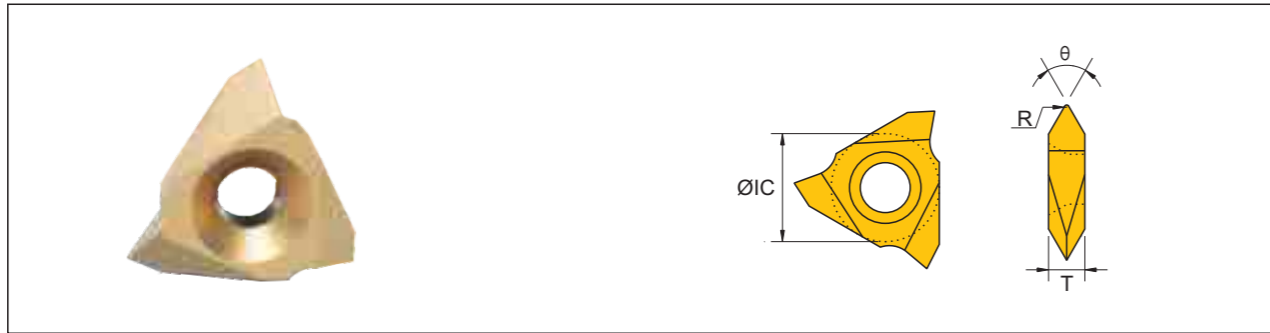
DCGT



inserts	Code	Size				Degree θ	Grade		
		IC	L	T	R		GR528	GR928	GR958
 半精加工	DCGT0702005ER/L-U	6.35	07	2.38	0.05	55°			
	DCGT070201ER/L-U				0.1				
	DCGT070202ER/L-U				0.2				
	DCGT070204ER/L-U				0.4				
 半精加工	DCGT0702005R/L-F	6.35	07	2.38	0.05	55°			
	DCGT070201R/L-F				0.1				
	DCGT070202R/L-F				0.2				
	DCGT070204R/L-F				0.4				

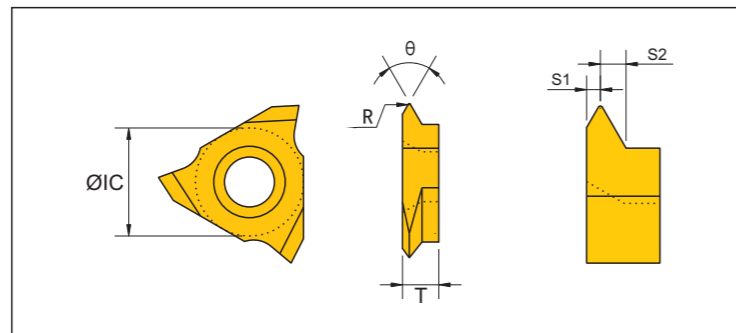
inserts	Code	Size				Degree θ	Grade		
		IC	L	T	R		GR528	GR928	GR958
 半精加工	DCGT11T3005ER/L-U	9.53	11	3.97	0.05	55°			
	DCGT11T301ER/L-U				0.1				
	DCGT11T302ER/L-U				0.2				
	DCGT11T304ER/L-U				0.4				
 半精加工	DCGT11T3005R/L-F	9.53	11	3.97	0.05	55°			
	DCGT11T301R/L-F				0.1				
	DCGT11T302R/L-F				0.2				
	DCGT11T304R/L-F				0.4				

MTTR Vertical General Threading



Code	Pitch		Size			Degree	Grade			Holder
	mm	tpi	R	IC	T	θ	GR520	GR928	GR958	
MTTR 326001	1.0-1.75	24-10	0.1	9.53	3.18	60°				CTTR-16
MTTR 326002	2.0-2.5	16-10	0.2							
MTTR 326003	3	11-10	0.3							
MTTR 325501		28-10	0.1			55°				
MTTR 325502		16-18	0.2							
MTTR 325503		11-8	0.3							
MTTR 436001	1.0-1.75	24-8	0.1	12.7	4.76	60°			CTTR-22	
MTTR 436002	2.0-2.5	16-8	0.2							
MTTR 436003	3.0-3.5	11-8	0.3							
MTTR 436004	4.0-4.5	8	0.4			55°				
MTTR 435501		28-10	0.1							
MTTR 435502		16-18	0.2							
MTTR 435503		11-8	0.3							
MTTR 435504		-	0.4							

TTX Vertical general Threading



Code	IC	T
TTX32R	9.53	3.18

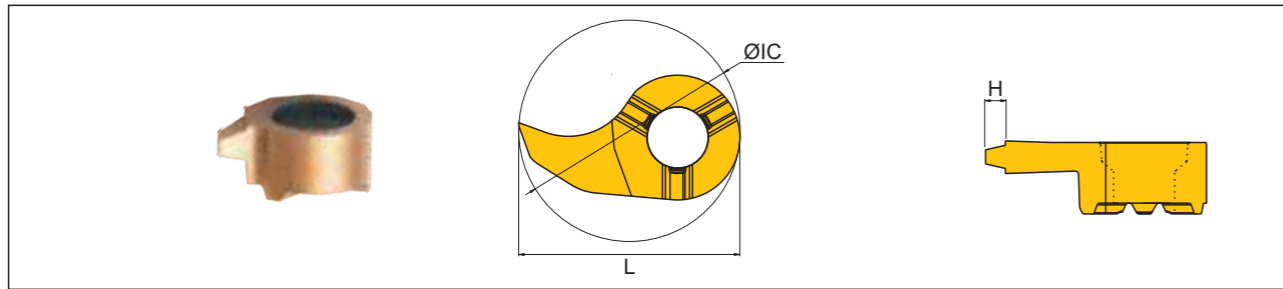
Code	Pitch		Size			Degree	Grade			Holder
	mm	tpi	R	S1	S2	θ	GR520	GR928	GR958	
TTX32R 6000	0.5-1.0	56-32	0.00	0.6	1.12	60°				CTTR-16
TTX32R 6005	0.5-1.0	48-32	0.05	0.6	1.12					
TTX32R 6001	1.0-2.0	28-14	0.10	1.1	1.62					
TTX32R 6002	1.0-2.5	28-14	0.20	1.1	1.62					
TTX32R 5501		28-19	0.10	0.75	1.01	55°				
TTX32R 5515		19-11	0.15	1.2	1.46					

TKFT threading processing



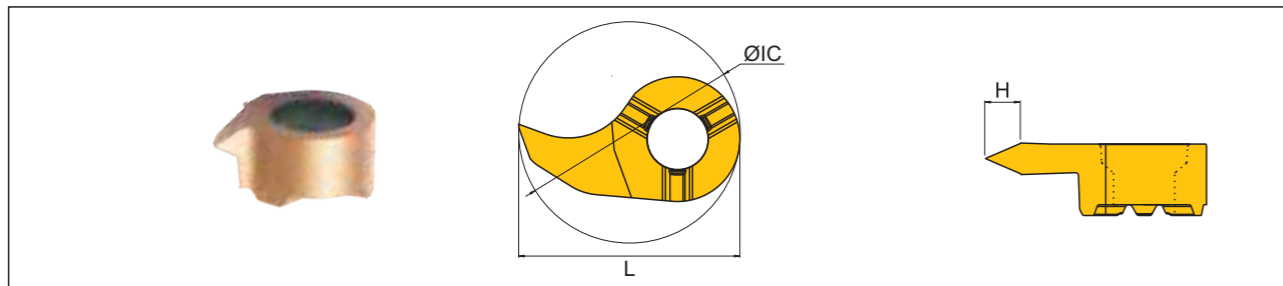
Code	Pitch		Size				Degree		Degree		Holder	
	mm	tpi	R	T	W	H	S1	S2	θ	GR928		GR958
TKFT 12RA6000	0.2-0.6	64-48	0	3	2.5	8.7	0.4	2.1	60°			KTKFR-12
TKFT 12RB6000										2.1	0.4	
TKFT 12RA60005	0.5-1.25	48-24	0.05	1.7	0.8	1.7	0.8					
TKFT 12RB60005								1.7		0.8		
TKFT 12RN6001	1.0-1.5	24-18	0.1	0.8	1.7	1.25	1.25	55°				
TKFT 12RA55005									40-16	0.05	1.7	0.8
TKFT 12RB55005												
TKFT 16RA6000	0.2-0.6	64-48	0	4	2.5	9.5	0.4	2.1	60°			KTKFR-16
TKFT 16RB6000										2.1	0.4	
TKFT 16RA60005	0.5-1.25	48-24	0.05	0.7	0.8	0.7	0.8					
TKFT 16RB60005								0.7		0.8		
TKFT 16RN6001	1.0-1.5	24-18	0.1	1.25	1.25	1.25	1.25	55°				
TKFT 16RA55005									40-16	0.05	0.8	1.7
TKFT 16RB55005												
TKFT 16RAG60	0.5-3.0	48-8	0.08	1.5	1.5	1.5	1.5	60°				
TKFT 16RG60									1.75-3.0	14-8	0.27	
TKFT 16RAG55	0.5-3.0	48-8	0.07	1.75-3.0	14-8	0.21	1.5	1.5	55°			
TKFT 16RG55												
TKFT 16RGN60	3.5-5.0	7-5	0.44	2	2	2	2	60°				
TKFT 16RGN55									3.5-5.0	7-5	0.44	

MB TR threading solid carbide head for grooving



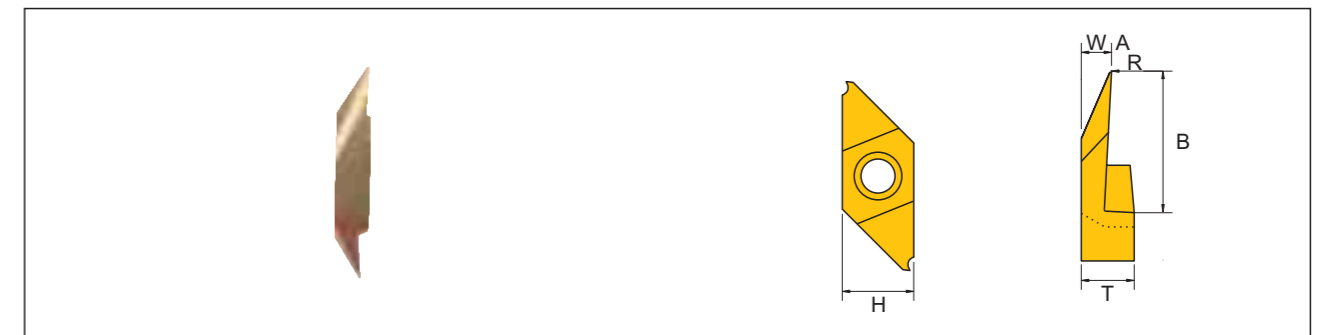
Code	Pitoh	Size			Grade		Holder
	Pitch	H	L	Dmin	GR928	GR958	
MB-071R3.0TR-D10	3.00	1.75	9.5	10			
MB-071R4.0TR-D11	4.00	2.25	10.5	11			
MB-091R4.0TR-D14	4.00	2.25	13.5	14			
MB-091R5.0TR-D14	5.00	2.75	13.5	14			

MB threading solid carbide head for grooving



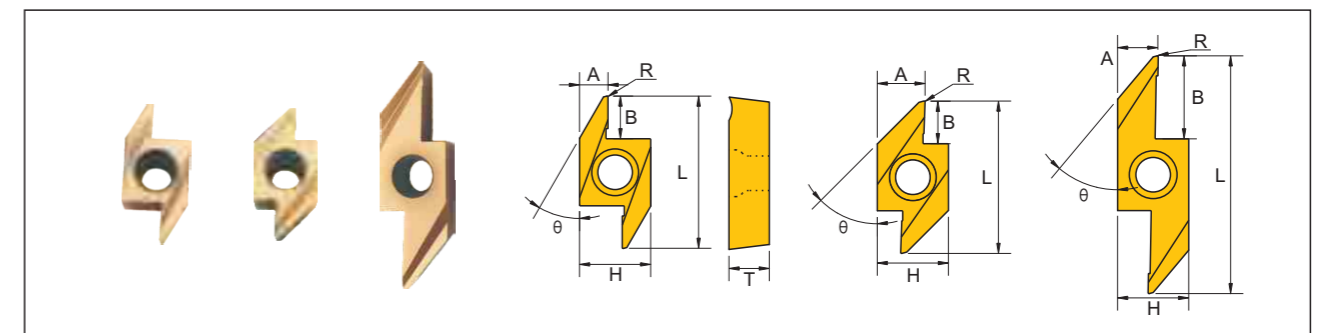
Code	Pitoh	Size			Grade		Holder
	Pitch	H	L	Dmin	GR928	GR958	
MB-051RA60-D08	0.5-1.75	1.75	7.0	8			
MB-071RA60-D10	0.5-1.75	2.25	9.5	10			
MB-071RAG60-D10	0.5-3.0	2.25	9.5	10			
MB-091RN60-D14	3.5-5.0	2.75	13.5	14			

TKFB12/16 back turning inserts



Code	Size					Grade		Holder
	R	W	A	B	T	H	GR928	
TKFB 12R15005	0.05	1.5	0.25	2.6	3.0	8.7		
TKFB 12R28005	0.05	2.8	0.3	4.6				
TKFB 12R28010	0.1							
TKFB 16R38005	0.05	3.8	0.3	6.3	4.0	9.5		
TKFB 16R38010	0.1							

YABS/YABW back turning inserts



Code	Size						Degree	Grade		Holder
	H	R	L	A	B	T	θ	GR928	GR958	
YABS 15R4005	7	0.05	15.4	4.2	2.8	3.97	30°			
YABS 15R4015		0.15								
YABS 15R4005M		<0.05								
YABS 15R4015M		<0.15								
YABW 15R4005	7	0.05	15.4	4.2	4.7	3.97	45°			
YABW 15R4015		0.15								
YABW 15R4005M		<0.05								
YABW 15R4015M		<0.15								
YABW 23R5005	7	0.05	23.4	8.2	4.7	3.97	40°			
YABW 23R5015		0.15								
YABW 23R5005M		<0.05								
YABW 23R5015M		<0.15								

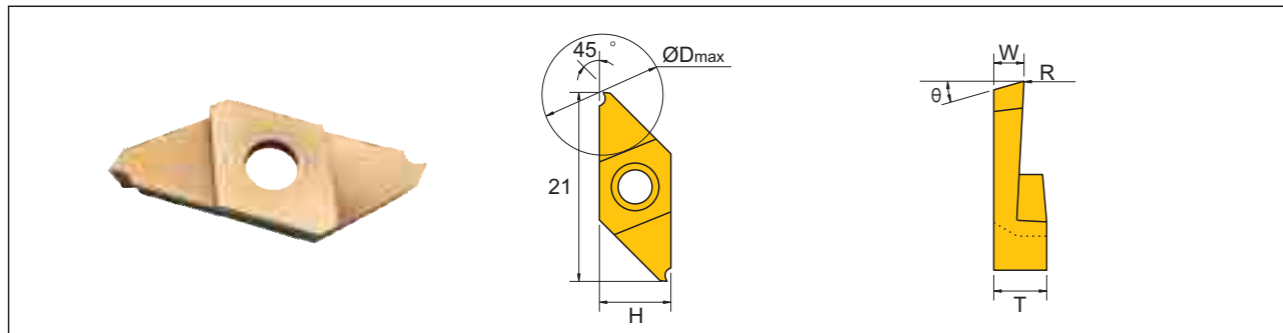
C

MB TR threading solid carbide head for grooving

C

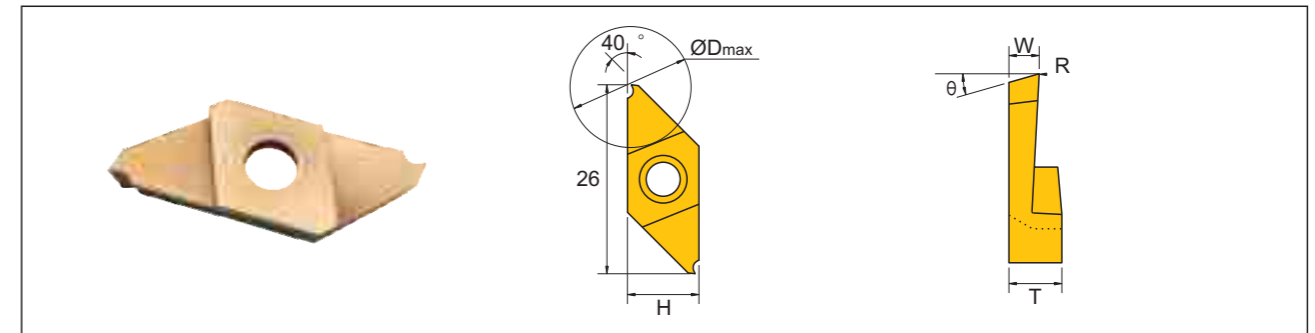
YAB backturning, TKFB back turning

TKF12 cut-off and grooving



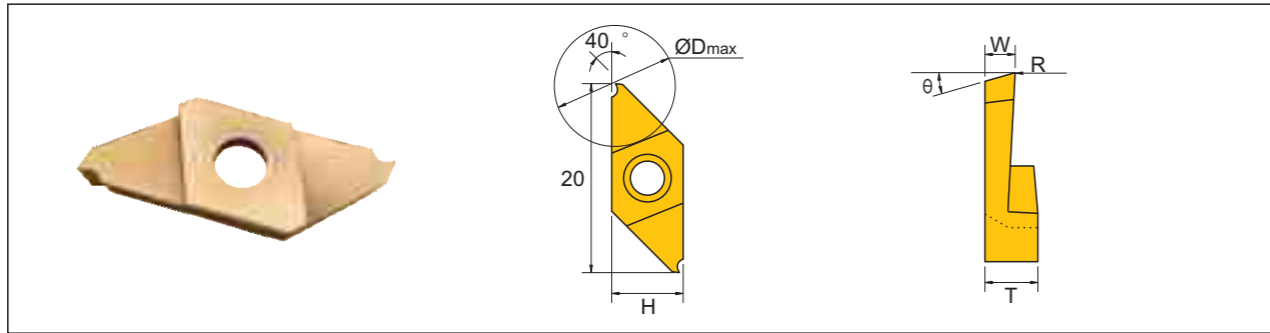
Code	Size						Grade		Holder
	W	Dmax	R	T	H	θ	GR928	GR958	
TKF12R/L 050-S16R	0.50	5	0.05	3	8.7	16°			KTKFR-12
TKF12R/L 070-S16R	0.70	8							
TKF12R/L 100-S16R	1.00	12							
TKF12R/L 150-S16R	1.50								
TKF12R/L 200-S16R	2.00								
TKF12R/L 050-S	0.50						5	0°	
TKF12R/L 070-S	0.70	8							
TKF12R/L 100-S	1.00	12							
TKF12R/L 150-S	1.50								
TKF12R/L 200-S	2.00								
TKF12R/L 050-NB-20R	0.50		5	0.00	3	8.7	20°		
TKF12R/L 070-NB-20R	0.70	8							
TKF12R/L 100-NB-20R	1.00	12							
TKF12R/L 150-NB-20R	1.50								
TKF12R/L 200-NB-20R	2.00								
TKF12R/L 050-NB	0.50		5					0°	
TKF12R/L 070-NB	0.70	8							
TKF12R/L 100-NB	1.00	12							
TKF12R/L 150-NB	1.50								
TKF12R/L 200-NB	2.00								
TKF12R/L 300-NB	3.00								

TKF16 cut-off and grooving



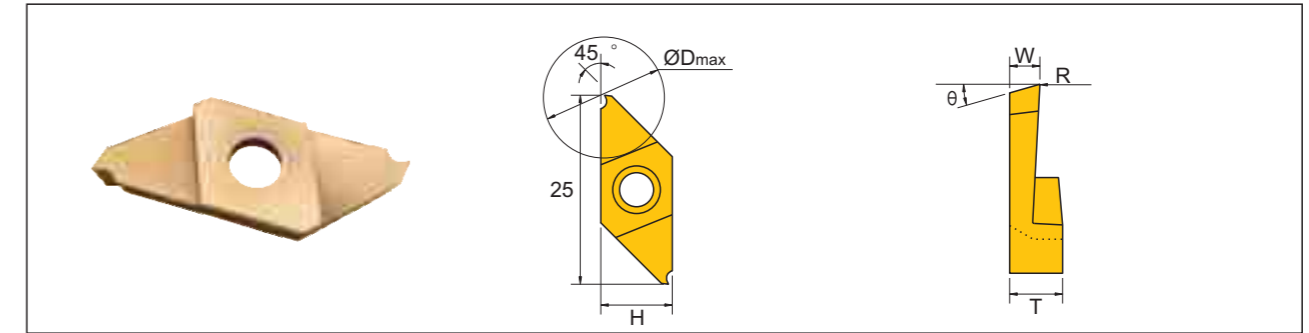
Code	Size						Grade		Holder	
	W	Dmax	R	T	H	θ	GR928	GR958		
TKF16R/L 100-S16R	1.00	12	0.05	4	9.5	16°			KTKFR-16	
TKF16R/L 150-S16R	1.50	16								
TKF16R/L 200-S16R	2.00									
TKF16R/L 300-S16R	3.00									
TKF16R/L 100-S	1.00						12	0°		
TKF16R/L 150-S	1.50	16								
TKF16R/L 200-S	2.00									
TKF16R/L 300-S	3.00									
TKF16R/L 100-NB-20R	1.00		12	0.00	4	9.5	20°			
TKF16R/L 150-NB-20R	1.50	16								
TKF16R/L 200-NB-20R	2.00									
TKF16R/L 300-NB-20R	3.00									
TKF12R/L 100-NB	1.00		12					0°		
TKF12R/L 150-NB	1.50	16								
TKF12R/L 200-NB	2.00									
TKF12R/L 300-NB	3.00									

CTP cut-off and grooving



Code	Size						Grade		Holder
	W	Dmax	R	T	H	θ	GR928	GR958	
CTP 07FR	0.70	8	0.05	2.5	8	16°			CTPR**
CTP 10FR	1.00	12							
CTP 12FR	1.20								
CTP 15FR	1.50								
CTP 20FR	2.00								
CTP 07FRN	0.70					8	0°		
CTP 10FRN	1.00	12							
CTP 12FRN	1.20								
CTP 15FRN	1.50								
CTP 20FRN	2.00								
CTP 07FL	0.70		8	0.05	2.5	8	16°		CTPL**
CTP 10FL	1.00	12							
CTP 12FL	1.20								
CTP 15FL	1.50								
CTP 20FL	2.00								
CTP 07FLN	0.70		8				0°		
CTP 10FLN	1.00	12							
CTP 12FLN	1.20								
CTP 15FLN	1.50								
CTP 20FLN	2.00								

CTPA cut-off and grooving



Code	Size						Grade		Holder						
	W	Dmax	R	T	H	θ	GR928	GR958							
CTPA 07FR	0.70	8	0.05	3.5	9.45	16°			CTPAR**						
CTPA 10FR	1.00	12													
CTPA 12FR	1.20														
CTPA 15FR	1.50														
CTPA 20FR	2.00														
CTPA 25FR	2.50					16	0°								
CTPA 30FR	3.00														
CTPA 07FRN	0.70	8						0.05		3.5	9.45	16°		CTPAL**	
CTPA 10FRN	1.00	12													
CTPA 12FRN	1.20														
CTPA 15FRN	1.50														
CTPA 20FRN	2.00		16	0°											
CTPA 25FRN	2.50														
CTPA 30FRN	3.00														
CTPA 07FL	0.70	8			0.05	3.5	9.45		16°				CTPAL**		
CTPA 10FL	1.00	12													
CTPA 12FL	1.20														
CTPA 15FL	1.50														
CTPA 20FL	2.00		16	0°											
CTPA 25FL	2.50														
CTPA 30FL	3.00														
CTPA 07FLN	0.70	8						0.05	3.5	9.45	16°			CTPAL**	
CTPA 10FLN	1.00	12													
CTPA 12FLN	1.20														
CTPA 15FLN	1.50														
CTPA 20FLN	2.00		16	0°											
CTPA 25FLN	2.50														
CTPA 30FLN	3.00														

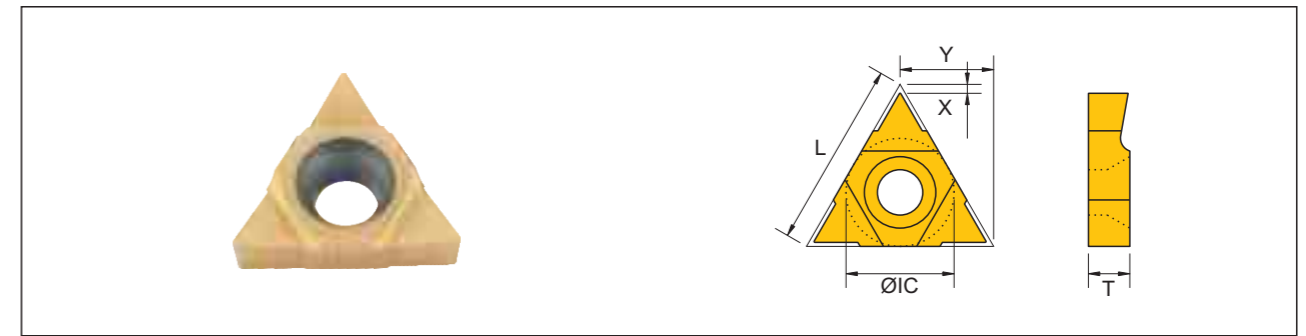
Model description	D2
UID deep hole threading	D3
90° FT rectangular threading	D4
40° ZA threading	D4
40° MTR vertical threading	D5
60° Seneral threading	D6-D7
55° Seneral threading	D8-D9
60° ISO metric threading	D10-D13
60° UN US i threading	D14-D15
60° NPT US threading	D16
60° NPTF US threading	D17
55° W imperial Whitworth pipe threading	D18-D19
55° BSPT conical pipe threading	D20
80° PG German threading	D21
30° RD405 German circular threading	D22
30° RD20400 German circular thread/ 30° TR German ACME	D23-D27
29° ACME American ACME threading	D28-D31
29° STACME American short-tooth ACME threading	D32-D35
ABUT American serrated threaing	D36-D39
BBUT British serrated threading	D40
SAGE metric serrated threading	D41
60° API oil pipe threading	D42-D43
60° APIRD oil pipe threading	D44

Threading Insert Ordering code System

16		E	R	1.5	ISO			GR928
1	2	3	4	5	6	7	8	9

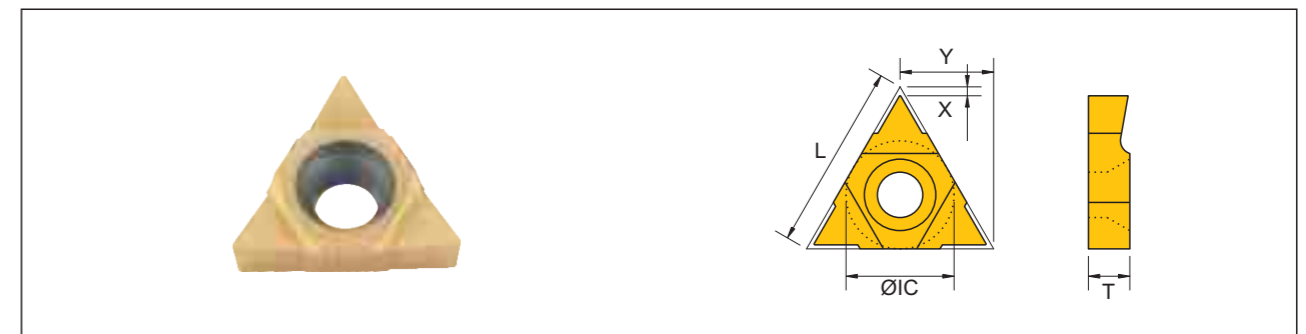
1-Inserts size 06 — IC=3.97mm 08 — IC=4.76mm 11 — IC=6.35mm 16 — IC=9.53mm 22 — IC=12.7mm 27 — IC=15.6mm	2-Inserts type V-stand up U-center	3-Inserts category E-External thread I-internal thread 4-Forehand/Backhand R-Forehand inserts/ Right Hand inserts L-Backhand Blade/ Left Hand Blade No label - front and back universal.	5-pitch Fixed tooth shape <table border="1"> <tr> <th>mm</th> <th>tpi</th> </tr> <tr> <td>0.35-12.0</td> <td>75-2</td> </tr> </table> Universal <table border="1"> <tr> <th></th> <th>mm</th> <th>tpi</th> </tr> <tr> <td>A</td> <td>0.5-1.5</td> <td>48-16</td> </tr> <tr> <td>AG</td> <td>0.5-3.0</td> <td>48-8</td> </tr> <tr> <td>G</td> <td>1.75-3.0</td> <td>14-8</td> </tr> <tr> <td>N</td> <td>3.5-5.0</td> <td>7-5</td> </tr> <tr> <td>U</td> <td>5.5-8.0</td> <td>4 1/2 - 3 1/2</td> </tr> <tr> <td>Q</td> <td>5.5-6.0</td> <td>4 1/2 - 4</td> </tr> <tr> <td>U</td> <td>6.5-9.0</td> <td>4-2 3/4</td> </tr> <tr> <td>V</td> <td>6.0-10.0</td> <td>4-2 1/2</td> </tr> </table>	mm	tpi	0.35-12.0	75-2		mm	tpi	A	0.5-1.5	48-16	AG	0.5-3.0	48-8	G	1.75-3.0	14-8	N	3.5-5.0	7-5	U	5.5-8.0	4 1/2 - 3 1/2	Q	5.5-6.0	4 1/2 - 4	U	6.5-9.0	4-2 3/4	V	6.0-10.0	4-2 1/2
mm	tpi																																	
0.35-12.0	75-2																																	
	mm	tpi																																
A	0.5-1.5	48-16																																
AG	0.5-3.0	48-8																																
G	1.75-3.0	14-8																																
N	3.5-5.0	7-5																																
U	5.5-8.0	4 1/2 - 3 1/2																																
Q	5.5-6.0	4 1/2 - 4																																
U	6.5-9.0	4-2 3/4																																
V	6.0-10.0	4-2 1/2																																
6-thread standard 60° Universal thread 55° Universal thread Metric ISO thread US made UN straight pipe thread Whitworth W (BSW, BSP) straight pipe thread Inch BSPT taper pipe thread US NPT tapered pipe thread US NPTF taper pipe thread NPTF taper pipe thread (DIN405) Round thread (DIN20400) German TR thread US ACME thread US short tooth ACME thread	8-Tooth shape M	9-Material GR520C Processing copper parts, steel parts GR520 Machining steel parts, stainless steel universal GR928 Processing stainless steel, 42CR and other quenching hardness above 40° GR958 Processing titanium alloy, containing nickel alloy and other quenching hardness above 50°	7-number of teeth Multi-toothed 2, 3, 5, 6, 8																															

UID partial profile 60°



Code	Pitch		Size			Degree		GR928	GR958
	mm	tpi	R	IC	L	θ			
11UI DA60	0.5-1.5	48-16	0.05	6.35	11	60°			
11UI DB60	1.5-2.0	16-12	0.06						
11UI DD60	2.0-2.5	9-12	0.11						
11UI DM60	2.5	10	0.11						
11UI DG60	2.5-4.0	10-6	0.14						
16UI DB60	1.5-2.0	16-12	0.06	9.53	16	60°			
16UI DE60	2.5-3.5	10-7	0.14						
16UI DH60	4.0-6.0	6-4	0.25						
22UI DK60	6.0-8.0	4-3	0.30				12.7		

UID partial profile 55°



Code	Pitch		Size			Degree		GR928	GR958
	mm	tpi	R	IC	L	θ			
11UI DA55		48-16	0.11	6.35	11	55°			
11UI DB55		16-12	0.08						
11UI DL55		11-7	0.24						
16UI DB55		16-12	0.08	9.53	16	55°			
16UI DL55		11-7	0.24						
16UI DH55		6-4	0.27						
22UI DK55		4-3	0.50				12.7		

Model description

UID deep hole threading

FT-90°



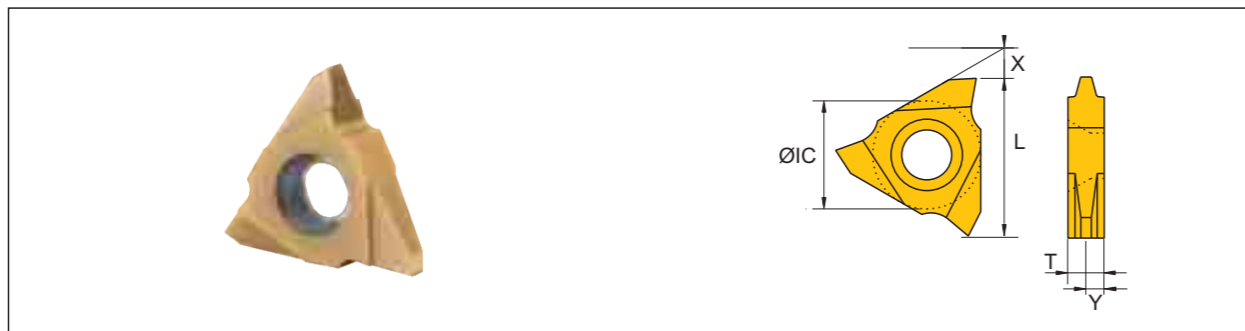
Code	Pitch		Size					Degree θ	Grade			Holder
	mm	h	IC	L	X	Y	T		GR520	GR928	GR958	
22V 1.5FT	1.5	1.48	12.7	22	1.0	2.4	4.8	90°				SER-22V / SNR-22V
22V 2.0FT	2.0	1.97			1.0							
22V 2.3FT	2.3	2.27			1.0							
22V 2.5FT	2.5	2.46			1.0							
22V 3.0FT	3.0	2.95			1.0							
22V 3.2FT	3.2	3.15			1.0							
22V 3.5FT	3.5	3.45			1.0							
22V 4.0FT	4.0	3.94			1.0							
22V 4.5FT	4.5	4.43			1.0							
22V 5.0FT	5.0	4.96			1.0				3.2	6.35		

MTTR-40° Vertical



Code	Pitch		Size			Degree θ	Grade			Holder
	mm		R	IC	T		GR520	GR928	GR958	
MTTR 324001	2.34/3.56		0.1	9.53	3.18	40°				CTTR-16
MTTR 324002			0.2							
MTTR 324003			0.3							
MTTR 434001	2.34/3.56		0.1	12.7	4.76	40°				CTTR-22
MTTR 434002			0.2							
MTTR 434003			0.3							
MTTR 434004			0.4							

ZA-40°



Code	Pitch		Size					Degree θ	Grade		Holder
	mm	h	IC	L	X	Y	T		GR928	GR958	
22V 1.57-M0.5	1.57	1.15	12.7	22	1.0	2.4	4.8	40°			SER-22V / SNR-22V
22V 2.34-M0.75	2.34	1.70			1.0						
22V 2.51-M0.8	2.51	1.81			1.0						
22V 3.14-M1.0	3.14	2.24			1.0						
22V 3.93-M1.25	3.93	2.80			1.0						
22V 4.71-M1.5	4.71	3.35			1.0						
22V 5.5-M1.75	5.5	3.90			1.0						
22V 6.28-M2.0	6.28	4.45			1.0						
22V 7.85-M2.5	7.85	5.55			1.0						
27V 9.42-M3.0	9.42	6.65			15.8				27	1.0	
22V 10.99-M3.5	10.99	7.75	15.8	27	1.0	10	10			SNR/ER-27V-10	

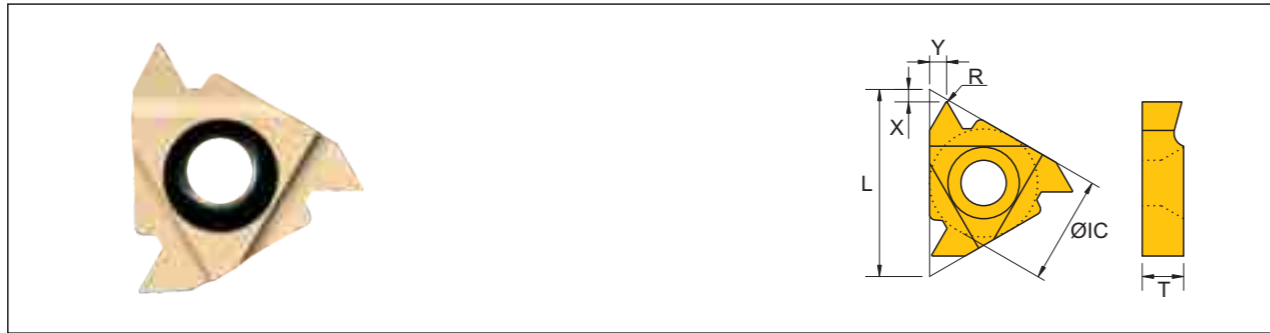
D

90° FT rectangular threading, 40° ZA threading

D

40° MTR vertical threading

Partial Profile 60° (E)



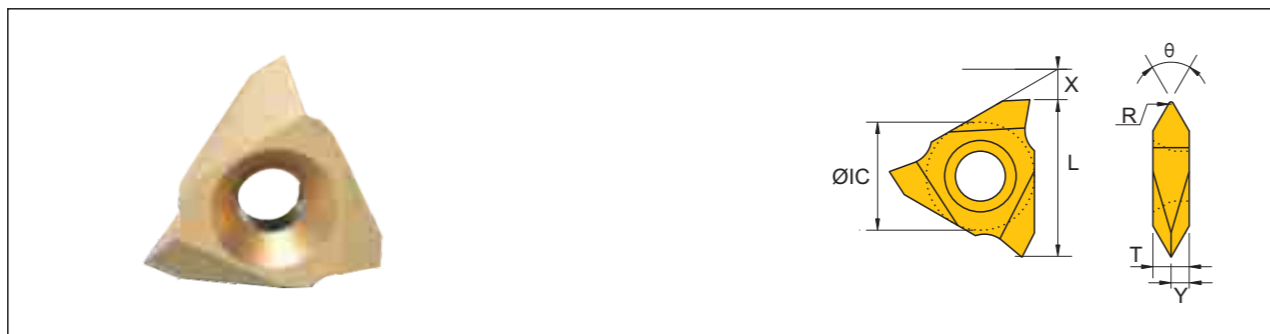
Code	Pitch		Size					Degree θ	Grade			Holder	
	mm	tpi	R	IC	L	X	Y		T	GR520	GR928		GR958
11ER A60	0.5-1.5	48-16	0.07	6.35	11	0.8	0.9	3.2	60°				SER-11
16ER A60	0.5-1.5	48-16	0.07			0.8	0.9						SER-16
16ERAG60	0.5-3.0	48-8	0.08	9.53	16	1.2	1.7	3.65					
16ER G60	1.75-3.0	14-8	0.21			1.2	1.7						
22ER N60	3.5-5.0	7-5	0.44	12.7	22	1.7	2.5	4.8					SER-22
27ER Q60	5.5-6.0	4.5-4	0.64	15.8	27	2.1	3.1	6.35					SER-27

partial profile 60° (I)



Code	Pitch		Size					Degree θ	Grade			Holder	
	mm	tpi	R	IC	L	X	Y		T	GR520	GR928		GR958
06IR A60	0.5-1.25	48-20	0.07	3.97	6	0.6	0.6	2.2	60°				SNR-06
08IR A60	0.5-1.5	48-16	0.07	4.76	8	0.6	0.7	2.2					SNR-08
11IR A60	0.5-1.5	48-16	0.07	6.35	11	0.8	0.9	3.2					SNR-11
16IR A60	0.5-1.5	48-16	0.07			0.8	0.9						SNR-16
16IR AG60	0.5-3.0	48-8	0.08	9.53	16	1.2	1.7	3.65					
16IR G60	1.75-3.0	14-8	0.21			1.2	1.7						
22IR N60	3.5-5.0	7-5	0.44	12.7	22	1.7	2.5	4.8					SNR-22
27IR Q60	5.5-6.0	4.5-4	0.64	15.8	27	2.1	3.1	6.35				SNR-27	

Vertical Partial profile 60° (E)



Code	Pitch		Size					Degree θ	Grade			Holder	
	mm	tpi	R	IC	L	X	Y		T	GR520	GR928		GR958
11VER A60	0.5-1.5	48-16	0.07	6.35	11	0.7	1.6	3.2	60°				SER-11V
16VER A60	0.5-1.5	48-16	0.07			1.1	1.8						SER-16V
16VER AG60	0.5-3.0	48-8	0.08	9.53	16	1.1	1.8	3.65					
16VER G60	1.75-3.0	14-8	0.21			1.1	1.8						
22VER N60	3.5-5.0	7-5	0.44	12.7	22	1.1	2.4	4.8					SER-22V
27VER V55	5.5-6.0	4.5-4	0.64	15.8	27	0.6	3.2	6.35					SER-27V

Partial Profile 55° (E)



Code	Pitch		Size						Degree θ	Grade			Holder
	mm	tpi	R	IC	L	X	Y	T		GR520	GR928	GR958	
11ER A55	0.5-1.5	48-16	0.07	6.35	11	0.8	0.9	3.2	55°				SER-11
16ER A55	0.5-1.5	48-16	0.07			0.8	0.9						SER-16
16ER AG55	0.5-3.0	48-8	0.08	9.53	16	1.2	1.7	3.65					SER-16
16ER G55	1.75-3.0	14-8	0.21			1.2	1.7						SER-16
22ER N55	3.5-5.0	7-5	0.44	12.7	22	1.7	2.5	4.8					SER-22
27ER Q55	5.5-6.0	4.5-4	0.64	15.8	27	2.1	3.1	6.35					SER-27

partial profile 55° (I)



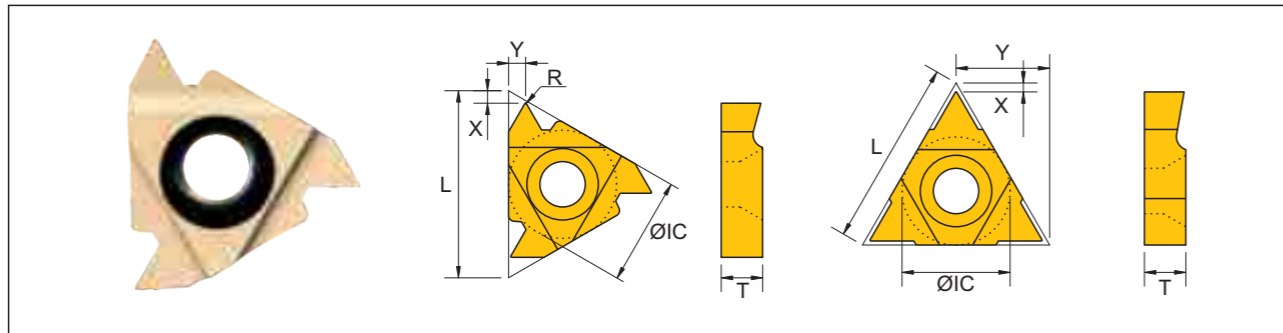
Code	Pitch		Size						Degree θ	Grade			Holder
	mm	tpi	R	IC	L	X	Y	T		GR520	GR928	GR958	
06IR A55	0.5-1.25	48-20	0.07	3.97	6	0.6	0.6	2.2	55°				SNR-06
08IR A55	0.5-1.5	48-16	0.07	4.76	8	0.6	0.7	2.2					SNR-08
11IR A55	0.5-1.5	48-16	0.07	6.35	11	0.8	0.9	3.2					SNR-11
16IR A55	0.5-1.5	48-16	0.07			0.8	0.9						SNR-16
16IR AG55	0.5-3.0	48-8	0.08	9.53	16	1.2	1.7	3.65					
16IR G55	1.75-3.0	14-8	0.21			1.2	1.7						SNR-16
22IR N55	3.5-5.0	7-5	0.44	12.7	22	1.7	2.5	4.8					SNR-22
27IR Q55	5.5-6.0	4.5-4	0.64	15.8	27	2.1	3.1	6.35					SNR-27

Vertical Partial profile 55° (E)



Code	Pitch		Size						Degree θ	Grade			Holder
	mm	tpi	R	IC	L	X	Y	T		GR520	GR928	GR958	
11VER A55	0.5-1.5	48-16	0.07	6.35	11	0.7	1.6	3.2	55°				SER-11V
16VER A55	0.5-1.5	48-16	0.07			1.1	1.8						SER-16V
16VER AG55	0.5-3.0	48-8	0.08	9.53	16	1.1	1.8	3.65					SER-16V
16VER G55	1.75-3.0	14-8	0.21			1.1	1.8						SER-16V
22VER N55	3.5-5.0	7-5	0.44	12.7	22	1.1	2.4	4.8					SER-22V
27VER V55	5.5-6.0	4.5-4	0.64	15.8	27	0.6	3.2	6.35					SER-27V

ISO 60° -metric (E)



Code	Pitoh	Size							Degree θ	Grade			Holder					
	mm	R	h	IC	L	X	Y	T		GR520	GR928	GR958						
11ER 0.5ISO	0.5	0.05	0.31	6.35	11	0.6	0.4	3.2	60°				SER-11					
11ER 0.75ISO	0.75	0.08	0.46			0.6	0.6											
11ER 1.0ISO	1.0	0.12	0.61			0.7	0.7											
11ER 1.25ISO	1.25	0.15	0.77			0.8	0.9											
11ER 1.5ISO	1.5	0.18	0.92			0.8	1.0											
11ER 1.75ISO	1.75	0.21	1.07			0.8	1.1											
11ER 2.0ISO	2.0	0.25	1.23			0.8	0.9											
16ER 0.5ISO	0.5	0.05	0.31			9.53	16			0.6	0.4	3.65		60°				SER-16
16ER 0.75ISO	0.75	0.08	0.46							0.6	0.6							
16ER 0.8ISO	0.8	0.09	0.49							0.6	0.6							
16ER 1.0ISO	1.0	0.12	0.61	0.7	0.7													
16ER 1.25ISO	1.25	0.15	0.77	0.8	0.9													
16ER 1.5ISO	1.5	0.18	0.92	0.8	1.0													
16ER 1.75ISO	1.75	0.21	1.07	0.9	1.2													
16ER 2.0ISO	2.0	0.25	1.23	1.0	1.3													
16ER 2.5ISO	2.5	0.31	1.53	1.1	1.5													
16ER 3.0ISO	3.0	0.38	1.84	1.2	1.6													
16ER 3.5ISO	3.5	0.44	2.15	1.6	1.9													
22ER 3.5ISO	3.5	0.44	2.15	12.7	22	1.6	2.3	4.8	60°				SER-22					
22ER 4.0ISO	4.0	0.52	2.45			1.6	2.3											
22ER 4.5ISO	4.5	0.58	2.78			1.7	2.4											
22ER 5.0ISO	5.0	0.64	3.07			1.7	1.5											
22ER 5.5ISO	5.5	0.70	3.32			1.9	2.7											
22ER 6.0ISO	6.0	0.78	3.68			2.0	2.9											
27ER 7.0ISO	7.0	0.93	4.30			15.8	27			2.0	2.9	6.35					SER-27	

ISO 60° vertical-(E)

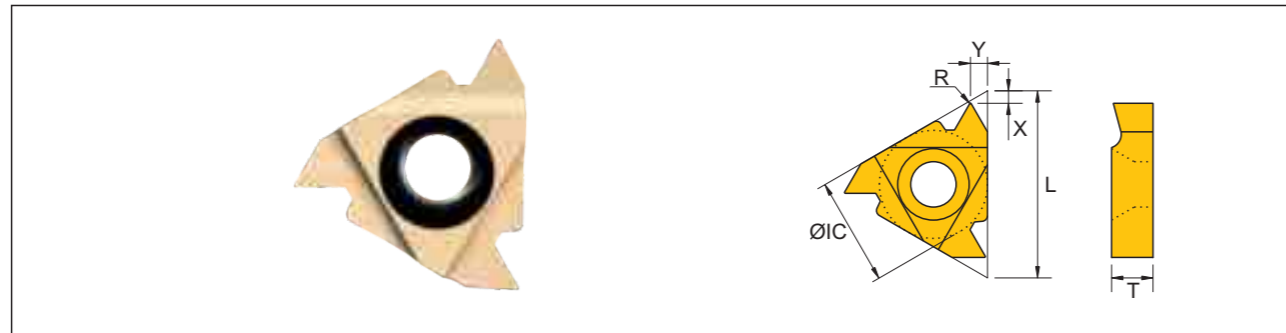


Code	Pitoh	Size							Degree θ	Grade			Holder
	mm	R	h	IC	L	X	Y	T		GR520	GR928	GR958	
11VER 0.75ISO	0.75	0.08	0.31	6.35	11	0.7	1.6	3.2	60°				SER-11V
11VER 1.0ISO	1.0	0.12	0.61			0.7	1.6						
11VER 1.5ISO	1.5	0.18	0.92			0.7	1.6						
11VER 1.75ISO	1.75	0.21	1.07			0.7	1.6						
11VER 2.0ISO	2.0	0.25	1.23			0.7	1.6						
16VER 0.5ISO	0.5	0.05	0.31			9.53	16			1.1	1.8	3.65	
16VER 0.75ISO	0.75	0.08	0.46	1.1	1.8								
16VER 0.8ISO	0.8	0.09	0.49	1.1	1.8								
16VER 1.0ISO	1.0	0.12	0.61	1.1	1.8								
16VER 1.25ISO	1.25	0.15	0.77	1.1	1.8								
16VER 1.5ISO	1.5	0.18	0.92	1.1	1.8								
16VER 1.75ISO	1.75	0.21	1.07	1.1	1.8								
16VER 2.0ISO	2.0	0.25	1.23	1.1	1.8								
16VER 2.5ISO	2.5	0.31	1.53	1.1	1.8								
16VER 3.0ISO	3.0	0.38	1.84	1.1	1.8								
22VER 4.0ISO	4.0	0.52	2.45	12.7	22	1.1	2.4	4.8	60°				SER-22V
22VER 4.5ISO	4.5	0.58	2.78			1.1	2.4						
22VER 5.0ISO	5.0	0.64	3.07			1.1	2.4						
27VER 5.5ISO	5.5	0.70	3.32	15.8	27	1.0	3.2	6.35	60°				SER-27V-6
27VER 6.0ISO	6.0	0.78	3.68			1.0	3.2						
27VER 8.0ISO	8.0	0.93	4.91			1.0	4.3			8.7	SER-27V-8		
27VER 10.0ISO	10.0	0.78	6.13			1.00	5.0			10.0		SER-27V-10	

ISO 60° u-metric (E)

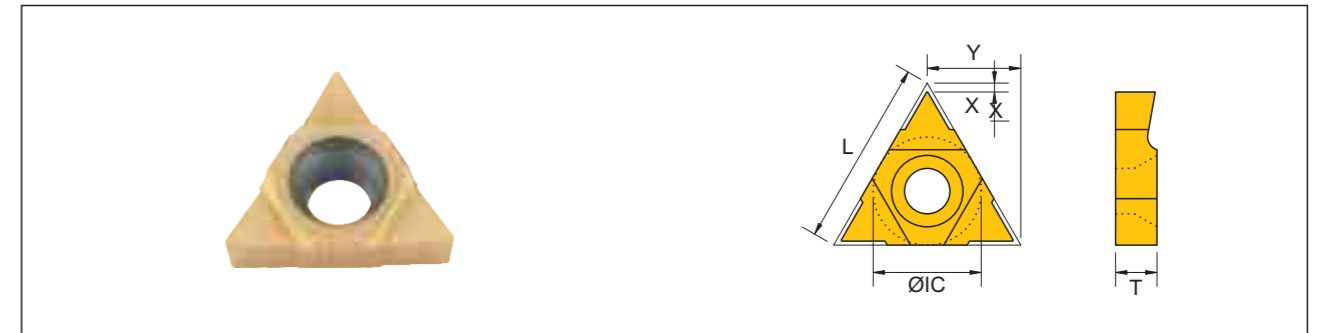
Code	Pitoh	Size							Degree θ	Grade			Holder
	mm	R	h	IC	L	X	Y	T		GR520	GR928	GR958	
27UER 8.0ISO	8.0	1.08	4.92	15.8	27	2.4	13.7	6.35	60°				SER-27U
27UER 9.0ISO	9.0	1.21	5.51	15.8	27	2.4	13.7	6.35					SER-27U

ISO 60° -metric (I)



Code	Pitch mm	Size							Degree θ	Grade			Holder		
		R	h	IC	L	X	Y	T		GR520	GR928	GR958			
08IR 0.5ISO	0.5	0.03	0.29	4.76	8	0.6	0.5	2.2	60°				SNR-08		
08IR 0.75ISO	0.75	0.04	0.43			0.6	0.5								
08IR 1.0ISO	1.0	0.05	0.58			0.6	0.6								
08IR 1.25ISO	1.25	0.07	0.72			0.6	0.7								
08IR 1.5ISO	1.5	0.08	0.87			0.6	0.7								
08IR 1.75ISO	1.75	0.10	1.01			0.6	0.8								
11IR 0.5ISO	0.5	0.03	0.29	6.35	11	0.6	0.4	3.2		60°				SNR-11	
11IR 0.75ISO	0.75	0.04	0.43			0.6	0.6								
11IR 1.0ISO	1.0	0.05	0.58			0.7	0.7								
11IR 1.25ISO	1.25	0.07	0.72			0.8	0.9								
11IR 1.5ISO	1.5	0.08	0.87			0.8	1.0								
11IR 1.75ISO	1.75	0.10	1.01			0.8	1.1								
11IR 2.0ISO	2.0	0.12	1.15	0.8	0.9										
16IR 0.5ISO	0.5	0.03	0.29	9.53	16	0.6	0.4	3.65			60°				SNR-16
16IR 0.75ISO	0.75	0.04	0.43			0.6	0.6								
16IR 0.8ISO	0.8	0.05	0.50			0.6	0.6								
16IR 1.0ISO	1.0	0.05	0.58			0.7	0.7								
16IR 1.25ISO	1.25	0.07	0.72			0.8	0.9								
16IR 1.5ISO	1.5	0.08	0.87			0.8	1.0								
16IR 1.75ISO	1.75	0.10	1.01			0.9	1.2								
16IR 2.0ISO	2.0	0.12	1.15			1.0	1.3								
16IR 2.5ISO	2.5	0.15	1.44			1.1	1.5								
16IR 3.0ISO	3.0	0.18	1.73			1.2	1.6								
16IR 3.5ISO	3.5	0.22	2.02			1.6	1.9								
22IR 3.5ISO	3.5	0.22	2.02	12.7	22	1.6	2.3	4.8	60°						SNR-22
22IR 4.0ISO	4.0	0.25	2.31			1.6	2.3								
22IR 4.5ISO	4.5	0.29	2.60			1.7	2.4								
22IR 5.0ISO	5.0	0.32	2.89			1.7	1.5								
22IR 5.5ISO	5.5	0.35	3.06			1.9	2.7								
22IR 6.0ISO	6.0	0.39	3.46			2.0	2.9								
27IR 7.0ISO	7.0	0.46	4.05	15.8	27	2.0	2.9	6.35						SNR-27	

ISO 60° U-metric (I)



Code	Pitch mm	Size							Degree θ	Grade			Holder
		R	h	IC	L	X	Y	T		GR520	GR928	GR958	
27UIR 8.0ISO	8.0	0.53	4.63	15.8	27	2.4	13.7	6.35	60°				SNR-27U
27UIR 9.0ISO	9.0	0.60	5.2	15.8	27	2.4	13.7	6.35					SNR-27U

D

60° ISO metric threading

D

60° ISO metric threading

UN 60° -unified Straight (E)



Code	Pitch		Size				Degree θ	Grade			Holder	
	tpi	h	IC	L	X	Y		T	GR520	GR928		GR958
16ER 32UN	32	0.49	9.53	16	0.6	0.6	3.65	60°				SER-16
16ER 28UN	28	0.56			0.6	0.7						
16ER 24UN	24	0.65			0.7	0.8						
16ER 20UN	20	0.78			0.8	0.9						
16ER 18UN	18	0.87			0.8	1.0						
16ER 16UN	16	0.97			0.9	1.1						
16ER 14UN	14	1.11			1.0	1.2						
16ER 12UN	12	1.30			1.1	1.4						
16ER 11UN	11	1.42			1.1	1.5						
16ER 10UN	10	1.56			1.1	1.5						
16ER 9UN	9	1.73	1.2	1.7								
16ER 8UN	8	1.95	1.2	1.6								
22ER 7UN	7	2.22	12.7	22	1.6	2.3	4.8				SER-22	
22ER 6UN	6	2.60			1.6	2.3						
22ER 5UN	5	3.12			1.7	2.5						
27ER 4.5UN	4.5	3.46	15.8	27	1.9	2.7	6.35				SER-27	
27ER 4UN	4	3.89			2.1	3.0						

UN 60° -unified Straight (I)



Code	Pitch		Size				Degree θ	Grade			Holder	
	tpi	h	IC	L	X	Y		T	GR520	GR928		GR958
08IR 32UN	32	0.46	4.76	8	0.6	0.5	2.2	60°				SNR-08
08IR 28UN	28	0.52			0.6	0.6						
08IR 24UN	24	0.61			0.6	0.6						
08IR 20UN	20	0.73			0.6	0.7						
08IR 18UN	18	0.81			0.6	0.7						
08IR 16UN	16	0.92			0.6	0.7						
08IR 14UN	14	1.05			0.6	0.8						
11IR 32UN	32	0.46			6.35	11			0.6	0.6	3.2	
11IR 28UN	28	0.52	0.6	0.7								
11IR 24UN	24	0.61	0.6	0.8								
11IR 20UN	20	0.73	0.7	0.9								
11IR 18UN	18	0.81	0.8	1.0								
11IR 16UN	16	0.92	0.8	1.1								
11IR 14UN	14	1.05	0.9	1.1								
11IR 11UN	11	1.33	1.1	1.5								
16IR 32UN	32	0.46	9.53	16	0.6	0.6	3.65	60°				SNR-16
16IR 28UN	28	0.52			0.6	0.7						
16IR 24UN	24	0.61			0.7	0.8						
16IR 20UN	20	0.73			0.8	0.9						
16IR 18UN	18	0.81			0.8	1.0						
16IR 16UN	16	0.92			0.9	1.1						
16IR 14UN	14	1.05			0.9	1.2						
16IR 12UN	12	1.22			1.1	1.4						
16IR 11UN	11	1.33			1.1	1.5						
16IR 10UN	10	1.47			1.1	1.5						
16IR 9UN	9	1.63			1.2	1.7						
16IR 8UN	8	1.83			1.1	1.5						
22IR 7UN	7	2.09	12.7	22	1.6	2.3	4.8				SNR-22	
22IR 6UN	6	2.44			1.6	2.3						
22IR 5UN	5	2.93			1.6	2.3						
27IR 4.5UN	4.5	3.26	15.8	27	1.7	2.4	6.35				SNR-27	
27IR 4UN	4	3.67			1.8	2.7						

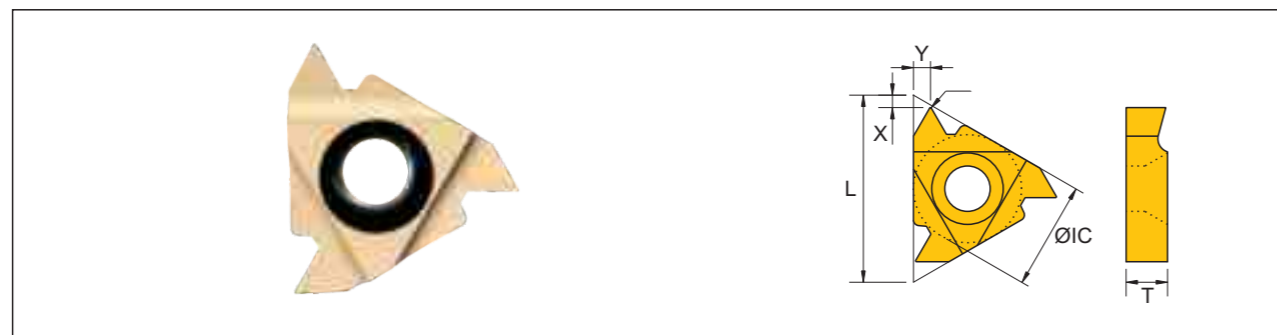
D

60° UN USi threading

D

60° UN USi threading

NPT-[E conical threading]



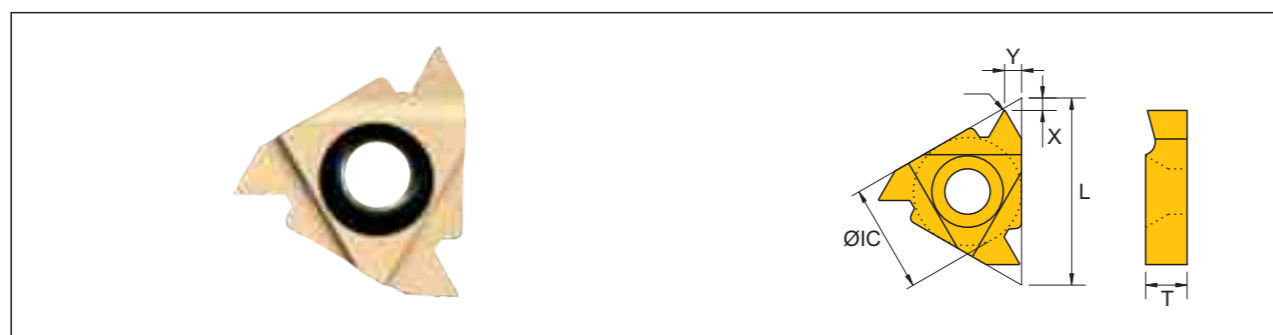
Code	Pitch		Size					Degree θ	Grade			Holder
	tpi	h	IC	L	X	Y	T		GR520	GR928	GR958	
11ER 27NPT	27	0.57	6.35	11	0.7	0.8	3.2	60°				SER-11
11ER 18NPT	18	0.85			0.8	1.0						
11ER 14NPT	14	1.14			0.8	1.0						
16ER 27NPT	27	0.65	9.53	16	0.7	0.8	3.65					SER-16
16ER 18NPT	18	1.00			0.8	1.0						
16ER 14NPT	14	1.31			0.9	1.2						
16ER11.5NPT	11.5	1.62			1.1	1.5						
16ER 8NPT	8	2.40			1.3	1.8						

NPT-[E conical threading]



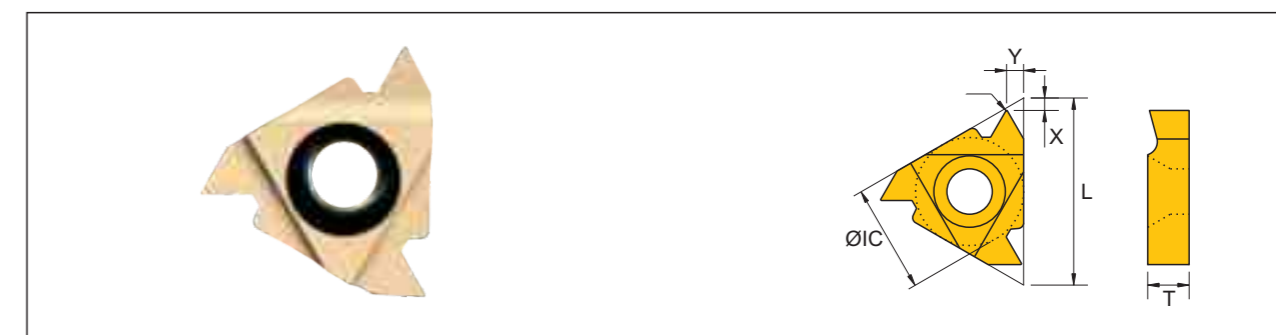
Code	Pitch		Size					Degree θ	Grade			Holder
	tpi	h	IC	L	X	Y	T		GR520	GR928	GR958	
11ER 27NPTF	27	0.64	6.35	11	0.7	0.8	3.2	60°				SER-11
11ER 18NPTF	18	1.00			0.8	1.0						
11ER 14NPTF	14	1.35			0.8	1.0						
16ER 27NPTF	27	0.64	9.53	16	0.7	0.8	3.65					SER-16
16ER 18NPTF	18	1.00			0.8	1.0						
16ER 14NPTF	14	1.35			0.9	1.2						
16ER11.5NPTF	11.5	1.63			1.1	1.5						
16ER 8NPTF	8	2.38			1.3	1.8						

NPT-[I conical threading]



Code	Pitch		Size					Degree θ	Grade			Holder
	tpi	h	IC	L	X	Y	T		GR520	GR928	GR958	
11IR 27NPT	27	0.57	6.35	11	0.7	0.8	3.2	60°				SNR-11
11IR 18NPT	18	0.85			0.8	1.0						
11IR 14NPT	14	1.14			0.8	1.0						
16IR 27NPT	27	0.65	9.53	16	0.7	0.8	3.65					SNR-16
16IR 18NPT	18	1.00			0.8	1.0						
16IR 14NPT	14	1.31			0.9	1.2						
16IR11.5NPT	11.5	1.62			1.1	1.5						
16IR 8NPT	8	2.40			1.3	1.8						

NPT-[I conical threading]



Code	Pitch		Size					Degree θ	Grade			Holder
	tpi	h	IC	L	X	Y	T		GR520	GR928	GR958	
11IR 27NPTF	27	0.64	6.35	11	0.7	0.8	3.2	60°				SNR-11
11IR 18NPTF	18	1.00			0.8	1.0						
11IR 14NPTF	14	1.35			0.8	1.0						
16IR 27NPTF	27	0.64	9.53	16	0.7	0.8	3.65					SNR-16
16IR 18NPTF	18	1.00			0.8	1.0						
16IR 14NPTF	14	1.35			0.9	1.2						
16IR11.5NPTF	11.5	1.63			1.1	1.5						
16IR 8NPTF	8	2.38			1.3	1.8						

D

60° NPT US threading

D

60° NPTF US threading

Whitworth-55° (E stright)



Code	Pitch		Size					Degree θ	Grade			Holder
	tpi	h	IC	L	X	Y	T		GR520	GR928	GR958	
16ER 28W	28	0.56	9.53	16	0.6	0.7	3.65	55°				SER-16
16ER 26W	26	0.61			0.7	0.8						
16ER 24W	24	0.66			0.7	0.8						
16ER 20W	20	0.78			0.8	0.9						
16ER 19W	19	0.83			0.8	1.0						
16ER 18W	18	0.87			0.9	1.1						
16ER 16W	16	0.99			0.9	1.1						
16ER 14W	14	1.12			1.0	1.2						
16ER 12W	12	1.31			1.1	1.4						
16ER 11W	11	1.43			1.1	1.5						
16ER 10W	10	1.57			1.1	1.5						
16ER 9W	9	1.75			1.2	1.7						
16ER 8W	8	2.03			1.2	1.5						
22ER 7W	7	2.41			12.7	22			1.6	2.3	4.8	
22ER 6W	6	2.71	1.6	2.3								
22ER 5W	5	3.25	1.7	2.4								
27ER 4.5W	4.5	3.61	15.8	27	1.8	2.6	6.35	55°				SER-27
27ER 4W	4	4.07			2.0	2.9						

Whitworth-55° (I stright threading)



Code	Pitch		Size					Degree θ	Grade			Holder										
	tpi	h	IC	L	X	Y	T		GR520	GR928	GR958											
08IR 24W	24	0.66	4.76	8	0.6	0.7	2.2	55°				SNR-08										
08IR 20W	20	0.78			0.7	0.8																
08IR 19W	19	0.83			0.7	0.8																
08IR 18W	18	0.87			0.8	0.9																
08IR 16W	16	0.99			0.8	1.0																
11IR 28W	28	0.56			6.35	11			0.6	0.7	3.2		55°				SNR-11					
11IR 26W	26	0.61	0.7	0.8																		
11IR 24W	24	0.66	0.7	0.8																		
11IR 20W	20	0.78	0.8	0.9																		
11IR 19W	19	0.83	0.8	1.0																		
11IR 18W	18	0.87	0.9	1.1																		
11IR 16W	16	0.99	0.9	1.1																		
11IR 14W	14	1.12	1.0	1.2																		
11IR 12W	12	1.31	1.1	1.4																		
11IR 11W	11	1.43	1.1	1.5																		
16IR 28W	28	0.56	9.53	16			0.6	0.7	3.65	55°						SNR-16						
16IR 26W	26	0.61					0.7	0.8														
16IR 24W	24	0.66					0.7	0.8														
16IR 20W	20	0.78					0.8	0.9														
16IR 19W	19	0.83			0.8	1.0																
16IR 18W	18	0.87			0.9	1.1																
16IR 16W	16	0.99			0.9	1.1																
16IR 14W	14	1.12			1.0	1.2																
16IR 12W	12	1.31			1.1	1.4																
16IR 11W	11	1.43			1.1	1.5																
16IR 10W	10	1.57			1.1	1.5																
16IR 9W	9	1.75			1.2	1.7																
16IR 8W	8	2.03			1.2	1.5																
22IR 7W	7	2.41			12.7	22	1.6	2.3			4.8	55°					SNR-22					
22IR 6W	6	2.71					1.6	2.3														
22IR 5W	5	3.25					1.7	2.4														
27IR 4.5W	4.5	3.61					15.8	27					1.8	2.6	6.35			55°				SNR-27
27IR 4W	4	4.07											2.0	2.9								

D

55° W imperial Whitworth pipe threading

D

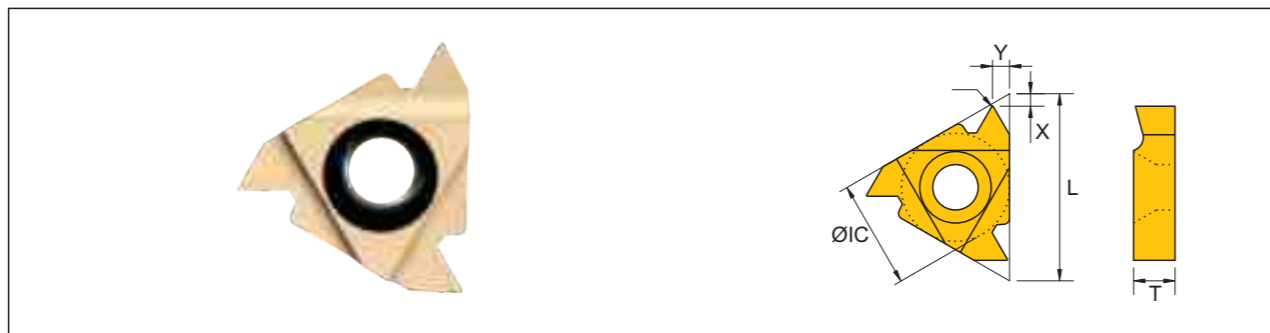
55° W imperial Whitworth pipe threading

BSPT Whitworth-55° (E conical threading)



Code	Pitch		Size					Degree θ	Grade			Holder
	tpi	h	IC	L	X	Y	T		GR520	GR928	GR958	
11ER 28BSPT	28	0.57	6.35	11	0.6	0.6	3.2	55°				SER-11
11ER 19BSPT	19	0.85			0.8	0.9						
11ER 14BSPT	14	1.14			0.9	1.0						
16ER 28BSPT	28	0.57	9.53	16	0.6	0.6	3.65					SER-16
16ER 19BSPT	19	0.85			0.8	0.9						
16ER 14BSPT	14	1.14			1.0	1.2						
16ER 11BSPT	11	1.46			1.1	1.5						

BSPT Whitworth-55° (I conical threading)



Code	Pitch		Size					Degree θ	Grade			Holder
	tpi	h	IC	L	X	Y	T		GR520	GR928	GR958	
11IR 28BSPT	28	0.57	6.35	11	0.6	0.6	3.2	55°				SNR-11
11IR 19BSPT	19	0.85			0.8	0.9						
11IR 14BSPT	14	1.14			0.9	1.0						
16IR 28BSPT	28	0.57	9.53	16	0.6	0.6	3.65					SNR-16
16IR 19BSPT	19	0.85			0.8	0.9						
16IR 14BSPT	14	1.14			1.0	1.2						
16IR 11BSPT	11	1.46			1.1	1.5						

PG-DIN 80° (E)



Code	Pitch	螺纹	Size					Degree θ	Grade			Holder	
	tpi		h	IC	L	X	Y		T	GR520	GR928		GR958
11ER 20PG	20	Pg7	0.61	6.35	11	0.8	0.9	3.2	80°				SER-11
11ER 18PG	18	Pg9/11/13.5/16	0.67			0.8	1.0						
11ER 16PG	16	Pg21/29/36/42/48	0.76			0.9	1.1						
16ER 20PG	20	Pg7	0.61	9.53	16	0.8	1.9	3.65					SER-16
16ER 18PG	18	Pg9/11/13.5/16	0.67			0.8	1.0						
16ER 16PG	16	Pg21/29/36/42/48	0.76			0.9	1.1						

PG-DIN 80° (I)



Code	Pitch	螺纹	Size					Degree θ	Grade			Holder	
	tpi		h	IC	L	X	Y		T	GR520	GR928		GR958
11IR 20PG	20	Pg7	0.64	6.35	11	0.8	0.9	3.2	80°				SNR-11
11IR 18PG	18	Pg9/11/13.5/16	0.67			0.8	1.0						
11IR 16PG	16	Pg21/29/36/42/48	0.76			0.9	1.1						
16IR 20PG	20	Pg7	0.64	9.53	16	0.8	1.9	3.65					SNR-16
16IR 18PG	18	Pg9/11/13.5/16	0.67			0.8	1.0						
16IR 16PG	16	Pg21/29/36/42/48	0.76			0.9	1.1						

Round-DIN 30° 405 (E)



Code	Pitch		Size				Degree θ	Grade			Holder	
	tpi	h	IC	L	X	Y		T	GR520	GR928		GR958
16ER 10RD	10	1.34	9.53	16	1.1	1.2	30°				SER-16	
16ER 8RD	8	1.67			1.4	1.3		3.65				
16ER 6RD	6	2.16			1.5	1.7						
22ER 6RD	6	2.16	12.7	22	1.5	1.7					SER-22	
22ER 4RD	4	3.18			2.2	2.3		4.8				
27ER 4RD	4	3.18			15.8	27		2.2	2.3	6.35		

Round-DIN 30° 20400 (E)



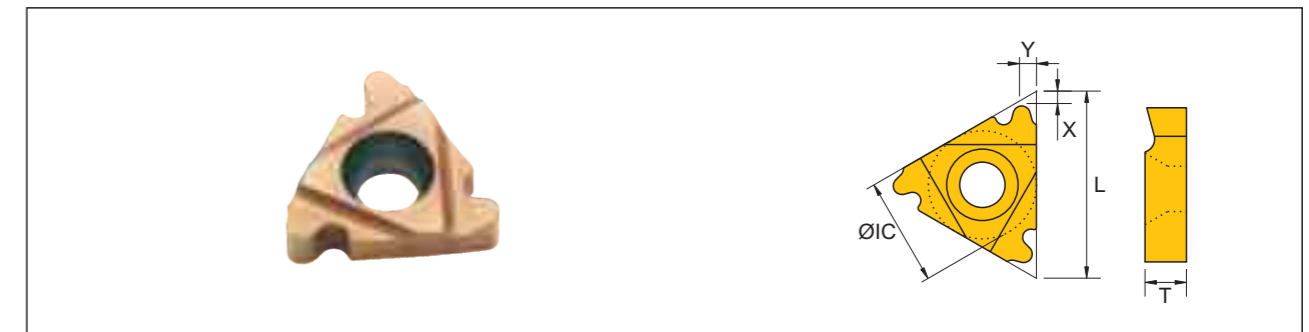
Code	Pitch		IC	L	X	Y	T	Degree θ	Grade			Holder
	mm	h							GR520	GR928	GR958	
16ER 2.ORD	2.0	1.00	9.53	16	1.3	1.7	3.65	30°				SER-16
16ER 3.ORD	3.0	1.50			1.3	1.7						
22ER 4.ORD	4.0	2.20	12.7	22	1.6	2.2	4.8					SER-22
22ER 5.ORD	5.0	2.75			1.4	1.7						
22ER 6.ORD	6.0	3.30			1.7	2.1						

Round-DIN 30° 405 (I)



Code	Pitch		Size				Degree θ	Grade			Holder	
	tpi	h	IC	L	X	Y		T	GR520	GR928		GR958
16IR 10RD	10	1.27	9.53	16	1.1	1.2	30°				SER-16	
16IR 8RD	8	1.61			1.4	1.3		3.65				
16IR 6RD	6	2.16			1.5	1.7						
22IR 6RD	6	2.16	12.7	22	1.5	1.7		4.8				SER-22
22IR 4RD	4	3.18			2.2	2.3						
27IR 4RD	4	3.18			15.8	27			2.2	2.3	6.35	

Round-DIN 30° 20400 (I)



Code	Pitch		IC	L	X	Y	T	Degree θ	Grade			Holder
	mm	h							GR520	GR928	GR958	
16IR 2.ORD	2.0	1.00	9.53	16	1.3	1.7	3.65	30°				SNR-16
16IR 3.ORD	3.0	1.50			1.3	1.7						
22IR 4.ORD	4.0	2.20	12.7	22	1.6	2.2	4.8					SNR-22
22IR 5.ORD	5.0	2.75			1.4	1.7						
22IR 6.ORD	6.0	3.30			1.7	2.1						

D 30° RD405 German circular threading

D 30° RD20400 German circular thread / 30° TR German ACME

Trapez-DIN 30° (E)



Code	Pitch		Size					Degree θ	Grade			Holder
	mm	h	IC	L	X	Y	T		GR520	GR928	GR958	
16ER 1.5TR	1.5	0.90	9.53	16	1.0	1.1	3.65	30°				SER-16
16ER 2.0TR	2.0	1.25			1.1	1.3						
16ER 2.5TR	2.5	1.50			1.2	1.4						
16ER 3.0TR	3.0	1.75			1.3	1.5						
22ER 4.0TR	4.0	2.25			1.7	1.9						
22ER 5.0TR	5.0	2.75	12.7	22	2.1	2.5	4.8					SER-22
22ER 6.0TR	6.0	3.50			2.3	2.7						
27ER 6.0TR	6.0	3.50			2.3	2.7						
27ER 7.0TR	7.0	4.00	15.8	27	2.3	2.7	6.35					SER-27
27ER 8.0TR	8.0	4.50			2.3	2.7						

Trapez-DIN 30° U Type (E)



Code	Pitch		Size					Degree θ	Grade			Holder
	mm	h	IC	L	X	Y	T		GR520	GR928	GR958	
22UER 7.0TR	7.0	3.50	12.7	22	2.3	11	4.8	30°				SER-22U
27UER 8.0TR	8.0	4.00	15.8	27	2.6	13.5	6.35					SER-27U
27UER 9.0TR	9.0	4.50			3.0	13.5						
27UER 10.0TR	10.0	5.00			3.0	13.5						

Trapez-DIN 30° vertical (E)



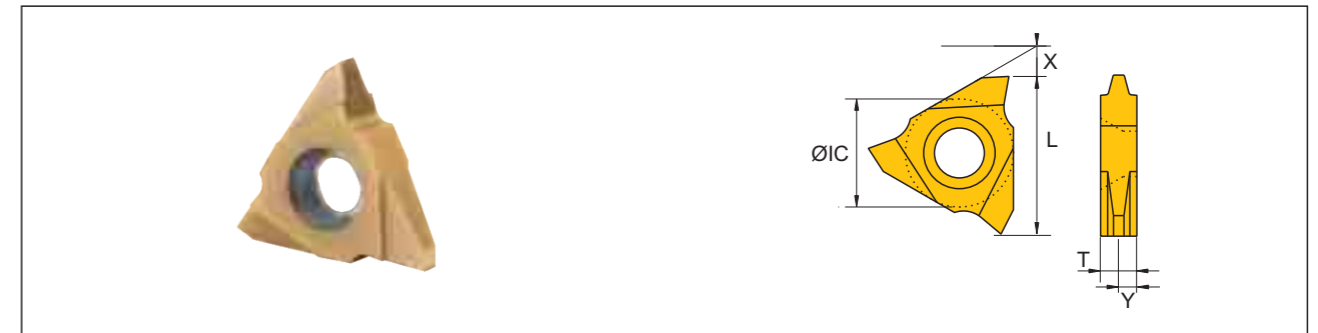
Code	Pitch		Size					Degree θ	Grade			Holder
	mm	h	IC	L	X	Y	T		GR520	GR928	GR958	
16VER 1.5TR	1.5	0.90	9.53	16	1.0	1.83	3.65	30°				SER-16V
16VER 2.0TR	2.0	1.25			1.0	1.83						
16VER 2.5TR	2.5	1.50			1.0	1.83						
16VER 3.0TR	3.0	1.75			1.0	1.83						
22VER 4.0TR	4.0	2.25			1.0	2.4						
22VER 5.0TR	5.0	2.75	12.7	22	1.0	2.4	4.8					SER-22V
22VER 6.0TR	6.0	3.50			1.0	2.4						
27VER 6.0TR	6.0	3.50			1.0	3.2						
27VER 7.0TR	7.0	4.00	15.8	27	1.0	3.2	6.35					SER-27V-6
27VER 8.0TR	8.0	4.50			1.0	3.2						
27VER 9.0TR	9.0	5.00			1.0	4.3						
27VER10.0TR	10.0	5.50			1.0	4.3						
27VER12.0TR	12.0	6.50			1.0	5.0			10.0	8.7		

Trapez-DIN 30° (I)



Code	Pitch		Size					Degree θ	Grade			Holder
	mm	h	IC	L	X	Y	T		GR520	GR928	GR958	
16IR 1.5TR	1.5	0.90	9.53	16	1.0	1.1	3.65	30°				SNR-16
16IR 2.0TR	2.0	1.25			1.1	1.3						
16IR 2.5TR	2.5	1.50			1.2	1.4						
16IR 3.0TR	3.0	1.75			1.3	1.5						
22IR 4.0TR	4.0	2.25	12.7	22	1.7	1.9	4.8					SNR-22
22IR 5.0TR	5.0	2.75			2.1	2.5						
22IR 6.0TR	6.0	3.50			2.3	2.7						
27IR 6.0TR	6.0	3.50	15.8	27	2.3	2.7	6.35					SNR-27
27IR 7.0TR	7.0	4.00			2.3	2.7						
27IR 8.0TR	8.0	4.50			2.3	2.7						

Trapez-DIN 30° vertical (I)



Code	Pitch		Size					Degree θ	Grade			Holder
	mm	h	IC	L	X	Y	T		GR520	GR928	GR958	
16VIR 1.5TR	1.5	0.90	9.53	16	1.0	1.83	3.65	30°				SNR-16V
16VIR 2.0TR	2.0	1.25			1.0	1.83						
16VIR 2.5TR	2.5	1.50			1.0	1.83						
16VIR 3.0TR	3.0	1.75			1.0	1.83						
22VIR 4.0TR	4.0	2.25	12.7	22	1.0	2.4	4.8					SNR-22V
22VIR 5.0TR	5.0	2.75			1.0	2.4						
22VIR 6.0TR	6.0	3.50			1.0	2.4						
27VIR 6.0TR	6.0	3.50	15.8	27	1.0	3.2	6.35					SNR-27V-6
27VIR 7.0TR	7.0	4.00			1.0	3.2						
27VIR 8.0TR	8.0	4.50			1.0	3.2						
27VIR 9.0TR	9.0	5.00			1.0	4.3	8.7				SNR-27V-8	
27VIR 10.0TR	10.0	5.50	1.0	4.3								
27VIR 12.0TR	12.0	6.50	1.0	5.0	10.0							SNR-27V-10

Trapez-DIN 30° U Type (I)



Code	Pitch		Size					Degree θ	Grade			Holder
	mm	h	IC	L	X	Y	T		GR520	GR928	GR958	
16UIR 4.0TR	4.0	2.25	9.53	16	1.53	8.0	3.65	30°				SNR-16U
16UIR 5.0TR	5.0	2.75			1.53	8.0						
16UIR 6.0TR	6.0	3.50			2.0	8.0						
22UIR 7.0TR	7.0	3.50	12.7	22	2.3	11	4.8					SNR-22U
27UIR 8.0TR	8.0	4.00	15.8	27	2.6	13.5	6.35					SNR-27U
27UIR 9.0TR	9.0	4.50			3.0	13.5						
27UIR 10.0TR	10.0	5.00			3.0	13.5						

ACME U type (E)



Code	Pitch		Size				Degree θ	Grade			Holder	
	tpi	h	IC	L	X	Y		T	GR520	GR928		GR958
16ER 16ACME	16	0.91	9.53	16	1.0	1.1	3.65	29°				SER-16
16ER 14ACME	14	1.01			1.0	1.2						
16ER 12ACME	12	1.17			1.1	1.2						
16ER 10ACME	10	1.50			1.3	1.4						
16ER 8ACME	8	1.81			1.4	1.5						
22ER 6ACME	6	2.34	12.7	22	1.8	2.1	4.8				SER-22	
22ER 5ACME	5	2.75			2.0	2.3						
22ER 4ACME	4	3.38			2.0	2.3						

ACME U type (E)



Code	Pitch		Size				Degree θ	Grade			Holder	
	tpi	h	IC	L	X	Y		T	GR520	GR928		GR958
22UER 4ACME	4	3.38	12.7	22	2.3	11.0	4.8	29°				SER-22U
22UER 3ACME	3	4.45			3.0	11.0						
27UER 3ACAME	3	4.45			15.8	27			3.0	13.5	6.35	

ACME (E) Vertical



Code	Pitch		Size				Degree θ	Grade			Holder	
	tpi	h	IC	L	X	Y		T	GR520	GR928		GR958
27VER 4ACME	4	3.38	15.8	27	1.0	3.2	6.35	29°				SER-27V-6
27VER 3.5ACME	3.5	3.80			1.0	3.2						
27VER 3ACME	3	4.45			1.0	3.2						
27VER 2ACME	2	6.55			1.0	5			10.0			

D

29° ACME American ACME threading

D

29° ACME American ACME threading

ACME (I)



Code	Pitch		Size				Degree θ	Grade			Holder	
	tpi	h	IC	L	X	Y		T	GR520	GR928		GR958
16IR 16ACME	16	0.91	9.53	16	1.0	1.1	3.65	29°				SNR-16
16IR 14ACME	14	1.01			1.0	1.2						
16IR 12ACME	12	1.17			1.1	1.2						
16IR 10ACME	10	1.50			1.3	1.4						
16IR 8ACME	8	1.81	12.7	22	1.4	1.5	4.8				SNR-22	
22IR 6ACME	6	2.34			1.8	2.1						
22IR 5ACME	5	2.75			2.0	2.3						
22IR 4ACME	4	3.38			2.0	2.3						

ACME U Type (I)



Code	Pitch		Size				Degree θ	Grade			Holder	
	tpi	h	IC	L	X	Y		T	GR520	GR928		GR958
22UIR 4ACME	4	3.38	12.7	22	2.3	11.0	4.8	29°				SNR-22U
22UIR 3ACME	3	4.45			3.0	11.0						
27UIR 3ACME	3	4.45			15.8	27			3.0	13.5	6.35	

ACME Vertical (I)



Code	Pitch		Size				Degree θ	Grade			Holder	
	tpi	h	IC	L	X	Y		T	GR520	GR928		GR958
27VIR 4ACME	4	3.50	15.8	27	1.0	3.2	6.35	29°				SNR-27V-6
27VIR 3.5ACME	3.5	4.00			1.0	3.2						
27VIR 3ACME	3	4.50			1.0	3.2						
27VIR 2ACME	2	5.00			1.0	5			10.0			

Stub ACME (E)



Code	Pitch		Size				Degree θ	Grade			Holder
	tpi	h	IC	L	X	Y		T	GR520	GR928	
16ER 16STACME	16	0.60	9.53	16	1.0	1.1	29°				SER-16
16ER 14STACME	14	0.67			1.0	1.2					
16ER 12STACME	12	0.76			1.1	1.2					
16ER 10STACME	10	1.02			1.3	1.4					
16ER 8STACME	8	1.21			1.4	1.5					
22ER 6STACME	6	1.52	12.7	22	1.8	2.1	4.8				SER-22
22ER 5STACME	5	1.78			2.0	2.3					
22ER 4STACME	4	2.16			2.0	2.3					

Stub ACME U type (E)



Code	Pitch		Size				Degree θ	Grade			Holder	
	tpi	h	IC	L	X	Y		T	GR520	GR928		GR958
22UER 4STACME	4	2.16	12.7	22	2.3	11.0	4.8	29°				SER-22U
22UER 3STACME	3	2.79			3.0	11.0						
27UER 3STACME	3	2.79	15.8	27	3.0	13.5	6.35				SER-27U	

Stub ACME vertical (E)



Code	Pitch		Size				Degree θ	Grade			Holder	
	tpi	h	IC	L	X	Y		T	GR520	GR928		GR958
27VER 4STACME	4	2.16	15.8	27	1.0	3.2	6.35	29°				SER-27V-6
27VER 3STACME	3	2.79			1.0	3.2						
27VER 2STACME	2	4.06			1.0	4.3						

D

29° STACME American short-tooth ACME threading

D

29° STACME American short-tooth ACME threading

Stub ACME (I)



Code	Pitch		Size				Degree θ	Grade			Holder
	tpi	h	IC	L	X	Y		T	GR520	GR928	
16IR 16STACME	16	0.60	9.53	16	1.0	1.1	29°				SNR-16
16IR 14STACME	14	0.67			1.0	1.2					
16IR 12STACME	12	0.76			1.1	1.2					
16IR 10STACME	10	1.02			1.3	1.4					
16IR 8STACME	8	1.21			1.4	1.5					
22IR 6STACME	6	1.52	12.7	22	1.8	2.1	29°				SNR-22
22IR 5STACME	5	1.78			2.0	2.3					
22IR 4STACME	4	2.16			2.0	2.3					

Stub ACME U type (I)



Code	Pitch		IC	L	X	Y	T	Degree θ	Grade			Holder
	tpi	h							GR520	GR928	GR958	
22UIR 4STACME	4	2.16	12.7	22	2.3	11.0	4.8	29°				SNR-22U
22UIR 3STACME	3	2.79			3.0	11.0						
27UIR 3STACME	3	2.79	15.8	27	3.0	13.5	6.35	29°				SNR-27U

Stub ACME vertical (I)



Code	Pitch		Size				Degree θ	Grade			Holder	
	tpi	h	IC	L	X	Y		T	GR520	GR928		GR958
27VIR 4STACME	4	2.16	15.8	27	1.0	3.2	6.35	29°				SNR-27V-6
27VIR 3STACME	3	2.79			1.0	3.2						
27VIR 2STACME	2	4.06			1.0	4.3						

ABUT (E)



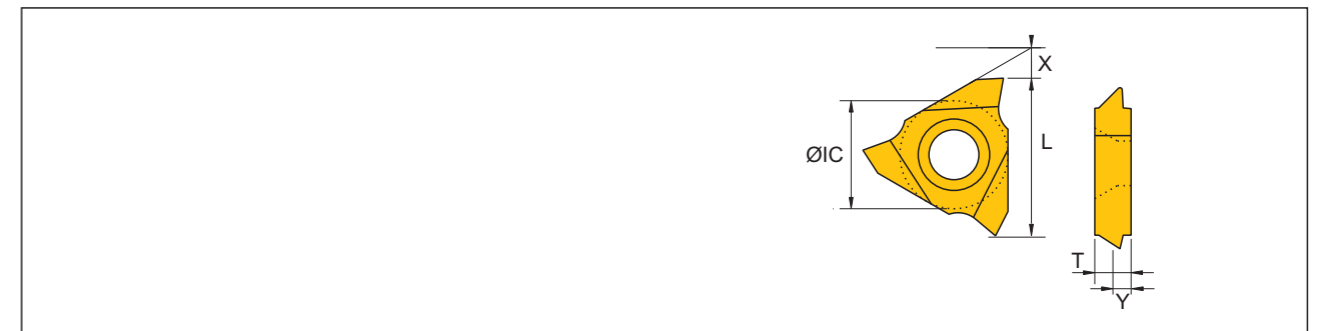
Code	Pitch		Size				Degree θ	Grade			Holder	
	tpi	h	IC	L	X	Y		T	GR520	GR928		GR958
11ER 20ABUT	20	0.84	6.35	11	1.0	1.4	3.2	45° / 7°				SER-11
11ER 16ABUT	16	1.05			1.3	1.9						
16ER 20ABUT	20	0.84	9.53	16	1.0	1.4	3.65					SER-16
16ER 16ABUT	16	1.05			1.3	1.9						
16ER 12ABUT	12	1.40			1.4	2.0						
16ER 10ABUT	10	1.68			1.5	2.3						
22ER 8ABUT	8	2.10	12.7	22	2.0	3.2	4.8					SER-22
22ER 6ABUT	6	2.80			2.2	3.5						

ABUT U Type (E)



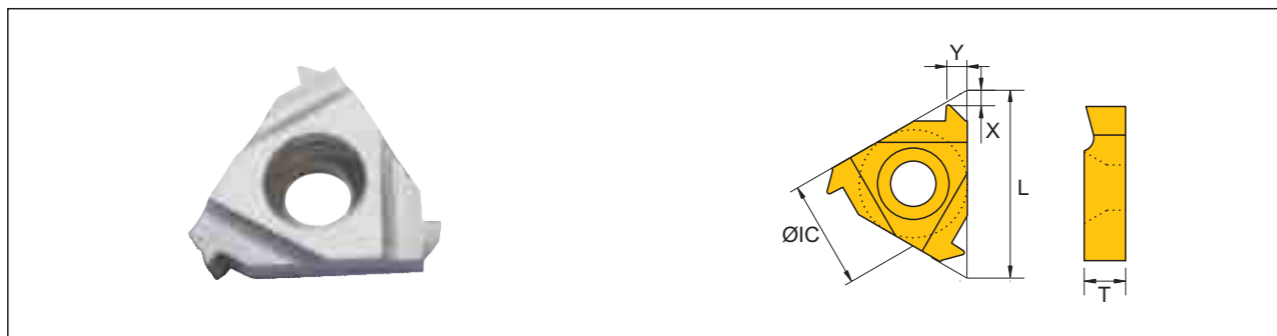
Code	Pitch		Size				Degree θ	Grade			Holder	
	tpi	h	IC	L	X	Y		T	GR520	GR928		GR958
22UER 4ABUT	4	4.21	12.7	22	2.4	9.8	4.8	45°				SER-22U
27UER 3ABUT	3	5.61	15.8	27	3.1	12.1	6.35	7°				SER-27U

ABUT Vertical (E)



Code	Pitch		Size				Degree θ	Grade			Holder	
	tpi	h	IC	L	X	Y		T	GR520	GR928		GR958
27VER 4ABUT	4	4.21	15.8	27	0.6	3.2	1.8	45°				SER-27V-6
27VER 3ABUT	3	5.61			0.6	4.3	2.2	/				
27VER2.5ABUT	2.5	6.73			0.6	5.0	2.7	7°				

ABUT (I)



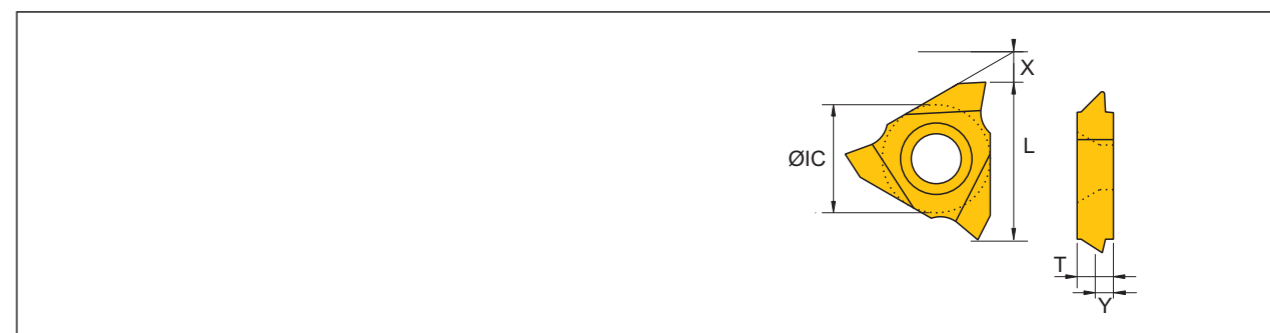
Code	Pitch		Size				Degree θ	Grade			Holder	
	tpi	h	IC	L	X	Y		T	GR520	GR928		GR958
11IR 20ABUT	20	0.84	6.35	11	1.0	1.4	3.2	45° / 7°				SNR-11
11IR 16ABUT	16	1.05			1.3	1.9						
16IR 20ABUT	20	0.84	9.53	16	1.0	1.4	3.65					SNR-16
16IR 16ABUT	16	1.05			1.3	1.9						
16IR 12ABUT	12	1.40			1.4	2.0						
16IR 10ABUT	10	1.68			1.5	2.3						
22IR 8ABUT	8	2.10	12.7	22	2.0	3.2	4.8					SNR-22
22IR 6ABUT	6	2.80			2.2	3.5						

ABUT U Type (I)



Code	Pitch		Size				Degree θ	Grade			Holder	
	tpi	h	IC	L	X	Y		T	GR520	GR928		GR958
22UIR 4ABUT	4	4.21	12.7	22	2.4	9.8	4.8	45°				SNR-22U
27UIR 3ABUT	3	5.61	15.8	27	3.1	12.1	6.35	7°				SNR-27U

ABUT Vertical (I)



Code	Pitch		Size				Degree θ	Grade			Holder	
	tpi	h	IC	L	X	Y		T	GR520	GR928		GR958
27VIR 4ABUT	4	4.21	15.8	27	0.6	3.2	1.8	45°				SNR-27V-6
27VIR 3ABUT	3	5.61			0.6	4.3	2.2	/				SNR-27V-8
27VIR2.5ABUT	2.5	6.73			0.6	5.0	2.7	7°				SNR-27V-10

D

ABUT American serrated threading

D

ABUT American serrated threading

BBUT (E)



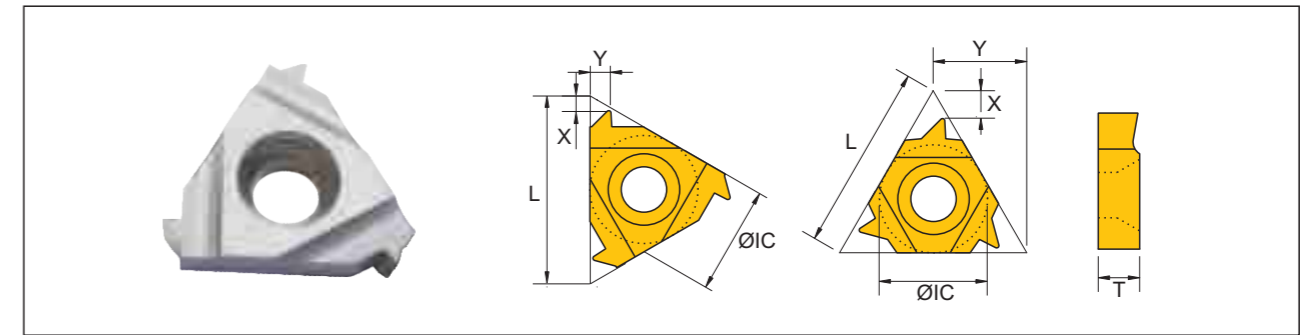
Code	Pito		Size					Degree θ	Grade			Holder
	t _{pi}	h	IC	L	X	Y	T		GR520	GR928	GR958	
16ER 16BBUT	16	0.80	9.53	16	1.1	1.6	3.65	45° / 7°				SER-16
16ER 12BBUT	12	1.07			1.4	2.1						
16ER 10BBUT	10	1.28			1.4	2.2						
16ER 8BBUT	8	1.61			1.6	2.5						
22ER 8BBUT	8	1.61	12.7	22	1.6	2.5	4.8				SER-22	

BBUT (I)



Code	Pito		Size					Degree θ	Grade			Holder
	t _{pi}	h	IC	L	X	Y	T		GR520	GR928	GR958	
16IR 16BBUT	16	0.80	9.53	16	1.1	1.6	3.65	45° / 7°				SNR-16
16IR 12BBUT	12	1.07			1.4	2.1						
16IR 10BBUT	10	1.28			1.4	2.2						
16IR 8BBUT	8	1.61			1.6	2.5						
22IR 8BBUT	8	1.61	12.7	22	1.6	2.5	4.8				SNR-22	

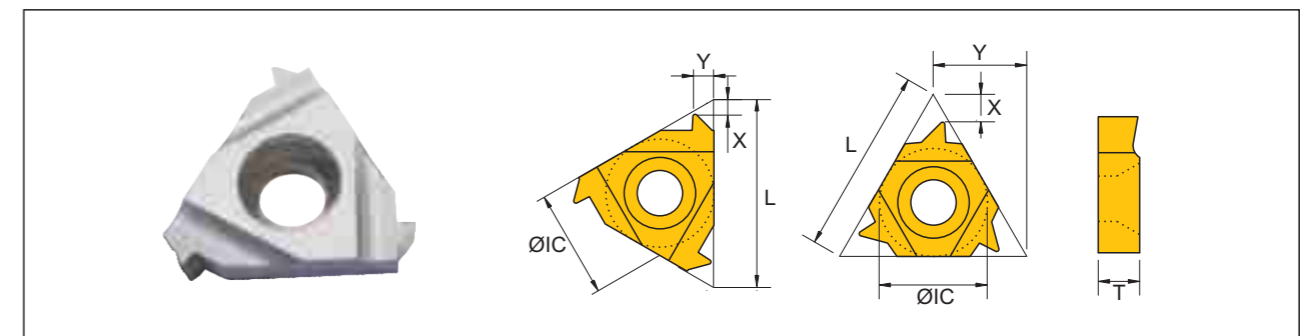
SAGE (E)



Code	Pito		Size					Degree θ	Grade			Holder
	mm	h	IC	L	X	Y	T		GR520	GR928	GR958	
16ER 2.OSAGE	2.0	1.74	9.53	16	1.5	2.1	3.65	30° / 3°				SER-16
22ER 2.OSAGE	2.0	1.74	12.7	22	1.5	2.1	4.8					
22ER 3.OSAGE	3.0	2.60			1.8	2.6						
22ER 4.OSAGE	4.0	3.55			1.75	3.1						
27ER 4.OSAGE	4.0	3.55	15.8	27	1.9	3.2	6.35				SER-27	

Code	Pito		Size					Degree θ	Grade			Holder
	mm	h	IC	L	X	Y	T		GR520	GR928	GR958	
22UER 5.OSAGE	5.0	4.41	12.7	22	1.27	10.35	4.8	30° / 3°				SER-22U
22UER 6.OSAGE	6.0	5.29			1.25	10.28						

SAGE (I)



Code	Pito		Size					Degree θ	Grade			Holder
	mm	h	IC	L	X	Y	T		GR520	GR928	GR958	
16IR 2.OSAGE	2.0	1.50	9.53	16	1.5	2.2	3.65	30° / 3°				SNR-16
22IR 3.OSAGE	3.0	2.25	12.7	22	1.75	2.9	4.8					
22IR 4.OSAGE	4.0	3.09			2.03	3.25						
27IR 4.OSAGE	4.0	3.09			15.8	27			2.1	3.2	6.35	

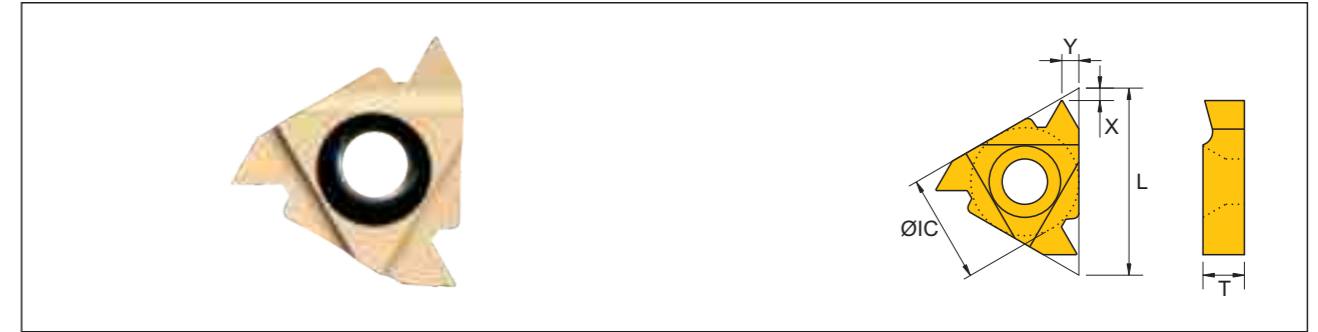
Code	Pito		尺寸					Degree θ	Grade			Holder
	mm	h	IC	L	X	Y	T		GR520	GR928	GR958	
22UIR 5.OSAGE	5.0	3.76	12.7	22	1.8	10.35	4.8	30° / 3°				SNR-22U
22UIR 6.OSAGE	6.0	4.54			1.9	10.15						

Oil Thread 60° API (E)



Code	thread	Taper IPF	Pitch tpi	Size							Degree θ	Grade		Holder
				h	IC	L	X	Y	T	GR928		GR958		
22ER 4API382	V-0.038R	2	4	NC23-NC50	3.09	12.7	22	2.1	2.8	4.8	60°			SER-22
22ER 4API383	V-0.038R	3	4	NC56-NC77	3.08			2.1	2.8					
22ER 4API502	V-0.050	2	4	6 5/8" REG	3.75			2.0	2.9					
22ER 4API503	V-0.050	3	4	5 1/2", 7 5/8", 8 5/8" REG	3.74			2.0	2.9					
22ER 5API403	V-0.040	3	5	2 3/8"-4 1/2" REG	2.99			1.8	2.6					
22ER 6API551	V-0.055	1.5	6	NC10-NC16	1.41			2.6	2.0					
27ER 4API382	V-0.038R	2	4	NC23-NC50	3.09	15.7	27	2.1	2.8	6.35	60°			SER-27
27ER 4API383	V-0.038R	3	4	NC56-NC77	3.08			2.1	2.8					
27ER 4API502	V-0.050	2	4	6 5/8" REG	3.75			2.1	3.1					
27ER 4API503	V-0.050	3	4	5 1/2", 7 5/8", 8 5/8" REG	3.74			2.1	3.1					
27ER 5API403	V-0.040	3	5	2 3/8"-4 1/2" REG	2.99			1.9	2.7					

Oil Thread 60° API (I)



Code	Thread	Taper IPF	Pitch tpi	Size							Degree θ	Grade		Holder
				h	IC	L	X	Y	T	GR928		GR958		
22IR 4API382	V-0.038R	2	4	NC23-NC50	3.09	12.7	22	2.1	2.8	4.8	60°			SNR-22
22IR 4API383	V-0.038R	3	4	NC56-NC77	3.08			2.1	2.8					
22IR 4API502	V-0.050	2	4	6 5/8" REG	3.75			2.1	3.1					
22IR 4API503	V-0.050	3	4	5 1/2", 7 5/8", 8 5/8" REG	3.74			2.0	2.9					
22IR 5API403	V-0.040	3	5	2 3/8"-4 1/2" REG	2.99			1.8	2.6					
22IR 6API551	V-0.055	1.5	6	NC10-NC16	1.41			2.6	2.0					
27IR 4API382	V-0.038R	2	4	NC23-NC50	3.09	15.7	27	2.1	2.8	6.35	60°			SNR-27
27IR 4API383	V-0.038R	3	4	NC56-NC77	3.08			2.1	2.8					
27IR 4API502	V-0.050	2	4	6 5/8" REG	3.75			2.1	3.1					
27IR 4API503	V-0.050	3	4	5 1/2", 7 5/8", 8 5/8" REG	3.74			2.1	3.1					
27IR 5API403	V-0.040	3	5	2 3/8"-4 1/2" REG	2.99			1.9	2.7					

D

60° API oil pipe threading

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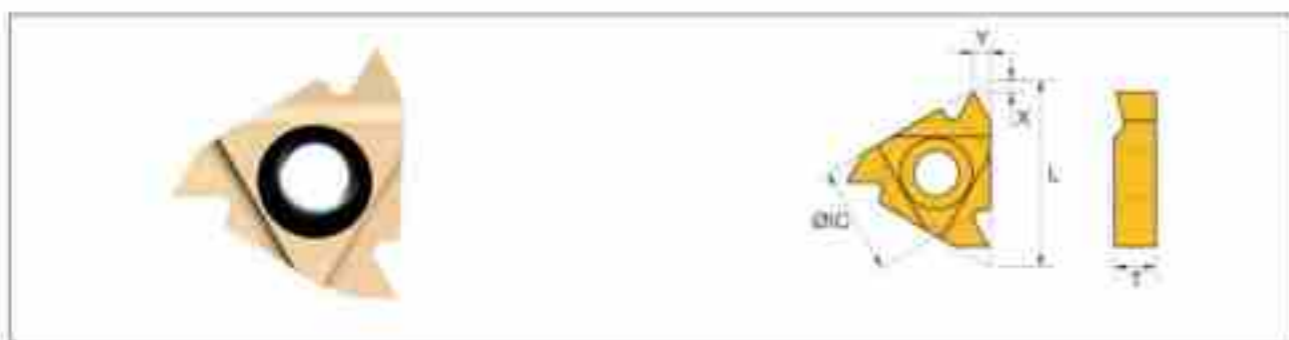
60° API oil pipe threading

oil Thread 60° APIRD(E)



Code	Pitch		Size					Degree θ	Grade			Holder
	tpi	h	IC	L	X	Y	T		GR520	GR928	GR958	
16ER 10APIRD	10	1.41	9.53	16	1.2	1.4	3.65	60°				SER-16
16ER 8APIRD	8	1.81			1.3	1.5						

oil Thread 60° APIRD(I)



Code	Pitch		Size					Degree θ	Grade			Holder
	tpi	h	IC	L	X	Y	T		GR520	GR928	GR958	
161R 10APIRD	10	1.41	9.53	16	1.2	1.4	3.65	60°				SNR-16
161R 8APIRD	8	1.81			1.3	1.5						

Carbide Tool Product Safety Manual (Cutting Tools Ed.)

Precautions for using cutting tools

Projects	Dangers Points	Response
General Cutting Tools	Direct touching of the sharp cutting edge may cause injury.	Wear protective gloves when you set the tool on the machine or take the tool out of the toolbox.
	Misuse or improper working conditions may result in broken or splintered tools.	Please use safety gear, such as safety glasses and protective gloves. Please use safety gear in the cutting condition we recommend. Please refer to our catalog or user guide.
	Excessive impact or severe wear will increase cutting resistance and may lead to tool damage and splinters.	Please use safety gear, such as safety glasses and protective gloves. It is best to replace the tool early.
	High temperature splashes or longer chips may cause injury or burns.	Please use safety gear, such as safety glasses and protective gloves. When removing chips, be sure to stop the machine and use protective gloves to operate.
	During the cutting operation, the cutting tool generates high heat. Touching the tool directly immediately after machining can cause burns.	Please use safety gear, such as safety glasses and protective gloves.
	Hot sparks or hot chips generated during operation may lead to burns or even fires.	Do not operate in hazardous areas where there is a risk of fire and explosions. If you use oil-based coolant, please ensure that it is equipped with an adequate fire protection system.
	Lack of power balance during high speed rotation can cause damage to the tool due to vibration.	Please use safety gear, such as safety glasses and protective gloves. Please test the operation before cutting, and make sure there is no vibration or abnormal sound.
Indexable cutting tools	If the blades or parts are not installed properly, they may fall or scatter and cause injury.	Please clean the mounting surface and fasteners before installing the blade. Insert the blade using only the wrench provided and verify that the blade is fully tightened.
	If the blade is clamped too tightly by an auxiliary tool such as a screw, etc., the blade will scatter or chip.	Use only the wrench provided for installation.
	When cutting at high speeds, insertive parts may fly out due to centrifugal force.	Please use within the recommended range of use. Please refer to the instructions for use and the catalog.
Milling tools and other rotary tools	Because of the sharp edges of the milling tool, avoid touching with empty hands to avoid injury.	Please use safety gear, such as safety glasses and protective gloves.
	If the tool is not balanced, the tool will vibrate and may be scattered by debris and coolant.	Please use within the processing parameters we recommend. Regularly check the accuracy and balance of the equipment spindle to avoid deflection and vibration caused by wear and tear of the bearing section.
Drill Bit	When drilling through hole processing, the chip will scatter and fly out from the hole at high speed, and the edges of the cuttings are sharp, so it is very dangerous.	Please use safety protection, such as safety glasses and protective gloves. In addition, a cover plate should be installed on the chuck area.
	Very small diameter drilling bits with a very sharp tip. Direct finger contact can cause deep lacerations or bleeding. It can also happen that the cutting tool is broken off and then fly apart.	Please give full consideration to safety aspects when using. Please use protective gloves, protective glasses, etc.
Welding tools	Scattering or dropping of broken blades may result in injury.	Scattering or dropping of the breaking blade may cause injury. Do not use under high temperature conditions.
	Multiple welds will cause the blade to lose strength and become unusable.	Multiple welds will cause the blade to lose strength and become unusable.
Other	Carbide inserts will deteriorate and become brittle in cutting if they are welded multiple times.	Please use the tool in the recommended manner.
	Using the tool in a non-recommended manner will result in damage to the tool or workpiece.	