



# SHOPPING TOOL & MACHINERY

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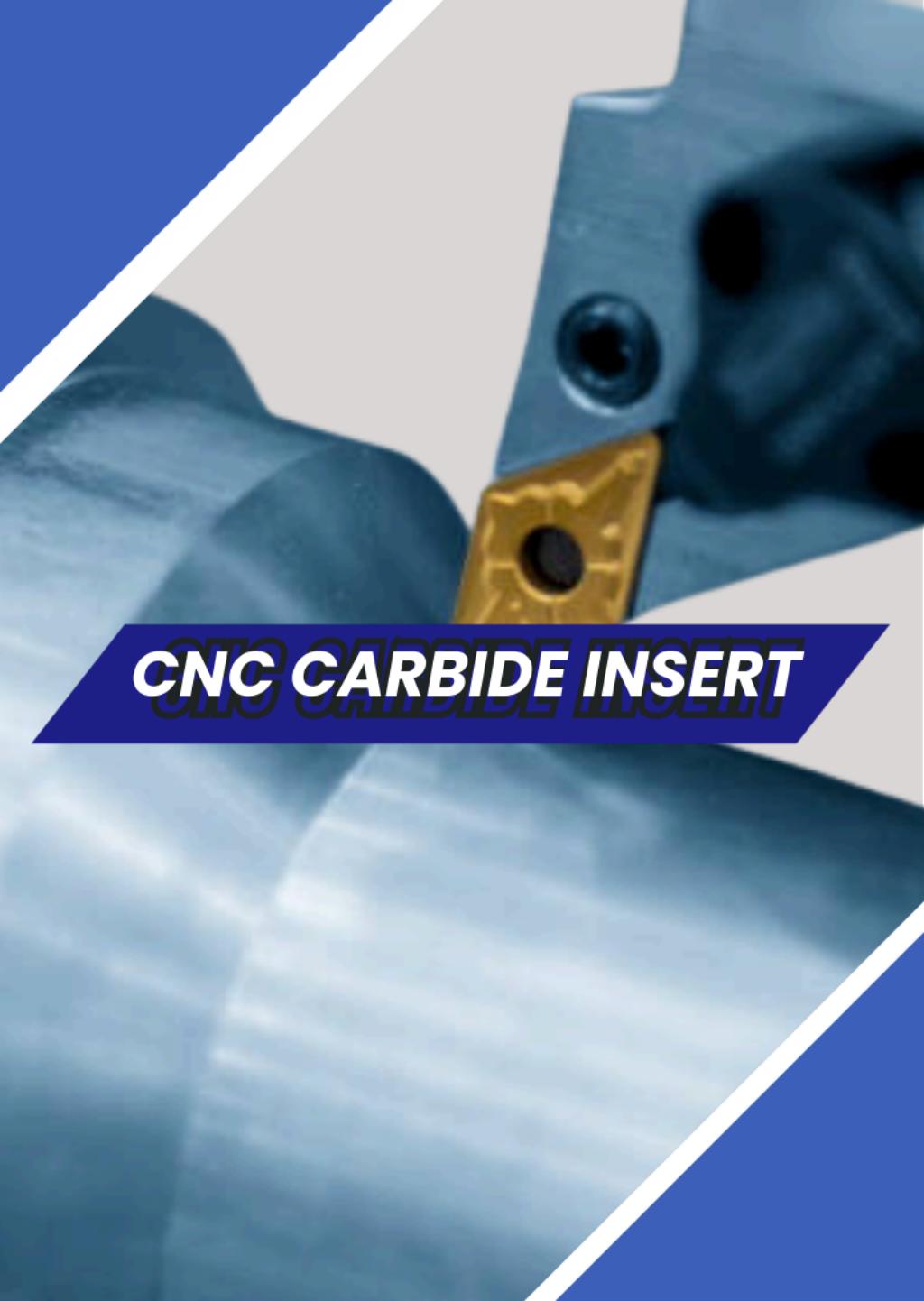
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A close-up photograph of a blue-colored metal workpiece being machined. A yellow carbide insert is held in place by a blue tool holder. The background features a blue and white diagonal striped pattern.

**CNC CARBIDE INSERT**

# TABLE OF CORRECTIONAL COEFFICIENT BETWEEN MATERIAL HARDNESS AND CUTTING SPEED

Workpiece material		THEORETICAL HARDNESS	Correctional coefficient between hardness of materials and cutting speed							
			Hardness decrease				Hardness difference(Measured value-Theoretical value)			
			-60	-40	-20	0	+20	+40	+60	+80
P	HB180	1.42	1.24	1.11	1.0	0.91	0.84	0.77	0.72	0.67
M	HB180	1.44	1.25	1.11	1.0	0.91	0.84	0.78	0.73	0.68
K	Grey cast iron	HB220	1.21	1.13	1.06	1.0	0.95	0.90	0.86	0.82
	Nodular cast iron	HB250	1.33	1.21	1.09	1.0	0.91	0.84	0.75	0.70
N	HB75				1.05	1.0	0.95			
S	HB350				1.12	1.0	0.89			
ROCKWELL HARDNESS HRC				-6	-3	0	+3	+6	+9	
H	HRC60		1.1	1.02	1.0	0.96	0.93	0.90		

Actual Cutting Speed = Recommended Cutting Speed x Correctional of Cutting Speed

EXAMPLE: IF THE MATERIAL YOU TO MACHINE IS NORMAL ALLOY STEEL, WHOSE THEORETICAL HARDNESS IS HB180, AND SELECTED INSERT IS CNMG120404-PF/SP8125, THEN THE RECOMMENDED CUTTING SPEED IS V=150M/MIN. IF THE HARDNESS MEASURED VALUE OF THE MATERIAL IS HB220, THEN THE HARDNESS DIFFERENCE VALUE IS 220-180=+40. CORRECTIONAL COEFFICIENT FOUND IN THE TABLE IS 0.84. THEREFORE, THE ACTUAL APPLICABLE CUTTING SPEED IS VC=250 X 0.84=210M/MIN.

A1

## CORRECTIONAL COEFFICIENT TABLE BETWEEN TOOL LIFE AND CUTTING SPEED

Tool life Insert materials	Correctional coefficient between tool life and cutting speed					
	10 minutes	15 minutes (Standard life)	30 minutes	45 minutes	60 minutes	90 minutes
SP8015	1.12	1.00	0.82	0.73	0.67	0.60
SP251	1.11	1.00	0.84	0.76	0.71	0.64
SP8025	1.11	1.00	0.84	0.76	0.70	0.63
SP8125	1.55	1.00	0.47	0.30	0.22	0.14
SM8025	1.10	1.00	0.85	0.77	0.72	0.66
SM8020	1.15	1.00	0.82	0.74	0.69	0.64
SK8010	1.20	1.00	0.74	0.63	0.55	0.47
SK8020	1.11	1.00	0.70	0.60	0.50	0.40

Actual cutting speed = Recommended cutting speed x Correctional coefficient of cutting speed

Example: If the material you are going to machine is normal alloy steel, and the selected insert is CNMG120404-PF/SP8015, then the recommended cutting speed is  $V=250\text{m/min}$  (standard life is 15 minutes). If you expect the tool life to reach 60 minutes, the correctional coefficient found in table is 0.67, then the applicable cutting is  $V_c=250 \times 0.67=167.5\text{m/min}$ .

A2

# CHIPBREAKER INTRODUCTION CHART

ISO Code	P	P/M	M	K	N
Finishing	PF CHIP BREAKER: SUITABLE FOR FINISHING ISO P MATERIAL.	PC  PC Chip Breaker: Suitable for finishing ISO P and M material.	SF  SF Chip Breaker: Suitable for finishing ISO M material.	(General Chipbreaker)	AK  AK Chip Breaker: Suitable for aluminum and aluminum alloy material.
	TF  TF Chip Breaker: Suitable for finishing ISO P material.		FM  FM Chip Breaker: Suitable for finishing ISO M material.		
Semi finishing	TM  TM Chip Breaker: Suitable for semi-finishing ISO P material.	SM  SM Chip Breaker: Suitable for semi-finishing ISO P and M material.	MF  MF Chip Breaker: Suitable for semi-finishing ISO M material.	(General Chipbreaker)  General Chip Breaker: Suitable for Cast iron Semi-finishing cutting.	AK  AK Chip Breaker: Suitable for aluminum and aluminum alloy material.
	MP  MP Chip Breaker: Suitable for semi-finishing ISO P material.	GM  GM Chip Breaker: Suitable for semi-finishing ISO P and M material.	OM  OM Chip Breaker: Suitable for semi-finishing ISO M material.		
	MT  MT Chip Breaker: Suitable for semi-finishing ISO P material.	MA  MA Chip Breaker: Suitable for semi-finishing ISO P and M material.	MS  MS Chip Breaker: Suitable for semi-finishing ISO M material.		
		SL  SL Chip Breaker: Suitable for semi-finishing ISO P material.			
Roughing	RP  RP Chip Breaker: Suitable for roughing ISO P material.	RT  RT Chip Breaker: Suitable for roughing ISO P and M material.		(Flat)  Flat Chip Breaker: Suitable for Cast iron roughing cutting.	AK  AK Chip Breaker: Suitable for aluminum and aluminum alloy material.
	RL  RL Chip Breaker: Suitable for roughing ISO P material.				

A3

# GRADE FOR TURNING INSERTS

GRADE	COATING	COLOR	WORKING MATERIAL	APPLICATION
SP8015	CVD (MT-TiCN+Al <sub>2</sub> O <sub>3</sub> +TiN)	golden yellow	P05-P15	carbide substrate have good anti-deformation resistance temperature resistance. MT-TiCN+Al <sub>2</sub> O <sub>3</sub> +TiN coating has surface quality and help to recognize wear easily. It is suitable for semi-finishing and finishing steel machining.
SP8025	CVD (MT-TiCN+Al <sub>2</sub> O <sub>3</sub> +TiN)	golden yellow	P10-P30	The carbide substrate have good anti-deformation resistance and toughness. MT-TiCN+Al <sub>2</sub> O <sub>3</sub> +TiN coating has very good surface quality and help to recognize wear easily. It is suitable for semi-finishing and roughing steel machining.
SP8125	CVD (Multi-TiCN+Al <sub>2</sub> O <sub>3</sub> )	black	P10-P40	The carbide substrate have mild cobalt content and high cubic content, combining with thick TiCN and Al <sub>2</sub> O <sub>3</sub> , treated by special technology after coating treatment, which gives inserts strong wearing resistance. It is priority for semi-finishing to finishing steel machining.
SM8020	PVD (Silicon+TiAlN)	purple	M10-M30	Micro WC grain substrate with high Co maintain cutting edge strength and it has smallest coefficient of friction and good nanohardness with good thermal stability silicon coating. The grade is very good for continuous turning and milling for stainless steel.
SM8025	PVD (Silicon+AlTiN)	grey black	M10-M30	Micro WC grain substrate with high Co maintain cutting edge strength and it has smallest coefficient of friction and good nanohardness with high antioxidant temperature. The grade is very good for turning and milling for stainless steel and steel.
SK8010	CVD (thick TiCN+ textured Al <sub>2</sub> O <sub>3</sub> )	black	K10-K30	The medium-coarse substrate combine with thick TiCN and textured Al <sub>2</sub> O <sub>3</sub> , after special coating treatment, it has strong wear-resistance. The grade is suitable for high-speed semi-finishing cast iron turning under stable working condition.
SK8020	CVD (thick TiCN+ textured Al <sub>2</sub> O <sub>3</sub> )	black	K10-K30	The mild-coarse substrate combine with ultrathick alumina CVD TiCN after special multi-coating treatment, it has strong wear-resistance. The grade is suitable for semi-finishing to roughing and slight interrupted cast iron machining.

A4

## GRADE FOR GROOVING&PARTING INSERTS

GRADE	COATING	COLOR	WORKING MATERIAL	APPLICATION
SM015	PVD (Silicon+TiAlN)	purple	M10-M30	The fine WC micro grain substrate with high Co content gives wonderful cutting edge strength. The PVD TiAlN coating combine with good thermal stability silicon, which has very small coefficient of friction and good nano-hardness. The grade is good at stainless steel semi-finishing grooving and parting processing.
SP015	CVD (MT-TiCN+Al <sub>2</sub> O <sub>3</sub> +TiN)	golden yellow	P10-P30	The carbide substrate have good anti-deformation resistance and toughness. MT-TiCN+Al <sub>2</sub> O <sub>3</sub> +TiN coating has very good surface quality and help to recognize wear easily. It is suitable for semi-finishing and finishing steel machining for grooving.
SK8010	CVD (thick TiCN+ textured Al <sub>2</sub> O <sub>3</sub> )	black	K10-K30	The medium-coarse substrate combine with thick TiCN and textured Al <sub>2</sub> O <sub>3</sub> , after special coating treatment, it has strong wear-resistance. The grade is suitable for high-speed semi-finishing cast iron processing under stable working condition.

A5

## GRADE FOR MILLING&DRILLING INSERTS

GRADE	COATING	COLOR	WORKING MATERIAL	APPLICATION
SG205	PVD (Silicon+TiAlN)	purple	M10-M30	Micro WC grain substrate with high Co maintain cutting edge strength and it has smallest coefficient of friction and good nano-hardness with good thermal stability silicon coating. The grade is good for continuous milling and drilling for stainless steel.
SG20	PVD (Silicon+AlTiN)	grey black	M20-M40	The fine WC micro grain substrate with high Co content gives wonderful cutting edge strength. The PVD AlTiN coating combine with good thermal stability silicon, which has very small coefficient of friction and good nano-hardness. It is a preferred grade for steel and stainless steel milling and drilling.
SP301	PVD (Silicon+ TiN)	golden yellow	P10-P30	The carbide substrate have good anti-deformation resistance and toughness. PVD TiN with silicon coating has very good surface quality and small friction with high hardness. It is suitable for semi-finishing and finishing steel processing for milling.

## GRADE FOR THREADING INSERTS

GRADE	COATING	COLOR	WORKING MATERIAL	APPLICATION
SM20	PVD (Silicon+AlTiN)	grey black	M10-M30	The carbide substrate have good anti-deformation resistance and toughness. The PVD AlTiN coating combines with good thermal stability silicon, which has very small coefficient of friction and good nano-hardness. The grade is good at stainless steel and steel processing for threading tools.
SM205	PVD (Silicon+TiAlN)	purple	M10-M30	The fine WC micro grain substrate with high Co content gives wonderful cutting edge strength. The PVD TiAlN coating combines with good thermal stability silicon, which has very small coefficient of friction and good nano-hardness. The grade is good at stainless steel processing for threading.
SP20	PVD(Silicon+TiN)	golden yellow	P10-P30	The carbide substrate have good anti-deformation resistance and toughness. PVD TiN coating has very good surface quality and helps to recognize wear easily. It is suitable for semi-finishing and rough steel machining for threading.

## GRADE FOR ALUMINUM INSERTS

GRADE	COATING	COLOR	WORKING MATERIAL	APPLICATION
SN10	uncoated	silver	N05-N25	Micro WC grain substrate with high Co maintains cutting edge strength and it has the smallest coefficient of friction. The finish polished with good thermal stability give best surface quality. The grade is very good for aluminum, copper, non-ferrous, etc.

A6

# GRADE OVERVIEW

ISO usage		ISO Turning			Threading		Grooving and Parting			Milling			Drilling	
Symbol	CVD	Coating		Coating	Coating			CVD	Coating		CVD	Coating		
		PVD	uncoated carbide		CVD	PVD	uncoated carbide		CVD	PVD		CVD	PVD	
<b>P Steel</b>	1													
	10													
	20													
	30													
	40													
<b>M Stainless Steel</b>	1													
	10													
	20													
	30													
	40													
<b>K Cast Iron</b>	1													
	10													
	20													
	30													
<b>N Aluminum Alloy</b>	1													
	10													
	20													
	30													
<b>S Hi-temp Alloy</b>	1													
	10													
	20													
	30													

A7

# A8

Insert shape/Code			Metric							
Code	Shape	Code	Code	Shape	Code	Shape	Code	Shape	Code	Shape
B	85°	A	82°	C	80°		N	Without	Without	
H	55°	D	75°	E	Hexagon		R	Without	Single-side	
C	55°	K	55°	L	Rectangular		F	Without	Double-side	
J	With				With		A	With	Without	
W	With				Without		M	With	Single-side	
T	With				Single-side		G	With	Double-side	
Q	With				Without		X	---	---	Special
U	With				Double-side					
				W	Others					

**T N M G**

Clearance angle of main cutting edge			
Code	Clearance angle	Code	Clearance angle
A		B	
C		D	
E		F	
G		N	
P		O	Other clearance angles

Tolerance									
Code	Nominal height or dimension	Incremental value ΔZ	Nominal's increment	Reference Details of M-level tolerance (Identified by shape)					
A	±0.005	±0.025	±0.025	Horizontal circle	Regular triangle	Square	Incremental width	Incremental height	Round
F	±0.005	±0.013	±0.025	6.35	±0.08	±0.08	±0.08	±0.11	±0.16
C	±0.013	±0.025	±0.025	9.525	±0.08	±0.08	±0.08	±0.11	±0.16
H	±0.013	±0.013	±0.025	12.7	±0.13	±0.13	±0.13	±0.15	---
E	±0.025	±0.025	±0.025	15.875	±0.15	±0.15	±0.15	±0.18	---
G	±0.025	±0.025	±0.013	19.05	±0.15	±0.15	±0.15	±0.18	---
J	±0.005	±0.05±0.13	±0.025	25.4	---	±0.18	---	---	---
Reference of rounded circle (E Codes)									
K	±0.013	±0.05±0.13	±0.025	Horizontal circle	Regular triangle	Square	Incremental width	Incremental height	Round
L	±0.025	±0.05±0.13	±0.025	9.525	±0.05	±0.05	±0.05	±0.05	±0.05
M	±0.08±0.18	±0.05±0.13	±0.013	12.7	±0.08	±0.08	±0.08	---	±0.08
N	±0.08±0.18	±0.05±0.13	±0.025	15.875	±0.10	±0.10	±0.10	±0.10	±0.10
U	±0.13±0.38	±0.08±0.25	±0.013	19.05	±0.10	±0.10	±0.10	±0.10	±0.10
				25.4	---	±0.13	---	---	±0.13

(mm) Diameter of IC	Insert shape							
	C	D	R	S	T	V	W	K
3.97						06		
5.0				05				
5.56						09		
6.0				06				
6.35	06	07				11	11	
8.0				08				
9.525	09	11	09	09	16	16	06	16
10.0				10				
12				12				
12.7	12	15	12	12	22	22	08	
15.875	16		15	15	27			
16.0		19	16					
19.05	19		19	19	33			
20			20					
25.0	25	25	25					
25.4			25	25				
31.75			31					
32			32					

Thickness is defined as the height of the insert to the part of cutting edge

Code	Insert thickness(mm)
00	0.79
T0	0.99
01	1.59
T1	1.98
02	2.38
T2	2.58
03	3.18
T3	3.97
04	4.76
T4	4.96
05	5.56
T5	5.95
06	6.35
T6	6.75
07	7.94
09	9.52
T9	9.72
11	11.11
12	12.70

22 04 08 - SM (ISO)

4 3 2 (inch)

Inscribed circle	
Code	Diameter of IC (mm)
2	6.35
3	9.525
4	12.7
5	15.875
6	19.05
8	25.4

Thickness	
Code	Thickness (mm)
2	3.18
3	4.76
4	6.35
5	7.94
6	9.52

Nose radius	
Code	Nose radius (mm)
0	0.2
1	0.4
2	0.8
3	1.2
4	1.6
5	2.0
6	2.4

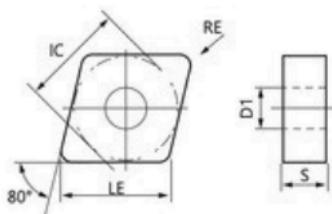
Code	Nose radius (mm)
00	
02	0.2
04	0.4
08	0.8
12	1.2
16	1.6
20	2.0
24	2.4
32	3.2
X	

Chipbreaker code		
SF	MF	RP
<b>TM</b>	<b>OM</b>	<b>SM</b>
<b>MP</b>	<b>RT</b>	<b>LP</b>
<b>TF</b>	<b>SL</b>	<b>MA</b>
<b>MT</b>	<b>PC</b>	<b>LMP</b>

A9

# Turning Insert /Negative

**CN**



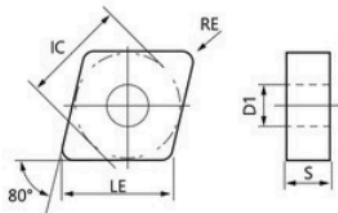
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		LE	IC	S	D1	RE	SP251	SP8015	SP8025	SP8125	SM8020	SM8125	SK8010	SK8020	SM8105
	CNMG120404-PF	12.9	12.7	4.76	5.16	0.4		○	★	○			★	○	
	CNMG120408-PF	12.9	12.7	4.76	5.16	0.8		○	★	○			★	○	
	CNMG120404-FM	12.9	12.7	4.76	5.16	0.4					★	○			○
	CNMG120408-FM	12.9	12.7	4.76	5.16	0.8					★	○			○
	CNMG090304-SF	9.7	9.525	3.18	3.81	0.4					★	○			○
	CNMG120404-SF	12.9	12.7	4.76	5.16	0.4					★	○			○
	CNMG120404	12.9	12.7	4.76	5.16	0.4		★	○				★	○	
	CNMG120408	12.9	12.7	4.76	5.16	0.8		★	○				★	○	
	CNMG120412	12.9	12.7	4.76	5.16	1.2		★	○				★	○	
	CNMG160608	16.1	15.875	6.35	6.35	0.8		★	○				★	○	
	CNMG160612	16.1	15.875	6.35	6.35	1.2		★	○				★	○	
	CNMG160616	16.1	15.875	6.35	6.35	1.6		★	○				★	○	
	CNMG190608	19.3	19.05	6.35	7.94	0.8		★	○				★	○	
	CNMG190612	19.3	19.05	6.35	7.94	1.2		★	○				★	○	
	CNMG190616	19.3	19.05	6.35	7.94	1.6		★	○				★	○	
	CNMG090308-MF	9.7	9.525	3.18	3.81	0.8				★	○				○
	CNMG120408-MF	12.9	12.7	4.76	5.16	0.8				★	○				○
	CNMG120412-MF	12.9	12.7	4.76	5.16	1.2			★	○				○	
	CNMG160612-MF	16.1	15.875	6.35	6.35	1.6			★	○				○	

★ Featured grade ○ Optional grade

A10

# Turning Insert /Negative

**CN** 



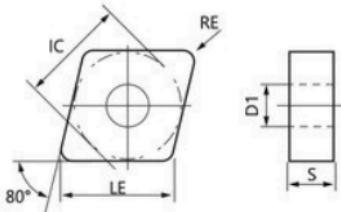
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		LE	IC	S	D1	RE	SP251	SP8015	SP8025	SP8125	SM8020	SM8125	SK8010	SK8020	SM8105
	CNMG120404-PM	12.9	12.7	4.76	5.16	0.4	★				○	○			
	CNMG120408-PM	12.9	12.7	4.76	5.16	0.8	★				○	○	○		
	CNMG120412-PM	12.9	12.7	4.76	5.16	1.2	★				○	○	○		
	CNMG120404-TM	12.9	12.7	4.76	5.16	0.4		○	★	○			★	○	
	CNMG120408-TM	12.9	12.7	4.76	5.16	0.8		○	★	○			★	○	
	CNMG120412-TM	12.9	12.7	4.76	5.16	1.2		○	★	○			★	○	
	CNMG120404-MA	12.9	12.7	4.76	5.16	0.4			★	○	★				
	CNMG120408-MA	12.9	12.7	4.76	5.16	0.8			★	○	★				
	CNMG120412-MA	12.9	12.7	4.76	5.16	1.2			★	○	★				
	CNMG120404-OM	12.9	12.7	4.76	5.16	0.4			★	○	★	○			
	CNMG120408-OM	12.9	12.7	4.76	5.16	0.8			★	○	★	○			
	CNMG160608-OM	16.1	15.875	6.35	6.35	0.8			★	○	★	○			
	CNMG120404-MP	12.9	12.7	4.76	5.16	0.4		○	★	○	★		★	○	
	CNMG120408-MP	12.9	12.7	4.76	5.16	0.8		○	★	○	★		★	○	
	CNMG120412-MP	12.9	12.7	4.76	5.16	1.2		○	★	○	★		★	○	
	CNMG120416-MP	12.9	12.7	4.76	5.16	1.6		○	★	○	★		★	○	
	CNMG160608-MP	16.1	15.875	6.35	6.35	0.8		○	★	○	★		★	○	
	CNMG160612-MP	16.1	15.875	6.35	6.35	1.2		○	★	○	★		★	○	
	CNMG160616-MP	16.1	15.875	6.35	6.35	1.6		○	★	○	★		★	○	
	CNMG190608-MP	19.3	19.05	6.35	7.94	0.8		○	★	○	★		★	○	
	CNMG190612-MP	19.3	19.05	6.35	7.94	1.2		○	★	○	★		★	○	
	CNMG190616-MP	19.3	19.05	6.35	7.94	1.6		○	★	○	★		★	○	

A11

★ Featured grade ○ Optional grade

# Turning Insert /Negative

**CN** □ □



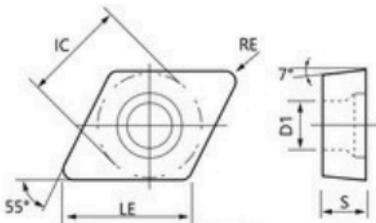
Insert Shape	Type	Dimension					P		M		K	S			
		LE	IC	S	D1	RE	SP251	SP8015	SP8025	SP8125	SMB8020	SMB8125	SK8010	SK8020	SMB8105
	CNMG120408-RP	12.9	12.7	4.76	5.16	0.8		○	★	○			★	○	
	CNMG120412-RP	12.9	12.7	4.76	5.16	1.2		○	★	★			★	○	
	CNMG120416-RP	12.9	12.7	4.76	5.16	1.6		○	★	○			★	○	
	CNMG160608-RP	16.1	15.875	6.35	6.35	0.8		○	○	★			★	○	
	CNMG160612-RP	16.1	15.875	6.35	6.35	1.2		○	○	★			★	○	
	CNMG160616-RP	16.1	15.875	6.35	6.35	1.6		○	○	★			★	○	
	CNMG190608-RP	19.3	19.05	6.35	7.94	0.84		○	○	★			★	○	
	CNMG190612-RP	19.3	19.05	6.35	7.94	1.2		○	○	★			★	○	
	CNMG190616-RP	19.3	19.05	6.35	7.94	1.6		○	○	★			★	○	
	CNMA120404	12.9	12.7	4.76	5.16	0.4							★	○	
	CNMA120408	12.9	12.7	4.76	5.16	0.8							★	○	
	CNMA120412	12.9	12.7	4.76	5.16	1.2							★	○	
	CNMA120416	12.9	12.7	4.76	5.16	1.6							★	○	
	CNMA160608	16.1	15.875	6.35	5.35	0.8							★	○	
	CNMA160612	16.1	15.875	6.35	6.35	1.2							★	○	
	CNMA160616	16.1	15.875	6.35	6.35	1.6							★	○	
	CNMA160620	16.1	15.875	6.35	6.35	2							★	○	
	CNMA190612	19.3	19.05	6.35	7.94	1.2							★	○	
	CNMA190616	19.3	19.05	6.35	7.94	1.6							★	○	
	CNMM190616-RL	19.3	19.05	6.35	7.94	1.6			○	★			○	○	

★ Featured grade ○ Optional grade

A12

# Turning Insert /Negative

**DN** □ □



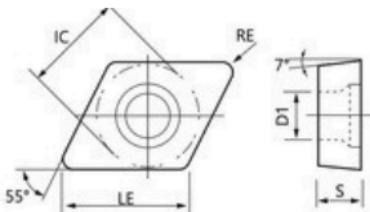
Insert Shape	Type	Dimension					P	M	K	S
		LE	IC	S	D1	RE				
	DNMG110404-SF	11.6	9.525	4.76	3.81	0.4			★	○
	DNMG150404-SF	15.5	12.7	4.76	5.16	0.4			★	○
	DNMG110404-MP	11.6	9.525	4.76	3.81	0.4	○	★	○	★
	DNMG110408-MP	11.6	9.525	4.76	3.81	0.8	○	★	○	★
	DNMG110412-MP	11.6	9.525	4.76	3.81	1.2	○	★	○	★
	DNMG150404-MP	15.5	12.7	4.76	5.16	0.4	○	★	○	★
	DNMG150408-MP	15.5	12.7	4.76	5.16	0.8	○	★	○	★
	DNMG150412-MP	15.5	12.7	6.35	5.16	1.2	○	★	○	★
	DNMG150604-MP	15.5	12.7	6.35	5.16	0.4	○	★	○	★
	DNMG150608-MP	15.5	12.7	6.35	5.16	0.8	○	★	○	★
	DNMG150612-MP	15.5	12.7	6.35	5.16	1.2	○	★	○	★
	DNMG150404-TM	15.5	12.7	4.76	5.16	0.4	○	★	○	○
	DNMG150408-TM	15.5	12.7	4.76	5.16	0.8	○	★	○	○
	DNMG150604-TM	15.5	12.7	6.35	5.16	0.4	○	★	○	○
	DNMG150608-TM	15.5	12.7	6.35	5.16	0.8	○	★	○	○
	DNMG150604-MA	15.5	12.7	6.35	5.16	0.4		★	○	★
	DNMG150608-MA	15.5	12.7	6.35	5.16	0.8		★	○	★
	DNMG110408-MF	11.6	9.525	4.76	3.81	0.8			★	○
	DNMG150408-MF	15.5	12.7	4.76	5.16	0.8			★	○
	DNMG150608-MF	15.5	12.7	6.35	5.16	0.8			★	○

★ Featured grade ○ Optional grade

A13

# Turning Insert /Negative

**DN** □ □



Insert Shape	Type	Dimension					P	M	K	S					
		LE	IC	S	D1	RE	SP251	SP8015	SP8025	SP8125	SM8020	SM8125	SK8010	SK8020	SM8105
	DNMG110408-OM	11.6	9.525	4.76	3.81	0.8			★	○	★	○			
	DNMG150404-OM	15.5	12.7	4.76	5.16	0.4			★	○	★	○			
	DNMG150408-OM	15.5	12.7	4.76	5.16	0.8			★	○	★	○			
	DNMG150604-OM	15.5	12.7	6.35	5.16	0.4			★	○	★	○			
	DNMG150608-OM	15.5	12.7	6.35	5.16	0.8			★	○	★	○			
	DNMG110408	11.6	9.525	4.76	3.81	0.8			★	○	★	○	★	○	
	DNMG150404	15.5	12.7	4.76	5.16	0.4			★	○	★	○	★	○	
	DNMG150408	15.5	12.7	6.35	5.16	0.8			★	○	★	○	★	○	
	DNMG150412	15.5	12.7	6.35	5.16	1.2			★	○	★	○	★	○	
	DNMG150608	15.5	12.7	6.35	5.16	0.8			★	○	★	○	★	○	
	DNMG150612	15.5	12.7	6.35	5.16	1.2			★	○	★	○	★	○	
	DNMG150408-RP	15.5	12.7	4.76	5.16	0.8			○	★			★	○	
	DNMG150412-RP	15.5	12.7	4.76	5.16	1.2			○	★			★	○	
	DNMG150608-RP	15.5	12.7	6.35	5.16	0.8			○	★			★	○	
	DNMG150612-RP	15.5	12.7	6.35	5.16	1.2			○	★			★	○	
	DNMG150616-RP	15.5	12.7	6.35	5.16	1.6			○	★			★	○	
	DNMA110416	11.6	9.526	4.76	3.81	1.6							★	○	
	DNMA150404	15.5	12.7	4.76	5.16	0.4							★	○	
	DNMA150408	15.5	12.7	4.76	5.16	0.8							★	○	
	DNMA150604	15.5	12.7	6.35	5.16	0.4							★	○	
	DNMA150608	15.5	12.7	6.35	5.16	0.8							★	○	
	DNMA150612	15.5	12.7	6.35	5.16	1.2							★	○	
	DNMA150616	15.5	12.7	6.335	5.16	1.6							★	○	

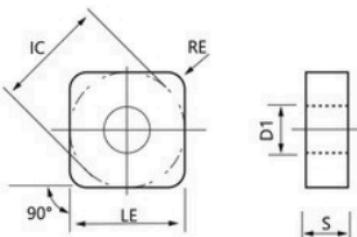
★ Featured grade ○ Optional grade

A14

# TURNING INSERT /NEGATIVE

## Turning Insert /Negative

**SN** □ □



Insert Shape	Type	Dimension					P		M		K	S			
		LE	IC	S	D1	RE	SP251	SP8015	SP8025	SP8125	SM8020	SM8125	SK8010	SK8020	SM8105
	SNMG120408-FM	12.7	12.7	4.76	5.16	0.8					★	○			○
	SNMG120404-PF	12.7	12.7	4.76	5.16	0.4	○	★	○				○	○	
	SNMG120408-PF	12.2	12.7	4.76	5.16	0.8	○	★	○				○	○	
	SNMG090304	9.525	9.525	3.18	3.81	0.4				★	○	★		★	○
	SNMG090308	9.525	9.525	3.18	3.81	0.8				★	○	★		★	○
	SNMG120404	12.7	12.7	4.76	5.16	0.4				★	○	★		★	○
	SNMG120408	12.7	12.7	4.76	5.16	0.8				★	○	★		★	○
	SNMG120412	12.7	12.7	4.76	5.16	1.2				★	○	★		★	○
	SNMG120416	12.7	12.7	4.76	5.16	1.6				★	○	★		★	○
	SNMG150608	15.875	15.875	6.35	6.35	0.8				★	○	★		★	○
	SNMG150612	15.875	15.875	6.35	6.35	1.2				★	○	★		★	○
	SNMG190612	19.05	19.05	6.35	7.94	1.2				★	○	★		★	○
	SNMG190616	19.05	19.05	6.35	7.94	1.6				★	○	★		★	○
	SNMG250724	25.4	25.4	7.94	9.12	2.4				★	○	★		★	○
	SNMG250924	25.4	25.4	9.525	9.12	2.4				★	○	★		★	○

★ Featured grade ○ Optional grade

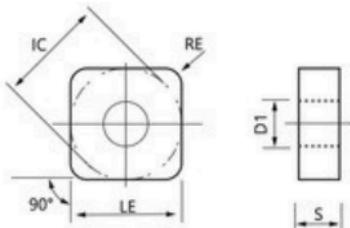
A15

# TURNING INSERT /NEGATIVE

A16

## Turning Insert /Negative

**SN** □ □

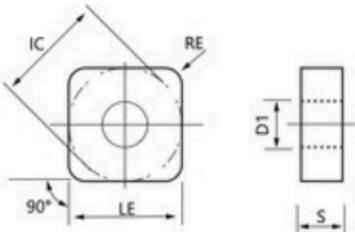


Insert Shape	Type	Dimension					P		M		K	S			
		LE	IC	S	D1	RE	SP251	SP8015	SP8025	SP8125	SM8020	SM8125	SK8010	SK8020	SM8105
I Semi-finishing	SNMG120408-PM	12.7	12.7	4.76	5.16	0.4	★					○	○		
	SNMG120404-MT	12.7	12.7	4.76	5.16	0.4		○	★	○			★	○	
	SNMG120408-MT	12.7	12.7	4.76	5.16	0.8		○	★	○			★	○	
	SNMG120404-MA	12.7	12.7	4.76	5.16	0.4			★	○	★				
	SNMA120408-MA	12.7	12.7	4.76	5.16	0.8			★	○	★				
	SNMG120404-MP	12.7	12.7	4.76	5.16	0.4	○	★	○	★	★		★	○	
II Finishing	SNMG120408-MP	12.7	12.7	4.76	5.16	0.8	○	★	○	★	★		★	○	
	SNMG120412-MP	12.7	12.7	4.76	5.16	1.2	○	★	○	★	★		★	○	
	SNMG150608-MP	15.875	15.875	6.35	6.35	0.8	○	★	○	★	★		★	○	
	SNMG150612-MP	15.875	15.875	6.35	6.35	1.2	○	★	○	★	★		★	○	
	SNMG190612-MP	19.05	19.05	6.35	7.94	1.2	○	★	○	★	★		★	○	
	SNMG120404-OM	12.7	12.7	4.76	5.16	0.4		★	○	★	○				
III High precision	SNMG120408-OM	12.7	12.7	4.76	5.16	0.8		★	○	★	○				
	SNMG120412-OM	12.7	12.7	4.76	5.16	1.2		★	○	★	○				
	SNMG150608-OM	15.875	15.875	6.35	6.35	0.8		★	○	★	○				
	SNMG150612-OM	15.875	15.875	6.35	7.94	1.2		★	○	★	○				

★ Featured grade ○ Optional grade

# TURNING INSERT /NEGATIVE

## Turning Insert /Negative



**SN** □ □

Insert Shape	Type	Dimension					P		M		K	S			
		LE	IC	S	D1	RE	SP251	SP8015	SP8025	SP8125	SM8020	SM8125	SK8010	SK8020	SM8105
	SNMG120408-MF Semi-finishing	12.7	12.7	4.76	5.16	0.8					★	○			○
	SNMG120408-RP	12.7	12.7	4.76	5.16	0.8	○	★	○				★	○	
	SNMG120412-RP	12.7	12.7	4.76	5.16	1.2	○	★	★				★	○	
	SNMG150608-RP	15.875	15.875	6.35	6.35	0.8	○	★	○				★	○	
	SNMG150312-RP	15.875	15.875	6.35	6.35	1.2	○	○	★				★	○	
	SNMG190612-RP	19.05	19.05	6.35	7.94	1.2	○	○	○	★			★	○	
	SNMG160616-RP	19.05	19.05	6.35	7.94	1.6	○	○	○	★			★	○	
	SNMM190624-RL	19.05	19.05	6.35	7.94	2.4	○	○	○	★			★	○	
	SNMM250924-RL	25.4	25.4	9.525	9.12	2.4	○	○	○	★			★	○	
	SNMA120408	12.7	12.7	4.76	5.16	0.8							★	○	
	SNMA120412	12.7	12.7	4.76	5.16	1.2							★	○	
	SNMA120416	12.7	12.7	4.76	5.16	1.6							★	○	
	SNMA150608	15.875	15.875	6.35	6.35	0.8							★	○	
	SNMA150612	15.875	15.875	6.35	6.35	1.2							★	○	
	SNMA190612	19.05	19.05	6.35	7.94	1.2							★	○	
	SNMA190616	19.05	19.05	6.35	7.94	1.6							★	○	

★ Featured grade ○ Optional grade

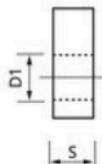
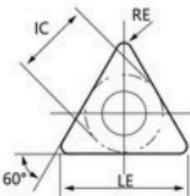
A17

# TURNING INSERT /NEGATIVE

A18

## Turning Insert /Negative

**TN** □ □



Insert Shape	Type	Dimension					P		M		K	S			
		LE	IC	S	D1	RE	SP251	SP8015	SP8025	SP8125	SM8020	SM8125	SK8010	SK8020	SM8105
Finishing	TNMG160404-PF	16.5	9.525	4.76	3.81	0.4	○	★	★				○	○	
	TNMG160408-PF	16.5	9.525	4.76	3.81	0.8	○	★	★				★	○	
	TNMG160404-FM	16.5	9.525	4.76	3.81	0.4					★	○			○
	TNMG160408-FM	16.5	9.525	4.76	3.81	0.8					★	○			○
	TNMG160404-SF	16.5	9.525	4.76	3.81	0.4				★	○			○	
	TNMG160408-SF														
Semi-finishing	TNMG160404-PM	16.5	9.525	4.76	3.81	0.4	★				○	○			
	TNMG160408-PM	16.5	9.525	4.76	3.81	0.8	★				○	○			
	TNMG160404-MT	16.5	9.525	4.76	3.81	0.4	○	★	○				★	○	
	TNMG160408-MT	16.5	9.525	4.76	3.81	0.8	○	★	○				★	○	
	TNMG160404-MA	16.5	9.525	4.76	3.81	0.4	★	○	★						
	TNMG160408-MA	16.5	9.525	4.76	3.81	0.8	★	○	★						

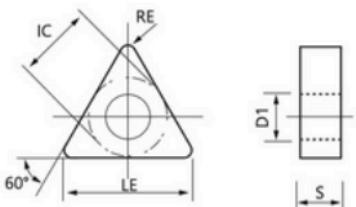
○ Optional grade  
★ Featured grade ○ Optional grade

# TURNING INSERT /NEGATIVE

A19

## Turning Insert /Negative

**TN**  



Insert Shape	Type	Dimension					P		M		K	S			
		LE	IC	S	D1	RE	SP251	SP8015	SP8025	SP8125	SM8020	SM8125	SK8010	SK8020	SM8105
	TNMG160404-OM	16.5	9.525	4.76	3.81	0.4			★	○	★	○			
	TNMG160408-OM	16.5	9.525	4.76	3.81	0.8			★	○	★	○			
	TNMG160412-OM	16.5	9.525	4.76	3.81	1.2			★	○	★	○			
	TNMG220404-OM	22	12.7	4.76	5.16	0.4			★	○	★	○			
	TNMG220408-OM	22	12.7	4.76	5.16	0.8			★	○	★	○			
	TNMG220412-OM	22	12.7	4.76	5.16	1.2			★	○	★	○			
	TNMG160404-MP	16.5	9.525	4.76	3.81	0.4		○	★	○	★	○		★	○
	TNMG160408-MP	16.5	9.525	4.76	3.81	0.8		○	★	○	★	○		★	○
	TNMG160412-MP	16.5	9.525	4.76	3.81	1.2		○	★	○	★	○		★	○
	TNMG220404-MP	22	12.7	4.76	5.16	0.4		○	★	○	★	○		★	○
	TNMG220408-MP	22	12.7	4.76	5.16	0.8		○	★	○	★	○		★	○
	TNMG220412-MP	22	12.7	4.76	5.16	1.2		○	★	○	★	○		★	○
	TNMG220416-MP	22	12.7	4.76	5.16	1.6		○	★	○	★	○		★	○
	TNMG160404-MF	16.5	9.525	4.76	3.81	0.4					★	○			○
	TNMG160408-MF	16.5	9.525	4.76	3.81	0.8					★	○			○
	TNMG160412-MF	16.5	9.525	4.76	3.81	1.2					★	○			○
	TNMG160408	16.5	9.525	4.76	3.81	0.8			★	○	★	○	★	○	
	TNMG160412	16.5	9.525	4.76	3.81	1.2			★	○	★	○	★	○	
	TNMG220404	16.5	9.525	4.76	5.16	0.4			★	○	★	○	★	○	
	TNMG220408	22	12.7	4.76	5.16	0.8			★	○	★	○	★	○	
	TNMG220412	22	12.7	4.76	5.16	1.2			★	○	★	○	★	○	
	TNMG220416	22	12.7	4.76	5.16	1.6			★	○	★	○	★	○	
	TNMG160408-PC	16.5	9.525	4.76	3.81	0.8		○	★	★	○				

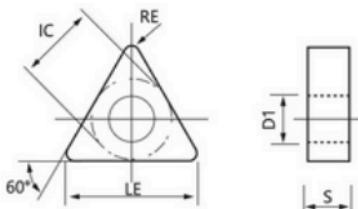
★ Featured grade ○ Optional grade

# TURNING INSERT /NEGATIVE

A20

## Turning Insert /Negative

**TN** □ □



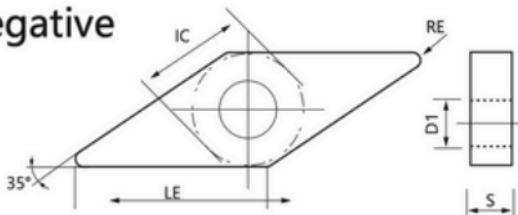
Insert Shape	Type	Dimension					P	M	K	S	
		LE	IC	S	D1	RE					
	TNMG160404-RP	16.5	9.525	4.76	3.81	0.4	○	★	○	★	○
	TNMG160408-RP	16.5	9.525	4.76	3.81	0.8	○	★	○	★	○
	TNMG160412-RP	16.5	9.525	4.76	3.81	1.2	○	★	○	★	○
	TNMG160416-RP	16.5	9.525	4.76	3.81	1.6	○	★	○	★	○
	TNMG220408-RP	22	12.7	4.76	5.6	0.8	○	★	○	★	○
	TNMG220412-RP	22	12.7	4.76	5.6	1.2	○	★	○	★	○
	TNMG220416-RP	22	12.7	4.76	5.6	1.6	○	★	○	★	○
	TNMG270612-RP	22	12.7	4.76	5.6	1.2	○	★	○	★	○
	TNMA160404	16.5	9.525	4.76	3.81	0.4				★	○
	TNMA160408	16.5	9.525	4.76	3.81	0.8				★	○
	TNMA160412	16.5	9.525	4.76	3.81	1.2				★	○
	TNMA160416	16.5	9.525	4.76	3.81	1.3				★	○
	TNMA220404	22	12.7	4.76	5.6	0.4				★	○
	TNMA220408	22	12.7	4.76	5.6	0.8				★	○
	TNMA220412	22	12.7	4.76	5.6	1.2				★	○
	TNMA220416	22	12.7	4.76	5.6	1.6				★	○

\* Featured grade O Optional grade

# TURNING INSERT /NEGATIVE

A21

## Turning Insert /Negative



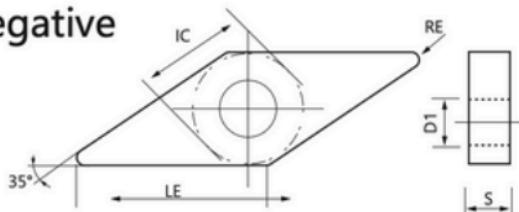
**VN** □ □

Insert Shape	Type	Dimension					P		M		K	S			
		LE	IC	S	D1	RE	SP251	SP8015	SP8025	SP8125	SM8020	SM8125	SK8010	SK8020	SM8105
	I. Finishing	VNMG160404-SF	16.6	9.525	4.76	3.81	0.4					★	○		○
		VNMG160404-TM	16.6	9.525	4.76	3.81	0.4	○	★	○			★	○	
		VNMG160408-TM	16.6	9.525	4.76	3.81	0.8	○	★	○			★	○	
	II. Semi-finishing	VNMG160404-MA	16.6	9.525	4.76	3.81	0.4		★	○	★				
		VNMG160408-MA	16.6	9.525	4.76	3.81	0.8		★	○	★				
	III. Multi-purpose	VNMG160404-MP	16.6	9.525	4.76	3.81	0.4	○	★	○	★	★	○		
		VNMG160408-MP	16.5	9.525	4.76	3.81	0.8	○	★	○	★	★	○		
		VNMG160408-PM	16.6	9.525	4.76	3.81	0.8	★				○	○		

★ Featured grade ○ Optional grade

# TURNING INSERT /NEGATIVE

## Turning Insert /Negative



**VN** □ □

Insert Shape	Type	Dimension					P		M		K	S			
		LE	IC	S	D1	RE	SP251	SP8015	SP8025	SP8125	SM8020	SM8125	SK8010	SK8020	SM8105
	VNMG160404-OM	16.6	9.525	4.76	3.81	0.4			★	○	★	○			
	VNMG160408-OM	16.6	9.525	4.76	3.81	0.8			★	○	★	○			
	VNMG160408-MF	16.6	9.525	4.76	3.81	0.8					★	○			○
	VNMG160404	16.6	9.525	4.76	3.81	0.4			★	○	★		★	○	
	VNMG160408	16.6	9.525	4.76	3.81	0.8			★	○	★		★	○	
	VNMG160408-RP	16.6	9.525	4.76	3.81	0.8	○	★	○			★	○		
	VNMG160412-RP	16.6	9.525	4.76	3.81	1.2	○	★	○			★	○		
	VNMA160404	16.6	9.525	4.76	3.81	0.4						★	○		
	VNMA160408	16.6	9.525	4.76	3.81	0.8						★	○		

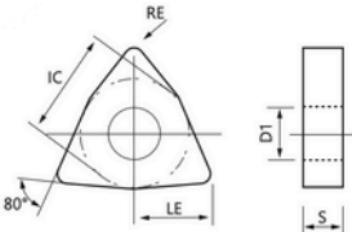
★ Featured grade ○ Optional grade

A22

# TURNING INSERT /NEGATIVE

## Turning Insert /Negative

**WN** 



Insert Shape	Type	Dimension					P		M		K		S		
		LE	IC	S	D1	RE	SP251	SP8015	SP8025	SP8125	SM8020	SM8125	SK8010	SK8020	SM8105
	WNMG060404-PF	6.5	9.525	4.76	3.81	0.4		○	★	○			★	○	
	WNMG060408-PF	6.5	9.525	4.76	3.81	0.8		○	★	○			★	○	
	WNMG080404-PF	8.7	12.7	4.76	5.16	0.4		○	★	○			★	○	
	WNMG080408-PF	8.7	12.7	4.76	5.16	0.8		○	★	○			★	○	
	WNMG060408-FM	6.5	9.525	4.76	3.81	0.8							★	○	
	WNMG080404-FM	8.7	12.7	4.76	5.16	0.4							★	○	
	WNMG080408-FM	8.7	12.7	4.76	5.16	0.8							★	○	
	WNMG060304-SF	6.5	9.525	3.18	3.81	0.4							★	○	
	WNMG060404-SF	6.5	9.525	4.76	3.81	0.4							★	○	
	WNMG080404-SF	8.7	12.7	4.76	5.16	0.4							★	○	
	WNMG080404-LMP	8.7	12.7	4.76	5.16	0.4							★		★
	WNMG080408-LMP	8.7	12.7	4.76	5.16	0.8							★		★
	WNMG080404-PM	8.7	12.7	4.76	5.16	0.4	★						○	○	
	WNMG080408-PM	8.7	12.7	4.76	5.16	0.8	★						○	○	
	WNMG080404-TM	8.7	12.7	4.76	5.16	0.4		○	★	○			★	○	
	WNMG080408-TM	8.7	12.7	4.76	5.16	0.8		○	★	○			★	○	
	WNMG080412-TM	8.7	12.7	4.76	5.16	1.2		○	★	○			★	○	

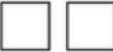
★ Featured grade ○ Optional grade

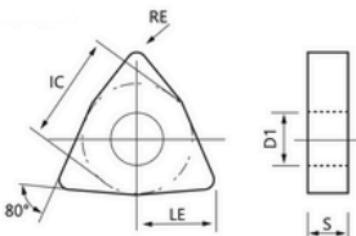
A23

# TURNING INSERT /NEGATIVE

A24

## Turning Insert /Negative

**WN** 



Insert Shape	Type	Dimension					P		M		K	S			
		LE	IC	S	D1	RE	SP251	SP8015	SP8025	SP8125	SM8020	SM8125	SK8010	SK8020	SM8105
	WNMG080404-MA	8.7	12.7	4.76	5.16	0.4			★	○	★	○			
	WNMG080408-MA	8.7	12.7	4.76	5.16	0.8			★	○	★	○			
	WNMG080412-MA	8.7	12.7	4.76	5.16	1.2			★	○	★	○			
	WNMG060408-OM	6.5	9.525	4.76	3.81	0.8			★	○	★	○	★	○	
	WNMG060412-OM	6.5	9.525	4.76	3.81	1.2			★	○	★	○	★	○	
	WNMG080404-OM	8.7	12.7	4.76	5.16	0.4			★	○	★	○	★	○	
	WNMG080408-OM	8.7	12.7	4.76	5.16	0.8			★	○	★	○	★	○	
	WNMG080412-OM	8.7	12.7	4.76	5.16	1.2			★	○	★	○	★	○	
	WNMG060408-MP	6.5	9.525	4.76	3.81	0.8	○	★	○	★	○	★	○	★	○
	WNMG080404-MP	8.7	12.7	4.76	5.16	0.4	○	★	○	★	○	★	○	★	○
	WNMG080408-MP	8.7	12.7	4.76	5.16	0.8	○	★	○	★	○	★	○	★	○
	WNMG080412-MP	8.7	12.7	4.76	5.16	1.2	○	★	○	★	○	★	○	★	○
	WNMG060408-MF	6.5	9.525	4.76	3.81	0.8				★	○				○
	WNMG080404-MF	8.7	12.7	4.76	5.16	0.4				★	○				○
	WNMG080408-MF	8.7	12.7	4.76	5.16	0.8				★	○				○
	WNMG080404	8.7	12.7	4.76	5.16	0.4		★	○	★	○	★	○		
	WNMG080408	8.7	12.7	4.76	5.16	0.8		★	○	★	○	★	○		
	WNMG080412	8.7	12.7	4.76	5.16	1.2		★	○	★	○	★	○		

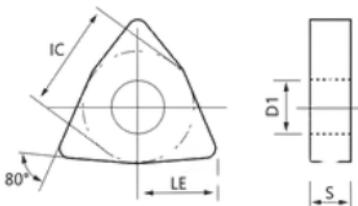
★ Featured grade ○ Optional grade

# TURNING INSERT /NEGATIVE

A25

## Turning Insert /Negative

**WN**  



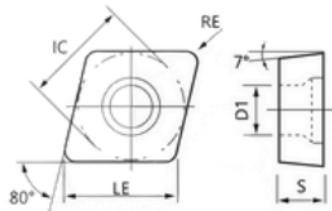
Insert Shape		Type	尺寸 Dimension					P		M		K	S			
			LE	IC	S	D1	RE	SP25I	SP8015	SP8025	SP8125	SM8020	SM8125	SK8010	SK8020	SM8105
		WNMG080408-RP	8.7	12.7	4.76	5.16	0.8	○	★	○				★	○	
		WNMG080412-RP	8.7	12.7	4.76	5.16	1.2	○	★	★				★	○	
		WNMA060404	6.5	9.525	4.76	3.81	0.4							★	○	
		WNMA060412	6.5	9.525	4.76	3.81	1.2							★	○	
		WNMA080408	8.7	12.7	4.76	5.16	0.8							★	○	
		WNMA080412	8.7	12.7	4.76	5.16	1.2							★	○	
		WNMA080416	8.7	12.7	4.76	5.16	1.6							★	○	

★ Featured grade ○ Optional grade

# TURNING INSERT /NEGATIVE

## Turning Insert /Positive

**CC**



Insert Shape	Type	Dimension					P		M	K	S				
		LE	IC	S	D1	RE	SP251	SP8015	SP8025	SP8125	SM8020	SM8125	SK8010	SK8020	SM8105
	T Finishing	CCMT060202-TF	6.4	6.35	2.38	2.8	0.2	○	★	○	★	○			
		CCMT060204-TF	6.4	6.35	2.38	2.8	0.4	○	★	○	★	○			
		CCMT060208-TF	6.4	6.35	2.38	2.8	0.8	○	★	○	★	○			
		CCMT09T304-TF	9.7	9.525	3.97	4.4	0.4	○	★	○	★	○			
		CCMT09T308-TF	9.7	9.525	3.97	4.4	0.8	○	★	○	★	○			
		CCMT120404-TF	12.9	12.7	4.76	5.5	0.4	○	★	○	★	○			
		CCMT120408-TF	12.9	12.7	4.76	5.5	0.8	○	★	○	★	○			
	T Finishing	CCMT060202-SF	6.4	6.35	2.38	2.8	0.2				★	○			○
		CCMT060204-SF	6.4	6.35	2.38	2.8	0.4				★	○			○
		CCMT09T304-SF	9.7	9.525	3.97	4.4	0.4				★	○			○
		CCMT09T308-SF	12.9	12.7	4.76	5.5	0.8				★	○			○
		CCMT120404-SF	12.9	12.7	4.76	5.5	0.4				★	○			○

\* Featured grade ○ Optional grade

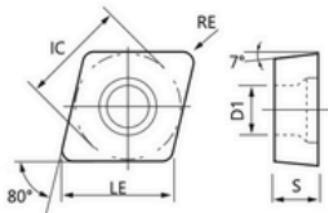
A26

# TURNING INSERT /POSITIVE

A27

## Turning Insert /Positive

**CC** 



Insert Shape	Type	Dimension					P	M	K	S	
		LE	IC	S	D1	RE					
	CCMT060204-SM	6.4	6.35	2.38	2.8	0.4	○	★	○	★	○
	CCMT060208-SM	6.4	6.35	2.38	2.8	0.8	○	★	○	★	○
	CCMT09T304-SM	9.7	9.525	3.97	4.4	0.4	○	★	○	★	○
	CCMT09T308-SM	9.7	9.525	3.97	4.4	0.8	○	★	○	★	○
	CCMT120404-SM	12.9	12.7	4.76	5.5	0.4	○	★	○	★	○
	CCMT120408-SM	12.9	12.7	4.76	5.5	0.8	○	★	○	★	○
	CCMT060204-SL	6.4	6.35	2.38	2.8	0.4	○	★	○	★	○
	CCMT09T304-SL	9.7	9.525	3.97	4.4	0.4	○	★	○	★	○
	CCMT09T308-SL	9.7	9.525	3.97	4.4	0.8	○	★	○	★	○
	CCMT060208-RT	6.4	6.35	2.38	2.8	0.8	○	★	○	★	○
	CCMT09T304-RT	9.7	9.525	3.97	4.4	0.4	○	★	○	★	○
	CCMT09T308-RT	9.7	9.525	3.97	4.4	0.8	○	★	○	★	○
	CCMT120408-RT	12.9	12.7	4.76	5.5	0.8	○	★	○	★	○
	CCMT120412-RT	12.9	12.7	4.76	5.5	1.2	○	★	○	★	○

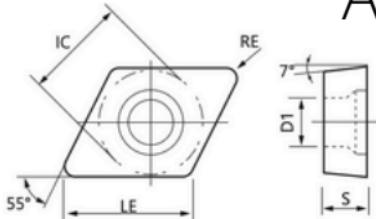
★ Featured grade   ○ Optional grade

# TURNING INSERT /POSITIVE

## Turning Insert /Positive

A28

**DC** 



Insert Shape	Type	Dimension					P	M	K	S					
		LE	IC	S	D1	RE	SP251	SP8015	SP8025	SP8125	SM8020	SM8125	SK8010	SK8020	SM8105
	<b>T</b> Finishing	DCMT070204-TF	7.8	6.35	2.38	2.8	0.4	○	★	○	★	○			○
		DCMT070208-TF	7.8	6.35	2.38	2.8	0.8	○	★	○	★	○			○
		DCMT11T302-TF	11.6	9.525	3.97	4.4	0.2	○	★	○	★	○			○
		DCMT11T304-TF	11.6	9.525	3.97	4.4	0.4	○	★	○	★	○			○
		DCMT11T308-TF	11.6	9.525	3.97	4.4	0.8	○	★	○	★	○			○
	<b>T</b> Semifinishing	DCMT070204-SF	7.8	6.35	2.38	2.8	0.4				★	○			○
		DCMT11T302-SF	11.6	9.525	3.97	4.4	0.2				★	○			○
		DCMT11T304-SF	11.6	9.525	3.97	4.4	0.4				★	○			○
		DCMT11T308-SF	11.6	9.525	3.97	4.4	0.8				★	○			○
	<b>T</b> Semifinishing	DCMT070204-SL	7.8	6.35	2.38	2.8	0.4	○	★	○	★	○	★	○	
		DCMT11T302-SL	7.8	6.35	2.38	2.8	0.2	○	★	○	★	○	★	○	
		DCMT11T304-SL	11.6	9.525	3.97	4.4	0.4	○	★	○	★	○	★	○	
		DCMT11T308-SL	11.6	9.525	3.97	4.4	0.8								
	<b>T</b> Roughing	DCMT070202-SM	7.8	6.35	2.38	2.8	0.2	○	★	○	★	○	★	○	
		DCMT070204-SM	7.8	6.35	2.38	2.8	0.4	○	★	○	★	○	★	○	
		DCMT070208-SM	7.8	6.35	2.38	2.8	0.8	○	★	○	★	○	★	○	
		DCMT11T304-SM	11.6	9.525	3.97	4.4	0.4	○	★	○	★	○	★	○	
		DCMT11T308-SM	11.6	9.525	3.97	4.4	0.8	○	★	○	★	○	★	○	
	<b>T</b> Roughing	DCMT11T304-RT	11.6	9.525	3.97	4.4	0.4	○	★	○			★	○	
		DCMT11T308-RT	11.6	9.525	3.97	4.4	0.8	○	★	○			★	○	
		DCMT11T312-RT	11.6	9.525	3.97	4.4	1.2	○	★	○			★	○	

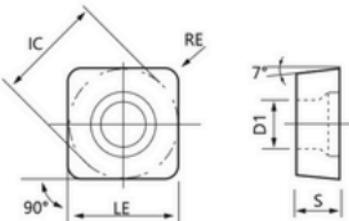
★ Featured grade   ○ Optional grade

# TURNING INSERT /POSITIVE

A29

## Turning Insert /Positive

**SC** 



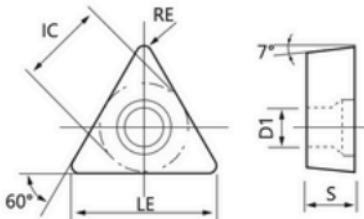
Insert Shape	Type	Dimension					P		M		K	S			
		LE	IC	S	D1	RE	SP251	SP8015	SP8025	SP8125	SM8020	SM8125	SK8010	SK8020	SM8105
	H <i>g</i> Finishing	SCMT09T304-TF	9.525	9.525	3.97	4.4	0.4	○	★	○	★	○			○
		SCMT09T308-TF	9.525	9.525	3.97	4.4	0.8		○	★	○	★	○		○
		SCMT120404-TF	12.7	12.7	4.76	5.5	0.4		○	★	○	★	○		○
	L Semi-Finishing	SCMT09T304-SL	9.525	9.525	3.97	4.4	0.4	○	★	○	★	○	★	○	
		SCMT09T308-SL	9.525	9.525	3.97	4.4	0.8		○	★	○	★	○	★	○
		SCMT120404-SL	12.7	12.7	4.76	5.5	0.4		○	★	○	★	○	★	○
		SCMT120408-SL	12.7	12.7	4.76	5.5	0.8		○	★	○	★	○	★	○
	L Roughing	SCMT09T304-SM	9.525	9.525	3.97	4.4	0.4	○	★	○	★	○	★	○	
		SCMT09T308-SM	9.525	9.525	3.97	4.4	0.8		○	★	○	★	○	★	○
		SCMT120404-SM	12.7	12.7	4.76	5.5	0.4		○	★	○	★	○	★	○
		SCMT120408-SM	12.7	12.7	4.76	5.5	0.8		○	★	○	★	○	★	○
		SCMT120412-SM	12.7	12.7	4.76	5.5	1.2		○	★	○	★	○	★	○
	Roughing	SCMT09T304-RT	9.525	9.525	3.97	4.4	0.4	○	★	○			★	○	
		SCMT09T308-RT	9.525	9.525	3.97	4.4	0.8		○	★	○		★	○	
		SCMT120404-RT	12.7	12.7	4.76	5.5	0.4		○	★	○		★	○	
		SCMT120408-RT	12.7	12.7	4.76	5.5	0.8		○	★	○		★	○	
		SCMT120412-RT	12.7	12.7	4.76	5.5	1.2		○	★	○		★	○	

★ Featured grade ○ Optional grade

# TURNING INSERT /POSITIVE

## Turning Insert /Positive

**TC** □ □



Insert Shape	Type	Dimension					P		M		K	S			
		LE	IC	S	D1	RE	SP251	SP8015	SP8025	SPB125	SMB8020	SM8125	SK8010	SK8020	SM8105
	TCMT110202-TF	11	6.35	2.38	2.8	0.2	○	★	○	★	○	○	○	○	○
	TCMT110204-TF	11	6.35	2.38	2.8	0.4	○	★	○	★	○	○	○	○	○
	TCMT16T304-TF	16.5	9.525	3.97	4.4	0.4	○	★	○	★	○	○	○	○	○
	TCMT16T308-TF	16.5	9.525	3.97	4.4	0.8	○	★	○	★	○	○	○	○	○
	TCMT110204-SL	11	6.35	2.38	2.8	0.4	○	★	○	★	○	●	●	●	●
	TCMT16T304-SL	16.5	9.525	3.97	4.4	0.4	○	★	○	★	○	●	●	●	●
	TCMT16T308-SL	16.5	9.525	3.97	4.4	0.8	○	★	○	★	○	●	●	●	●
	TCMT090204-SM	9.6	5.56	2.38	2.5	0.4	○	★	○	★	○	●	●	●	●
	TCMT090208-SM	9.6	5.56	2.38	2.5	0.8	○	★	○	★	○	●	●	●	●
	TCMT110204-SM	11	6.35	2.38	2.8	0.4	○	★	○	★	○	●	●	●	●
	TCMT110208-SM	11	6.35	2.38	2.8	0.8	○	★	○	★	○	●	●	●	●
	TCMT16T304-SM	16.5	9.525	3.97	4.4	0.4	○	★	○	★	○	●	●	●	●
	TCMT16T308-SM	16.5	9.525	3.97	4.4	0.8	○	★	○	★	○	●	●	●	●
	TCMT16T312-SM	16.5	9.525	3.97	4.4	1.2	○	★	○	★	○	●	●	●	●

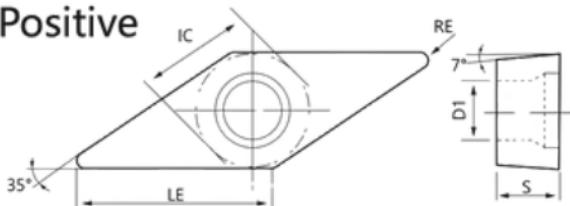
★ Featured grade ○ Optional grade

A30

# TURNING INSERT /POSITIVE

## Turning Insert /Positive

**VC** 



Insert Shape	Type	Dimension					P		M		K	S			
		LE	IC	S	D1	RE	SP251	SP8015	SP8025	SP8125	SM8020	SM8125	SK8010	SK8020	SM8105
	I Finishing	VCMT110302-TF	11	6.35	3.18	2.8	0.2	○	★	○	★	○	○	○	○
		VCMT110304-TF	11	6.35	3.18	2.8	0.4	○	○	★	○	★	○	○	○
		VCMT160404-TF	16.5	9.525	4.76	4.4	0.4	○	★	○	★	○	○	○	○
	I Semi-finishing	VCMT160404-SM	16.5	9.525	4.76	4.4	0.4	○	★	○	★	○	★	○	○
		VCMT160408-SM	16.5	9.525	4.76	4.4	0.8	○	★	○	★	○	★	○	○
	I Semi-finishing	VCMT160404-PC	16.5	9.525	4.76	4.4	0.4	○	★	★	○	○	○	○	○
		VCMT160408-PC	16.5	9.525	4.76	4.4	0.8	○	★	★	○	○	○	○	○

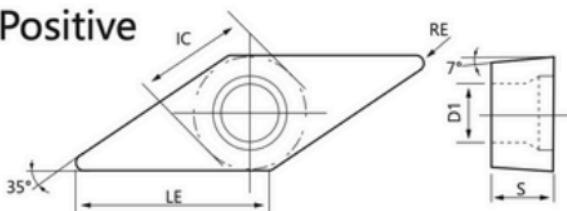
\* Featured grade ○ Optional grade

A31

# TURNING INSERT /POSITIVE

## Turning Insert /Positive

**VB** 



Insert Shape	Type	Dimension					P		M		K	S			
		LE	IC	S	D1	RE	SP251	SP8015	SP8025	SP8125	SM8020	SM8125	SK8010	SK8020	SM8105
	T Finishing	VBMT160404-TF	16.5	9.525	4.76	4.4	0.4	○	★	○	★	○			○
		VBMT160408-TF	16.5	9.525	4.76	4.4	0.8	○	★	○	★	○			○
	T Semi-finishing	VBMT110304-SM	11	6.35	3.18	2.8	0.4	○	★	○	★	○	★	○	
		VBMT110308-SM	11	6.35	3.18	2.8	0.8	○	★	○	★	○	★	○	
	T Precision	VBMT160404-SM	16.5	9.525	4.76	4.4	0.4	○	★	○	★	○	★	○	
		VBMT160408-SM	16.5	6.525	4.76	4.4	0.8	○	★	○	★	○	★	○	
	T Roughing	VBMT160412-SM	16.5	9.525	4.76	4.4	1.2	○	★	○	★	○	★	○	
		VBMT160404-PC	16.5	9.525	4.76	4.4	0.4	○	★	★	○				
	T 160408-RT	VBMT160408-RT	16.5	9.525	4.76	4.4	0.4	○	★	○			★	○	
		VBMT160408-RT	16.5	9.525	4.76	4.4	0.8	○	★	○			★	○	
	T 160412-RT	VBMT160412-RT	16.5	9.525	4.76	4.4	1.2								

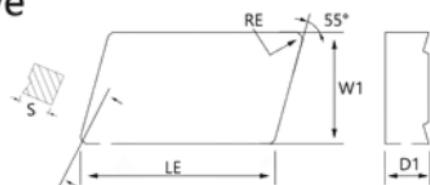
★ Featured grade ○ Optional grade

A32

# TURNING INSERT /POSITIVE

## Turning Insert /Positive

**KN** 



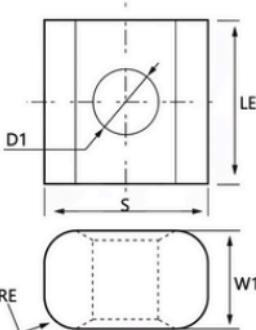
Insert Shape	Type	Dimension					P		M		K	S			
		LE	W1	S	D1	RE	SP251	SP8015	SP8025	SP8125	SM8020	SM8125	SK8010	SK8020	SM8105
	Semi-finishing	KNUX160405L11	16.2	9.525	4.76	2.2	0.5		○	★	○	★	○	★	○
		KNUX160405R11	16.2	9.525	4.76	2.2	0.5								

★ Featured grade ○ Optional grade

A33

## HEAVY DUTY MACHINING

### Heavy Duty Machining



Insert Shape	Type	Dimension					P		M		K	S		
		LE	W1	S	D1	RE	SPB015	SPB025	SPB125	SM8020	SM8125	SK8010	SK8020	SM8105
	T Heavy Duty Machining	175.32-191940-22	19.1	10	19.1	6.35	4	<input type="radio"/>	<input checked="" type="radio"/>	<input type="radio"/>				
		175.32-191940-24	19.1	10	19.1	6.35	4	<input type="radio"/>	<input checked="" type="radio"/>	<input type="radio"/>				
		175.32-191940-28	19.1	10	19.1	6.35	4	<input type="radio"/>	<input checked="" type="radio"/>	<input type="radio"/>				

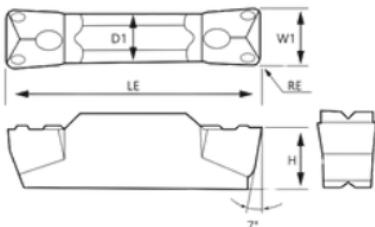
★ Featured grade   O Optional grade

A34

# PARTING AND GROOVING INSERTS

## Parting and Grooving inserts

**MG** 



Insert Shape	Type	Dimension					P	M	K	N	
		LE	W1	H	D1	RE	SP015	SM015	SM025	SK8010	SN10
	MGMN-150-G	16	1.5	3.5	1.2	0.15	★	★	○	★	★
	MGMN-200-G	16	2	3.5	1.6	0.2	★	★	○	★	★
	MGMN-250-M	18.5	2.5	3.85	2	0.2	★	★	○	★	★
	MGMN-300-M	21	3	4.8	2.35	0.4	★	★	○	★	★
	MGMN-400-M	21	4	4.8	3.3	0.4	★	★	○	★	★
	MGMN-500-M	26	5	5.8	4.1	0.8	★	★	○	★	★
	MGMN-600-M	31	8	5.8	5	0.8	★	★	○	★	★

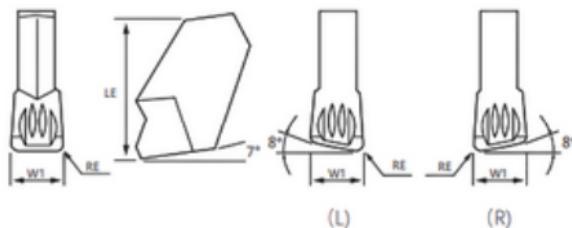
★ Featured grade ○ Optional grade

A35

# PARTING AND GROOVING INSERTS

## Parting and Grooving inserts

**SP**



Insert Shape	Type	Dimension					P	M	K	N	
		LE	W1	H	D1	RE	SP015	SM015	SM025	SN8010	SN10
	SP200	9.3	2.2	-	-	0.2	★	★	○	★	★
	SP300	11.3	3.1	-	-	0.2	★	★	○	★	★
	SP400	11.3	4.1	-	-	0.25	★	★	○	★	★
	SP500	11.4	5.1	-	-	0.3	★	★	○	★	★

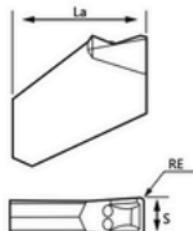
★ Featured grade ○ Optional grade

A36

## PARTING OFF INSERTS

### Parting off Inserts

**ZQ** □ □



Insert Shape	Type	Dimension			最大 切深 Lamax	P	M	K	N	
		S <sub>0+0.1</sub>	RE			SP015	SM015	SM25	SK8010	SN10
	ZQMX3N11-1E	3.1	0.3		11	★	★	○	★	★
	ZQMX4N11-1E	4.1	0.3		11	★	★	○	★	★
	ZQMX5N11-1E	5.1	0.3		11	★	★	○	★	★
	ZQMX6N11-1E	6.4	0.3		11	★	★	○	★	★

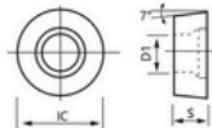
★ Featured grade ○ Optional grade

A37

# MILLING INSERT

## Milling Insert

**RD** □ □



Insert Shape	Type	Dimension					P	M	K	N	
		LE	IC	S	D1	RE	SP301	SG20	SG205	SK10	SN10
	RDMW0803MOE	-	8	3.18	3.4	-	★	★	○	○	★
	RDMW1003MOE	-	10	3.18	4.6	-	★	★	○	○	★
	RDMW10T3MOE	10	3.97	4.4			★	★	○	○	★
	RDMW1204MOE	12	4.76	4.4			★	★	○	○	★
	RDMW1604MOE	16	4.76	5.2			★	★	○	○	★
	RDMT10T3MOTN	10	3.97	4.4			★	★	○	○	★
	RDMT1204MOTN	12	4.76	4.4			★	★	○	○	★
	RDMT1604MOTN	16	4.76	4.4			★	★	○	○	★
	RDMT1204MO-TT	12	4.76	4.4			★	★	○	○	★
	RDMT1204MOE-JS	12	4.76	4.4			★	★	○	○	★
	RDMT1605MOE-JS	16	5.56	5.56			★	★	○	○	★
	RPMW0803MOE	8	3.18	3.4			★	★	○	○	★
	RPMW1003MOE	10	3.18	4.6			★	★	○	○	★
	RPMT10T3MOE-JS	10	3.97	4.4			★	★	○	○	★
	RPMT1204MOE-JS	12	4.76	4.4			★	★	○	○	★

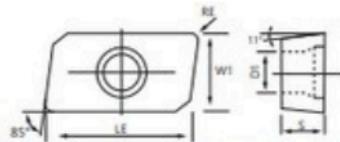
A38

\* Featured grade ○ Optional grade

# MILLING INSERT

## Milling Insert

**AP**



Insert Shape	Type	Dimension					P	M	K	N	
		LE	IC	S	D1	RE	SG701	SG20	SG205	SK10	SN10
	APKT1003PDSR APKT1604PDSR	9.8 16.4	6.65 9.525	3.5 4.76	2.8 4.4	0.8 0.8	★ ★	★ ★	○ ○	○ ○	★ ★
	APKT100308PDTR APKT1604PDER	9.8 16.5	6.65 9.525	3.5 4.76	2.8 4.4	0.8 0.8	★ ★	★ ★	○ ○	○ ○	★ ★
	APKT100308PDTR APKT1604PDER	9.8 16.5	6.65 9.525	3.5 4.76	2.8 4.4	0.8 0.8	★ ★	★ ★	○ ○	○ ○	★ ★
	APMT1135PDER APMT1604PDER	11.39 16.4	6.2 9.41	3.5 5.76	2.8 4.5	0.8 0.8	★ ★	★ ★	○ ○	○ ○	★ ★
	APMT1135PDER-M2 APMT1604PDER-M2	11.39 16.4	6.2 9.41	3.5 5.76	2.8 4.5	0.8 0.8	★ ★	★ ★	○ ○	○ ○	★ ★
	APMT1135PDER-H2 APMT1604PDER-H2	11.39 16.4	6.2 9.41	3.5 5.76	2.8 4.5	0.8 0.8	★ ★	★ ★	○ ○	○ ○	★ ★

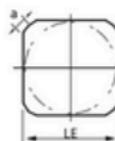
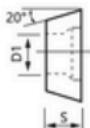
★ Featured grade ○ Optional grade

A39

# MILLING INSERT

Milling Insert

**SE** □ □      **SP** □ □



Insert Shape	Type	Dimension					P	M	K	N
		LE	W1	S	D1	a	SP201	SG20	SG205	SK10
	SEKT1204AFTN	12.7	12.7	4.76	5.5	2.66	★	○	○	★
	SEKN1203AFTN	12.7	12.7	3.18	-	1.48	★	★	○	○
	SEKN1204AFTN	12.7	12.7	4.76	-	1.48	★	★	○	○
	SEKN1504AFTN	15.875	15.875	4.76	-	1.48	★	★	○	○
	SPKN1203EDR	12.7	12.7	3.18	-	1.481	★	★	○	○
	SPKN1204EDR	12.7	12.7	4.76	-	1.481	★	★	○	○

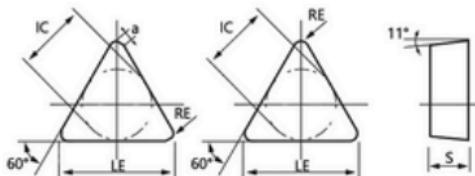
★ Featured grade ○ Optional grade

A40

# MILLING INSERT

## Milling Insert

**TP** □ □



Insert Shape	Type	Dimension					P	M	K	N	
		LE	IC	S	a	RE	SP301	SG20	SG205	SK10	SN10
	TPKN1603PDSKR TPKN2204PDSKR	16.5 22	9.525 12.7	3.18 4.76	1.7 1.91	- -	★ ★	★ ★	○ ○	○ ○	★ ★
	TPKR160304 TPKR160308	16.5 22	9.525 12.7	3.18 4.76	1.2 1.4	0.4 0.8	★ ★	★ ★	○ ○	○ ○	★ ★

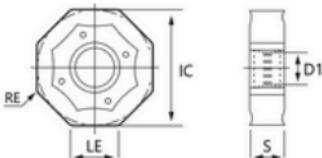
\* Featured grade ○ Optional grade

A41

## MILLING INSERT

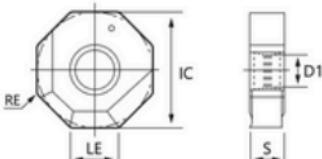
### Milling Insert

# ONHU



Insert Shape	Type	Dimension					P	M	K	N	
		LE	IC	S	D1	RE	SP301	SG20	SG205	SK10	SN10
	ONHU060408-PF	6.58	15.875	4.76	4.4	0.83	★	★	○		
	ONHU08T508-PF	8.37	20.2	5.77	5.3	0.83	★	★	○		
	ONHU060408-PM	6.58	15.875	4.76	4.4	0.83	★	★	○		
	ONHU08T508-PM	8.37	20.2	5.79	5.3	0.83	★	★	○		

★ Featured grade ○ Optional grade



# ONHU

Insert Shape	Type	Dimension					P	M	K	N	
		LE	IC	S	D1	RE	SP301	SG20	SG205	SK10	SN10
	ONHU08T508-W	6.9	20.5	6	5.3	0.8	★	★	○		

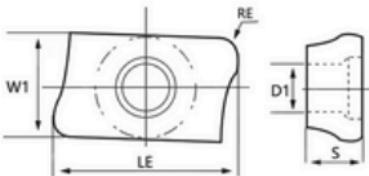
★ Featured grade ○ Optional grade

A42

## MILLING INSERT

### Milling Insert

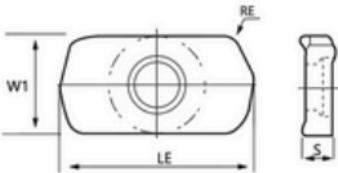
# AOMT



Insert Shape	Type	Dimension					P	M	K	N
		LE	IC	S	a	RE	SP301	SG20	SG205	SK10
	AOMT180516-M	18.55	10.7	5.85	4.5	1.6	○	★		
	AOMT120408R-FA	7.66	14.04	4.76	3.4	0.8	○	★		
	AOMT124340R-FA	7.6	12.8	4.3.6	3.4	4	○	★		

★ Featured grade ○ Optional grade

# LNMU



Insert Shape	Type	Dimension					P	M	K	N
		LE	IC	S	a	RE	SP301	SG20	SG205	SK10
	LNMU0303ZER-MJ AH725	11.59	6	4.29	-	1.2	★	○		

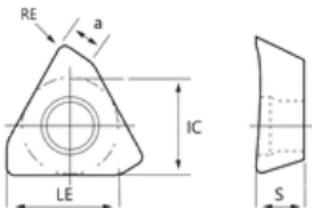
A4A343

★ Featured grade ○ Optional grade

# MILLING INSERT

## Milling Insert

**3PKT**



Insert Shape	Type	Dimension					P	M	K	N	
		LE	IC	S	a	RE	SP301	SG20	SG205	SK10	SN10
	3PKT100404R-M	7	6.9	4	1.3	0.4	★	★	○		
	3PKT100408R-M	7	6.9	4	0.9	0.8	★	★	○		
	3PKT150508R-M	11	10.7	5	1.6	0.8	★	★	○		

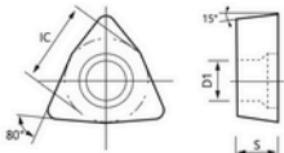
★ Featured grade ○ Optional grade

A44

# MILLING INSERT

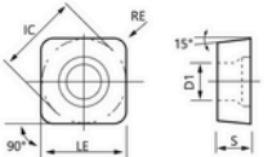
## Milling Insert

**WP**



Insert Shape	Type	Dimension					P	M	K	N	
		LE	IC	S	D1	RE	SP301	SG20	SG205	SK10	SN10
	WPGT050315ZSR	-	7.94	3.5	4	1.5	★	★	○		
	WPGT060415ZSR	-	9.525	4.2	4.4	1.5	★	★	○		
	WPGT080615ZSR	-	12.8	6.35	5.5	1.5	★	★	○		
	WPGT090715ZSR	-	15	7	5.5	1.5	★	★	○		
	WPGT080520ZSR	-	12.85	2	5.5	2.0	★	★	○		
	WPGT080615ZSR	-	12.85	1	6.35	15	★	★	○		
	WPGT06T320ZTR	-	9.89	2	3.97	2.0	★	★	○		

**SD**



Insert Shape	Type	Dimension					P	M	K	N	
		LE	IC	S	D1	RE	SP301	SG20	SG205	SK10	SN10
	SDMT120412-MP	12.7	12.7	4.76	4.4	1.2	★	★	○		
	SDMT09T304-MP	9.525	9.525	3.5	3.5	0.4	★	★	○		
	SDMT09T308-MP	9.525	9.525	3.5	4.6	0.8	★	★	○		
	SDMT09T312-DM	9.525	9.525	3.94	4	1.2	★	★	○		
	SDMT120412-DM	12.7	12.7	4.76	4.4	1.2	★	★	○		

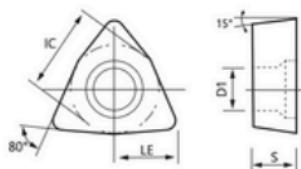
★ Featured grade ○ Optional grade

A45

# U DRILLING INSERT

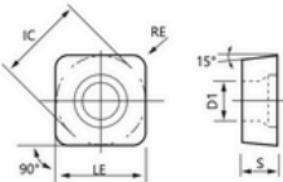
## U Drilling Insert

**WC** □ □



Insert Shape	Type	Dimension					P	M	K	N	
		LE	IC	S	D1	RE	SP301	SG20	SG205	SK10	SN10
	WCMT030208-MX	3.8	5.56	2.38	2.8	0.8	○	★			
	WCMT040208-MX	4.3	6.35	2.38	3.1	0.8	○	★			
	WCMT050308-MX	5.4	7.94	3.18	3.2	0.8	○	★			
	WCMT06T308-MX	6.5	9.525	3.97	3.7	0.8	○	★			
	WCMT080412-MX	8.7	12.7	4.76	4.3	1.2	○	★			
							○	★			

**SP** □ □



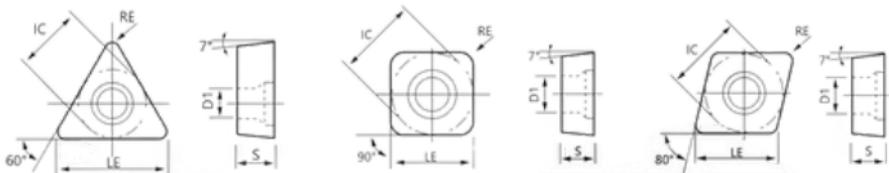
Insert Shape	Type	Dimension					P	M	K	N	
		LE	IC	S	D1	RE	SP301	SG20	SG205	SK10	SN10
	SPGT050204-MX	5	5	2.38	2.2	0.4	○	★			
	SPGT060204-MX	6	6	2.38	2.6	0.4	○	★			
	SPGT07T308-MX	7.94	7.94	3.97	2.8	0.8	○	★			
	SPGT090408-MX	9.8	9.8	4.3	4.2	0.8	○	★			
	SPGT110408-MX	11.5	11.5	4.76	4.4	0.8	○	★			
	SPGT140512-MX	14.3	14.3	5.2	5.75	1.2	○	★			

★ Featured grade ○ Optional grade

A46

# INSERT FOR ALUMINUM CUTTING

## Insert for Aluminum Cutting



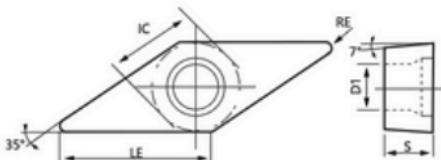
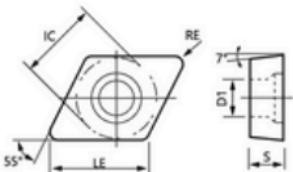
Insert Shape	Type	Dimension					牌号 Grade
		LE	IC	S	D1	RE	
	TCGT090204-AK	9.6	5.56	2.38	2.5	0.4	SN10
	TCGT110202-AK	11	6.35	2.38	2.8	0.2	
	TCGT110204-AK	11	6.35	2.38	2.8	0.4	
	TCGT16T304-AK	16.5	9.525	3.97	4.4	0.4	
	TCGT16T308-AK	166.5	9.525	3.97	4.4	0.8	
	SCGT09T304-AK	9.525	9.525	3.97	4.4	0.4	SN10
	SCGT09T308-AK	9.525	9.525	3.97	4.4	0.8	
	SCGT120408-AK	12.7	12.7	4.76	5.5	0.8	
	CCGT060202-AK	6.4	6.35	2.38	2.8	0.2	SN10
	CCGT060204-AK	6.4	6.35	2.38	2.8	0.4	
	CCGT09T302-AK	9.7	9.525	3.97	4.4	0.2	
	CCGT09T304-AK	9.7	9.525	3.97	4.4	0.4	
	CCGT09T308-AK	9.7	9.525	3.97	4.4	0.8	
	CCGT120404-AK	12.9	12.7	4.76	5.5	0.4	
	CCGT120408-AK	12.9	12.7	4.76	5.5	0.8	

★ Featured grade ◇ Optional grade

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# INSERT FOR ALUMINUM CUTTING

## Insert for Aluminum Cutting



Insert Shape	Type	Dimension					牌号 Grade
		LE	IC	S	D1	RE	
	DCGT070202-AK	7.8	6.35	2.38	2.8	0.2	SN10
	DCGT070204-AK	7.8	6.35	2.38	2.8	0.4	
	DCGT11T302-AK	11.6	9.525	3.97	4.4	0.2	
	DCGT11T304-AK	11.6	9.525	3.97	4.4	0.4	
	DCGT11T308-AK	11.6	9.525	3.97	4.4	0.8	
	VCGT110302-AK	11	6.35	3.18	2.8	0.2	SN10
	VCGT110304-AK	11	6.35	3.18	2.8	0.4	
	VCGT160402-AK	16.5	9.525	4.76	4.4	0.2	
	VCGT160404-AK	16.5	9.525	4.76	4.4	0.4	
	VCGT160408-AK	16.5	9.525	4.76	4.4	0.8	
	VCGT160412-AK	16.5	9.525	4.76	4.4	1.2	
	VCGT220530-AK	22	12.7	5.56	5.5	3	

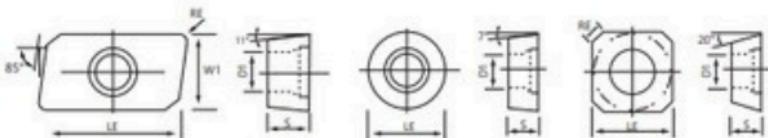
★ Featured grade   O Optional grade

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# INSERT FOR ALUMINUM CUTTING

**AP□□ RC□□ SE□□**

## Insert for Aluminum Cutting

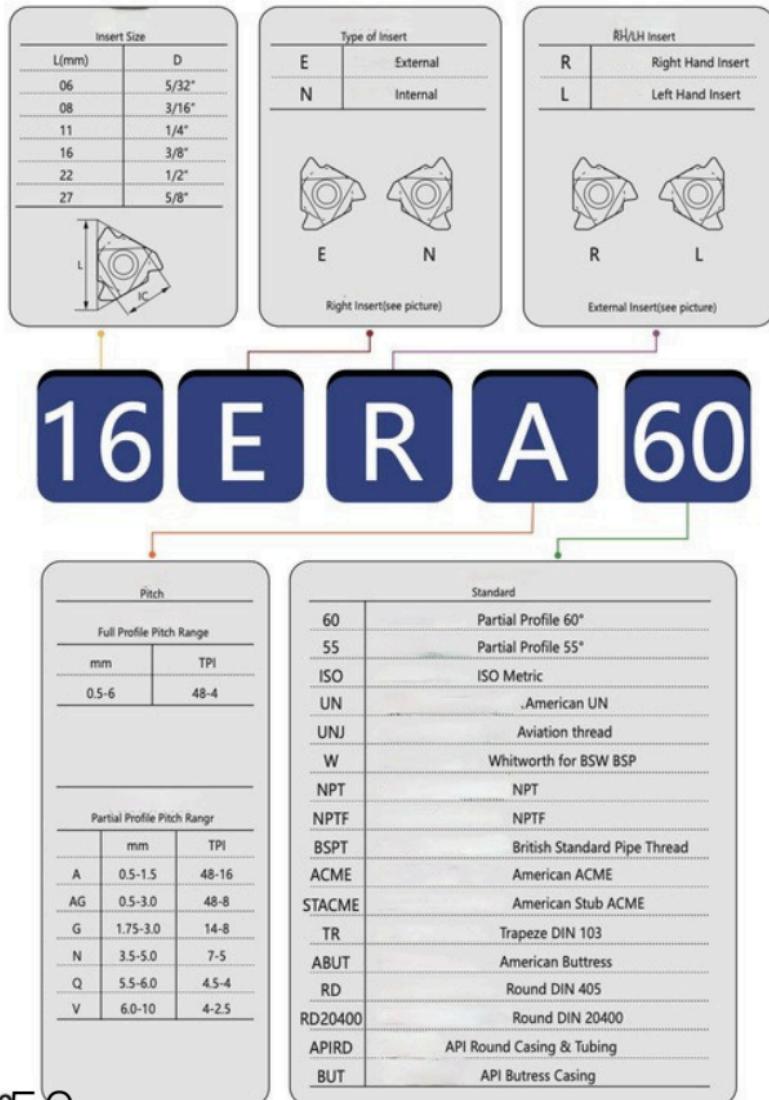


Insert Shape	Type	Dimension					Grade
		LE	W1	S	D1	RE	
	APKT160402PDER-MA3	16.5	9.525	4.76	4.4	0.2	SN10
	APKT160404PDER-MA3	16.5	9.525	4.76	4.4	0.4	
	APKT160408PDER-MA3	16.5	9.525	4.76	4.4	0.8	
	APKT100302PDER-MA3	9.8	6.65	3.5	2.8	0.2	
	APKT100304PDER-MA3	9.8	6.65	3.5	2.8	0.4	
	APKT100308PDER-MA3	9.8	6.65	3.5	2.8	0.8	
	APKT160402PDER-MA	16.5	9.525	4.76	4.4	0.2	SN10
	APKT160404PDER-MA	16.5	9.525	4.76	4.4	0.4	
	APKT160408PDER-MA	16.5	9.525	4.76	4.4	0.8	
	APKT113502PDER-G2	12.24	6.2	3.5	2.8	0.2	SN10
	APKT113504PDER-G2	12.24	6.2	3.5	2.8	0.4	
	APKT113508PDER-G2	12.24	6.2	3.5	2.8	0.8	
	APKT160402PDER-G2	16.5	9.525	4.76	4.4	0.2	
	APKT160404PDER-G2	16.5	9.525	4.76	4.4	0.4	
	APKT160408PDER-G2	16.5	9.525	4.76	4.4	0.8	
	RCGT0602MO	6.0	-	2.38	2.8	-	SN10
	RCGT0803MO	8	-	3.18	3.35	-	
	RCGT1003MO	10.0	-	3.18	4.0	-	
	RCGT10T3MO	10	-	3.97	4.4	-	
	RCGT1204MO	12	-	4.76	4.4	-	
	SEHT1204AFFN	12.7	12.7	4.76	4.4	2.3	SN10

\* Featured grade   O Optional grade

# THREADING INSERT IDENTIFICATION SYSTEM

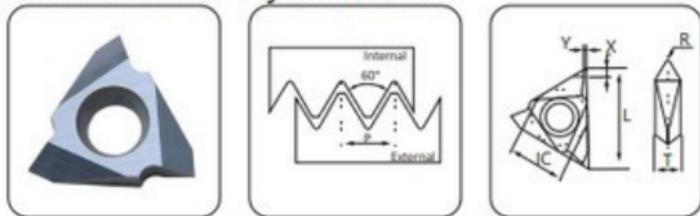
## Threading Insert Identification System



A<sup>o</sup>50

## 60° PARTIAL PROFILE V-STYLE INSERTS

### 60° Partial Profile V-style Inserts

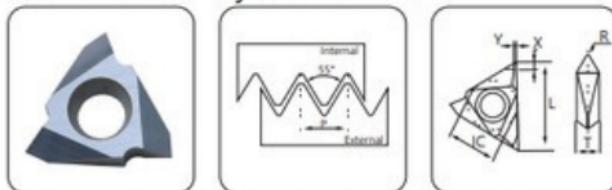


Type MAX 45°CS Right Hand	Type MIN 45°CS Left Hand	Pitch		Insert Size		Dimensions			P	M	K	N	
		mm	TPI	IC	L/inch	R	X	Y	SP20	SP30	SM20	SM25	SK10
MTTR436001	MTTL436001	1.0-1.75	24-14	1/2"	0.87	0.1	1.7	0.29	★	○	★	○	○
MTTR436002	MTTL436002	2.0-2.5	13-10	1/2"	0.87	0.2	1.7	0.29	★	○	★	○	○
MTTR436003	MTTL436003	3.0-3.5	9-7	1/2"	0.87	0.3	1.7	0.29	★	○	★	○	○
MTTR436004	MTTL436004	4.0-4.5	6-5	1/2"	0.87	0.4	1.7	0.29	★	○	★	○	○

## 55° PARTIAL PROFILE V-STYLE INSERTS

55°

### Partial Profile V-style Inserts



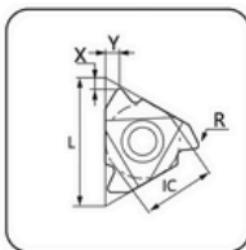
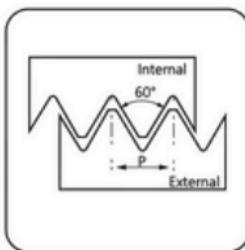
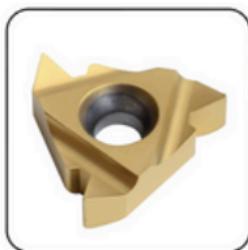
Type Right Hand	Type Left Hand	Pitch		Insert Size		Dimensions			P	M	K	N	
		mm	TPI	IC	L/inch	R	X	Y	SP20	SP30	SM20	SM25	SK10
MTTR435501	MTTL435501	1.0-1.75	24-14	1/2"	0.87	0.1	1.7	0.29	★	○	★	○	○
MTTR435502	MTTL435502	2.0-2.5	13-10	1/2"	0.87	0.2	1.7	0.29	★	○	★	○	○
MTTR435503	MTTL435503	3.0-3.5	9-7	1/2"	0.87	0.3	1.7	0.29	★	○	★	○	○
MTTR435504	MTTL435504	4.0-4.5	6-5	1/2"	0.87	0.4	1.7	0.29	★	○	★	○	○

\* Featured grade   ○ Optional grade

# PARTIAL PROFILE 60°THREADING INSERTS

## Partial Profile 60°Threading Inserts

### External



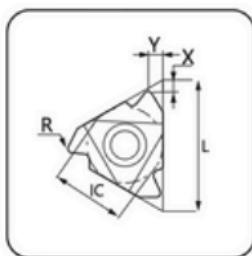
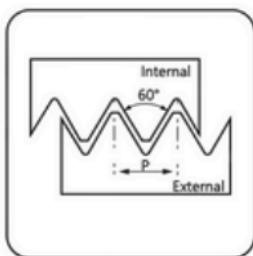
Type	Type	Pitch		Insert Size		Dimensions			P		M		K	N
		mm	TPI	IC	L/inch	R	X	Y	SP20	SP30	SM20	SM205	SK10	SN10
Right Hand	Left Hand													
11ERA60	11ELA60	0.5-1.5	48-16	1/4"	0.43	0.002	0.029	0.035	★	○	★	○		○
16ERA60	16ELA60	0.5-1.5	48-16			0.002	0.031	0.035	★	○	★	○		○
16ERAG60	16ELAG60	0.5-3.0	48-8	3/8"	0.63	0.003	0.047	0.067	★	○	★	○		○
16ERG60	16ELG60	1.75-3.0	18-8			0.011	0.047	0.067	★	○	★	○		○
22ERN60	22ELN60	3.5-5.0	7-5	1/2"	0.87	0.021	0.067	0.098	★	○	★	○		○
27ERQ60	27ELQ60	5.5-6.0	4.5-4	5/8"	1.06	0.27			★	○	★	○		○

★ Featured grade ○ Optional grade

## PARTIAL PROFILE 60°THREADING INSERTS

### Partial Profile 60°Threading Inserts

#### Internal



Type	Type	Pitch		Insert Size		Dimensions			P	M	K	N		
		mm	TPI	IC	L/inch	R	X	Y	SP20	SP30	SM20	SM205	SK10	SN10
Right Hand	Left Hand													
06NRA60	06NLA60	0.15-1.5	48-16	5/32"	0.271	0.002	0.03	0.031	★	○	★	○		○
08NRA60	08NLA60	0.5-1.5	48-16	3/16"	0.325	0.002	0.03	0.031	★	○	★	○		○
11NRA60	11NLA60	0.5-1.5	48-16	1/4"	0.43	0.002	0.031	0.035	★	○	★	○		○
16NRA60	16NLA60	0.5-1.5	48-16			0.002	0.031	0.035	★	○	★	○		○
16NRAG60	16NLG60	0.5-3.0	48-8	3/8"	0.63	0.003	0.047	0.067	★	○	★	○		○
16NRG60	16NLG60	1.75-3.0	18-8			0.008	0.047	0.067	★	○	★	○		○
22NRN60	22NLN60	3.5-5.0	7-5	1/2"	0.87	0.018	0.067	0.098	★	○	★	○		○
27NRQ60	27NLQ60	5.5-6.0	4.5-4	5/8"	1.06	0.24			★	○	★	○		○

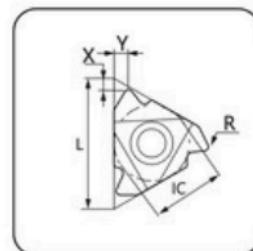
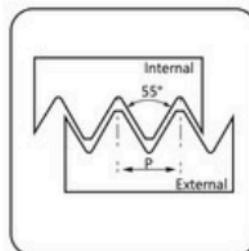
★ Featured grade ○ Optional grade

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# PARTIAL PROFILE 55°THREADING INSERTS

## Partial Profile 55°Threading Inserts

### External



Type	Type	Pitch		Insert Size		Dimensions			P	M	K	N		
		mm	TPI	IC	L/inch	R	X	Y	SP20	SP30	SM20	SM205	SK10	SN10
Right Hand	Left Hand													
11ERA55	11ELA55	0.5-1.5	48-16	1/4"	0.43	0.003	0.031	0.035	★	○	★	○		○
16ERA55	16ELA55	0.5-1.5	48-16			0.003	0.031	0.035	★	○	★	○		○
16ERAG55	16ELAG55	0.5-3.0	48-8	3/8"	0.63	0.004	0.047	0.067	★	○	★	○		○
16ERG55	16ELG55	1.75-3.0	18-8			0.011	0.047	0.067	★	○	★	○		○
22ERN55	22ELN55	3.5-5.0	7-5	1/2"	0.87	0.021	0.067	0.098	★	○	★	○		○
27ERQ55	27ELQ55	5.5-6.0	4.5-4	5/8"	1.06	0.27			★	○	★	○		○

★ Featured grade ○ Optional grade

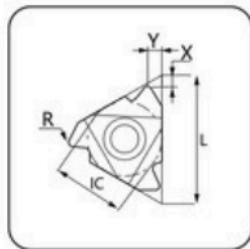
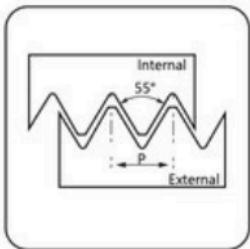
A54

# PARTIAL PROFILE 55°THREADING INSERTS

## Partial Profile 55°Threading Inserts



**Internal**



Type 	Type 	Pitch		Insert Size		Dimensions			P		M		K	N
		mm	TPI	IC	L/inch	R	X	Y	SP20	SP30	SM205	SM206	SK10	SN10
06NRA55	06NLA55	0.15-1.5	48-16	5/32"	0.271	0.002	0.03	0.031	★	○	★	○		○
08NRA55	08NLA55	0.5-1.5	48-16	3/16"	0.325	0.002	0.03	0.031	★	○	★	○		○
11NRA55	11NLA55	0.5-1.5	48-16	1/4"	0.43	0.002	0.031	0.035	★	○	★	○		○
16NRA55	16NLA55	0.5-1.5	48-16			0.002	0.031	0.035	★	○	★	○		○
16NRAG55	16NLAG55	0.5-3.0	48-8	3/8"	0.63	0.003	0.047	0.067	★	○	★	○		○
16NRG55	16NLG55	1.75-3.0	18-8			0.008	0.047	0.067	★	○	★	○		○
22NRN55	22NLN55	3.5-6.0	7-5	1/2"	0.87	0.018	0.067	0.098	★	○	★	○		○
27NRQ55	27NLQ55	5.5-6.0	4.5-4	5/8"	1.06	0.24			★	○	★	○		○

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\* Featured grade ○ Optional grade

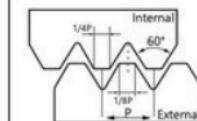
A55

# ISO METRIC

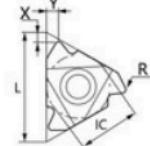
# EXTERNAL



ISO Metric



External



Type	Type	Pitch		Insert Size		Dimensions			P	M	K	N		
		mm	TPI	IC	L/inch	R	X	Y	SP20	SP30	SM20	SM205	SK10	SN10
Right Hand	Left Hand													
11ER0.50 ISO	11EL0.50 ISO	0.5		1.4"	0.43	0.002	0.024	0.016	★	○	★	○	○	○
11ER0.75 ISO	11EL0.75 ISO	0.75		1.4"	0.43	0.003	0.024	0.024	★	○	★	○	○	○
11ER1.00 ISO	11EL1.00 ISO	1		1.4"	0.43	0.004	0.027	0.027	★	○	★	○	○	○
11ER1.25 ISO	11EL1.25 ISO	1.25		1.4"	0.43	0.005	0.031	0.035	★	○	★	○	○	○
11ER1.50 ISO	11EL1.50 ISO	1.5		1.4"	0.43	0.007	0.031	0.039	★	○	★	○	○	○
11ER1.75 ISO	11EL1.75 ISO	1.75		1.4"	0.43	0.009	0.035	0.047	★	○	★	○	○	○
11ER2.00 ISO	11EL2.00 ISO	2		1.4"	0.43	0.01	0.039	0.051	★	○	★	○	○	○
16ER0.50 ISO	16EL0.50 ISO	0.5		3/8"	0.63	0.002	0.024	0.016	★	○	★	○	○	○
16ER0.75 ISO	16EL0.75 ISO	0.75		3/8"	0.63	0.003	0.024	0.024	★	○	★	○	○	○
16ER1.00 ISO	16EL1.00 ISO	1		3/8"	0.63	0.004	0.027	0.027	★	○	★	○	○	○
16ER1.25 ISO	16EL1.25 ISO	1.25		3/8"	0.63	0.005	0.031	0.035	★	○	★	○	○	○
16ER1.50 ISO	16EL1.50 ISO	1.5		3/8"	0.63	0.007	0.031	0.039	★	○	★	○	○	○
16ER1.75 ISO	16EL1.75 ISO	1.75		3/8"	0.63	0.009	0.035	0.047	★	○	★	○	○	○
16ER2.00 ISO	16EL2.00 ISO	2		3/8"	0.63	0.01	0.039	0.051	★	○	★	○	○	○
16ER2.50 ISO	16EL2.50 ISO	2.5		3/8"	0.63	0.012	0.043	0.059	★	○	★	○	○	○
16ER3.00 ISO	16EL3.00 ISO	3		3/8"	0.63	0.014	0.047	0.063	★	○	★	○	○	○
16ER3.50 ISO	16EL3.50 ISO	3.5		3/8"	0.63	0.015	0.047	0.063	★	○	★	○	○	○
22ER3.00 ISO	22EL3.00 ISO	3		1/2"	0.87	0.014	0.047	0.063	★	○	★	○	○	○
22ER3.50 ISO	22EL3.50 ISO	3.5		1/2"	0.87	0.015	0.063	0.09	★	○	★	○	○	○
22ER4.00 ISO	22EL4.00 ISO	4		1/2"	0.87	0.015	0.063	0.09	★	○	★	○	○	○
22ER4.50 ISO	22EL4.50 ISO	4.5		1/2"	0.87	0.016	0.067	0.094	★	○	★	○	○	○
22ER5.00 ISO	22EL5.00 ISO	5		1/2"	0.87	0.016	0.067	0.098	★	○	★	○	○	○
22ER5.50 ISO	22EL5.50 ISO	5.5		1/2"	0.87	0.016	0.067	0.098	★	○	★	○	○	○
22ER6.00 ISO	22EL6.00 ISO	6		1/2"	0.87	0.02	0.067	0.098	★	○	★	○	○	○
27ER5.50 ISO	27EL5.50 ISO	5.5		5/8"	1.06	0.016			★	○	★	○	○	○
27ER6.00 ISO	27EL6.00 ISO	6		5/8"	1.06	0.02			★	○	★	○	○	○
27VER6.00 ISO	27VEL6.00 ISO	6		5/8"	1.06	0.02			★	○	★	○	○	○
27VER8.00 ISO	27VEL8.00 ISO	8		5/8"	1.06	0.045			★	○	★	○	○	○
27VER10.00 ISO	27VEL10.00 ISO	10		5/8"	1.06	0.056			★	○	★	○	○	○

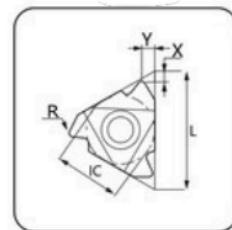
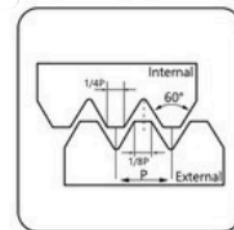
★ Featured grade ○ Optional grade

## ISO METRIC

## EXTERNAL



ISO Metric

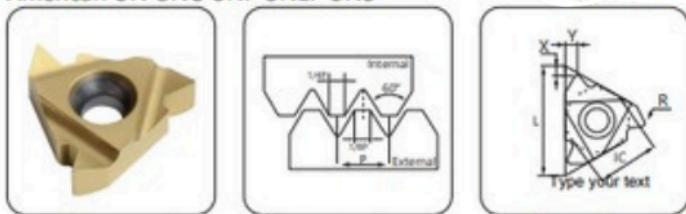


Type	Type	Pitch		Insert Size		Dimensions			P	M	K	N		
		mm	TPI	IC	L/inch	R	X	Y	SP20	SP30	SM20	SM205	SK10	SN10
Right Hand	Left Hand													
11NR0.50 ISO	11NL0.50 ISO	0.5		1.4"	0.43	0.002	0.024	0.016	★	○	★	○		○
11NR0.75 ISO	11NL0.75 ISO	0.75		1.4"	0.43	0.003	0.024	0.024	★	○	★	○		○
11NR1.00 ISO	11NL1.00 ISO	1		1.4"	0.43	0.004	0.024	0.027	★	○	★	○		○
11NR1.25 ISO	11NL1.25 ISO	1.25		1.4"	0.43	0.005	0.031	0.035	★	○	★	○		○
11NR1.50 ISO	11NL1.50 ISO	1.5		1.4"	0.43	0.006	0.031	0.039	★	○	★	○		○
11NR1.75 ISO	11NL1.75 ISO	1.75		1.4"	0.43	0.007	0.035	0.047	★	○	★	○		○
11ER2.00 ISO	11NL2.00 ISO	2		1.4"	0.43	0.009	0.039	0.051	★	○	★	○		○
16NR0.50 ISO	16NL0.50 ISO	0.5		3/8"	0.63	0.002	0.024	0.016	★	○	★	○		○
16NR0.75 ISO	16NL0.75 ISO	0.75		3/8"	0.63	0.003	0.024	0.024	★	○	★	○		○
16NR1.00 ISO	16NL1.00 ISO	1		3/8"	0.63	0.004	0.024	0.027	★	○	★	○		○
16NR1.25 ISO	16NL1.25 ISO	1.25		3/8"	0.63	0.005	0.031	0.035	★	○	★	○		○
16NR1.50 ISO	16NL1.50 ISO	1.5		3/8"	0.63	0.006	0.031	0.039	★	○	★	○		○
16NR1.75 ISO	16EL1.75 ISO	1.75		3/8"	0.63	0.007	0.035	0.047	★	○	★	○		○
16NR2.00 ISO	16NL2.00 ISO	2		3/8"	0.63	0.009	0.039	0.051	★	○	★	○		○
16NR2.50 ISO	16NL2.50 ISO	2.5		3/8"	0.63	0.011	0.043	0.059	★	○	★	○		○
16NR3.00 ISO	16NL3.00 ISO	3		3/8"	0.63	0.012	0.043	0.059	★	○	★	○		○
16NR3.50 ISO	16NL3.50 ISO	3.5		3/8"	0.63	0.014	0.043	0.059	★	○	★	○		○
22NR3.00 ISO	22NL3.00 ISO	3		1/2"	0.87	0.012	0.043	0.059	★	○	★	○		○
22NR3.50 ISO	22NL3.50 ISO	3.5		1/2"	0.87	0.014	0.063	0.09	★	○	★	○		○
22NR4.00 ISO	22NL4.00 ISO	4		1/2"	0.87	0.015	0.063	0.09	★	○	★	○		○
22NR4.50 ISO	22NL4.50 ISO	4.5		1/2"	0.87	0.015	0.063	0.094	★	○	★	○		○
22NR5.00 ISO	22NL5.00 ISO	5		1/2"	0.87	0.016	0.063	0.094	★	○	★	○		○
22NR5.50 ISO	22NL5.50 ISO	5.5		1/2"	0.87	0.016	0.063	0.094	★	○	★	○		○
22NR6.00 ISO	22NR6.00 ISO	6		1/2"	0.87	0.018	0.063	0.094	★	○	★	○		○
27NR5.50 ISO	27NL5.50 ISO	5.5		5/8"	1.06	0.016			★	○	★	○		○
27NR6.00 ISO	27NR6.00 ISO	6		5/8"	1.06	0.02			★	○	★	○		○
27VNR6.00 ISO	27VNL6.00 ISO	6		5/8"	1.06	0.02			★	○	★	○		○
27VNR8.00 ISO	27VNL8.00 ISO	8		5/8"	1.06	0.045			★	○	★	○		○
27VNR10.00 ISO	27VNL10.00 ISO	10		5/8"	1.06	0.056			★	○	★	○		○

★ Featured grade ○ Optional grade

**UN-60°**

60° American UN UNC UNF UNEF UNS



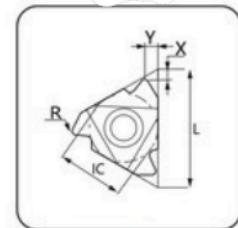
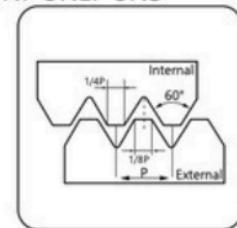
Type	Type	Pitch		Insert Size		Dimensions			P	M	K	N		
		mm	TPI	IN	1/inch	R	X	Y	SP20	SP30	SM20	SM20S	SK10	SN10
Right Hand	Left Hand													
11ER32UN	11EL32UN	0.794	32	1/4"	0.43	0.003	0.024	0.024	★	○	★	○	○	○
11ER28UN	11EL28UN	0.907	28	1/4"	0.43	0.003	0.024	0.027	★	○	★	○	○	○
11ER24UN	11EL24UN	1.058	24	1/4"	0.43	0.004	0.027	0.031	★	○	★	○	○	○
11ER20UN	11EL20UN	1.27	20	1/4"	0.43	0.004	0.031	0.035	★	○	★	○	○	○
11ER18UN	11EL18UN	1.411	18	1/4"	0.43	0.005	0.035	0.039	★	○	★	○	○	○
11ER16UN	11EL16UN	1.588	16	1/4"	0.43	0.006	0.039	0.043	★	○	★	○	○	○
11ER14UN	11EL14UN	1.814	14	1/4"	0.43	0.007	0.043	0.047	★	○	★	○	○	○
11ER12UN	11EL12UN	2.117	12	1/4"	0.43	0.008	0.043	0.055	★	○	★	○	○	○
16ER32UN	16EL32UN	0.794	32	3/8"	0.63	0.003	0.024	0.024	★	○	★	○	○	○
16ER28UN	16EL28UN	0.907	28	3/8"	0.63	0.003	0.024	0.027	★	○	★	○	○	○
16ER24UN	16EL24UN	1.058	24	3/8"	0.63	0.004	0.027	0.031	★	○	★	○	○	○
16ER20UN	16EL20UN	1.27	20	3/8"	0.63	0.004	0.031	0.035	★	○	★	○	○	○
16ER18UN	16EL18UN	1.411	18	3/8"	0.63	0.005	0.035	0.039	★	○	★	○	○	○
16ER16UN	16EL16UN	1.588	16	3/8"	0.63	0.006	0.039	0.043	★	○	★	○	○	○
16ER14UN	16EL14UN	1.814	14	3/8"	0.63	0.007	0.043	0.047	★	○	★	○	○	○
16ER12UN	16EL12UN	2.117	12	3/8"	0.63	0.008	0.043	0.055	★	○	★	○	○	○
16ER11UN	16EL11UN	2.309	11	3/8"	0.63	0.01	0.043	0.055	★	○	★	○	○	○
16ER10UN	16EL10UN	2.54	10	3/8"	0.63	0.012	0.043	0.059	★	○	★	○	○	○
16ER9UN	16EL9UN	2.822	9	3/8"	0.63	0.013	0.047	0.059	★	○	★	○	○	○
16ER8UN	16EL8UN	3.175	8	3/8"	0.63	0.013	0.047	0.063	★	○	★	○	○	○
22ER7UN	22EL7UN	3.629	7	1/2"	0.87	0.014	0.047	0.063	★	○	★	○	○	○
22ER6UN	22EL6UN	4.233	6	1/2"	0.87	0.015	0.047	0.063	★	○	★	○	○	○
22ER5UN	22EL5UN	5.08	5	1/2"	0.87	0.016	0.057	0.073	★	○	★	○	○	○
22ER4.5UN	22EL4.5UN	5.644	4.5	1/2"	0.87	0.017	0.057	0.073	★	○	★	○	○	○
22ER4UN	22EL4UN	6.35	4	1/2"	0.87	0.02	0.057	0.073	★	○	★	○	○	○
27ER4.5UN	27EL4.5UN	5.644	4.5	5/8"	1.06	0.017			★	○	★	○	○	○
27ER4UN	27EL4UN	6.35	4	5/8"	1.06	0.02			★	○	★	○	○	○
27VER4UN	27VEL4UN	6.35	4	5/8"	1.06	0.02			★	○	★	○	○	○
27VER3UN	27VEL3UN	8.466	3	5/8"	1.06	0.048			★	○	★	○	○	○

★ Featured Grade ○ Optional Grade

60° AMERICAN UN UNC  
UNF UNEF UNS

(INTERNAL)

60° American UN UNC UNF UNEF UNS

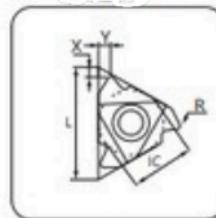
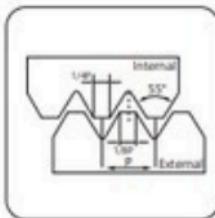


Type	Type	Pitch		Insert Size		Dimensions			P	M	K	N		
		mm	TPI	IC	L/inch	R	X	Y	SP20	SP30	SM20	SM205	SK10	SN10
Right Hand	Left Hand													
11NR32UN	11NL32UN	0.794	32	1/4"	0.43	0.003	0.024	0.024	★	○	★	○	○	○
11NR28UN	11NL28UN	0.907	28	1/4"	0.43	0.003	0.024	0.024	★	○	★	○	○	○
11NR24UN	11NL24UN	1.058	24	1/4"	0.43	0.003	0.027	0.031	★	○	★	○	○	○
11NR20UN	11NL20UN	1.27	20	1/4"	0.43	0.004	0.031	0.035	★	○	★	○	○	○
11NR18UN	11NL18UN	1.411	18	1/4"	0.43	0.006	0.031	0.039	★	○	★	○	○	○
11NR16UN	11NL16UN	1.588	16	1/4"	0.43	0.008	0.035	0.043	★	○	★	○	○	○
11NR14UN	11NL14UN	1.814	14	1/4"	0.43	0.009	0.035	0.047	★	○	★	○	○	○
11NR12UN	11NL12UN	2.117	12	1/4"	0.43	0.01	0.043	0.055	★	○	★	○	○	○
16NR32UN	16NL32UN	0.794	32	3/8"	0.63	0.003	0.024	0.024	★	○	★	○	○	○
16NR28UN	16NL28UN	0.907	28	3/8"	0.63	0.003	0.024	0.024	★	○	★	○	○	○
16NR24UN	16NL24UN	1.058	24	3/8"	0.63	0.003	0.027	0.031	★	○	★	○	○	○
16NR20UN	16NL20UN	1.27	20	3/8"	0.63	0.004	0.031	0.035	★	○	★	○	○	○
16NR18UN	16NL18UN	1.411	18	3/8"	0.63	0.005	0.031	0.039	★	○	★	○	○	○
16NR16UN	16NL16UN	1.588	16	3/8"	0.63	0.006	0.035	0.043	★	○	★	○	○	○
16NR14UN	16NL14UN	1.814	14	3/8"	0.63	0.007	0.035	0.047	★	○	★	○	○	○
16NR12UN	16NL12UN	2.117	12	3/8"	0.63	0.007	0.043	0.055	★	○	★	○	○	○
16NR11UN	16NL11UN	2.309	11	3/8"	0.63	0.009	0.043	0.055	★	○	★	○	○	○
16NR10UN	16NL10UN	2.54	10	3/8"	0.63	0.011	0.043	0.059	★	○	★	○	○	○
16NR9UN	16NL9UN	2.822	9	3/8"	0.63	0.011	0.043	0.059	★	○	★	○	○	○
16NR8UN	16NL8UN	3.175	8	3/8"	0.63	0.012	0.043	0.059	★	○	★	○	○	○
22NR7UN	22NL7UN	3.629	7	1/2"	0.87	0.014	0.047	0.065	★	○	★	○	○	○
22NR6UN	22NL6UN	4.233	6	1/2"	0.87	0.014	0.047	0.065	★	○	★	○	○	○
22NR5UN	22NL5UN	5.08	5	1/2"	0.87	0.015	0.057	0.072	★	○	★	○	○	○
22NR4.5UN	22NL4.5UN	5.644	4.5	1/2"	0.87	0.016	0.057	0.072	★	○	★	○	○	○
22NR4UN	22NL4UN	6.35	4	1/2"	0.87	0.017	0.057	0.072	★	○	★	○	○	○
27NR4.5UN	27NL4.5UN	5.644	4.5	5/8"	1.06	0.017			★	○	★	○	○	○
27NR4UN	27NL4UN	6.35	4	5/8"	1.06	0.02			★	○	★	○	○	○
27VNR4UN	27VNL4UN	6.35	4	5/8"	1.06	0.02			★	○	★	○	○	○
27VNR3UN	27VNL3UN	8.466	3	5/8"	1.06	0.046			★	○	★	○	○	○

★ Featured grade ○ Optional grade

**W-55°**

55° Whitworth Full Profile

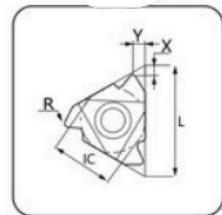
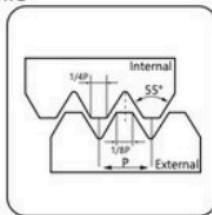


Type	Type	Pitch		Insert Size		Dimensions			P	M	K	N		
		mm	TPI	IC	L/inch	R	X	Y	S/P20	S/P30	S/M20	S/M20S	S/K10	S/N10
11ER28W	11EL28W	0.907	28	1/4"	0.43	0.003	0.024	0.027	★	○	●	○	○	○
11ER26W	11EL26W	0.977	26	1/4"	0.43	0.003	0.024	0.027	★	○	●	○	○	○
11ER24W	11EL24W	1.058	24	1/4"	0.43	0.003	0.024	0.027	★	○	●	○	○	○
11ER20W	11EL20W	1.27	20	1/4"	0.43	0.004	0.031	0.035	★	○	●	○	○	○
11ER19W	11EL19W	1.377	19	1/4"	0.43	0.006	0.031	0.039	★	○	●	○	○	○
11ER18W	11EL18W	1.411	18	1/4"	0.43	0.008	0.031	0.039	★	○	●	○	○	○
11ER16W	11EL16W	1.588	16	1/4"	0.43	0.009	0.035	0.043	★	○	●	○	○	○
11ER14W	11EL14W	1.814	14	1/4"	0.43	0.01	0.039	0.047	★	○	●	○	○	○
16ER28W	16EL28W	0.907	13	3/8"	0.63	0.003	0.024	0.027	★	○	●	○	○	○
16ER26W	16EL26W	0.977	26	3/8"	0.63	0.003	0.024	0.027	★	○	●	○	○	○
16ER24W	16EL24W	1.058	24	3/8"	0.63	0.003	0.024	0.027	★	○	●	○	○	○
16ER20W	16EL20W	1.27	20	3/8"	0.63	0.004	0.031	0.035	★	○	●	○	○	○
16ER19W	16EL19W	1.337	19	3/8"	0.63	0.006	0.031	0.039	★	○	●	○	○	○
16ER18W	16EL18W	1.411	18	3/8"	0.63	0.008	0.031	0.039	★	○	●	○	○	○
16ER16W	16EL16W	1.588	16	3/8"	0.63	0.009	0.035	0.043	★	○	●	○	○	○
16ER14W	16EL14W	1.814	14	3/8"	0.63	0.01	0.039	0.047	★	○	●	○	○	○
16ER12W	16EL12W	2.117	12	3/8"	0.63	0.011	0.043	0.055	★	○	●	○	○	○
16ER11W	16EL11W	2.309	11	3/8"	0.63	0.012	0.043	0.059	★	○	●	○	○	○
16ER10W	16EL10W	2.54	10	3/8"	0.63	0.013	0.043	0.059	★	○	●	○	○	○
16ER9W	16EL9W	2.822	9	3/8"	0.63	0.014	0.047	0.067	★	○	●	○	○	○
16ER8W	16EL8W	3.175	8	3/8"	0.63	0.014	0.047	0.059	★	○	●	○	○	○
16ER7W	16EL7W	3.629	7	3/8"	0.63	0.014	0.047	0.059	★	○	●	○	○	○
22ER7W	22EL7W	3.629	7	1/2"	0.87	0.015	0.063	0.088	★	○	●	○	○	○
22ER6W	22EL6W	4.233	6	1/2"	0.87	0.016	0.063	0.088	★	○	●	○	○	○
22ER5W	22EL5W	5.08	5	1/2"	0.87	0.016	0.063	0.088	★	○	●	○	○	○
22ER4.5W	22EL4.5W	5.644	4.5	1/2"	1.06	0.017	0.071	0.091	★	○	●	○	○	○
22ER4W	22EL4W	6.35	4	1/2"	1.06	0.02	0.071	0.091	★	○	●	○	○	○
27ER4.5W	27EL4.5W	5.644	4.5	5/8"	1.06	0.017			★	○	●	○	○	○
27ER4W	27EL4W	6.35	4	5/8"	1.06	0.02			★	○	●	○	○	○
27VER4W	27VEL4W	6.35	4	5/8"	1.06	0.02			★	○	●	○	○	○
27VER3W	27VEL3W	8.466	3	5/8"	1.06	0.048			★	○	●	○	○	○
27VER2.5W	27VEL2.5W	10.16	2.5	5/8"	1.06	0.056			★	○	●	○	○	○

★ Featured grade ○ Optional grade

A60

## 55° Whitworth Full Profile



Type Right Hand	Type Left Hand	Pitch		Insert Size		Dimensions			P	M	K	N		
		mm	TPI	IC	L/inch	R	X	Y	SP20	SP30	SM20	SM20S	SK10	SN10
11NR28W	11NL28W	0.907	28	1/4"	0.43	0.003	0.031	0.038	★	○	★	○	○	○
11NR26W	11NL26W	0.977	26	1/4"	0.43	0.003	0.031	0.035	★	○	★	○	○	○
11NR24W	11NL24W	1.058	24	1/4"	0.43	0.003	0.031	0.035	★	○	★	○	○	○
11NR20W	11NL20W	1.27	20	1/4"	0.43	0.004	0.031	0.035	★	○	★	○	○	○
11NR19W	11NL19W	1.377	19	1/4"	0.43	0.006	0.031	0.035	★	○	★	○	○	○
11NR18W	11NL18W	1.411	18	1/4"	0.43	0.007	0.031	0.035	★	○	★	○	○	○
11NR16W	11NL16W	1.588	16	1/4"	0.43	0.008	0.035	0.039	★	○	★	○	○	○
11NR14W	11NL14W	1.814	14	1/4"	0.43	0.009	0.035	0.039	★	○	★	○	○	○
16NR28W	16NL28W	0.907	13	3/8"	0.63	0.003	0.031	0.035	★	○	★	○	○	○
16NR26W	16NL26W	0.977	26	3/8"	0.63	0.003	0.031	0.035	★	○	★	○	○	○
16NR24W	16NL24W	1.058	24	3/8"	0.63	0.004	0.031	0.035	★	○	★	○	○	○
16NR20W	16NL20W	1.27	20	3/8"	0.63	0.006	0.031	0.035	★	○	★	○	○	○
16NR19W	16NL19W	1.337	19	3/8"	0.63	0.006	0.031	0.035	★	○	★	○	○	○
16NR18W	16NL18W	1.411	18	3/8"	0.63	0.008	0.031	0.035	★	○	★	○	○	○
16NR16W	16NL16W	1.588	16	3/8"	0.63	0.009	0.035	0.039	★	○	★	○	○	○
16NR14W	16NL14W	1.814	14	3/8"	0.63	0.009	0.035	0.039	★	○	★	○	○	○
16NR12W	16NL12W	2.117	12	3/8"	0.63	0.01	0.039	0.047	★	○	★	○	○	○
16NR11W	16NL11W	2.309	11	3/8"	0.63	0.011	0.039	0.055	★	○	★	○	○	○
16NR10W	16NL10W	2.54	10	3/8"	0.63	0.012	0.043	0.059	★	○	★	○	○	○
16NR9W	16NL9W	2.822	9	3/8"	0.63	0.013	0.043	0.059	★	○	★	○	○	○
16NR8W	16NL8W	3.175	8	3/8"	0.63	0.013	0.047	0.059	★	○	★	○	○	○
16NR7W	16NL7W	3.629	7	3/8"	0.63	0.013	0.047	0.059	★	○	★	○	○	○
22NR7W	22NL7W	3.629	7	1/2"	0.87	0.014	0.063	0.088	★	○	★	○	○	○
22NR6W	22NL6W	4.233	6	1/2"	0.87	0.014	0.063	0.088	★	○	★	○	○	○
22NR5W	22NL5W	5.08	5	1/2"	0.87	0.015	0.063	0.088	★	○	★	○	○	○
22NR4.5W	22NL4.5W	5.644	4.5	1/2"	1.06	0.016	0.072	0.091	★	○	★	○	○	○
22NR4W	22NL4W	6.35	4	1/2"	1.06	0.018	0.072	0.091	★	○	★	○	○	○
27NR4.5W	27NL4.5W	5.644	4.5	5/8"	1.06	0.017			★	○	★	○	○	○
27NR4W	27NL4W	6.35	4	5/8"	1.06	0.02			★	○	★	○	○	○
27VNR4W	27VNL4W	6.35	4	5/8"	1.06	0.02			★	○	★	○	○	○
27VNR3W	27VNL3W	8.466	3	5/8"	1.06	0.048			★	○	★	○	○	○
27VNR2.5W	27VNL2.5W	10.16	2.5	5/8"	1.06	0.056			★	○	★	○	○	○

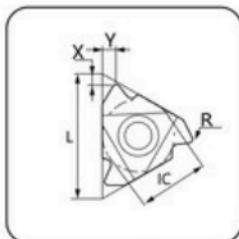
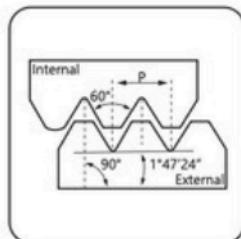
★ Featured grade ○ Optional grade

60°NPT

## EXTERNAL

60°NPT

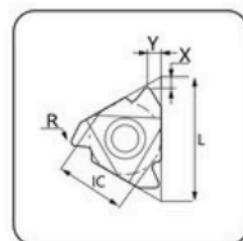
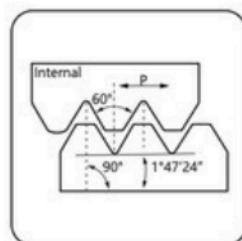
External



Type	Type	Pitch		Insert Size		Dimensions			P	M	K	N		
		mm	TPI	IC	L/inch	R	X	Y	SP20	SP30	SM20	SM205	SK10	SN10
Right Hand	Left Hand													
11ER27NPT	11EL27NPT	0.941	27	1/4"	0.43	0.003	0.031	0.027	★	○	★	○		○
11ER18NPT	11EL18NPT	1.411	18	1/4"	0.43	0.004	0.039	0.031	★	○	★	○		○
11ER14NPT	11EL14NPT	1.814	14	1/4"	0.43	0.006	0.047	0.035	★	○	★	○		○
16ER27NPT	16EL27NPT	0.941	27	1/4"	0.43	0.003	0.031	0.027	★	○	★	○		○
18ER18NPT	18EL18NPT	1.411	18	3/8"	0.63	0.004	0.039	0.031	★	○	★	○		○
16ER14NPT	16EL14NPT	1.814	14	3/8"	0.63	0.006	0.047	0.035	★	○	★	○		○
16ER11.5NPT	16EL11.5NPT	2.209	11.5	3/8"	0.63	0.008	0.059	0.043	★	○	★	○		○
16ER8NPT	16EL8NPT	3.175	8	3/8"	0.63	0.01	0.071	0.051	★	○	★	○		○

★ Featured grade ○ Optional grade

## INTERNAL

**60°NPT****Internal**

Type	Type	Pitch		Insert Size		Dimensions			P	M	K	N		
		mm	TPI	IC	L/inch	R	X	Y	SP20	SP30	SM20	SM20S	SK10	SN10
Right Hand	Left Hand													
11NR27NPT	11NL27NPT	0.941	27	1/4"	0.43	0.003	0.039	0.031	★	○	★	○		○
11NR18NPT	11NL18NPT	1.411	18	1/4"	0.43	0.004	0.039	0.031	★	○	★	○		○
11NR14NPT	11NL14NPT	1.814	14	1/4"	0.43	0.006	0.039	0.031	★	○	★	○		○
16NR27NPT	16NL27NPT	0.941	27	1/4"	0.43	0.003	0.039	0.031	★	○	★	○		○
18NR18NPT	18NL18NPT	1.411	18	3/8"	0.63	0.004	0.039	0.031	★	○	★	○		○
16NR14NPT	16NL14NPT	1.814	14	3/8"	0.63	0.005	0.039	0.031	★	○	★	○		○
16NR11.5NPT	16NL11.5NPT	2.209	11.5	3/8"	0.63	0.007	0.052	0.049	★	○	★	○		○
16NR8NPT	16NL8NPT	3.175	8	3/8"	0.63	0.009	0.071	0.051	★	○	★	○		○

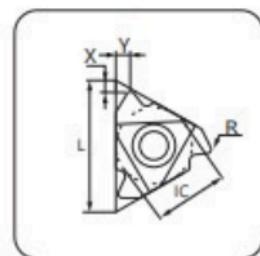
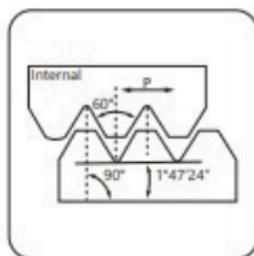
★ Featured grade ○ Optional grade

## EXTERNAL

60°NPTF

NPTF

External



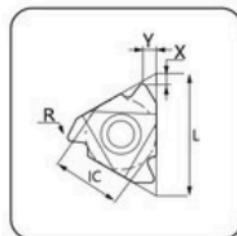
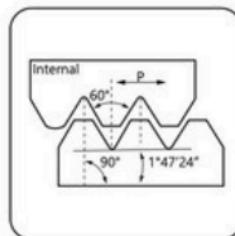
Type Right Hand	Type Left Hand	Pitch		Insert Size		Dimensions			P SP20	M SP50	K SM20	N SM205	K SK10	N SN10
		mm	TPI	IC	L/inch	R	X	Y	SP20	SP50	SM20	SM205	SK10	SN10
11ER27NPTF	11EL27NPTF	0.941	27	1/4"	0.43	0.003	0.039	0.031	★	○	★	○	○	○
11ER18NPTF	11EL18NPTF	1.411	18	1/4"	0.43	0.004	0.039	0.031	★	○	★	○	○	○
11ER14NPTF	11EL14NPTF	1.814	14	1/4"	0.43	0.005	0.039	0.031	★	○	★	○	○	○
16ER27NPTF	16EL27NPTF	0.941	27	1/4"	0.43	0.003	0.039	0.031	★	○	★	○	○	○
18ER18NPTF	18EL18NPTF	1.411	18	3/8"	0.63	0.004	0.039	0.031	★	○	★	○	○	○
16ER14NPTF	16EL14NPTF	1.814	14	3/8"	0.63	0.005	0.039	0.031	★	○	★	○	○	○
16ER11.5NPTF	16EL11.5NPTF	2.209	11.5	3/8"	0.63	0.007	0.052	0.049	★	○	★	○	○	○
16ERBNPTF	16EL8NPTF	3.175	8	3/8"	0.63	0.009	0.071	0.051	★	○	★	○	○	○

★ Featured grade ○ Optional grade }

## INTERNAL

60°NPTF

Internal



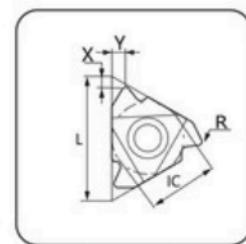
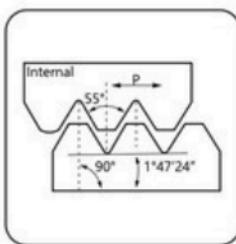
Type	Type	Pitch		Insert Size		Dimensions			P	M	K	N		
		mm	TPI	IC	L/inch	R	X	Y	SP20	SP30	SM20	SM205	SK10	SN10
Right Hand	Left Hand													
11NR27NPTF	11NL27NPTF	0.941	27	1/4"	0.43	0.003	0.039	0.031	★	○	★	○	○	○
11NR18NPTF	11NL18NPTF	1.411	18	1/4"	0.43	0.004	0.039	0.031	★	○	★	○	○	○
11NR14NPTF	11NL14NPTF	1.814	14	1/4"	0.43	0.005	0.039	0.031	★	○	★	○	○	○
16NR27NPTF	16NL27NPTF	0.941	27	1/4"	0.43	0.003	0.039	0.031	★	○	★	○	○	○
18NR18NPTF	18NL18NPTF	1.411	18	3/8"	0.63	0.003	0.039	0.031	★	○	★	○	○	○
16NR14NPTF	16NL14NPTF	1.814	14	3/8"	0.63	0.004	0.039	0.031	★	○	★	○	○	○
16NR11.5NPTF	16NL11.5NPTF	2.209	11.5	3/8"	0.63	0.006	0.052	0.049	★	○	★	○	○	○
16NR8NPTF	16NL8NPTF	3.175	8	3/8"	0.63	0.008	0.071	0.051	★	○	★	○	○	○

★ Featured grade ○ Optional grade

## EXTERNAL

BSPT-55°

External



Type	Type	Pitch		Insert Size		Dimensions			P	M	K	N		
		mm	TPI	IC	L/inch	R	X	Y	SP20	SP30	SM20	SM205	SK10	SN10
Right Hand	Left Hand													
11ER28BSPT	11EL28BSPT	0.907	28	1/4"	0.43	0.003	0.031	0.035	★	○	★	○	○	○
11ER19BSPT	11EL19BSPT	1.337	19	1/4"	0.43	0.004	0.037	0.039	★	○	★	○	○	○
11ER14BSPT	11EL14BSPT	1.814	14	1/4"	0.43	0.006	0.047	0.039	★	○	★	○	○	○
16ER28BSPT	16EL28BSPT	0.907	28	3/8"	0.63	0.003	0.031	0.035	★	○	★	○	○	○
18ER19BSPT	18EL19BSPT	1.337	19	3/8"	0.63	0.004	0.037	0.039	★	○	★	○	○	○
16ER14BSPT	16EL14BSPT	1.814	14	3/8"	0.63	0.006	0.047	0.039	★	○	★	○	○	○
16ER11BSPT	16EL11BSPT	2.309	11	3/8"	0.63	0.007	0.059	0.041	★	○	★	○	○	○

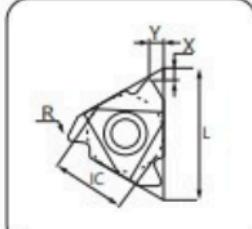
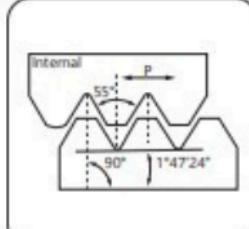
★ Featured grade ○ Optional grade

## INTERNAL

BSPT-55°

BSPT

Internal



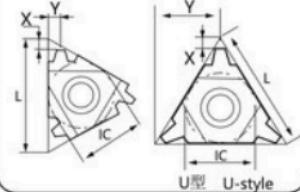
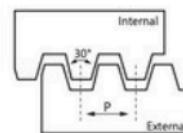
Type	Type	Pitch		Insert Size		Dimensions			P	M	K	N		
		mm	TPI	IC	L/inch	R	X	Y	SP20	SP30	SM20	SM205	SK10	SN10
Right Hand	Left Hand													
11NR28BSPT	11NL28BSPT	0.907	28	1/4"	0.43	0.003	0.031	0.035	★	○	★	○		○
11NR19BSPT	11NL19BSPT	1.337	19	1/4"	0.43	0.004	0.037	0.039	★	○	★	○		○
11NR14BSPT	11NL14BSPT	1.814	14	1/4"	0.43	0.006	0.047	0.039	★	○	★	○		○
16NR28BSPT	16NL28BSPT	0.907	28	3/8"	0.63	0.003	0.031	0.035	★	○	★	○		○
18NR19BSPT	18NL19BSPT	1.337	19	3/8"	0.63	0.004	0.037	0.039	★	○	★	○		○
16NR14BSPT	16NL14BSPT	1.814	14	3/8"	0.63	0.005	0.047	0.039	★	○	★	○		○
16NR11BSPT	16NL11BSPT	2.309	11	3/8"	0.63	0.006	0.059	0.041	★	○	★	○		○

★ Featured grade ○ Optional grade

## EXTERNAL

TR-30°

External



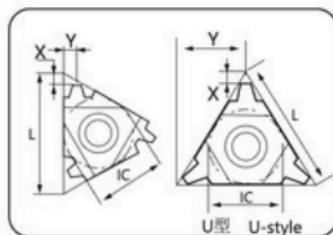
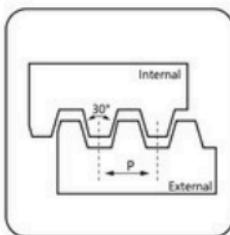
Type	Type	Pitch		Insert Size		Dimensions			P	M	K	N		
		mm	TPI	IC	L/inch	R	X	Y	SP20	SP30	SM20	SM205	SK10	SN10
Right Hand	Left Hand													
16ER1.5TR	16EL1.5TR	1.5		3/8"	0.63	0.003	0.041	0.039	★	○	★	○		○
16ER2.0TR	16EL2.0TR	2		3/8"	0.63	0.004	0.051	0.043	★	○	★	○		○
16ER3.0TR	16EL3.0TR	3		3/8"	0.63	0.006	0.059	0.051	★	○	★	○		○
22ER4.0TR	22EL4.0TR	4		1/2"	0.87	0.008	0.075	0.067	★	○	★	○		○
22ER5.0TR	22EL5.0TR	5		1/2"	0.87	0.009	0.098	0.083	★	○	★	○		○
22ER6.0TR	22EL6.0TR	6		1/2"	0.87	0.011	0.101	0.099	★	○	★	○		○
22ER7.0TR	22EL7.0TR	7		1/2"	0.87	0.012	0.095	0.54	★	○	★	○		○
27ER6.0TR	27EL6.0TR	6		5/8"	1.06	0.011			★	○	★	○		○
27ER7.0TR	27EL7.0TR	7		5/8"	1.06	0.012			★	○	★	○		○
27VER6.0TR	27VEL6.0TR	6		5/8"	1.06	0.008			★	○	★	○		○
27VER7.0TR	27VEL7.0TR	7		5/8"	1.06	0.009			★	○	★	○		○
27VER8.0TR	27VEL8.0TR	8		5/8"	1.06	0.011			★	○	★	○		○
27VER9.0TR	27VEL9.0TR	9		5/8"	1.06	0.012			★	○	★	○		○
27VER10TR	27VEL10TR	10		5/8"	1.06	0.013			★	○	★	○		○
27VER12TR	27VEL12TR	12		5/8"	1.06	0.014			★	○	★	○		○

★ Featured grade ○ Optional grade

## INTERNAL

TR-30°

Internal



Type	Type	Pitch		Insert Size		Dimensions			P	M	K	N		
		mm	TPI	IC	L/inch	R	X	Y	SP20	SP30	SM20	SM205	SK10	SN10
Right Hand	Left Hand													
16NR1.5TR	16NL1.5TR	1.5		3/8"	0.63	0.003	0.041	0.039	★	○	★	○		○
16NR2.0TR	16NL2.0TR	2		3/8"	0.63	0.004	0.051	0.043	★	○	★	○		○
16NR3.0TR	16NL3.0TR	3		3/8"	0.63	0.006	0.059	0.051	★	○	★	○		○
22NR4.0TR	22NL4.0TR	4		1/2"	0.87	0.008	0.075	0.067	★	○	★	○		○
22NR5.0TR	22NL5.0TR	5		1/2"	0.87	0.009	0.098	0.083	★	○	★	○		○
22NR6.0TR	22NL6.0TR	6		1/2"	0.87	0.01	0.101	0.099	★	○	★	○		○
22NR7.0TR	22NL7.0TR	7		1/2"	0.87	0.011	0.095	0.054	★	○	★	○		○
27NR6.0TR	27NL6.0TR	6		5/8"	1.06	0.011			★	○	★	○		○
27NR7.0TR	27NL7.0TR	7		5/8"	1.06	0.012			★	○	★	○		○
27VNR6.0TR	27VNL6.0TR	6		5/8"	1.06	0.008			★	○	★	○		○
27VNR7.0TR	27VNL7.0TR	7		5/8"	1.06	0.009			★	○	★	○		○
27VNR8.0TR	27VNL8.0TR	8		5/8"	1.06	0.011			★	○	★	○		○
27VNR9.0TR	27VNL9.0TR	9		5/8"	1.06	0.012			★	○	★	○		○
27VNR10TR	27VNL10TR	10		5/8"	1.06	0.013			★	○	★	○		○
27VNR12TR	27VNL12TR	12		5/8"	1.06	0.014			★	○	★	○		○

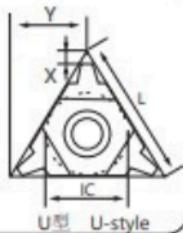
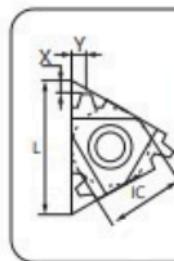
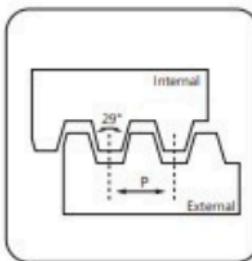
★ Featured grade ○ Optional grade

## EXTERNAL

ACME-29°

American ACME

## External



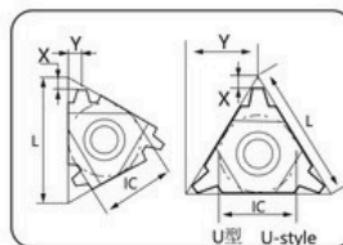
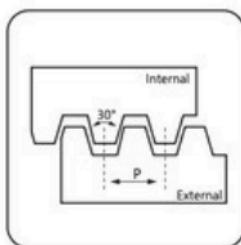
Type	Type	Pitch		Insert Size		Dimensions			P	M	K	N		
		mm	TPI	IC	L/inch	R	X	Y	SIP20	SIP30	SM20	SM205	SK10	SN10
Right Hand	Left Hand													
16ER16ACME	16EL16ACME	1.588	16	3/8"	0.63	0.003	0.043	0.039	★	○	★	○		○
16ER14ACME	16EL14ACME	1.814	14	3/8"	0.63	0.004	0.043	0.039	★	○	★	○		○
16ER12ACME	16EL12ACME	2.117	12	3/8"	0.63	0.006	0.047	0.043	★	○	★	○		○
16ER10ACME	16EL10ACME	2.54	10	3/8"	0.63	0.008	0.055	0.051	★	○	★	○		○
16ER8ACME	16EL8ACME	3.175	8	3/8"	0.63	0.009	0.059	0.055	★	○	★	○		○
22ER6ACME	22EL6ACME	4.233	6	1/2"	0.87	0.011	0.083	0.071	★	○	★	○		○
22ER5ACME	22EL5ACME	5.08	5	1/2"	0.87	0.016	0.09	0.079	★	○	★	○		○
22ER4ACME	22EL4ACME	6.35	4	1/2"	0.87	0.021	0.112	0.092	★	○	★	○		○
27ER4ACME	27EL4ACME	6.35	4	5/8"	1.06	0.021			★	○	★	○		○
27VER3ACME	27VEL3ACME	8.466	3	5/8"	1.06	0.026			★	○	★	○		○

★ Featured grade ○ Optional grade

## INTERNAL

ACME-29°

Internal



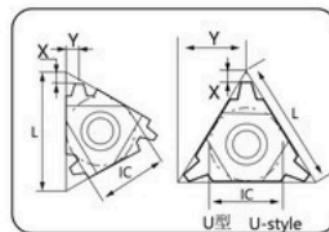
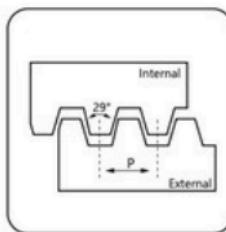
Type	Type	Pitch		Insert Size		Dimensions			P	M	K	N		
		mm	TPI	IC	L/inch	R	X	Y	SP20	SP30	SM20	SM205	SK10	SN10
16NR16ACME	16NL16ACME	1.588	16	3/8"	0.63	0.003	0.043	0.039	★	○	★	○		○
16NR14ACME	16NL14ACME	1.814	14	3/8"	0.63	0.004	0.043	0.039	★	○	★	○		○
16NR12ACME	16NL12ACME	2.117	12	3/8"	0.63	0.006	0.047	0.043	★	○	★	○		○
16NR10ACME	16NL10ACME	2.54	10	3/8"	0.63	0.007	0.055	0.051	★	○	★	○		○
16NR8ACME	16NL8ACME	3.175	8	3/8"	0.63	0.008	0.059	0.055	★	○	★	○		○
22NR6ACME	22NL6ACME	4.233	6	1/2"	0.87	0.01	0.083	0.071	★	○	★	○		○
22NR5ACME	22NL5ACME	5.08	5	1/2"	0.87	0.014	0.09	0.079	★	○	★	○		○
22NR4ACME	22NL4ACME	6.35	4	1/2"	0.87	0.019	0.112	0.092	★	○	★	○		○
27NR4ACME	27NL4ACME	6.35	4	5/8"	1.06	0.021			★	○	★	○		○
27VNR3ACME	27VNL3ACME	8.466	3	5/8"	1.06	0.026			★	○	★	○		○

★ Featured grade ○ Optional grade

## EXTERNAL

## STACME-29°

## External



Type	Type	Pitch		Insert Size		Dimensions			P	M	K	N		
		mm	TPI	IC	L/inch	R	X	Y	SP20	SP30	SM20	SM4205	SK10	SN10
Right Hand	Left Hand													
16ER16STACME	16EL16STACME	1.588	16	3/8"	0.63	0.003	0.039	0.039	★	○	★	○		○
16ER14STACME	16EL14STACME	1.814	14	3/8"	0.63	0.004	0.039	0.039	★	○	★	○		○
16ER12STACME	16EL12STACME	2.117	12	3/8"	0.63	0.006	0.051	0.047	★	○	★	○		○
16ER10STACME	16EL10STACME	2.54	10	3/8"	0.63	0.008	0.051	0.047	★	○	★	○		○
16ER8STACME	16EL8STACME	3.175	8	3/8"	0.63	0.009	0.059	0.055	★	○	★	○		○
16ER6TSTACME	16EL6TSTACME	4.233	6	3/8"	0.63	0.011	0.059	0.055	★	○	★	○		○
22ER6STACME	22EL6STACME	4.233	6	1/2"	0.87	0.011	0.059	0.055	★	○	★	○		○
22ER5STACME	22EL5STACME	5.08	5	1/2"	0.87	0.016	0.09	0.083	★	○	★	○		○
22ER4STACME	22EL4STACME	6.35	4	1/2"	0.87	0.021	0.099	0.087	★	○	★	○		○
27ER4STACME	27EL4STACME	6.35	4	5/8"	1.06	0.021			★	○	★	○		○
27VER3STACME	27VEL3STACME	8.466	3	5/8"	1.06	0.026			★	○	★	○		○

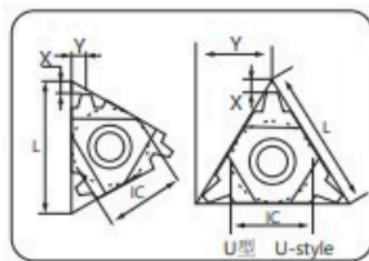
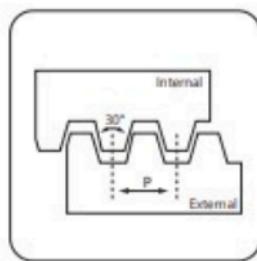
\* Featured grade ○ Optional grade

## INTERNAL

STACME-29°

Stub ACME

Internal



Type	Type	Pitch		Insert Size		Dimensions			P	M	K	N		
		mm	TPI	IC	L/inch	R	X	Y	SP20	SP30	SM20	SM25	SK10	SN10
Right Hand	Left Hand													
16NR16STACME	16NL16STACME	1.588	16	3/8"	0.63	0.003	0.039	0.039	★	○	★	○		○
16NR14STACME	16NL14STACME	1.814	14	3/8"	0.63	0.004	0.039	0.039	★	○	★	○		○
16NR12STACME	16NL12STACME	2.117	12	3/8"	0.63	0.006	0.051	0.047	★	○	★	○		○
16NR10STACME	16NL10STACME	2.54	10	3/8"	0.63	0.007	0.051	0.047	★	○	★	○		○
16NR8STACME	16NL8STACME	3.175	8	3/8"	0.63	0.008	0.059	0.055	★	○	★	○		○
16NR6STACME	16NL6STACME	4.233	6	3/8"	0.63	0.009	0.059	0.055	★	○	★	○		○
22NR6STACME	22NL6STACME	4.233	6	1/2"	0.87	0.009	0.059	0.055	★	○	★	○		○
22NR5STACME	22NL5STACME	5.08	5	1/2"	0.87	0.014	0.09	0.083	★	○	★	○		○
22NR4STACME	22NL4STACME	6.35	4	1/2"	0.87	0.019	0.099	0.087	★	○	★	○		○
27NR4STACME	27NL4STACME	6.35	4	5/8"	1.06	0.021			★	○	★	○		○
27VNR3STACME	27VNL3STACME	8.466	3	5/8"	1.06	0.026			★	○	★	○		○

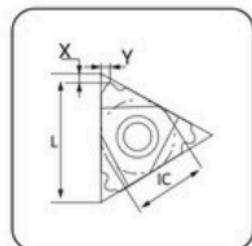
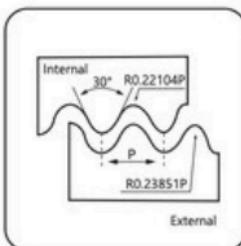
★ Featured grade ○ Optional grade

## EXTERNAL

RD

30° DIN 405

External



Type Right Hand	Type Left Hand	Pitch		Insert Size		Dimensions			P		M		K	N
		mm	TPI	IC	L/inch	R	X	Y	SP20	SP30	SM20	SM20S	SK10	SN10
16ER10RD	16EL10RD	2.54	10	3/8"	0.63	0.024	0.051	0.055	★	○	★	○		○
16ER8RD	16EL8RD	3.175	8	3/8"	0.63	0.03	0.059	0.063	★	○	★	○		○
16ER6RD	16EL6RD	4.23	6	3/8"	0.63	0.04	0.067	0.059	★	○	★	○		○
22ER6RD	22EL6RD	4.23	6	2/1"	0.87	0.04	0.067	0.059	★	○	★	○		○
22ER5RD	22EL5RD	5.08	5	2/1"	0.87	0.048	0.078	0.066	★	○	★	○		○
22ER4RD	22EL4RD	6.35	4	2/1"	0.87	0.059	0.092	0.087	★	○	★	○		○

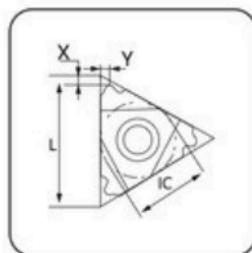
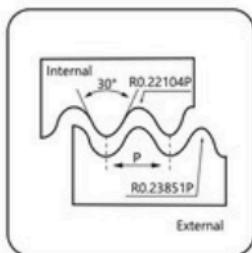
★ Featured grade ○ Optional grade

## INTERNAL

RD

30° DIN 405

## Internal



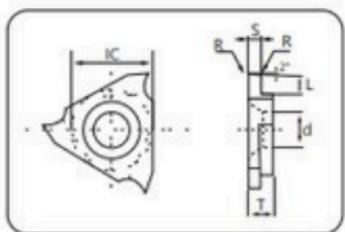
Type Right Hand	Type Left Hand	Pitch		Insert Size		Dimensions			P SP20	P SP30	M SM20	K SM205	N SK10	
		mm	TPI	IC	L/inch	R	X	Y						
16NR10RD	16NL10RD	2.54	10	3/8"	0.63	0.022	0.051	0.055	★	○	★	○		
16NR8RD	16NL8RD	3.175	8	3/8"	0.63	0.028	0.059	0.063	★	○	★	○		
16NR6RD	16NL6RD	4.23	6	3/8"	0.63	0.037	0.067	0.059	★	○	★	○		
22NR6RD	22NL6RD	4.23	6	2/1"	0.87	0.037	0.067	0.059	★	○	★	○		
22NR5RD	22NL5RD	5.08	5	2/1"	0.87	0.048	0.078	0.066	★	○	★	○		
22NR4RD	22NL4RD	6.35	4	2/1"	0.87	0.055	0.091	0.087	★	○	★	○		

★ Featured grade ○ Optional grade

## TGF32 GROOVING INSERT

**TGF32**

TGF32 Grooving Insert



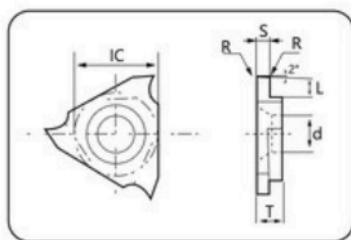
Type Right Hand	Type Left Hand	Dimensions						P	S	K	N	
		IC	T	d	S	L	R	SP20	SM015	SG025	SK10	SN10
TGF32R033	TGF32L033	9.525	3.18	4.5	0.33	0.85	0.05		★	○	○	○
TGF32R050	TGF32L050	9.525	3.18	4.5	0.5	1.25	0.05		★	○	○	○
TGF32R060	TGF32L060	9.525	3.18	4.5	0.6	1.25	0.05		★	○	○	○
TGF32R065	TGF32L065	9.525	3.18	4.5	0.65	2.05	0.1		★	○	○	○
TGF32R075	TGF32L075	9.525	3.18	4.5	0.75	2.05	0.1		★	○	○	○
TGF32R080	TGF32L080	9.525	3.18	4.5	0.8	2.05	0.1		★	○	○	○
TGF32R090	TGF32L090	9.525	3.18	4.5	0.9	2.05	0.1		★	○	○	○
TGF32R095	TGF32L0895	9.525	3.18	4.4	0.95	2.05	0.1		★	○	○	○
TGF32R100	TGF32L100	9.525	3.18	4.5	1	2.2	0.1		★	○	○	○
TGF32R110	TGF32L110	9.525	3.18	4.5	1.1	2.2	0.1		★	○	○	○
TGF32R115	TGF32L115	9.525	3.18	4.5	1.15	2.2	0.1		★	○	○	○
TGF32R120	TGF32L120	9.525	3.18	4.5	1.2	2.2	0.1		★	○	○	○
TGF32R125	TGF32L125	9.525	3.18	4.5	1.25	2.2	0.1		★	○	○	○
TGF32R130	TGF32L130	9.525	3.18	4.5	1.3	2.2	0.1		★	○	○	○
TGF32R140	TGF32L140	9.525	3.18	4.5	1.4	2.2	0.1		★	○	○	○
TGF32R145	TGF32L145	9.525	3.18	4.5	1.45	2.2	0.1		★	○	○	○
TGF32R150	TGF32L150	9.525	3.18	4.5	1.5	2.2	0.1		★	○	○	○
TGF32R160	TGF32L160	9.525	3.18	4.5	1.6	2.4	0.15		★	○	○	○

★ Featured grade ○ Optional grade

## TGF32 GROOVING INSERT

**TGF32**

## TGF32 Grooving Insert



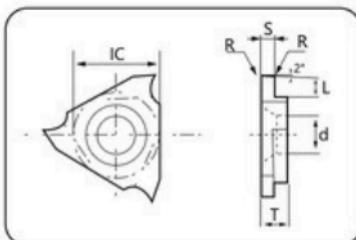
Type	Type	Dimensions						SP20	SM20	SG205	SK10	SN10
		IC	T	d	S	L	R					
Right Hand	Left Hand											
TGF32R165	TGF32L165	9.525	3.18	4.5	1.65	2.4	0.15	★	○			○
TGF32R170	TGF32L170	9.525	3.18	4.5	1.7	2.4	0.15	★	○			○
TGF32R175	TGF32L175	9.525	3.18	4.5	1.75	2.4	0.15	★	○			○
TGF32R180	TGF32L180	9.525	3.18	4.5	1.8	2.4	0.15	★	○			○
TGF32R185	TGF32L185	9.525	3.18	4.5	1.85	2.4	0.15	★	○			○
TGF32R200	TGF32L200	9.525	3.18	4.5	2	2.7	0.15	★	○			○
TGF32R215	TGF32L215	9.525	3.18	4.5	2.15	2.7	0.15	★	○			○
TGF32R220	TGF32L220	9.525	3.18	4.4	2.2	2.7	0.15	★	○			○
TGF32R225	TGF32L225	9.525	3.18	4.5	2.25	2.7	0.15	★	○			○
TGF32R230	TGF32L230	9.525	3.18	4.5	2.3	2.7	0.15	★	○			○
TGF32R240	TGF32L240	9.525	3.18	4.5	2.4	2.7	0.15	★	○			○
TGF32R250	TGF32L250	9.525	3.18	4.5	2.5	3	0.15	★	○			○
TGF32R265	TGF32L265	9.525	3.18	4.5	2.65	3	0.15	★	○			○
TGF32R270	TGF32L270	9.525	3.18	4.5	2.7	3	0.15	★	○			○
TGF32R275	TGF32L275	9.525	3.18	4.5	2.75	3	0.15	★	○			○
TGF32R280	TGF32L280	9.525	3.18	4.5	2.8	3	0.15	★	○			○
TGF32R300	TGF32L300	9.525	3.18	4.5	3	3.4	0.2	★	○			○
TGF32R320	TGF32L320	9.525	3.18	4.5	3.2	3.4	0.2	★	○			○

★ Featured grade ○ Optional grade

## TGF32 GROOVING INSERT

**TGF32**

TGF32 Grooving Insert



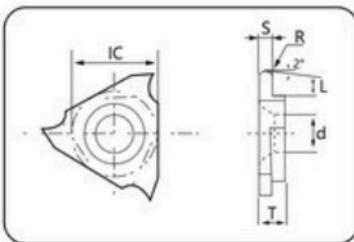
Type Right Hand	Type Left Hand	Dimensions						P	S	K	N	
		IC	T	d	S	L	R	SP20	SM015	SG025	SK10	SN10
TGF32R050L220	TGF32L050L220	9.525	3.18	4.5	0.5	2.2	0.05	★	○			○
TGF32R100L330	TGF32L100L330	9.525	3.18	4.5	1	3.3	0.1	★	○			○
TGF32R150L380	TGF32L150L380	9.525	3.18	4.5	1.5	3.8	0.1	★	○			○
TGF32R200L400	TGF32L200L400	9.525	3.18	4.5	2	4	0.1	★	○			○
TGF32R250L400	TGF32L250L400	9.525	3.18	4.5	2.5	4	0.4	★	○			○

★ Featured grade ○ Optional grade

## TGF32 GROOVING INSERT

**TGF32**

TGF32 Grooving Insert

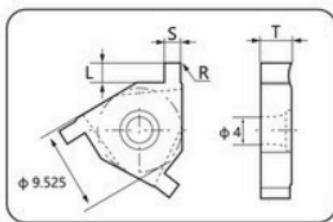


Type 	Type 	Dimensions						P	S	K	N	
		IC	T	d	S	L	R	SP20	SM015	SG205	SK10	SN10
TGF32R100-R0.5	TGF32L100-R0.5	9.525	3.18	4.5	1	2.2	0.5		★	○		○
TGF32R150-R0.75	TGF32L150-R0.75	9.525	3.18	4.5	1.5	2.2	0.75		★	○		○
TGF32R200-R1	TGF32L200-R1	9.525	3.18	4.5	2	2.7	1		★	○		○
TGF32R250-R1.25	TGF32L250-R1.25	9.525	3.18	4.5	2.5	3	1.25		★	○		○
TGF32R300-R1.5	TGF32L300-R1.5	9.525	3.18	4.5	3	3.2	1.5		★	○		○

★ Featured grade ○ Optional grade

## T11/T16 CIRCLIP GROOVING INSERT

## T11/T16 Circlip Grooving Insert



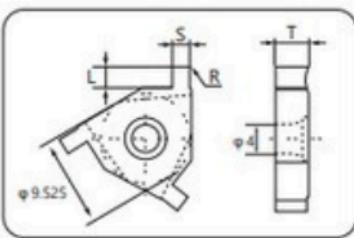
Type 	Type 	Dimensions			P	S	K	N	
		T	S±0.02	L	R	SP20	SM015	SG025	SK10
T11N050	T11E050	3.18	0.5	1	0.06	★	○		○
T11N060	T11E060	3.18	0.6	1	0.06	★	○		○
T11N080	T11E080	3.18	0.8	1.2	0.06	★	○		○
T11N100	T11E100	3.18	1	1.5	0.06	★	○		○
T11N120	T11E120	3.18	1.2	1.5	0.1	★	○		○
T11N140	T11E140	3.18	1.4	1.5	0.1	★	○		○
T11N150	T11E150	3.18	1.5	1.5	0.1	★	○		○
T11N180	T11E180	3.18	1.8	1.3	0.1	★	○		○
T16N033	T16E033	3.65	0.33	1.6	0.06	★	○		○
T16N050	T16E050	3.65	0.5	1.6	0.06	★	○		○
T16N075	T16E075	3.65	0.75	1.6	0.06	★	○		○
T16N080	T16E080	3.65	0.8	1.6	0.06	★	○		○
T16N095	T16E095	3.65	0.95	1.6	0.06	★	○		○
T16N100	T16E100	3.65	1	1.8	0.1	★	○		○
T16N110	T16E110	3.65	1.1	1.8	0.1	★	○		○
T16N115	T16E115	3.65	1.15	1.8	0.1	★	○		○

★ Featured grade ○ Optional grade

## T11/T16 CIRCLIP GROOVING INSERT

T11/T16

## T11/T16 Circlip Grooving Insert

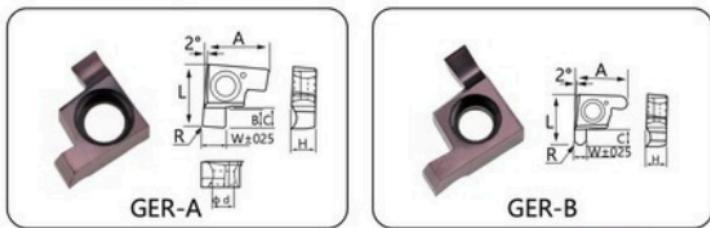


Type	Type	Dimensions				P	S	K	N
		T	S±0.02	L	R	SP20	SM015	SG025	SK10
Internal Grooving Insert	External Grooving Insert								
T16N120	T16E120	3.65	1.2	1.8	0.1	★	○		○
T16N125	T16E125	3.65	1.25	1.8	0.1	★	○		○
T16N140	T16E140	3.65	1.4	1.8	0.1	★	○		○
T16N145	T16E145	3.65	1.45	1.8	0.1	★	○		○
T16N150	T16E150	3.65	1.5	1.8	0.1	★	○		○
T16N160	T16E160	3.65	1.6	1.8	0.1	★	○		○
T16N175	T16E175	3.65	1.75	1.8	0.1	★	○		○
T16N180	T16E180	3.65	1.8	1.8	0.1	★	○		○
T16N200	T16E200	3.65	2	1.8	0.1	★	○		○
T16N215	T16E215	3.64	2.15	2	0.2	★	○		○
T16N225	T16E225	3.65	2.25	2	0.2	★	○		○
T16N230	T16E230	3.65	2.3	2	0.2	★	○		○
T16N250	T16E250	3.65	2.5	2	0.2	★	○		○
T16N265	T16E265	3.65	2.65	2.2	0.2	★	○		○
T16N300	T16E300	3.65	3	2	0.2	★	○		○

★ Featured grade ○ Optional grade

## GE GROOVING INSERT

## GE Grooving Insert



Type	Type	Dimensions			Toolholders	P	S	K	N
		W	B	R		SP20	SM015	SG025	SK10
Right Hand	Left hand								
GER100-A	GEL100-A	1	1.5	0.05	SIGER/L...A SIGER/L...A	★	○		○
GER120-A	GEL120-A	1.2	1.5	0.05		★	○		○
GER125-A	GEL125-A	1.25	1.5	0.05		★	○		○
GER150-A	GEL150-A	1.5	1.5	0.1		★	○		○
GER200-A	GEL200-A	2	1.5	0.1		★	○		○
GER100-B	GEL100-B	1	2.2	0.05		★	○		○
GER120-B	GEL120-B	1.2	2.2	0.05		★	○		○
GER125-B	GEL125-B	1.25	2.2	0.05		★	○		○
GER145-B	GEL145-B	1.45	2.2	0.1		★	○		○
GER150-B	GEL150-B	1.5	2.2	0.1		★	○		○
GER200-B	GEL200-B	2	2.2	0.1	SIGER/L...B SIGER/L...B SIGER/L...B-A90	★	○		○
GER250-B	GEL250-B	2.5	2.2	0.2		★	○		○
GER300-B	GEL300-B	3	2.2	0.2.		★	○		○
GER100-050AR	GEL100-050AL	1	1.5	0.5		★	○		○
GER200-100AR	GEL200-100AL	2	1.5	0.5	SIGER/L...B SIGER/L...B SIGER/L...B-A90	★	○		○
GER100-050BR	GEL100-050BL	1	2.2	1		★	○		○
GER200-100BR	GEL200-100BL	2	2.2	1		★	○		○

	A	L	H	qd
GER/L-A	669	6.5	2.58	2.5
GER/L-AR				
GER/L-B	845	8.2	3.18	2.7
GER/L-BR				

★ Featured grade ○ Optional grade

## GE GROOVING INSERT

GE

## GE Grooving Insert



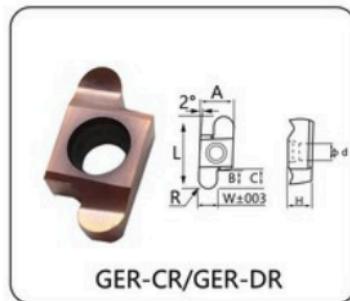
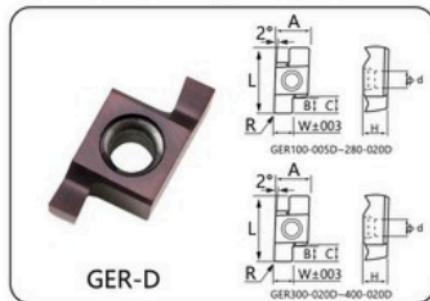
Type	Type	Dimensions			Toolholders	P	S	K	N
		W	B	R		SP20	SM015	SG025	SK10
Right Hand	Left hand								
GER100-C	GEL100-C	1	2.5	0.05			★	○	○
GER120-C	GEL120-C	1.2	2.5	0.05			★	○	○
GER125-C	GEL125-C	1.25	2.5	0.05			★	○	○
GER140-C	GEL140-C	1.4	2.5	0.05			★	○	○
GER145-C	GEL145-C	1.45	2.5	0.1			★	○	○
GER150-C	GEL150-C	1.5	2.5	0.1	SIGER/L-C		★	○	○
GER170-C	GEL170-C	1.7	2.5	0.1	SIGER/L-C		★	○	○
GER185-C	GEL185-C	1.85	2.5	0.1	SIGER/L-C-A90		★	○	○
GER195-C	GEL195-C	1.95	2.5	0.1			★	○	○
GER200-C	GEL200-C	2	2.5	0.1			★	○	○
GER250-C	GEL250-C	2.5	2.5	0.2			★	○	○
GER300-C	GEL300-C	3	2.5	0.2			★	○	○
GER350-C	GEL350-C	3.5	2.5	0.2			★	○	○
GER100-D	GEL100-D	1	2.5	0.05	SIGER/L-D		★	○	○
GER140-D	GEL140-D	1.4	2.5	0.05			★	○	○
GER145-D	GEL145-D	1.45	2.5	0.1			★	○	○
GER150-D	GEL150-D	1.5	3	0.1			★	○	○
GER170-D	GEL170-D	1.7	3	0.1			★	○	○
GER185-D	GEL185-D	1.85	3	0.1			★	○	○

	A	L	H	ød
GER/L-A	6.69	65	258	25
GER/L-AR				
GER/L-B	8.45	82	338	27
GER/L-BR				

★ Featured grade ○ Optional grade

## GE GROOVING INSERT

## GE Grooving Insert



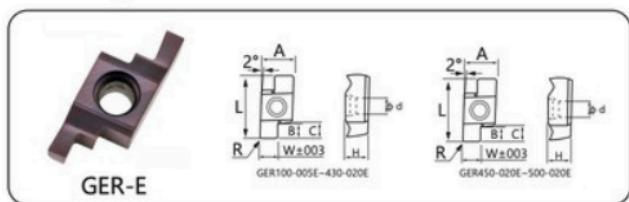
型号 Right Insert Code	型号 Left Insert Code	尺寸 Dimensions			适用刀杆 Applicable Holder Code	P	S	K	N
		W	B	R		SP20	SM015	SG025	SK10
GER195-D	GEL195-D	1.95		0.1	SIGER/L--D	★	○		○
GER200-D	GEL200-D	2	3.2	0.1		★	○		○
GER225-D	GEL225-D	2.25	3.2	0.1		★	○		○
GER230-D	GEL230-D	2.3	3.2	0.2		★	○		○
GER250-D	GEL250-D	2.5	3.2	0.2		★	○		○
GER275-D	GEL275-D	2.75	3.2	0.2		★	○		○
GER280-D	GEL280-D	2.8	3.2	0.2		★	○		○
GER300-D	GEL300-D	3	4.5	0.2		★	○		○
GER330-D	GEL330-D	3.3	4.5	0.2		★	○		○
GER350-D	GEL350-D	3.5	4.5	0.2		★	○		○
GER400-D	GEL400-D	4	4.5	0.2	SIGR/L--C	★	○		○
GER200-100CR	GLR200-100CR	2	2.5	1		★	○		○
GER250-125CR	GLR250-125CR	2.5	2.5	1.25		★	○		○
GER300-150CR	GLR300-150CR	3	2.5	1.5		★	○		○
GER200-100DR	GLR200-100DR	2	3.2	1	SIGER/L--D	★	○		○
GER300-150DR	GLR300-150DR	3	4.5	1.5		★	○		○

★ 主推牌号 ○ 可选牌号

型号	A	L	H	qd
GER/L--C	5.8	11.48	4.05	2.8
GER/L--CR				
GER/L--D	6.8	16.44	5.05	4.4
GER/L--DR				
GER/L--E	9.54	21.6	5.55	4.4

## GE GROOVING INSERT

## GE Grooving Insert



Type	Type	Dimensions			Toolholders	P	S	K	N
		W	B	R		SP20	SM015	SG025	SK10
Right Hand	Left hand					★	○		○
GER100-E	GEL100-E	1	2.5	0.05		★	○		○
GER150-E	GEL150-E	1.5	3	0.1		★	○		○
GER170-E	GEL170-E	1.7	3	0.1		★	○		○
GER185-E	GEL185-E	1.85	3	0.1		★	○		○
GER195-E	GEL195-E	1.95	3	0.1		★	○		○
GER200-E	GEL200-E	2	3.2	0.1		★	○		○
GER225-E	GEL225-E	2.25	3.2	0.1		★	○		○
GER230-E	GEL230-E	2.3	3.2	0.2		★	○		○
GER250-E	GEL250-E	2.5	4.5	0.2		★	○		○
GER275-E	GEL275-E	2.75	4.5	0.2	SIGER/L-E	★	○		○
GER280-E	GEL280-E	2.8	4.5	0.2		★	○		○
GER300-E	GEL300-E	3	4.5	0.2		★	○		○
GER330-E	GEL330-E	3.3	4.5	0.2		★	○		○
GER350-E	GEL350-E	3.5	5.5	0.2		★	○		○
GER400-E	GEL400-E	4	5.5	0.2		★	○		○
GER430-E	GEL430-E	4.3	5.5	0.2		★	○		○
GER450-E	GEL450-E	4.5	6.5	0.2		★	○		○
GER460-E	GEL460-E	4.6	6.5	0.2		★	○		○
GER500-E	GEL500-E	5	6.5	0.2		★	○		○

	A	L	H	pd
GER/L-C	5.8	11.48	4.05	2.8
GER/L-CR				
GER/L-D	6.8	16.44	5.05	4.4
GER/L-DR				
GER/L-E	9.54	21.6	5.55	4.4

★ Featured grade ○ Optional grade



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