

INNOVATIONS MASTER CATALOGUE

A4™ Tooling
and Beyond™ Inserts
2013



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 **KENNAMETAL®**



A4™ Tooling and Beyond™ Inserts for All Your O.D. and I.D. Applications



Primary Application

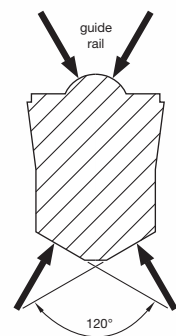
Choose A4 tooling for turning, facing, grooving, face grooving, and cut-off applications across a broad range of workpiece materials. The unique clamping system and versatile insert geometry deliver the highest metal removal rates in the industry.

Features and Benefits

A4 Grooving and Turning System

- One tool for turning, facing, grooving, face-grooving, and cut-off in O.D. and I.D. applications means exceptionally fast cycle times, no turret indexes!
- Extra-long clamping area, ground 120° bottom prism seating surface, and an exclusive top guide rail combine to deliver unsurpassed grooving and side-turning stability!
- Precise insert positioning is ensured for accurate cuts!
- Rigid clamping securely locks insert in place through the toughest cuts.

- Versatile design enables one system to handle O.D. and I.D. grooving, face grooving, back turning, undercutting, and even threading operations.
- Chip control inserts provide excellent chip evacuation in grooving, and offer better chip control in multidirectional turning.



A4 Chipbreakers



GMN Chipbreaker



GMP Chipbreaker



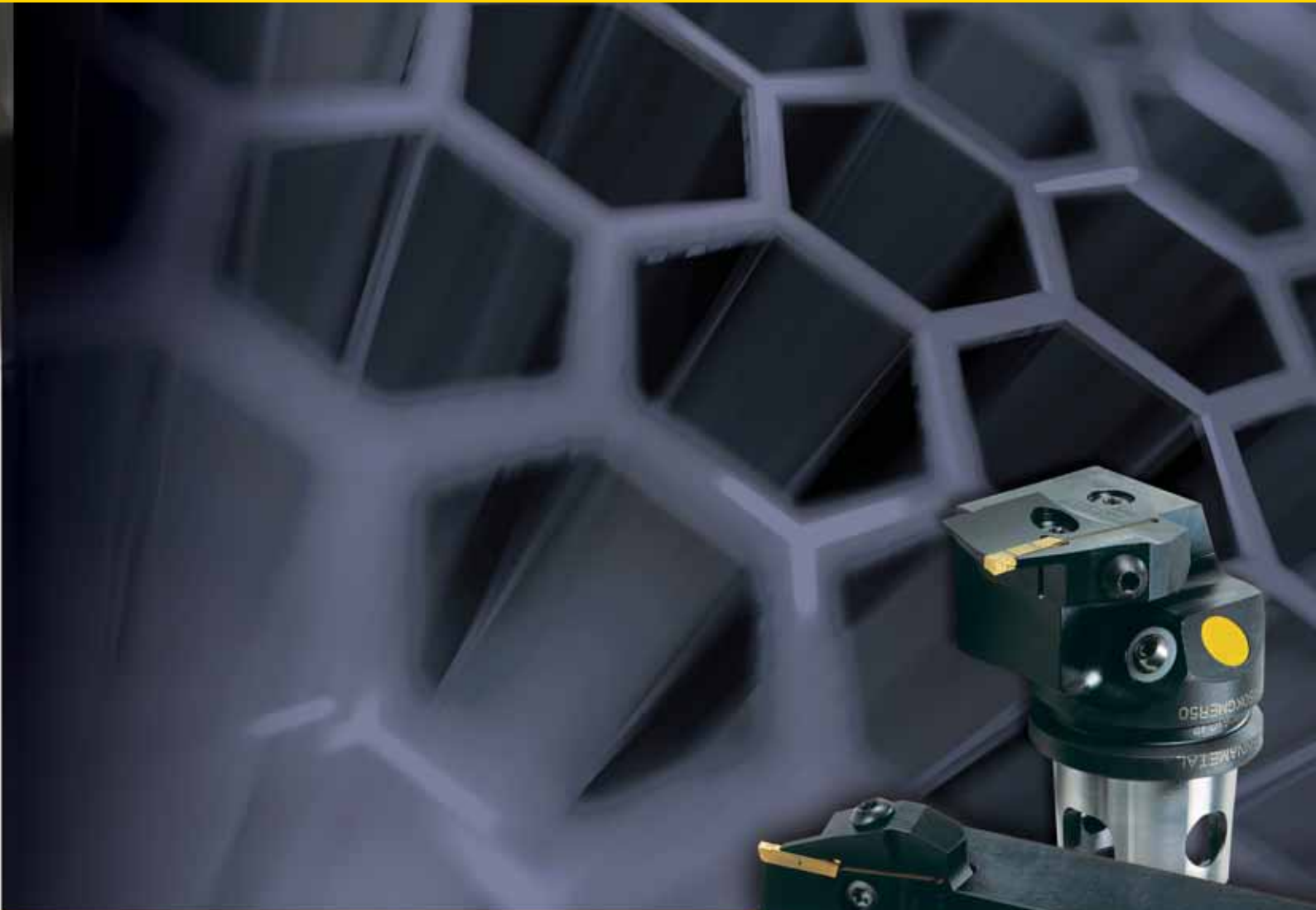
GMN Chipbreaker



GMP Chipbreaker



GUP Chipbreaker



The A4™ System Increases Productivity

- Covers multiple applications.
- Reduces tool cost.
- Minimizes machining time.

To learn more, scan here.
For instructions on how to scan, please see page xxix.



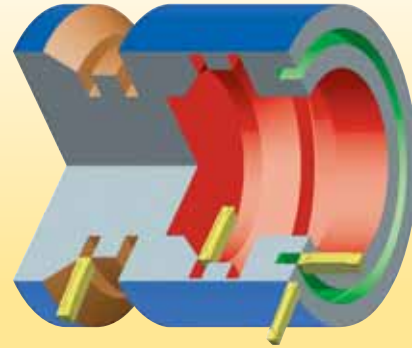
■ Step 1 • Select A4 size for grooving and turning application

What you need to know:

- Groove depth, width, and profile.
- Material being machined.
- Application to be performed (O.D. and I.D. grooving, turning, face grooving, and cut-off).

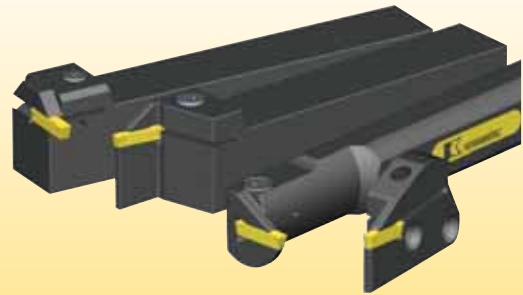
General Recommendation to Select the Insert Size

for workpiece diameters	insert seat size
<25mm	3
25–50mm	4
>50mm	5–10



■ Step 2 • Select toolholder based on the application

	conventional toolholders	modular blades
O.D. grooving, cut-off, and turning	page D90	page D106
face grooving	page D94	page D107
I.D. grooving, cut-off, and turning	page D95	—



NOTE: Insert seat size must match the seat size of the toolholder.

■ Step 3 • Select chipbreaker style and feed rate

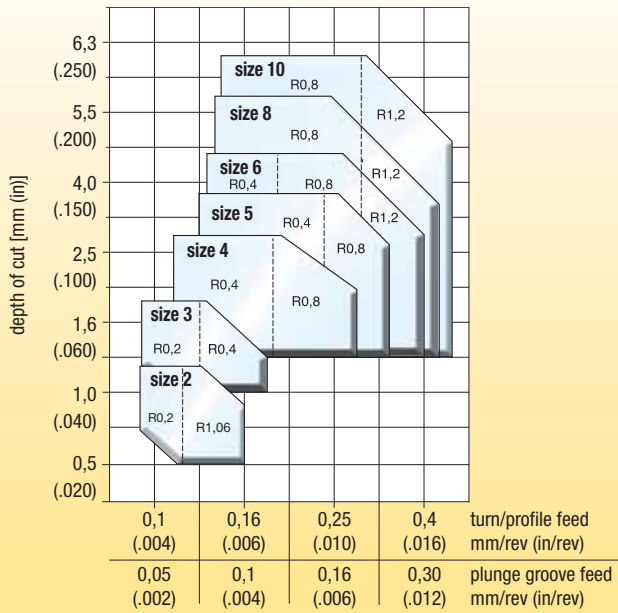
Choose Chipbreaker Based on Material Type

P	M	N	S	H
GMN	GUP/GMP	GUP/GMP precision ground (-E for KD 1405)	GUP/GMP precision ground	GMN

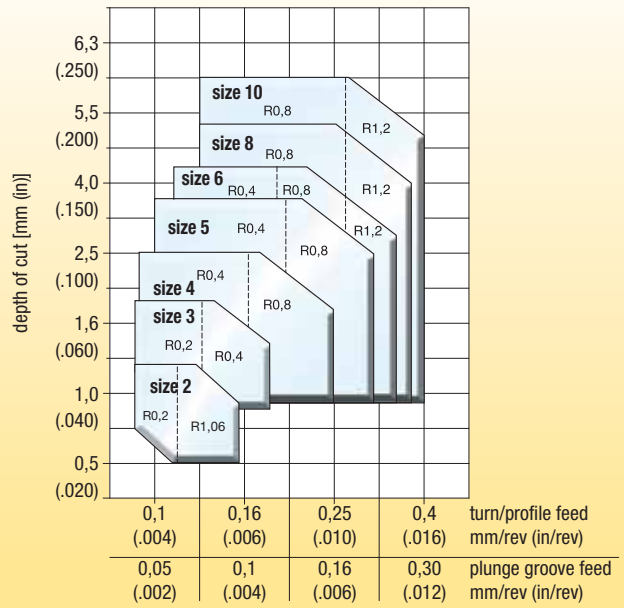
NOTE: Precision ground A4-P-GMN inserts can be applied on all material groups for inch-width grooving.

Depth of Cut and Feed Guidelines

	square inserts (A4G...)			full radius inserts (A4R...)	
	GMN chipbreaker	GMP chipbreaker	GUP chipbreaker	GMN chipbreaker	GMP chipbreaker
	<ul style="list-style-type: none"> • Groove and turn molded and precision ground inserts. • Stable cutting edge. • Available in metric and inch widths. 	<ul style="list-style-type: none"> • Groove and turn inserts. • Available in molded and precision-ground styles. • Positive rake angle. • Available in metric widths only. 	<ul style="list-style-type: none"> • Groove and turn inserts in new Beyond™ grades. • Available in molded and precision-ground styles. • Positive rake angle with enhanced chip control. • Available in metric widths only. 	<ul style="list-style-type: none"> • Maximum turning and profiling depth of cut equals half the insert width. • The maximum turn and profile feed rate depends on the material to be machined and the depth of cut. For easy-to-machine materials, feed can be increased up to 1.5 times. 	<ul style="list-style-type: none"> • Groove and turn inserts. • Available in molded and precision-ground styles. • Positive rake angle. • Available in metric widths only.

GMN


NOTE: Select feed based on nose radius.
Diagram explanation: R0,2 - R = corner radius; 0,2 = 0,2mm radius

GMP/GUP


■ Step 4 • Select grade and speed

Recommended Beyond™ Grades

cutting condition		P	M	K	N	S	H
heavily interrupted cut		KCU25/KC5025	KCU25/KC5025	KC9125	KCU25/KC5025	KCU25/KC5025	—
lightly interrupted cut		KCP25/KC9125/ KC9125/KCU25/ KC5025	KCU25/KC5025	KC9125	KCU25/KC5025	KCU25/KC5025	—
varying depth of cut, casting, or forging skin		KCU10/KC5010	KCU10/KC5010	KC9110	KCU10/KC5010/ KD1405	K313/KU10/ KCU10/KC5010	KCU10/KC5010
smooth cut, pre-turned surface		KT315/KCP10/ KC9110	KT315	KC9110	KCU10/KC5010/ KD1405	K313/KU10/ KCU10/KC5010	KCU10/KC5010

Recommended Beyond Cutting Speeds

Steel speed — m/min (SFM) starting conditions

material group	grade	speed — m/min (SFM)						starting conditions	
		60 (200)	120 (400)	185 (600)	245 (800)	300 (1000)	360 (1200)	m/min	SFM
P	KCU10		◊					120	400
	KCP10					◊		275	900
	KCP25				◊			220	725
	KC5025		◊					120	400
	KC9110				◊			250	800
	KC9125				◊			200	650
	KT315**						◊	260	850

**KT315 is an alternative choice for steel; primarily available in the GMP chipbreaker.

Stainless Steel speed — m/min (SFM) starting conditions

material group	grade	speed — m/min (SFM)						starting conditions	
		45 (150)	90 (300)	140 (450)	185 (600)	230 (750)	275 (900)	m/min	SFM
M	KU10		◊					55	185
	KCU10			◊				140	465
	KCU25			◊				110	365
	KC5010			◊				135	450
	KC5025			◊				105	350
	KT315				◊			170	400

Non-Ferrous Metals speed — m/min (SFM) starting conditions

material group	grade	speed — m/min (SFM)						starting conditions	
		150 (500)	300 (1000)	460 (1500)	610 (2000)	760 (2500)	900 (3000)	m/min	SFM
N	KC5025		◊					365	1200
	KC5010			◊				455	1500
	KD1405***				◊			610	2000

***Recommended for high-silicon aluminum alloys and abrasive nonmetallics.

High-Temperature Alloys speed — m/min (SFM) starting conditions

material group	grade	speed — m/min (SFM)						starting conditions	
		15 (60)	35 (120)	55 (180)	75 (240)	90 (300)	140 (450)	m/min	SFM
S	KU10		◊					22	75
	KCU10				◊			65	220
	KCU25				◊			50	160
	KC5010				◊			60	200
	KC5025				◊			45	150
	KT315			◊				30	100

Hardened Materials speed — m/min (SFM) starting conditions

material group	grade	speed — m/min (SFM)						starting conditions	
		15 (60)	35 (120)	55 (180)	75 (240)	95 (300)	115 (360)	m/min	SFM
H	KC5010		◊					30	100

Grooving and Cut-Off

■ **Step 5 • Select insert and holder from catalog page**

NOTE: The insert seat size must match the seat size of your toolholder selection.

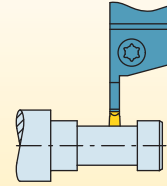
Example for A4 — Groove and Turn

Material low-alloyed steel
 Workpiece O.D. 1.5" (38mm)
 Groove depth5" (12mm)
 Groove width850" (22mm)
 Lightly interrupted cut

Recommendation

Insert A4G0405M04U08GMN
 Grade KC9125
 Insert width 4,05mm
 Insert seat size 4

 Toolholder A4SMR160417
 Grooving depth670" (17mm)
 Seat size 4



Speed: 650 SFM (200 m/min)
 Feed: .010 in/rev (0,25 mm/rev)
 Plunge feed: .006 in/rev (0,14 mm/rev)

Congratulations!

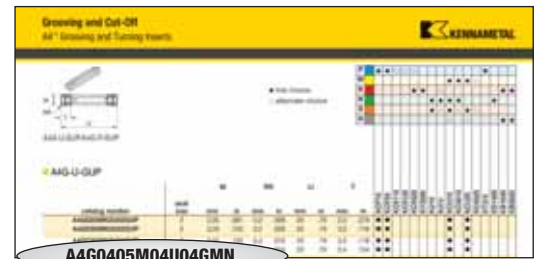
You have successfully maximized your productivity by selecting the best A4 insert geometry, grade, and cutting specifications for your application!

Grooving and Cut-Off



How Do Catalog Numbers Work?

Each character in our catalog number signifies a specific trait of that product. Use the following key columns and corresponding images to easily identify which attributes apply.



A4G0405M04U04GMN

Grooving and Cut-Off

Grooving and Turning Inserts

A4	G	0405	M	04	U	04	GMN
Tooling System	Insert Type	Groove Width	Unit of Measurement for Grooving Width	Seat Size	Insert Tolerance	Corner Radii	Chipbreaker Type/Edge Prep
A4 = Grooving and Turning	G = Square R = Full radius C = Cut-off	Expressed in 1/100mm or .00"	M = Metric N = Inch				GMN = Grooving and turning medium machining stable cutting edge GMP = Grooving and turning medium machining positive rake angle GUP = Grooving and turning high positive geometry. Especially in stainless steels and high-temp alloys B = Flat top for special forms and applications E = Flat top, slight honed edge S = Negative land plus hone ST = Single tip

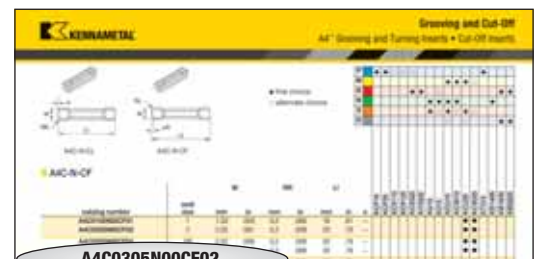
pocket seat size	cutting width (mm)
02	2,00-2,62
2B	2,39-2,62
03	3,0-3,05
04	4,0-4,05
05	5,0-5,05
06	6,0-6,05
08	8,0-8,05
10	10,0-10,05
2S	2,00-2,62
3S	3,00-3,05
4S	4,00-4,05
5S	5,00-5,05

P = Precision ground
grooving width tolerance:
± .001" (0,025mm)

U = Utility molded
grooving width tolerance:

3,05-4,05:	+ .006"	(+0,15mm)
	-0	-0
5,05-10,05:	+ .010"	(+0,25mm)
	-0	-0

inch	mm
0 = .004	01 = 0,1
05 = .008	02 = 0,2
1 = .016	04 = 0,4
2 = .032	08 = 0,8
3 = .047	12 = 1,2
full radius = 00	



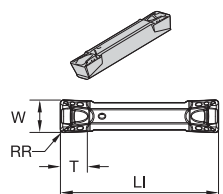
A4C0305N00CF02

Cut-Off Inserts

A4	C	0305	N	00	CF	02				
Tooling System	Insert Type	Cutting Width	Hand of Insert	Main Cutting Edge Lead Angle	Chipbreaker Type	Corner Radius				
A4 = Grooving and Turning	C = Cut-off	Expressed in 1/100mm	R = Right hand L = Left hand N = Neutral	00 = Neutral 06 = 6° 10 = 10°	CF = Cut-off fine positive rake	<table border="1"> <thead> <tr> <th>inch</th> <th>mm</th> </tr> </thead> <tbody> <tr> <td>.008</td> <td>02 = 0,2</td> </tr> </tbody> </table>	inch	mm	.008	02 = 0,2
inch	mm									
.008	02 = 0,2									

insert type and chipbreaker designation		application range	metric widths (mm)	inch widths (in)	P	M	N	S	H
Molded: A4G-U-GUP		Groove and Turn: • Stable cutting edge for higher feed rates. • Utility molded.	2–10	—	●	●	●	●	○
Precision Ground: A4G-P-GUP		• Stable, precision ground cutting edge. • General grooving for specific inch widths. • ± .001" (0,025mm) width tolerance.	2–10	—	●	●	●	●	○
Molded: A4G-U-GMN		Groove and Turn: • Stable cutting edge for higher feed rates. • Utility molded.	3,05–10,05	—	●				●
Precision Ground: A4G-P-GMN		• Stable, precision ground cutting edge. • General grooving for specific inch widths. • ± .001" (0,025mm) width tolerance.	—	.125–.375	●	○	○	○	●
Molded: A4G-U-GMP		Groove and Turn: • Positive rake angle. • Reduced cutting force. • Small to medium feed rates. • Utility molded.	3,05–10,05	—	○	●			
Precision Ground: A4G-P-GMP		• Positive rake angle. • Precision ground cutting edge. • ± .001" (0,025mm) width tolerance.	3–10	—		○	●	●	
Molded: A4R-U-GMN		Groove and Turn: • Stable cutting edge for higher feed rates. • Utility molded.	3,05–10,05	—	●				●
Precision Ground: A4R-P-GMN		• Stable, precision ground cutting edge. • General grooving for specific inch widths. • ± .001" (0,025mm) width tolerance.	—	.125–.375	●	○	○	○	●
Precision Ground: A4R-P-GMP		Groove and Turn: • Positive rake angle. • Precision ground cutting edge. • ± .001" (0,025mm) width tolerance.	3–10	—		●	●	●	
Molded: A4G-U-B		Groove and Turn: • For special profiles and for PCBN-tipped inserts (by request only). • Secondary choice for cast iron and high-temp alloys.	3,05–10,05	—				○	
Precision Ground: A4G-P-E-PCD		• Diamond sheet-tipped tool for high-performance non-ferrous machining.	3–5	—			●		
Molded: A4C-CF		Cut-Off: • High positive rake angle. • Sharp cutting edge. • Available in neutral lead angle in 6° and 10° right- and left-hand styles.	3,05–4,05	—	●	●	●	●	

Grooving and Cut-Off



A4G-U-GUP/A4G-P-GUP

● first choice
○ alternate choice

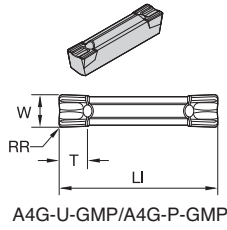
P	●	○	○	○															
M														●	●	○			
K																			●
N																			●
S														●	○	○	○		
H														○	○				●

■ A4G-U-GUP

catalog number	seat size	W		RR		LI		T		KCP10	KCP25	KC9110	KC9125	KC9320	KY3500	KU10	K313	KCU10	KC5010	KCU25	KC5025	KT315	KD1405	KB1630	KB5625	
		mm	in	mm	in	mm	in	mm	in																	
A4G0205M02U02GUP	2	2,05	.081	0,2	.008	20	.79	2,0	.079	●	●															
A4G0305M03U02GUP	3	3,05	.120	0,2	.008	20	.79	3,0	.118	●	●															
A4G0305M03U04GUP	3	3,05	.120	0,4	.016	20	.79	3,0	.118	●	●															
A4G0405M04U04GUP	4	4,05	.159	0,4	.016	20	.79	3,4	.134	●	●															
A4G0405M04U08GUP	4	4,05	.159	0,8	.031	20	.79	3,4	.134	●	●															
A4G0505M05U04GUP	5	5,05	.199	0,4	.016	25	.99	4,2	.165	●	●															
A4G0505M05U08GUP	5	5,05	.199	0,8	.031	25	.99	4,2	.165	●	●															
A4G0605M06U04GUP	6	6,05	.238	0,4	.016	30	1.19	4,5	.177	●	●															
A4G0605M06U08GUP	6	6,05	.238	0,8	.031	30	1.19	4,5	.177	●	●															
A4G0605M06U12GUP	6	6,05	.238	1,2	.047	30	1.19	4,5	.177	●	●															
A4G0805M08U08GUP	8	8,05	.317	0,8	.031	30	1.19	6,0	.236	●	●															
A4G0805M08U12GUP	8	8,05	.317	1,2	.047	30	1.19	6,0	.236	●	●															
A4G1005M10U08GUP	10	10,05	.396	0,8	.031	30	1.19	6,0	.236	●	●															
A4G1005M10U12GUP	10	10,05	.396	1,2	.047	30	1.19	6,1	.238	●	●															

■ A4G-P-GUP

catalog number	seat size	W		RR		LI		T		KCP10	KCP25	KC9110	KC9125	KC9320	KY3500	KU10	K313	KCU10	KC5010	KCU25	KC5025	KT315	KD1405	KB1630	KB5625	
		mm	in	mm	in	mm	in	mm	in																	
A4G0200M02P02GUP	2	2,00	.079	0,2	.008	20	.79	1,9	.075									●	●	●						
A4G0300M03P02GUP	3	3,00	.118	0,2	.008	20	.79	2,9	.115									●	●	●						
A4G0300M03P04GUP	3	3,00	.118	0,4	.016	20	.79	2,9	.115									●	●	●						
A4G0400M04P02GUP	4	4,00	.157	0,2	.008	20	.79	3,3	.130									●	●	●						
A4G0400M04P04GUP	4	4,00	.157	0,4	.016	20	.79	3,3	.130									●	●	●						
A4G0400M04P08GUP	4	4,00	.157	0,8	.031	20	.79	3,3	.130									●	●	●						
A4G0500M05P04GUP	5	5,00	.197	0,4	.016	25	.98	4,1	.163									●	●	●						
A4G0500M05P08GUP	5	5,00	.197	0,8	.031	25	.98	4,1	.163									●	●	●						
A4G0600M06P04GUP	6	6,00	.236	0,4	.016	30	1.18	4,5	.176									●	●	●						
A4G0600M06P08GUP	6	6,00	.236	0,8	.031	30	1.18	4,5	.176									●	●	●						
A4G0800M08P08GUP	8	8,00	.315	0,8	.031	30	1.18	6,0	.235									●	●	●						
A4G0800M08P12GUP	8	8,00	.315	1,2	.047	30	1.18	6,0	.235									●	●	●						
A4G094I2BP05GUP	2B	2,38	.094	0,2	.008	20	.79	1,9	.075												●					
A4G1000M10P08GUP	10	10,00	.394	0,8	.031	30	1.18	6,0	.235									●	●	●						
A4G1000M10P12GUP	10	10,00	.394	1,2	.047	30	1.18	6,0	.235									●	●	●						
A4G125I03P05GUP	3	3,18	.125	0,2	.008	20	.79	2,9	.115												●					
A4G125I03P1GUP	3	3,18	.125	0,4	.016	20	.79	2,9	.115												●					
A4G187I04P1GUP	4	4,76	.187	0,4	.016	20	.79	3,3	.130												●					
A4G187I04P2GUP	4	4,76	.187	0,8	.033	20	.79	3,3	.130												●					
A4G250I06P1GUP	6	6,35	.250	0,4	.016	30	1.18	4,4	.175												●					
A4G250I06P2GUP	6	6,35	.250	0,8	.031	30	1.18	4,4	.175												●					
A4G312I08P1GUP	8	7,94	.312	0,4	.016	30	1.18	5,9	.233												●					
A4G375I10P1GUP	10	9,53	.375	0,4	.016	30	1.18	5,9	.233												●					
A4G375I10P2GUP	10	9,52	.375	0,8	.032	30	1.18	5,9	.234												●					



● first choice
 ○ alternate choice

P	●	○	○	○	○	○															
M																					
K																					
N																					
S																					
H																					

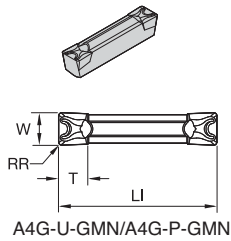
■ A4G-U-GMP

catalog number	seat size	W		RR		LI		T		KCP10	KCP25	KC9110	KC9125	KC9320	KY3500	KUI10	K313	KCU10	KC5010	KCU25	KC5025	KT315	KD1405	KB1630	KB5625
		mm	in	mm	in	mm	in	mm	in																
A4G0205M02U02GMP	2	2,05	.081	0,2	.008	20	.79	2,0	.079																
A4G0255M2BU02GMP	2B	2,62	.103	0,2	.008	20	.79	2,0	.079																
A4G0305M03U02GMP	3	3,05	.120	0,2	.008	20	.79	3,5	.138																
A4G0305M03U04GMP	3	3,05	.120	0,4	.016	20	.79	3,5	.138																
A4G0405M04U04GMP	4	4,05	.159	0,4	.016	20	.79	3,5	.138																
A4G0405M04U08GMP	4	4,05	.159	0,8	.031	20	.79	3,5	.138																
A4G0505M05U04GMP	5	5,05	.199	0,4	.016	25	.99	4,2	.165																
A4G0505M05U08GMP	5	5,05	.199	0,8	.031	25	.99	4,2	.165																
A4G0605M06U04GMP	6	6,05	.238	0,4	.016	30	1.19	4,9	.193																
A4G0605M06U08GMP	6	6,05	.238	0,8	.031	30	1.19	4,9	.193																
A4G0605M06U12GMP	6	6,05	.238	1,2	.047	30	1.19	4,9	.193																
A4G0805M08U08GMP	8	8,05	.317	0,8	.031	30	1.19	6,4	.252																
A4G0805M08U12GMP	8	8,05	.317	1,2	.047	30	1.19	6,4	.252																
A4G1005M10U08GMP	10	10,05	.396	0,8	.031	30	1.19	8,1	.319																
A4G1005M10U12GMP	10	10,05	.396	1,2	.047	30	1.19	8,1	.319																

■ A4G-P-GMP

catalog number	seat size	W		RR		LI		T		KCP10	KCP25	KC9110	KC9125	KC9320	KY3500	KUI10	K313	KCU10	KC5010	KCU25	KC5025	KT315	KD1405	KB1630	KB5625
		mm	in	mm	in	mm	in	mm	in																
A4G0200M02P02GMP	2	2,00	.079	0,2	.008	20	.79	2,0	.079																
A4G0250M2BP02GMP	2B	2,50	.098	0,2	.008	20	.79	2,0	.079																
A4G0300M03P02GMP	3	3,00	.118	0,2	.008	20	.79	3,5	.138																
A4G0300M03P04GMP	3	3,00	.118	0,4	.016	20	.79	3,5	.138																
A4G0400M04P02GMP	4	4,00	.157	0,2	.008	20	.79	3,5	.138																
A4G0400M04P04GMP	4	4,00	.157	0,4	.016	20	.79	3,5	.138																
A4G0400M04P08GMP	4	4,00	.157	0,8	.031	20	.79	3,5	.138																
A4G0500M05P04GMP	5	5,00	.197	0,4	.016	25	.98	4,2	.165																
A4G0500M05P08GMP	5	5,00	.197	0,8	.031	25	.98	4,2	.165																
A4G0600M06P04GMP	6	6,00	.236	0,4	.016	30	1.18	4,8	.190																
A4G0600M06P08GMP	6	6,00	.236	0,8	.031	30	1.18	4,8	.190																
A4G0800M08P08GMP	8	8,00	.315	0,8	.031	30	1.18	6,3	.249																
A4G0800M08P12GMP	8	8,00	.315	1,2	.047	30	1.18	6,3	.249																
A4G1000M10P08GMP	10	10,00	.394	0,8	.031	30	1.18	8,0	.316																
A4G1000M10P12GMP	10	10,00	.394	1,2	.047	30	1.18	8,0	.316																

Grooving and Cut-Off



- first choice
- alternate choice

P	●	○	○	○													●		
M	●															●	●	○	
K	●				●	●				○								●	●
N																			
S																			
H															○				●

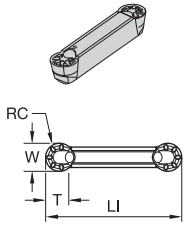
Grooving and Cut-Off

A4G-U-GMN

catalog number	seat size	W		RR		LI		T		KCP10	KCP25	KC9110	KC9125	KC9320	KY3500	KU10	K313	KCU10	KC5010	KCU25	KC5025	KT315	KD1405	KB1630	KB5625
		mm	in	mm	in	mm	in	mm	in																
A4G0205M02U02GMN	2	2,05	.081	0,2	.008	20	.79	2,0	.079			●						●	●	○					
A4G0255M2BU02GMN	2B	2,62	.103	0,2	.008	20	.79	2,0	.079			●						●	●						
A4G0305M03U02GMN	3	3,05	.120	0,2	.008	20	.79	3,5	.138			●	●					●	●	●					
A4G0305M03U04GMN	3	3,05	.120	0,4	.016	20	.79	3,5	.138			●	●					●	●	●					
A4G0405M04U04GMN	4	4,05	.159	0,4	.016	20	.79	3,5	.138			●	●					●	●	●					
A4G0405M04U08GMN	4	4,05	.159	0,8	.031	20	.79	3,5	.138			●	●					●	●	●					
A4G0505M05U04GMN	5	5,05	.199	0,4	.016	25	.98	4,2	.165			●	●					●	●	●					
A4G0505M05U08GMN	5	5,05	.199	0,8	.031	25	.98	4,2	.165			●	●					●	●	●					
A4G0605M06U04GMN	6	6,05	.238	0,4	.016	30	1,18	4,9	.193			●	●					●	●	●					
A4G0605M06U08GMN	6	6,05	.238	0,8	.031	30	1,18	4,9	.193			●	●					●	●	●					
A4G0605M06U12GMN	6	6,05	.238	1,2	.047	30	1,18	4,9	.193			●	●					●	●	●					
A4G0805M08U08GMN	8	8,05	.317	0,8	.031	30	1,18	6,4	.252			●	●					●	●	●					
A4G0805M08U12GMN	8	8,05	.317	1,2	.047	30	1,18	6,4	.252			●	●					●	●	●					
A4G1005M10U08GMN	10	10,05	.396	0,8	.031	30	1,18	8,1	.319			●	●					●	●	●					
A4G1005M10U12GMN	10	10,05	.396	1,2	.047	30	1,18	8,1	.319			●	●					●	●	●					

A4G-P-GMN

catalog number	seat size	W		RR		LI		T		KCP10	KCP25	KC9110	KC9125	KC9320	KY3500	KU10	K313	KCU10	KC5010	KCU25	KC5025	KT315	KD1405	KB1630	KB5625
		mm	in	mm	in	mm	in	mm	in																
A4G094I2BP05GMN	2B	2,39	.094	0,2	.008	20	.79	1,9	.075									●	●						
A4G125I03P05GMN	3	3,18	.125	0,2	.008	20	.79	3,4	.134									●	●	●					
A4G125I03P1GMN	3	3,18	.125	0,4	.016	20	.79	3,4	.134									●	●	●					
A4G187I04P1GMN	4	4,76	.187	0,4	.016	20	.79	3,5	.138									●	●	●					
A4G187I04P2GMN	4	4,76	.187	0,8	.031	20	.79	3,5	.138									●	●	●					
A4G250I06P1GMN	6	6,35	.250	0,4	.016	30	1,18	4,7	.187									●	●	●					
A4G250I06P2GMN	6	6,35	.250	0,8	.031	30	1,18	4,7	.187									●	●	●					
A4G312I08P1GMN	8	7,94	.312	0,4	.016	30	1,18	6,2	.246									●	●	●					
A4G312I08P2GMN	8	7,94	.312	0,8	.031	30	1,18	6,2	.246									●	●	●					
A4G375I10P1GMN	10	9,53	.375	0,4	.016	30	1,18	7,9	.312										●	●					
A4G375I10P2GMN	10	9,53	.375	0,8	.031	30	1,18	7,9	.313									●	●	●					



A4R-P-GUP/A4R-U-GUP

A4R-P-GUP

Grooving and Cut-Off

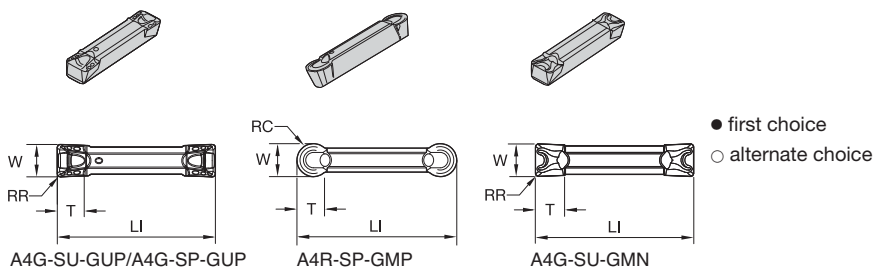
catalog number	seat size	W		RC		LI		KCP10	KCP25	KC9110	KC9125	KC9320	KY3500	KU10	K313	KCU10	KC5010	KCU25	KC5025	KT315	KD1405	KB1630	KB5625	
		mm	in	mm	in	mm	in																	
A4R0300M03P00GUP	3	3,00	.118	1,5	.059	20	.79																	
A4R0400M04P00GUP	4	4,00	.157	2,0	.079	20	.79																	
A4R0500M05P00GUP	5	5,00	.197	2,5	.098	25	.98																	
A4R0600M06P00GUP	6	6,00	.236	3,0	.118	30	1.18																	
A4R0800M08P00GUP	8	8,00	.315	4,0	.158	30	1.18																	
A4R1000M10P00GUP	10	10,00	.394	5,0	.197	30	1.18																	
A4R125I03P00GUP	3	3,18	.125	1,6	.063	20	.79																	
A4R187I04P00GUP	4	4,76	.188	2,4	.094	20	.79																	
A4R250I06P00GUP	6	6,35	.250	3,2	.125	30	1.18																	
A4R312I08P00GUP	8	7,94	.312	4,0	.156	30	1.18																	
A4R375I10P00GUP	10	9,52	.375	4,8	.188	30	1.18																	

A4R-U-GUP

catalog number	seat size	W		RC		LI		KCP10	KCP25	KC9110	KC9125	KC9320	KY3500	KU10	K313	KCU10	KC5010	KCU25	KC5025	KT315	KD1405	KB1630	KB5625	
		mm	in	mm	in	mm	in																	
A4R0305M03U00GUP	3	3,05	.120	1,5	.060	20	.79																	
A4R0505M05U00GUP	5	5,05	.199	2,5	.099	25	.99																	
A4R1005M10U00GUP	10	10,05	.396	5,0	.198	30	1.19																	

P	●	○	○	○																				
M																								
K																								
N																								
S																								
H																								

● first choice
○ alternate choice



P	●	○	○	○																			
M																							
K																							
N																							
S																							
H																							

■ A4G-SU-GUP • Small Diameter Face Grooving

catalog number	seat size	W		RR		LI		T		KCP10	KCP25	KC9110	KC9125	KC9320	KY3500	KU10	K313	KCU10	KC5010	KCU25	KC5025	KT315	KD1405	KB1630	KB5625
		mm	in	mm	in	mm	in	mm	in																
A4G0205M2SU02GUP	2S	2,05	.081	0,2	.008	20	.79	2,0	.079																
A4G0305M3SU02GUP	3S	3,05	.120	0,2	.008	20	.79	3,0	.118									●	●						
A4G0305M3SU04GUP	3S	3,05	.120	0,4	.016	20	.79	3,0	.118									●	●						
A4G0405M4SU04GUP	4S	4,05	.159	0,4	.016	20	.79	3,4	.134									●	●						
A4G0405M4SU08GUP	4S	4,05	.159	0,8	.031	20	.79	3,4	.134									●	●						
A4G0505M5SU04GUP	5S	5,05	.199	0,4	.016	25	.99	4,2	.165									●	●						
A4G0505M5SU08GUP	5S	5,05	.199	0,8	.031	25	.99	4,2	.165									●	●						

NOTE: A4-S inserts are reduced-height A4 inserts.
For example, a 2S seat size holder will not accept a seat size 2 insert.

■ A4G-SP-GUP • Small Diameter Face Grooving

catalog number	seat size	W		RR		LI		T		KCP10	KCP25	KC9110	KC9125	KC9320	KY3500	KU10	K313	KCU10	KC5010	KCU25	KC5025	KT315	KD1405	KB1630	KB5625
		mm	in	mm	in	mm	in	mm	in																
A4G0200M2SP02GUP	2S	2,00	.079	0,2	.008	20	.79	1,9	.075									●	●						
A4G0300M3SP02GUP	3S	3,00	.118	0,2	.008	20	.79	2,9	.115									●	●						
A4G0300M3SP04GUP	3S	3,00	.118	0,4	.016	20	.79	2,9	.115									●	●						
A4G0400M4SP04GUP	4S	4,00	.157	0,4	.016	20	.79	3,4	.132									●	●						
A4G0400M4SP08GUP	4S	4,00	.157	0,8	.031	20	.79	3,4	.132									●	●						
A4G0500M5SP04GUP	5S	5,00	.197	0,4	.016	25	.98	4,1	.163									●	●						
A4G0500M5SP08GUP	5S	5,00	.197	0,8	.031	25	.98	4,1	.163									●	●						

NOTE: A4-S inserts are reduced-height A4 inserts.
For example, a 2S seat size holder will not accept a seat size 2 insert.

■ A4R-SP-GMP • Small Diameter Face Grooving

catalog number	seat size	W		RC		LI		T		KCP10	KCP25	KC9110	KC9125	KC9320	KY3500	KU10	K313	KCU10	KC5010	KCU25	KC5025	KT315	KD1405	KB1630	KB5625
		mm	in	mm	in	mm	in	mm	in																
A4R0200M2SP00GMP	2S	2,00	.079	1,0	.039	20	.79	1,7	.067																
A4R0300M3SP00GMP	3S	3,00	.118	1,5	.059	20	.79	2,5	.099																
A4R0400M4SP00GMP	4S	4,00	.157	2,0	.079	20	.79	3,4	.134																
A4R0500M5SP00GMP	5S	5,00	.197	2,5	.098	25	.98	4,1	.161																

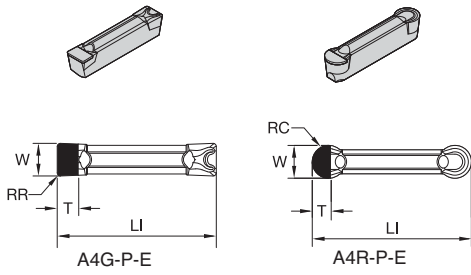
NOTE: A4-S inserts are reduced-height A4 inserts.
For example, a 2S seat size holder will not accept a seat size 2 insert.

■ A4G-SU-GMN • Small Diameter Face Grooving

catalog number	seat size	W		RR		LI		T		KCP10	KCP25	KC9110	KC9125	KC9320	KY3500	KU10	K313	KCU10	KC5010	KCU25	KC5025	KT315	KD1405	KB1630	KB5625
		mm	in	mm	in	mm	in	mm	in																
A4G0205M2SU02GMN	2S	2,05	.081	0,2	.008	20	.79	2,0	.079									●	●						
A4G0305M3SU02GMN	3S	3,05	.120	0,2	.008	20	.79	3,5	.138									●	●						
A4G0305M3SU04GMN	3S	3,05	.120	0,4	.016	20	.79	3,5	.138									●	●						
A4G0405M4SU04GMN	4S	4,05	.159	0,4	.016	20	.79	3,6	.143									●	●						
A4G0405M4SU08GMN	4S	4,05	.159	0,8	.031	20	.79	3,6	.143									●	●						
A4G0505M5SU04GMN	5S	5,05	.199	0,4	.016	25	.98	4,2	.165									●	●						
A4G0505M5SU08GMN	5S	5,05	.199	0,8	.031	25	.98	4,2	.166									●	●						

NOTE: A4-S inserts are reduced-height A4 inserts.
For example, a 2S seat size holder will not accept a seat size 2 insert.

Grooving and Cut-Off



● first choice
○ alternate choice

P	●	●	○	○	○																	
M																						
K																						
N																						
S																						
H																						

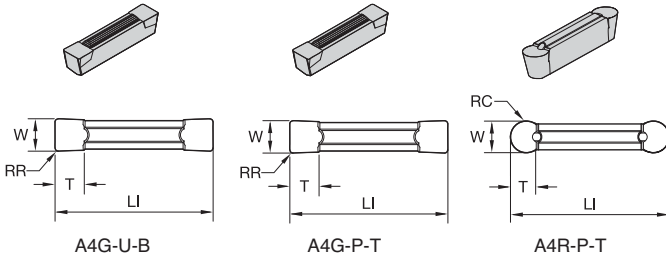
■ A4G-P-E • PCD Grooving

catalog number	seat size	W		RR		LI		T		KCP10	KCP25	KC9110	KC9125	KC9320	KY3500	KU10	K313	KCU10	KC5010	KCU25	KC5025	KT315	KD1405	KB1630	KB5625
		mm	in	mm	in	mm	in	mm	in																
A4G0300M03P04E	3	3,00	.118	0,4	.016	20	.79	3,5	.138																
A4G0400M04P04E	4	4,00	.157	0,4	.016	20	.79	3,5	.138														●		
A4G0500M05P08E	5	5,00	.197	0,8	.031	25	.98	4,2	.165														●		

■ A4R-P-E • PCD Grooving

catalog number	seat size	W		RC		LI		T		KCP10	KCP25	KC9110	KC9125	KC9320	KY3500	KU10	K313	KCU10	KC5010	KCU25	KC5025	KT315	KD1405	KB1630	KB5625
		mm	in	mm	in	mm	in	mm	in																
A4R0500M05P00E	5	5,00	.197	2,5	.099	25	.98	4,1	.161														●		

Grooving and Cut-Off



● first choice
○ alternate choice

P	M	K	N	S	H	KCP10	KCP25	KC9110	KC9125	KC9320	KY3500	KU10	K313	KCU10	KC5010	KCU25	KC5025	KT315	KD1405	KB1630	KB5625	
●	○	○	○	○																		

A4G-U-B

catalog number	seat size	W		RR		LI		T		KCP10	KCP25	KC9110	KC9125	KC9320	KY3500	KU10	K313	KCU10	KC5010	KCU25	KC5025	KT315	KD1405	KB1630	KB5625
		mm	in	mm	in	mm	in	mm	in																
A4G0305M03U02B	3	3,05	.120	0,2	.008	20	.79	3,5	.138																
A4G0405M04U04B	4	4,05	.159	0,4	.016	20	.79	3,4	.134																
A4G0505M05U04B	5	5,05	.199	0,4	.016	25	.98	4,2	.165																
A4G0605M06U04B	6	6,05	.238	0,4	.016	30	1.18	4,9	.193																
A4G0805M08U08B	8	8,05	.317	0,8	.031	30	1.18	6,4	.252																
A4G1005M10U08B	10	10,05	.396	0,8	.031	30	1.18	8,1	.319																

A4G-P-T

catalog number	seat size	W		RR		LI		T		KCP10	KCP25	KC9110	KC9125	KC9320	KY3500	KU10	K313	KCU10	KC5010	KCU25	KC5025	KT315	KD1405	KB1630	KB5625
		mm	in	mm	in	mm	in	mm	in																
A4G0300M03P04T01025	3	3,00	.118	0,4	.016	20	.79	3,4	.134																
A4G125I03P1T0425	3	3,18	.125	0,4	.016	20	.79	3,4	.134																
A4G0400M04P04T01025	4	4,00	.157	0,4	.016	20	.79	3,4	.134																
A4G187I04P2T0425	4	4,76	.187	0,8	.031	20	.79	3,4	.134																
A4G0500M05P08T01025	5	5,00	.197	0,8	.031	25	.98	4,2	.165																
A4G0600M06P08T01025	6	6,00	.236	0,8	.031	30	1.18	4,8	.189																
A4G250I06P2T0425	6	6,35	.250	0,8	.031	30	1.18	4,9	.193																
A4G0800M08P08T01025	8	8,00	.315	0,8	.031	30	1.18	6,4	.250																

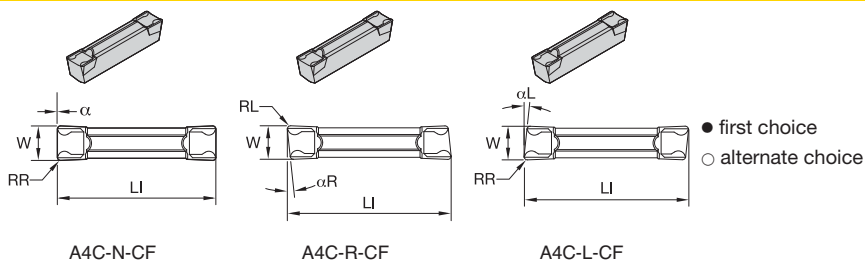
A4R-P-T

catalog number	seat size	W		RC		LI		T		KCP10	KCP25	KC9110	KC9125	KC9320	KY3500	KU10	K313	KCU10	KC5010	KCU25	KC5025	KT315	KD1405	KB1630	KB5625
		mm	in	mm	in	mm	in	mm	in																
A4R0300M03P00T01025	3	3,00	.118	1,5	.059	20	.79	2,4	.095																
A4R125I03P00T0425	3	3,18	.125	1,6	.062	20	.79	2,6	.100																
A4R0400M04P00T01025	4	4,00	.157	2,0	.079	20	.79	3,0	.117																
A4R187I04P00T0425	4	4,76	.187	2,4	.094	20	.79	4,3	.169																
A4R0500M05P00T01025	5	5,00	.197	2,5	.098	25	.98	4,1	.163																
A4R0600M06P00T01025	6	6,00	.236	3,0	.118	30	1.18	4,3	.171																
A4R250I06P00T0425	6	6,35	.250	3,2	.125	30	1.18	4,8	.191																
A4R0800M08P00T01025	8	8,00	.315	4,0	.157	30	1.18	6,4	.250																



Grooving and Cut-Off

A4™ Grooving and Turning Inserts • Cut-Off Inserts



P	●	○	○	○																			
M	●	○	○	○																			
K									●	●		○	●	●	●	●	●	●			●	●	
N																							
S																							
H														○	○							●	●

■ A4C-N-CF

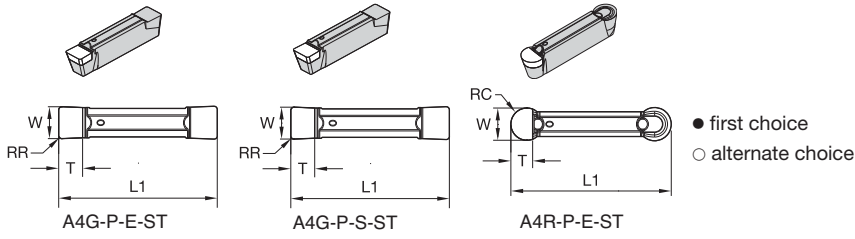
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		mm	in	mm	in	mm	in																	
A4C0155N00CF01	1	1,50	.059	0,2	.006	16	.61	—																
A4C0205N00CF02	2	2,05	.081	0,2	.008	20	.79	—											●	●				
A4C0255N00CF02	2B	2,50	.098	0,2	.008	20	.79	—											●	●				
A4C0305N00CF02	3	3,05	.120	0,2	.008	20	.79	—											●	●				
A4C0405N00CF02	4	4,05	.159	0,2	.008	20	.79	—											●	●				

■ A4C-R-CF

catalog number	seat size	W		RL		LI		αR	KCP10	KCP25	KC9110	KC9125	KC9320	KY3500	KU10	K313	KCU10	KC5010	KCU25	KC5025	KT315	KD1405	KB1630	KB5625
		mm	in	mm	in	mm	in																	
A4C0155R16CF01	1	1,50	.059	0,2	.006	16	.61	16.0																●
A4C0155R06CF01	1	1,50	.059	0,2	.006	16	.61	6.0																●
A4C0155R10CF01	1	1,50	.059	0,2	.006	16	.61	10.0																●
A4C0205R10CF02	2	1,99	.078	0,2	.008	20	.79	10.0																●
A4C0205R06CF02	2	1,99	.078	0,2	.008	20	.79	6.0																●
A4C0255R06CF02	2B	2,49	.098	0,2	.008	20	.79	6.0																●
A4C0305R06CF02	3	3,05	.120	0,2	.008	20	.79	6.0																●
A4C0305R10CF02	3	3,05	.120	0,2	.008	20	.79	10.0																●
A4C0405R06CF02	4	4,05	.159	0,2	.008	20	.79	6.0																●
A4C0405R10CF02	4	4,05	.159	0,2	.008	20	.79	10.0																●

■ A4C-L-CF

catalog number	seat size	W		RR		LI		αL	KCP10	KCP25	KC9110	KC9125	KC9320	KY3500	KU10	K313	KCU10	KC5010	KCU25	KC5025	KT315	KD1405	KB1630	KB5625
		mm	in	mm	in	mm	in																	
A4C0155L06CF01	1	1,50	.059	0,2	.006	16	.61	6.0																●
A4C0205L06CF02	2	1,99	.078	0,2	.008	20	.79	6.0																●
A4C0205L10CF02	2	1,99	.078	0,2	.008	20	.79	10.0																●
A4C0305L06CF02	3	3,05	.120	0,2	.008	20	.79	6.0																●
A4C0305L10CF02	3	3,05	.120	0,2	.008	20	.79	10.0																●
A4C0405L06CF02	4	4,05	.159	0,2	.008	20	.79	6.0																●
A4C0405L10CF02	4	4,05	.159	0,2	.008	20	.79	10.0																●



P	●	○	○	○																								
M																												
K																												
N																												
S																												
H																												

A4G-P-E-ST

catalog number	seat size	W		RR		LI		T		KCP10	KCP25	KC9110	KC9125	KC9320	KY3500	KU10	K313	KCU10	KC5010	KCU25	KC5025	KT315	KD1405	KB1630	KB5625	
		mm	in	mm	in	mm	in	mm	in																	
A4G0300M03P04EST	3	3,00	.118	0,4	.016	20	.78	3,0	.118																	
A4G0400M04P04EST	4	4,00	.157	0,4	.016	20	.78	3,3	.130																	
A4G0500M05P08EST	5	5,00	.197	0,8	.031	25	.98	3,5	.138																	
A4G0600M06P08EST	6	6,00	.236	0,8	.031	30	1.18	4,0	.157																	

A4G-P-S-ST

catalog number	seat size	W		RR		LI		T		KCP10	KCP25	KC9110	KC9125	KC9320	KY3500	KU10	K313	KCU10	KC5010	KCU25	KC5025	KT315	KD1405	KB1630	KB5625	
		mm	in	mm	in	mm	in	mm	in																	
A4G0300M03P04S02025ST	3	3,00	.118	0,4	.016	20	.78	3,0	.118																	
A4G0400M04P04S02025ST	4	4,00	.157	0,4	.016	20	.78	3,3	.130																	
A4G0500M05P08S02025ST	5	5,00	.197	0,8	.031	25	.98	3,5	.138																	
A4G0600M06P08S02025ST	6	6,00	.236	0,8	.031	30	1.18	4,0	.157																	

A4R-P-E-ST

catalog number	seat size	W		RR		LI		T		KCP10	KCP25	KC9110	KC9125	KC9320	KY3500	KU10	K313	KCU10	KC5010	KCU25	KC5025	KT315	KD1405	KB1630	KB5625	
		mm	in	mm	in	mm	in	mm	in																	
A4R0300M03P00EST	3	3,00	.118	—	—	20	.78	2,2	.087																	
A4R0400M04P00EST	4	4,00	.157	—	—	20	.78	2,9	.114																	
A4R0500M05P00EST	5	5,00	.197	—	—	25	.98	3,7	.146																	
A4R0600M06P00EST	6	6,00	.236	—	—	30	1.18	4,4	.173																	

Grooving and Cut-Off

How Do Catalog Numbers Work?

Each character in our catalog number signifies a specific trait of that product. Use the following key columns and corresponding images to easily identify which attributes apply.

A4SMR100214

Grooving and Cut-Off

A4

Tooling System

A4 = Grooving and Turning

S

Tool Style



S = Straight



E = End mounted 90°

M

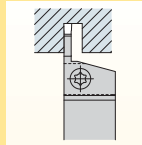
Support Type

M = Maximum support for specific groove widths and straight clearance for unlimited workpiece diameters

E = No steel support for face grooving

R

Hand of Tool



R = Right hand
L = Left hand
N = Neutral

10

Shank Size

inch: For square shanks, the number indicates the height and width in 1/16-inch increments (rectangular: 1st digit = width in 1/8-inch increments, 2nd digit = height in 1/4-inch increments)

metric: Height x width in mm, letter indicates tool length according to ISO

metric tool length (mm)
K = 125
M = 150
P = 170

02

Seat Size

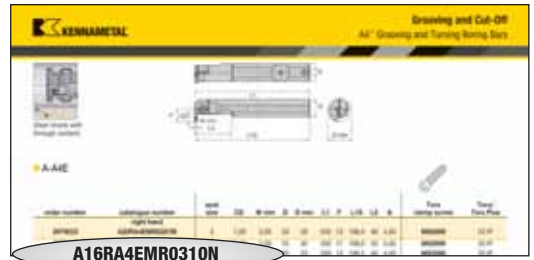
- 02
- 03
- 04
- 05
- 06
- 08
- 10

14

Max Grooving Depth

in millimeters

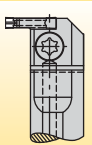
By referencing this easy-to-use guide, you can identify the correct product to meet your needs.



A16RA4EMR0310N

A

Steel Bar with Coolant



16

Bar Diameter

R

Bar Length

A4

A4 Groove & Turn System

E

Tool Style

M

Support Type

R

Hand of Tool

03

Insert Seat Size

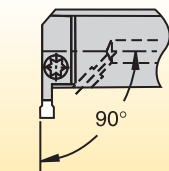
10

Grooving Depth in mm

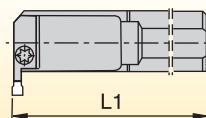
N

Tool Units

N = Inch
M = Metric

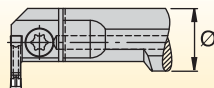


E = End mounted (90°)



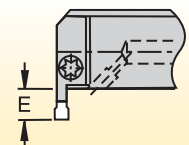
inch bars:
R = 8"
S = 10"
T = 12"

metric bars:
R = 200mm
S = 250mm
T = 300mm



inch bars:
A two-digit number which indicates the bar diameter in 1/16" increments.

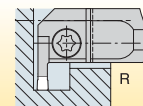
metric bars:
Bar diameter in millimeters



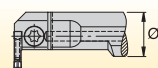
conversions:

mm	inch
7mm	= .28"
10mm	= .39"
12mm	= .47"
16mm	= .63"

pocket seat size	cutting width (mm)
02	2,00–2,62
2B	2,39–2,62
03	3,0–3,05
04	4,0–4,05
05	5,0–5,05
06	6,0–6,05
08	8,0–8,05
10	10,0–10,05



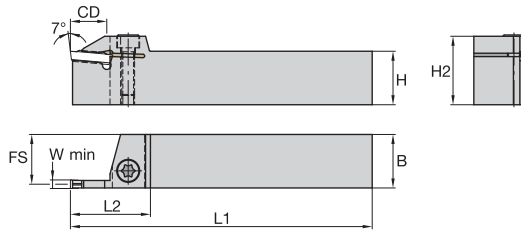
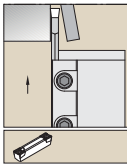
R = Right hand



L = Left hand

M = Maximum support

Grooving and Cut-Off



A4SM

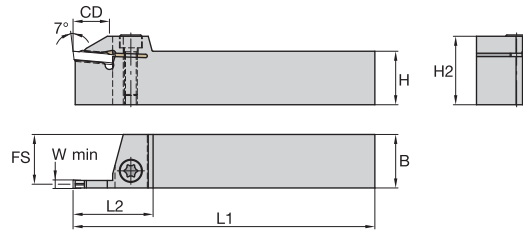
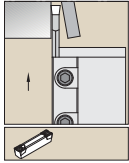


Grooving and Cut-Off

order number	catalog number	seat size	CD	W min	H	B	H2	L1	FS	L2	clamp screw	Torx
	right hand											
2976495	A4SMR100214	2	.55	.079	.625	.625	.98	5.00	.59	1.18	MS1160	T20
2976496	A4SMR120214	2	.55	.079	.750	.750	.95	5.00	.71	1.18	MS1160	T20
2976497	A4SMR120217	2	.67	.079	.750	.750	1.18	5.00	.71	1.34	MS1944	T25
2976498	A4SMR160217	2	.67	.079	1.000	1.000	1.24	6.00	.96	1.34	MS1944	T25
1953179	A4SMR120314	3	.55	.118	.750	.750	1.06	5.00	.69	1.38	MS1595	T30
1953177	A4SMR100314	3	.55	.118	.625	.625	1.03	5.00	.57	1.38	MS2091	T25
1953181	A4SMR160317	3	.67	.118	1.000	1.000	1.26	6.00	.94	1.46	MS1970	T30
1957224	A4SMR100414	4	.55	.157	.625	.625	1.03	5.00	.55	1.38	MS2091	T25
1953323	A4SMR120414	4	.55	.157	.750	.750	1.06	5.00	.67	1.38	MS1595	T30
1953325	A4SMR160417	4	.67	.157	1.000	1.000	1.26	6.00	.92	1.46	MS1970	T30
1957226	A4SMR200417	4	.67	.157	1.250	1.250	1.54	6.00	1.17	1.46	MS1970	T30
1953327	A4SMR120519	5	.75	.197	.750	.750	1.10	5.00	.65	1.57	MS1595	T30
1953329	A4SMR160520	5	.79	.197	1.000	1.000	1.30	6.00	.90	1.57	MS1970	T30
1957228	A4SMR200522	5	.87	.197	1.250	1.250	1.54	6.00	1.15	1.65	MS1970	T30
2263175	A4SMR120620	6	.79	.236	.750	.750	1.06	5.00	.64	1.57	MS1595	T30
2263176	A4SMR160620	6	.79	.236	1.000	1.000	1.30	6.00	.89	1.57	MS1970	T30
2263177	A4SMR160624	6	.94	.236	1.000	1.000	1.30	6.00	.89	1.69	MS1970	T30
2263178	A4SMR200626	6	1.02	.236	1.250	1.250	1.57	6.00	1.14	1.77	MS1970	T30
2263179	A4SMR240626	6	1.02	.236	1.500	1.500	1.81	7.00	1.39	1.77	MS1970	T30
2263185	A4SMR160820	8	.79	.315	1.000	1.000	1.34	6.00	.86	1.69	MS1490	T45
2263186	A4SMR160824	8	.94	.315	1.000	1.000	1.34	6.00	.86	1.81	MS1490	T45
2263187	A4SMR200826	8	1.02	.315	1.250	1.250	1.61	6.00	1.11	1.85	MS1490	T45
2263188	A4SMR240826	8	1.02	.315	1.500	1.500	1.85	7.00	1.36	1.85	MS1490	T45
2263193	A4SMR201026	10	1.02	.394	1.250	1.250	1.61	6.00	1.08	1.85	MS1490	T45
2263195	A4SMR241026	10	1.02	.394	1.500	1.500	1.85	7.00	1.33	1.85	MS1490	T45

(continued)

(A4SM continued)



order number	catalog number	seat size	CD	W min	H	B	H2	L1	FS	L2	clamp screw	Torx
	left hand											
2976491	A4SML100214	2	.55	.079	.625	.625	.98	5.00	.59	1.18	MS1160	T20
2976492	A4SML120214	2	.55	.079	.750	.750	.95	5.00	.71	1.18	MS1160	T20
2976493	A4SML120217	2	.67	.079	.750	.750	1.18	5.00	.71	1.34	MS1944	T25
2976494	A4SML160217	2	.67	.079	1.000	1.000	1.24	6.00	.96	1.34	MS1944	T25
1953178	A4SML100314	3	.55	.118	.625	.625	1.03	5.00	.57	1.38	MS2091	T25
1953180	A4SML120314	3	.55	.118	.750	.750	1.06	5.00	.69	1.38	MS1595	T30
1953182	A4SML160317	3	.67	.118	1.000	1.000	1.26	6.00	.94	1.46	MS1970	T30
1953324	A4SML120414	4	.55	.157	.750	.750	1.06	5.00	.67	1.38	MS1595	T30
1957227	A4SML200417	4	.67	.157	1.250	1.250	1.54	6.00	1.17	1.46	MS1970	T30
1953326	A4SML160417	4	.67	.157	1.000	1.000	1.26	6.00	.92	1.46	MS1970	T30
1953328	A4SML120519	5	.75	.197	.750	.750	1.10	5.00	.65	1.57	MS1595	T30
1953330	A4SML160520	5	.79	.197	1.000	1.000	1.30	6.00	.90	1.57	MS1970	T30
1957229	A4SML200522	5	.87	.197	1.250	1.250	1.54	6.00	1.15	1.65	MS1970	T30
2263180	A4SML120620	6	.79	.236	.750	.750	1.06	5.00	.64	1.57	MS1595	T30
2263181	A4SML160620	6	.79	.236	1.000	1.000	1.30	6.00	.89	1.57	MS1970	T30
2263182	A4SML160624	6	.94	.236	1.000	1.000	1.30	6.00	.89	1.69	MS1970	T30
2263183	A4SML200626	6	1.02	.236	1.250	1.250	1.57	6.00	1.14	1.77	MS1970	T30
2263184	A4SML240626	6	1.02	.236	1.500	1.500	1.81	7.00	1.39	1.77	MS1970	T30
2263189	A4SML160820	8	.79	.315	1.000	1.000	1.34	6.00	.86	1.69	MS1490	T45
2263190	A4SML160824	8	.94	.315	1.000	1.000	1.34	6.00	.86	1.81	MS1490	T45
2263191	A4SML200826	8	1.02	.315	1.250	1.250	1.61	6.00	1.11	1.85	MS1490	T45
2263192	A4SML240826	8	1.02	.315	1.500	1.500	1.85	7.00	1.36	1.85	MS1490	T45
2263194	A4SML201026	10	1.02	.394	1.250	1.250	1.61	6.00	1.08	1.85	MS1490	T45
2263196	A4SML241026	10	1.02	.394	1.500	1.500	1.85	7.00	1.33	1.85	MS1490	T45

Grooving and Cut-Off