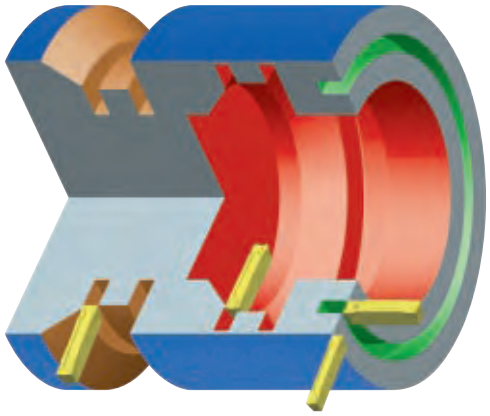
KENNA PERFECT – A4 Groove & Turn

5 Easy Steps to Greater Productivity in Grooving and Turning

What you need to know:

- Groove depth, width, and profile
- Material being machined
- Application to be performed (OD, ID face grooving, or turning)

1st Step – Choose the A4 Size for Your Grooving and Turning Application

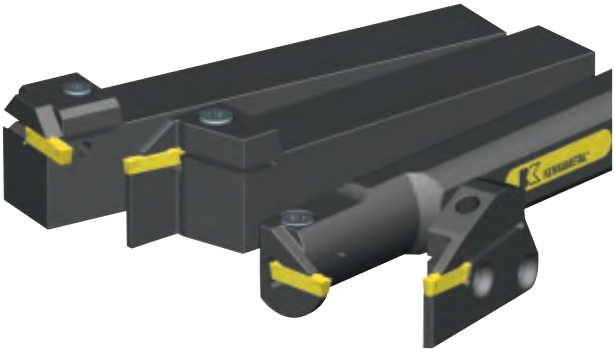


General Recommendation to Select the Insert Size

for workpiece diameters...	insert seat size
up to 1 inch	3
from 1 to 2 inches	4
>2 inches	5 - 10

EXAMPLE: For a 1.5 inch diameter part with a .125 inch minimum groove width, select insert seat size 3 (size 3 is required to cut the .125 inch groove).

2nd Step – Choose Your Toolholder Based on the Application



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

	Conventional Toolholders	Modular Blades
OD Grooving and Turning	B49	B53
Face Grooving	B50	B54
ID Grooving and Turning	B51	–

3rd Step – Select Chipbreaker Style and Feed Rate

Choose Chipbreaker Based on Material Type.

Steel	Stainless Steel	Cast Iron	Non-Ferrous Metals	High-Temp Alloys	Hardened Materials
GMN	GMP	GMN	GMP precision ground (-E for KD1405)	GMP precision ground	GMN *

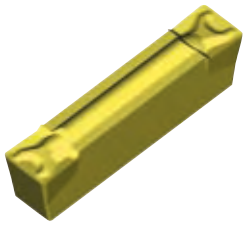
*Alternative PCBN tipped inserts in KB5625 are available upon request.

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

Depth of Cut and Feed Guidelines for Square Inserts (A4G...):

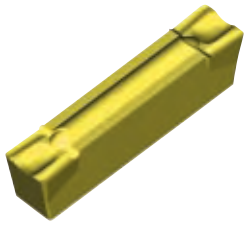
GMN Chipbreaker

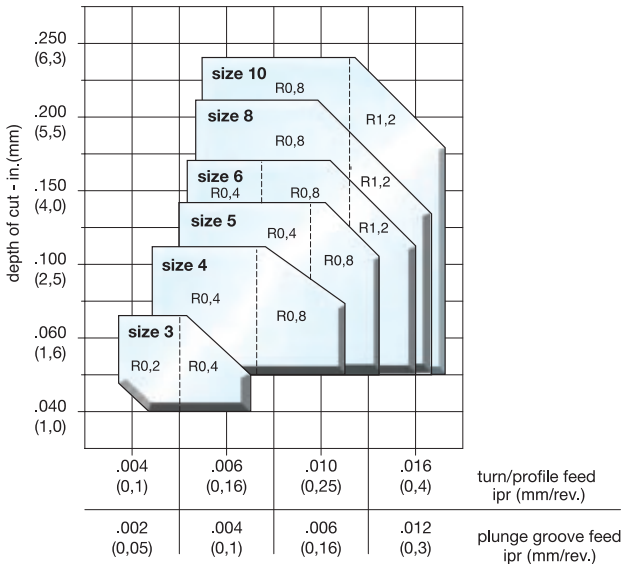
- Groove & turn molded inserts
- Stable cutting edge
- Available in metric and inch widths

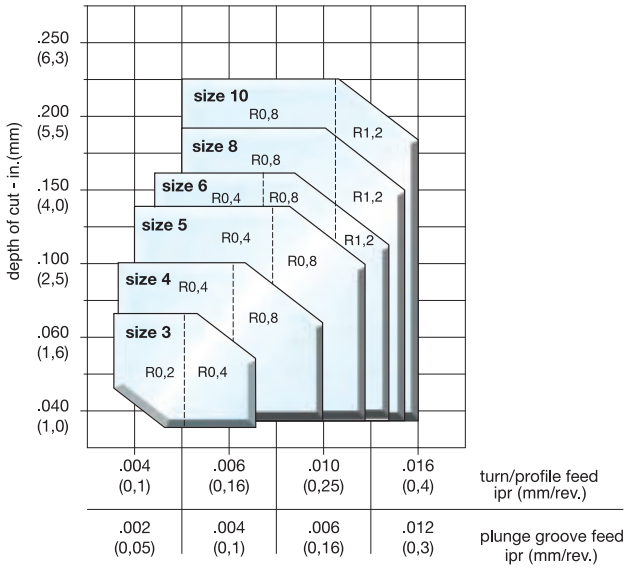


GMP Chipbreaker

- Groove & turn inserts
- Available in molded and precision-ground styles
- Positive rake angle
- Available in metric widths only







NOTE: Select feed based on nose radius. Diagram explanation: R0,2 - R = corner radius; 0,2 = 0,2 mm radius; see page B42 for further references

Depth of Cut and Feed Guidelines for Full Radius Inserts (A4R...):

GMN Chipbreaker

Maximum turning and profiling depth of cut equals 1/2 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.

GMP Chipbreaker

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4th Step – Select Grade and Speed

Recommended KENNA PERFECT Grades

Cutting Conditions	Steel	Stainless Steel	Cast Iron	Non-Ferrous Metals	High-Temp Alloys	Hardened Materials
heavily interrupted cut	KC5025	KC5025	KC9125	KC5025	KC5025	–
lightly interrupted cut	KC9125/KC5025	KC5025	KC9125	KC5025	KC5025	–
varying depth of cut, casting or forging skin	KC9110	KC5010	KC9110	KC5010/KD1405	K313/KC5010	KC5010*
smooth cut, pre-turned surface	KT315**/KC9110	KT315**	KC9110	KC5010/KD1405	K313/KC5010	KC5010*

*NOTE: PCBN-tipped inserts in KB5625 are available on request

Recommended KENNA UNIVERSAL Grades

Cutting Conditions	Grades
heavily interrupted cut	KU30T
lightly interrupted cut	KU30T
varying depth of cut, casting or forging skin	KU30T
smooth cut, pre-turned surface	KU30T

Recommended KENNA PERFECT Cutting Speeds

Steel

KENNA PERFECT Material Group	grade	Speed - sfm (m/min) 200 (60)	400 (120)	600 (185)	800 (245)	1000 (300)	Starting Conditions sfm	m/min
P	KC5025		◁▷				400	120
	KC9125			◁▷			650	200
	KC9110				◁▷		800	250
	KT315**				◁▷		850	260

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

Stainless Steel

KENNA PERFECT Material Group	grade	Speed - sfm (m/min) 150 (45)	300 (90)	450 (140)	600 (185)	750 (230)	Starting Conditions sfm	m/min
M	KC5025		◁▷				350	105
	KC5010			◁▷			450	135
	KT315			◁▷			550	170

Cast Iron

KENNA PERFECT Material Group	grade	Speed - sfm (m/min) 400 (120)	550 (170)	700 (215)	850 (260)	1000 (300)	Starting Conditions sfm	m/min
K	KC9125			◁▷			650	200
	KC9110		◁▷				800	245

Non-Ferrous Metals

KENNA PERFECT Material Group	grade	Speed - sfm (m/min) 500 (150)	1000 (300)	1500 (460)	2000 (610)	2500 (760)	Starting Conditions sfm	m/min
N	KC5025		◁▷				1200	365
	KC5010			◁▷			1500	455
	KD1405***				◁▷		2000	610

***Recommended for high-silicon aluminum alloys and abrasive non-metallics.

High-Temp Alloys

KENNA PERFECT Material Group	grade	Speed - sfm (m/min) 60 (15) / 120 (35) / 180 (55) / 240 (75) / 300 (90) / 450 (140)	Starting Conditions sfm	Starting Conditions m/min
S	KT315		100	30
	KC5025		150	45
	KC5010		200	60

Hardened Materials

KENNA PERFECT Material Group	grade	Speed - sfm (m/min) 60 (15) / 120 (35) / 180 (55) / 240 (75)	Starting Conditions sfm	Starting Conditions m/min
H	KC5010		100	30

Recommended KENNA UNIVERSAL Cutting Speeds

KENNA UNIVERSAL Material Group	grade	Speed - sfm (m/min) 150 (45) / 300 (90) / 450 (140) / 600 (185) / 750 (230)	Starting Conditions sfm	Starting Conditions m/min
P	KU30T		400	120
K	KU30T		650	200
M	KU30T		350	105
S	KU30T		200	60

5th Step – Select Insert and Holder from Catalog Page

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

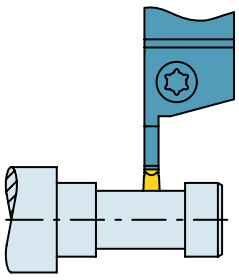
Example for A4 – Groove and Turn

material: low-alloyed steel
workpiece OD: 1.5 in. (38 mm)
groove depth: .5 in. (12 mm)
groove width: .850 in. (22 mm)
lightly interrupted cut

Recommendation:

insert: A4G0405M04U08GMN
grade: KC9125
insert width: 4,05 mm
insert seat size: 4

toolholder: A4SMR160417
grooving depth: .670 in. (17 mm)
seat size: 4



speed: 650 sfm (200 m/min)
turn feed: .010 ipr (0,25 mm)
plunge feed: .006 ipr (0,14 mm)

Congratulations!

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