

KENNA PERFECT – Selection Guide

A system of grades, geometries, and application guidelines to provide optimal solutions for your metalcutting needs. It's easy to determine which Kennametal chip-control cutting tool will work best in your specific workpiece materials and applications!



by Geometry...
CNMG432FP
1 2

by Grade...
KC9225
3 4 5

...and by looking at the actual insert!

- 1 APPLICATION:**
FF (Fine Finishing)
F (Finishing)
M (Medium Machining)
R (Roughing)
HP (High Positive)
U (Universal)

- 2 EDGE CLASS:**
N (Negative)
P (Positive)
S (Sharp)
H (Heavy Roughing)

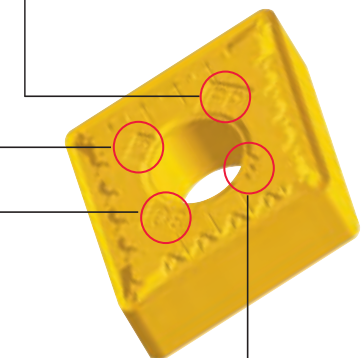
- 3 COATING TYPE:**
9 = CVD
(Chemical Vapor Deposition)
5 = PVD
(Physical Vapor Deposition)

- 4 KENNA PERFECT MATERIAL GROUP:**
1 = Steel
2 = Stainless Steel
3 = Cast Iron
4 = Non-Ferrous
5 = High-Temp Alloy
6 = Hardened Material
0 = Universal Machining

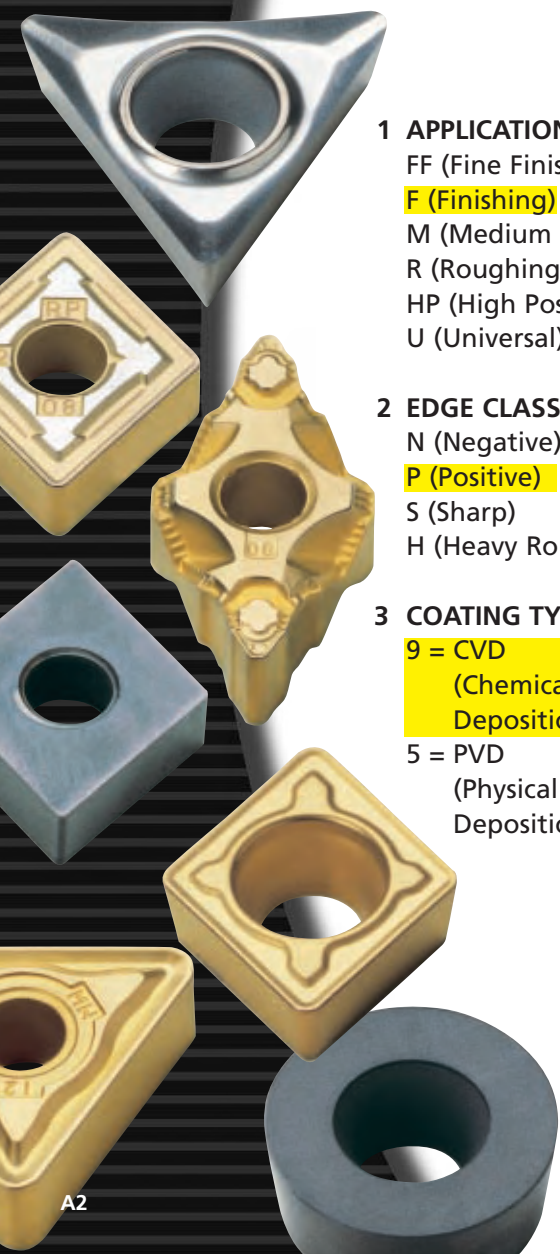
- 5 WEAR/TOUGHNESS ISO RANGE:**
10 = Highly Wear Resistant to
50 = Extremely Tough

NOSE RADIUS:
both ANSI and ISO

APPLICATION:
FF, FN, MN, RN, **FP**,
MP, RP, RH, or UN



- GEOMETRY:**
▼ Roughing
▼▼ Medium Machining
▼▼▼ **Finishing**
▼▼▼▼ Fine Finishing



Positive Inserts



SCREW-ON Inserts

- Screw-On inserts are your first choice for ID turning of all materials and OD turning on small to medium-size lathes.
- Available in flat top and chip control geometries with both molded and ground peripheries. Suitable for all workpiece materials.

See pages A116-A145 for product listing.



KENDEX and V-Bottom Inserts

- Kendex positive and V-Bottom inserts are your first choice for productive machining of high-temperature alloys on medium to large lathes.
- Available in flat top geometries with ground periphery.

See pages A106-A115 for Kendex positive product listing.
See pages A106-A109 for V-Bottom product listing.



TOP NOTCH Profiling Inserts

- First choice for high-production profiling.
- Unique insert clamping design offers superior rigidity.
- Available in chip control geometries with both molded and ground peripheries. Suitable for all workpiece materials.

See pages D4-D7 for product listing.



K-LOCK Inserts

- K-Lock inserts are ideal for deep grooving and profiling.
- A unique insert clamping system allows for unimpeded chip flow.
- Available in molded and ground peripheries.

See pages D18-D19 for product listing.

Negative Inserts



KENLOC Inserts

- Kenloc inserts are your first choice for general machining of all materials on medium to large lathes.
- Kenloc inserts offer the best economy for high metal removal rates.
- Available in flat top and chip control geometries with both molded and ground peripheries. Suitable for all workpiece materials.

See pages A40-A91 for product listing.



KENDEX Inserts

- Ceramic Kendex inserts are a great choice for productive machining of high-temp alloys.
- Kendex negative rake inserts are also recommended for the machining of hardened materials and cast irons.
- Available in flat top geometries with molded and ground peripheries.

- Wide selection of standard toolholders are offered.

See pages A92-A105 for product listing.



TOP NOTCH TURNING Inserts

- Ceramic Top Notch Turning inserts are your first choice for high-speed roughing and finishing of cast iron parts.
- Available in flat top geometries with molded and ground peripheries.

See pages A92-A105 for product listing.



KENNA PERFECT, Kennametal's 3-step insert selection system, makes choosing and applying the most productive tool as easy as 1, 2, 3. Tool recommendations are based on six workpiece material groups, optimizing selection accuracy.


Example:

6 workpiece material groups

1st Step – Select the Insert Geometry

Given: depth of cut = .040" (1,0 mm) and
feed = .016 ipr (0,4 mm)
Unknown: insert geometry
Solution: -MN

2nd Step – Select the Grade

Given: cutting conditions:
lightly interrupted cut 
Geometry: -MN
Unknown: grade
Solution: KC9125

3rd Step – Select the Cutting Speed

Given: grade KC9125
cutting conditions 
material AISI 1010
Unknown: cutting speed
Solution: 925 sfm

**Need help in selecting a product?
Call Customer Application Support at 800/835-3668.**

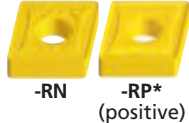


- Steel
- Stainless Steel
- Cast Iron
- Non-Ferrous
- High-Temp Alloys
- Hardened Materials

1st Step – Select the Insert Geometry

Negative Inserts

▼ Roughing



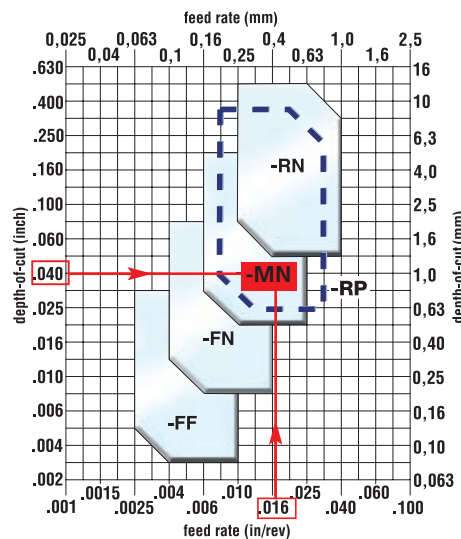
▼▼ Medium Machining



▼▼▼ Finishing



▼▼▼▼ Fine Finishing



*-RP – Supplemental geometry for high-strength materials

2nd Step – Select the Grade

Cutting Condition	Negative Insert Geometry				
	-FF ▼▼▼▼	-FN ▼▼▼	-MN ▼▼	-RN ▼	-RP ▼
heavily interrupted cut	KC9110	KC9125	KC9040*	KC9040*	KC9040*
lightly interrupted cut	KC9110	KC9125	KC9125	KC9125	KC9125
varying depth of cut, casting or forging skin	KT315	KC9110	KC9110	KC9110	KC9110
smooth cut, pre-turned surface	KT315	KT315	KC9110	KC9110	KC9110

3rd Step – Select the Cutting Speed

Low-Carbon (< 0,3% C) and Free-Machining Steel

AISI: 1008, 1010, 1018, 1020, 1026, 10L18, 10L45, 10L50, 1108, 1117, 1141, 1151, 11L44, 1200 series, and 12L14

KENNA PERFECT Material Group	grade	Speed - sfm (m/min)								Starting Conditions ◊	
		450 (135)	600 (180)	750 (225)	900 (275)	1050 (320)	1200 (360)	1350 (410)	1500 (455)	sfm	m/min
P 1	KT315									1450	440
	KC9110/KC9315									1320	400
	KC9125/KC9225/KC5010									925	280
	KC9040*/KC9240/KC8050									700	215

New KENNA PERFECT Material Group Selection Guide:

To optimize speed recommendations, KENNA PERFECT Material Sub-Groups have been added to each of the six workpiece material groups.

Material	Material Group ISO Code	No. of Material Sub-Groups
Steel	P	1 - 6
Stainless Steel	M	1 - 3
Cast Iron	K	1 - 3
Non-Ferrous	N	1 - 8
High-Temp Alloys	S	1 - 4
Hardened Materials	H	1

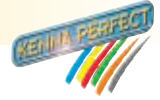
see page E54 for KENNA PERFECT Material Group Selection Guide

*Grade KC9140 available Spring 2005

TURNING INSERTS
 KENDEX
 SCREW-ON
 TOOLHOLDERS
 BORING BARS
 BORING HEADS
 CARTRIDGES



1st Step – Select the Insert Geometry



Negative Wiper Inserts

Roughing Wiper



-RW

Medium Wiper

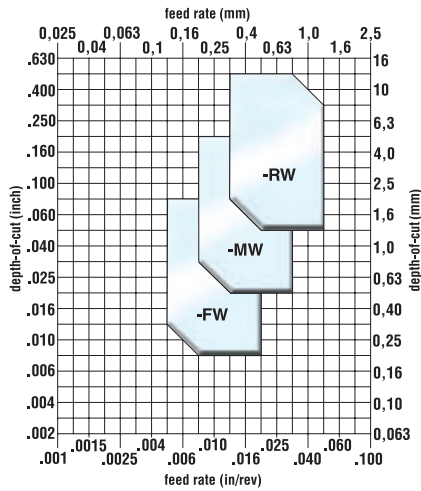


-MW

Finishing Wiper



-FW



Positive Wiper Inserts

Medium Wiper

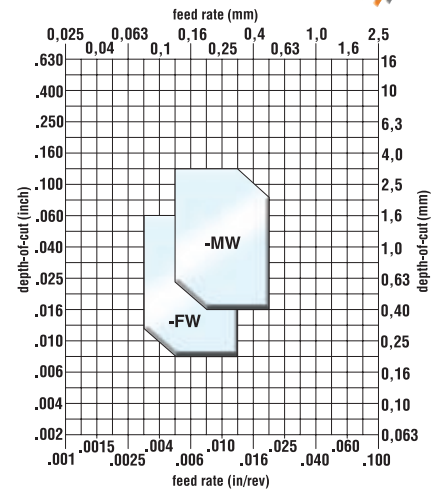


-MW

Finishing Wiper



-FW



2nd Step – Select the Grade

Negative Insert Geometry

Positive Insert Geometry

Cutting Condition



-FW

-MW

-RW

-FW

-MW

heavily interrupted cut

-

-

KC8050

-

KC8050

lightly interrupted cut



KC9110

KC9125

KC9125

KC9225

KC9225

varying depth of cut, casting or forging skin



KT315

KC9110

KC9110

KC9315

KC9315

smooth cut, pre-turned surface



KT315

KC9110

KC9110

KT315

KT315

1st Step – Select the Insert Geometry

Negative Inserts

▼ Roughing



-RN



-RP*
(positive)

▼▼ Medium Machining



-MN

▼▼▼ Finishing



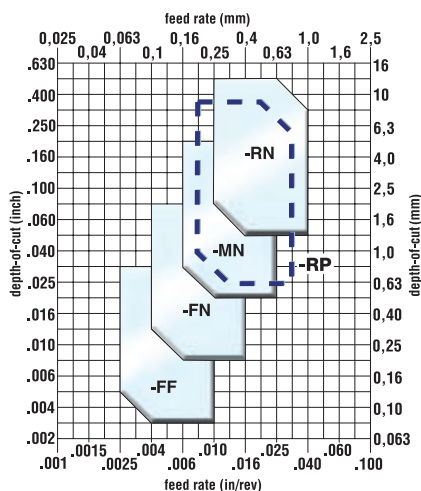
-FN

▼▼▼▼ Fine Finishing



-FF

*-RP – Supplemental geometry for high-strength materials



Positive Inserts

▼▼ Medium Machining



-MF

▼▼▼ Finishing



-LF

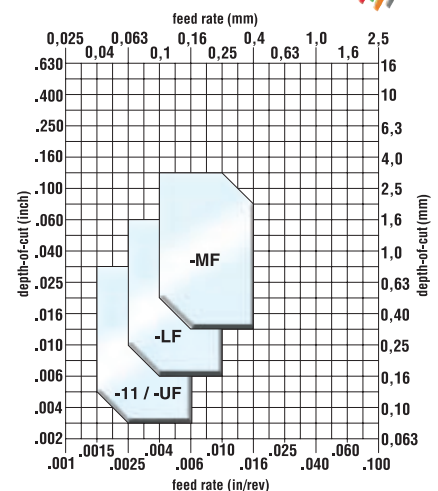
▼▼▼▼ Fine Finishing



-11



-UF



2nd Step – Select the Grade

Negative Insert Geometry

Positive Insert Geometry

Cutting Condition



-FF

-FN

-MN

-RN

-RP

-11

-UF

-LF

-MF

heavily interrupted cut

▼▼▼▼

▼▼▼

▼▼

▼

▼

▼▼▼▼

▼▼▼▼

▼▼▼

▼▼

lightly interrupted cut



KC9110

KC9125

KC9125

KC9125

-

KC5010

KC9125

KC9125

varying depth of cut, casting or forging skin



KT315

KC9110

KC9110

KC9110

KT315

-

KC9110

KC9110

smooth cut, pre-turned surface



KT315

KT315

KC9110

KC9110

KT315

-

KT315

KC9110



3rd Step – Select the Cutting Speed

Low-Carbon (< 0,3% C) and Free-Machining Steel

AISI: 1008, 1010, 1018, 1020, 1026, 10L18, 10L45, 10L50, 1108, 1117, 1141, 1151, 11L44, 1200 series, and 12L14

KENNA PERFECT Material Group	grade	Speed - sfm (m/min)							Starting Conditions ◊		
		450 (135)	600 (180)	750 (225)	900 (275)	1050 (320)	1200 (360)	1350 (410)	1500 (455)	sfm	m/min
P 1	KT315								◊	1450	440
	KC9110/KC9315							◊		1320	400
	KC9125/KC9225/KC5010				◊					925	280
	KC9040*/KC9240/KC8050		◊							700	215

Medium- and High-Carbon Steels (> 0,3% C)

AISI: 1035, 1040, 1045, 1055, 1080, 1085, 1090, 1095, 1525, 1541, 1548, 1551, 1561, and 1572

KENNA PERFECT Material Group	grade	Speed - sfm (m/min)							Starting Conditions ◊		
		450 (135)	600 (180)	750 (225)	900 (275)	1050 (320)	1200 (360)	1350 (410)	sfm	m/min	
P 2	KT315				◊					880	270
	KC9110/KC9315				◊					800	250
	KC9125/KC9225/KC5010			◊						650	200
	KC9040*/KC9240/KC8050		◊							500	150

Alloy Steels and Tool Steels (≤ 330 HB) (≤ 35 HRC)

Alloy Steels: AISI 1300, 2000, 3000, 4000, 5000, 6000, 7000, and 8000 series steels. Tool Steels: SAE classes: M and T; hot and cold work SAE classes: A, D, H, O, and S; wrought high carbon / low alloy W1, W2, L2, P1, P6, and P20

KENNA PERFECT Material Group	grade	Speed - sfm (m/min)							Starting Conditions ◊		
		450 (135)	600 (180)	750 (225)	900 (275)	1050 (320)	1200 (360)	1350 (410)	sfm	m/min	
P 3	KT315				◊					680	210
	KC9110/KC9315				◊					630	190
	KC9125/KC9225/KC5010			◊						510	155
	KC9040*/KC9240/KC8050		◊							400	120

Alloy Steels and Tool Steels (340 - 450 HB) (36 - 48 HRC)

Alloy Steels: AISI 1300, 4000, 5000, and 8000 series steels. Tool Steels: SAE classes: M and T; hot and cold work SAE classes: A, D, H, O, and S; wrought high carbon / low alloy W1, W2, L2, P1, P6, and P20.

KENNA PERFECT Material Group	grade	Speed - sfm (m/min)							Starting Conditions ◊		
		200 (60)	300 (90)	400 (120)	500 (180)	600 (180)	700 (210)	900 (240)	sfm	m/min	
P 4	KT315						◊			530	160
	KC9110/KC9315						◊			480	150
	KC9125/KC9225/KC5010			◊						360	110
	KC9040*/KC9240/KC8050		◊							325	100

Ferritic, Martensitic, and PH Stainless Steels (≤ 330 HB) (≤ 35 HRC)

400 and 500 series, and precipitation hardening (PH) AISI: 410, 416, 416F, 416Se, 420F, 430F, 4389F Se, 440, 440C, 502, 504, 17-4PH, PH 13-8 Mo, and 15-5 PH

KENNA PERFECT Material Group	grade	Speed - sfm (m/min)							Starting Conditions ◊		
		400 (120)	500 (150)	600 (180)	700 (210)	800 (240)	900 (275)	1000 (300)	sfm	m/min	
P 5	KT315						◊			800	250
	KC9110/KC9315						◊			720	220
	KC9125/KC9225/KC5010			◊						660	200
	KC9040*/KC9240/KC8050		◊							450	140

Ferritic, Martensitic, and PH Stainless Steels (340 - 450 HB) (36 - 48 HRC)

400 and 500 series, and precipitation hardening (PH) AISI: 410, 416, 416F, 416Se, 420F, 430F, 4389F Se, 440, 440C, 502, 504, 17-4PH, PH 13-8 Mo, and 15-5 PH

KENNA PERFECT Material Group	grade	Speed - sfm (m/min)							Starting Conditions ◊		
		350 (105)	450 (135)	550 (170)	650 (200)	750 (225)	850 (260)	950 (285)	sfm	m/min	
P 6	KT315						◊			660	200
	KC9110/KC9315						◊			600	180
	KC9125/KC9225/KC5010			◊						500	150
	KC9040*/KC9240/KC8050		◊							350	110

*Grade KC9140 available Spring 2005

◊ Represents the recommended starting conditions. Optimize for your specific application.

KENLOC
TURNING INSERTS
KENDEX
SCREW-ON
TOOL HOLDERS
BORING BARS
TURNING HOLDERS
BORING HEADS
CARTRIDGES



Austenitic Stainless Steels

1st Step – Select the Insert Geometry



Negative Wiper Inserts

Roughing Wiper



-RW

Medium Wiper

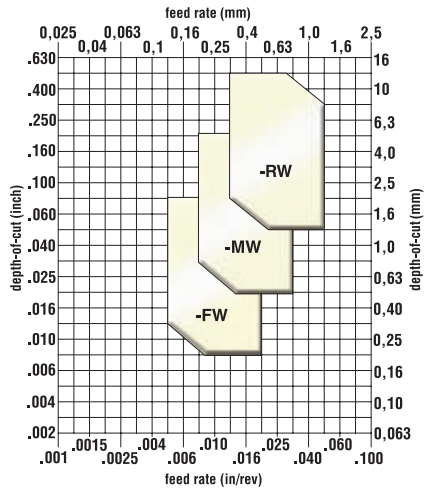


-MW

Finishing Wiper



-FW



Positive Wiper Inserts

Medium Wiper

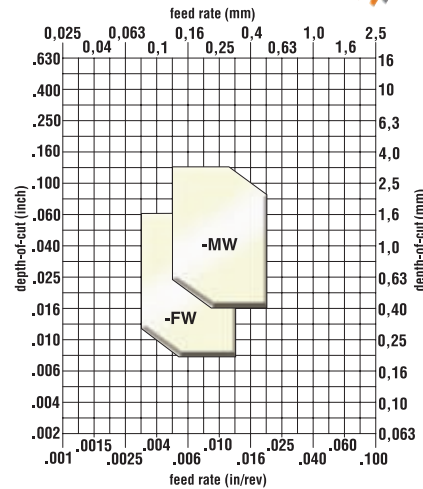


-MW

Finishing Wiper



-FW



2nd Step – Select the Grade

Negative Insert Geometry

Positive Insert Geometry

Cutting Condition	-FW	-MW	-RW	-FW	-MW
heavily interrupted cut	⚙️	–	–	–	–
lightly interrupted cut	⚙️	KC9225	KC9240	KC8050	KC9225
varying depth of cut, casting or forging skin	⚙️	KC5010	KC9225	KC8050	KC5010
smooth cut, pre-turned surface	⚙️	KT315	KC9225	KC8050	KT315

1st Step – Select the Insert Geometry



Negative Inserts

▼ Roughing



-RP -P

▼▼ Medium Machining



-MP

▼▼▼ Finishing

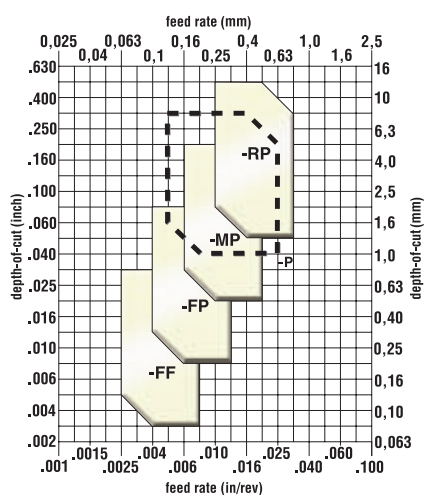


-FP

▼▼▼▼ Fine Finishing



-FF



Positive Inserts

▼▼ Medium Machining



-MF

▼▼▼ Finishing

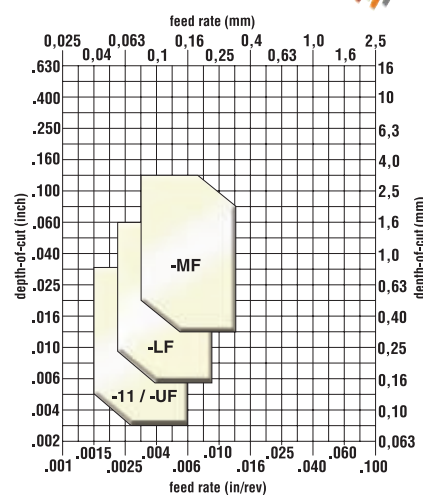


-LF ..GT-LF

▼▼▼▼ Fine Finishing



-11 -UF



2nd Step – Select the Grade

Negative Insert Geometry

Positive Insert Geometry

Cutting Condition	-FF	-FP	-MP	-P	-RP	-11	-UF	-LF	..GT-LF	-MF
heavily interrupted cut	⚙️	⚙️	⚙️	⚙️	⚙️	–	–	–	–	–
lightly interrupted cut	⚙️	KC5010	KC9225	KC9240	KC9240	–	–	–	–	–
varying depth of cut, casting or forging skin	⚙️	KT315	KC5010	KC9225	KC9225	KT315	–	–	–	–
smooth cut, pre-turned surface	⚙️	KT315	KT315	KC5010	KC5010	KT315	–	–	–	–



3rd Step – Select the Cutting Speed

Austenitic Stainless Steel: AISI: 200, 201, 202, 209, 219, 301, 302, 303, 304, 304L, 305, 309

KENNA PERFECT Material Group	grade	Speed - sfm (m/min)						Starting Conditions		
		300 (90)	450 (135)	600 (180)	750 (225)	900 (275)	1050 (320)	1200 (360)	sfm	m/min
M 1	KT315								750	230
	KC5010								700	215
	KC9225								600	185
	KC5025								550	180
	KC8050								550	170
	KC9240								500	150
	KC9245								400	120

Austenitic Stainless Steel: AISI: 310, 314, 316, 316L, 317, 321, 347, 384 ASTM Cast: XM-1, XM-5, XM-7, XM-21

KENNA PERFECT Material Group	grade	Speed - sfm (m/min)						Starting Conditions		
		300 (90)	450 (135)	600 (180)	750 (225)	900 (275)	1050 (320)	1200 (360)	sfm	m/min
M 2	KT315								700	215
	KC5010								650	200
	KC9225								550	170
	KC5025								500	165
	KC8050								500	150
	KC9240								450	140
	KC9245								350	105

Austenitic Stainless Steel: Duplex (Ferritic and Austenitic Mixture) AISI: 323, 329, F55, 2205, S329000

KENNA PERFECT Material Group	grade	Speed - sfm (m/min)						Starting Conditions		
		300 (90)	450 (135)	600 (180)	750 (225)	900 (275)	1050 (320)	1200 (360)	sfm	m/min
M 3	KT315								650	200
	KC5010								600	185
	KC9225								500	150
	KC5025								450	150
	KC8050								450	140
	KC9240								400	120
	KC9245								300	90

Represents the recommended starting conditions. Optimize for your specific application.

Ferritic, Martensitic, and PH Stainless Steels like those listed below have cutting characteristics similar to that of typical steels. For recommendations on cutting these types of steels, please refer to page A7 (groups P5 and P6).

Ferritic, Martensitic, and PH Stainless Steels (330 - 450 HB) (up to 48 HRC)

400 and 500 series, and precipitation hardening (PH) AISI: 410, 416, 416F, 416Se, 420F, 430F, 4389F Se, 440, 440C, 502, 504, 17-4PH, PH 13-8 Mo, and 15-5 PH

**Need help in selecting a product?
Call Customer Application Support at 800/835-3668.**



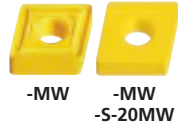
Ductile and Gray Irons

1st Step – Select the Insert Geometry

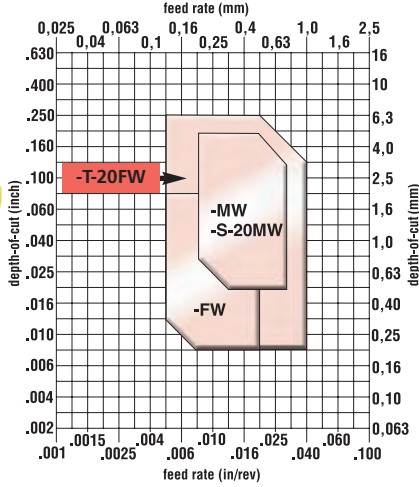


Negative Wiper Inserts

Medium Wiper



Finishing Wiper

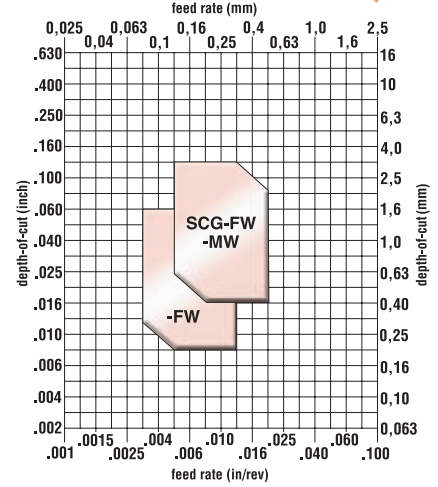


Positive Wiper Inserts

Medium Wiper



Finishing Wiper



2nd Step – Select the Grade

Cutting Condition	Gray Iron	Negative Insert Geometry				Positive Insert Geometry		
		-FW	-T-20FW	-MW	-S-20MW	-FW	SCG-FW	-MW
heavily interrupted cut		–	KY3500	–	KB9640	–	KY3500	–
lightly interrupted cut		KC9315	KY3500	KC9325	KB9640	KC9315	KY3500	KC9315
varying depth of cut, casting or forging skin		KT315	KY1310	KC9315	KB9640	KC9315	KY1310	KC9315
smooth cut, pre-turned surface		KT315	KY1310	KC9315	KB9640	KT315	KY1310	KT315

Cutting Condition	Ductile Iron	Negative Insert Geometry			Positive Insert Geometry		
		-FW	-T-20FW	-MW	-FW	SCG-FW	-MW
heavily interrupted cut		–	–	–	–	–	–
lightly interrupted cut		KC9315	KY3500	KC9315	KC9315	KY3500	KC9315
varying depth of cut, casting or forging skin		KT315	KY3400	KC9315	KC9315	KY3400	KC9315
smooth cut, pre-turned surface		KT315	KY3400	KC9315	KT315	KY3400	KT315



3rd Step – Select the Cutting Speed

Gray Cast Iron

ASTM A48: class 20, 25, 30, 35, 40, 45, 50, 55, 60 SAE J431: grade G1800, G3000, G3500, G4000

KENNA PERFECT Material Group	grade	Speed - sfm (m/min)									Starting Conditions		
		200 (60)	600 (180)	1000 (305)	1400 (430)	1800 (550)	2200 (675)	2600 (800)	3000 (920)	3400 (1040)	3800 (1160)	sfm	m/min
		K 1	KT315										
KC9315											900	275	
KC9325											900	275	
KB9640											2500	760	
KY1310											2500	760	
KY3500											2500	760	

Ductile, Compacted Graphite & Malleable Cast Irons (<80 KSI tensile strength)

ASTM: A536; 60-40-18, 65-45-12, 80-55-06 SAE J434: D4018, D4512, D5506 ASTM A47: grade 32510, 35018
SAE J158: grade M3210, M4504, M5003, M5503, M7002 ASTM: A842; grade 250, 300, 350, 400, 450

KENNA PERFECT Material Group	grade	Speed - sfm (m/min)							Starting Conditions	
		400 (120)	650 (200)	900 (275)	1150 (350)	1400 (430)	1650 (505)	1900 (580)	sfm	m/min
		K 2	KT315							
KC9315									850	260
KY3400									1400	430
KY3400									1200	365

Ductile, Malleable & Austempered Cast Irons (>80 KSI tensile strength)

ASTM: A536; 100-70-03, 120-90-02 SAE J434: D7003 SAE J158: grade M8501 ASTM: A897; 125-80-10, 150-100-7, 175-125-4, 200-150-1, 230-185

KENNA PERFECT Material Group	grade	Speed - sfm (m/min)							Starting Conditions	
		400 (120)	650 (200)	900 (275)	1150 (350)	1400 (430)	1650 (505)	1900 (580)	sfm	m/min
		K 3	KT315							
KC9315									700	215
KY3400									1200	365
KY3500									1100	335

Represents the recommended starting conditions. Optimize for your specific application.

Need help in selecting a product?

Call Customer Application Support at 800/835-3668.



Ductile and Gray Irons

1st Step – Select the Insert Geometry

Negative Inserts

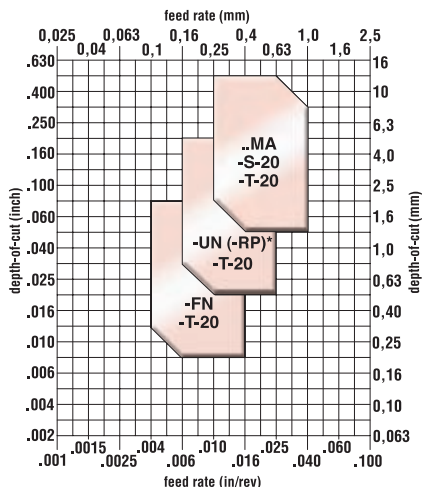
▼ Roughing



▼▼ Medium Machining



▼▼▼ Finishing



Positive Inserts

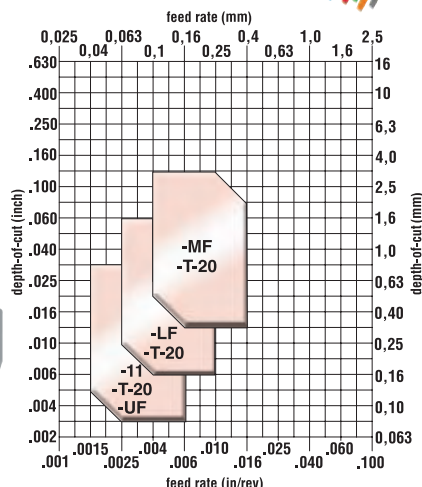
▼▼ Medium Machining



▼▼▼ Finishing



▼▼▼ Fine Finishing



* geometry can be used in medium machining operations to reduce tool pressure in high-strength metals.

2nd Step – Select the Grade

Gray Iron

Cutting Condition	Negative Insert Geometry							Positive Insert Geometry					
	-T-20	-FN	-T-20	-UN(-RP)	-T-20	..MA	-S-20	-T-20	-T-20	-LF	-T-20	-MF	
heavily interrupted cut	☹	–	KC9315	KY3500	KC9325	KY3500	KC9325	KB9640	–	KY3500	KC9325	KY3500	KC9325
lightly interrupted cut	☹	–	KC9315	KY3500	KC9325	KY3500	KC9325	KB9640	–	KY3500	KC9325	KY3500	KC9325
varying depth of cut, casting or forging skin	☹	KY1310	KT315	KY1310	KC9325	KY3500	KC9325	KB9640	KY1310	KY1310	KC9325	KY3500	KC9325
smooth cut, pre-turned surface	☹	KY1310	KT315	KY1310	KC9315	KY1310	KC9315	KB9640	KY1310	KY1310	KC9315	KY1310	KC9325

Ductile Iron

Cutting Condition	Negative Insert Geometry						Positive Insert Geometry						
	-T-20	-FN	-T-20	-UN(-RP)	-T-20	..MA	-T-20	-11/-UF	-T-20	-LF	-T-20	-MF	
heavily interrupted cut	☹	–	KC9315	KY3500	KC9325	KY3500	KC9325	–	–	KY3500	KC9325	KY3500	KC9325
lightly interrupted cut	☹	–	KC9315	KY3400	KC9315	KY3400	KC9315	–	KC5010	KY3400	KC9315	KY3400	KC9315
varying depth of cut, casting or forging skin	☹	KY3400	KT315	KY3400	KC9315	KY3400	KC9315	KY3400	KT315	KY3400	KC5010	KY3400	KC9315
smooth cut, pre-turned surface	☹	KY3400	KT315	KY3400	KC9315	KY3400	KC9315	KY3400	KT315	KY3400	KT315	KY3400	KC9315



3rd Step – Select the Cutting Speed

Gray Cast Iron

ASTM A48: class 20, 25, 30, 35, 40, 45, 50, 55, 60 SAE J431: grade G1800, G3000, G3500, G4000

KENNA PERFECT Material Group	grade	Speed - sfm (m/min)										Starting Conditions		
		200 (60)	600 (180)	1000 (305)	1400 (430)	1800 (550)	2200 (675)	2600 (800)	3000 (920)	3400 (1040)	3800 (1160)	sfm	m/min	
K 1	KT315												900	275
	KC9315												900	275
	KC9325												900	275
	KB9640												2500	760
	KY1310												2500	760
	KY3500												2500	760

Ductile, Compacted Graphite & Malleable Cast Irons (< 80 KSI tensile strength)

ASTM: A536; 60-40-18, 65-45-12, 80-55-06 SAE J434: D4018, D4512, D5506 ASTM A47: grade 32510, 35018
SAE J158: grade M3210, M4504, M5003, M5503, M7002 ASTM: A842; grade 250, 300, 350, 400, 450

KENNA PERFECT Material Group	grade	Speed - sfm (m/min)													Starting Conditions	
		300 (90)	450 (135)	600 (180)	750 (225)	900 (275)	1050 (320)	1200 (360)	1350 (410)	1500 (460)	1650 (500)	1800 (550)	1950 (600)	sfm	m/min	
K 2	KT315													900	275	
	KC5010													650	200	
	KC9315													850	260	
	KC9325													850	260	
	KY3400													1400	430	
	KY3500													1200	365	

Ductile, Malleable & Austempered Cast Irons (> 80 KSI tensile strength)

ASTM: A536; 100-70-03, 120-90-02 SAE J434: D7003 SAE J158: grade M8501 ASTM: A897; 125-80-10, 150-100-7, 175-125-4, 200-150-1, 230-185

KENNA PERFECT Material Group	grade	Speed - sfm (m/min)													Starting Conditions	
		300 (90)	450 (135)	600 (180)	750 (225)	900 (275)	1050 (320)	1200 (360)	1350 (410)	1500 (460)	1650 (500)	1800 (550)	1950 (600)	sfm	m/min	
K 3	KT315													750	230	
	KC5010													500	150	
	KC9315													700	215	
	KC9325													700	215	
	KY3400													1200	365	
	KY3500													1100	335	

Represents the recommended starting conditions. Optimize for your specific application.

**Need help in selecting a product?
Call Customer Application Support at 800/835-3668.**



Aluminum Alloys

1st Step – Select the Insert Geometry

Negative Inserts

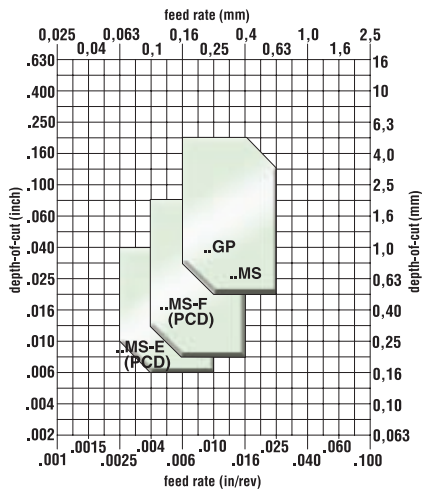
▼ Medium Machining



▼▼ Finishing



▼▼▼ Fine Finishing



Positive Inserts

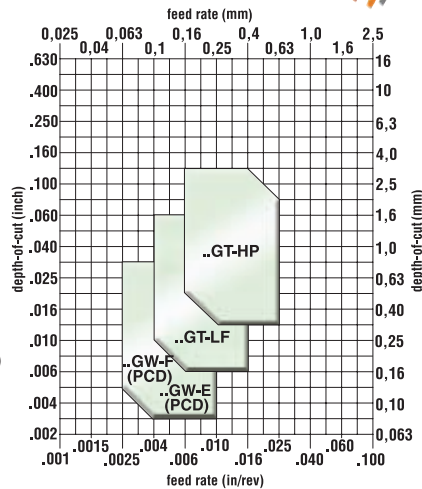
▼ Medium Machining



▼▼ Finishing



▼▼▼ Fine Finishing



2nd Step – Select the Grade

Cutting Condition	Negative Insert Geometry				Positive Insert Geometry			
	..MS-E (PCD)	..MS-F (PCD)	..GP	..MS	..GW-E (PCD)	..GW-F (PCD)	..GT-LF	..GT-HP
heavily interrupted cut	⚙️	▼▼▼▼	▼▼	▼▼	▼▼▼▼	▼▼▼▼	▼▼▼	▼▼
lightly interrupted cut	⚙️	KD1405	KD100	KC5410	KC5410	KD1405	KD100	KC5410
varying depth of cut, casting or forging skin	⚙️	KD1405	KD100	KC5410	KC5410	KD1405	KD100	KC5410
smooth cut, pre-turned surface	⚙️	KD1405	KD100	KC5410	KC5410	KD1405	KD100	KC5410

3rd Step – Select the Cutting Speed

low-silicon aluminum alloys (hypoeutectic < 12.2% Si) and magnesium alloys

KENNA PERFECT Material Group	grade	Speed - sfm (m/min)								Starting Conditions ◊	
		800 (250)	1600 (500)	2400 (750)	3200 (1000)	4000 (1250)	4800 (1500)	5600 (1750)	6400 (2000)	7200 (2250)	8000 (2500)
N 1	KC5410	◊								1800	550
	KD100	◊								2500	765

high-silicon aluminum alloys (hypereutectic > 12.2% Si) and magnesium alloys

KENNA PERFECT Material Group	grade	Speed - sfm (m/min)				Starting Conditions ◊	
		800 (250)	1600 (500)	2400 (750)	3200 (1000)	sfm	m/min
N 2	KD100	◊				1700	520
	KD1405	◊				2000	520

◊ Represents the recommended starting conditions. Optimize for your specific application.



Additional Cutting Speed Recommendations for Miscellaneous Workpiece Materials

copper, brass, zinc-based on a machinability index range of 70 - 100

KENNA PERFECT Material Group	grade	Speed - sfm (m/min)				Starting Conditions	
		800 (250)	1600 (500)	2400 (750)	3200 (1000)	sfm	m/min
N 3	KD100/KD1405					1700	520
	KC5010					900	275
	K313					850	260

nylon, plastics, rubbers, phenolics, resins, fiberglass, and glass

KENNA PERFECT Material Group	grade	Speed - sfm (m/min)				Starting Conditions	
		800 (250)	1600 (500)	2400 (750)	3200 (1000)	sfm	m/min
N 4	KD100/KD1405					1300	400
	KC5010					550	170

carbon and graphite composites: brush alloys, Kevlar, graphite 280 - 400 HB (30 - 43 HRC)

KENNA PERFECT Material Group	grade	Speed - sfm (m/min)				Starting Conditions	
		800 (250)	1600 (500)	2400 (750)	3200 (1000)	sfm	m/min
N 5	KD100/KD1405					2500	760
	KC5010					650	200

MMC's (aluminum-based Metal Matrix Composites)

KENNA PERFECT Material Group	grade	Speed - sfm (m/min)				Starting Conditions	
		800 (250)	1600 (500)	2400 (750)	3200 (1000)	sfm	m/min
N 6	KD1405					1500	460
	KD100					1200	365

TiN alloys, cast: ASTM 823, alloys 1, 2, 3, 11

KENNA PERFECT Material Group	grade	Speed - sfm (m/min)				Starting Conditions	
		800 (250)	1600 (500)	2400 (750)	3200 (1000)	sfm	m/min
N 7	KC5010					700	215
	K313					600	180

depleted uranium

KENNA PERFECT Material Group	grade	Speed - sfm (m/min)				Starting Conditions	
		800 (250)	1600 (500)	2400 (750)	3200 (1000)	sfm	m/min
N 8	KC5010					700	215
	K313					600	180

Represents the recommended starting conditions. Optimize for your specific application.

**Need help in selecting a product?
Call Customer Application Support at 800/835-3668.**

KENLOC
TURNING INSERTS
KENDIX
SCREW-ON
TOOLHOLDERS
BORING BARS
TURNING HOLDERS
BORING HEADS
CARTRIDGES



1st Step – Select the Insert Geometry

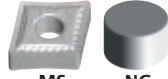
Negative Inserts

▼ Roughing



-RP

▼▼ Medium Machining



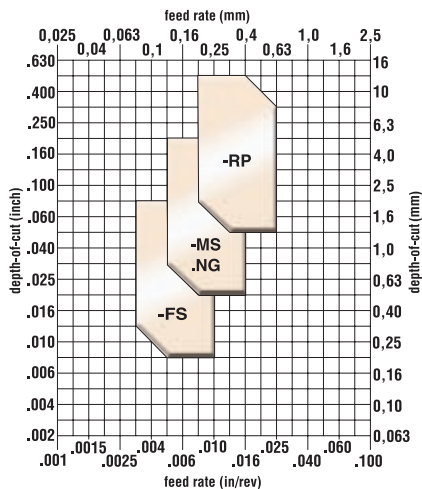
-MS

.NG

▼▼▼ Finishing



-FS



Positive Inserts

▼▼ Medium Machining



MT-LF

R.GV-T

▼▼▼ Finishing



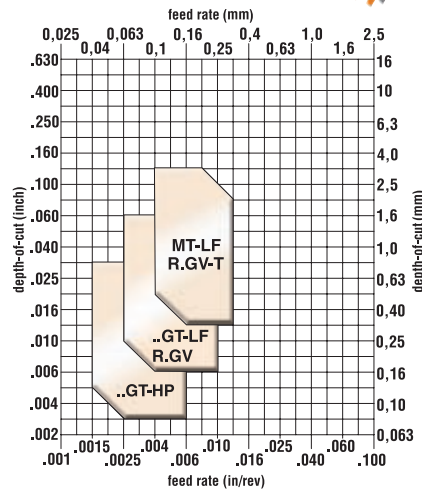
..GT-LF

R.GV

▼▼▼ Fine Finishing



..GT-HP



2nd Step – Select the Grade

Negative Insert Geometry

Positive Insert Geometry

Cutting Condition	Negative Insert Geometry				Positive Insert Geometry				
	-FS ▼▼▼	.NG ▼▼	-MS ▼▼	-RP ▼	..GT-HP ▼▼▼▼	R.GV ▼▼▼	..GT-LF ▼▼▼	R.GV-T ▼▼	MT-LF ▼▼
heavily interrupted cut	KC5525	–	KC5525	KC9245	–	–	KC5025	–	KC5025
lightly interrupted cut	KC5510	KY1540	KC5525	KC5525	KC5025	KY1540	KC5025	KY1540	KC5025
varying depth of cut, casting or forging skin	KC5510	KY1540/ KY1525*	KC5510	KC5525	KC5010	KY1540/ KY1525*	KC5010	KY1540/ KY1525*	KC5010
smooth cut, pre-turned surface	KC5510/ K313	KY1525/* KY2100	KC5510/ K313	KC5510	KC5010/ K313	KY1525/* KY2100	KC5010/ K313	KY1525/* KY2100	KC5010

*Grade KY1525 available Spring 2005.



3rd Step – Select the Cutting Speed

Iron-Based, Heat-Resistant Alloys (135 - 320 HB) (≤ 34 HRC)

Wrought: A-286, Discaloy, Incoloy 801, N-155, 16-25-6, 19-9 DL Cast: ASTM A297, A351, A608, A567

KENNA PERFECT Material Group	grade	Speed - sfm (m/min)												Starting Conditions	
		50 (15)	150 (45)	250 (75)	350 (105)	450 (140)	550 (170)	650 (200)	750 (230)	850 (260)	950 (290)	1050 (350)	1150 (350)	1250 (380)	sfm
S 1	K313													100	30
	KC5510/KC5010													180	55
	KC5525/KC5025													125	40
	KC9245													100	30
	KY1525*													650	200
	KY1540													550	170
	KY2100													600	185

Cobalt-Based, Heat-Resistant Alloys (150 - 425 HB) (≤ 45 HRC)

Wrought: AiResist 213, Haynes 25 (L605), Haynes 188, J-1570, Stellite Cast: AiResist 13, Haynes 21, MAR-M302, MAR-M509, NASA Co-W-Re, WI-52

KENNA PERFECT Material Group	grade	Speed - sfm (m/min)												Starting Conditions	
		50 (15)	150 (45)	250 (75)	350 (105)	450 (140)	550 (170)	650 (200)	750 (230)	850 (260)	950 (290)	1050 (350)	1150 (350)	1250 (380)	sfm
S 2	K313													110	35
	KC5510/KC5010													195	60
	KC5525/KC5025													100	30
	KC9245													110	35
	KY1525*													720	220
	KY1540													600	185
	KY2100													650	200

Nickel-Based, Heat-Resistant Alloys (140 - 475 HB) (≤ 48 HRC)

Astrolloy, Hastelloy B/C/C-276/X, Inconel 601/617/625/700/706/718, IN102, Incoloy 901, MAR-M200, Nimonic, Rene 41, Udimet, Waspaloy, Monel

KENNA PERFECT Material Group	grade	Speed - sfm (m/min)												Starting Conditions	
		50 (15)	150 (45)	250 (75)	350 (105)	450 (140)	550 (170)	650 (200)	750 (230)	850 (260)	950 (290)	1050 (350)	1150 (350)	1250 (380)	sfm
S 3	K313													125	40
	KC5510/KC5010													225	70
	KC5525/KC5025													125	40
	KC9245													125	40
	KY1525*													820	250
	KY1540													700	215
	KY2100													750	230

Titanium and Titanium Alloys (110 - 450 HB) (≤ 48 HRC)

Pure: Ti98.8, Ti99.9 Alloyed: Ti-5Al-2.5Sn, Ti-6Al-4V, Ti-6Al-2Sn-4Zr-2Mo, Ti-3Al-8V-6Cr-4Mo-4Zr, Ti-10V-2Fe-3Al, Ti-13V-11Cr-3Al

KENNA PERFECT Material Group	grade	Speed - sfm (m/min)												Starting Conditions	
		50 (15)	150 (45)	250 (75)	350 (105)	450 (140)	550 (170)	650 (200)	750 (230)	850 (260)	950 (290)	1050 (350)	1150 (350)	1250 (380)	sfm
S 4	K313													150	45
	KC5510/KC5010													225	70
	KC5525/KC5025													175	55

Represents the recommended starting conditions. Optimize for your specific application.

*Grade KY1525 available Spring 2005.

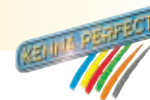
**Need help in selecting a product?
Call Customer Application Support at 800/835-3668.**

KENNA PERFECT – Hardened Materials



Hardened Steels and Irons 450 - 750 HB (48 - 65 HRC)

1st Step – Select the Insert Geometry



Negative Wiper Inserts

Medium Wiper



-S-20MWM (multi-tipped)

Finishing Wiper



-EFWMT (multi-tipped)

Finishing Wiper

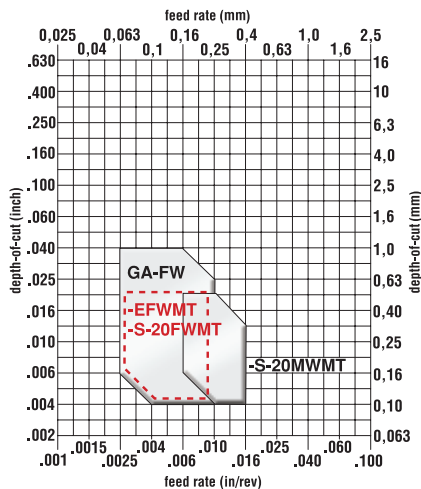


-S-20FWMT (multi-tipped)

Finishing Wiper



GA-FW



Positive Wiper Inserts

Finishing Wiper

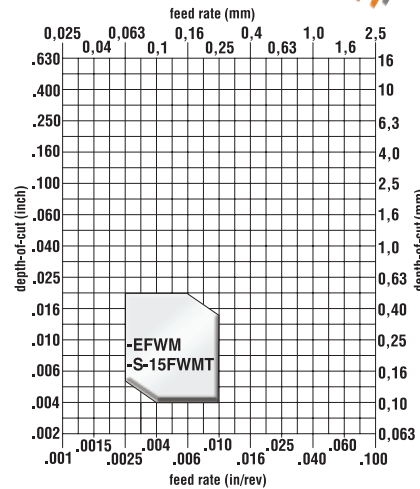


-EFWM

Fine Finishing Wiper



-S-15FWMT (multi-tipped)



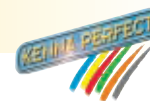
2nd Step – Select the Grade

Negative Insert Geometry

Positive Insert Geometry

Cutting Condition	GA-FW	-S-20FWMT	-EFWMT	-S-20MWM	-S-15FWMT	-EFWM
heavily interrupted cut	–	–	KB5625	–	–	–
lightly interrupted cut	–	KB9610	KB5625	KB9610	KB9610	KB5625
varying depth of cut, casting or forging skin	KY4400	KB9610	KB9610	KB9610	KB9610	KB5625
smooth cut, pre-turned surface	KY4400	KB9610	KB9610	KB9610	KB9610	KB5625

1st Step – Select the Insert Geometry



Negative Inserts

▼ Medium Machining



-S-20

▼▼ Finishing

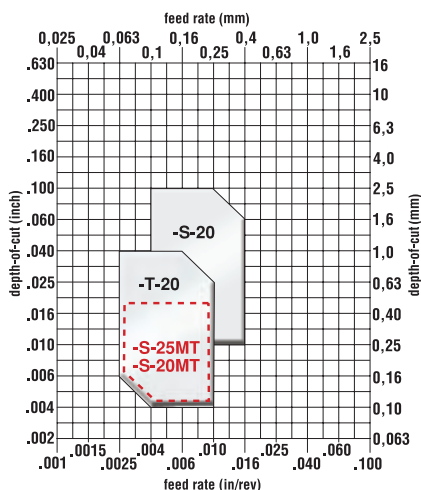


-S-25MT (multi-tipped)

▼▼▼ Fine Finishing



-T-20 -S-20MT (multi-tipped)



Positive Inserts

▼ Medium Machining



-T-15

▼▼ Finishing

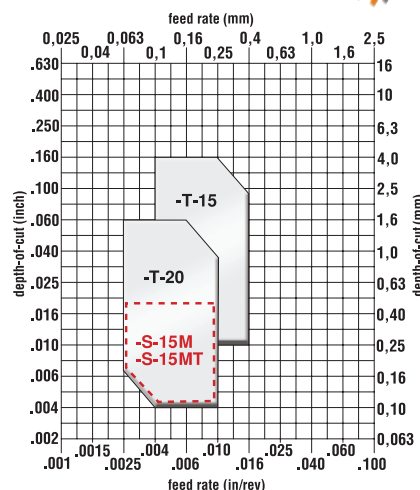


-S-15M

▼▼▼ Fine Finishing



-T-20 -S-15MT (multi-tipped)



2nd Step – Select the Grade

Negative Insert Geometry

Positive Insert Geometry

Cutting Condition	S-20MT ▼▼▼▼	-T-20 ▼▼▼▼	-S-25MT ▼▼▼	-S-20 ▼▼	-S-15MT ▼▼▼▼	-T-20 ▼▼▼▼	-S-15M ▼▼▼	-T-15 ▼▼
heavily interrupted cut	–	–	KB5625	KB9640	–	–	KB5625	–
lightly interrupted cut	KB9610	–	KB5625	KB9640	KB9610	KY4400	KB5625	KY1615
varying depth of cut, casting or forging skin	KB9610	KY4400	KB5625	KY1615	KB9610	KY4400	KB5625	KY1615
smooth cut, pre-turned surface	KB9610	KY4400	KB5625	KY1615	KB9610	KY4400	KB5625	KY1615



3rd Step – Select the Cutting Speed

KENNA PERFECT Material Group	grade	Speed - sfm (m/min)									Starting Conditions	
		50 (15)	150 (45)	250 (75)	350 (110)	450 (140)	550 (170)	650 (200)	750 (230)	850 (260)	sfm	m/min
H 1	KY4400										450	135
	KY1615										325	100
	KB9610										550	170
	KB5625										400	120
	KB9640										350	105

Represents the recommended starting conditions. Optimize for your specific application.

**Need help in selecting a product?
Call Customer Application Support at 800/835-3668.**