Step 1 • Select the insert geometry

P	Steel
M	Stainless Steel
K	Cast Iron
N	Non-Ferrous Materials
S	High-Temp Alloys
H	Hardened Materials

beyond™

Negative Inserts

-RN

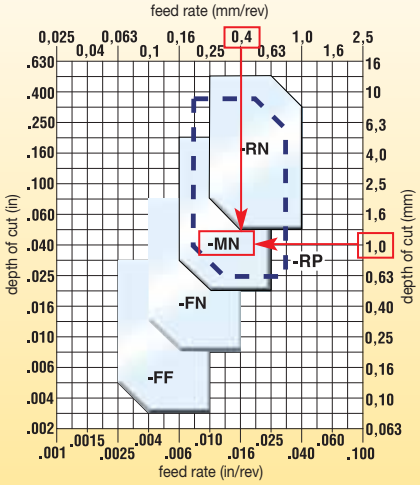
-RP* (positive)

Roughing

-FN Finishing

-MN Medium Machining

-FF Fine Finishing



*-RP – Supplemental geometry for high-strength materials

Step 2 • Select the grade

cutting condition	-FF	-FN	-MN	-RN	-RP	-11	-UF	-LF	-FP	-MF	-MP
heavily interrupted cut	KCP10	KCP25	KCP30	KCP30/KCP40	KCP30/KCP40	—	KC5010/KCP25	KCP25	KCU25/KCP25	KCP40	KCM25
lightly interrupted cut	KCP10	KCP25	KCP25	KCP30/KCP40	KCP30/KCP40	—	KC5010/KCP25	KCP25	KCP25	KCP25	KCP25
varying depth of cut, casting, or forging skin	KCP05/KT315	KCP10	KCP10	KCP30/KCP40	KCP30/KCP40	KT315	KCP10	KCP10	KCP10	KCP10	KCP10

Step 3 • Selecting the cutting speed

Low-Carbon (<0,3% C) and Free-Machining Steel — **speed — m/min (SFM)** — **starting conditions**

material group	grade	135 (450)	180 (600)	225 (800)	275 (900)	320 (1050)	360 (1200)	410 (1350)	455 (1500)	495 (1650)	m/min	SFM
P1	KCP05/KTP10							◁▷			435	1450
	KCP10							◁▷			395	1320
	KCP25				◆						275	925
	KCP30/KCP40			◁▷							210	700

New Beyond™ Material Group Selection Guide:
To optimise speed recommendations, Beyond material subgroups have been added to each of the six workpiece material groups.

material	material group ISO code	number of material subgroups
steel	P	1–6
stainless steel	M	1–3
cast iron	K	1–3
non-ferrous materials	N	1–8
high-temp alloys	S	1–4
hardened materials	H	1

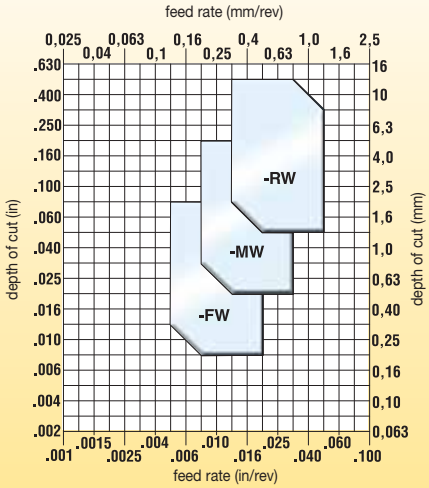
Step 1 • Select the insert geometry

Negative Wiper Inserts

-RW
Rough Wiper

-MW
Medium Wiper

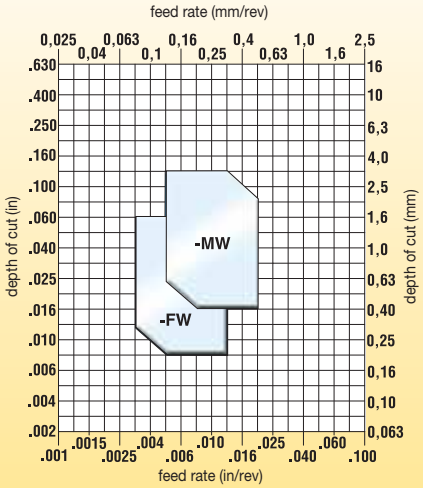
-FW
Finishing Wiper



Positive Wiper Inserts

-MW
Medium Wiper

-FW
Finishing Wiper



Step 2 • Select the grade

cutting condition		Negative Insert Geometry -FW	Negative Insert Geometry -MW	Negative Insert Geometry -RW	Positive Insert Geometry -FW	Positive Insert Geometry -MW
heavily interrupted cut		–	–	KCP25	–	KCP25
lightly interrupted cut		KCP10	KCP25	KCP25	KCP25	KCP25
varying depth of cut, casting, or forging skin		KCP05/KT315	KCP10	KCP10	KCP10/KCK20	KCP10/KCK20
smooth cut, pre-turned surface		KCP05/KT315	KCP05	KCP10	KCP10/KT315	KT315/KT315

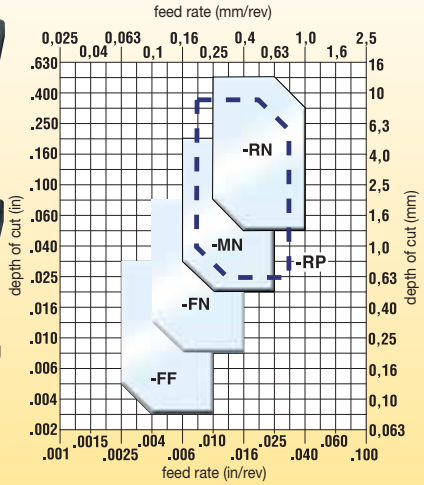
Step 1 • Select the insert geometry

Negative Inserts

-RN -RP* (positive)
Roughing

-FN Finishing
-MN Medium Machining

-FF
Fine Finishing



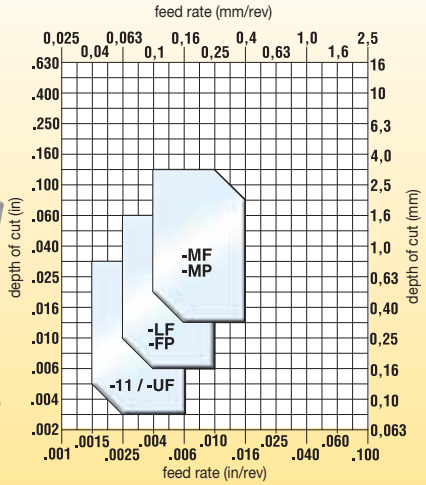
*-RP – Supplemental geometry for high-strength materials

Positive Inserts

-MF -MP Positive
Medium Machining

-LF -FP Positive
Finishing

-11 -UF
Fine Finishing



Step 2 • Select the grade

cutting condition		-FF	-FN	-MN	-RN	-RP	-11	-UF	-LF	-FP	-MF	-MP
heavily interrupted cut		KCP10	KCP25	KCP30	KCP30/KCP40	KCP30/KCP40	—	KC5010/KCP25	KCP25	KCU25/KCP25	KCP40	KCM25
lightly interrupted cut		KCP10	KCP25	KCP25	KCP30/KCP40	KCP30/KCP40	—	KC5010/KCP25	KCP25	KCP25	KCP25	KCP25
varying depth of cut, casting, or forging skin		KCP05/KT315	KCP10	KCP10	KCP30/KCP40	KCP30/KCP40	KT315	KCP10	KCP10	KCP10	KCP10	KCP10
smooth cut, pre-turned surface		KCP05/KT315	KCP05	KCP05	KCP30/KCP40	KCP30/KCP40	KT315	KCP05	KCP05/KT315	KCP05/KTP10	KCP05	KCP05

Step 3 • Select the cutting speed

Low-Carbon (<0,3% C) and Free-Machining Steel — speed — m/min (SFM) — starting conditions

material group	grade	135 (450)	180 (600)	225 (800)	275 (900)	320 (1050)	360 (1200)	410 (1350)	455 (1500)	495 (1650)	m/min	SFM
P0/P1	KCP05/KTP10								◁▷		435	1450
	KCP10							◁▷			395	1320
	KCP25				◁▷						275	925
	KCP30/KCP40		◁▷								210	700
	KT315								◁▷		440	1450
	KCU10/KC5010			◁▷							280	925

Medium- and High-Carbon Steels (>0,3% C) — speed — m/min (SFM) — starting conditions

material group	grade	135 (450)	180 (600)	225 (800)	275 (900)	320 (1050)	360 (1200)	410 (1350)	455 (1500)	495 (1650)	m/min	SFM
P2	KCP05/KTP10				◁▷						240	800
	KCP10			◁▷							265	880
	KCP25			◁▷							195	650
	KCP30/KCP40		◁▷								150	500
	KT315				◁▷						270	880
	KCU10/KC5010	◁▷									200	650

Alloy Steels and Tool Steels (≤330 HB) (≤35 HRC) — speed — m/min (SFM) — starting conditions

material group	grade	135 (450)	180 (600)	225 (800)	275 (900)	320 (1050)	360 (1200)	410 (1350)	455 (1500)	495 (1650)	m/min	SFM
P3	KCP05/KTP10		◁▷								205	680
	KCP10		◁▷								190	630
	KCP25	◁▷									155	510
	KCP30/KCP40	◁▷									120	400
	KT315		◁▷								210	680
	KCU10/KC5010		◁▷								155	510

Alloy Steels and Tool Steels (340–450 HB) (36–48 HRC) — speed — m/min (SFM) — starting conditions

material group	grade	60 (200)	90 (300)	120 (400)	150 (500)	180 (600)	210 (700)	240 (800)	270 (900)	300 (1000)	m/min	SFM
P4	KCP05/KTP10				◁▷						160	530
	KCP10				◁▷						145	480
	KCP25			◁▷							105	360
	KCP30/KCP40		◁▷								95	325
	KT315				◁▷						210	530
	KCU10/KC5010			◁▷							110	360

Ferritic, Martensitic, and PH Stainless Steels (≤330 HB) (≤35 HRC) — speed — m/min (SFM) — starting conditions

material group	grade	120 (400)	150 (500)	180 (600)	210 (700)	240 (800)	270 (900)	300 (1000)	330 (1100)	360 (1200)	m/min	SFM
P5	KCP05/KTP10					◁▷					240	800
	KCP10				◁▷						215	720
	KCP25				◁▷						195	650
	KCP30/KCP40	◁▷									135	450
	KT315					◁▷					250	800
	KCU10/KC5010				◁▷						200	660

Ferritic, Martensitic, and PH Stainless Steels (340–450 HB) (36–48 HRC) — speed — m/min (SFM) — starting conditions

material group	grade	105 (350)	135 (450)	165 (550)	195 (650)	225 (750)	255 (850)	285 (950)	315 (1050)	345 (1150)	m/min	SFM
P6	KCP05/KTP10				◁▷						200	660
	KCP10				◁▷						180	600
	KCP25			◁▷							150	500
	KCP30/KCP40	◁▷									105	350
	KT315				◁▷						200	660
	KCU10/KC5010			◁▷							150	500

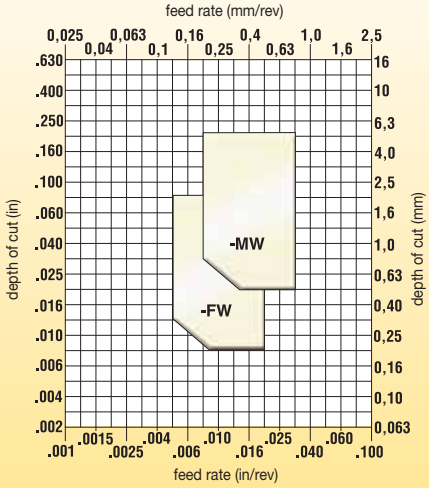
Step 1 • Select the insert geometry

Wiper technology beyond

Negative Wiper Inserts

-MW
Medium Wiper

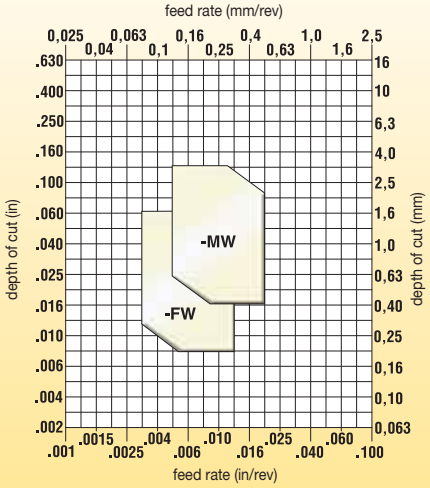
-FW
Finishing Wiper



Positive Wiper Inserts

-MW
Medium Wiper

-FW
Finishing Wiper



Step 2 • Select the grade

cutting condition		Negative Insert Geometry -FW	Negative Insert Geometry -MW	Positive Insert Geometry -FW	Positive Insert Geometry -MW
heavily interrupted cut		—	—	—	—
lightly interrupted cut		KCM15	KCM25	KCM15	KCM15
varying depth of cut, casting, or forging skin		KCM15/KCU10/KC5010	KCM15	KCU10/KC5010	KCU10/KC5010
smooth cut, pre-turned surface		KCM15/KT315	KCM15	KT315	KT315

Step 1 • Select the insert geometry

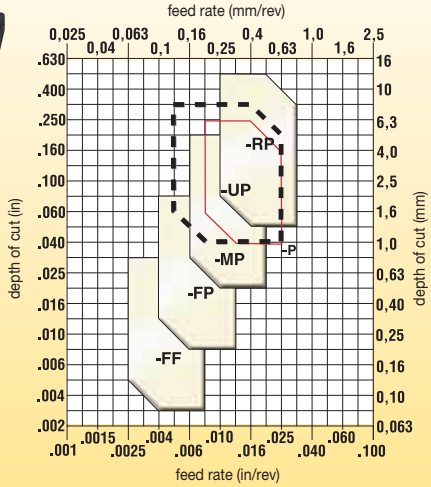
beyond

Negative Inserts

-RP -P
Roughing

-MP -UP
Medium Machining

-FP -FF
Finishing

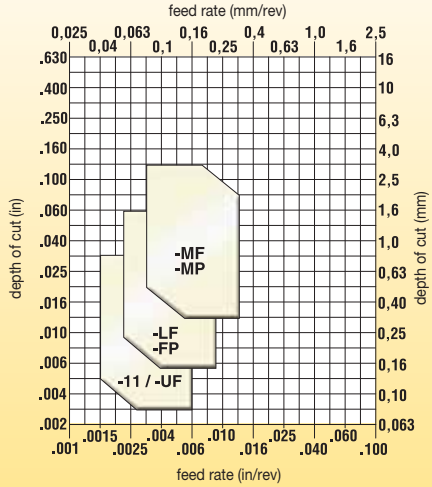


Positive Inserts

-MP
Medium Machining

-LF ..GT-LF
Finishing

-11 -UF
Fine Finishing



Step 2 • Select the grade

cutting condition		Negative Insert Geometry -FF	-FP	-MP/-UP	-P/-RP
heavily interrupted cut		KCU10/KC5010	KCM15	KCM35	KCM35
lightly interrupted cut		KCU10/KC5010	KCM15	KCM25	KCM25
varying depth of cut, casting, or forging skin		KT315	KCM15/KC5010	KCM15	KCM15/KCM25
smooth cut, pre-turned surface		KT315	KCM15/KT315	KCM15/KU10	KCU10

(continued)

Step 2 • Select the grade *(continued)*

cutting condition		Positive Insert Geometry -11	-UF	-LF	-MP/-MF	-FP
heavily interrupted cut		—	KCU25/KC5025	KCM35	KCM25	KCU25/KCM25
lightly interrupted cut		—	KCU10/KC5010	KCM25	KCM25	KCM15
varying depth of cut, casting, or forging skin		KT315	—	KCM15/KCU10	KCM15	KCU10
smooth cut, pre-turned surface		KT315	—	KCM15/KT315	KCM15	KTP10

Step 3 • Select the cutting speed

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

material group	grade	90 (300)	135 (450)	180 (600)	225 (800)	270 (900)	315 (1050)	360 (1200)	405 (1350)	450 (1500)	m/min	SFM
M1	KCM15			◁▷							180	600
	KCM25			◁▷							150	500
	KCM35		◁▷								120	400
	KT315				◁▷						230	750
	KCU10/KC5010				◁▷						215	700
	KCU25/KC5025			◁▷							180	550

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

material group	grade	90 (300)	135 (450)	180 (600)	225 (800)	270 (900)	315 (1050)	360 (1200)	405 (1350)	450 (1500)	m/min	SFM
M2	KCM15			◁▷							165	550
	KCM25		◁▷								140	450
	KCM35	◁▷									105	350
	KT315				◁▷						215	700
	KCU10/KC5010			◁▷							200	650
	KCU25/KC5025		◁▷								165	500

Austenitic Stainless Steel: Duplex (Ferritic and Austenitic Mixture) — speed — m/min (SFM) — starting conditions ◁▷

material group	grade	90 (300)	135 (450)	180 (600)	225 (800)	270 (900)	315 (1050)	360 (1200)	405 (1350)	450 (1500)	m/min	SFM
M3	KCM15			◁▷							150	500
	KCM25		◁▷								120	400
	KCM35	◁▷									90	300
	KT315			◁▷							200	650
	KCU10/KC5010			◁▷							185	600
	KCU25/KC5025		◁▷								150	450

Step 1 • Select the insert geometry

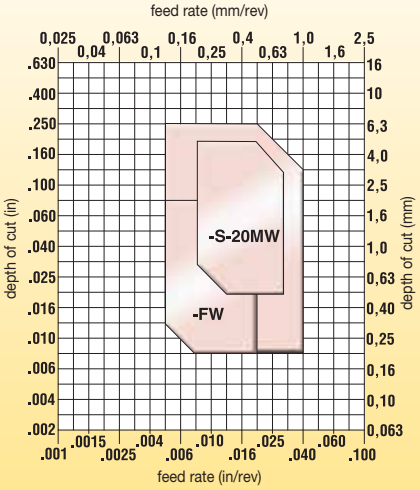
Negative Wiper Inserts

-MW -S...MW

Medium Wiper

-FW -FW -T-20FW

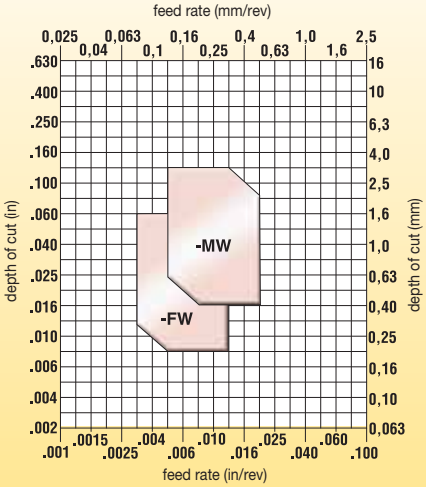
-FW -T-20FW Finishing Wiper



Positive Wiper Inserts

..MW Medium Wiper

-FW Finishing Wiper



Step 2 • Select the grade

Grey Iron

cutting condition	Negative Insert Geometry			Positive Insert Geometry	
	-FW	-T-20FW	-S...MW...	-FW	-MW
heavily interrupted cut	—	KY3500	KB1345	—	KCK20
lightly interrupted cut	KCK15	KY3500	KB1345	KCK20	KCK20
varying depth of cut, casting, or forging skin	KCK05/KT315	KYK10	KB1345	KCK20	KCK20
smooth cut, pre-turned surface	KCK05/KT315	KYK25	KB1345	KCK20/KT315	KT315/KCK20

Ductile Iron

cutting condition	Negative Insert Geometry		Positive Insert Geometry	
	-FW	-T-20FW-	-FW	-MW
heavily interrupted cut	—	—	—	—
lightly interrupted cut	KCK15	KY3500	KCK20	KCK20
varying depth of cut casting, or forging skin	KCK05/KT315	KYK10	KCK20	KCK20
smooth cut, pre-turned surface	KCK05/KT315	KYK25	KCK20/KT315	KCK20/KT315

Step 3 • Select the cutting speed

Grey Cast Iron — speed — m/min (SFM) — starting conditions

material group	grade	60 (200)	150 (500)	240 (800)	330 (1100)	420 (1400)	510 (1700)	600 (2000)	690 (2300)	780 (2600)	m/min	SFM
K1	KCK05										450	1500
	KCK15										360	1200
	KCK20										300	1000
	KT315										275	900

Ductile, Compacted Graphite, and Malleable Cast Irons (<80 KSI tensile strength) — speed — m/min (SFM) — starting conditions

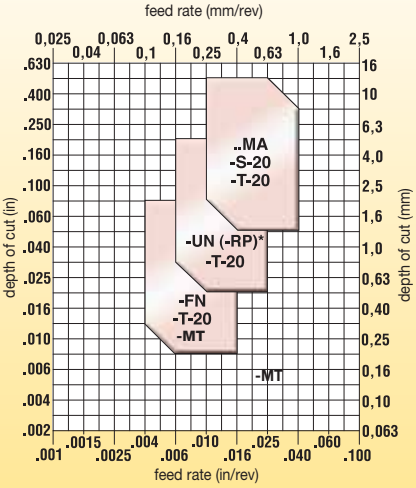
material group	grade	60 (200)	150 (500)	240 (800)	330 (1100)	420 (1400)	510 (1700)	600 (2000)	690 (2300)	780 (2600)	m/min	SFM
K2	KCK05										360	1200
	KCK15										270	900
	KCK20										240	800
	KT315										275	900

Ductile, Compacted Graphite, and Malleable Cast Irons (>80 KSI tensile strength) — speed — m/min (SFM) — starting conditions

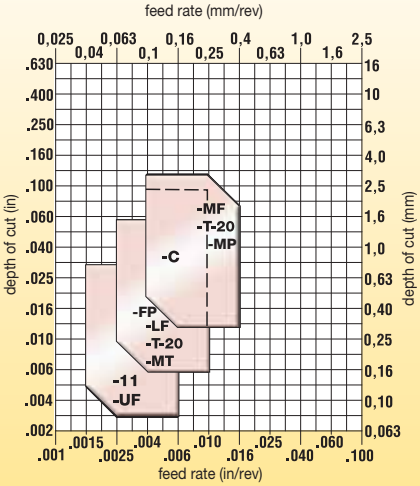
material group	grade	60 (200)	150 (500)	240 (800)	330 (1100)	420 (1400)	510 (1700)	600 (2000)	690 (2300)	780 (2600)	m/min	SFM
K3	KCK05										240	800
	KCK15										215	725
	KCK20										210	700
	KT315										230	750

Step 1 • Select the insert geometry

Negative Inserts



Positive Inserts



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

Step 2 • Select the grade

Carbide Grades

Grey Iron

		Negative Insert Geometry			Positive Insert Geometry				
cutting condition		**-FN**	**-UN(-RP)**	**-MA**	**-LF**	**-FP**	**-MF**	**-MP**	**-MW**
heavily interrupted cut		KCK15	KCK20	KCK20	KCK20	KCK20	KCK20	KCK20	KCK20
lightly interrupted cut		KCK15	KCK20	KCK20	KCK20	KCK20	KCK20	KCK20	KCK20
varying depth of cut, casting, or forging skin		KCK05/KT315	KCK15	KCK15	KCK15	KCK20	KCK15	KCK20	KCK20
smooth cut, pre-turned surface		KCK05/KT315	KCK05	KCK05	KCK05	KCK20	KCK15	KCK20	KCK20

Ductile Iron

	Negative Insert Geometry		
cutting condition	**-FN**	**-UN(-RP)**	**-MA**
heavily interrupted cut	KCK15	KCK20	KCK20
lightly interrupted cut	KCK15	KCK20	KCK20
varying depth of cut, casting, or forging skin	KCK05/KT315	KCK15	KCK15
smooth cut, pre-turned surface	KCK05/KT315	KCK05	KCK05

	Positive Insert Geometry					
cutting condition	**-11/-UF**	**-LF**	**-MF**	**-FP**	**-MP**	**-MW**
heavily interrupted cut	—	KCK20	KCK20	KCK20	KCK20	KCK20
lightly interrupted cut	KCU10/KC5010	KCK20	KCK20	KCK20	KCK20	KCK20
varying depth of cut, casting, or forging skin	KCU10/KC5010	KCK15	KCK15	KCK20	KCK20	KCK20
smooth cut, pre-turned surface	KT315	KCU10/KC5010	KCK15	KCK20	KCK20	KCK20

(continued)

Step 2 • Select the grade *(continued)*

Ceramic and PCBN Grades

Grey Iron

	Negative Insert Geometry				
cutting condition	-T-20 Finishing	MT	-T-20 Medium	-T-20 Roughing	-S20
heavily interrupted cut	KY3500	KCK20	KY3500	KY3500	KB1340
lightly interrupted cut	KY3500	KB1345	KYK10	KY3500	KB1340
varying depth of cut, casting, or forging skin	KYK10	KB1345	KYK10	KYK10	KB1340
smooth cut, pre-turned surface	KYK25	KB1345	KYK25	KYK25	KB1340

	Positive Insert Geometry			
cutting condition	-T-20 Fine Finishing	-T-20 Medium	MT	C
heavily interrupted cut	—	KY3500	KB1630/KB1345	KB1630/KB1345
lightly interrupted cut	—	KY3500	KB1630/KB1345	KB1630/KB1345
varying depth of cut, casting, or forging skin	KY3500	KY3500	KB1630/KB1345	KB1630/KB1345
smooth cut, pre-turned surface	KY3500	KY3500	KB1630/KB1345	KB1630/KB1345

Ductile Iron

	Negative Insert Geometry			Positive Insert Geometry		
cutting condition	-T-20 Finishing	-T-20 Medium	-T-20 Roughing	-T-20 Fine Finishing	-T-20 Finishing	-T-20 Medium
heavily interrupted cut	—	KY3500	KY3500	—	KY3500	KY3500
lightly interrupted cut	—	KYK25	KYK25	—	KYK25	KYK25
varying depth of cut, casting, or forging skin	KYK25	KYK25	KYK25	KYK25	KYK25	KYK25
smooth cut, pre-turned surface	KYK25	KYK25	KYK25	KYK25	KYK25	KYK25

Step 3 • Select the cutting speed (Optimal speed depends on casting quality and disposition.)

Grey Cast Iron — speed — m/min (SFM) — starting conditions ◁▷

material group	grade	60 (200)	180 (600)	305 (1000)	430 (1400)	550 (1800)	675 (2200)	800 (2600)	920 (3000)	1040 (3400)	1160 (3800)	m/min	SFM
K1	KT315		◁▷									275	900
	KB1340/KB1345							◁▷				760	2500
	KYK25							◁▷				760	2500
	KY3500							◁▷				760	2500
	KYK10							◁▷				760	2500
	KCK05				◁▷							450	1500
	KCK15				◁▷							360	1200
	KCK20				◁▷							300	1000

Ductile, Compacted Graphite, and Malleable Cast Irons (<600 MPa tensile strength) — speed — m/min (SFM) — starting conditions ◁▷

material group	grade	90 (300)	135 (450)	180 (600)	225 (750)	275 (900)	320 (1050)	360 (1200)	410 (1350)	460 (1500)	500 (1650)	550 (1800)	600 (1950)	m/min	SFM
K2	KT315					◁▷								275	900
	KCU10/KC5010				◁▷									200	650
	KYK25								◁▷					430	1400
	KY3500							◁▷						365	1200
	KYK10							◁▷						365	1200
	KCK05						◁▷							360	1200
	KCK15					◁▷								270	900
	KCK20				◁▷									240	800

Ductile, Malleable, and Austempered Cast Irons (>600 MPa tensile strength) — speed — m/min (SFM) — starting conditions ◁▷

material group	grade	90 (300)	135 (450)	180 (600)	225 (750)	275 (900)	320 (1050)	360 (1200)	410 (1350)	460 (1500)	500 (1650)	550 (1800)	600 (1950)	m/min	SFM
K3	KT315				◁▷									230	750
	KCU10/KC5010			◁▷										150	500
	KYK25						◁▷							365	1200
	KCK05				◁▷									240	800
	KCK15			◁▷										215	725
	KCK20		◁▷											210	700

Step 1 • Select the insert geometry

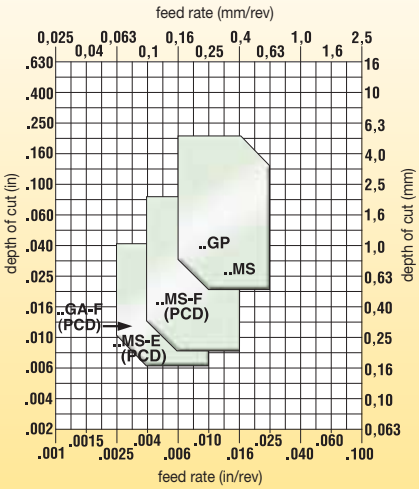
beyond

Negative Wiper Inserts

..GP ..MS
Medium Finishing

..MS-E (PCD) ..GA-F (PCD)
Finishing

..GA-E (PCD)
Fine Finishing

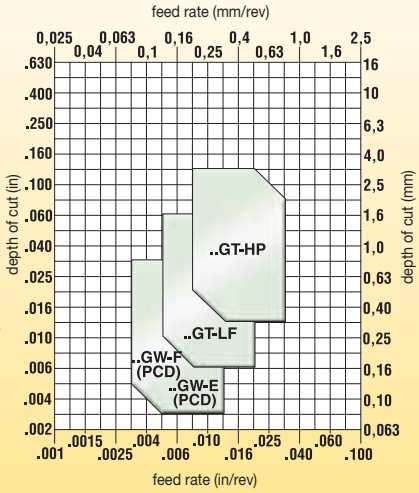


Positive Wiper Inserts

..GT-HP
Medium Finishing

..GT-LF
Finishing

..GW-F (PCD) ..GW-E (PCD)



Step 2 • Select the grade

		Negative Insert Geometry					Positive Insert Geometry			
cutting condition		..GA-E (PCD)	..MS-E (PCD)	..GA-F (PCD)	..GP	..MS	..GW-E (PCD)	..GW-F (PCD)	..GT-LF	..GT-HP
heavily interrupted cut		—	—	KD1400	KC5410/K313	KC5410	—	KD1400	—	KC5410
lightly interrupted cut		KD1405	KD1405	KD1400	KC5410/K313	KC5410	KD1405	KD1400	KC5410	KC5410
varying depth of cut, casting, or forging skin		KD1405	KD1405	KD1425	KC5410/K313	KC5410	KD1405	KD1425	KC5410	KC5410
smooth cut, pre-turned surface		KD1405	KD1405	KD1425	KC5410/K313	KC5410	KD1405	KD1425	KC5410	KC5410

Step 3 • Select the cutting speed

Low-Silicon Aluminium Alloys
(hypoeutectic <12,2% Si) and Magnesium Alloys

speed — m/min (SFM) | starting conditions ◁▷

material group	grade	250 (800)	500 (1600)	750 (2400)	1000 (3200)	1250 (4000)	1500 (4800)	1750 (5600)	2000 (6400)	2250 (7200)	2500 (8000)	m/min	SFM
N2	KC5410		◁▷									550	1800
	KD1400			◁▷								765	2500

High-Silicon Aluminium Alloys
(hypereutectic >12,2% Si) and Magnesium Alloys

speed — m/min (SFM) | starting conditions ◁▷

material group	grade	250 (800)	500 (1600)	750 (2400)	1000 (3200)	m/min	SFM
N3	KD1405		◁▷			580	2000
	KD1425		◁▷			520	1700

Additional Cutting Speed Recommendations for Miscellaneous Workpiece Materials

Copper-, Brass-, Zinc-Based on a Machinability Index Range of 70–100 — speed — m/min (SFM) — starting conditions ◁▷

material group	grade	250 (800)	500 (1600)	750 (2400)	1000 (3200)	m/min	SFM
N4	KD1400/ KD1405		◁▷			520	1700
	KD1425	◁▷				500	1600
	KC5410	◁▷				275	900
	K313	◁▷				260	850

Nylon, Plastics, Rubbers, Phenolics, Resins, Fibreglass, and Glass — speed — m/min (SFM) — starting conditions ◁▷

material group	grade	250 (800)	500 (1600)	750 (2400)	1000 (3200)	m/min	SFM
N5	KD1400/ KD1405	◁▷				400	1300
	KD1425	◁▷				365	1200
	KC5410	◁▷				170	550

Carbon and Graphite Composites: Brush Alloys, Kevlar, and Graphite (280–400 HB) (30–43 HRC) — speed — m/min (SFM) — starting conditions ◁▷

material group	grade	250 (800)	500 (1600)	750 (2400)	1000 (3200)	m/min	SFM
N6	KD1400/ KD1405			◁▷		760	2500
	KC5410	◁▷				200	650

MMCs (Aluminium-Based Metal Matrix Composites) — speed — m/min (SFM) — starting conditions ◁▷

material group	grade	250 (800)	500 (1600)	750 (2400)	1000 (3200)	m/min	SFM
N7	KD1405		◁▷			460	1500
	KD1400		◁▷			365	1200

Tin Alloys, Cast: ASTM 823, Alloys 1, 2, 3, 11 — speed — m/min (SFM) — starting conditions ◁▷

material group	grade	250 (800)	500 (1600)	750 (2400)	1000 (3200)	m/min	SFM
N	KC5410	◁▷				215	700
	K313	◁▷				180	600

Step 1 • Select the insert geometry

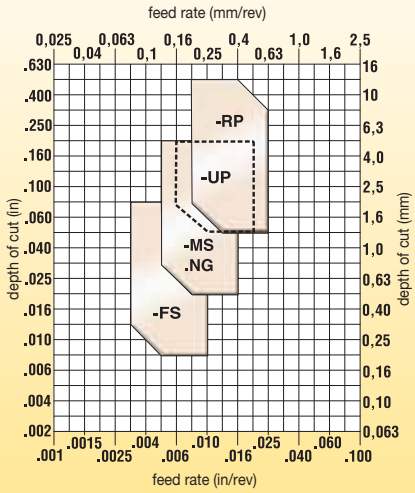
Negative Inserts

-RP
Roughing

-MS .NG

-UP
Medium Machining

-FS
Finishing

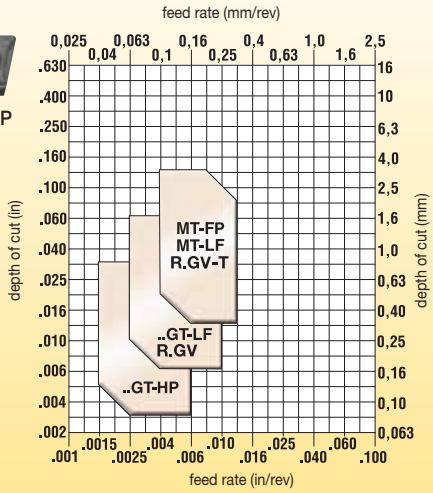


Positive Inserts

MT-LF R.GV-T MT-FP
Medium Machining

..GT-LF R.GV

..GT-HP
Fine Finishing



Step 2 • Select the grade

Negative Insert Geometry

cutting condition		-FS	.NG	-MS	-UP	-RP
heavily interrupted cut		KCU25/KC5525	—	KCU25/KC5525	KCM35	KCM25/KCM35
lightly interrupted cut		KCU10/KC5510	KYS30/KY1540	KCU25/KC5525	KCM25	KCM15KC5525
varying depth of cut, casting, or forging skin		KCU10/KC5510	KYS30/KY1540/ KYS25/KY4300	KCU10/KC5510	KCM15	KCU25/KC5525
smooth cut, pre-turned surface		KCU10/KC5510/ K313	KYS25/KY4300	KCU10/KC5510 K313	KCU10/KC5510	KCU10/KC5510

Positive Insert Geometry

cutting condition		-FP	..GT-HP	MT-LF	R.GV-T	..GT-LF	R.GV
heavily interrupted cut		KCU25	—	KCU25/KC5025	—	KCU25/KC5025	—
lightly interrupted cut		KCU25	KCU25/KC5025	KCU25/KC5025	KYS30/KY1540	KCU25/KC5025	KYS30/KY1540
varying depth of cut, casting, or forging skin		KCU10/KU10	KCU10/KC5510	KCU10/KC5510	KYS30/KY1540/ KYS25/KY4300	KCU10/KC5510	KYS30/KY1540/ KYS25/KY4300
smooth cut, pre-turned surface		KCU10/KU10	KCU10/KC5510 K313	KCU10/KC5510 K313	KYS25/KY4300	KCU10/KC5510 K313	KYS25/KY4300

Step 3 • Select the cutting speed

Iron-Based, Heat-Resistant Alloys (135–320 HB) (≤34 HRC) — speed — m/min (SFM) — starting conditions

material group	grade	15 (50)	45 (150)	75 (250)	105 (350)	140 (450)	170 (550)	200 (650)	230 (750)	260 (850)	290 (950)	310 (1050)	350 (1150)	380 (1250)	m/min	SFM
S1	K313/KU10		◁▷												30	100
	KCU10/KC5510/KC5010			◁▷											55	180
	KCU25/KC5525/KC5025		◁▷												40	125
	KYS25/KY4300							◁▷							200	650
	KYS30/KY1540						◁▷								170	550
	KCM15			◁▷											55	180
	KCM25/KCM35		◁▷												40	125

Cobalt-Based, Heat-Resistant Alloys (150–425 HB) (≤45 HRC) — speed — m/min (SFM) — starting conditions

material group	grade	15 (50)	45 (150)	75 (250)	105 (350)	140 (450)	170 (550)	200 (650)	230 (750)	260 (850)	290 (950)	310 (1050)	350 (1150)	380 (1250)	m/min	SFM
S2	K313/KU10		◁▷												35	110
	KC5510/KC5010			◁▷											60	195
	KC5525/KC5025		◁▷												30	100
	KYS25/KY4300							◁▷							220	720
	KYS30/KY1540						◁▷								185	600
	KCM15			◁▷											60	195
	KCM25/KCM35		◁▷												30	100

Nickel-Based, Heat-Resistant Alloys (140–475 HB) (≤48 HRC) — speed — m/min (SFM) — starting conditions

material group	grade	15 (50)	45 (150)	75 (250)	105 (350)	140 (450)	170 (550)	200 (650)	230 (750)	260 (850)	290 (950)	310 (1050)	350 (1150)	380 (1250)	m/min	SFM
S3	K313/KU10		◁▷												40	125
	KCU10/KC5510/KC5010			◁▷											70	225
	KCU25/KC5525/KC5025		◁▷												40	125
	KYS25/KY4300							◁▷							250	820
	KYS30/KY1540							◁▷							215	700
	KCM15			◁▷											70	225
	KCM25/KCM35		◁▷												40	125

Titanium and Titanium Alloys (110–450 HB) (≤48 HRC) — speed — m/min (SFM) — starting conditions

material group	grade	15 (50)	45 (150)	75 (250)	105 (350)	140 (450)	170 (550)	200 (650)	230 (750)	260 (850)	290 (950)	310 (1050)	350 (1150)	380 (1250)	m/min	SFM
S4	K313/KU10			◁▷											45	150
	KC5510/KC5010/KC9225				◁▷										70	225
	KC5525/KC50225/KC9240			◁▷											55	175
	KCM15				◁▷										70	225
	KCM25/KCM35		◁▷												55	175

Step 1 • Select the insert geometry

Negative Wiper Inserts

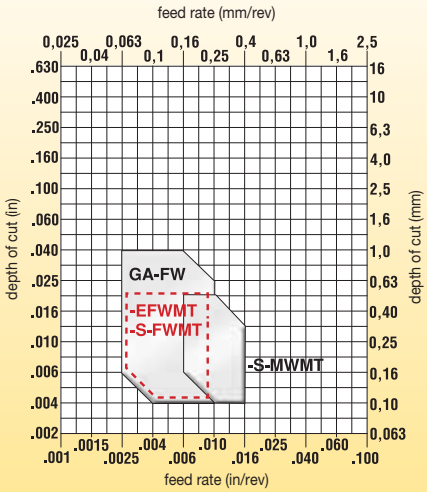
-S..MWMT
(multitipped)
Medium Wiper

-EFWMT
(multitipped)

-S..FWMT
(multitipped)

GA-FW

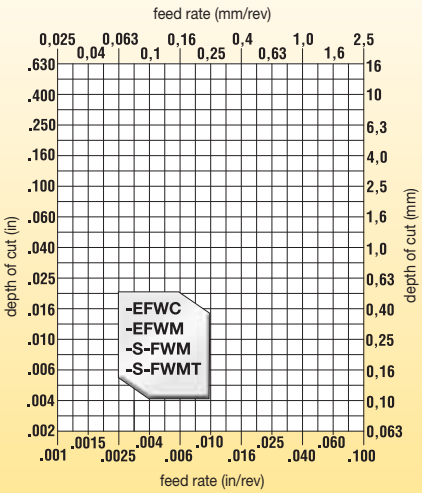
Finishing Wiper



Positive Wiper Inserts

-EFWC (full face)
-EFWM (single tipped)
Finishing Wiper

-S..FWM
(single tipped)
-S..FWMT
(multitipped)
Fine Finishing Wiper



Step 2 • Select the grade

cutting condition		Negative Insert Geometry GA-FW	-S..FWMT	-EFWMT	Positive Insert Geometry -S..FWM -S..FWMT	-S..FWMT	-EFWC -EFWM
heavily interrupted cut		—	KB5630	KB1625	—	—	—
lightly interrupted cut		—	KB1610/KB5610	KB5625	KB9610	KB1610	KB5610
varying depth of cut, casting, or forging skin		KY4400	KB1610/KB5610	KB1610/KB5610	KB9610	KB1610	KB5610
smooth cut, pre-turned surface		KY4400	KB9610	KB9610	KB9610	KB9610	KB9610

Step 1 • Select the insert geometry

Negative Inserts

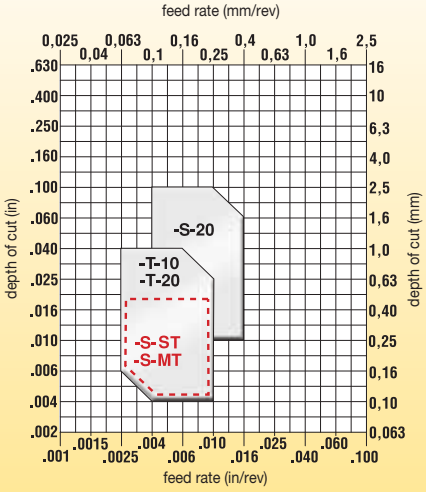
-S-20
Medium Machining

-S..ST (single tipped)
-S..MT (multitipped)
Finishing

-T..10
-T.20

-T.10
-T.20

Fine Finishing



Positive Inserts

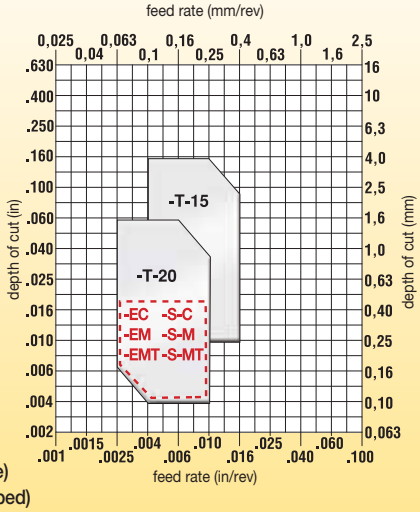
-T-15
Medium Machining

-EC (full-face)
-EM (single tipped)
-EMT (multitipped)
Finishing

-T-20

-S....C (full face)
-S....M (single tipped)
-S....MT (multitipped)

Fine Finishing

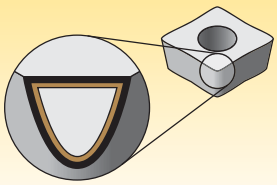


Step 2 • Select the grade

cutting condition		Negative Insert Geometry -T.10 -T.20	-S..ST -S..MT	-S-20	Positive Insert Geometry -S..C/-S..M -S..MT	-T-20	-EC/-EM -EMT	-T-15
heavily interrupted cut		—	KB1630/KB5630	KB1340	KB1630/KB5630	—	KB1630/KB5630	—
lightly interrupted cut		—	KB1625/KB5625	KB1340	KB1625/KB5625	KY4400	KB1625/KB5625	KY1615
varying depth of cut, casting, or forging skin		KY1615/KY4400	KB1625/KB5625	—	KB1625/KB5625	KY4400	KB1625/KB5625	KY1615
smooth cut, pre-turned surface		KY1615/KY4400	KB1610/KB5610	—	KB1610/KB5610	KY4400	KB1610/KB5610	KY1615

Step 3 • Select the cutting speed

material group	grade	speed — m/min (SFM) 15 (50)	45 (150)	75 (250)	110 (350)	140 (450)	170 (550)	200 (650)	230 (750)	260 (850)	starting conditions m/min	SFM
H1	KY4400					◁▷					135	450
	KY1615				◁▷						100	325
	KB1610					◁▷					140	460
	KB1625				◁▷						110	360
	KB1630			◁▷							90	295
	KB5610					◁▷					150	490
	KB5625				◁▷						120	400
	KB5630			◁▷							105	345

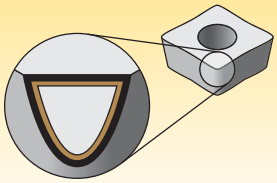


Coatings provide high-speed capability and are engineered for finishing to heavy roughing.

P	Steel
M	Stainless Steel
K	Cast Iron
N	Non-Ferrous Materials
S	High-Temp Alloys
H	Hardened Materials

wear resistance ⟷ toughness

	Coating	Grade Description	05	10	15	20	25	30	35	40	45
Uncoated Carbide Grades	KU10 C3	**Composition:** A hard, low binder content, WC/Co fine-grain grade. **Application:** The KU10 grade has excellent abrasion resistance for machining cast irons, austenitic stainless steels, non-ferrous metals, non-metals, and most high-temperature alloys. Use as a general-purpose grade for non-ferrous materials. beyond		M	M	M					
				K	K	K					
				N	N	N					
				S	S	S					
	K313 C3–C4	**Composition:** A hard, low binder content, unalloyed WC/Co fine-grain grade. **Application:** Exceptional edge wear resistance combined with very high strength for machining titanium, cast irons, austenitic stainless steels, non-ferrous metals, non-metals, and most high-temp alloys. Superior thermal deformation and depth-of-cut notch resistance. The grain structure is well controlled for minimal pits and flaws, which contributes to long, reliable service.		M	M	M					
				K	K	K					
				N	N	N					
				S	S	S					
	K68 C3	**Composition:** A hard, low binder content, alloyed grade WC/Co fine-grain grade. **Application:** The K68 grade has excellent abrasion resistance for machining cast irons, austenitic stainless steels, non-ferrous metals, non-metals, and as an alternative to the K313 grade on most high-temperature alloys. Use as a general-purpose grade for non-ferrous materials.		M	M	M					
				K	K	K					
				N	N	N					
				S	S	S					
PVD-Coated Carbide Grades	KCU10 C3–C4	**Composition:** An advanced multilayer PVD coating over a very deformation-resistant unalloyed carbide substrate. The new and improved coating improves edge stability with wide range speed and feed capabilities. **Application:** The KCU10 grade is ideal for finishing to general machining of most workpiece materials at a wide range of speed and feed capabilities. Excellent for machining most steels, stainless steels, cast irons, non-ferrous materials, and super alloys with improved edge toughness and higher cutting speed/feed capability. beyond		P	P	P					
				M	M	M					
				K	K	K					
				N	N	N					
				S	S	S					
				H	H						
	KCU25 C2, C6	**Composition:** An advanced PVD grade with hard AlTiN coating and fine-grain unalloyed substrate. The new and improved coating improves edge stability with wide range speed and feed capabilities. **Application:** The KCU25 grade is ideal for general machining of most steels, stainless steels, high-temp alloys, titanium, irons, and non-ferrous materials in a wide range of speeds and feeds with improved edge toughness for interrupted cut and high feed rates. beyond		P	P	P	P	P	P		
				M	M	M	M	M	M		
				K	K	K	K	K	K		
				N	N	N	N	N	N		
				S	S	S	S	S	S		
	KC5010 C3–C4	**Composition:** An advanced PVD AlTiN coating over a very deformation-resistant unalloyed carbide substrate. The new and improved coating enables speeds to be increased by 50–100%. **Application:** The KC5010 grade is ideal for finishing to general machining of most workpiece materials at higher speeds. Excellent for machining most steels, stainless steels, cast irons, non-ferrous materials, and super alloys under stable conditions. It also performs well machining hardened and short chipping materials.		P	P	P					
				M	M	M					
				K	K	K					
				N	N	N					
				S	S	S					
				H	H						



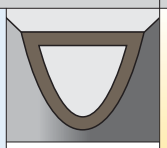
Coatings provide high-speed capability and are engineered for finishing to heavy roughing.

P	Steel
M	Stainless Steel
K	Cast Iron
N	Non-Ferrous Materials
S	High-Temp Alloys
H	Hardened Materials

wear resistance ⟷ toughness

PVD-Coated Carbide Grades

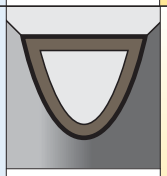
KC5025



C2, C6

Composition: An advanced PVD-AlTiN-coated grade with a tough, ultra-fine-grain unalloyed substrate.
Application: For general-purpose machining of most steels, stainless steels, high-temp alloys, titanium, irons, and non-ferrous materials. Speeds may vary from low to medium and will handle interruptions and high feed rates.

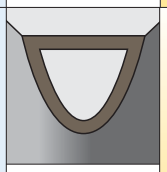
KC5410



C3–C4

Composition: A PVD TiB_2 coating over a very deformation-resistant unalloyed substrate.
Application: Designed for roughing, semi-finishing, and finishing of free machining (hypoeutectic <12,2% Si) aluminium, aluminium alloys, and magnesium alloys. The TiB_2 coating is harder than TiN and TiAlN coatings and has an extremely smooth surface, resulting in reduced surface friction, speedy chip flow, and outstanding wear resistance. Built-up edge is prevented because this coating has a very low affinity for aluminium. The substrate is unalloyed and fine grained and offers sharp edges, smooth surfaces, and excellent thermal deformation resistance and edge integrity. Inserts with a ground periphery are polished before coating and have a sharp edge. Moulded inserts have a light hone.

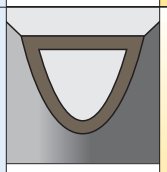
KC5510



C3–C4

Composition: An advanced PVD AlTiN-coated fine-grain tungsten carbide grade.
Application: The KC5510 grade is specifically engineered for the productive machining of high-temp alloys. The fine-grain tungsten carbide 6% cobalt substrate has excellent toughness and deformation resistance while the advanced PVD coating enables metalcutting speeds double those of conventional PVD-coated cutting tools.

KC5525

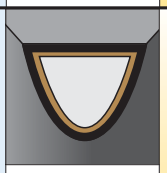


C2–C6

Composition: Advanced PVD AlTiN-coated fine-grain high-cobalt carbide grade.
Application: The KC5525 grade utilises the same advanced PVD coating as the KC5510 grade in conjunction with a fine-grained tungsten carbide 10% cobalt substrate. The higher cobalt enables added security in interrupted cuts while the fine-grained WC maintains hardness-resisting deformation at higher speeds. Designed for medium to heavy interruptions in high-temp alloys.

CVD-Coated Carbide Grades

KCP05

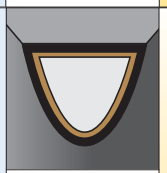


C3–C4

Composition: An innovative, highly deformation-resistant, cobalt-enriched substrate with a specially designed, adherent MTCVD-TiCN-Al_2O_3 coating.
Application: For finishing to semi-finishing of most steels, ferritic, martensitic, and PH stainless steels and cast irons. Provides excellent combination of deformation resistance and insert edge strength. The new coating combined with a state-of-the-art post-coat treatment provides high-productivity with long predictable tool life and superior workpiece surface finish.

beyond

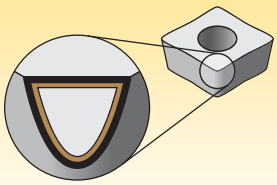
KCP10



C3, C7

Composition: A specially engineered cobalt-enriched carbide grade with thick MTCVD-TiCN-Al_2O_3 coating for maximum wear resistance.
Application: An excellent finishing to medium machining grade for a variety of workpiece materials, including most steels, ferritic, martensitic, and PH stainless steels, and cast irons. The cobalt-enriched substrate offers a balanced combination of deformation resistance and edge toughness, while the thick coating layers offer outstanding abrasion resistance and crater wear resistance for high-speed machining. Smooth coating provides resistance to edge build-up and microchipping and produces excellent surface finishes.

beyond

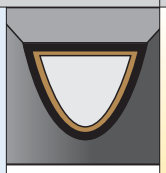
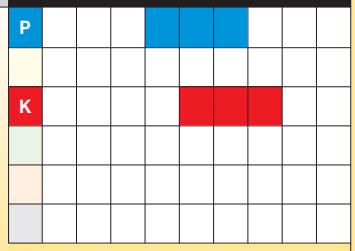
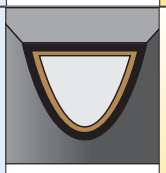
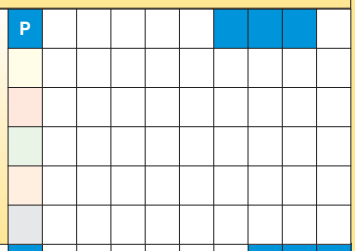
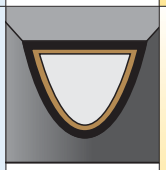
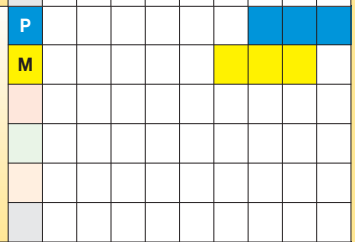
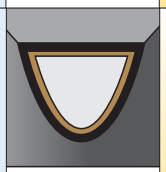
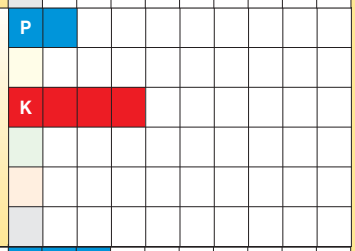
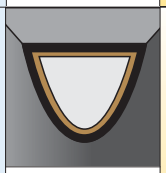
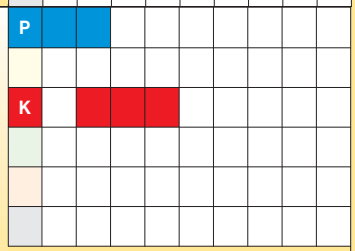
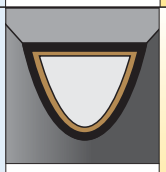
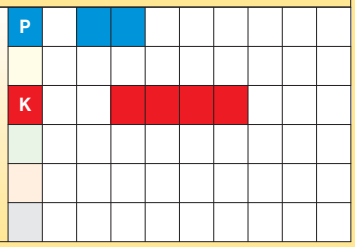


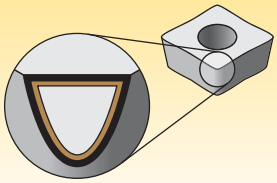
Coatings provide high-speed capability and are engineered for finishing to heavy roughing.

P	Steel
M	Stainless Steel
K	Cast Iron
N	Non-Ferrous Materials
S	High-Temp Alloys
H	Hardened Materials

wear resistance ⟷ toughness

CVD-Coated Carbide Grades

Coating	Grade Description	05 10 15 20 25 30 35 40 45
KCP25  C2–C3, C6–C7	**Composition:** A tough cobalt-enriched carbide grade with a newly designed multilayer MTCVD-TiCN-Al_2O_3 coating with superior interlayer adhesion. **Application:** Best general-purpose turning grade for most steels and ferritic and martensitic stainless steels. The substrate design ensures adequate deformation resistance with excellent insert edge strength. Coating layers offer good wear resistance over a wide range of machining conditions and the post-coat treatment minimises microchipping and improves coating adhesion to substrate leading to long tool life and improved workpiece finishes. beyond	
KCP30  C5–C6	**Composition:** A newly engineered, tough cobalt-enriched carbide grade with an advanced multilayer TiN-MT-TiCN-Al_2O_3 coating. **Application:** For medium to rough machining of all carbon, alloy, and stainless steels. The substrate design provides superior insert strength that is required for this application, and the multilayer coating adds wear resistance to the insert resulting in long tool life. beyond	
KCP40  C5–C6	**Composition:** A tough carbide grade with a moderately thick TiN-MT-TiCN-Al_2O_3 coating. **Application:** For heavy roughing of carbon, alloy, and stainless steels. The substrate-coating combination provides unbelievable toughness and operational security allowing high metal removal rates even in most demanding interrupted cuts. beyond	
KCK05  C3–C4	**Composition:** A multilayered coating with moderately thick MTCVD TiCN-Al_2O_3 layers over a highly deformation-resistant carbide substrate. **Application:** Designed for high-speed machining of grey and ductile irons. The substrate and coating architecture together with CW5 post-coat treatment ensure a tremendous tool life advantage, especially when cutting higher tensile strength ductile and grey irons where workpiece size consistency and reliability of tool life are critical. Excellent both in straight and varied depths of cut. beyond	
KCK15  C3–C4	**Composition:** A multilayered coating with thick MTCVD TiCN-Al_2O_3 layers applied over a carbide substrate specifically engineered for cast irons. **Application:** Delivers consistent performance in high-speed machining of grey and ductile irons. The substrate design permits the insert to stay in the cut for a long time at high speeds with minimum deformation. The thick CVD coating and post-coat treatment provide superior wear resistance ensuring long and consistent tool life. Can be applied both in straight and lightly interrupted cuts. beyond	
KCK20  C2–C3	**Composition:** A specially toughened MTCVD-TiCN-Al_2O_3 coating over a wear-resistant substrate. **Application:** The KCK20 grade is specifically engineered to maximise coating adhesion and edge strength making this grade ideal in wet interrupted cutting of grey and ductile irons. It can be used in a wide range of applications from finishing to roughing to maximise productivity wherever strength and reliability are needed. beyond	

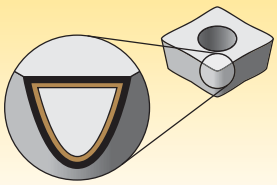


Coatings provide high-speed capability and are engineered for finishing to heavy roughing.

P	Steel
M	Stainless Steel
K	Cast Iron
N	Non-Ferrous Materials
S	High-Temp Alloys
H	Hardened Materials

wear resistance ⟷ toughness

	Coating	Grade Description	05	10	15	20	25	30	35	40	45
CVD-Coated Carbide Grades	KCM15 C2–C3	**Composition:** A multilayer MTCVD-TiCN-Al_2O_3 coated carbide grade. **Application:** An excellent finishing to medium machining grade for austenitic stainless steels at higher speeds and covers a broad range of steel applications in the P20–25 range. KCM15 grade in combination with unique geometries have been designed to resist depth-of-cut notching and minimise burr formation. The post-coat treatment reduces coating stresses, improves coating adhesion, minimises microchipping and edge build-up, and improves workpiece finish. beyond	P			■	■	■				
			M		■	■	■					
	KCM25 C1–C2	**Composition:** A multilayer CVD coating comprised of TiN-MT-TiCN-Al_2O_3 layers over a tough, cobalt-enriched carbide substrate. **Application:** This CVD-coated grade is designed for general-purpose machining of austenitic stainless steels at moderate speeds and feeds. KCM25 inserts offer an extraordinary combination of toughness, built-up edge resistance, and wear resistance in stainless steel applications. beyond	P				■	■	■			
			M			■	■	■				
	KCM35 C1–C2	**Composition:** A multilayer TiN-MT-TiCN-Al_2O_3 CVD coating over a super-tough substrate. **Application:** The KCM35 grade is engineered to take on the most brutal cast stainless steel machining applications. The substrate withstands heavy interruptions, while the coating provides the wear resistance needed for long tool life. The polished surface resists edge build-up, even at slow cutting speeds. KCM35 grade is available in insert sizes and geometries appropriate for heavy feeds and large depths of cut. beyond	P						■	■	■	
			M					■	■	■		
PVD-Coated Cermet Grades	KT315 C3, C7	**Composition:** A multilayer PVD-TiN/TiCN/TiN-coated cermet turning grade. **Application:** Ideal for high-speed finishing to medium machining of most carbon and alloy steels and stainless steels. Performs very well in cast and ductile iron applications, too. Provides long and consistent tool life and will produce excellent workpiece finishes.	P	■	■							
			M		■	■						
			K		■	■						
	KTP10 C3, C7	**Composition:** A multilayer, PVD-TiN/TiCN/TiN-coated cermet turning grade. **Application:** Ideal for high-speed finishing to medium machining of most carbon and alloy steels and stainless steels. Performs very well in cast and ductile iron applications, too. Provides long and consistent tool life and will produce excellent workpiece finishes.	P	■	■							
			M		■	■						
			K		■	■						

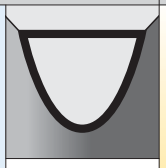
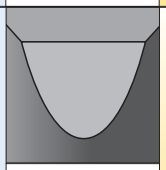
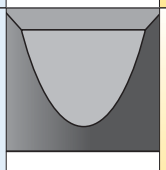
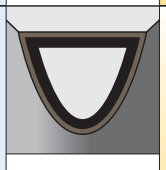


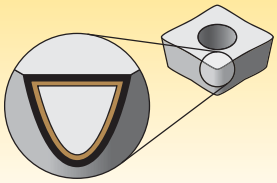
Coatings provide high-speed capability and are engineered for finishing to heavy roughing.

P	Steel
M	Stainless Steel
K	Cast Iron
N	Non-Ferrous Materials
S	High-Temp Alloys
H	Hardened Materials

wear resistance ⟷ toughness

Ceramic Grades

Coating	Grade Description	05	10	15	20	25	30	35	40	45
KYS25  C4	**Composition:** SiAlON ceramic with a multi-layered alumina-TiCN CVD coating. **Application:** Compliments the KYS30 grade when machining high-temp and nickel-based alloys and cast materials with high Brinell hardness. This advanced CVD coating provides excellent chemical and depth-of-cut notch resistance compared to whisker ceramics. beyond									
KYS30  C4	**Composition:** Latest and most advanced sialon material developed. **Application:** Combines excellent wear properties, fracture toughness, and thermal shock resistance for general-purpose to finish machining of high-temp alloys. Provides superior depth-of-cut notch resistance compared to whisker ceramics. beyond									
KYK10  —	**Composition:** An advanced sialon ceramic grade. **Application:** Provides maximum wear resistance. Use for high-speed continuous turning of grey cast iron, including through scale. beyond									
KYK25  C3	**Composition:** Pure silicon nitride ceramic with an alumina CVD coating. **Application:** Excellent combination of toughness and edge wear resistance. Used for general-purpose machining of grey, ductile, or nodular cast irons. beyond									

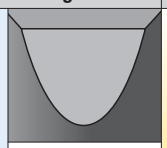
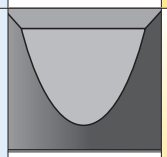
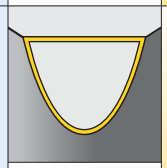


Coatings provide high-speed capability and are engineered for finishing to heavy roughing.

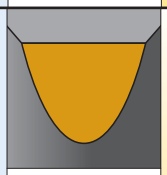
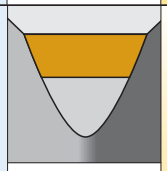
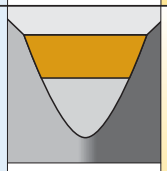
P	Steel
M	Stainless Steel
K	Cast Iron
N	Non-Ferrous Materials
S	High-Temp Alloys
H	Hardened Materials

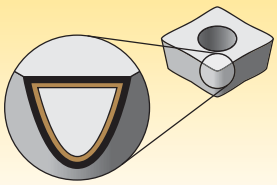
wear resistance ⟷ toughness

Ceramic Grades

Coating	Grade	Grade Description	05	10	15	20	25	30	35	40	45
 C4	KY4300	**Composition:** Whisker ceramic with a matrix of Al_2O_3 + SiCW. **Application:** The SiC whiskers embedded in the micro structure give this ceramic excellent toughness for cutting high-temp alloys and cast materials with high Brinell hardness.									
 C2	KY3500	**Composition:** Pure silicon nitride grade. **Application:** Maximum toughness. Used at high feed rates for rough machining of grey cast iron, including machining through interruptions.									
 C4, C8	KY4400	**Composition:** A PVD TiN coating over an aluminium oxide and titanium carbonitride composite ceramic (Al_2O_3/TiCN). **Application:** Used for finish turning of hardened steels and irons (greater than 45 HRC). Where possible, use under dry conditions in smooth or varied depths of cut. Can also be applied in finish turning of nickel alloys, cobalt alloys, and powder metals.									

PCBN – Polycrystalline Cubic Born Nitride Grades

Coating	Grade	Grade Description	05	10	15	20	25	30	35	40	45
 —	KB1340	**Composition:** A high CBN content, solid PCBN insert having multiple cutting edges. **Application:** Applied in roughing to finishing of fully pearlitic grey cast iron, chilled irons, high-chrome alloyed steels, sintered powdered metals, and heavy cuts in hardened steels (>45 HRC). Also use for finishing chilled cast iron and fully pearlitic cast iron. The solid PCBN insert offers better security and shock resistance compared to tipped PCBN inserts, while also enabling deeper depth-of-cut capabilities.									
 —	KB1345	**Composition:** A high CBN content, PCBN tip brazed onto a carbide insert. **Application:** Applied in roughing to finishing of fully pearlitic grey cast iron, chilled irons, high-chrome alloyed steels, sintered powdered metals, and heavy cuts in hardened steels (>45 HRC). Also use for finishing chilled cast iron and fully pearlitic cast iron. The tipped PCBN insert is available in a wide range of insert styles including positive rake geometries that are ideally suited for boring applications.									
 —	KB1610	**Composition:** A low CBN content, PCBN tip brazed onto a carbide insert. **Application:** Designed for precision finishing in smooth cuts on hardened steels (>45 HRC) where optimal surface finish is needed. Use on bearing steel, hot and cold work tool steels, high-speed steels, die steels, case hardened steels, carburised and nitrided irons, and some hard coatings. Do not apply on soft steel.									



Coatings provide high-speed capability and are engineered for finishing to heavy roughing.

P	Steel
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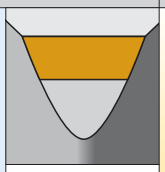
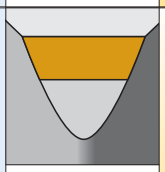
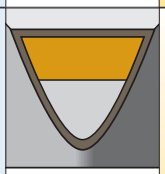
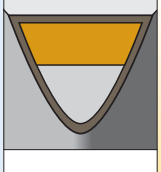
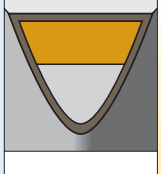
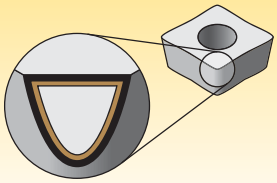
S	High-Temp Alloys
H	Hardened Materials

wear resistance ⟷ toughness

PCBN – Polycrystalline Cubic Born Nitride Grades

Coating	Grade Description	05	10	15	20	25	30	35	40	45
KB1625  —	**Composition:** A medium CBN content, PCBN tip brazed onto a carbide insert. **Application:** Designed for roughing to finishing of hardened steels (>45 HRC) where optimal surface finish is needed. It can be used in continuous to interrupted cutting of bearing steel, hot and cold work tool steels, high-speed steels, die steels, case-hardened steels, carburised and nitrided irons, and some hard coatings.									
KB1630  —	**Composition:** A high CBN content, PCBN tip brazed onto a carbide insert. **Application:** Designed for roughing to finishing in interrupted cuts on hardened steels (>45 HRC). It can also be applied on grey cast iron, chilled irons, high-chrome alloyed steels, and sintered powdered metals. The tipped PCBN insert is available in a wide range of insert styles, including positive rake geometries, that are ideally suited for boring applications.									
KB5610  C4, C8	**Composition:** A low content PCBN grade with a PVD TiAlN coating for added wear resistance. **Application:** Designed for the precision machining of hardened steels (>45 HRC). The PVD coating offers improved wear resistance and excellent surface finish capabilities. It can be very effectively applied on bearing steels, hot and cold work tool steels, high-speed steels, die steels, case-hardened steels, carburised and nitrided irons, and some hard coatings. Available in a multitip format with a tremendous breadth of edge preps, insert styles, and wiper geometries.									
KB5625  C4, C8	**Composition:** A PVD TiAlN coating over a medium content, PCBN tip brazed onto a carbide insert. **Application:** Designed for roughing to finishing of hardened steels (>45 HRC). Use on bearing steel, hot and cold work tool steels, high-speed steels, die steels, case-hardened steels, carburised and nitrided irons, and some hard coatings.									
KB5630  C4, C8	**Composition:** A high content PCBN grade with a PVD AlTiN coating for added wear resistance. **Application:** Designed for roughing to finishing in hardened steels (>45 HRC), abrasive workpiece materials such as sintered valve seat materials, powder metallurgy tool steels, and hard high-alloy cast irons. The PVD coating provides resistance to crater wear and increased resistance to chipping. The tipped PCBN insert is available in a wide range of insert styles, including positive rake geometries, that are ideally suited for boring applications.									

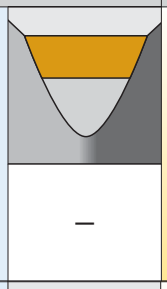
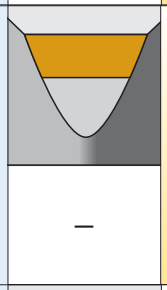
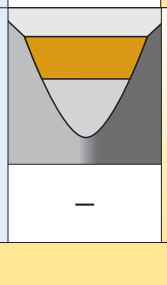


Coatings provide high-speed capability and are engineered for finishing to heavy roughing.

P	Steel
M	Stainless Steel
K	Cast Iron
N	Non-Ferrous Materials
S	High-Temp Alloys
H	Hardened Materials

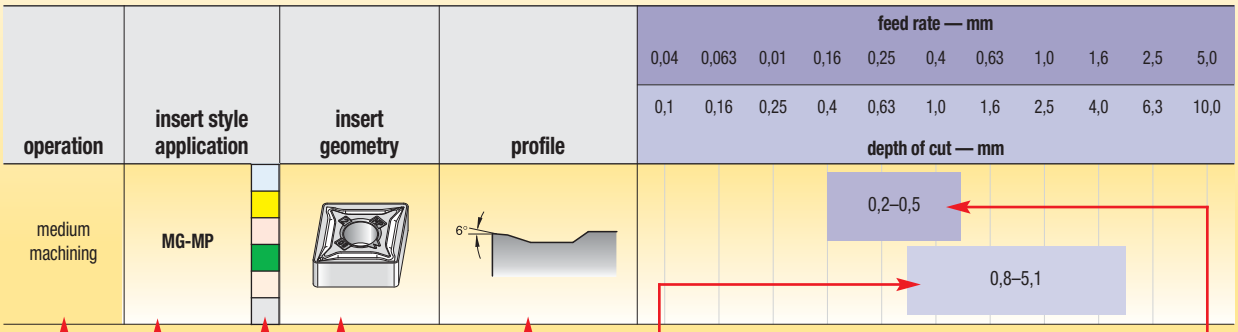
wear resistance ⟷ toughness

PCD – Polycrystalline Diamond Grades

Coating	Grade Description	05	10	15	20	25	30	35	40	45
KD1400 	**Composition:** An ultra-fine-grain, polycrystalline diamond (PCD) tip brazed onto a carbide substrate. **Application:** Designed for general-purpose turning of primarily non-ferrous materials. It can be applied over a wide range of continuous to interrupted cuts where superior surface finish is needed. Use on low to medium silicon-content aluminium alloys, non-metallics, copper, and brass- and zinc-based alloys. The ultra-fine-grain diamond particle size enables superior surface finishes while ensuring the best mechanical shock resistance of any PCD cutting tool.									
KD1405 	**Composition:** A pure CVD-deposited diamond-sheet tool brazed directly to a carbide substrate. **Application:** KD1405 is Kennametal's most abrasion-resistant tool material for non-ferrous and non-metallic materials. Best applied when abrasion resistance is the desired benefit.									
KD1425 	**Composition:** A multimodal PCD grade with a range of grain sizes brazed onto a carbide substrate. **Application:** Engineered for extreme abrasion resistance, combined with good edge strength for demanding applications. An ideal choice for high-silicon aluminium alloys, bi-metallic (AL/GCI) materials, MMC, carbon-fibre reinforced plastics, and other abrasive non-metallic materials.									

Select the geometry — based on feed rate and depth of cut

P	Steel
M	Stainless Steel
K	Cast Iron
N	Non-Ferrous Materials
S	High-Temp Alloys
H	Hardened Materials



Feed Rate Range —
for best results, use the centre 60% of the range

Depth-of-Cut Range —
for all inserts in the program, select smaller inserts for lighter cuts and larger inserts for heavy cuts

Pictorial View of Insert

Chipbreaker Geometry —
section is through nose radius of insert

Primary Workpiece Material Group

P	Steel
M	Stainless Steel
K	Cast Iron
N	Non-Ferrous Materials
S	High-Temp Alloys
H	Hardened Materials

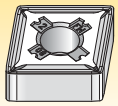
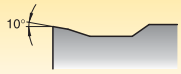
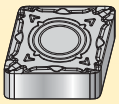
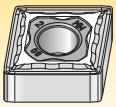
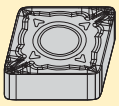
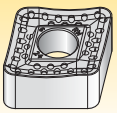
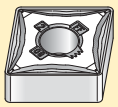
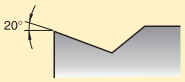
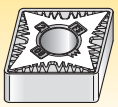
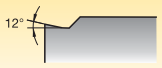
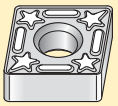
Chip Control Geometry Designation —
example: MG-MP = CNMG-432MP

Machining Operation —
for what the insert geometry is designed

NOTE: For detailed grade and geometry recommendations, reference the Kennametal Beyond™ Selection System on pages B8–B23.

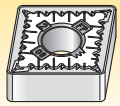
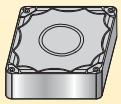
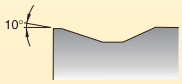
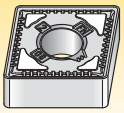
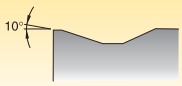
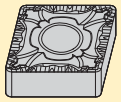
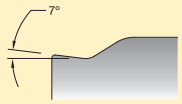
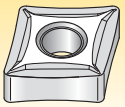
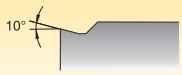
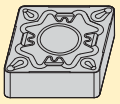
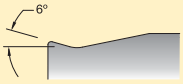
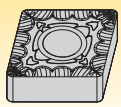
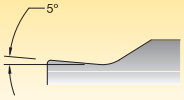
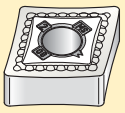
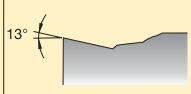
Select the geometry — based on feed rate and depth of cut

P	Steel
M	Stainless Steel
K	Cast Iron
N	Non-Ferrous Materials
S	High-Temp Alloys
H	Hardened Materials

operation	insert style application	insert geometry	profile	feed rate — mm: 0,04 / 0,063 / 0,01 / 0,16 / 0,25 / 0,4 / 0,63 / 1,0 / 1,6 / 2,5 / 5,0 depth of cut — mm: 0,1 / 0,16 / 0,25 / 0,4 / 0,63 / 1,0 / 1,6 / 2,5 / 4,0 / 6,3 / 10,0
wiper finishing	**MG-FW**			0,2–2,0 0,3–2,0
	MG-FW1			0,1–1,5 0,1–1,5
wiper medium machining	**MG-MW**			0,3–0,6 0,8–5,1
	MG-MW1			0,15–0,5 0,5–3
wiper roughing	**MM-RW**			0,3–1,3 1,3–12,7
fine finishing	**MG-FF**			0,1–0,3 0,1–2,0
finishing sharp	**GG-FS** precision ground			0,07–0,25 0,20 - 2,0
finishing	**GG-LF** precision ground			0,1 - 0,5 0,5–3,0

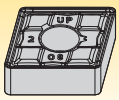
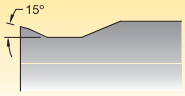
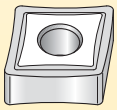
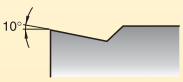
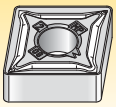
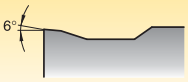
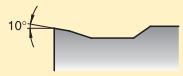
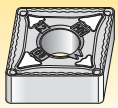
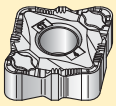
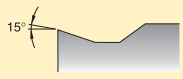
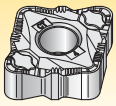
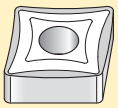
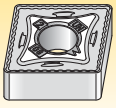
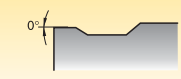
Select the geometry — based on feed rate and depth of cut

P	Steel
M	Stainless Steel
K	Cast Iron
N	Non-Ferrous Materials
S	High-Temp Alloys
H	Hardened Materials

operation	insert style application	insert geometry	profile	feed rate — mm: 0,04 / 0,063 / 0,01 / 0,16 / 0,25 / 0,4 / 0,63 / 1,0 / 1,6 / 2,5 / 5,0 depth of cut — mm: 0,1 / 0,16 / 0,25 / 0,4 / 0,63 / 1,0 / 1,6 / 2,5 / 4,0 / 6,3 / 10,0
finishing	MG-FP			0,1–0,3 0,3–2,5
	MG-FH			0,05–0,25 0,25–1
	MG-FN			0,1–0,3 0,3–2,5
	MG-FX			0,07–0,22 0,2–1
	MP-K			0,1–0,3 0,2–2,5
medium machining	MG-MH			0,15–0,5 0,3–2
	MG-MX			0,15–0,35 0,5–1,5
medium sharp	MG-MS			0,12–0,35 0,76–5,0

Select the geometry — based on feed rate and depth of cut

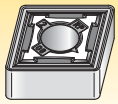
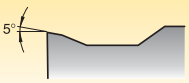
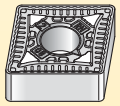
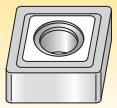
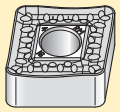
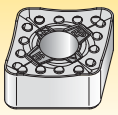
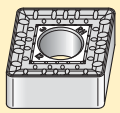
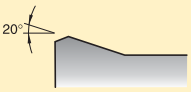
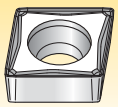
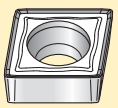
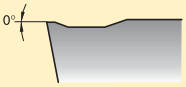
P	Steel
M	Stainless Steel
K	Cast Iron
N	Non-Ferrous Materials
S	High-Temp Alloys
H	Hardened Materials

operation	insert style application	insert geometry	profile	feed rate — mm: 0,04 / 0,063 / 0,01 / 0,16 / 0,25 / 0,4 / 0,63 / 1,0 / 1,6 / 2,5 / 5,0 depth of cut — mm: 0,1 / 0,16 / 0,25 / 0,4 / 0,63 / 1,0 / 1,6 / 2,5 / 4,0 / 6,3 / 10,0
medium machining	**MG-UP**			0,2–0,6 1,0–6,4
	__GP*			0,3–0,5 0,5–3,2
	MG-MP			0,2–0,5 0,8–5,1
	MG-P			0,15–0,5 0,75–5,0
	MG-MN			0,2–0,5 0,5–5,1
	MG-CT O.D. turning			0,13–0,5 1,0–3,0
	MG-CT outward facing			0,25–0,5 0,25–1,0
	-MS single sided			0,2–0,4 0,6–2,3
	MG-UN			0,2–0,5 0,8–3,8

*35° and 55° geometries are single sided.

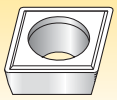
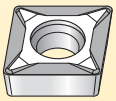
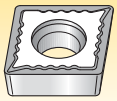
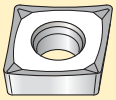
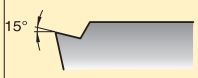
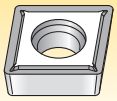
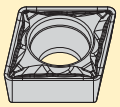
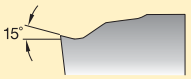
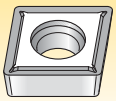
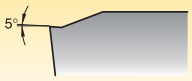
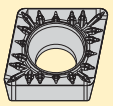
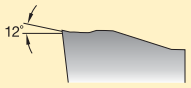
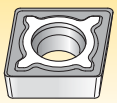
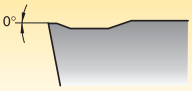
Select the geometry — based on feed rate and depth of cut

P	Steel
M	Stainless Steel
K	Cast Iron
N	Non-Ferrous Materials
S	High-Temp Alloys
H	Hardened Materials

operation	insert style application	insert geometry	profile	feed rate — mm: 0,04 / 0,063 / 0,01 / 0,16 / 0,25 / 0,4 / 0,63 / 1,0 / 1,6 / 2,5 / 5,0 depth of cut — mm: 0,1 / 0,16 / 0,25 / 0,4 / 0,63 / 1,0 / 1,6 / 2,5 / 4,0 / 6,3 / 10,0
roughing	**MG-RP**			0,2–0,6 1,1–6,4
	MG-RN			0,3–.025 1,1–6,4
heavy roughing	**MG**			0,3–0,8 1,1–5,7
	MM-RM single sided			0,3–1,0 1,3–12,7
	MM-RP			0,2–1,0 1,3–10,0
	MM-RH single sided			0,4–1,3 1,3–12,7
wiper finishing	**MT-FW**			0,1–0,3 0,2–1,5
wiper, medium finishing	**MT-MW**			0,1–0,5 0,4–3,3

Select the geometry — based on feed rate and depth of cut

P	Steel
M	Stainless Steel
K	Cast Iron
N	Non-Ferrous Materials
S	High-Temp Alloys
H	Hardened Materials

operation	insert style application	insert geometry	profile	feed rate — mm: 0,04 / 0,063 / 0,01 / 0,16 / 0,25 / 0,4 / 0,63 / 1,0 / 1,6 / 2,5 / 5,0 depth of cut — mm: 0,1 / 0,16 / 0,25 / 0,4 / 0,63 / 1,0 / 1,6 / 2,5 / 4,0 / 6,3 / 10,0
fine finishing	**__GM** precision ground			0,1–0,2 0,2–1,0
	MT-11			0,1–0,3 0,2–1,3
	.MT-UF			0,1–0,3 0,1–1,3
finishing	**GT-HP** precision ground			0,2–0,4 0,6–2,3
	GT-LF precision ground			0,2–0,4 0,8–2,3
	MT-FP			0,063–0,25 0,16–1,6
	MT-LF			0,2–0,4 0,8–2,3
medium machining	**MT-MP**			0,01–0,4 0,4–2,3
	MT-MF			0,2–0,4 1,1–2,3