

MASTER CATALOG 2018

VOLUME ONE | **TURNING TOOLS**



ISO/ANSI TURNING | GROOVING & CUT-OFF | THREADING | APPLICATION SPECIFIC

➤ Polycrystalline Diamond Inserts



Polycrystalline Diamond (PCD) Inserts

- Use for machining high-temperature alloys and in targeted machining of non-ferrous materials.
- Significant hardness advantage compared to carbide inserts.
- Increased productivity through higher speeds and longer tool life.
- Best used in processing materials that cannot be machined with conventional tooling.

KD1400™ Grade

- Ideal for general-purpose turning of non-ferrous materials.
- Use on low to medium silicon-content aluminum alloys, non-metallics, copper, and brass- and zinc-based alloys.
- Excellent mechanical shock resistance.
- Use in a wide range of continuous to interrupted cuts where superior surface finished is needed.



KD1405™ Grade

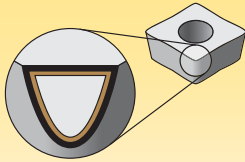
- The most abrasion-resistant tool material for non-ferrous and non-metallic materials from Kennametal.
- Use when abrasion resistance is needed in the application.
- CVD diamond grade.



KD1425™ Grade

- Engineered for extreme abrasion resistance.
- Good edge strength in demanding applications.
- Ideal choice for high-silicon aluminum alloys, bi-metallic materials, carbon-fiber reinforced plastics, and other abrasive non-metallic materials.





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

P	Steel
M	Stainless Steel
K	Cast Iron
N	Non-Ferrous
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		<p>Composition: An ultra-fine-grain, polycrystalline diamond (PCD) tip brazed onto a carbide substrate.</p> <p>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 aluminum 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.</p>										
KD1405		<p>Composition: A pure CVD-deposited diamond-sheet tool brazed directly to a carbide substrate.</p> <p>Application: KD1405™ is the best Kennametal abrasion-resistant tool material for non-ferrous and non-metallic materials. Best applied when abrasion resistance is the desired benefit.</p>										
KD1425		<p>Composition: A multimodal PCD grade with a range of grain sizes brazed onto a carbide substrate.</p> <p>Application: Engineered for extreme abrasion resistance, combined with good edge strength for demanding applications. An ideal choice for high-silicon aluminum alloys, bi-metallic (AL/GC) materials, MMC, carbon-fiber reinforced plastics, and other abrasive non-metallic materials.</p>										

Beyond™ PVD Grades



Beyond™ advanced PVD coatings are well suited to resist high temperatures associated with machining tough alloys. These coatings offer increased tool life and a boost in productivity to the general engineering, transportation, aerospace, energy, and earthworks markets. Use the strength of Beyond PVD coatings and the broad product offering to perform turning, grooving, and cut-off operations in a wide array of materials and applications. Beyond PVD coatings help to maintain consistent chip control and minimize insert edge wear.



KCU10™ Grade

- PVD-coated grade with excellent wear resistance. Finishing to medium applications.
- Use in all materials, especially stainless steels and high-temp alloys.

KCU25™ Grade

- PVD-coated grade with superior edge toughness and excellent wear resistance. Medium to roughing applications.
- Use in all materials.

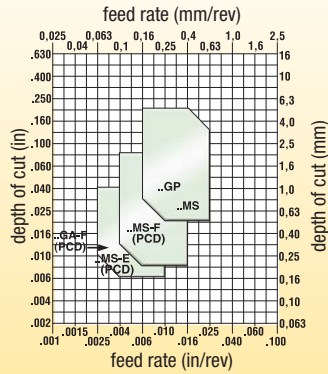
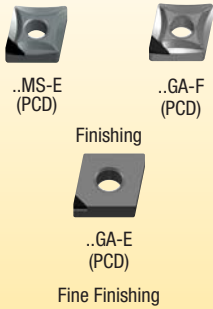
Experience the advantages at your Authorized Kennametal Distributor or at kennametal.com.



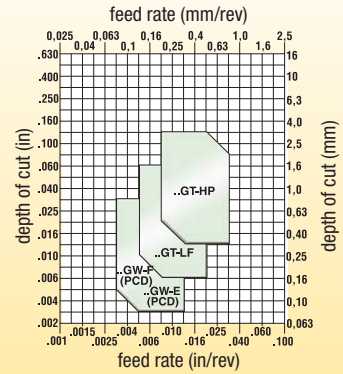
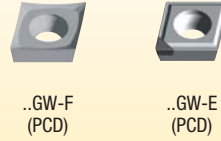
kennametal.com

Step 1 • Select the insert geometry

Negative Inserts



Positive Inserts



Step 2 • Select the grade

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

Step 3 • Selecting the cutting speed

Low-Silicon Aluminum Alloys

(hypoeutectic <12.2% Si) and Magnesium Alloys

material group	grade	speed — m/min (SFM)										Starting Conditions	
		250 (800)	500 (1600)	750 (2400)	1000 (3200)	1250 (4000)	1500 (4800)	1750 (5600)	2000 (6400)	2250 (7200)	2500 (8000)	m/min	SFM
N1	KD1400	◊										765	2500

High-Silicon Aluminum Alloys

(hypereutectic >12.2% Si) and Magnesium Alloys

material group	grade	speed — m/min (SFM)				Starting Conditions	
		250 (800)	500 (1600)	750 (2400)	1000 (3200)	m/min	SFM
N3	KD1405	◊				550	1800
	KD1425	◊				765	2500

■ 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

Nylon, Plastics, Rubbers, Phenolics, Resins, Fiberglass, and Glass speed — m/min (SFM) Starting Conditions ◊

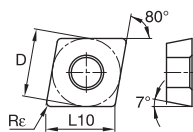
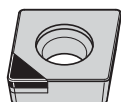
material group	grade	250 (800)	500 (1600)	750 (2400)	1000 (3200)	m/min	SFM
N5	KD1400/KD1405	◊				400	1300
	KD1425	◊				365	1200

**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

MMCs (Aluminum-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



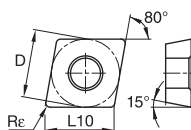
● first choice
○ alternate choice

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

■ CCGW-FST

ISO catalog number	ANSI catalog number	D		L10		Re		KD1400	KD1405	KD1425
		mm	in	mm	in	mm	in			
CCGW060204FST	CCGW2151FST	6,35	1/4	6,45	.254	0,4	1/64	●	-	●
CCGW09T304FST	CCGW3251FST	9,53	3/8	9,67	.381	0,4	1/64	●	-	●
CCGW09T308FST	CCGW3252FST	9,53	3/8	9,67	.381	0,8	1/32	●	-	●

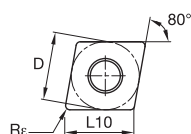
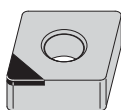
NOTE: For toolholders and boring bars, see pages B193–B198.



■ CDHB-FST

ISO catalog number	ANSI catalog number	D		L10		Re		KD1400	KD1405	KD1425
		mm	in	mm	in	mm	in			
CDHBS4T002FST	CDHB120605FST	3,97	.1562	4,03	.159	0,2	.007	●	-	●
CDHBS4T0X0FST	CDHB1206X0FST	3,97	5/32	4,03	.159	0,1	.002	●	-	-

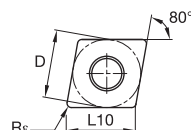
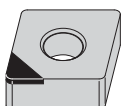
NOTE: For toolholders and boring bars, see pages B200–B204.



■ CNGA

ISO catalog number	ANSI catalog number	D		L10		Re		KD1400	KD1405	KD1425
		mm	in	mm	in	mm	in			
CNGA120404E	CNGA431E	12,70	1/2	12,90	.508	0,4	1/64	-	●	-
CNGA120408E	CNGA432E	12,70	1/2	12,90	.508	0,8	1/32	-	●	-

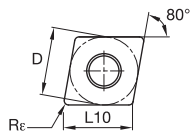
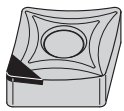
NOTE: For toolholders and boring bars, see pages B58–B76.



■ CNGA-FST

ISO catalog number	ANSI catalog number	D		L10		Re		KD1400	KD1405	KD1425
		mm	in	mm	in	mm	in			
CNGA120404FST	CNGA431FST	12,70	1/2	12,90	.508	0,4	1/64	●	-	●
CNGA120408FST	CNGA432FST	12,70	1/2	12,90	.508	0,8	1/32	●	-	●

NOTE: For toolholders and boring bars, see pages B58–B76.

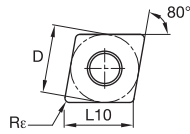
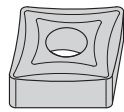


- first choice
- alternate choice

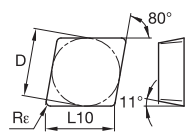
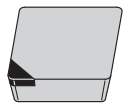
P	■	■	■	■
M	■	■	■	■
K	■	■	■	■
N	■	●	○	●
S	■	●	●	●
H	■	■	■	■


■ CNMS-E

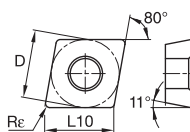
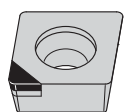
ISO catalog number	ANSI catalog number	D		L10		Rε		KD1400	KD1405	KD1425
		mm	in	mm	in	mm	in			
CNMS120408E	CNMS432E	12,70	1/2	12,90	.508	0,8	1/32	-	●	-


■ CNMS-FST

ISO catalog number	ANSI catalog number	D		L10		Rε		KD1400	KD1405	KD1425
		mm	in	mm	in	mm	in			
CNMS120404FST	CNMS431FST	12,70	1/2	12,90	.508	0,4	1/64	●	-	-
CNMS120408FST	CNMS432FST	12,70	1/2	12,90	.508	0,8	1/32	●	-	●

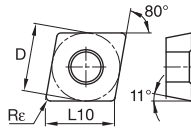
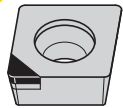

■ CPGN/CPG

ISO catalog number	ANSI catalog number	D		L10		Rε		KD1400	KD1405	KD1425
		mm	in	mm	in	mm	in			
CPGN120304F	CPG421F	12,70	1/2	12,90	.508	0,4	1/64	-	-	●
CPGN120308F	CPG422F	12,70	1/2	12,90	.508	0,8	1/32	-	-	●


■ CPGW-E-F

ISO catalog number	ANSI catalog number	D		L10		Rε		KD1400	KD1405	KD1425
		mm	in	mm	in	mm	in			
CPGW060204E	CPGW2151E	6,35	1/4	6,45	.254	0,4	1/64	-	●	-
CPGW09T304E	CPGW3251E	9,53	3/8	9,67	.381	0,4	1/64	-	●	-

NOTE: For toolholders and boring bars, see pages B209–B223.



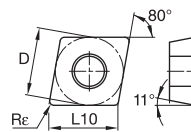
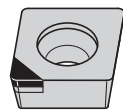
- first choice
- alternate choice

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

■ CPGW-FWST

ISO catalog number	ANSI catalog number	D		L10		Rε		KD1400	KD1405	KD1425
		mm	in	mm	in	mm	in			
CPGW060204FWST	CPGW2151FWST	6,35	1/4	6,45	.254	0,4	1/64	●	-	●
CPGW09T308FWST	CPGW3252FWST	9,53	3/8	9,67	.381	0,8	1/32	●	-	●
CPGW120408FWST	CPGW432FWST	12,70	1/2	12,90	.508	0,8	1/32	●	-	●

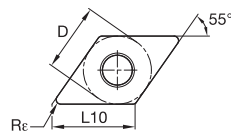
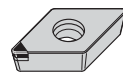
NOTE: For toolholders and boring bars, see pages B209–B223.



■ CPGW-ST

ISO catalog number	ANSI catalog number	D		L10		Rε		KD1400	KD1405	KD1425
		mm	in	mm	in	mm	in			
CPGW060202FST	CPGW21505FST	6,35	1/4	6,45	.254	0,2	.008	●	-	●
CPGW060204FST	CPGW2151FST	6,35	1/4	6,45	.254	0,4	1/64	●	-	●
CPGW060208FST	CPGW2152FST	6,35	1/4	6,45	.254	0,8	1/32	●	-	●
CPGW09T304FST	CPGW3251FST	9,53	3/8	9,67	.381	0,4	1/64	●	-	●
CPGW09T308FST	CPGW3252FST	9,53	3/8	9,67	.381	0,8	1/32	●	-	●

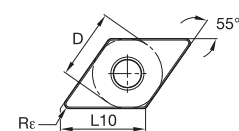
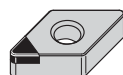
NOTE: For toolholders and boring bars, see pages B209–B223.



■ DCGW-ST

ISO catalog number	ANSI catalog number	D		L10		Rε		KD1400	KD1405	KD1425
		mm	in	mm	in	mm	in			
DCGW070204FST	DCGW2151FST	6,35	1/4	7,75	.305	0,4	1/64	●	-	●
DCGW11T304FST	DCGW3251FST	9,53	3/8	11,63	.458	0,4	1/64	●	-	●

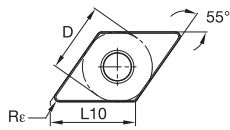
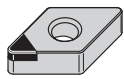
NOTE: For toolholders and boring bars, see pages B227–B230.



■ DNGA

ISO catalog number	ANSI catalog number	D		L10		Rε		KD1400	KD1405	KD1425
		mm	in	mm	in	mm	in			
DNGA150404E	DNGA431E	12,70	1/2	15,50	.610	0,4	1/64	-	●	-

NOTE: For toolholders and boring bars, see pages B87–B96.



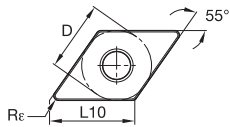
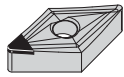
- first choice
- alternate choice

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


■ DNGA-FST

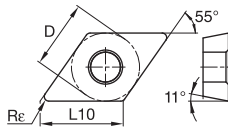
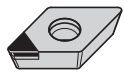
ISO catalog number	ANSI catalog number	D		L10		Rε		KD1400	KD1405	KD1425
		mm	in	mm	in	mm	in			
DNGA150404FST	DNGA431FST	12,70	1/2	15,50	.610	0,4	1/64	●	-	●
DNGA150408FST	DNGA432FST	12,70	1/2	15,50	.610	0,8	1/32	●	-	●

NOTE: For toolholders and boring bars, see pages B87–B96.


■ DNMS-FST

ISO catalog number	ANSI catalog number	D		L10		Rε		KD1400	KD1405	KD1425
		mm	in	mm	in	mm	in			
DNMS150404FST	DNMS431FST	12,70	1/2	15,50	.610	0,4	1/64	●	-	-
DNMS150408FST	DNMS432FST	12,70	1/2	15,50	.610	0,8	1/32	●	-	●

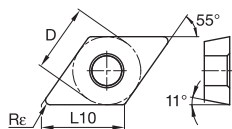
NOTE: For toolholders and boring bars, see pages B87–B96.


■ DPGW-E

ISO catalog number	ANSI catalog number	D		L10		Rε		KD1400	KD1405	KD1425
		mm	in	mm	in	mm	in			
DPGW11T304E	DPGW3251E	9,53	3/8	11,63	.458	0,4	1/64	-	●	-

NOTE: For toolholders and boring bars, see pages B234–B237.

ISO/ANSI Turning



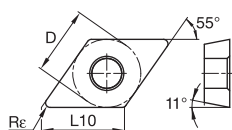
- first choice
- alternate choice

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

■ DPGW-FST

ISO catalog number	ANSI catalog number	D		L10		Rε		KD1400	KD1405	KD1425
		mm	in	mm	in	mm	in			
DPGW070202FST	DPGW21505FST	6,35	1/4	7,75	.305	0,2	.008	●	-	●
DPGW070204FST	DPGW2151FST	6,35	1/4	7,75	.305	0,4	1/64	●	-	●
DPGW11T304FST	DPGW3251FST	9,53	3/8	11,63	.458	0,4	1/64	●	-	●

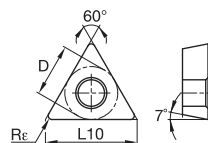
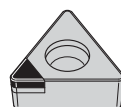
NOTE: For toolholders and boring bars, see pages B234–B237.



■ DPGW-FWST

ISO catalog number	ANSI catalog number	D		L10		Rε		KD1400	KD1405	KD1425
		mm	in	mm	in	mm	in			
DPGW11T304FWST	DPGW3251FWST	9,53	3/8	11,63	.458	0,2	.007	-	-	●

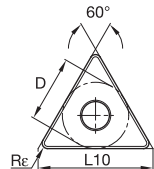
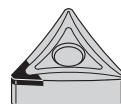
NOTE: For toolholders and boring bars, see pages B234–B237.



■ TCGW-FST

ISO catalog number	ANSI catalog number	D		L10		Rε		KD1400	KD1405	KD1425
		mm	in	mm	in	mm	in			
TCGW110204FST	TCGW2151FST	6,35	1/4	11,00	.433	0,4	1/64	●	-	●
TCGW16T304FST	TCGW3251FST	9,53	3/8	16,50	.650	0,4	1/64	●	-	-

NOTE: For toolholders and boring bars, see pages B259–B262.



■ TNMS-FST

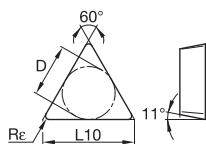
ISO catalog number	ANSI catalog number	D		L10		Rε		KD1400	KD1405	KD1425
		mm	in	mm	in	mm	in			
TNMS160404FST	TNMS331FST	9,53	3/8	16,50	.650	0,4	1/64	●	-	●
TNMS160408FST	TNMS332FST	9,53	3/8	16,50	.650	0,8	1/32	●	-	●

NOTE: For toolholders and boring bars, see pages B131–B143.

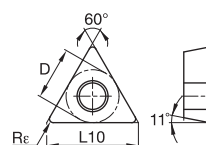
P	■	■	■	■
M	■	■	■	■
K	■	■	■	■
N	●	○	●	○
S	■	■	■	■
H	■	■	■	■

ISO/ANSI Turning

- first choice
- alternate choice

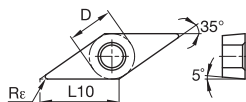
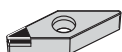

TPGN/TPG

ISO catalog number	ANSI catalog number	D		L10		Rε		KD1400	KD1405	KD1425
		mm	in	mm	in	mm	in			
TPGN110304F	TPG221F	6,35	1/4	11,00	.433	0,4	1/64	-	-	●
TPGN160304F	TPG321F	9,53	3/8	16,50	.650	0,4	1/64	-	-	●
TPGN160308F	TPG322F	9,53	3/8	16,50	.650	0,8	1/32	-	-	●
TPGN220408F	TPG432F	12,70	1/2	22,00	.866	0,8	1/32	-	-	●


TPGW-FST

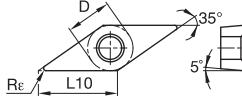
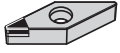
ISO catalog number	ANSI catalog number	D		L10		Rε		KD1400	KD1405	KD1425
		mm	in	mm	in	mm	in			
TPGW110204FST	TPGW2151FST	6,35	1/4	11,00	.433	0,4	1/64	●	-	●
TPGW110208FST	TPGW2152FST	6,35	1/4	11,00	.433	0,8	1/32	●	-	-
TPGW16T304FST	TPGW3251FST	9,53	3/8	16,50	.650	0,4	1/64	-	-	●
TPGW16T308FST	TPGW3252FST	9,53	3/8	16,50	.650	0,8	1/32	●	-	●

NOTE: For toolholders and boring bars, see pages B270–B279.


VBGW-E

ISO catalog number	ANSI catalog number	D		L10		Rε		KD1400	KD1405	KD1425
		mm	in	mm	in	mm	in			
VBGW160408E	VBGW332E	9,53	3/8	16,61	.654	0,8	1/32	-	●	-

NOTE: For toolholders and boring bars, see pages B282–B285.



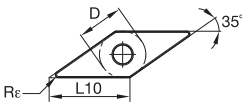
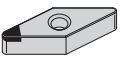
- first choice
- alternate choice

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

■ VBGW-FST

ISO catalog number	ANSI catalog number	D		L10		Rε		KD1400	KD1405	KD1425
		mm	in	mm	in	mm	in			
VBGW110304FST	VBGW221FST	6,35	1/4	11,07	.436	0,4	1/64	●	-	●
VBGW160404FST	VBGW331FST	9,53	3/8	16,61	.654	0,4	1/64	●	-	●

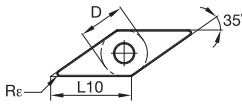
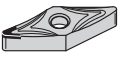
NOTE: For toolholders and boring bars, see pages B282–B285.



■ VNGA-FST

ISO catalog number	ANSI catalog number	D		L10		Rε		KD1400	KD1405	KD1425
		mm	in	mm	in	mm	in			
VNGA160404FST	VNGA331FST	9,53	3/8	16,61	.654	0,4	1/64	●	-	-
VNGA160408FST	VNGA332FST	9,53	3/8	16,61	.654	0,8	1/32	●	-	●

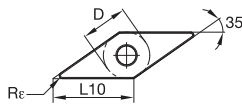
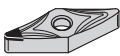
NOTE: For toolholders and boring bars, see pages B150–B155.



■ VNMS-E

ISO catalog number	ANSI catalog number	D		L10		Rε		KD1400	KD1405	KD1425
		mm	in	mm	in	mm	in			
VNMS160404E	VNMS331E	9,53	3/8	16,61	.654	0,4	1/64	-	●	-
VNMS160408E	VNMS332E	9,53	3/8	16,61	.654	0,8	1/32	-	●	-

NOTE: For toolholders and boring bars, see pages B150–B155.



■ VNMS-FST

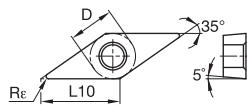
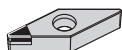
ISO catalog number	ANSI catalog number	D		L10		Rε		KD1400	KD1405	KD1425
		mm	in	mm	in	mm	in			
VNMS160404FST	VNMS331FST	9,53	3/8	16,61	.654	0,4	1/64	●	-	●
VNMS160408FST	VNMS332FST	9,53	3/8	16,61	.654	0,8	1/32	●	-	●

NOTE: For toolholders and boring bars, see pages B150–B155.

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

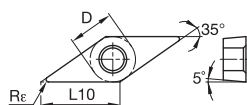
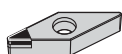


- first choice
- alternate choice


■ VPGN

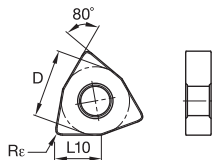
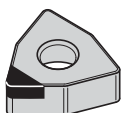
ISO catalog number	ANSI catalog number	D		L10		Rε		KD1400	KD1405	KD1425
		mm	in	mm	in	mm	in			
VCGN160404	VPGN331	9,53	3/8	16,61	.654	0,4	1/64	-	-	●
VCGN160408	VPGN332	9,53	3/8	16,61	.654	0,8	1/32	-	-	●

NOTE: For toolholders and boring bars, see pages B282–B285.


■ VPGR

ISO catalog number	ANSI catalog number	D		L10		Rε		KD1400	KD1405	KD1425
		mm	in	mm	in	mm	in			
VCGR160404	VPGR331	9,53	3/8	16,61	.654	0,4	1/64	-	-	●
VCGR160408	VPGR332	9,53	3/8	16,61	.654	0,8	1/32	-	-	●
VCGR160412	VPGR333	9,53	3/8	16,61	.654	1,2	3/64	-	-	●

NOTE: For toolholders and boring bars, see pages B282–B285.


■ WNGA-FST

ISO catalog number	ANSI catalog number	D		L10		Rε		KD1400	KD1405	KD1425
		mm	in	mm	in	mm	in			
WNGA080408FST	WNGA432FST	12,70	1/2	8,69	.342	0,8	1/32	-	-	●

NOTE: For toolholders and boring bars, see page B163.

