kennametal.com

KENNAMETAL®

INNOVATIONS 2019 | 02

METRIC

Hydraulic Chuck Portfolio

Achieving optimum performance
for round-tool applications.

HydroForce™

High Performance

Slim Line

INNOVATIONS

CAS — Customer Application Support

Get Fast and Reliable Answers to Your Toughest Problems

Our CAS Team is the metalworking industry's leading help desk resource for tooling application solutions and problem resolution.

Easy Access to Proven Metalworking Expertise!

Kennametal Application Engineers assist customers and engineering groups throughout the world with expert tool selection and application recommendations for the entire range of Kennametal tooling.

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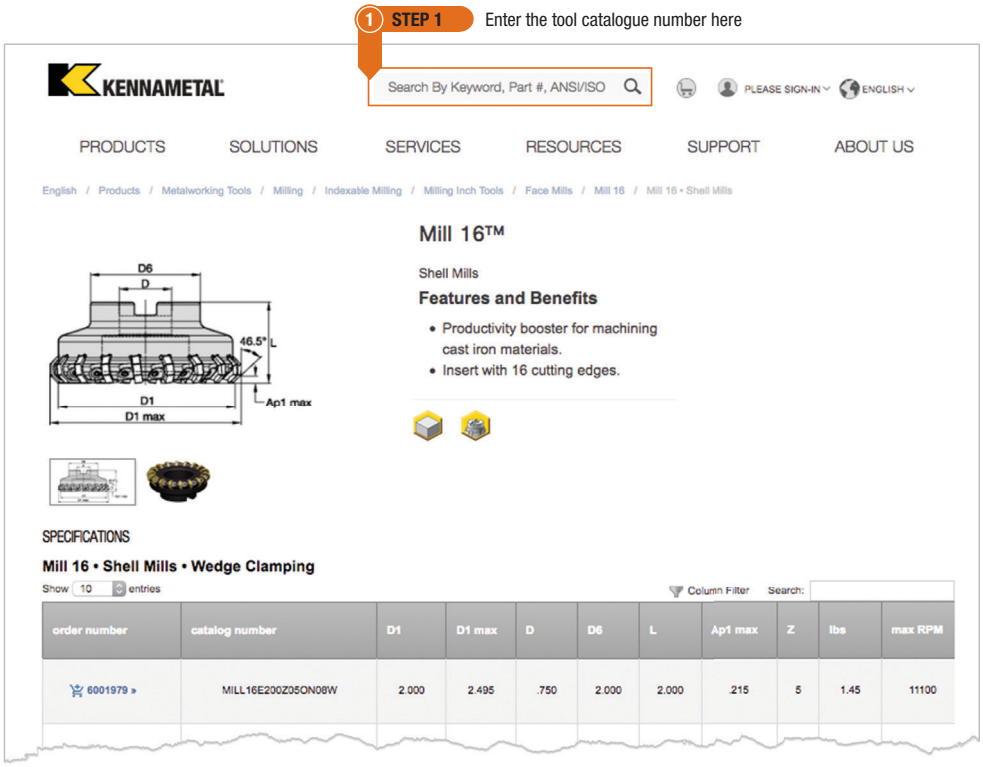
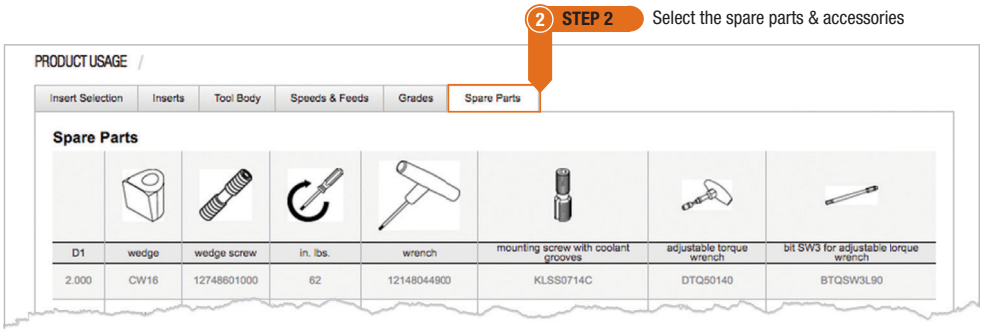
Spare Parts & Accessories Information

Lost a screw? Have to replace worn-out clamping wedges?
Need to find and re-order those spare parts?

Are you in need of some accessories, like a torque wrench or coolant shower plate? These tools are at your fingertips!
Go to **kennametal.com** and find what you need in seconds. Enter the catalogue number of the corresponding tool, and it will display.





NOVO™

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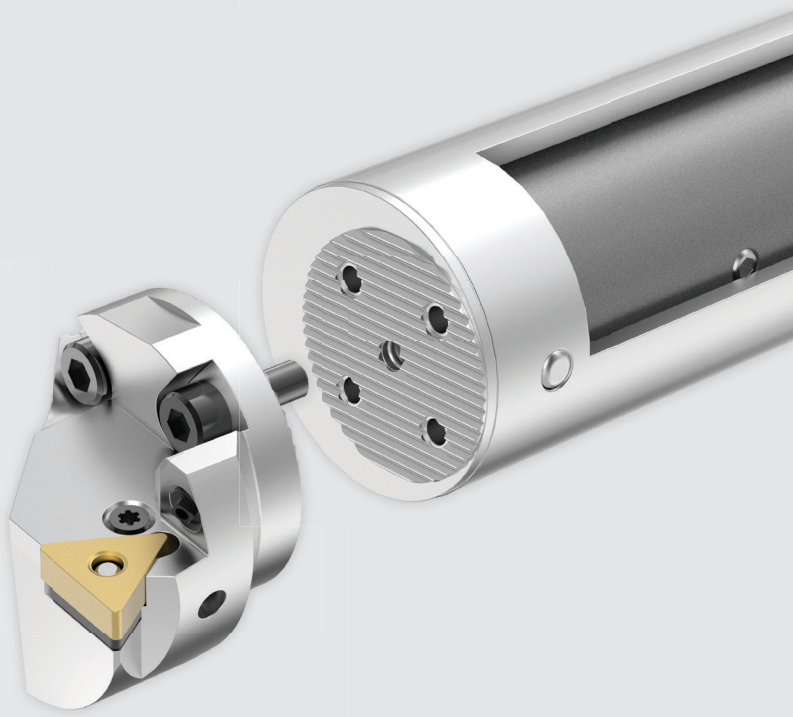
POWERED BY NOVO

Vibration-Free Boring Bars With Bolt-On Heads



Materials

P M K N S

Applications

- Boring
- Back Boring
- Chamfering

kennametal.com/Vibration-FreeBoringBars

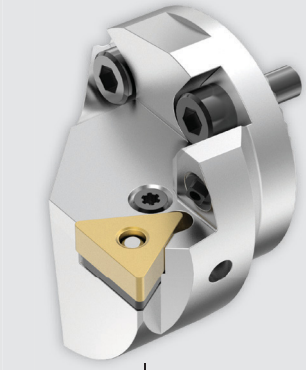
Coupled with our bolt-on heads, the Vibration-Free boring bars provide stability and rigidity when boring at extended overhangs up to 10 x D.

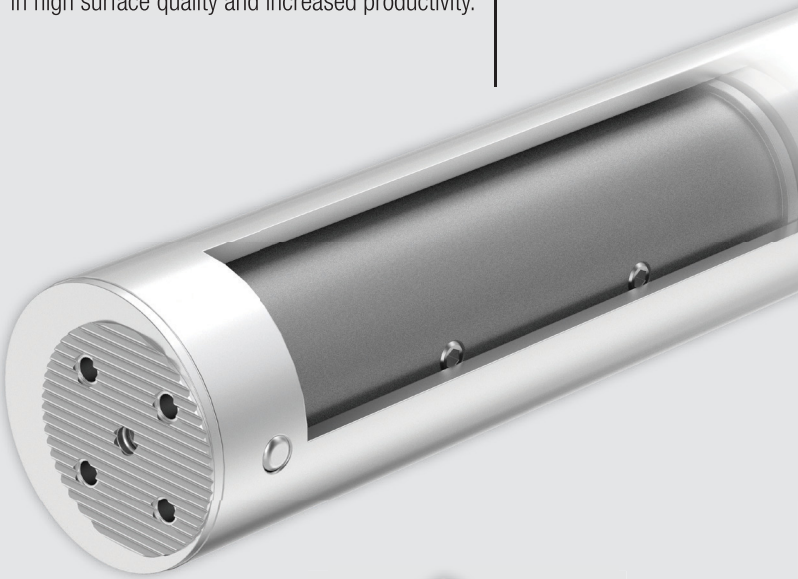
Vibration-Free boring bars are a plug-and-play solution designed to work out of the box with no manual adjusting required or possible. The internal dampening package is designed to provide process stability by increasing the stiffness of the bar and dampening out chatter.

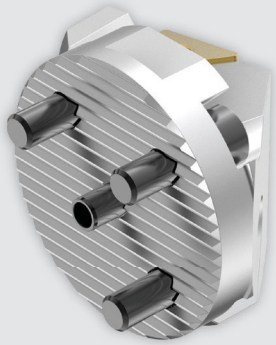
These Vibration-Free boring bars utilise a new portfolio of bolt-on heads that connect to the bar by a serrated design.

Internal dampening package ensures vibration- and chatter-free machining, allowing high metal removal rates and large depths-of-cut, resulting in high surface quality and increased productivity.

Short design bolt-on heads result in low weight, providing high stability and consistent repeatability.





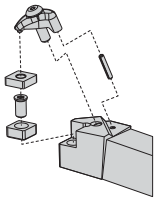


Serrated design interface creates a secure connection.

Through coolant bolt-on heads to achieve optimum insert performance and tool life.

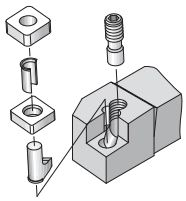
Lightweight Bolt-On Heads with Through Coolant

Kenclamp™



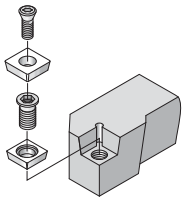
H-DCLN 95°
H-DDUN 93°
H-DTFN 90°
H-DVUN 93°
H-DWLN 95°

Kenlever™



H-PCLN 95°
H-PDUN 93°
H-PTFN 90°

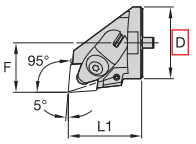
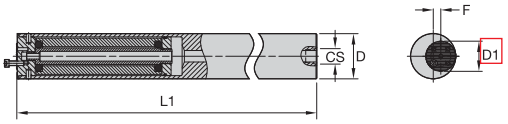
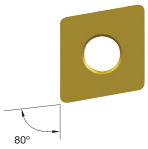
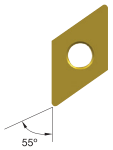
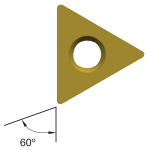
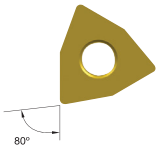
Screw-On

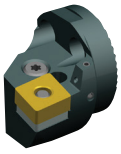
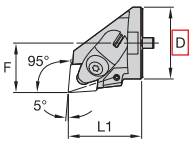
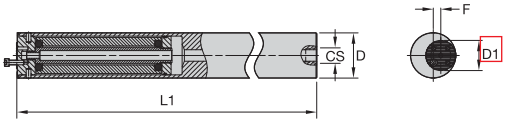
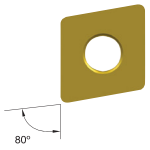
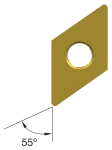
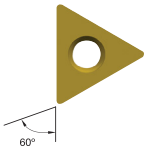


H-SCLC 95°
H-SDPC 62.5°
H-SDUC 93°
H-STFC 90°
H-SVUB 93°
H-SWLP 95°

Boring Bars

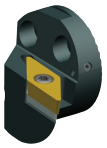
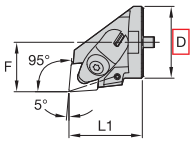
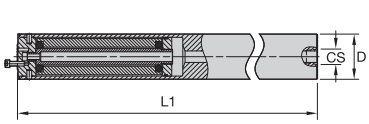
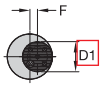
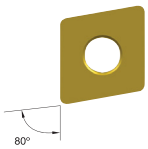
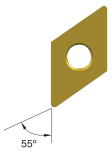
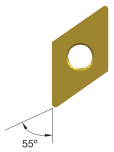
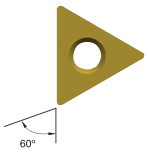
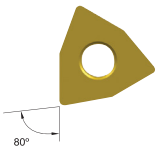
VIBRATION-FREE • BOLT-ON HEADS • SELECTION GUIDE

	D-Style Clamping				
					
	H-DCLN	**H-DDUN**	**H-DTFN**	**H-DVUN**	**H-DWLN**
Page	16	17	18	19	19
Bolt-On "D" diameter = "D1" on the vibration-free boring bar					
Lead Angle	95°	93°	90°	93°	95°
Bolt-On Head Diameter [D]	32–50mm	32–50mm	40–50mm	40–50mm	32mm
Minimum Boring Diameter [DMIN]	40–63mm	40–63mm	50–63mm	50–63mm	40mm
Centre of Boring Bar to Insert Tip [F]	22–35mm	22–35mm	27–35mm	27–35mm	22mm
Boring Head Length [L1]	33–36mm	33–39mm	35–36mm	35–36mm	33mm
Insert Shape					
Gage Inserts	CN..120408 CN..160612 CN..190612	DN..110408 DN..150408 DN..150608	TN..160408 TN..220408	VN..160408	WN..060408

	P-Style Clamping		
			
	H-PCLN	**H-PDUN**	**H-PTFN**
Page	16	17	18
Bolt-On "D" diameter = "D1" on the vibration-free boring bar			
Lead Angle	95°	93°	90°
Bolt-On Head Diameter [D]	25–50mm	25–50mm	25–50mm
Minimum Boring Diameter [DMIN]	33–63mm	32–63mm	33–63mm
Centre of Boring Bar to Insert Tip [F]	17–35mm	17–35mm	17–35mm
Boring Head Length [L1]	26–36mm	27–36mm	25–36mm
Insert Shape			
Gage Inserts	CN..090308 CN..120408 CN..160612	DN..110408 DN..150608	TN..160408

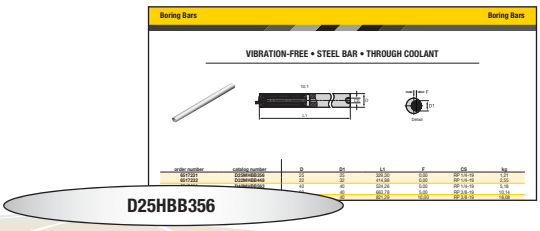
Boring Bars

VIBRATION-FREE • BOLT-ON HEADS • SELECTION GUIDE

	Screw-On Style					
						
	H-SCLC	H-SDPC	H-SDUC	H-STFC	H-SVUB	H-SWLP
Page	20	20	21	21	22	22
Bolt-On "D" diameter = "D1" on the vibration-free boring bar						
Lead Angle	95°	62.5°	93°	90°	93°	95°
Bolt-On Head Diameter [D]	25–40mm	25mm	25–50mm	25–40mm	25–50mm	25mm
Minimum Boring Diameter [DMIN]	32–50mm	32mm	32–63mm	32–50mm	32–63mm	32mm
Centre of Boring Bar to Insert Tip [F]	17–27mm	17mm	17–35mm	17–27mm	17–35mm	17mm
Boring Head Length [L1]	19–32mm	18mm	18–36mm	18–32mm	18–36mm	18mm
Insert Shape						
Gage Inserts	CCMT09T308 CCMT120408	DCMT070204	DCMT070204 DCMT11T308	TCMT16T308	VBMT110304 VBMT160408	WPMT040204

VIBRATION-FREE • BORING BARS • CATALOGUE NUMBERING SYSTEM

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

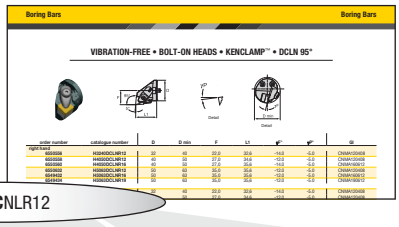


D	25	HBB	356
Dampened Bar with Coolant	Bar Diameter	Vibration-Free Boring Bar	Total Assembled Length
	Metric: A two-digit number indicates the bar diameter in mm.		**Metric:** Measured in mm when using a standard bolt-on head. Round up or down to the nearest 0,5mm increment.

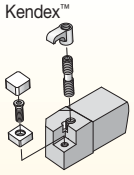
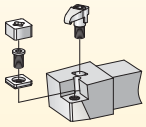
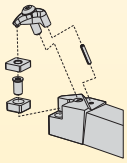
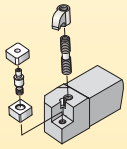
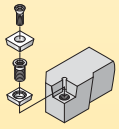
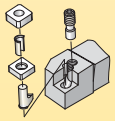
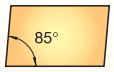
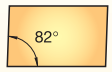
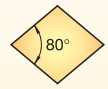
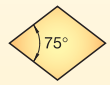
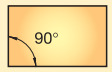
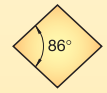
Boring Bars

VIBRATION-FREE • BOLT-ON HEADS • CATALOGUE NUMBERING SYSTEM

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

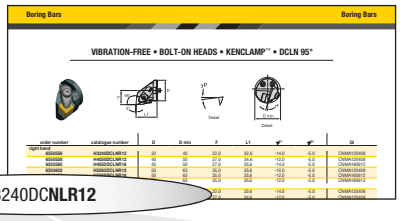


H3240DCNLR12

H	32	40	D	C
Bolt-On Head	Head Diameter	Minimum Boring Diameter	Insert Holding Method	Insert Shape
	A two-digit number indicates the bar diameter in mm.		C Kendex™  N Top Notch™ Profiling  D Kenclamp™  M Kenloc™  S Screw-On  P Kenlever™ 	A  B  C  D  E  H  K  L  M  O  P  R  S  T  V  W 

VIBRATION-FREE • BOLT-ON HEADS • CATALOGUE NUMBERING SYSTEM

(continued)



N	L	R	12
Bar Style or Lead Angle	Insert Clearance Angle	Hand of Tool	Insert Size Cutting Edge Length L10

N – Bar Style or Lead Angle

E	30°
F	0°
K	15°
L (E-style inserts)	5° / 5°
L	7.5° / 7.5°
P	27.5°
Q	17.5°
S	45°
U	3°
X	5°

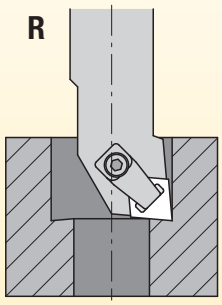
L – Insert Clearance Angle

N	0°
B	5°
C	7°
P	11°
D	15°
E	20°
F	25°

R – Hand of Tool

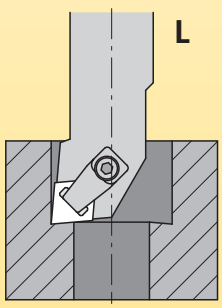
R =

Right-hand boring bar



L =

Left-hand boring bar

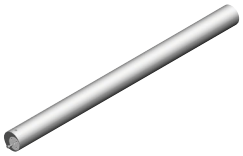


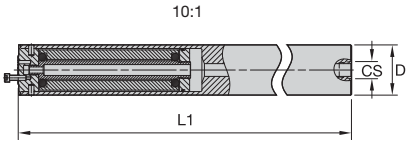
12 – Insert Size Cutting Edge Length L10

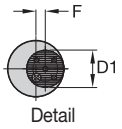
H	L10
O	L10
P	L10
S	L10
T	L10
CDE M V	L10
W	L10
L	L10
A B K	L10
R	D

Boring Bars

VIBRATION-FREE • STEEL BAR • THROUGH COOLANT

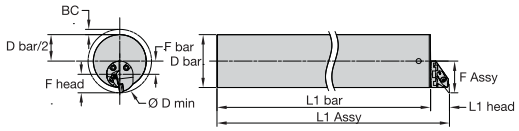






order number	catalogue number	D	D1	L1	F	CS	kg
6517231	**D25MHBB356**	25	25	329,30	0,00	RP 1/4-19	1,21
6517232	**D32MHBB448**	32	32	414,98	0,00	RP 1/4-19	2,55
6517233	**D40MHBB563**	40	40	524,26	0,00	RP 1/4-19	5,18
6517234	**D50MHBB702**	50	40	663,78	5,00	RP 3/8-19	10,14
6517235	**D60MHBB860**	60	40	821,29	10,00	RP 3/8-19	18,08
6549456	**D80MHBB1125**	80	50	1089,64	13,10	RP 3/8-19	39,94
6549457	**D100MHBB1445**	100	50	1409,29	25,00	RP 3/8-19	81,20

NOTE: When using smaller bolt-on heads on larger bars:
Minimum Bore = (F bar + F head) + (0.5 x D bar) + Bore Clearance



D min = F head + F bar + D/2 + BC

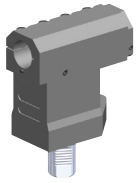
Metric

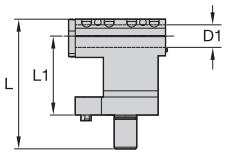
Bar Diameter	Bore Clearance
32–50mm	3mm
50–100mm	7mm

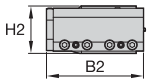
120	122	9	4	124

Boring Bars

VIBRATION-FREE • SPLIT BLOCK • MAZAK™



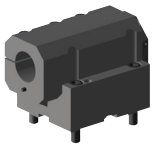


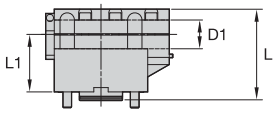


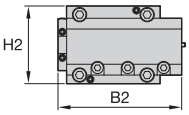
Detail

order number	catalogue number	D1	L1	L	H2	B2	series
6423189	SB40QTN200M065	40	140	230,0	84,0	172,0	QTN200M
6423190	SB40QTN300M175	40	175	285,0	100,0	172,0	Nexus 300/350/400/450M
6423201	SB50QTN300M175	50	175	290,0	100,0	212,0	SQT28, 30, 300 - QT Nexus 300/350M, 400/450M

VIBRATION-FREE • SPLIT BLOCK • DMG MORI







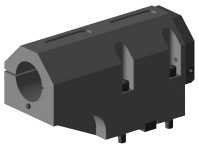
Detail

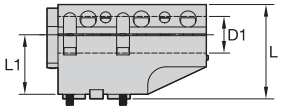
order number	catalogue number	D1	L1	L	H2	B2	series
6423204	SB40NL2000080	40	80	127,0	108,0	172,0	DMG Mori NL1500, NL2000, NL2500, NL3000, NT5400DCG
6423205	SB60NZX4000080	60	80	144,0	135,0	252,0	DMG Mori NZX4000080

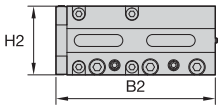
				
120	122	–	4	124

Boring Bars

VIBRATION-FREE • SPLIT BLOCK • DOOSAN™



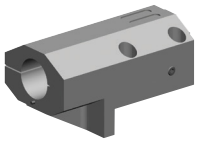


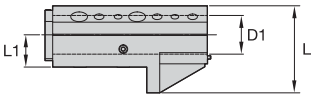


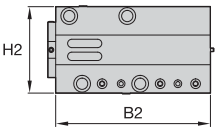
Detail

order number	catalogue number	D1	L1	L	H2	B2	series
6423207	SB40PU230M060	40	60	115,0	93,0	172,0	PUMA 230M, 240M, 280M, 1500, 2000, 2500SY&LSY, TT1500, 18
6423206	SB40L220M065	40	65	103,0	75,0	174,0	LYNX L220LM/M (BMT45 TURRET)
6423208	SB40PU300M072	40	70	139,0	110,0	172,0	PUMA 300M, MA, LMA, LM, LMB, MB, MC, LMC, MS (BMT65 TURRET)
6423209	SB60PU400MB060	60	60	150,0	120,0	252,0	PUMA 400MA, 400MB, 400LMA, 400LMB (BMT75 TURRET)

VIBRATION-FREE • SPLIT BLOCK • OKUMA™







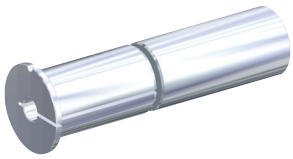
Detail

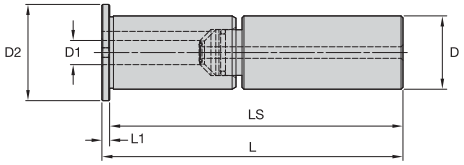
order number	catalogue number	D1	L1	L	H2	B2	series
6423221	SB40LB4000EX085	40	85	130,0	100,0	172,0	LB4000 EX (M,MY)
6423222	SB50LU35035	50	35	122,0	136,0	215,2	LU35, LB35 (2 AXIS)
6423223	SB60LU45050	60	50	120,0	134,0	252,0	LB45II & LU45
6423210	SB60LU45M050	60	50	135,0	134,0	252,0	LB45II & LU45/M

120	122	–	4	124

Boring Bars

VIBRATION-FREE • REDUCER SLEEVES



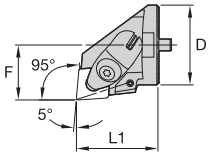


order number	catalogue number	D	D1	D2	L1	L	LS
6423264	SL040025	40	25	50	10	170	160
6423263	SL040032	40	32	50	4	164	160
6423262	SL050032	50	32	60	4	204	200
6423261	SL050040	50	40	60	4	204	200
6423260	SL060032	60	32	70	4	244	240
6423259	SL060040	60	40	70	4	244	240
6423258	SL080050	80	50	90	6	326	320
6423256	SL080060	80	60	90	4	324	320
6423255	SL100060	100	60	110	4	404	400
6423254	SL100080	100	80	110	4	404	400
6423253	SL120080	120	80	138	8	395	387
6423252	SL120100	120	100	138	8	488	480

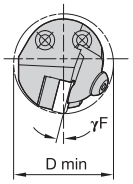
				
120	122	–	4	124

Boring Bars

VIBRATION-FREE • BOLT-ON HEADS • KENCLAMP™ • DCLN 95°



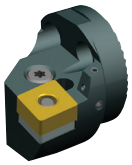
Detail

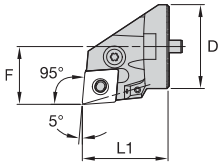


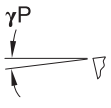
Detail

order number	catalogue number	D	D min	F	L1	γF°	γP°	GI
right hand								
6550556	H3240DCLNR12	32	40	22,0	32,6	-14.0	-5.0	CNMA120408
6550558	H4050DCLNR12	40	50	27,0	34,6	-12.0	-5.0	CNMA120408
6550560	H4050DCLNR16	40	50	27,0	35,6	-14.0	-5.0	CNMA160612
6550632	H5063DCLNR12	50	63	35,0	35,6	-12.0	-5.0	CNMA120408
6549432	H5063DCLNR16	50	63	35,0	35,6	-12.0	-5.0	CNMA160612
6549434	H5063DCLNR19	50	63	35,0	35,6	-12.0	-5.0	CNMA190612
left hand								
6550557	H3240DCLNL12	32	40	22,0	32,6	-14.0	-5.0	CNMA120408
6550559	H4050DCLNL12	40	50	27,0	34,6	-12.0	-5.0	CNMA120408
6550631	H4050DCLNL16	40	50	27,0	35,6	-14.0	-5.0	CNMA160612
6550633	H5063DCLNL12	50	63	35,0	35,6	-12.0	-5.0	CNMA120408
6549431	H5063DCLNL16	50	63	35,0	35,6	-12.0	-5.0	CNMA160612
6549433	H5063DCLNL19	50	63	35,0	35,6	-12.0	-5.0	CNMA190612

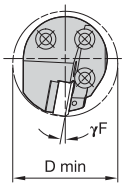
VIBRATION-FREE • BOLT-ON HEADS • KENLEVER™ • PCLN 95°







Detail



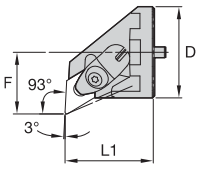
Detail

order number	catalogue number	D	D min	F	L1	γF°	γP°	GI
right hand								
6549409	H2532PCLNR09	25	33	17,0	25,6	-10.0	-5.0	CNMA090308
6550656	H3240PCLNR12	32	40	22,0	32,6	-10.0	-5.0	CNMA120408
6550658	H4050PCLNR12	40	50	27,0	34,6	-10.0	-5.0	CNMA120408
6550660	H4050PCLNR16	40	50	27,0	34,6	-11.0	-5.0	CNMA160612
6549442	H5063PCLNR12	50	63	35,0	35,6	-10.0	-5.0	CNMA120408
left hand								
6549408	H2532PCLNL09	25	33	17,0	25,6	-10.0	-5.0	CNMA090308
6550657	H3240PCLNL12	32	40	22,0	32,6	-10.0	-5.0	CNMA120408
6550659	H4050PCLNL12	40	50	27,0	34,6	-10.0	-5.0	CNMA120408
6550671	H4050PCLNL16	40	50	27,0	34,6	-11.0	-5.0	CNMA160612
6549441	H5063PCLNL12	50	63	35,0	35,6	-10.0	-5.0	CNMA120408

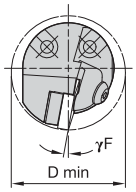
120	122	10	4	124

Boring Bars

VIBRATION-FREE • BOLT-ON HEADS • KENCLAMP™ • DDUN 93°



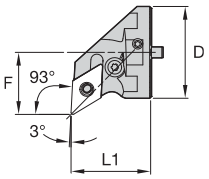
Detail



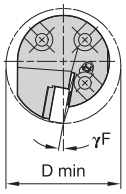
Detail

order number	catalogue number	D	D min	F	L1	γF°	γP°	GI
right hand								
6550634	**H3240DDUNR11**	32	40	22,0	32,6	-10.0	-5.0	DNMA110408
6550636	**H4050DDUNR15**	40	50	27,0	38,6	-10.0	-5.0	DNMA150408
6549436	**H5063DDUNR15**	50	63	35,0	35,6	-8.0	-5.0	DNMA150608
left hand								
6550635	**H3240DDUNL11**	32	40	22,0	32,6	-10.0	-5.0	DNMA110408
6550637	**H4050DDUNL15**	40	50	27,0	38,6	-10.0	-5.0	DNMA150408
6549435	**H5063DDUNL15**	50	63	35,0	35,6	-8.0	-5.0	DNMA150608

VIBRATION-FREE • BOLT-ON HEADS • KENLEVER™ • PDUN 93°



Detail



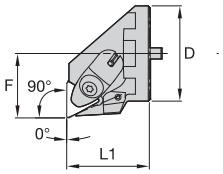
Detail

order number	catalogue number	D	D min	F	L1	γF°	γP°	GI
right hand								
6550672	**H2532PDUNR11**	25	32	17,0	26,6	-11.0	-5.0	DNMA110408
6550674	**H3240PDUNR15**	32	40	22,0	32,6	-12.0	-5.0	DNMA150608
6550676	**H4050PDUNR15**	40	50	27,0	34,6	-10.0	-5.0	DNMA150608
6549444	**H5063PDUNR15**	50	63	35,0	35,6	-10.0	-5.0	DNMA150608
left hand								
6550673	**H2532PDUNL11**	25	32	17,0	26,6	-11.0	-5.0	DNMA110408
6550675	**H3240PDUNL15**	32	40	22,0	32,6	-12.0	-5.0	DNMA150608
6550677	**H4050PDUNL15**	40	50	27,0	34,6	-10.0	-5.0	DNMA150608
6549443	**H5063PDUNL15**	50	63	35,0	35,6	-10.0	-5.0	DNMA150608

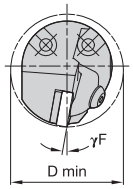
120	122	10	4	124

Boring Bars

VIBRATION-FREE • BOLT-ON HEADS • KENCLAMP™ • DTFN 90°



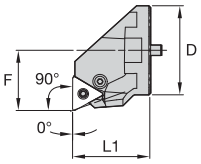
Detail



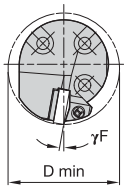
Detail

order number	catalogue number	D	D min	F	L1	γF°	γP°	GI
right hand								
6550638	**H4050DTFNR16**	40	50	27,0	34,6	-10.0	-5.0	TNMA160408
6549438	**H5063DTFNR22**	50	63	35,0	35,6	-8.0	-5.0	TNMA220408
left hand								
6550639	**H4050DTFNL16**	40	50	27,0	34,6	-10.0	-5.0	TNMA160408
6549437	**H5063DTFNL22**	50	63	35,0	35,6	-8.0	-5.0	TNMA220408

VIBRATION-FREE • BOLT-ON HEADS • KENLEVER™ • PTFN 90°



Detail



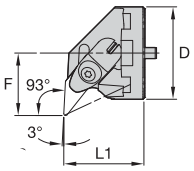
Detail

order number	catalogue number	D	D min	F	L1	γF°	γP°	GI
right hand								
6549411	**H2532PTFNR16**	25	32	17,0	24,6	-12.0	-15.0	TNMA160408
6550678	**H3240PTFNR16**	32	40	22,0	32,6	-12.0	-5.0	TNMA160408
6550680	**H4050PTFNR16**	40	50	27,0	34,6	-10.0	-5.0	TNMA160408
6549446	**H5063PTFNR16**	50	63	35,0	35,6	-8.0	-5.0	TNMA160408
left hand								
6549410	**H2532PTFNL16**	25	32	17,0	24,6	-12.0	-15.0	TNMA160408
6550679	**H3240PTFNL16**	32	40	22,0	32,6	-12.0	-5.0	TNMA160408
6550681	**H4050PTFNL16**	40	50	27,0	34,6	-10.0	-5.0	TNMA160408
6549445	**H5063PTFNL16**	50	63	35,0	35,6	-8.0	-5.0	TNMA160408

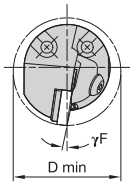
				
120	122	10	4	124

Boring Bars

VIBRATION-FREE • BOLT-ON HEADS • KENCLAMP™ • DVUN 93°



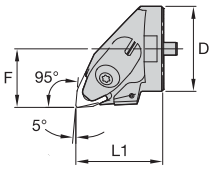
Detail



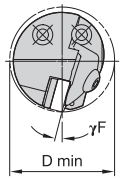
Detail

order number	catalogue number	D	D min	F	L1	γF°	γP°	GI
right hand								
6550640	**H4050DVUNR16**	40	50	27,0	34,6	-9.0	-4.0	VNMA160408
6549440	**H5063DVUNR16**	50	63	35,0	35,6	-9.0	-5.0	VNMA160408
left hand								
6550651	**H4050DVUNL16**	40	50	27,0	34,6	-9.0	-4.0	VNMA160408
6549439	**H5063DVUNL16**	50	63	35,0	35,6	-9.0	-5.0	VNMA160408

VIBRATION-FREE • BOLT-ON HEADS • KENCLAMP™ • DWLN 95°



Detail



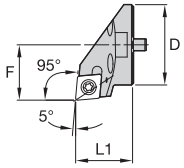
Detail

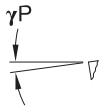
order number	catalogue number	D	D min	F	L1	γF°	γP°	GI
right hand								
6550652	**H3240DWLNR06**	32	40	22,0	32,6	-14.0	-5.0	WNMA060408
left hand								
6550653	**H3240DWLNL06**	32	40	22,0	32,6	-14.0	-5.0	WNMA060408

120	122	10	4	124

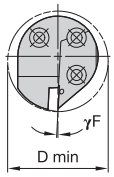
Boring Bars

VIBRATION-FREE • BOLT-ON HEADS • SCREW-ON • SCLC 95°





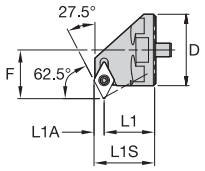
Detail

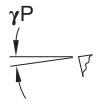


Detail

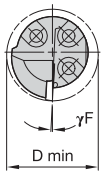
order number	catalogue number	D	D min	F	L1	γF°	γP°	GI
right hand								
6549070	**H2532SCLCR09**	25	32	17,0	18,6	-3.0	0.0	CCMT09T308
6549392	**H3240SCLCR09**	32	40	22,0	22,6	-3.0	0.0	CCMT09T308
6549394	**H4050SCLCR12**	40	50	27,0	31,6	-3.0	0.0	CCMT120408
left hand								
6549391	**H2532SCLCL09**	25	32	17,0	18,6	-3.0	0.0	CCMT09T308
6549393	**H3240SCLCL09**	32	40	22,0	22,6	-3.0	0.0	CCMT09T308
6549395	**H4050SCLCL12**	40	50	27,0	31,6	-3.0	0.0	CCMT120408

VIBRATION-FREE • BOLT-ON HEADS • SCREW-ON • SDPC 62.5°





Detail



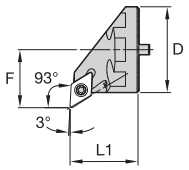
Detail

order number	catalogue number	D	D min	F	L1	L1A	L1S	γF°	γP°	GI
right hand										
6549413	**H2532SDPCR07**	25	32	17,0	17,6	3,5	21,2	-3.0	0.0	DCMT070204
left hand										
6549412	**H2532SDPCL07**	25	32	17,0	17,6	3,5	21,2	-3.0	0.0	DCMT070204

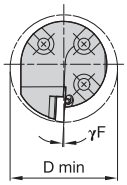
				
120	122	10	4	124

Boring Bars

VIBRATION-FREE • BOLT-ON HEADS • SCREW-ON • SDUC 93°



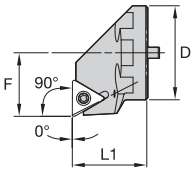
Detail



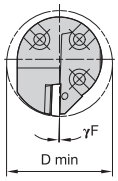
Detail

order number	catalogue number	D	D min	F	L1	γF°	γP°	GI
right hand								
6549415	**H2532SDUCR07**	25	32	17,0	17,6	-3.0	0.0	DCMT070204
6549396	**H2532SDUCR11**	25	32	17,0	17,6	-3.0	0.0	DCMT11T308
6549398	**H3240SDUCR11**	32	40	22,0	22,6	-3.0	0.0	DCMT11T308
6549400	**H4050SDUCR11**	40	50	27,0	31,6	-3.0	0.0	DCMT11T308
6549448	**H5063SDUCR11**	50	63	35,0	35,6	-3.0	0.0	DCMT11T308
left hand								
6549414	**H2532SDUCL07**	25	32	17,0	17,6	-3.0	0.0	DCMT070204
6549397	**H2532SDUCL11**	25	32	17,0	17,6	-3.0	0.0	DCMT11T308
6549399	**H3240SDUCL11**	32	40	22,0	22,6	-3.0	0.0	DCMT11T308
6549401	**H4050SDUCL11**	40	50	27,0	31,6	-3.0	0.0	DCMT11T308
6549447	**H5063SDUCL11**	50	63	35,0	35,6	-3.0	0.0	DCMT11T308

VIBRATION-FREE • BOLT-ON HEADS • SCREW-ON • STFC 90°



Detail



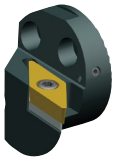
Detail

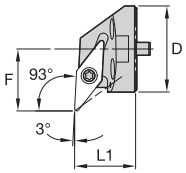
order number	catalogue number	D	D min	F	L1	γF°	γP°	GI
right hand								
6549417	**H2532STFCR11**	25	32	17,0	17,6	-2.0	0.0	TCMT110204
6549403	**H3240STFCL16**	32	40	22,0	24,6	-3.0	0.0	TCMT16T308
6549404	**H4050STFCR16**	40	50	27,0	31,6	-2.0	0.0	TCMT16T308
left hand								
6549416	**H2532STFCL11**	25	32	17,0	17,6	-2.0	0.0	TCMT110204
6549402	**H3240STFCR16**	32	40	22,0	24,6	-3.0	0.0	TCMT16T308
6549405	**H4050STFCL16**	40	50	27,0	31,6	-2.0	0.0	TCMT16T308

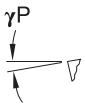
120	122	10	4	124

Boring Bars

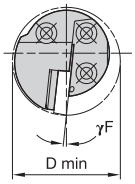
VIBRATION-FREE • BOLT-ON HEADS • SCREW-ON • SVUB 93°







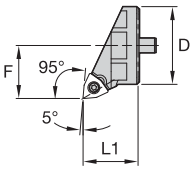
Detail



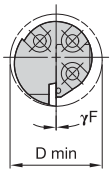
Detail

order number	catalogue number	D	D min	F	L1	γF°	γP°	GI
right hand								
6549406	**H2532SVUBR11**	25	32	17,0	17,6	-5.0	0.0	VBMT110304
6549452	**H3240SVUBR16**	32	40	23,0	22,6	-6.0	0.0	VBMT160408
6549450	**H5063SVUBR16**	50	63	35,0	35,6	-3.0	0.0	VBMT160408
left hand								
6549407	**H2532SVUBL11**	25	32	17,0	17,6	-5.0	0.0	VBMT110304
6549451	**H3240SVUBL16**	32	40	23,0	22,6	-6.0	0.0	VBMT160408
6549449	**H5063SVUBL16**	50	63	35,0	35,6	-3.0	0.0	VBMT160408

VIBRATION-FREE • BOLT-ON HEADS • SCREW-ON • SWLP 95°



Detail



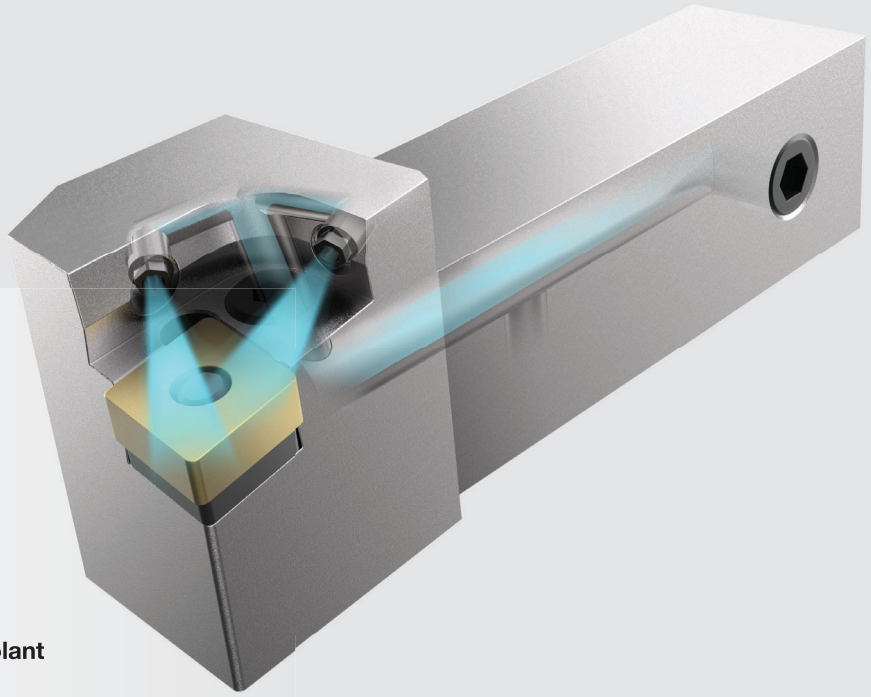
Detail

order number	catalogue number	D	D min	F	L1	γF°	γP°	GI
right hand								
6549419	**H2532SWLPR04**	25	32	17,0	17,6	0.0	0.0	WPMT040204
left hand								
6549418	**H2532SWLPL04**	25	32	17,0	17,6	0.0	0.0	WPMT040204

				
120	122	10	4	124

POWERED BY NOVO

Toolholders with Through Coolant



Applications

- Turning
- Profiling
- Facing

kennametal.com/ISOHolders-Coolant

NEW! ISO holders with through coolant direct the coolant where it is needed.

Adjustable coolant nozzles point the coolant to the cutting zone where the chip is being formed.

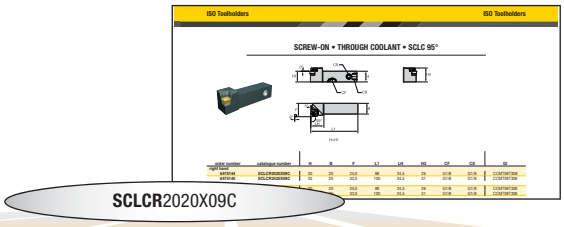
This controls and manages heat more efficiently, providing maximum tool life and process safety.

The through coolant toolholders are available as Kenlever™, Screw-On, and Kenloc™ clamping styles.

ISO Toolholders

ISO TOOLHOLDERS • CATALOGUE NUMBERING SYSTEM

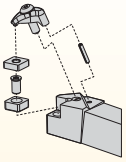
Each character in our catalogue number signifies a specific trait of that product. Use the following key columns and corresponding images to easily identify which attributes apply.



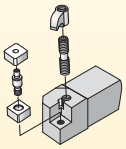
SCLCR2020X09C

S — Insert Holding Method

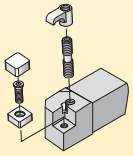
D Kenclamp™



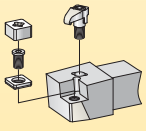
M Kenloc™



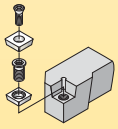
C Kendex™



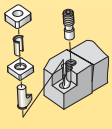
N Top Notch™ Profiling



S Screw-On



P Kenlever™



C — Insert Shape

A 85°

B 82°

C 80°

D 55°

E 75°

H 120°

K 55°

L 90°

M 86°

O 135°

P 108°

R

S 90°

T 60°

V 35°

W 80°

L — Tool Style or Lead Angle

A 90°

B 15°

C 90°

D 45°

E 60°

F 90°

G 90°

H 107,5°

J 93°

K 75°

L 95°

M 50°

P 107,5°

Q 107,5°

R 75°

S 45°

U 93°

V 72,5°

Y 85°

C — Insert Clearance Angle

N 0°

B 5°

C 7°

P 11°

D 15°

E 20°

F 25°

R — Hand of Tool

R = Right hand

L = Left hand

N = Neutral

Additional Information

C = Deep pocket for ceramic insert

S = Single pocket locating wall

F = Straight shank, no offset

R

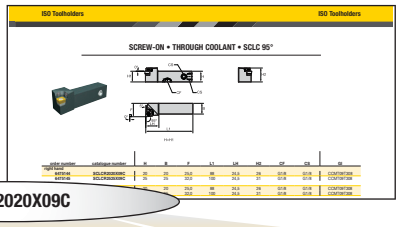
L

N

ISO Toolholders

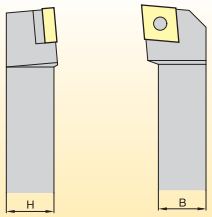
ISO TOOLHOLDERS • CATALOGUE NUMBERING SYSTEM

(continued)



SCLCR**2020X09C**

20	20	X	09	C	
Shank Dimensions		Tool Length	Insert Size	Additional Information	Insert Thickness *(optional)*



The seventh and eighth position shall be a significant two-digit number that indicates the holder cross section.

- If the dimension for the width "B" or the height "H" is represented by a one-digit number, a 0 (zero) will be used in front of it.

Example: 8,0mm = 08

L1	ISO
32	A
40	B
50	C
60	D
70	E
80	F
90	G
100	H
110	J
125	K
140	L
150	M
160	N
170	P
180	Q
200	R
250	S
300	T
350	U
400	V
450	W
500	Y
Special Design	X

KC = Kenclamp™

H4 = Wedgelock™ clamping system

M = MTS clamping system for ceramic and PcBN inserts

C = Through coolant

04 = 4,76mm

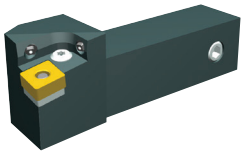
06 = 6,35mm

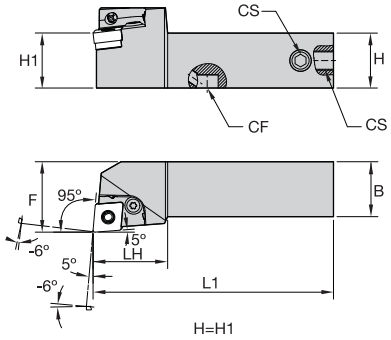
Cutting Edge Length L10

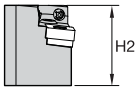
H	Hexagon 120°		**C**	Rhomboid 80°	
			D	55°	
O	Octagon 135°		**E**	75°	
			M	86°	
			V	35°	
P	Pentagon 108°		**W**	Trigon 80° with enlarged corner angles	
S	Square 90°		**L**	Rectangular 90°	
T	Triangular 60°		**A**	Parallelogram 85°	
R	Round —		**B**	82°	
			K	55°	

ISO Toolholders

KENLEVER™ • THROUGH COOLANT • PCLN 95°

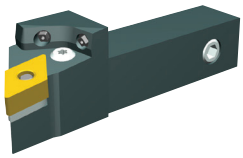


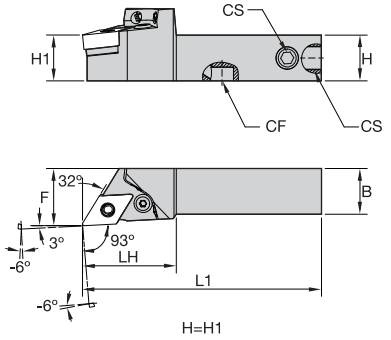


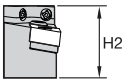


order number	catalogue number	H	B	F	L1	LH	H2	CF	CS	GI
right hand										
6475062	PCLNR2020X12C	20	20	25,0	97	34,0	32	G1/8	G1/8	CNMA120408
6475063	PCLNR2525X12C	25	25	32,0	109	34,0	37	G1/8	G1/8	CNMA120408
left hand										
6475064	PCLNL2020X12C	20	20	25,0	97	34,0	32	G1/8	G1/8	CNMA120408
6475065	PCLNL2525X12C	25	25	32,0	109	34,0	37	G1/8	G1/8	CNMA120408

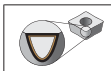
KENLEVER • THROUGH COOLANT • PDJN 93°





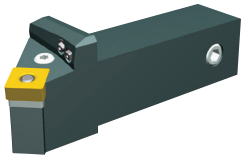


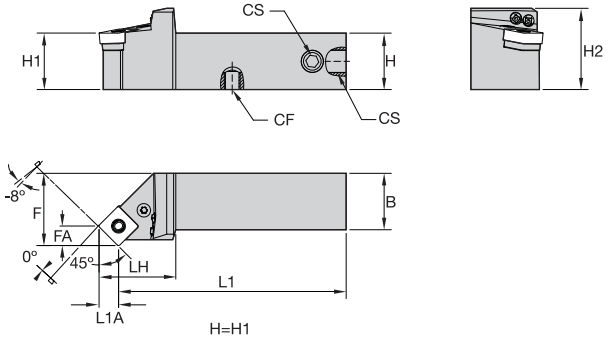
order number	catalogue number	H	B	F	L1	LH	H2	CF	CS	GI
right hand										
6475066	PDJNR2020X11C	20	20	25,0	96	33,0	32	G1/8	G1/8	DNMA110408
6475067	PDJNR2020X15C	20	20	25,0	104	41,0	32	G1/8	G1/8	DNMA150608
6475068	PDJNR2525X11C	25	25	32,0	108	33,0	37	G1/8	G1/8	DNMA110408
6475069	PDJNR2525X15C	25	25	32,0	116	41,0	37	G1/8	G1/8	DNMA150608
left hand										
6475070	PDJNL2020X11C	20	20	25,0	96	33,0	32	G1/8	G1/8	DNMA110408
6475111	PDJNL2020X15C	20	20	25,0	104	41,0	32	G1/8	G1/8	DNMA150608
6475112	PDJNL2525X11C	25	25	32,0	108	33,0	37	G1/8	G1/8	DNMA110408
6475113	PDJNL2525X15C	25	25	32,0	116	41,0	37	G1/8	G1/8	DNMA150608

				
120	122	24	4	124

ISO Toolholders

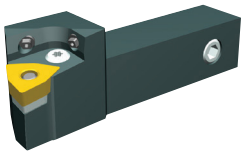
KENLEVER™ • THROUGH COOLANT • PSSN 45°

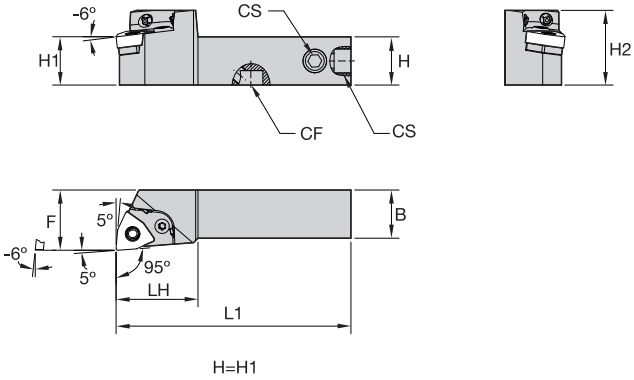




order number	catalogue number	H	B	F	L1	LH	H2	FA	L1A	CF	CS	GI
right hand												
6475114	PSSNR2020X12C	20	20	25,0	97	34,0	31	8,7	8,7	G1/8	G1/8	SNMA120408
6475115	PSSNR2525X12C	25	25	32,0	109	34,0	36	8,7	8,7	G1/8	G1/8	SNMA120408
left hand												
6475116	PSSNL2020X12C	20	20	25,0	97	34,0	31	8,7	8,7	G1/8	G1/8	SNMA120408
6475117	PSSNL2525X12C	25	25	32,0	109	34,0	36	8,7	8,7	G1/8	G1/8	SNMA120408

KENLEVER • THROUGH COOLANT • PWLN 95°



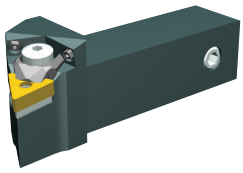


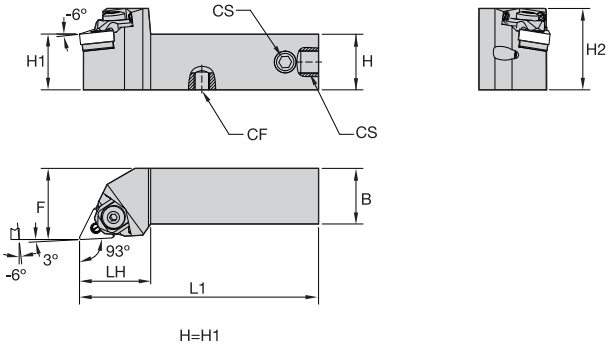
order number	catalogue number	H	B	F	L1	LH	H2	CF	CS	GI
right hand										
6475118	PWLNR2020X06C	20	20	25,0	93	30,0	31	G1/8	G1/8	WNMA060408
6475119	PWLNR2020X08C	20	20	25,0	97	34,0	31	G1/8	G1/8	WNMA080408
6475120	PWLNR2525X06C	25	25	32,0	105	30,0	36	G1/8	G1/8	WNMA060408
6475131	PWLNR2525X08C	25	25	32,0	109	34,0	36	G1/8	G1/8	WNMA080408
left hand										
6475132	PWLNL2020X06C	20	20	25,0	93	30,0	31	G1/8	G1/8	WNMA060408
6475133	PWLNL2020X08C	20	20	25,0	97	34,0	31	G1/8	G1/8	WNMA080408
6475134	PWLNL2525X06C	25	25	32,0	105	30,0	36	G1/8	G1/8	WNMA060408
6475135	PWLNL2525X08C	25	25	32,0	109	34,0	36	G1/8	G1/8	WNMA080408

120	122	24	4	124

ISO Toolholders

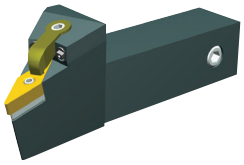
KENLOC™ • THROUGH COOLANT • MTJN 93°

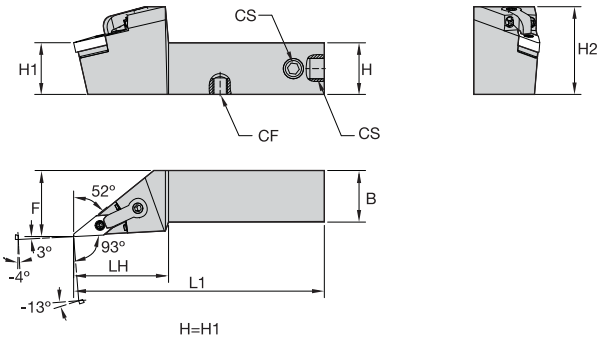




order number	catalogue number	H	B	F	L1	LH	H2	CF	CS	GI
right hand										
6475140	MTJNR2020X16C	20	20	25,0	95	32,0	32	G1/8	G1/8	TNMA160408
6475141	MTJNR2525X16C	25	25	32,0	107	32,0	37	G1/8	G1/8	TNMA160408
left hand										
6475142	MTJNL2020X16C	20	20	25,0	95	32,0	32	G1/8	G1/8	TNMA160408
6475143	MTJNL2525X16C	25	25	32,0	107	32,0	37	G1/8	G1/8	TNMA160408

KENLOC • THROUGH COOLANT • MVJN 93°



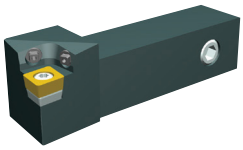


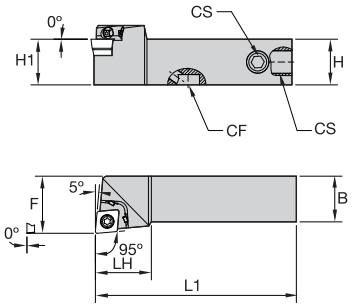
order number	catalogue number	H	B	F	L1	LH	H2	CF	CS	GI
right hand										
6475136	MVJNR2025X16C	20	25	32,0	109	46,0	38	G1/8	G1/8	VNMA160408
6475137	MVJNR2525X16C	25	25	32,0	121	46,0	43	G1/8	G1/8	VNMA160408
left hand										
6475138	MVJNL2025X16C	20	25	32,0	109	46,0	38	G1/8	G1/8	VNMA160408
6475139	MVJNL2525X16C	25	25	32,0	121	46,0	43	G1/8	G1/8	VNMA160408

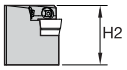
120	122	24	4	124

ISO Toolholders

SCREW-ON • THROUGH COOLANT • SCLC 95°



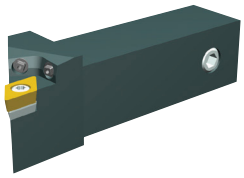


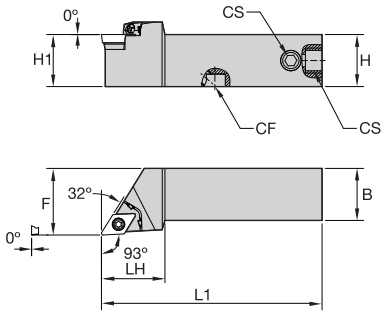


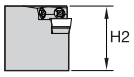
H=H1

order number	catalogue number	H	B	F	L1	LH	H2	CF	CS	GI
right hand										
6475144	SCLCR2020X09C	20	20	25,0	88	24,5	26	G1/8	G1/8	CCMT09T308
6475145	SCLCR2525X09C	25	25	32,0	100	24,5	31	G1/8	G1/8	CCMT09T308
left hand										
6475146	SCLCL2020X09C	20	20	25,0	88	24,5	26	G1/8	G1/8	CCMT09T308
6475147	SCLCL2525X09C	25	25	32,0	100	24,5	31	G1/8	G1/8	CCMT09T308

SCREW-ON • THROUGH COOLANT • SDJC 93°







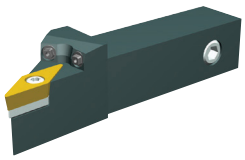
H=H1

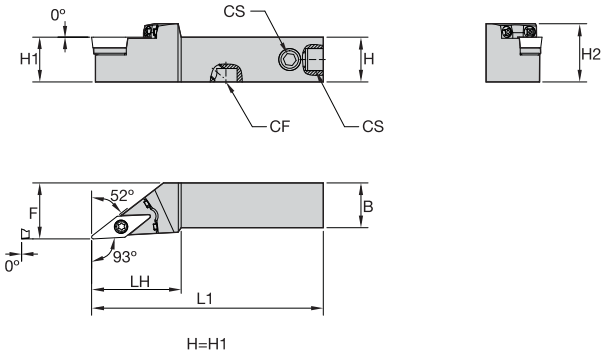
order number	catalogue number	H	B	F	L1	LH	H2	CF	CS	GI
right hand										
6475148	SDJCR2020X11C	20	20	25,0	94	30,5	26	G1/8	G1/8	DCMA11T308
6475149	SDJCR2525X11C	25	25	32,0	106	30,5	31	G1/8	G1/8	DCMA11T308
left hand										
6475150	SDJCL2020X11C	20	20	25,0	94	30,5	26	G1/8	G1/8	DCMA11T308
6475151	SDJCL2525X11C	25	25	32,0	106	30,5	31	G1/8	G1/8	DCMA11T308

120	122	24	4	124

ISO Toolholders

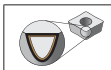
SCREW-ON • THROUGH COOLANT • SVJC 93°



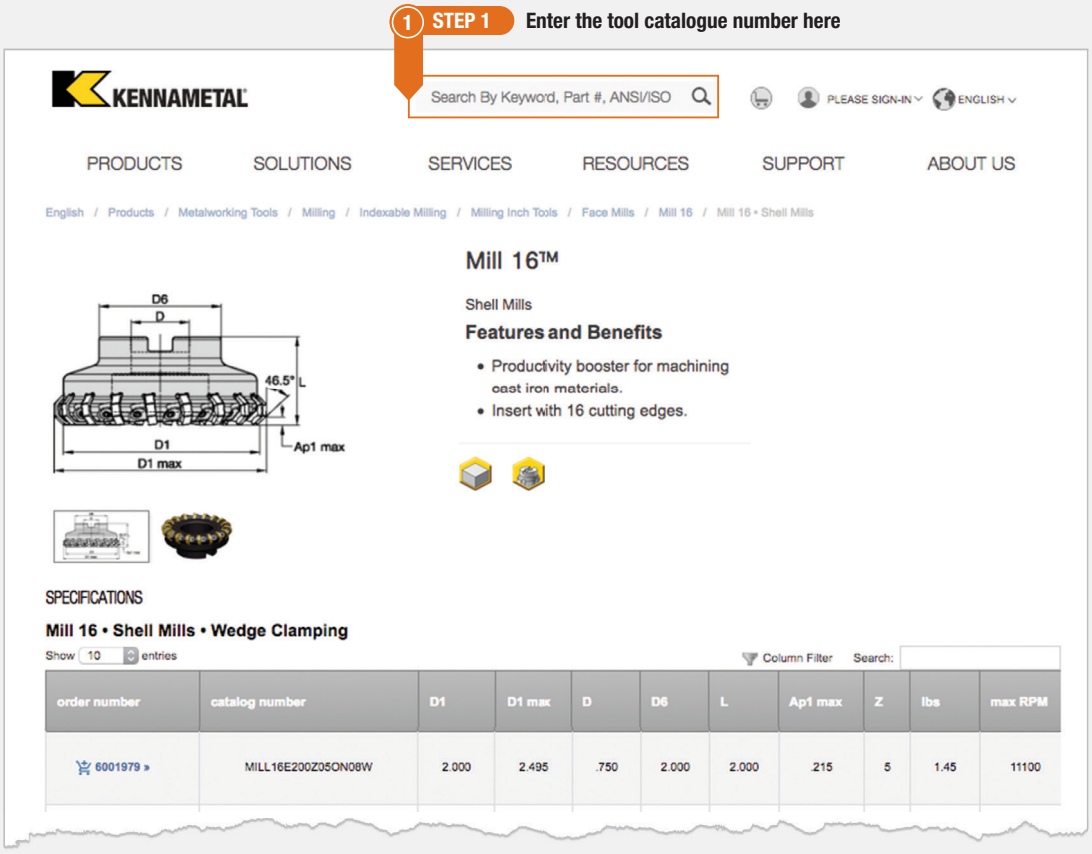


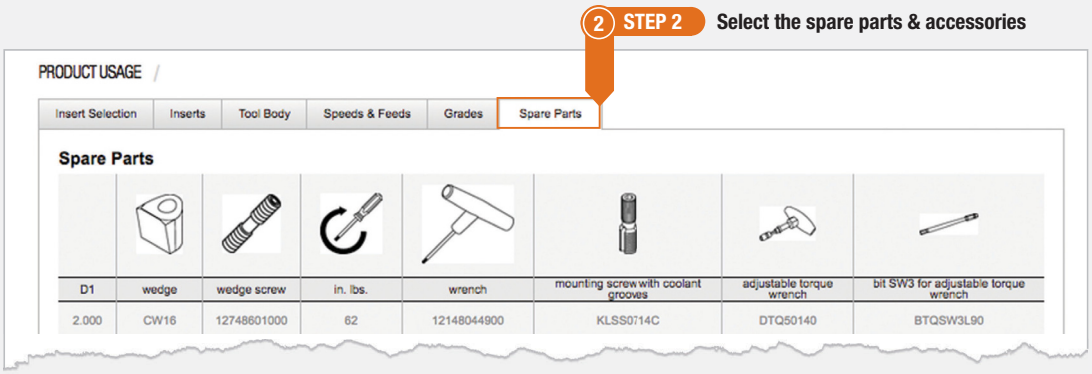
H=H1

order number	catalogue number	H	B	F	L1	LH	H2	CF	CS	GI
right hand										
6475152	**SVJBR2020X11C**	20	20	25,0	98	35,0	27	G1/8	G1/8	VBMT110304
6475153	**SVJBR2020X16C**	20	20	25,0	103	40,0	26	G1/8	G1/8	VBMT160408
6475154	**SVJBR2525X11C**	25	25	32,0	110	35,0	32	G1/8	G1/8	VBMT110304
6475155	**SVJBR2525X16C**	25	25	32,0	115	40,0	31	G1/8	G1/8	VBMT160408
left hand										
6475156	**SVJBL2020X11C**	20	20	25,0	98	35,0	27	G1/8	G1/8	VBMT110304
6475157	**SVJBL2020X16C**	20	20	25,0	103	40,0	26	G1/8	G1/8	VBMT160408
6475158	**SVJBL2525X11C**	25	25	32,0	110	35,0	32	G1/8	G1/8	VBMT110304
6475159	**SVJBL2525X16C**	25	25	32,0	115	40,0	31	G1/8	G1/8	VBMT160408

				
120	122	24	4	124

Spare Parts & Accessories Information





Lost a screw? Have to replace worn-out clamping wedges?
Need to find and re-order those spare parts?

GO TO **KENNAMETAL.COM** AND FIND
WHAT YOU NEED IN SECONDS.

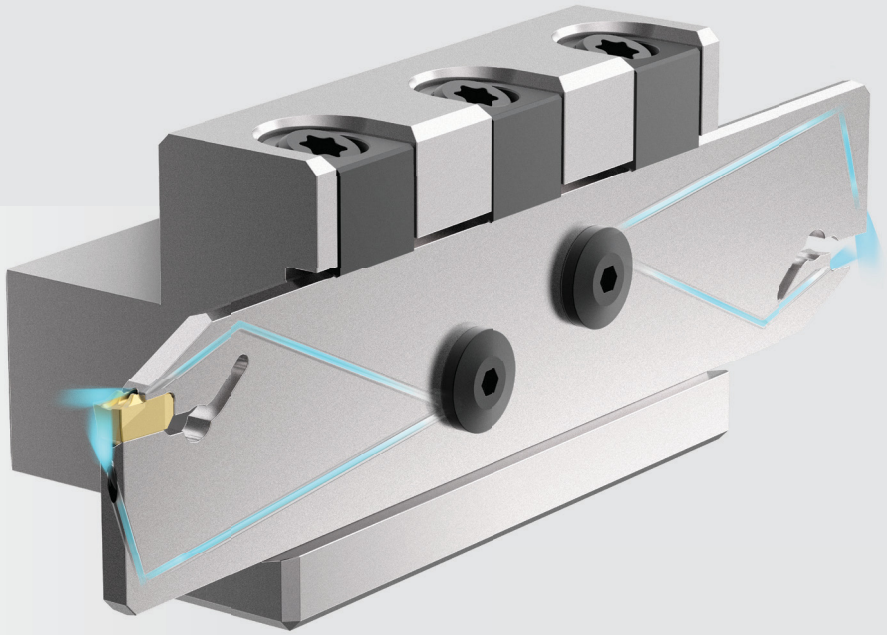
KENNAMETAL

kennametal.com

POWERED BY NOVO

Beyond™ Evolution™

Grooving and Cut-Off



Materials (CF Geometry)

P M N S

Applications

- Cut-Off
- O.D. Deep Grooving
- Grooving

kennametal.com/BeyondEvolution

Beyond Evolution is the new single-sided grooving and cut-off tool that also performs multi-directional turning.

Whether you are using a high- or low-pressure coolant supply, Beyond Evolution, featuring active coolant control, delivers longer tool life and higher Metal Removal Rates (MRR).

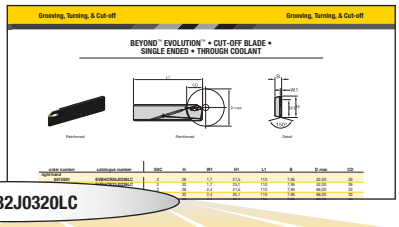
Available now: cut-off blades and supporting blocks with active coolant control. For even higher productivity in cut-off and deep-grooving applications.

NEW! The CF (cut-off fine) geometry is now also available with sharp corners and increased lead angles. A performance booster for applications in stainless steels, or in applications when thin walls are present.

Grooving, Turning, & Cut-Off

BEYOND™ EVOLUTION™ • CATALOGUE NUMBERING SYSTEM • CUT-OFF BLADES

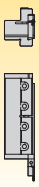
Each character in our catalogue number signifies a specific trait of that product. Use the following key columns and corresponding images to easily identify which attributes apply.



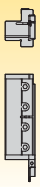
EVBSCL32J0320LC

EV	BS	C	L	32	J	03	20	L	C
Family Name	Tool Style	Support Type	Hand of Pocket	Blade Height	Overall Length	Seat Size (SSC)	Max. Cutting Depth	Hand of Blade	Coolant
Beyond™ Evolution™	**BS** = Blade Standard 2 Pocket **BH** = Blade Heavy 1 Pocket	**C** = Reinforced	**N** = Neutral **L** = Left Hand **R** = Right Hand	in millimetres	According to ISO **G** = 90mm **J** = 110mm **M** = 150mm **X** = Special	**1B** **1F** **02** **03** **04** **05** **06** **08** **10**	in millimetres	**L** = Left Hand **R** = Right Hand	**C** = Through Coolant Capable

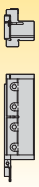
RH Blade RH Pocket



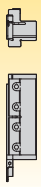
RH Blade LH Pocket



LH Blade RH Pocket



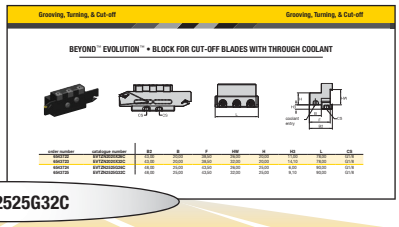
LH Blade LH Pocket



Grooving, Turning, & Cut-Off

BEYOND™ EVOLUTION™ • CATALOGUE NUMBERING SYSTEM • BLOCKS

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



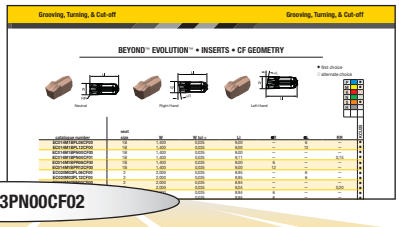
EVTZN2525G32C

EV	T	Z	N	2525	G	32	C
Family Name	Tool Block	Clamping Style	Hand of Tool	Shank Size	Tool Length in (mm)	Blade Size	Coolant
Beyond™ Evolution™		**E** = Integral Clamp **Z** = Removable Clamp	**R** = Right **L** = Left **N** = Neutral	**Metric** = Height x width in mm letter indicates tool length according to ISO	**G** = 80 **J** = 110 **X** = Other Length	in millimetres	**C** = Through Coolant Capable

Grooving, Turning, & Cut-Off

BEYOND™ EVOLUTION™ • CATALOGUE NUMBERING SYSTEM • INSERTS

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



EC030M03PN00CF02

E	C	030	M	03	P	N	00	CF	02
Family Name	Insert Type	Cutting Edge Width	Unit	Seat Size (SSC)	Tolerance	Hand of Insert	Approach Angle	Chip-breaker	Corner Radius
Beyond™ Evolution™	**C** = Cut-Off		**M** = Metric		**P** = Periphery Ground	**N** = Neutral **L** = Left Hand **R** = Right Hand	**00** = Neutral **06** = 6° **12** = 12°	**CL** = Cut-Off Low Feed **CF** = Cut-Off Fine **CM** = Cut-Off Medium **CR** = Cut-Off Rough	

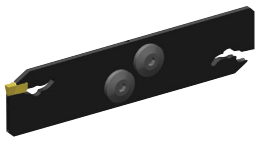
Cutting Edge Width	mm
014	1,4
020	2,0
030	3,0
040	4,0
050	5,0
060	6,0
070	7,0
080	8,0

Seat Size (SSC)	mm
1B	1,4
1F	2,0
02	3,0
03	4,0
04	5,0
05	6,0
06	7,0
08	8,0

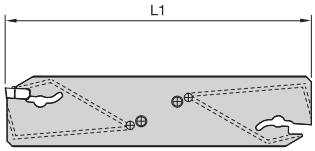
Corner Radius	mm
00	0,0
01	0,1
02	0,2
04	0,4

Grooving, Turning, & Cut-Off

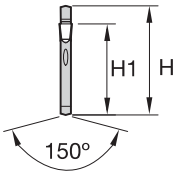
BEYOND™ EVOLUTION™ • CUT-OFF BLADE • DOUBLE ENDED • THROUGH COOLANT



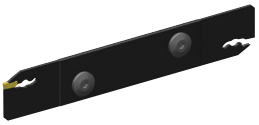
Straight



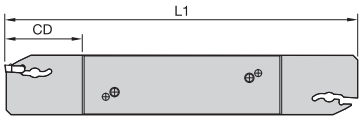
Straight



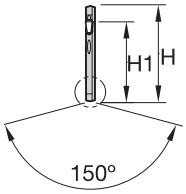
Detail



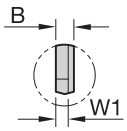
Reinforced



Reinforced



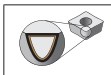
Detail



Detail

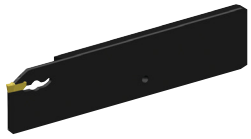
order number	catalogue number	SSC	H	W1	H1	L1	B	CD
neutral hand								
6513449	**EVBSN26M0233C**	2	26	1,7	21,5	150	2,40	33
6513450	**EVBSN32M0233C**	2	32	1,7	25,1	150	2,40	33
6513521	**EVBSN26J0340C**	3	26	–	21,5	110	2,40	40
6513522	**EVBSN26M0340C**	3	26	–	21,5	150	2,40	40
6513523	**EVBSN32M0350C**	3	32	–	25,1	150	2,40	50
6513524	**EVBSN26J0440C**	4	26	–	21,5	110	3,40	40
6513525	**EVBSN26M0440C**	4	26	–	21,5	150	3,40	40
6513526	**EVBSN32M0450C**	4	32	–	25,1	150	3,40	50
6513527	**EVBSN32M0560C**	5	32	–	25,1	150	4,40	60
6513529	**EVBSN32M0660C**	6	32	–	25,1	150	5,40	60

SSC = To correspond with the SSC on the insert.

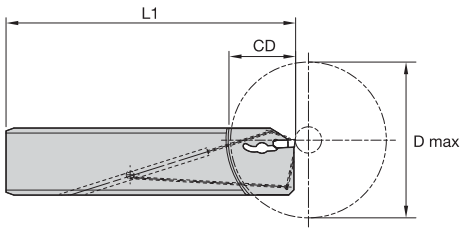
				
120	122	33	4	124

Grooving, Turning, & Cut-Off

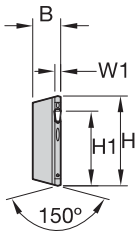
BEYOND™ EVOLUTION™ • CUT-OFF BLADE • SINGLE ENDED • THROUGH COOLANT



Reinforced



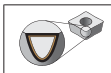
Reinforced



Detail

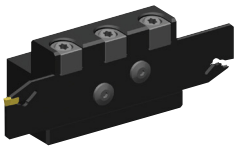
order number	catalogue number	SSC	H	W1	H1	L1	B	D max	CD
right hand									
6513530	**EVBHCR26J0226LC**	2	26	1,7	21,5	110	7,95	52,00	26
6513552	**EVBHCR32J0226LC**	2	32	1,7	25,1	110	7,95	52,00	26
6513554	**EVBHCR26J0333LC**	3	26	2,4	21,5	110	7,95	66,00	33
6513558	**EVBHCR32J0333LC**	3	32	2,4	25,1	110	7,95	66,00	33
6513556	**EVBHCR32K0340LC**	3	32	2,4	25,1	125	7,95	80,00	40
6513560	**EVBHCR26J0433LC**	4	26	3,4	21,5	110	7,95	66,00	33
6513574	**EVBHCR32J0433LC**	4	32	3,4	25,1	110	7,95	66,00	33
6513572	**EVBHCR32K0440LC**	4	32	3,4	25,1	125	7,95	80,00	40
left hand									
6513551	**EVBHCL26J0226RC**	2	26	1,7	21,5	110	7,95	52,00	26
6513553	**EVBHCL32J0226RC**	2	32	1,7	25,1	110	7,95	52,00	26
6513555	**EVBHCL26J0333RC**	3	26	2,4	21,5	110	7,95	66,00	33
6513559	**EVBHCL32J0333RC**	3	32	2,4	25,1	110	7,95	66,00	33
6513557	**EVBHCL32K0340RC**	3	32	2,4	25,1	125	7,95	80,00	40
6513571	**EVBHCL26J0433RC**	4	26	3,4	21,5	110	7,95	66,00	33
6513575	**EVBHCL32J0433RC**	4	32	3,4	25,1	110	7,95	66,00	33
6513573	**EVBHCL32K0440RC**	4	32	3,4	25,1	125	7,95	80,00	40

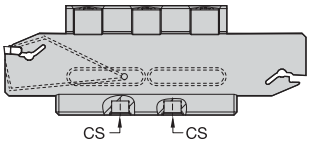
SSC = To correspond with the SSC on the insert.

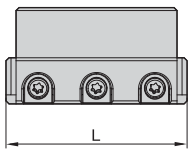
				
120	122	33	4	124

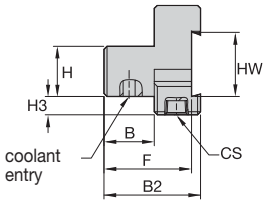
Grooving, Turning, & Cut-Off

BEYOND™ EVOLUTION™ • BLOCK FOR CUT-OFF BLADES WITH THROUGH COOLANT

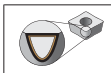






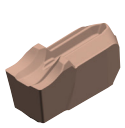
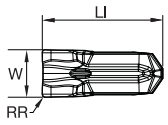


order number	catalogue number	B2	B	F	HW	H	H3	L	CS
6543722	**EVTZN2020X26C**	43,00	20,00	38,50	26,00	20,00	11,00	78,00	G1/8
6543723	**EVTZN2020X32C**	43,00	20,00	38,50	32,00	20,00	14,10	78,00	G1/8
6543724	**EVTZN2525G26C**	48,00	25,00	43,50	26,00	25,00	6,00	90,00	G1/8
6543725	**EVTZN2525G32C**	48,00	25,00	43,50	32,00	25,00	9,10	90,00	G1/8

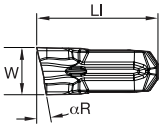
				
120	122	34	4	124

Grooving, Turning, & Cut-Off

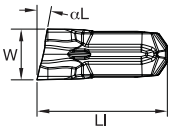
BEYOND™ EVOLUTION™ • INSERTS • CF GEOMETRY

Neutral

Right Hand

Left Hand

● first choice
○ alternate choice

P		●
M		●
K		○
N		○
S		●
H		

catalogue number	SSC	W	W tol ±	LI	αR	αL	RR	KCU25
EC014M1BPL06CF00	1B	1,400	0,025	9,00	–	6	–	●
EC014M1BPL12CF00	1B	1,400	0,025	9,00	–	12	–	●
EC014M1BPN00CF00	1B	1,400	0,025	9,00	–	–	–	●
EC014M1BPN00CF01	1B	1,400	0,025	9,11	–	–	0,15	●
EC014M1BPR06CF00	1B	1,400	0,025	9,00	6	–	–	●
EC014M1BPR12CF00	1B	1,400	0,025	9,00	12	–	–	●
EC020M02PL06CF00	2	2,000	0,025	8,95	–	6	–	●
EC020M02PL12CF00	2	2,000	0,025	8,95	–	6	–	●
EC020M02PN00CF00	2	2,000	0,025	8,94	–	–	–	●
EC020M02PN00CF02	2	2,000	0,025	9,04	–	–	0,20	●
EC020M02PR06CF00	2	2,000	0,025	8,94	6	–	–	●
EC020M02PR12CF00	2	2,000	0,025	8,95	6	–	–	●
EC030M03PL06CF00	3	3,000	0,025	9,48	–	6	–	●
EC030M03PL12CF00	3	3,000	0,025	9,48	–	12	–	●
EC030M03PN00CF00	3	3,000	0,025	9,48	–	–	–	●
EC030M03PN00CF02	3	3,000	0,025	9,63	–	–	0,20	●
EC030M03PR06CF00	3	3,000	0,025	9,48	6	–	–	●
EC030M03PR12CF00	3	3,000	0,025	9,48	12	–	–	●
EC040M04PL06CF00	4	4,000	0,025	10,01	–	6	–	●
EC040M04PL12CF00	4	4,000	0,025	10,28	–	12	–	●
EC040M04PN00CF00	4	4,000	0,025	10,01	–	–	–	●
EC040M04PN00CF02	4	4,000	0,025	10,16	–	–	0,20	●
EC040M04PR06CF00	4	4,000	0,025	10,01	6	–	–	●
EC040M04PR12CF00	4	4,000	0,025	10,28	12	–	–	●
EC050M05PN00CF00	5	5,000	0,025	12,07	–	–	–	●
EC050M05PN00CF03	5	5,000	0,020	12,22	–	–	0,30	●

SSC = To correspond with the SSC on the toolholder.

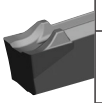
120	122	35	4	124

Grooving, Turning, & Cut-Off

BEYOND™ EVOLUTION™ • RECOMMENDED FEED RATES

● first choice
○ alternate choice

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

Geometry	Description	Insert Geometry	Seat Size (SSC)	Corner Radius mm	Starting Conditions mm	Cut-Off Feed Rates mm/rev 0,05 0,10 0,15 0,20 0,25 0,30 0,35 0,40
CF	First choice in stainless steel, non-ferrous, and high-temperature materials. Apply also press-to-size inserts in steel where smooth cutting is present or precision-ground inserts for applications with thin walls.		1B	0,0	0,05	
				0,1	0,06	
			2	0,0	0,06	
				0,2	0,07	
			3	0,0	0,08	
				0,2	0,09	
			4	0,0	0,08	
				0,2	0,11	
			5	0,0	0,09	
				0,3	0,13	

NOTE: For cut-off inserts with a lead angle, maximum feed rate should be reduced by up to 40%.
For more information on how to select a geometry reference,
see the Kennametal Master Catalogue 2018, Volume I, page C12.

Maximum Feed Rate Values

Data above is for P and K material groups. **Maximum** feed rates should be adjusted by multiplying max feed rate values by following factors for shown material groups.

Material Group	Feed Factor
M	.8
N	1.2
S	.8
H	.5

POWERED BY NOVO

Coolant Accessories

kennametal.com/CoolantAccessories

Connecting Kennametal tooling to your machine is easy. Whether requiring heavy duty hoses capable of 350 bar (5,000 psi) or more flexible braided hoses capable of 210 bar (3,000 psi), we have you covered.

Pre-assembled coolant kits

These kits connect Kennametal turning tooling to the industry's most common machines. The Kennametal universal coolant kits are ideal! Each kit contains the most common thread sizes with a variety of fitting styles for maximum flexibility.

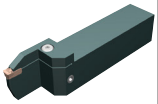
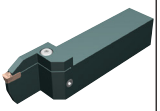
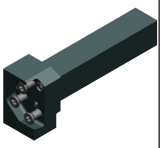
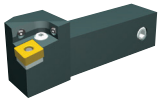
Know exactly what you need?

Knowing the precise components required will allow you to choose only the fittings you need! Each component is individually available, including less common fittings for your convenience.

Coolant Supply

KITS • SELECTION GUIDE

1 STEP 1: Look for your application, holder style, and size.

Application	Cut-Off		Grooving			Turning
Holder Style	Front clamp	Top clamp	Top clamp	Top clamp	Modular holder	ISO turning holder
Shank Size — mm	12–20	12–20	12–20	25–40	all	all
						

2 STEP 2: Find the matching coolant kits.

Kit Description	Hose Type: 					
Universal 200mm flex hose coolant kit	●	●	●	●	●	●
Universal 300mm flex hose coolant kit	●	●	●	●	●	●
Maximum Coolant Pressure Bar/psi	200 / 2901	200 / 2901	200 / 2901	200 / 2901	200 / 2901	200 / 2901
Kit Description	**Hose Type:** 					
M8x1.0 banjo 200mm flex hose coolant kit	●	●	●			
M8x1.0 banjo 300mm flex hose coolant kit	●	●	●			
G 1/8 banjo 200mm flex hose coolant kit				●	●	●
G 1/8 banjo 300mm flex hose coolant kit				●	●	●
Maximum Coolant Pressure Bar/psi	200 / 2901	200 / 2901	200 / 2901	200 / 2901	200 / 2901	200 / 2901
Kit Description	**Hose Type:** 					
Universal 200mm heavy-duty coolant kit				●	●	●
Universal 300mm heavy-duty coolant kit				●	●	●
Maximum Coolant Pressure Bar/psi	200 / 2901	* 350 / 5,076	* 350 / 5,076	* 350 / 5,076	* 350 / 5,076	* 350 / 5,076

* Max pressure for seat size (SSC) 02 holders is 200 bar/2901 psi.

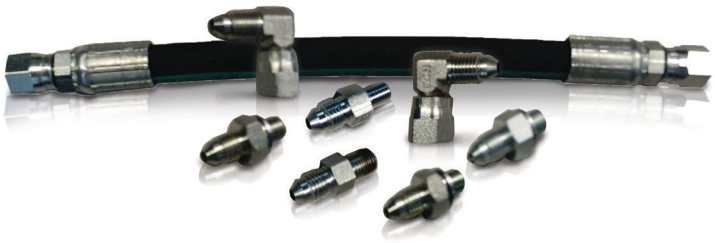
Coolant Supply

KIT COMPONENTS

			COMPONENT DESCRIPTION														
			1/16 NPTF MALE TO JIC MALE	1/8 NPTF MALE TO JIC MALE	M8 X 1.25 MALE TO JIC MALE	M8 X 1.0 MALE TO JIC MALE	G1/8 MALE TO JIC MALE	M10 MALE TO JIC MALE	MALE JIC TO FEMALE JIC ELBOW	HEAVY DUTY 200MM COOLANT HOSE	HEAVY DUTY 300MM COOLANT HOSE	UNIV 200MM FLEX COOLANT HOSE	UNIV 300MM FLEX COOLANT HOSE	M8X1.0 BANJO 200MM FLEX HOSE	G1/8 BANJO 200MM FLEX HOSE	M8X1.0 BANJO 300MM FLEX HOSE	G1/8 BANJO 300MM FLEX HOSE
																	
Kit Description	**Catalogue Number**	**Order Number**															
Universal 200mm flex hose coolant kit	**COOL-KIT-UNIVERSAL-FLEX-101**	**6475019**	●	●	●	●	●	●	●			●					
Universal 300mm flex hose coolant kit	**COOL-KIT-UNIVERSAL-FLEX-201**	**6475021**	●	●	●	●	●	●	●				●				
M8x1.0 banjo 200mm flex hose coolant kit	**COOL-KIT-FLEX-301B**	**6475023**					●	●	●					●			
M8x1.0 banjo 300mm flex hose coolant kit	**COOL-KIT-FLEX-401B**	**6475025**					●	●	●							●	
G 1/8 banjo 200mm flex hose coolant kit	**COOL-KIT-FLEX-501B**	**6475027**					●	●	●						●		
G 1/8 banjo 300mm flex hose coolant kit	**COOL-KIT-FLEX-601B**	**6475029**					●	●	●								●
Universal 200mm heavy-duty coolant kit	**COOL-KIT-101-HD**	**6145372**	●	●			●	●	●	●							
Universal 300mm heavy-duty coolant kit	**COOL-KIT-201-HD**	**6145373**	●	●			●	●	●		●						

Coolant Supply

INDIVIDUAL KIT COMPONENT LIST



order number	catalogue number	description
6145374	1-16NPTF-JIC	Straight fitting, 1/16 NPTF male thread to JIC male thread
6145375	1-8NPTF-JIC	Straight fitting, 1/8 NPTF male thread to JIC male thread
6145378	M8X1.25-JIC	Straight fitting, M8 x 1.25 male thread to JIC male thread
6475041	M8X1-JIC	Straight fitting, M8 x 1.0 male thread to JIC male thread
6145376	G18-JIC	Straight fitting, G 1/8 male thread to JIC male thread
6145377	M10X1.5-JIC	Straight fitting, M10 x 1.5 male thread to JIC male thread
6145379	JICM-JICF-ELB	Elbow fitting, male JIC thread to female JIC thread
6145380	COOL-HOSE-200-HD	Heavy Duty 200mm Coolant hose with JIC female fitting both ends
6145381	COOL-HOSE-300-HD	Heavy Duty 300mm Coolant hose with JIC female fitting both ends
6432549	COOL-HOSE-200-FLEX	Flexible braided 200mm Coolant hose with JIC female fitting both ends
6432550	COOL-HOSE-300-FLEX	Flexible braided 300mm Coolant hose with JIC female fitting both ends
6475043	M8X1-BAN-JIC-HOSE-200	Flexible braided 200mm Coolant hose, M8 x 1.0 male thread to JIC female thread. Contains (1) M8x1.0 banjo bolt and (2) M8 bonded washers
6475045	G18-BAN-JIC-HOSE-200	Flexible braided 200mm Coolant hose, G 1/8 male thread to JIC female thread. Contains (1) G 1/8 banjo bolt and (2) G 1/8 bonded washers
6475047	M8X1-BAN-JIC-HOSE-300	Flexible braided 300mm Coolant hose, M8 x 1.0 male thread to JIC female thread. Contains (1) M8x1.0 banjo bolt and (2) M8 bonded washers
6475049	G18-BAN-JIC-HOSE-300	Flexible braided 300mm Coolant hose, G 1/8 male thread to JIC female thread. Contains (1) G 1/8 banjo bolt and (2) G 1/8 bonded washers

Coolant Supply

COOLANT ACCESSORIES

The items shown below are not part of any coolant kits shown on previous pages.

order number	catalogue number	description
6145382	M6X1-JIC	Straight fitting, M6 x 1.0 male thread to JIC male thread
6145383	JICM-JICM-STR	Straight fitting, JIC male thread to JIC male thread
6145386	G14-G18-RED	Straight fitting, G 1/4 male thread to G 1/8th male thread
6475058	R18-JIC	Straight fitting, 1/8 BSPT male thread to JIC male thread
6475059	R14-JIC	Straight fitting, 1/4 BSPT male thread to JIC male thread

COOLANT SPARE PARTS

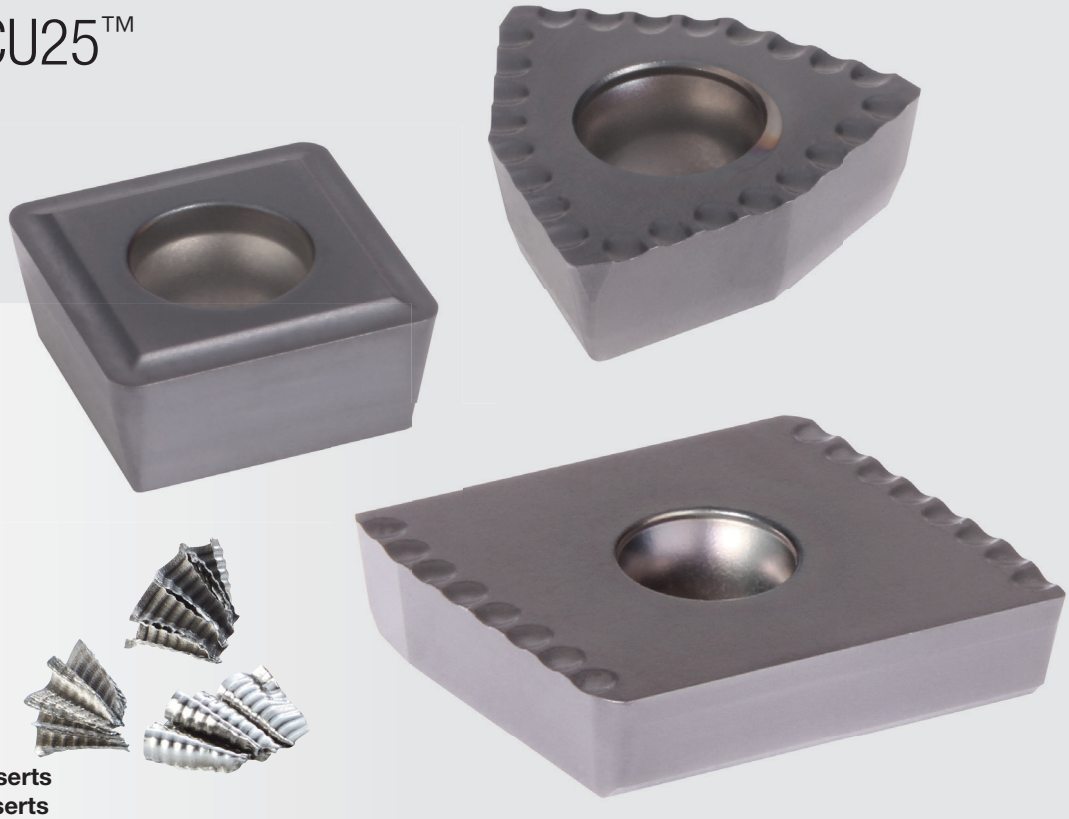
Included in kits; part of components.

order number	catalogue number	description
6475051	M8X1-BAN-BOLT	Banjo bolt, M8 x 1.0 male thread
6475053	G18-BAN-BOLT	Banjo bolt, G1/8 male thread
6475060	M6-BON-WASHER	M6 bonded washer
6475055	M8-BON-WASHER	M8 bonded washer
6475061	M10-BON-WASHER	M10 bonded washer
6475056	G18-BON-WASHER	G 1/8 bonded washer

POWERED BY NOVO

DS & LP Geometry

New Grade KCU25™



Materials

P

kennametal.com/DS-Inserts
kennametal.com/LP-Inserts

The DS and LP geometries in the KCU25 grade ensure smooth chip flow, chip curling, and chip breakage when working with long chipping materials. They ensure process stability as bird-nesting and chip jamming are eliminated.

Fit into DFSP™ Indexable drill and modular KSEM PLUS™ A1/B1 heads.

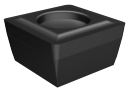
KCU25 is a high speed and feed capability grade. Its reliability in low carbon and alloyed steels (P0–P3) make it the first choice for DS and LP geometries when high productivity and tool life in stable drilling conditions are required.

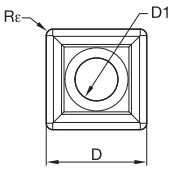
For full portfolio overview, please see our Master Catalogue 2018, Volume II, Rotating Tools!

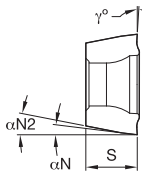
Indexable Drills

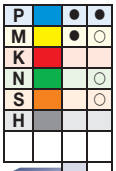
DRILL FIX™ DFSP™ • INSERTS • LP GEOMETRY

● first choice
○ alternate choice





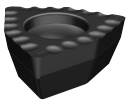


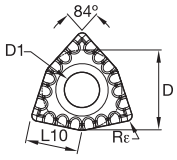


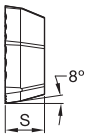
NEW!

catalogue number	D	D1	S	Rε	γ°	αN	αN2	KCU25	KCU40
SPGX050204LP	5,42	2,25	2,38	0,40	4	7	11	●	●
SPGX060304LP	6,35	2,65	3,18	0,40	4	7	11	●	●
SPPX070304LP	7,80	2,85	3,18	0,40	4	7	11	●	●
SPPX09T308LP	9,38	3,60	3,97	0,80	4	7	11	●	●
SPPX120408LP	12,56	4,60	4,76	0,80	4	7	11	●	●
SPPX15T508LP	15,73	5,50	5,95	0,80	4	7	11	●	●

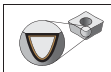
DRILL FIX DFT™ • INSERTS • DS GEOMETRY







catalogue number	L10	D	D1	S	Rε	KCU40
DFTX20204DS	3,31	5,00	2,25	2,45	0,40	●
DFT030304DS	3,97	6,00	2,65	2,95	0,40	●
DFT05T308DS	5,29	8,00	3,40	3,75	0,80	●
DFT06T308DS	6,62	10,00	4,40	3,75	0,80	●
DFT070408DS	7,94	12,00	4,40	4,75	0,80	●
DFT090508DS	9,92	15,00	5,50	5,25	0,80	●


120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4

NOVO
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Indexable Drills

DRILL FIX™ DFSP™ • RECOMMENDED SPEEDS AND FEEDS

Metric															
Material Group		Condition	Pocket Seat	Geometry	Grade	Cutting Speed — vc Range — m/min			Recommended Feed Rate (fz) by Diameter						
						min	Starting Value	max	Ø	SPGX05 DFTX2 14–17,99	SPGX06 DFT03 18–21,99	SPPX07 DFT05 22–25,99	SPPX09 DFT05 26–32,99	SPPX12 DFT06/07 33–43,99	SPPX15 DFT07/09 44–55,00
P	0	S	O	LP	KCU25	310	**325**	360	mm/r	0,06–0,10	0,06–0,11	0,08–0,14	0,12–0,21	0,14–0,26	0,16–0,26
			I	DS	KCU40										
	1	S	O	LP	KCU25	310	**325**	360	mm/r	0,06–0,10	0,06–0,11	0,08–0,14	0,12–0,21	0,14–0,26	0,16–0,26
			I	DS	KCU40										
	2	S	O	LP	KCU25	310	**325**	360	mm/r	0,06–0,10	0,06–0,11	0,08–0,14	0,12–0,21	0,14–0,26	0,16–0,26
			I	DS	KCU40										
	3	S	O	LP	KCU25	260	**285**	320	mm/r	0,06–0,10	0,06–0,11	0,08–0,14	0,12–0,21	0,14–0,26	0,16–0,26
			I	DS	KCU40										
	4	S	O	LP	KCU25	220	**250**	300	mm/r	0,06–0,10	0,06–0,11	0,08–0,14	0,12–0,21	0,14–0,26	0,16–0,26
			I	DS	KCU40										
M	1	S	O	LP	KCU25	150	**190**	230	mm/r	0,05–0,08	0,06–0,10	0,07–0,12	0,10–0,16	0,12–0,21	0,14–0,24
			I	DS	KCU40										
	2	S	O	LP	KCU25	150	**180**	210	mm/r	0,05–0,08	0,06–0,10	0,07–0,12	0,10–0,16	0,12–0,21	0,14–0,24
			I	DS	KCU40										

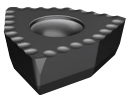
Condition: S = Stable cutting conditions;
U = Unstable cutting conditions;
I = Interrupted cutting conditions

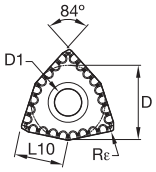
Pocket seat: I = Inboard insert;
O = Outboard insert

NOTE: Applying Drill Fix DFSP 5 x D requires high stability. It is highly recommended to be conservative in regard to speeds and feeds, and start with minimum values indicated. It is always recommended to use a DFT™ DS KCU40 inboard insert when using outboard LP in KCU25™.

Modular Drills

KSEM PLUS™ • SIDE INSERTS FOR A1 HEADS • DFT™ DS GEOMETRY



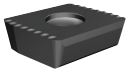


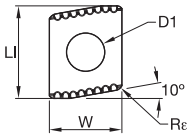
● first choice
○ alternate choice

P	● ●
M	● ○
K	
N	○
S	○
H	

catalogue number	L10	D	D1	S	Rε	NEW! KCU25	KCU40
DFT05T308D32DS	5,29	8,00	3,40	3,75	0,80	●	●
DFT05T308D33DS	5,29	8,00	3,40	3,75	0,80	●	●
DFT06T308D36DS	6,62	10,00	4,40	3,75	0,80	●	●
DFT06T308D39DS	6,62	10,00	4,40	3,75	0,80	●	●
DFT06T308D44DS	6,62	10,00	4,40	3,75	0,80	●	●
DFT070408D45DS	7,94	12,00	4,40	4,75	0,80	●	●
DFT070408D50DS	7,94	12,00	4,40	4,75	0,80	●	●
DFT090508D56DS	9,92	15,00	5,50	5,25	0,80	●	●
DFT090508D63DS	9,92	15,00	5,50	5,25	0,80	●	●

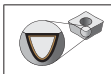
KSEM PLUS • SIDE INSERTS FOR B1 HEADS • DFC™ DS GEOMETRY





P	● ●
M	● ○
K	
N	○
S	○
H	

catalogue number	LI	W	D1	S	Rε	NEW! KCU25	KCU40
DFC040310D28DS	10,00	7,60	2,85	3,18	1,00	●	●
DFC05T312D32DS	12,00	9,40	3,40	3,75	1,20	●	●
DFC06T312D36DS	16,00	12,40	4,40	3,75	1,20	●	●
DFC070416D45DS	18,00	14,50	4,40	4,75	1,60	●	●
DFC090520D56DS	24,00	19,00	5,50	5,25	2,00	●	●


120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NOVO
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Modular Drills

KSEM PLUS™ A1 AND B1 HEADS • RECOMMENDED SPEEDS AND FEEDS • USING DS KCU25™ INSERTS

Metric												
Material Group		Condition	Cutting Speed — vc Range — m/min			Recommended Feed Rate (fz) by Diameter						
			min	Starting Value	max	Ø	KSEM 14….17 DFC04... 28–31,74	KSEM 15….18 DFC05…/DFT05... 31,75–35,99	KSEM 13….22 DFC06…/DFT06... 36–44,99	KSEM 18….28 DFC07…/DFT07... 45–55,99	KSEM 20….34 DFC09…/DFT09... 56–70,00	KSEM 26….40 DFx06…/DFx07... 70,36–102,35
P	0	S	90	**190**	230	mm/r	0,140–0,240	0,140–0,240	0,180–0,320	0,180–0,340	0,180–0,400	0,180–0,400
	1	S	90	**190**	230	mm/r	0,140–0,240	0,140–0,240	0,180–0,280	0,180–0,340	0,180–0,400	0,180–0,400
	2	S	90	**190**	230	mm/r	0,140–0,240	0,140–0,240	0,180–0,320	0,180–0,340	0,180–0,400	0,180–0,400
	3	S	90	**180**	230	mm/r	0,140–0,240	0,140–0,240	0,180–0,280	0,180–0,340	0,180–0,400	0,180–0,400
	4	S	90	**140**	220	mm/r	0,140–0,240	0,140–0,240	0,180–0,280	0,180–0,340	0,180–0,400	0,180–0,400
M	1	S	60	**110**	135	mm/r	0,110–0,210	0,110–0,210	0,120–0,200	0,140–0,280	0,160–0,280	0,160–0,280
	2	S	60	**100**	135	mm/r	0,110–0,210	0,110–0,210	0,120–0,200	0,140–0,280	0,160–0,280	0,160–0,280

Insert Recommendation

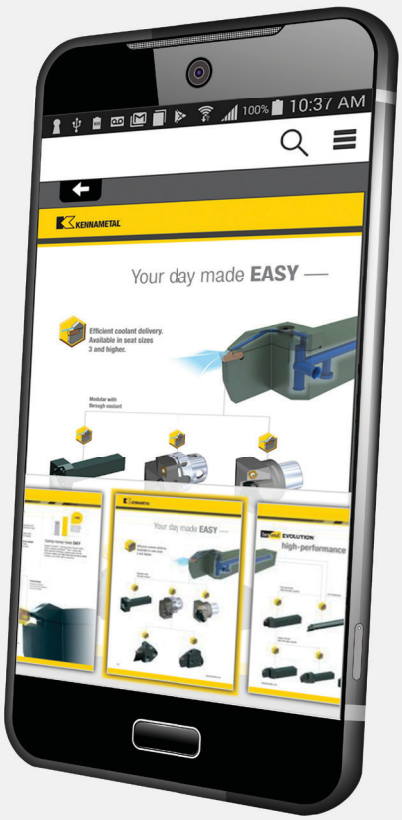
P	O	DFC-/DFT-DS	KCU25
	I	KSEMP-HPG	
M	O	DFC-/DFT-DS	KCU25
	I	KSEMP-HPG	

Condition: S = Stable cutting conditions;
U = Unstable cutting conditions;
I = Interrupted cutting conditions

Pocket seat: I = Inboard insert;
O = Outboard insert

Catalogue App

Browse Pages



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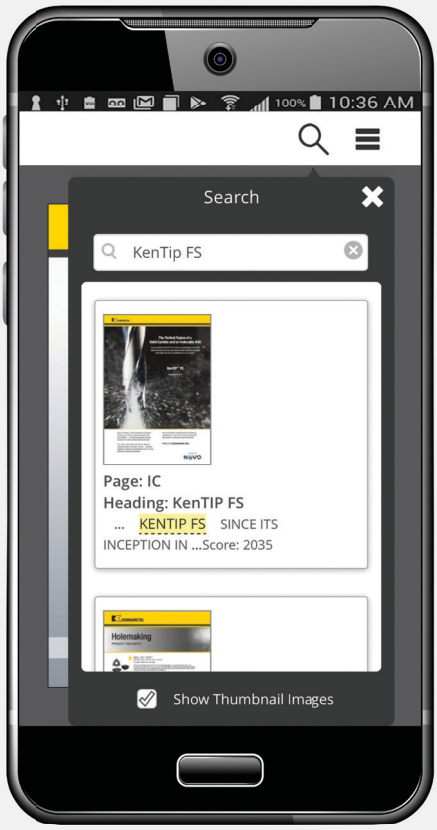

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POWERED BY NOVO

Duo-Lock™

The ONLY modular system with the performance of a solid carbide end mill

Materials

P M K S H

Applications

- Plunge Milling
- Ramping
- Slotting
- Side Milling/ Shoulder Milling
- 3D Milling/Profiling
- Chamfer Milling
- Side Milling/Shoulder Milling: Radius

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DUO-LOCK®
by HAIMER® and Kennametal

Duo-Lock™ is a new revolutionary coupling for solid carbide end milling applications. This replaceable head design combines a high accuracy in runout and length repeatability with maximum stability, making it a precise and virtually unbreakable interface.

To adapt Duo-Lock™ perfectly to your spindle, a vast array of adaptors and extensions are available.

- Standard length extensions with Safe-Lock™, cylindrical and conical.
- Cut-to-size extensions, cylindrical and conical.
- Integral adaptors with HSK, PSC, DV, and BT back ends.

Intermediate diameters are available upon request as custom solutions.

Reconditioning will maximise tool life and your investment.

Double cone eliminates expensive presetting processes by providing an axial 10µm repeatability. Length repeatability from insert tip-to-tip within 50µm.

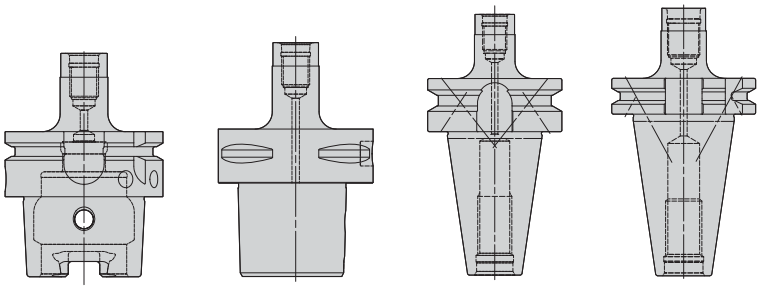
3rd contact surface delivers high stiffness and highest accuracy below 5µm runout.

Vast array of roughing, finishing, profiling, and chamfering tools, and blanks available. Covering all end milling applications

Intelligent thread ensures stress level to remain below critical values, allowing >25% higher transmittable torque.

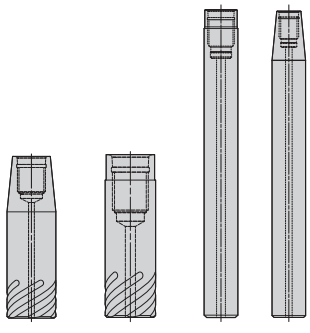
With a Duo-Lock™ wrench the tool change becomes easy and can be done in a few seconds.

Adaptors



HSK PSC BT DV

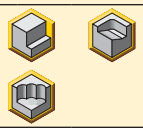
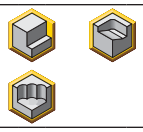
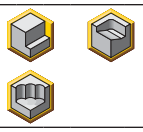
Extensions



SAFE-LOCK® by HAIMER® Cut-to-size

Modular Solid Carbide End Mills

DUO-LOCK™ • TOOL SELECTION GUIDE

	HIGH-PERFORMANCE (HP) ROUGHING & FINISHING					
	—	HARVI™ I	HARVI I	HARVI II	HARVI II	HARVI III
	NEW! 					
Series	**FGDF**	**UKDV**	**ULDV**	**UCDV**	**UDDV**	**UJDV**
Page	59	O8*	O9*	O12*	O13*	O16*
Tool type						
Rougher	●	●	●	○	○	
Finisher	○	○	○	●	●	●
Chamfering						
Main operation						
Workpiece material						
Primary	P M	P M	S	P M	S	S
Secondary	K S H	K S	P M H	K S H	P H	P M H
Corner style						
Corner radius [Rε]	0,33–0,4mm	—	0,5–4mm	—	0,5–5mm	0,5–4mm
Corner chamfer width [BCH]	—	0,5mm	—	0,5mm	—	—
Cutter diameter [D1]	10–20mm	10–32mm	10–32mm	10–32mm	10–32mm	10–32mm
Length of cut	0,75 x D	1,5 x D	1,5 x D	1,5 x D	1,5 x D	1,5 x D
Maximum cutting depth [Ap1 max]	7,5–15mm	15–48mm	15–48mm	15–48mm	15–48mm	15–48mm
Flute helix angle	42°/45°/48°	37°/39°	37°/39°	37°/39°	37°/39°	37°/39°
Number of flutes [ZU]	3	4	4	5	5	6
Centre cutting	✔	✔	✔	—	—	✔
Additional operations						

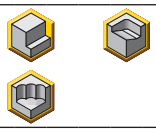
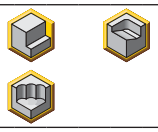
* See page in the Kennametal Master Catalogue 2018 • Volume Two • Rotating Tools, A-16-05217.

● Primary

○ Secondary

Modular Solid Carbide End Mills

DUO-LOCK™ • TOOL SELECTION GUIDE

	HP ROUGHING & FINISHING *(CONTINUED)*		HIGH FEED • HARD MATERIALS	HP PROFILING	
	MaxiMet™	MaxiMet	KenFeed™	HARVI™ Ball Nose	HARVI III Ball Nose
		 NEW!			
Series	ABDF	ABDE	KMDA	UKBV	UJBV
Page	O28*	O29*	61	O18*	O19*
Tool type					
Rougher	●	●	●	●	
Finisher	○	●	●	○	●
Chamfering					
Main operation					
Workpiece material					
Primary	N	N	H	P M	S
Secondary			P	K S H	P M K H
Corner style					
Corner radius [Rε]	—	0,5–4mm	0,36–1,25mm	—	—
Corner chamfer width [BCH]	—	—	—	—	—
Cutter diameter [D1]	10–20mm	10–25mm	10–20mm	10–25mm	10–25mm
Length of cut	1,5 x D	1,5 x D	—	1,5 x D	1,5 x D
Maximum cutting depth [Ap1 max]	15–30mm	15–37,5mm	0,33–0,67mm	15–37,5mm	15–37,5mm
Flute helix angle	45°	38°	20°	37°/39°	37°/39°
Number of flutes [ZU]	2	3	6	4	6
Centre cutting	✔	✔	—	✔	✔
Additional operations					

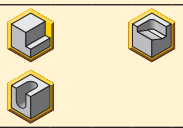
* See page in the Kennametal Master Catalogue 2018 • Volume Two • Rotating Tools, A-16-05217.

● Primary

○ Secondary

Modular Solid Carbide End Mills

DUO-LOCK™ • TOOL SELECTION GUIDE

	HP ROUGHING			
	—	—	—	—
	NEW! 			
Series	**RFDD**	**RQDB**	**RKDF**	**RQBB**
Page	60	O34*	O35*	O36*
Tool type				
Rougher	●	●	●	●
Finisher				
Chamfering				
Main operation				
Workpiece material				
Primary	P M	P M	S	P M
Secondary	K H	K S H	P M K H	K S H
Corner style				
Corner radius [Rε]	0,4mm	—	0,5–0,75mm	—
Corner chamfer width [BCH]	—	0,5mm	—	—
Cutter diameter [D1]	10–20mm	10–25mm	10–25mm	10–25mm
Length of cut	0,75 x D	1,5 x D	1,5 x D	1,5 x D
Maximum cutting depth [Ap1 max]	7,5–15mm	15–37,5mm	15–37,5mm	15–37,5mm
Flute helix angle	35°	20°	45°	20°
Number of flutes [ZU]	3	4 & 5	4 & 6	4
Centre cutting	✔	—	✔	✔
Additional operations				

* See page in the Kennametal Master Catalogue 2018 • Volume Two • Rotating Tools, A-16-05217.

● Primary

○ Secondary

Modular Solid Carbide End Mills

DUO-LOCK™ • TOOL SELECTION GUIDE

	HP FINISHING		CHAMFERING		DUO-LOCK™ BLANKS
	—	RSM II™	—	—	—
				 NEW!	
Series	**FMDF**	**FSDE**	**XADA**	**XRDA**	**Blanks**
Page	O42*	O43*	O48*	O49*	62
Tool type					
Rougher					
Finisher	●	●			
Chamfering			●	●	
Main operation					
Workpiece material					
Primary	P M	S	P M	P M	
Secondary	K S H	P M H	K N S H	K N S H	
Corner style			—	—	—
Corner radius [Rε]	0,5–0,75mm	0,5–4mm	—	—	—
Corner chamfer width [BCH]	—	—	—	—	—
Cutter diameter [D1]	10–25mm	10–25mm	10–16mm	10–16mm	10–32mm
Length of cut	1,5 x D	1,5 x D	2–4mm	1,5–4mm	1,5 x D
Maximum cutting depth [Ap1 max]	15–37,5mm	15–37,5mm	2–4mm	1,5–4mm	—
Flute helix angle	45°	36°	0°	0°	—
Number of flutes [ZU]	6	9, 11, 15, & 19	4, 5, & 6	4, 5, & 6	—
Centre cutting	✔	—	—	—	—
Additional operations					

* See page in the Kennametal Master Catalogue 2018 • Volume Two • Rotating Tools, A-16-05217.

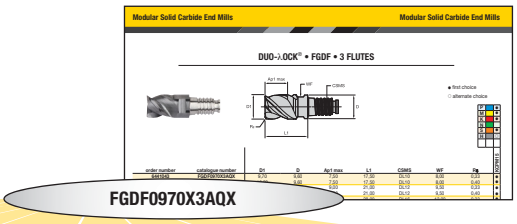
● Primary

○ Secondary

Modular Solid Carbide End Mills

DUO-LOCK™ • CATALOGUE NUMBERING SYSTEM

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

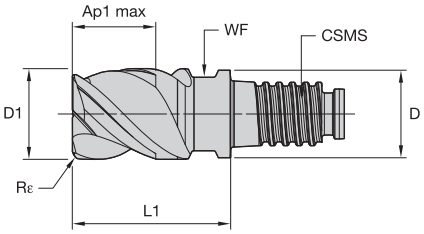


FGDF0970X3AQX

FG	D	F	0970	X	3	A	Q	X
Series	End Mill Shape	Helix Angle	Diameter	Shank Style	Number of Flutes	Length-of-cut	Shape/ Feature	Corner Configuration
AB = MaxiMet™ — Non-ferrous metals **FG** = Finisher general applications — Steels **FM** = Finisher multi-flute — Steels **FS** = RSM II™ multi-flute — High-temperature alloys **KM** = KenFeed™ — Medium steels **RF** = Rougher — Chipbreaker design **RK** = Rougher — Fine-pitch profile design **RQ** = Rougher — Coarse-pitch profile design **UC** = HARVI™ II — Stainless steels **UD** = HARVI II — High-temperature alloys **UJ** = HARVI III centre cut & eccentric cut — High-temperature alloys **UK** = HARVI I asymmetric fluting — Stainless steels **UL** = HARVI I asymmetric fluting — High-temperature alloys **XA** = Chamfering tool **XR** = Corner rounding tool	**B** = Ball Nose **D** = Square End	**A** = 0–10 **B** = 11–20 **D** = 31–35 **E** = 36–40 **F** = 41–45 **V** = 37/39° variable		**X** = Metric – Duo-Lock™	**2** **3** **4** **5** **6** **9** **B** = 11 **F** = 15 **J** = 19	**A** = 0,75 x D **B** = 1,0 x D **C** = 1,5 x D	**H** = Chamfer **N** = Necked **Q** = Necked & Radius **R** = Radius **U** = Necked + Sharp **V** = Necked + Chamfer	**D** = Metric — 0,4mm **E** = Metric — 0,5mm **F** = Metric — 0,75mm **H** = Metric — 1,25mm **J** = Metric — 1,5mm **N** = Metric — 4,0mm **S** = Sharp **X** = Custom

Modular Solid Carbide End Mills

DUO-LOCK™ • FGDF • 3 FLUTES



● first choice
○ alternate choice

P		●
M		●
K		●
N		
S		●
H		○

order number	catalogue number	D1	D	Ap1 max	L1	CSMS	WF	Rε	KCPM15
6441043	FGDF0970X3AQX	9,70	9,60	7,50	17,50	DL10	8,00	0,33	●
6441029	FGDF1000X3AQD	10,00	9,60	7,50	17,50	DL10	8,00	0,40	●
6441044	FGDF1170X3AQX	11,70	11,50	9,00	21,00	DL12	9,50	0,33	●
6441030	FGDF1200X3AQD	12,00	11,50	9,00	21,00	DL12	9,50	0,40	●
6441045	FGDF1570X3AQX	15,70	15,50	12,00	28,00	DL16	13,00	0,33	●
6441041	FGDF1600X3AQD	16,00	15,50	12,00	28,00	DL16	13,00	0,40	●
6441046	FGDF1970X3AQD	19,70	19,30	15,00	35,00	DL20	16,00	0,40	●
6441042	FGDF2000X3AQD	20,00	19,30	15,00	35,00	DL20	16,00	0,40	●

DUO-LOCK™ • FGDF • 3 FLUTES • APPLICATION DATA

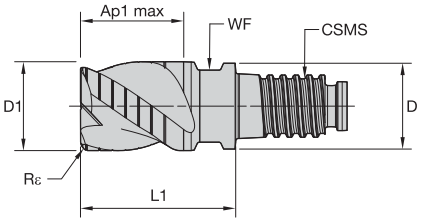
Material Group		Side Milling (A) and Slotting (B) A ap	A ae	B ap	straight short KCPM15 Cutting Speed – vc m/min min		max	conical medium KCPM15 Cutting Speed – vc m/min min		max	conical long KCPM15 Cutting Speed – vc m/min min		max	Recommended feed per tooth (fz = mm/th) for side milling (A). For slotting (B), reduce fz by 20%. D1 – Diameter mm	10,0	12,0	16,0	20,0
P	0	0,75 x D	0,5 x D	0,5 x D	150	–	200	135	–	180	135	–	180	fz	0,061	0,070	0,086	0,097
	1	0,75 x D	0,5 x D	0,5 x D	150	–	200	135	–	180	135	–	180	fz	0,061	0,070	0,086	0,097
	2	0,75 x D	0,5 x D	0,5 x D	140	–	190	126	–	171	126	–	171	fz	0,061	0,070	0,086	0,097
	3	0,75 x D	0,4 x D	0,5 x D	120	–	160	108	–	144	108	–	144	fz	0,051	0,060	0,074	0,086
	4	0,75 x D	0,3 x D	0,5 x D	90	–	150	81	–	135	81	–	135	fz	0,046	0,053	0,065	0,075
	5	0,75 x D	0,4 x D	0,5 x D	60	–	100	51	–	85	48	–	80	fz	0,041	0,048	0,059	0,069
	6	0,75 x D	0,3 x D	0,5 x D	50	–	75	43	–	64	40	–	60	fz	0,034	0,040	0,048	0,055
M	1	0,75 x D	0,4 x D	0,5 x D	90	–	115	72	–	92	63	–	81	fz	0,051	0,060	0,074	0,086
	2	0,75 x D	0,4 x D	0,5 x D	60	–	80	48	–	64	42	–	56	fz	0,041	0,048	0,059	0,069
	3	0,75 x D	0,4 x D	0,5 x D	60	–	70	48	–	56	42	–	49	fz	0,034	0,040	0,048	0,055
K	1	0,75 x D	0,5 x D	0,5 x D	120	–	150	108	–	135	108	–	135	fz	0,061	0,070	0,086	0,097
	2	0,75 x D	0,5 x D	0,5 x D	110	–	140	99	–	126	99	–	126	fz	0,051	0,060	0,074	0,086
	3	0,75 x D	0,4 x D	0,5 x D	110	–	130	99	–	117	99	–	117	fz	0,041	0,048	0,059	0,069
S	1	0,3 x D	0,3 x D	0,5 x D	50	–	90	40	–	72	30	–	54	fz	0,051	0,060	0,074	0,086
	2	0,3 x D	0,3 x D	0,5 x D	25	–	40	20	–	32	15	–	24	fz	0,027	0,032	0,039	0,046
	3	0,75 x D	0,3 x D	0,5 x D	25	–	40	20	–	32	15	–	24	fz	0,027	0,032	0,039	0,046
	4	0,75 x D	0,3 x D	0,5 x D	50	–	60	40	–	48	30	–	36	fz	0,038	0,044	0,055	0,063
H	1	0,75 x D	0,2 x D	0,3 x D	80	–	140	64	–	112	48	–	84	fz	0,046	0,053	0,065	0,075

NOTE: These guidelines may require variations to achieve optimum results.
Lower value of cutting speed is used for high stock removal applications or for higher hardness (machinability) within group.
Higher value of cutting speed is used for finishing applications or for lower hardness (machinability) within group.
Above parameters are based on ideal conditions. For smaller taper machining centres, please adjust parameters accordingly on diameters >12mm.
For tools with reach > 3 x D, reduce fz by 20%.
For tools with reach >5 x D, reduce fz by 30%.
For tools with reach >10 x D, reduce Vc and fz by 30%.

120	122	58	4	124

Modular Solid Carbide End Mills

DUO-LOCK™ • RFDD • 3 FLUTES



● first choice
○ alternate choice

P	●
M	●
K	●
N	
S	
H	○

order number	catalogue number	D1	D	Ap1 max	L1	CSMS	WF	Rε	KCPM15
6441047	RFDD1000X3AQD	10,00	9,60	7,50	17,50	DL10	8,00	0,40	●
6441048	RFDD1200X3AQD	12,00	11,50	9,00	21,00	DL12	9,50	0,40	●
6441049	RFDD1600X3AQD	16,00	15,50	12,00	28,00	DL16	13,00	0,40	●
6441050	RFDD2000X3AQD	20,00	19,30	15,00	35,00	DL20	16,00	0,40	●

DUO-LOCK™ • RFDD • 3 FLUTES • APPLICATION DATA



Material Group		Side Milling (A) and Slotting (B)			straight short			conical medium			conical long			Recommended feed per tooth (fz = mm/th) for side milling (A). For slotting (B), reduce fz by 20%.				
		A		B	KCPM15 Cutting Speed — vc m/min			KCPM15 Cutting Speed — vc m/min			KCPM15 Cutting Speed — vc m/min			D1 — Diameter				
		ap	ae	ap	min		max	min		max	min		max	mm	10,0	12,0	16,0	20,0
P	0	0,75 x D	0,5 x D	0,5 x D	150	–	200	135	–	180	135	–	180	fz	0,061	0,070	0,086	0,097
	1	0,75 x D	0,5 x D	0,5 x D	150	–	200	135	–	180	135	–	180	fz	0,061	0,070	0,086	0,097
	2	0,75 x D	0,5 x D	0,5 x D	140	–	190	126	–	171	126	–	171	fz	0,061	0,070	0,086	0,097
	3	0,75 x D	0,5 x D	0,5 x D	120	–	160	108	–	144	108	–	144	fz	0,051	0,060	0,074	0,086
	4	0,75 x D	0,4 x D	0,5 x D	90	–	150	81	–	135	81	–	135	fz	0,046	0,053	0,065	0,075
	5	0,75 x D	0,5 x D	0,5 x D	60	–	100	51	–	85	48	–	80	fz	0,041	0,048	0,059	0,069
	6	0,75 x D	0,4 x D	0,5 x D	50	–	75	43	–	64	40	–	60	fz	0,034	0,040	0,048	0,055
M	1	0,75 x D	0,4 x D	0,5 x D	90	–	115	72	–	92	63	–	81	fz	0,051	0,060	0,074	0,086
	2	0,75 x D	0,4 x D	0,5 x D	60	–	80	48	–	64	42	–	56	fz	0,041	0,048	0,059	0,069
	3	0,75 x D	0,4 x D	0,5 x D	60	–	70	48	–	56	42	–	49	fz	0,034	0,040	0,048	0,055
K	1	0,75 x D	0,5 x D	0,5 x D	120	–	150	108	–	135	108	–	135	fz	0,061	0,070	0,086	0,097
	2	0,75 x D	0,5 x D	0,5 x D	110	–	140	99	–	126	99	–	126	fz	0,051	0,060	0,074	0,086
	3	0,75 x D	0,4 x D	0,5 x D	110	–	130	99	–	117	99	–	117	fz	0,041	0,048	0,059	0,069
H	1	0,75 x D	0,2 x D	0,3 x D	80	–	140	64	–	112	48	–	84	fz	0,046	0,053	0,065	0,075

NOTE: These guidelines may require variations to achieve optimum results.
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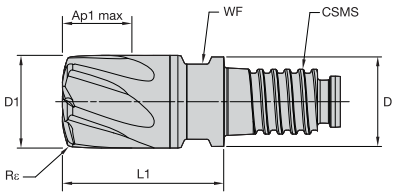
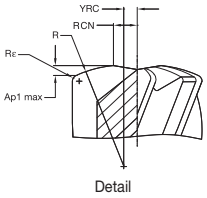
For tools with reach >5 x D, reduce fz by 30%.
For tools with reach >10 x D, reduce Vc and fz by 30%.

				NOVO
120	122	58	4	124

Modular Solid Carbide End Mills

DUO-LOCK™ • KENFEED™ • 6 FLUTES





● first choice
○ alternate choice

P		○
M		
K		
N		
S		
H		●

order number	catalogue number	D1	D	Ap1 max	L1	CSMS	WF	Rε	KC639M
6197625	KMDA1000X6BQX	10,00	9,60	0,53	17,50	DL10	8,00	0,63	●
6197626	KMDA1200X6BQF	12,00	11,50	0,63	21,00	DL12	9,50	0,75	●
6197627	KMDA1600X6BQG	16,00	15,50	0,84	28,00	DL16	13,00	1,00	●
6197628	KMDA2000X6BQH	20,00	19,30	1,05	35,00	DL20	16,00	1,25	●

DUO-LOCK™ • KENFEED • 6 FLUTES • APPLICATION DATA

Material Group		3D Milling/Profiling		straight short KC639M Cutting Speed — vc m/min			conical medium KC639M Cutting Speed — vc m/min			conical long KC639M Cutting Speed — vc m/min			D1 — Diameter				
		ap	ae	min		max	min		max	min		max	mm	10,0	12,0	16,0	20,0
P	3	0,05 x D	0,55 x D	120	–	160	108	–	144	108	–	144	fz	0,424	0,491	0,610	0,707
	4	0,05 x D	0,55 x D	90	–	150	81	–	135	81	–	135	fz	0,378	0,437	0,538	0,616
H	1	0,05 x D	0,55 x D	80	–	140	64	–	112	48	–	84	fz	0,378	0,437	0,538	0,616
	2	0,05 x D	0,55 x D	70	–	120	56	–	96	42	–	72	fz	0,283	0,326	0,399	0,454

NOTE: These guidelines may require variations to achieve optimum results.
Lower value of cutting speed is used for high stock removal applications or for higher hardness (machinability) within group.
Higher value of cutting speed is used for finishing applications or for lower hardness (machinability) within group.
Above parameters are based on ideal conditions. For smaller taper machining centres, please adjust parameters accordingly on diameters >12mm.
For better surface finish, reduce feed per tooth.
For tools with reach > 3 x D, reduce fz by 20%.
For tools with reach >5 x D, reduce fz by 30%.
For tools with reach >10 x D, reduce vc and fz by 30%.

DUO-LOCK™ • KENFEED • 6 FLUTES • PROGRAMMING DATA

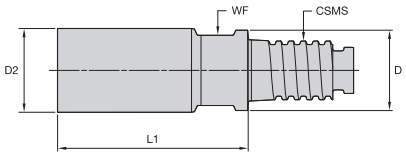
	geometrical parameters						ramping guide for circular and linear ramping						
							circular interpolation		linear ramping				
							optimal range of circle diameter for a single pass		calculated length per ramp angle				
catalogue number	D1	Ap1 max	R	Rε	YRC	RCN	smallest	largest	1°	2°	3°	4°	5°
KMDA1000X6BQX	10	0,53	10	0,625	1,25	2,20	14,40	20,00	30,20	15,09	10,06	7,54	6,02
KMDA1200X6BQF	12	0,63	12	0,750	1,50	2,64	17,28	24,00	36,24	18,11	12,07	9,05	7,23
KMDA1600X6BQG	16	0,84	16	1,000	2,00	3,52	23,04	32,00	48,31	24,15	16,09	12,06	9,64
KMDA2000X6BQH	20	1,05	20	1,250	2,50	4,40	28,80	40,00	60,39	30,19	20,11	15,08	12,05
recommended degree of programmed feed rate to use while ramping									100%	70%	50%	30%	10%

NOTE: YRC = distance from centre line to the crown of the R radius.
RCN = distance from centreline to the start of the cutting edge. This dimension can also help determine the minimum circle size when helical ramping.
R = the head radius size.
Rε = the shoulder radius or radius at the corner of the cutter.

120	122	58	4	124

Modular Solid Carbide End Mills

DUO-LOCK™ • BLANKS

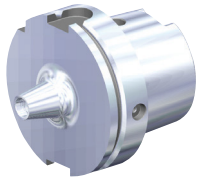


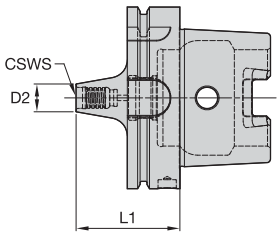
● first choice
○ alternate choice

P		●
M		●
K		●
N		●
S		●
H		○

order number	catalogue number	D	D2	L1	CSMS	WF	K600
6517103	U0356U1000A2	9,60	10,00	23,00	DL10	8,00	●
6517104	U0426U1200A2	11,50	12,00	27,50	DL12	9,50	●
6517105	U0566U1600A2	15,50	16,00	36,50	DL16	13,00	●
6517106	U0695U2000A2	19,30	20,00	45,50	DL20	16,00	●
6517108	U0885U2500A2	24,00	25,00	57,00	DL25	21,00	●
6517109	U1128U3200A2	31,00	32,00	72,20	DL32	28,00	●

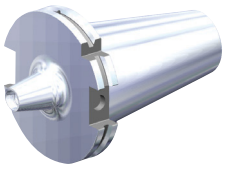
DUO-LOCK™ • HSK100 A

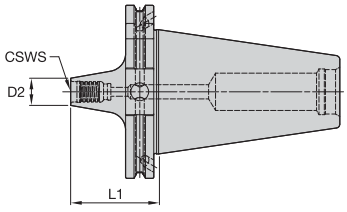




order number	catalogue number	CSWS	D2	L1	kg
6452503	HSK100ADL16060M	DL16	16	60	2,07
6452504	HSK100ADL20060M	DL20	19	60	2,09
6452505	HSK100ADL25065M	DL25	24	65	2,15
6452506	HSK100ADL32075M	DL32	31	75	2,32

DUO-LOCK™ • DV50



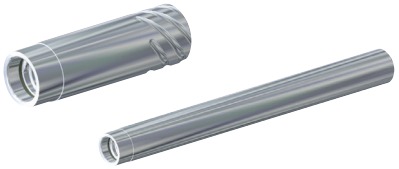
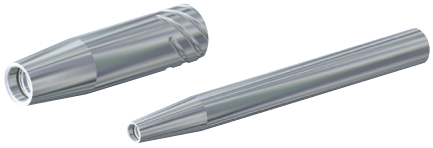


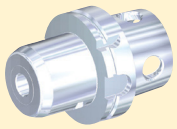
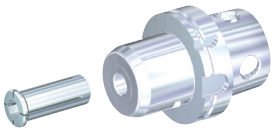
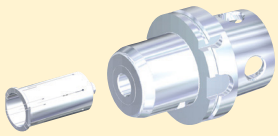
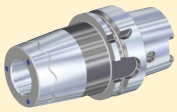
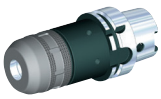
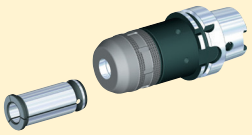
order number	catalogue number	CSWS	D2	L1	kg
6452419	DV50BDL16050M	DL16	16	50	2,68
6452420	DV50BDL20050M	DL20	19	50	2,71
6452501	DV50BDL25056M	DL25	24	56	2,77
6452502	DV50BDL32065M	DL32	31	65	2,93

120	122	–	4	124

Modular Solid Carbide End Mills

DUO-LOCK™ • TOOL CLAMPING

Duo-Lock™ Extension Shank Diameter [D2]	10	12	16	20	25	32	12	16	20	25	32	40	50
HydroForce™ 	–	–	–	●	–	●	–	–	●	–	●	–	●
HydroForce with Sleeve 	●	●	●	●	●	–	●	●	●	●	–	●	–
HydroForce with Safe-Lock™ Sleeve * 	–	●	●	●	●	–	●	●	●	●	–	–	–
Shrink Fit 	●	●	●	●	●	●	●	●	●	●	●	●	●
Safe-Lock™ Shrink Fit * 	–	●	●	●	●	●	●	●	●	●	●	●	●
Milling Chuck 	–	–	–	●	–	●	–	–	●	–	●	–	–
Milling Chuck with Sleeve 	●	●	●	●	●	–	●	●	●	●	–	–	–
ER Collet Chuck 	■	■	○	○	○	–	■	■	○	○	–	–	–
TG Collet Chuck 	■	■	■	○	○	–	■	■	■	○	–	–	–

* Features Safe-Lock™ pullout protection

● Recommended
■ Suitable with limitations
○ Not recommended
– Not available

NOTE: Duo-Lock™ steel extensions require high power shrinking units greater than 10kW.
All Safe-Lock™ extensions can be clamped in a cylindrical shank adaptor.

Modular Solid Carbide End Mills

DUO-LOCK™ • SINGLE-HANDED TORQUE WRENCH

1 Single-Handed Torque Wrench

2 Insert

3 Adaptor

order number	catalogue number	description		Duo-Lock™ Size	torque (Nm)
6411155	TWDLSH9X12	D-L SINGLE HAND TORQUE WRENCH	1	–	–
6410950	TWSH9X12INSERTDL10	D-L TORQUE WRENCH SH INSERT	2	DL10	20
6411151	TWSH9X12INSERTDL12	D-L TORQUE WRENCH SH INSERT		DL12	30
6411152	TWSH9X12INSERTDL16	D-L TORQUE WRENCH SH INSERT		DL16	60
6411153	TWSH9X12INSERTDL20	D-L TORQUE WRENCH SH INSERT		DL20	80
6411154	TWDL9X12CA14X18	D-L ADAPTER 9X12 TO 14X18	3	–	–

DUO-LOCK™ • DOUBLE-HANDED WRENCH KIT

1 ERICKSON™ Torque Master Wrench

2 Insert

3 Extension Handle

Order this

Get that

order number	catalogue number	Kit Description		Duo-Lock™ Size	torque (Nm)
6342967	TWDL10TM	D-L WRENCH WITH DL10 INSERT AND HANDLES	1+2+3	DL 10	20
6342968	TWDL12TM	D-L WRENCH WITH DL12 INSERT AND HANDLES		DL 12	30
6342969	TWDL16TM	D-L WRENCH WITH DL16 INSERT AND HANDLES		DL 16	60
6342970	TWDL20TM	D-L WRENCH WITH DL20 INSERT AND HANDLES		DL 20	80
6343061	TWDL25TM	D-L WRENCH WITH DL25 INSERT AND HANDLES		DL 25	100
6343062	TWDL32TM	D-L WRENCH WITH DL32 INSERT AND HANDLES		DL 32	130

120	122	–	4	124

Modular Solid Carbide End Mills

DUO-LOCK™ • INTELLIGENT THREAD

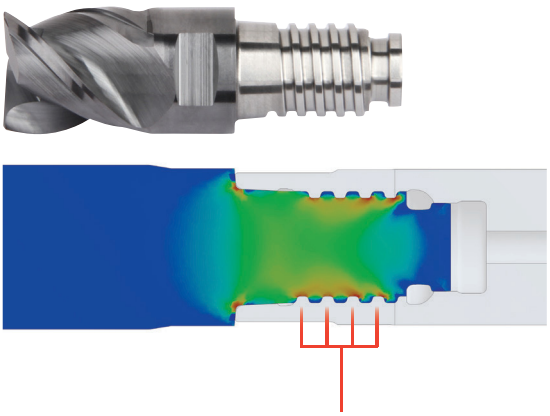
The Duo-Lock™ Intelligent Thread eliminates the force peaks all regular threads have in the first groove.

3 golden rules to success:

1. Clean both sides of the coupling. Thread needs to be free of any lubricant, such as oil, anti seize, grease, etc.
2. Apply recommended torque values.
3. When using Duo-Lock™ cylindrical extensions, never clamp on the coupling.

Finite Element Analysis FEA

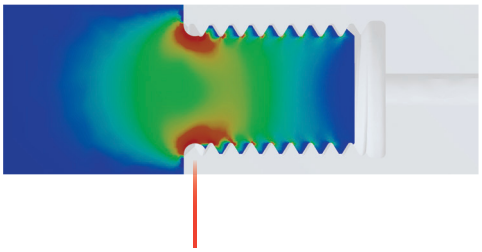
Duo-Lock™ Intelligent Thread



Duo-Lock™ Intelligent Thread at maximum load.

The Duo-Lock™ Intelligent Thread evenly distributes the forces across the entire length of the thread. This allows a greater than 25% torque transmission than known competitors.

Regular threads



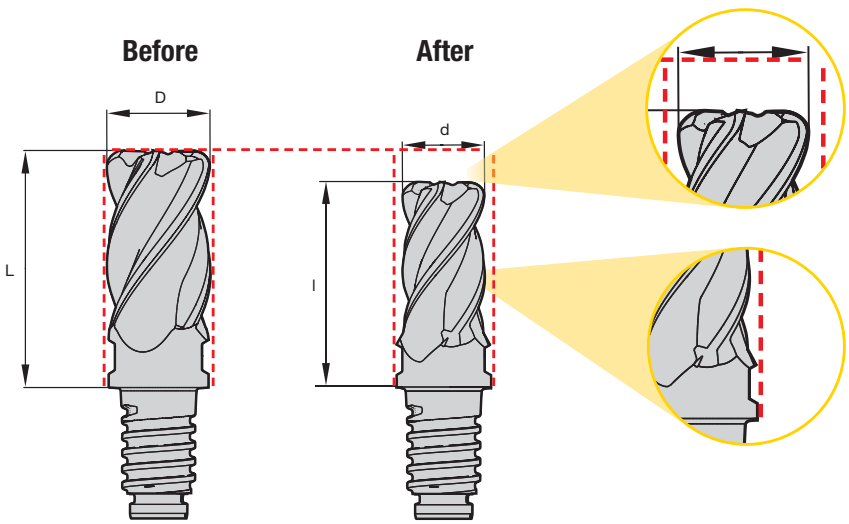
Typical for any regular thread at maximum load.

High force peak in the first groove, limiting the performance of the connection.

DUO-LOCK™ • RECONDITIONING

Wear and/or chipping determines to what extent and how often Duo-Lock™ tips can be reconditioned. To ensure integrity of the wrench flats, the neck portion cannot be modified.

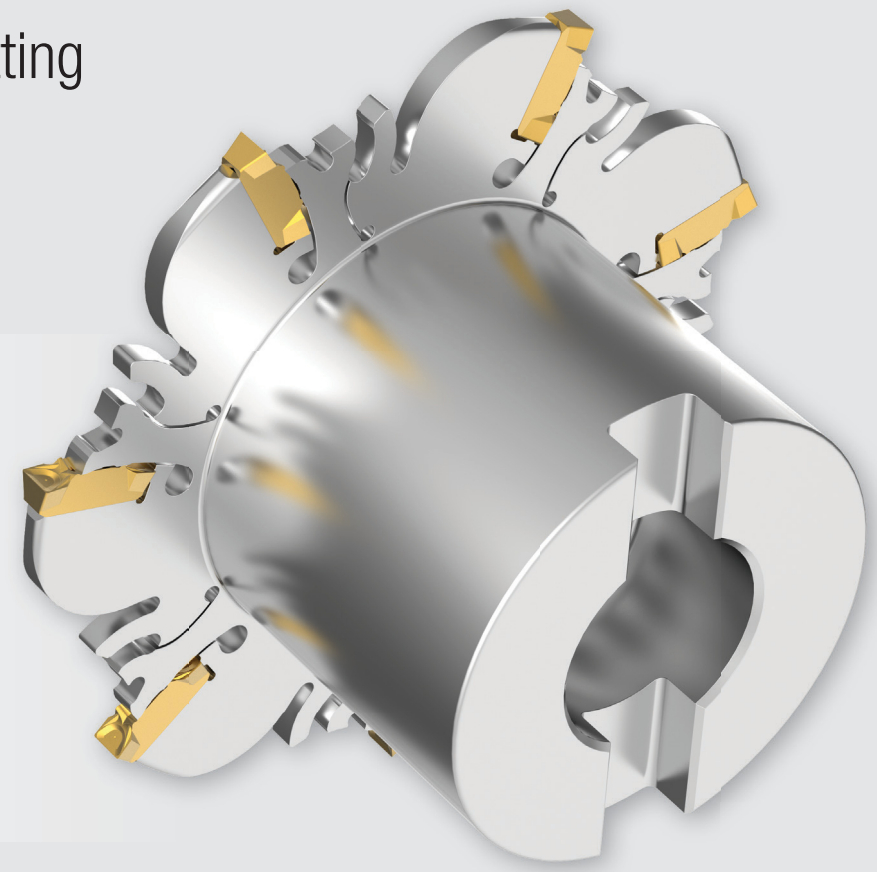
NOTE: The cutting diameter of reconditioned Duo-Lock™ tips might be smaller than the neck diameter, and therefore may not have a clearance anymore. To prevent collisions, precautions need to be taken.



POWERED BY NOVO

KNS®

Kennametal Narrow Slotting



Materials

P M K N S

Applications

- Slotting
- Side/Shoulder Milling
- Slotting: Full Radius
- Cut-Off
- Slotting: Gang Milling

kennametal.com/KNS

The Double-V Design of the insert and the insert pocket securely holds the insert in place and minimises radial runout.

As a result, these stable cutting conditions lead to high slot width accuracy and high repeatability.

A unique self-clamping mechanism ensures easy insert exchange.

From light to heavy machining, the positive SGP chipbreaker geometry ensures smooth cutting action, and efficient chip evacuation.

Seat size “SSC” coded on cutter body.

Easy matching of cutter and insert.

Double-V insert design minimises radial runout.

Double-V pocket design for secure insert placement.

Integral hub for high accuracy and repeatability.

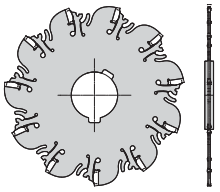
The Easy-X-Wrench comes with the cutter, reduces setup time, and minimises spindle downtime.

Please visit kennametal.com to download detailed assembly instructions.

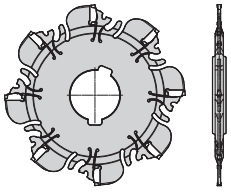
Self-clamping mechanism. No screws, no wedges, no hassle.

Two-keyway hub design for gang slotting applications.

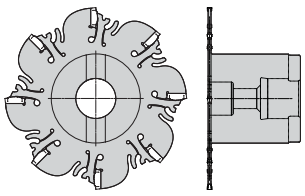
Cutter styles



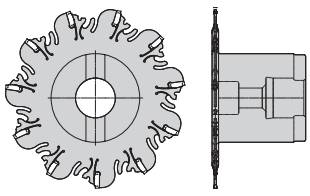
Arbour mount style.



Arbour mount style, reinforced cutter body.



Shell mount style.

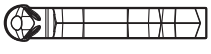


Shell mount style, reinforced cutter body.

Insert Styles

Double-ended insert style for slots with flat bottom.

Single-ended insert style for deep slots with flat bottom.

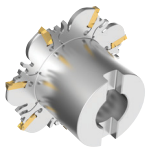
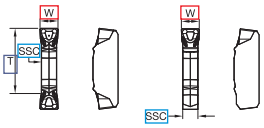
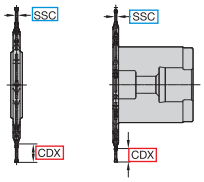
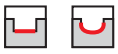
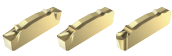
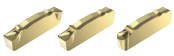


Full radius, single-ended insert style for slots with radius at the bottom.

Slotting

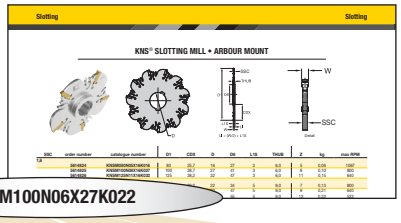
KNS® • TOOL SELECTION GUIDE

SELECTION STEPS

	KNS KENNAMETAL NARROW SLOTTING MILLS			
	ARBOR MOUNT	ARBOR MOUNT • REINFORCED BODY	SHELL MOUNT	SHELL MOUNT • REINFORCED BODY
				
Page	70	70	71	71
Choose your slot width "W"				
"SSC" is the seat size. *"SSC" on insert = "SSC" on cutter body.* *"W"= cutting edge width.* 	2,2–6,35mm	1,59mm	2,2–6,35mm	1,59mm
Choose your slotting depth "CDX"				
CDX is the cutter's maximum depth of cut. *For double-sided insert dimension "T" = limit of slotting depth.* *If there is no "T", then your max. slot depth = CDX of cutter.* *SSC is the pocket seat size.* 	26–97mm	10mm	25–27mm	10mm
Choose your insert style				
Flat Bottom or Full Radius 				
Single Ended or Double Ended				
Cutting Edges	2 1 1	2	2 1 1	2

KNS® • CATALOGUE NUMBERING SYSTEM • CUTTERS

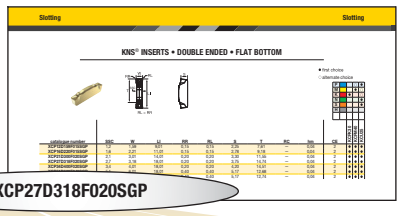
Each character in our catalogue number signifies a specific trait of that product. Use the following key columns and corresponding images to easily identify which attributes apply.



KNSM100N06X27K022

KNS	M	100	N	06	X	27	K	022
Kennametal Narrow Slotter	Units	Cutting Diameter	Cutting Direction	Effective Teeth (z)	Insert Shape	Seat Size (SSC)	Connection Style Machine Side (CSMS)	Connection Size
	M = mm (Metric) **U** = Inch (US)	**Metric** 063 = 63mm 080 = 80mm 100 = 100mm 125 = 125mm 160 = 160mm 200 = 200mm 250 = 250mm	**N** = Neutral			12 = 1,2mm 16 = 1,6mm 21 = 2,1mm 27 = 2,7mm 34 = 3,4mm 42 = 4,2mm 51 = 5,1mm	**K** = Arbour Mount **S** = Shell Mount	**Metric** 16 = 16mm 22 = 22mm 27 = 27mm 32 = 32mm 40 = 40mm 50 = 50mm

KNS • CATALOGUE NUMBERING SYSTEM • INSERTS



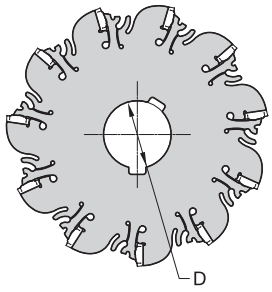
XCP27D318F020SGP

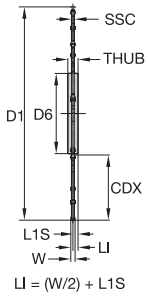
X	C	P	27	D	318	F	020	S	G	P
Insert Shape	Insert Clearance Angle	Tolerance Class	Seat Size (SSC)	Indexability	Groove Width "W"	Groove Bottom Shape	Corner Radius	Edge Prep	Edge Prep/ Application	Rake Angle
			12 = 1,2mm 16 = 1,6mm 21 = 2,1mm 27 = 2,7mm 34 = 3,4mm 42 = 4,2mm 51 = 5,1mm	**S** = Single-Ended **D** = Double-Ended		**F** = Flat Bottom **R** = Full Radius		**S** = Land and Hone	**G** = General	**P** = 11°

symbol	mm
159	1,588
220	2,200
250	2,500
300	3,000
318	3,175
400	4,000
500	5,000
600	6,000
635	6,350

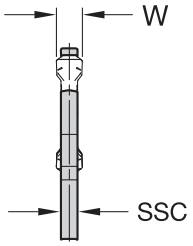
symbol	mm
015	0,150
020	0,200
030	0,300
040	0,400

KNS® SLOTTING MILL • ARBOUR MOUNT





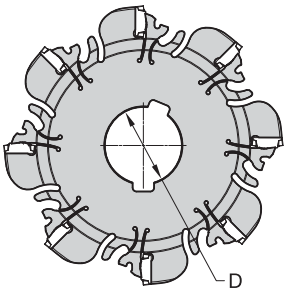
LI = (W/2) + L1S

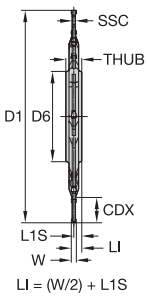


Detail

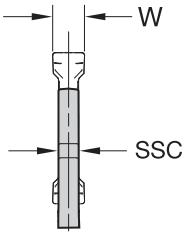
SSC	order number	catalogue number	D1	CDX	D	D6	L1S	THUB	Z	kg	max RPM
16											
	5614824	KNSM080N05X16K016	80	25,7	16	27	3	6,0	5	0,06	1067
	5614825	KNSM100N08X16K027	100	28,7	27	41	3	6,0	8	0,10	800
	5614826	KNSM125N11X16K032	125	38,2	32	47	3	6,0	11	0,15	640
21											
	5614827	KNSM100N07X21K022	100	32,2	22	34	5	9,0	7	0,13	800
	5614828	KNSM125N09X21K032	125	38,2	32	47	5	9,0	9	0,21	640
	5614829	KNSM160N13X21K040	160	51,7	40	55	5	9,0	13	0,33	533
	5614830	KNSM200N17X21K040	200	71,7	40	55	5	9,0	17	0,51	400
27											
	5614831	KNSM100N06X27K022	100	32,2	22	34	6	12,0	6	0,17	800
	5614832	KNSM125N08X27K032	125	38,2	32	47	6	12,0	8	0,27	640
	5614833	KNSM160N11X27K040	160	51,7	40	55	6	12,0	11	0,43	533
	5614834	KNSM200N15X27K040	200	71,7	40	55	6	12,0	15	0,65	400
34											
	5614835	KNSM100N05X34K022	100	32,2	22	34	8	16,0	5	0,21	800
	5614836	KNSM125N07X34K032	125	38,2	32	47	8	16,0	7	0,35	640
	5614837	KNSM160N10X34K040	160	51,7	40	55	8	16,0	10	0,54	533
	5614838	KNSM200N13X34K040	200	71,7	40	55	8	16,0	13	0,82	400
	5614839	KNSM250N17X34K040	250	96,7	40	55	8	16,0	17	1,26	320
42											
	5614840	KNSM100N04X42K022	100	32,2	22	34	10	19,0	4	0,26	800
	5614841	KNSM125N07X42K032	125	38,2	32	47	10	19,0	7	0,42	640
	5614842	KNSM160N10X42K040	160	51,7	40	55	10	19,0	10	0,66	533
	5614843	KNSM200N13X42K040	200	71,7	40	55	10	19,0	13	1,01	400
	5614845	KNSM250N17X42K040	250	96,7	40	55	10	19,0	17	1,55	320
51											
	5614846	KNSM100N05X51K022	100	32,2	22	34	11	22,0	5	0,26	800
	5614847	KNSM125N06X51K032	125	38,2	32	47	11	22,0	6	0,45	640
	5614848	KNSM160N09X51K040	160	51,7	40	55	11	22,0	9	0,71	533
	5614849	KNSM200N12X51K040	200	71,7	40	55	11	22,0	12	1,01	400
	5614850	KNSM250N15X51K040	250	96,7	40	55	11	22,0	15	1,73	320

KNS SLOTTING MILL • REINFORCED BODY • ARBOUR MOUNT





LI = (W/2) + L1S

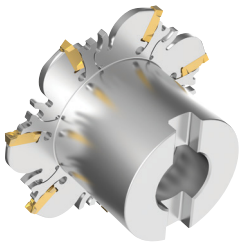


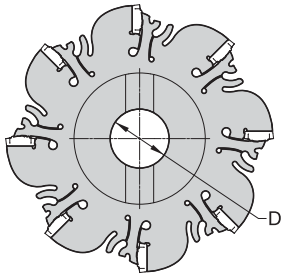
Detail

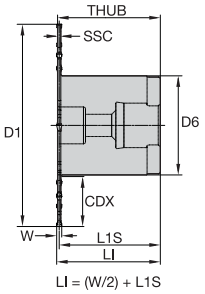
SSC	order number	catalogue number	D1	CDX	D	D6	L1S	THUB	Z	kg	max RPM
12											
	5614820	KNSM063N06X12K016	63	9,5	16	27	3	6,0	6	0,05	1280
	5614821	KNSM080N08X12K022	80	9,5	22	34	3	6,0	8	0,09	1067
	5614822	KNSM100N11X12K027	100	9,5	27	41	3	6,0	11	0,15	800
	5614823	KNSM125N14X12K032	125	9,5	32	47	3	6,0	14	0,25	640

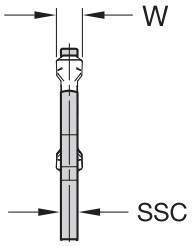
121	122	69	4	124

KNS® SLOTTING MILL • SHELL MOUNT





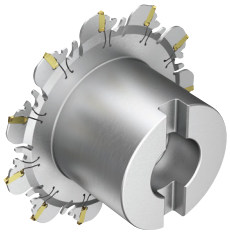


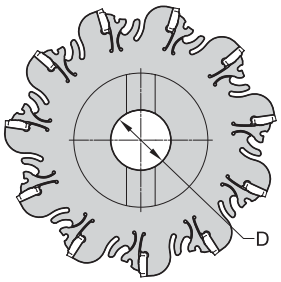


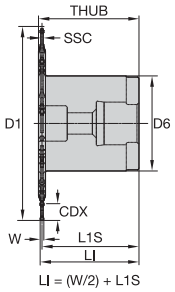
Detail

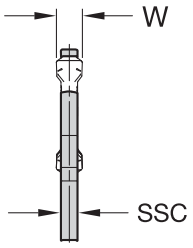
SSC	order number	catalogue number	D1	CDX	D	D6	L1S	THUB	Z	kg	max RPM
16	5614852	KNSM100R08X16S022	100	24,7	22	49	50	50,8	8	0,73	800
21	5614853	KNSM100R07X21S022	100	24,7	22	49	50	51,1	7	0,75	800
27	5614854	KNSM125R08X27S032	125	24,7	32	74	60	61,4	8	2,00	640
34	5614855	KNSM125R07X34S032	125	25,7	32	72	60	61,7	7	1,94	640
42	5614856	KNSM125R07X42S032	125	26,7	32	70	60	62,1	7	1,89	640
51	5614857	KNSM125R06X51S032	125	25,7	32	72	60	62,6	6	1,87	640

KNS SLOTTING MILL • REINFORCED BODY • SHELL MOUNT







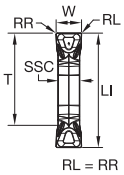


Detail

SSC	order number	catalogue number	D1	CDX	D	D6	L1S	THUB	Z	kg	max RPM
12	5614851	KNSM100R11X12S022	100	9,5	22	49	50	51,8	11	0,78	800

121	122	69	4	124

KNS® INSERTS • DOUBLE ENDED • FLAT BOTTOM

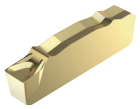


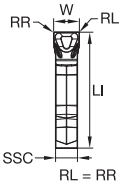
● first choice
○ alternate choice

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

ISO catalogue number	SSC	W	LI	RR	RL	S	T	RC	hm	CE	KCPK30	KCPM40	KCU25
XCP12D159F015SGP	12	1,59	9,01	0,15	0,15	2,25	7,61	–	0,04	2	●	●	●
XCP16D220F015SGP	16	2,21	11,01	0,15	0,15	2,78	9,18	–	0,04	2	●	●	●
XCP21D300F020SGP	21	3,01	14,01	0,20	0,20	3,30	11,55	–	0,04	2	●	●	●
XCP27D318F020SGP	27	3,18	18,01	0,20	0,20	3,75	14,74	–	0,04	2	●	●	●
XCP34D400F020SGP	34	4,01	18,01	0,20	0,20	4,20	14,51	–	0,04	2	●	●	●
XCP51D600F040SGP	51	6,01	18,01	0,40	0,40	5,17	12,68	–	0,04	2	●	●	●
XCP51D635F040SGP	51	6,36	18,01	0,40	0,40	5,17	12,74	–	0,04	2	●	●	●

KNS INSERTS • SINGLE ENDED • FLAT BOTTOM

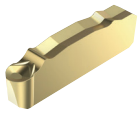


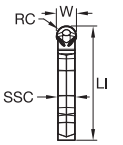


P			○	●
M			●	○
K		●		○
N				●
S				●
H				

ISO catalogue number	SSC	W	LI	RR	RL	S	T	RC	hm	CE	KCPK30	KCPM40	KCU25
XCP16S220F015SGP	16	2,21	11,00	0,15	0,15	2,78	–	–	0,04	1	●	●	●
XCP21S250F020SGP	21	2,50	14,00	0,20	0,20	3,30	–	–	0,04	1	●	●	●
XCP21S300F020SGP	21	3,01	14,00	0,20	0,20	3,30	–	–	0,04	1	●	●	●
XCP27S318F020SGP	27	3,18	18,00	0,20	0,20	3,75	–	–	0,04	1	●	●	●
XCP34S400F020SGP	34	4,01	18,00	0,20	0,20	4,20	–	–	0,04	1	●	●	●
XCP42S500F030SGP	42	5,01	18,00	0,30	0,30	4,65	–	–	0,04	1	●	●	●
XCP51S600F040SGP	51	6,01	18,00	0,40	0,40	5,17	–	–	0,04	1	●	●	●
XCP51S635F040SGP	51	6,36	18,00	0,40	0,40	5,17	–	–	0,04	1	●	●	●

KNS INSERTS • SINGLE ENDED • FULL RADIUS





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

ISO catalogue number	SSC	W	LI	RR	RL	S	T	RC	hm	CE	KCPK30	KCPM40	KCU25
XCP21S300R150SGP	21	3,01	14,00	–	–	3,30	–	1,5	0,04	1	●	-	●
XCP27S318R159SGP	27	3,18	18,00	–	–	3,75	–	1,6	0,04	1	●	●	●
XCP34S400R200SGP	34	4,00	18,00	–	–	4,20	–	2,0	0,04	1	●	–	●

				NOVO
121	122	69	4	124

KNS® • INSERT SELECTION GUIDE

Material Group	Light Machining (Light geometry)		General Purpose		Heavy Machining (Strong geometry)	
	wear resistance		◄——►		toughness	
	Geometry	Grade	Geometry	Grade	Geometry	Grade
P1–P2	.S..GP	KCU25	**.S..GP**	**KCU25**	.S..GP	KCPM40
P3–P4	.S..GP	KCU25	**.S..GP**	**KCU25**	.S..GP	KCPM40
P5–P6	.S..GP	KCU25	**.S..GP**	**KCU25**	.S..GP	KCPM40
M1–M2	.S..GP	KCU25	**.S..GP**	**KCPM40**	.S..GP	KCPM40
M3	.S..GP	KCU25	**.S..GP**	**KCPM40**	.S..GP	KCPM40
K1–K2	.S..GP	KCU25	**.S..GP**	**KCPK30**	.S..GP	KCPK30
K3	.S..GP	KCU25	**.S..GP**	**KCPK30**	.S..GP	KCPK30
N1–N2	–	–	**.S..GP**	**KCU25**	–	–
N3	–	–	**.S..GP**	**KCU25**	–	–
S1–S2	.S..GP	KCU25	**.S..GP**	**KCU25**	.S..GP	KCU25
S3	.S..GP	KCU25	**.S..GP**	**KCU25**	.S..GP	KCU25
S4	.S..GP	KCU25	**.S..GP**	**KCU25**	.S..GP	KCU25

KNS • RECOMMENDED STARTING FEEDS [MM]

	Light Machining	General Purpose	Heavy Machining

Insert Geometry	Recommended Starting Feed per Tooth (Fz) in Relation to % of Radial Engagement (ae)												Insert Geometry
	5%			10%			20%			30%			
.S..GP	0,13	**0,28**	0,35	0,09	**0,20**	0,32	0,07	**0,15**	0,32	0,06	**0,12**	0,30	.S..GP

NOTE: Use "Light Machining" values as starting feed rate.
% = ae/Dc * 100 (ae = radial depth of cut, Dc = cutting diameter).

KNS • RECOMMENDED STARTING SPEEDS [M/MIN]

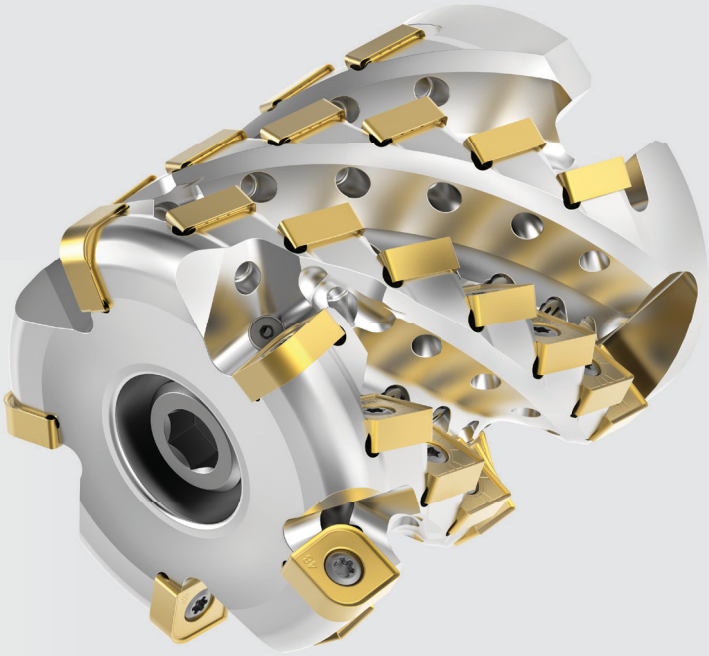
Material Group		KCPK30			KCPM40			KCU25		
P	1	365	**320**	270	200	**190**	150	260	**230**	215
	2	280	**255**	230	190	**175**	140	220	**190**	160
	3	255	**230**	205	170	**145**	120	200	**170**	140
	4	190	**175**	160	150	**130**	90	180	**150**	120
	5	260	**230**	210	105	**75**	60	150	**135**	120
	6	160	**135**	120	75	**60**	50	130	**100**	80
M	1	–	**–**	–	170	**150**	135	210	**170**	135
	2	–	**–**	–	155	**130**	110	170	**150**	110
	3	–	**–**	–	115	**100**	80	130	**120**	85
K	1	260	**230**	205	–	**–**	–	270	**220**	170
	2	235	**210**	190	–	**–**	–	230	**190**	160
	3	195	**175**	160	–	**–**	–	210	**160**	140
N	1	–	**–**	–	–	**–**	–	760	**680**	400
	2	–	**–**	–	–	**–**	–	710	**550**	350
	3	–	**–**	–	–	**–**	–	620	**490**	320
S	1	–	**–**	–	–	**–**	–	30	**25**	20
	2	–	**–**	–	–	**–**	–	30	**25**	20
	3	–	**–**	–	–	**–**	–	40	**30**	20
	4	–	**–**	–	–	**–**	–	55	**40**	25

NOTE: FIRST choice starting speeds are in **bold** type.
Do not exceed max RPM. Reduce speed if necessary.

POWERED BY NOVO

HARVI™ Ultra 8X

with Flange Mount Adaptors



Materials

P M S

Applications

- Shoulder Milling
- Shoulder/Slot Milling
- Chamfer Milling
- Pocketing
- Profile Milling

kennametal.com/Harvi-Ultra-8X

Up to 8 cutting edges per insert. That's helical milling at the lowest possible cost-per-edge.

HARVI Ultra 8X helical milling cutters are designed to deliver the highest metal removal rates (MRR), especially in high-temperature alloys.

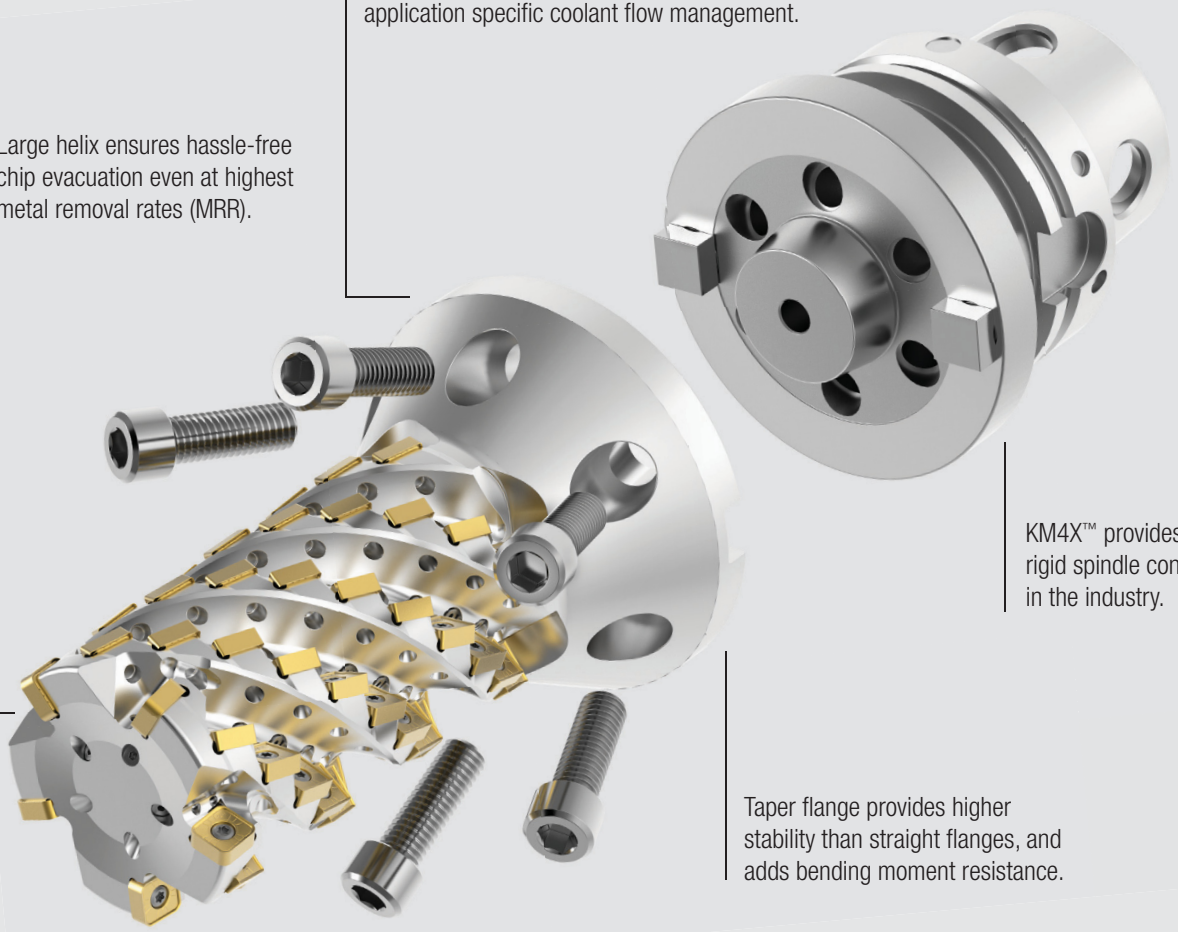
Lead inserts in various corner radii available, matching the needs of the aerospace industry.

HARVI Ultra 8x Taper Flange Adaptors achieve maximum tool stiffness and maximum tool life.

Ideal for machines specifically designed to produce airframe structural parts.

Adjustable coolant nozzles support chip evacuation and control heat in the cutting zone, allowing application specific coolant flow management.

Large helix ensures hassle-free chip evacuation even at highest metal removal rates (MRR).

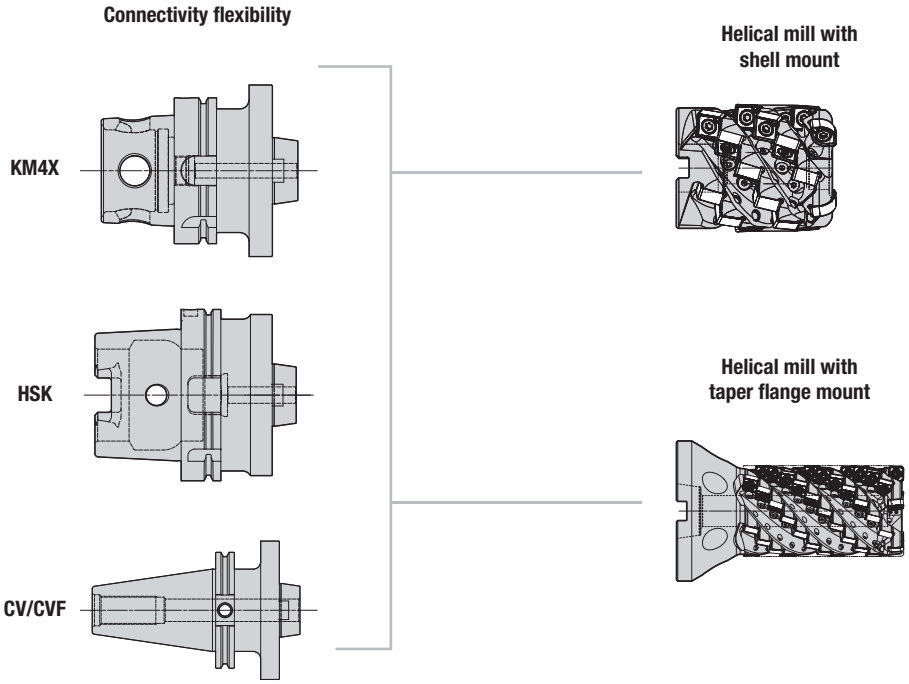


KM4X™ provides most rigid spindle connection in the industry.

Taper flange provides higher stability than straight flanges, and adds bending moment resistance.

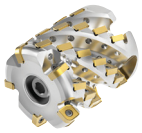
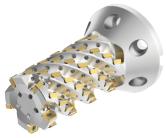
HARVI™ Ultra 8X cutters with different lead row pocket designs available. Especially for applications that require larger corner radii.

Connectivity flexibility



Shoulder Milling

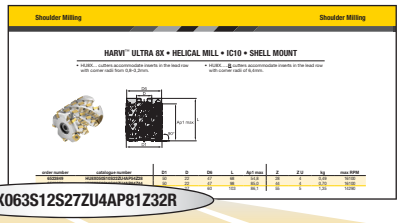
HARVI™ ULTRA 8X • TOOL SELECTION GUIDE

	HARVI Ultra 8X			
	SHELL MOUNT		TAPER FLANGE MOUNT	
				
Page	80, 83		80, 83	
Main operation				
Cutter diameter [D1]	50–80mm		50–80mm	
Maximum cutting depth [Ap1 max]	50,9–102,2mm		100,0–132,9mm	
Insert size IC	10 & 12mm		10 & 12mm	
Number of inserts per cutter [Z]	15–55		40–55	
Number of flutes per cutter [ZU]	3–5		4–5	
Internal coolant	✔		✔	
Additional operations				
Connection Style Machine Side (CSMS)				
Fits regular shell mill adaptors	✔		—	
Pilot diameter flange mount extension	22–32mm		117mm	
Flange mount size	BTF46		BTF46	
				
Cutting edges	8	4	8	4
Corner radius for 10mm inserts on 1st row	0,8mm	1,6–6,4mm	0,8mm	1,6–6,4mm
Corner radius for 10mm inserts after 1st row	0,8mm		0,8mm	
Corner radius for 12mm inserts on 1st row	0,8–2,4mm	3,2–6,4mm	0,8–2,4mm	3,2–6,4mm
Corner radius for 12mm inserts after 1st row	0,8mm		0,8mm	
Workpiece materials	P M S		P M S	

Shoulder Milling

HARVI™ ULTRA 8X • CATALOGUE NUMBERING SYSTEM • CUTTERS

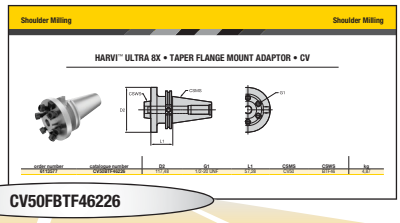
Each character in our catalogue number signifies a specific trait of that product. Use the following key columns and corresponding images to easily identify which attributes apply.



HU8X063S12S27ZU4AP81Z32R

HU8X	063	S12	S27	ZU4	AP81	Z32	R
HARVI Ultra 8X	Cutter Diameter	Insert Style and IC	Connection Style Machine Side (CSMS)	Number of Flutes	Maximum DoC	Number of Inserts	Large Radii
		S10 = IC10mm **S12** = IC12mm	**S** = Shell Mill **F** = Flange BTF46 *Back end or Monoblock supplied as custom solution: KM4X™, HSK, CV, DV, etc.				*Cutters with an 'R' at the end have a 1st row that accepts larger corner radii.

TAPER FLANGE MOUNTING ADAPTORS • CATALOGUE NUMBERING SYSTEM



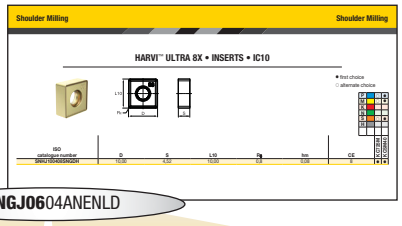
CV50FBTF46226

CV	50	F	BTF	46	226
Connection Style Machine Side (CSMS)	Connection Size	Special Feature	Connection Style Workpiece Side (CSWS)	Connection Size	Tool Length
CV = CAT Shank Style ANSI B5.50 **HSK** = HSK Shank Style DIN 69893-1 **KM4X**™ = KM4X Shank Style	**40** = 40 **50** = 50 **100** = 100 **125** = 125	**F** = Face Contact—Face Contact (Not Interchangeable with CVKV Tooling)	**BTF** = Bolt Taper Flange	**46** = 46mm	Gage Line of Toolholder

Shoulder Milling

HARVI™ ULTRA 8X • CATALOGUE NUMBERING SYSTEM • INSERTS

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



HNGJ0604ANENLD

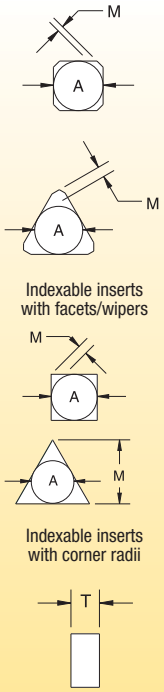
H — Insert Shape

A	Parallelogram 85°	
C	Rhomboid 80°	
E	75°	
H	Hexagon 120°	
L	Rectangular 90°	
O	Octagon 135°	
R	Round —	
S	Square 90°	
T	Triangular 60°	
X	Kennametal Standard Form	

N — Insert Clearance Angle

A	3°
B	5°
C	7°
D	15°
E	20°
F	25°
G	30°
N	0°
P	11°

G — Tolerance Class



J — Geometry and Clamping Type

06 — Size

A	"L" for shapes						
	C	T	R	O	C	H	E
6,00	–	–	06	–	–	–	–
6,35	06	11	06	02	06	03	06
8,00	–	–	08	–	–	–	–
9,52	09	16	09	04	09	05	09
10,00	–	–	10	–	–	–	–
12,00	–	–	12	–	–	–	–
12,70	12	22	12	05	12	07	13
15,88	15	27	15	06	16	09	16
16,00	–	–	16	–	–	–	–
19,05	19	33	19	07	19	11	19
20,00	–	–	20	–	–	–	–
25,00	–	–	25	–	–	–	–
25,40	25	44	25	10	25	14	26

For shapes A, L, and X, see position #1; use length of leading cutting edge.

tolerance class	tolerance on "A"	tolerance on "M"	tolerance on "T"	tolerance class	tolerance on "A"	tolerance on "M"	tolerance on "T"
A	0,025	0,005	0,025	J	0,05–0,13*	0,005	0,025
B	0,025	0,005	0,13	K	0,05–0,13*	0,013	0,025
C	0,025	0,013	0,025	L	0,05–0,13*	0,025	0,025
D	0,025	0,013	0,13	M	0,05–0,10*	0,05–0,25*	0,13
E	0,025	0,025	0,025	N	0,05–0,10*	0,05–0,25*	0,025
F	0,013	0,005	0,025	P**	0,038	0,038	0,038
G	0,025	0,025	0,13	U	0,08–0,25*	0,13–0,30*	0,13
H	0,013	0,013	0,025	—	—	—	—

*See table below for tolerances according to insert size and class.
**Kennametal standard only.

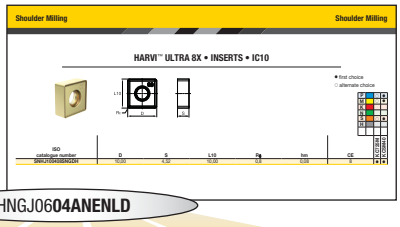
A	tolerances on "A"		tolerances on "M"	
	classes J, K, L, M, N	class U	classes M & N	class U
4,76–10,00	0,051	0,076	0,076	0,127
11,11–14,29	0,076	0,127	0,127	0,203
15,00–20,64	0,102	0,178	0,152	0,279
22,00–31,16	0,127	0,254	0,178	0,381
31,75–35,00	0,152	0,254	0,203	0,381

symbol	hole	shape of hole	chipbreaker	shape of insert's section
N	without		without	
R			single sided	
F			double sided	
A	with	cylindrical hole	without	
M			single sided	
G			double sided	
W		partly cylindrical hole, 40–60° countersink	without	
T			single sided	
Q		partly cylindrical hole, 40–60° double countersink	without	
U			double sided	
B		partly cylindrical hole, 70–90° countersink	without	
H			single sided	
C		partly cylindrical hole, 70–90° double countersink	without	
J			double sided	
X	special design			

Shoulder Milling

HARVI™ ULTRA 8X • CATALOGUE NUMBERING SYSTEM • INSERTS

(continued)

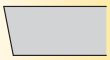


HNGJ06**04ANENLD**

04	AN	E	N	L	D	
Thickness	Corner Configuration	Cutting Edge Form	Insert Hand	Edge Prep Size	Rake Face Angle	Added Info

insert thickness

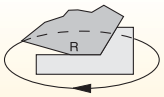
T	
2,38	02
3,18	03
3,97	T3
4,76	04
5,56	05
6,35	06
7,94	07

F 
Sharp

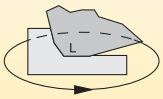
E 
Honed

T 
T-land

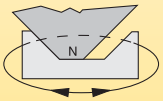
S 
Honed T-land



direction of cutter rotation

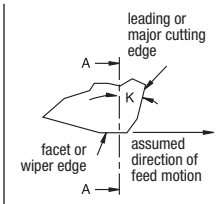


direction of cutter rotation



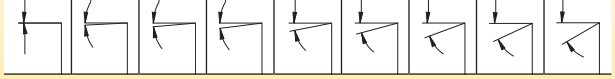
direction of cutter rotation

J = Polished rake face
P = Partial T-land
W = Wiper/radiused facet
H = Helical

radius				wiper edge clearance P	
M0	round insert			A	3°
01	0,1mm			B	5°
02	0,2mm			C	7°
04	0,4mm	If letter is replaced by number(s), refer to table for radius "r".		D	15°
05	0,5mm			E	20°
08	0,8mm			F	25°
10	1,0mm			G	30°
12	1,2mm	lead angle K		N	0°
15	1,5mm	A	45°	P	11°
16	1,6mm	D	60°		
24	2,4mm	E	75°		
32	3,2mm	P	90°		

L = Light — sharp or lightly honed and/or T-land
G = General — medium hone and/or T-land
H = Heavy — large hone and/or T-land

N	A	B	C	P	D	E	F	G
0° or less	3°	5°	7°	11°	15°	20°	25°	30°

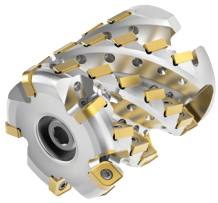


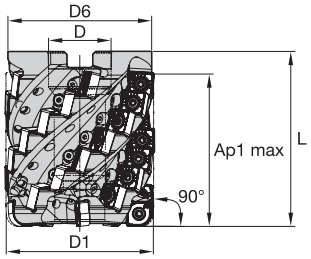
Nominal or average angle of rake on insert face at leading cutting edge before edge prep and before installation.

Shoulder Milling

HARVI™ ULTRA 8X • HELICAL MILL • IC10 • SHELL MOUNT

- HU8X… cutters accommodate inserts in the lead row with corner radii from 0,8–3,2mm.
- HU8X…..**R** cutters accommodate inserts in the lead row with corner radii of 6,4mm.





order number	catalogue number	D1	D	D6	L	Ap1 max	Z	Z U	kg	max RPM
6523849	HU8X050S10S22ZU4AP54Z28	50	22	47	68	54,8	28	4	0,49	16100
6523850	HU8X050S10S22ZU4AP84Z44	50	22	47	98	85,0	44	4	0,70	16100
6524711	HU8X063S10S27ZU5AP86Z55	63	27	60	103	86,1	55	5	1,35	14290

HARVI ULTRA 8X • HELICAL MILL • IC10 • TAPER FLANGE MOUNT

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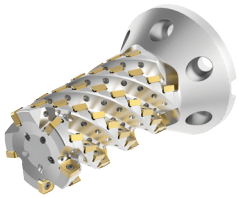
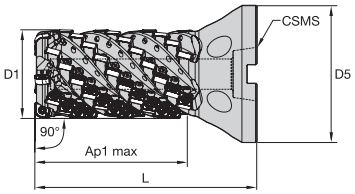


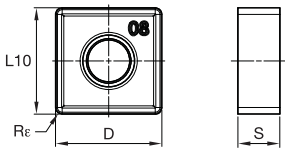


order number	catalogue number	D1	D5	CSMS	L	Ap1 max	Z	Z U	kg	max RPM
6523956	HU8X050S10F462ZU4AP100Z52	50	117	BTF46	178	100,0	52	4	3,70	16100

121	122	77	4	124

Shoulder Milling

HARVI™ ULTRA 8X • INSERTS • IC10

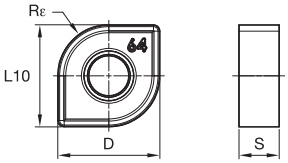


● first choice
○ alternate choice

P	○	●
M	○	●
K		
N		
S	○	●
H		

ISO catalogue number	D	S	L10	Rε	hm	CE	KC725M	KCSM40
SNHJ100408SNGDH	10,00	4,52	10,00	0,8	0,08	8	●	●

HARVI ULTRA 8X • INSERTS • IC10 • LEAD ROW ONLY



P	○	●
M	○	●
K		
N		
S	○	●
H		

ISO catalogue number	D	S	L10	Rε	hm	CE	KC725M	KCSM40
SNHJ100416SNGDH	10,00	4,52	10,00	1,6	0,08	4	–	●
SNHJ100424SNGDH	10,00	4,52	10,00	2,4	0,08	4	–	●
SNHJ100432SNGDH	10,00	4,52	10,00	3,2	0,08	4	–	●
SNHJ100448SNGDH	10,00	4,52	10,00	4,8	0,08	4	–	●
SNHJ100464SNGDH	10,00	4,52	10,00	6,4	0,08	4	●	●

121	122	78	4	124

Shoulder Milling

HARVI™ ULTRA 8X • INSERT SELECTION GUIDE • IC10

Material Group	Light Machining (Light geometry)		General Purpose		Heavy Machining (Strong geometry)	
	wear resistance		◄——►		toughness	
	Geometry	Grade	Geometry	Grade	Geometry	Grade
P1–P2	–	–	**–**	**–**	–	–
P3–P4	–	–	**–**	**–**	–	–
P5–P6	.S..GDH	KCSM40	**.S..GDH**	**KCSM40**	.S..GDH	KCSM40
M1–M2	.S..GDH	KCSM40	**.S..GDH**	**KCSM40**	.S..GDH	KCSM40
M3	.S..GDH	KCSM40	**.S..GDH**	**KCSM40**	.S..GDH	KCSM40
K1–K2	–	–	**–**	**–**	–	–
K3	–	–	**–**	**–**	–	–
N1–N2	–	–	**–**	**–**	–	–
N3	–	–	**–**	**–**	–	–
S1–S2	.S..GDH	KCSM40	**.S..GDH**	**KCSM40**	.S..GDH	KCSM40
S3	.S..GDH	KCSM40	**.S..GDH**	**KCSM40**	.S..GDH	KCSM40
S4	.S..GDH	KCSM40	**.S..GDH**	**KCSM40**	.S..GDH	KCSM40
H1	**–**	**–**	–	–	–	–

HARVI ULTRA 8X • RECOMMENDED STARTING FEEDS [MM] • IC10

Light Machining	General Purpose	Heavy Machining

Material	Insert Geometry	Recommended Starting Feed per Tooth (Fz) in Relation to % of Radial Engagement (ae)															Insert Geometry
		5%			10%			20%			30%			40–100%			
P5	.S..GDH	–	**–**	–	0,18	**0,26**	0,40	0,16	**0,23**	0,36	0,13	**0,19**	0,29	0,07	**0,10**	0,16	.S..GDH
P6	.S..GDH	–	**–**	–	0,18	**0,21**	0,33	0,16	**0,19**	0,29	0,13	**0,15**	0,24	0,07	**0,08**	0,13	.S..GDH
M1	.S..GDH	–	**–**	–	0,18	**0,24**	0,38	0,16	**0,22**	0,34	0,13	**0,18**	0,27	0,07	**0,10**	0,15	.S..GDH
M2	.S..GDH	–	**–**	–	0,18	**0,24**	0,38	0,16	**0,22**	0,34	0,13	**0,18**	0,27	0,07	**0,10**	0,15	.S..GDH
M3	.S..GDH	–	**–**	–	0,18	**0,21**	0,33	0,16	**0,19**	0,29	0,13	**0,15**	0,24	0,07	**0,08**	0,13	.S..GDH
S1	.S..GDH	–	**–**	–	0,18	**0,16**	0,25	0,16	**0,15**	0,22	0,13	**0,12**	0,18	0,07	**0,07**	0,10	.S..GDH
S2	.S..GDH	–	**–**	–	0,18	**0,16**	0,25	0,16	**0,15**	0,22	0,13	**0,12**	0,18	0,07	**0,07**	0,10	.S..GDH
S3	.S..GDH	–	**–**	–	0,18	**0,21**	0,33	0,16	**0,19**	0,29	0,13	**0,15**	0,24	0,07	**0,08**	0,13	.S..GDH
S4	.S..GDH	–	**–**	–	0,18	**0,24**	0,38	0,16	**0,22**	0,34	0,13	**0,18**	0,27	0,07	**0,10**	0,15	.S..GDH

NOTE: Use “General Purpose” values as starting feed rate (ae = radial depth of cut, Dc = cutting diameter).

HARVI ULTRA 8X • RECOMMENDED STARTING SPEEDS [M/MIN] • IC10

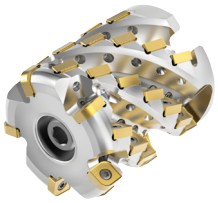
Material Group		KC725M			KCSM40		
P	1	–	**–**	–	–	**–**	–
	2	–	**–**	–	–	**–**	–
	3	–	**–**	–	–	**–**	–
	4	–	**–**	–	–	**–**	–
	5	120	**110**	95	250	**138**	125
	6	105	**80**	65	225	**127**	115
M	1	135	**120**	110	270	**127**	115
	2	125	**105**	90	270	**127**	115
	3	90	**80**	65	200	**88**	80
K	1	–	**–**	–	–	**–**	–
	2	–	**–**	–	–	**–**	–
	3	–	**–**	–	–	**–**	–
N	1	–	**–**	–	–	**–**	–
	2	–	**–**	–	–	**–**	–
	3	–	**–**	–	–	**–**	–
S	1	30	**25**	20	60	**27**	23
	2	30	**25**	20	50	**27**	21
	3	35	**30**	20	55	**32**	24
	4	45	**35**	25	80	**45**	35
H	1	–	**–**	–	–	**–**	–
	2	–	**–**	–	–	**–**	–
	3	–	**–**	–	–	**–**	–

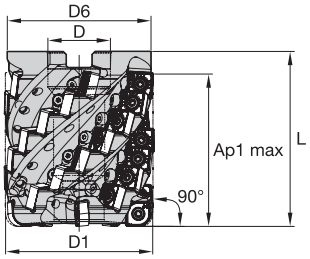
NOTE: FIRST choice starting speeds are in **bold** type.
Do not exceed max RPM. Reduce speed if necessary.

Shoulder Milling

HARVI™ ULTRA 8X • HELICAL MILL • IC12 • SHELL MOUNT

- HU8X… cutters accommodate inserts in the lead row with corner radii from 0,8–3,2mm.
- HU8X…..**R** cutters accommodate inserts in the lead row with corner radii from 4,8–6,4mm.

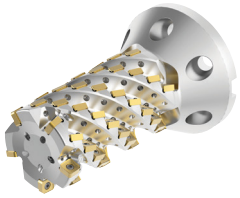


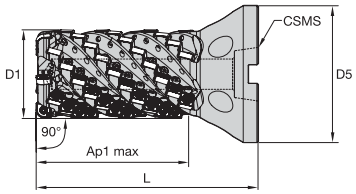


order number	catalogue number	D1	D	D6	L	Ap1 max	Z	Z U	kg	max RPM
6524712	HU8X050S12S22ZU3AP50Z15	50	22	49	75	50,9	15	3	0,57	16400
6524713	HU8X050S12S22ZU3AP70Z21	50	22	49	95	71,0	21	3	0,69	16400
6524714	HU8X063A12S27ZU4AP60Z24	63	27	60	75	60,8	24	4	0,88	14600
6423303	HU8X063S12S27ZU4AP81Z32R	63	27	60	95	81,2	32	4	1,11	14600
6423302	HU8X063S12S27ZU4AP81Z32	63	27	60	95	81,2	32	4	1,11	14600
6524715	HU8X080S12S32ZU5AP72Z35	80	32	78	90	72,0	35	5	2,02	12900
6423305	HU8X080S12S32ZU5AP102Z50R	80	32	77	115	102,2	50	5	2,46	12900
6423304	HU8X080S12S32ZU5AP102Z50	80	32	77	115	102,2	50	5	2,46	12900

HARVI ULTRA 8X • HELICAL MILL • IC12 • TAPER FLANGE MOUNT

- HU8X… cutters accommodate inserts in the lead row with corner radii from 0,8–3,2mm.
- HU8X…..**R** cutters accommodate inserts in the lead row with corner radii from 4,8–6,4mm.



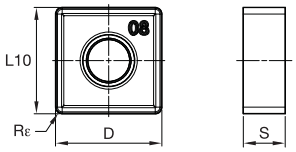


order number	catalogue number	D1	D5	CSMS	L	Ap1 max	Z	Z U	kg	max RPM
6524716	HU8X063S12F462ZU4AP100Z40R	63	117	BTF46	175	101,5	40	4	3,91	14600
6524717	HU8X080S12F462ZU5AP133Z65R	80	117	BTF46	204	132,9	65	5	2,46	12900

121	122	77	4	124

Shoulder Milling

HARVI™ ULTRA 8X • INSERTS • IC12

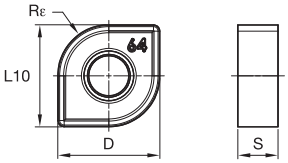


● first choice
○ alternate choice

P	○	●
M	○	●
K		
N		
S	○	●
H		

ISO catalogue number	D	S	L10	Rε	hm	CE	KC725M	KCSM40
SNHJ120608SNGDH	12,70	4,52	12,70	0,8	0,08	8	●	●

HARVI ULTRA 8X • INSERTS • IC12 • LEAD ROW ONLY



P	○	●
M	○	●
K		
N		
S	○	●
H		

ISO catalogue number	D	S	L10	Rε	hm	CE	KC725M	KCSM40
SNHJ120616SNGDH	12,70	4,52	12,70	1,6	0,08	8	–	●
SNHJ120624SNGDH	12,70	4,52	12,70	2,4	0,08	8	–	●
SNHJ120632SNGDH	12,70	4,52	12,70	3,2	0,08	4	–	●
* **SNHJ120640SNGDH**	12,70	4,52	12,70	4,0	0,08	4	–	●
SNHJ120648SNGDH	12,70	4,52	12,70	4,8	0,08	4	–	●
SNHJ120660SNGDH	12,70	4,52	12,70	6,0	0,08	4	–	●
SNHJ120664SNGDH	12,70	4,52	12,70	6,4	0,08	4	●	●

*SNHJ120640SNGDH requires modification of the cutter body.

				
121	122	78	4	124

Shoulder Milling

HARVI™ ULTRA 8X • INSERT SELECTION GUIDE • IC12

Material Group	Light Machining (Light geometry)		General Purpose		Heavy Machining (Strong geometry)	
	wear resistance		◄——►		toughness	
	Geometry	Grade	Geometry	Grade	Geometry	Grade
P1–P2	–	–	**–**	**–**	–	–
P3–P4	–	–	**–**	**–**	–	–
P5–P6	.S..GDH	KCSM40	**.S..GDH**	**KCSM40**	.S..GDH	KCSM40
M1–M2	.S..GDH	KCSM40	**.S..GDH**	**KCSM40**	.S..GDH	KCSM40
M3	.S..GDH	KCSM40	**.S..GDH**	**KCSM40**	.S..GDH	KCSM40
K1–K2	–	–	**–**	**–**	–	–
K3	–	–	**–**	**–**	–	–
N1–N2	–	–	**–**	**–**	–	–
N3	–	–	**–**	**–**	–	–
S1–S2	.S..GDH	KCSM40	**.S..GDH**	**KCSM40**	.S..GDH	KCSM40
S3	.S..GDH	KCSM40	**.S..GDH**	**KCSM40**	.S..GDH	KCSM40
S4	.S..GDH	KCSM40	**.S..GDH**	**KCSM40**	.S..GDH	KCSM40
H1	**–**	**–**	–	–	–	–

HARVI ULTRA 8X • RECOMMENDED STARTING FEEDS [MM] • IC12

Light Machining	General Purpose	Heavy Machining

Material	Insert Geometry	Recommended Starting Feed per Tooth (Fz) in Relation to % of Radial Engagement (ae)															Insert Geometry
		5%			10%			20%			30%			40–100%			
P5	.S..GDH	–	**–**	–	0,18	**0,29**	0,45	0,16	**0,26**	0,40	0,13	**0,21**	0,33	0,07	**0,12**	0,18	.S..GDH
P6	.S..GDH	–	**–**	–	0,18	**0,24**	0,38	0,16	**0,22**	0,34	0,13	**0,18**	0,27	0,07	**0,10**	0,15	.S..GDH
M1	.S..GDH	–	**–**	–	0,18	**0,28**	0,43	0,16	**0,25**	0,38	0,13	**0,20**	0,31	0,07	**0,11**	0,17	.S..GDH
M2	.S..GDH	–	**–**	–	0,18	**0,28**	0,43	0,16	**0,25**	0,38	0,13	**0,20**	0,31	0,07	**0,11**	0,17	.S..GDH
M3	.S..GDH	–	**–**	–	0,18	**0,24**	0,38	0,16	**0,22**	0,34	0,13	**0,18**	0,27	0,07	**0,10**	0,15	.S..GDH
S1	.S..GDH	–	**–**	–	0,18	**0,20**	0,30	0,16	**0,17**	0,27	0,13	**0,14**	0,22	0,07	**0,08**	0,12	.S..GDH
S2	.S..GDH	–	**–**	–	0,18	**0,20**	0,30	0,16	**0,17**	0,27	0,13	**0,14**	0,22	0,07	**0,08**	0,12	.S..GDH
S3	.S..GDH	–	**–**	–	0,18	**0,23**	0,35	0,16	**0,20**	0,31	0,13	**0,17**	0,26	0,07	**0,09**	0,14	.S..GDH
S4	.S..GDH	–	**–**	–	0,18	**0,28**	0,43	0,16	**0,25**	0,38	0,13	**0,20**	0,31	0,07	**0,11**	0,17	.S..GDH

NOTE: Use “General Purpose” values as starting feed rate (ae = radial depth of cut, Dc = cutting diameter).

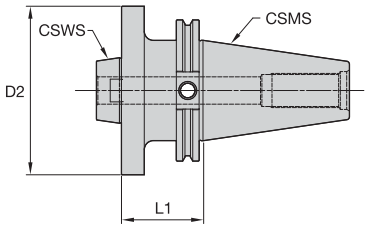
HARVI ULTRA 8X • RECOMMENDED STARTING SPEEDS [M/MIN] • IC12

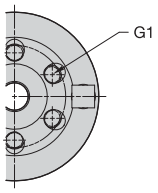
Material Group		KC725M			KCSM40		
P	1	–	**–**	–	–	**–**	–
	2	–	**–**	–	–	**–**	–
	3	–	**–**	–	–	**–**	–
	4	–	**–**	–	–	**–**	–
	5	120	**110**	95	250	**138**	125
	6	105	**80**	65	225	**127**	115
M	1	135	**120**	110	270	**127**	115
	2	125	**105**	90	270	**127**	115
	3	90	**80**	65	200	**88**	80
K	1	–	**–**	–	–	**–**	–
	2	–	**–**	–	–	**–**	–
	3	–	**–**	–	–	**–**	–
N	1	–	**–**	–	–	**–**	–
	2	–	**–**	–	–	**–**	–
	3	–	**–**	–	–	**–**	–
S	1	30	**25**	20	60	**27**	23
	2	30	**25**	20	50	**27**	21
	3	35	**30**	20	55	**32**	24
	4	45	**35**	25	80	**45**	35
H	1	–	**–**	–	–	**–**	–
	2	–	**–**	–	–	**–**	–
	3	–	**–**	–	–	**–**	–

NOTE: FIRST choice starting speeds are in **bold** type.
Do not exceed max RPM. Reduce speed if necessary.

Shoulder Milling

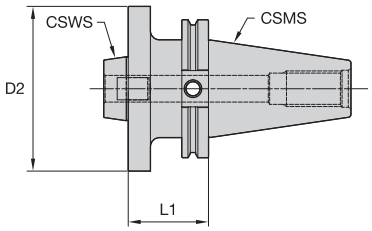
HARVI™ ULTRA 8X • TAPER FLANGE MOUNT ADAPTOR • CV

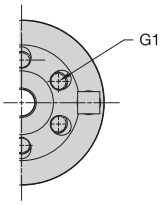




order number	catalogue number	D2	G1	L1	CSMS	CSWS	kg
6113577	**CV50BTF46226**	117,48	1/2-20 UNF	57,28	CV50	BTF46	4,87

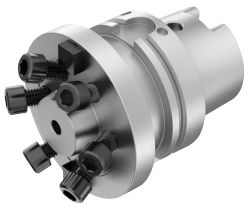
HARVI ULTRA 8X • TAPER FLANGE MOUNT ADAPTOR • CVF

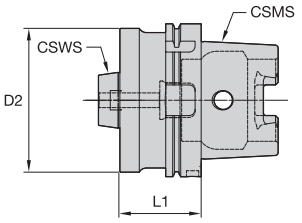


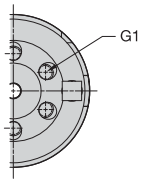


order number	catalogue number	D2	G1	L1	CSMS	CSWS	kg
6113578	**CV50FBTF46226**	117,48	1/2-20 UNF	57,28	CV50F	BTF46	4,95
5996208	**CV60FBTF46245**	117,48	1/2-20 UNF	62,25	CV60F	BTF46	13,56

HARVI ULTRA 8X • TAPER FLANGE MOUNT ADAPTOR • HSK A





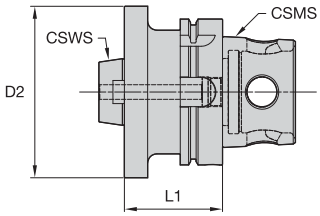


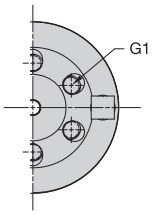
order number	catalogue number	D2	G1	L1	CSMS	CSWS	kg
6113478	**HSK125ABTF46262**	117,48	1/2-20 UNF	66,43	HSK125A	BTF46	6,65
6113477	**HSK100ABTF46265**	117,48	1/2-20 UNF	67,24	HSK100A	BTF46	4,81

122	77	4	124

Shoulder Milling

HARVI™ ULTRA 8X • TAPER FLANGE MOUNT ADAPTOR • KM4X™





order number	catalogue number	D2	G1	L1	CSMS	CSWS	kg
6285330	**KM4X100BTF46265**	117,48	1/2-20 UNF	67,24	KM4X100	BTF46	5,02

122	77	4	124

POWERED BY NOVO

Hydraulic Chucks

High Performance

Slim Line

HydroForce™

Applications

- Drilling
- Side Milling
- Reaming
- Slotting
- Helix Angle Tapping: 45°
- Ramping
- 3D Profiling
- Plunge Milling

kennametal.com/Hydraulic-Chucks

HydroForce

For any application, providing an unparalleled combination of accuracy and clamping force.

High Performance

Universal solution for drilling and tapping.

Slim Line

For long-reach applications and narrow conditions.

Optimum performance for round-tool applications.

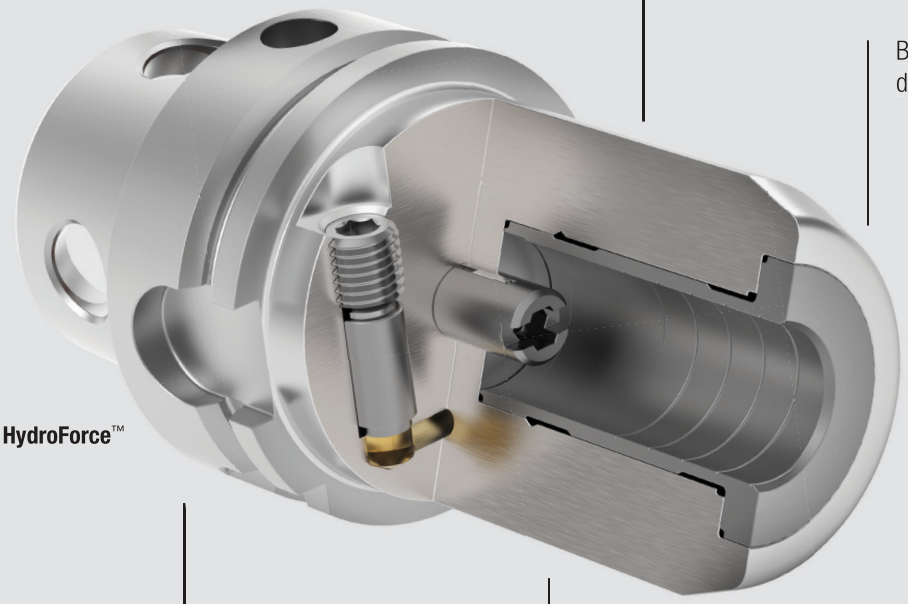
Activation of the chuck is achieved by turning the piston screw, which pressurises the hydraulic fluid and exerts force on a thin-walled membrane along the length of the clamping bore.

This highly concentric clamping force not only holds the tool shank more securely, but also produces a dampening effect that reduces vibration and helps eliminate micro-cracking on cutting edges.

Highest clamping force in the industry.

Diameter 20 and 32mm:
Runout of 3 µm or less at 2.5x diameter overhang
[6 µm for diameter 50mm].

Balanced G2.5 at 25.000 RPM,
delivering precision.



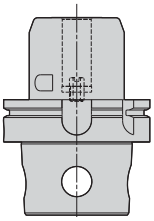
HydroForce™

3 clamping bore sizes for all applications.
20, 32, and 50mm.

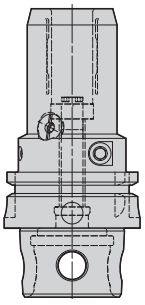
Short projection length and 40% thicker front
wall enabling high cutting parameters and
optimum surface quality.

3x higher clamping force
than High-Performance Line.

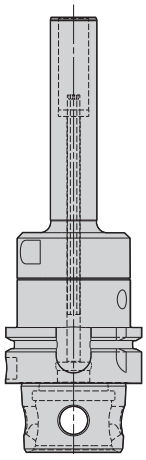
Portfolio



HydroForce™ with
KM4X™ back end.

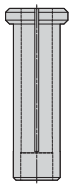


High Performance
with KM4X back end.

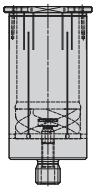


Slim Line with
KM4X back end.

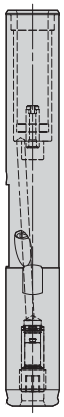
Accessories



Reducer
sleeves



HydroForce Safe-Lock™
reducer sleeves with
pullout protection.

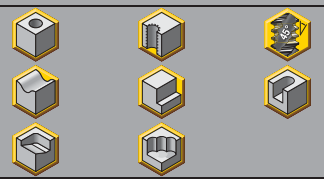


Hydraulic
extensions

Hydraulic Chucks

HYDRAULIC CHUCKS • TOOL SELECTION GUIDE

STEP 1

	HYDRAULIC CHUCK PORTFOLIO		
	HYDROFORCE™	HIGH PERFORMANCE	SLIM LINE
Rigidity	High Rigidity	Moderate Rigidity	Long Reach
Range	20, 32, 50mm	6–32mm	6–20mm
Application recommendation			

STEP 2

	HYDROFORCE HIGH TORQUE						
	KM™	KM4X™	PSC	HSK A	BT	BTKV	DV
							
Page(s)	94, 96	98	101	102	106	109	110
Connection size	KM63TS KM63XMZ	KM4X63 KM4X100	PSC63	HSK63A HSK100A HSK125A	BT40 BT50	BTKV40 BTKV50	DV40 DV50
Rigidity	High Rigidity						
Application recommendation							

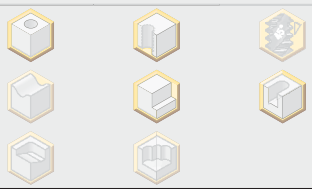
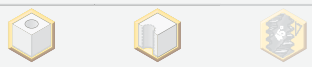
STEP 2

	HIGH PERFORMANCE						
	KM	KM4X	PSC	HSK A	HSK C	BT	DV
							
Page(s)	94, 96	99	101	103	105	106, 107	111
Connection size	KM40TS KM50TS KM63TS KM63XMZ	KM4X63	PSC50 PSC63	HSK40A HSK50A HSK63A HSK80A HSK100A	HSK32C HSK40C HSK50C HSK63C	BT30 BT40 BT50	DV40 DV50
Rigidity	Moderate Rigidity						
Application recommendation							

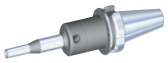
Hydraulic Chucks

HYDRAULIC CHUCKS • TOOL SELECTION GUIDE

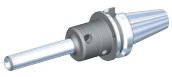
STEP 1

	HYDRAULIC CHUCK PORTFOLIO		
	HYDROFORCE™	HIGH PERFORMANCE	SLIM LINE
Rigidity	High Rigidity	Moderate Rigidity	Long Reach
Range	20, 32, 50mm	6–32mm	6–20mm
Application recommendation			

STEP 2

	SLIM LINE, XS				
	KM™	KM4X™	HSK A	BT	DV
					
Page(s)	95, 97	100	104	108	112
Connection size	KM63TS KM63XMZ	KM4X63 KM4X100	HSK40A HSK63A HSK100A	BT40 BT50	DV40 DV50
Rigidity	Long Reach				
Application recommendation					

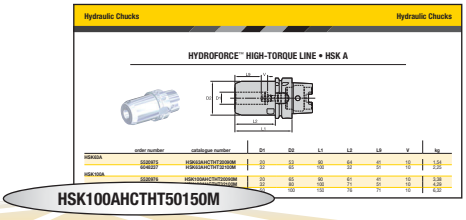
STEP 2

	SLIM LINE				
	KM	KM4X	HSK A	BT	DV
					
Page(s)	95, 97	100	104	108	112
Connection size	KM63TS KM63XMZ	KM4X63 KM4X100	HSK40A HSK63A HSK100A	BT40 BT50	DV40 DV50
Rigidity	Long Reach				
Application recommendation					

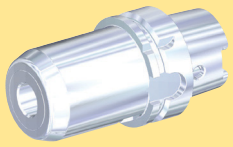
Hydraulic Chucks

HYDRAULIC CHUCKS • CATALOGUE NUMBERING SYSTEM

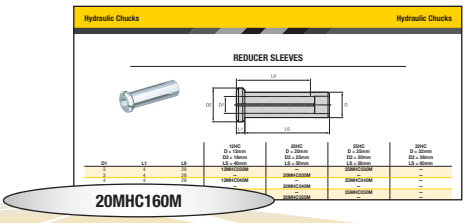
Each character in our catalogue number signifies a specific trait of that product. Use the following key columns and corresponding images to easily identify which attributes apply.



HSK	100	A	HCTHT	50	150	M
Connection Style Machine Side (CSMS)	Connection Size	System Flange Form	Hydraulic Chuck Type	Clamping Diameter	Tool Length	Value
KM™ KM4X™ HSK DV CV BT PSC	30 32 40 50 63 80 100 125	**A** = Form A **C** = Form C **B** = Coolant	**HCTHT** = HydroForce™ **HCSL** = Slim Line **HCSLT** = Slim Line T **HC** = High Performance	50 = 50mm	150 = 150mm	**M** = Metric



REDUCER SLEEVES • CATALOGUE NUMBERING SYSTEM



20	M	HC	160	M
Connection Size	Value	Sleeve Style	Sleeve Bore Size	Value
12 = 12mm 20 = 20mm 32 = 32mm	**M** = Metric	**HC** = Hydraulic Chuck **HCSFC** = Safe-Lock™	100 = 10mm 160 = 16mm 250 = 25mm	**M** = Metric

HydroForce™

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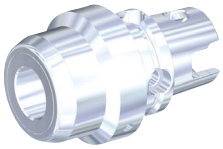
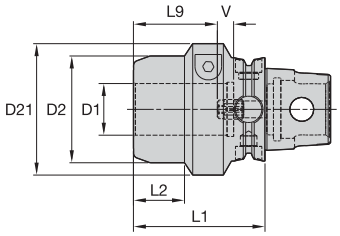
kennametal.com

Hydraulic Chucks

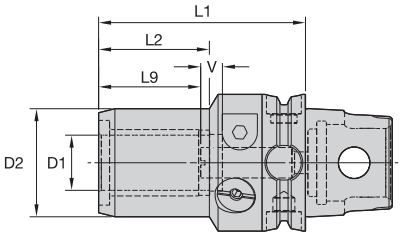
HYDROFORCE™ HIGH-TORQUE LINE • KM-TS™





CSMS	order number	catalogue number	D1	D2	D21	L1	L2	L9	V	kg
KM63TS										
	5520979	**KM63TSHCTHT32080M**	32	65	80	80	31	51	10	2,00

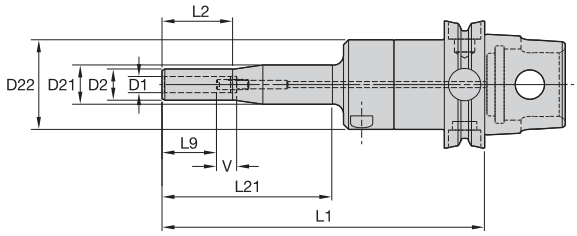
HIGH-PERFORMANCE LINE • KM-TS



CSMS	order number	catalogue number	D1	D2	L1	L2	L9	V	kg
KM40TS									
	3960498	**KM40TSHC06065M**	6	26	65	34	27	10	0,43
	3960499	**KM40TSHC08065M**	8	28	65	34	27	10	0,44
	3960500	**KM40TSHC10070M**	10	30	70	38	31	10	0,49
	3960501	**KM40TSHC12075M**	12	32	75	41	36	10	0,53
KM50TS									
	4007723	**KM50TSHC06065M**	6	26	65	30	27	10	0,63
	4007724	**KM50TSHC08065M**	8	28	65	30	27	10	0,65
	4007725	**KM50TSHC10070M**	10	30	70	36	31	10	0,69
	4007726	**KM50TSHC12075M**	12	32	75	40	36	10	0,73
	4007727	**KM50TSHC14075M**	14	34	75	43	36	10	0,72
	4007728	**KM50TSHC16080M**	16	38	80	47	39	10	0,83
	4007729	**KM50TSHC18080M**	18	40	80	47	39	10	0,85
	4007730	**KM50TSHC20085M**	20	42	85	48	41	10	0,94
KM63TS									
	2388650	**KM63TSHC06070M**	6	26	70	33	27	10	1,08
	2388651	**KM63TSHC08070M**	8	28	70	33	27	10	1,10
	2388652	**KM63TSHC10075M**	10	30	75	36	31	10	1,17
	2388653	**KM63TSHC12080M**	12	32	80	41	36	10	1,21
	2388654	**KM63TSHC14080M**	14	34	80	43	36	10	1,18
	2388655	**KM63TSHC16080M**	16	38	80	48	39	10	1,17
	2388656	**KM63TSHC18080M**	18	40	80	47	39	10	1,19
	2388657	**KM63TSHC20085M**	20	42	85	48	41	10	1,32
	2388658	**KM63TSHC25095M**	25	50	95	51	47	10	1,64
	2388659	**KM63TSHC32100M**	32	60	100	59	51	10	1,92

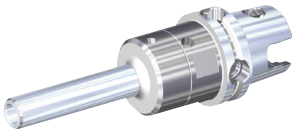
			NOVO
122	92	4	124

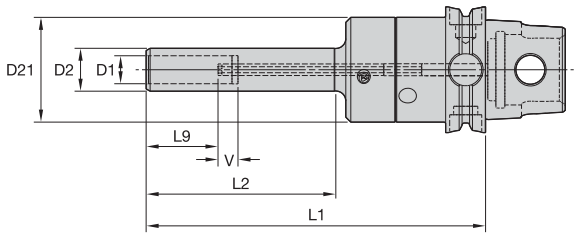
SLIM LINE, XS • KM-TS™



CSMS	order number	catalogue number	D1	D2	D21	D22	L1	L2	L21	L9	V	kg
KM63TS												
	3055503	KM63TSHCSLT06160M	6	14	20	44	160	35	85	27	10	1,35
	3055504	KM63TSHCSLT08160M	8	16	20	44	160	35	85	27	10	1,36

SLIM LINE • KM-TS



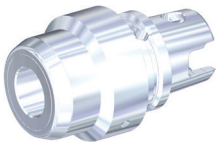


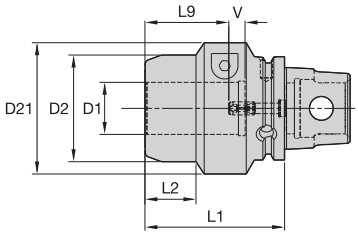
CSMS	order number	catalogue number	D1	D2	D21	L1	L2	L9	V	kg
KM63TS										
	3055505	KM63TSHCSLT10160M	10	18	44	160	85	31	10	1,34
	3055506	KM63TSHCSL12170M	12	20	44	170	95	36	10	1,38
	3055507	KM63TSHCSL14170M	14	22	52	170	95	36	10	1,64
	3055508	KM63TSHCSL16170M	16	24	52	170	95	39	10	1,66
	3055509	KM63TSHCSL18170M	18	26	52	170	95	39	10	1,70
	3055510	KM63TSHCSL20170M	20	28	52	170	95	41	10	1,74

122	92	4	124

Hydraulic Chucks

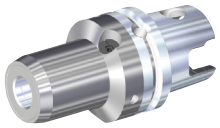
HYDROFORCE™ HIGH-TORQUE LINE • KM-XMZ™

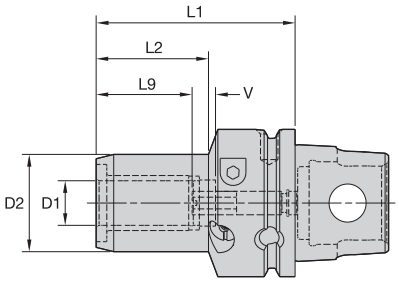




CSMS	order number	catalogue number	D1	D2	D21	L1	L2	L9	V	kg
KM63XMZ										
	5520978	KM63XMZHCTHT32090M	32	65	80	90	41	51	10	2,33

HIGH-PERFORMANCE LINE • KM-XMZ



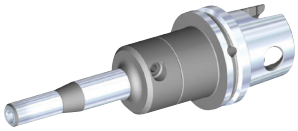


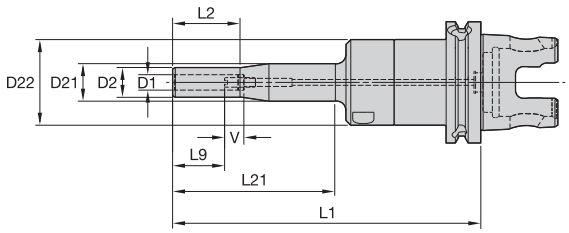
CSMS	order number	catalogue number	D1	D2	L1	L2	L9	V	kg
KM63XMZ									
	1514516	KM63XMZHC2085Y	20	42	85	48	41	10	1,36
	1514517	KM63XMZHC32100Y	32	60	100	59	51	10	1,97

122	92	4	124

Hydraulic Chucks

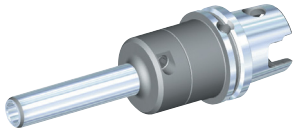
SLIM LINE, XS • KM-XMZ™

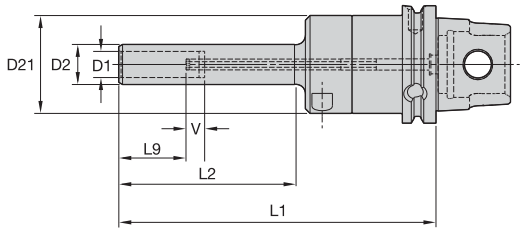




CSMS	order number	catalogue number	D1	D2	D21	D22	L1	L2	L21	L9	V	kg
KM63XMZ												
	3055511	KM63XMZHCSLT06160MY	6	14	20	44	160	35	85	27	10	1,37
	3055512	KM63XMZHCSLT08160MY	8	16	20	44	160	35	85	27	10	1,38

SLIM LINE • KM-XMZ





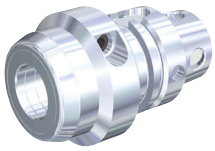
CSMS	order number	catalogue number	D1	D2	D21	L1	L2	L9	V	kg
KM63XMZ										
	3055513	KM63XMZHCSLT10160MY	10	18	44	160	85	31	10	1,36
	3055514	KM63XMZHCSL12170MY	12	20	44	170	95	36	10	1,40
	3055515	KM63XMZHCSL14170MY	14	22	52	170	95	36	10	1,68
	3055516	KM63XMZHCSL16170MY	16	24	52	170	95	39	10	1,70
	3055517	KM63XMZHCSL18170MY *	18	26	52	170	95	39	10	1,74
	3055518	KM63XMZHCSL20170MY	20	28	52	170	95	41	10	1,77

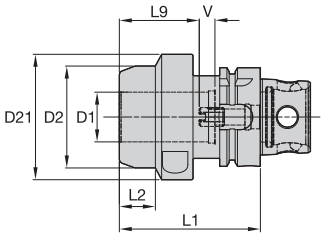
NOTE: *Made-to-order standard item. Standard pricing, manufacturing lead time, and minimum order quantity applies.

122	92	4	124

Hydraulic Chucks

HYDROFORCE™ HIGH-TORQUE LINE • KM4X™



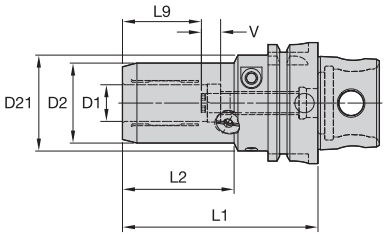


CSMS	order number	catalogue number	D1	D2	D21	L1	L2	L9	V	kg
KM4X63										
	5520990	**KM4X63HCTHT20090M**	20	53	–	90	64	41	10	1,63
	6048253	**KM4X63HCTHT32090M**	32	65	80	90	23	51	10	2,05
KM4X100										
	5520991	**KM4X100HCTHT20085M**	20	65	–	85	56	41	10	3,53
	5520992	**KM4X100HCHT32095M**	32	80	–	95	66	51	10	4,37
NEW	**6381972**	**KM4X100HCTHT50135M**	50	100	105	135	56	71	10	6,87

122	92	4	124

Hydraulic Chucks

HIGH-PERFORMANCE LINE • KM4X™

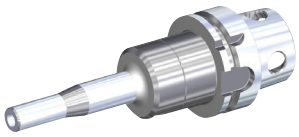


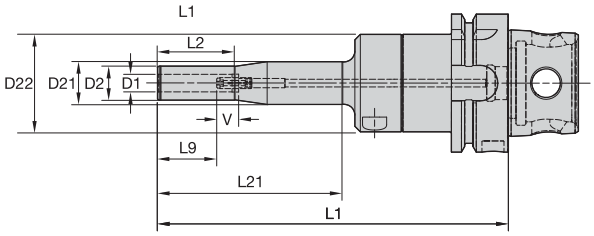
CSMS		order number	catalogue number	D1	D2	D21	L1	L2	L9	V	kg
KM4X63											
	NEW	6480229	KM4X63HC06080M	6	26	50	80	33	27	10	1,09
	NEW	6480499	KM4X63HC06150M	6	26	50	150	105	27	10	1,35
	NEW	6480230	KM4X63HC08080M	8	28	50	80	34	27	10	1,10
	NEW	6480500	KM4X63HC08150M	8	28	50	150	105	27	10	1,42
	NEW	6480491	KM4X63HC10085M	10	30	50	85	39	31	10	1,14
	NEW	6480501	KM4X63HC10150M	10	30	50	150	105	31	10	1,48
	NEW	6480492	KM4X63HC12090M	12	32	50	90	45	36	10	1,18
	NEW	6480502	KM4X63HC12150M	12	32	50	150	105	36	10	1,54
	NEW	6480493	KM4X63HC14090M	14	34	50	90	46	36	10	1,19
	NEW	6480503	KM4X63HC14150M	14	34	50	150	105	36	10	1,59
	NEW	6480494	KM4X63HC16095M	16	38	50	95	52	39	10	1,29
	NEW	6480504	KM4X63HC16150M	16	38	50	150	105	39	10	1,76
	NEW	6480495	KM4X63HC18095M	18	40	50	95	–	39	10	1,31
	NEW	6480505	KM4X63HC18150M	18	40	50	150	105	39	10	1,83
	NEW	6480496	KM4X63HC20100M	20	42	50	100	58	41	10	1,39
	NEW	6480506	KM4X63HC20150M	20	42	50	150	105	41	10	1,91
	NEW	6480497	KM4X63HC25120M	25	50	50	120	51	47	10	2,06
	NEW	6480498	KM4X63HC32125M	32	60	63	125	59	51	10	2,34
KM4X100											
		5437081	KM4X100HC06085M	6	26	63	85	33	27	10	2,85
		5437082	KM4X100HC06150M	6	26	63	150	90	27	10	3,26
		5437083	KM4X100HC08085M	8	28	63	85	33	27	10	2,87
		5437084	KM4X100HC08150M	8	28	63	150	90	27	10	3,32
		5437085	KM4X100HC10090M	10	30	63	90	38	31	10	2,91
		5437086	KM4X100HC10150M	10	30	63	150	94	31	10	3,29
		5437087	KM4X100HC12095M	12	32	63	95	41	36	10	2,97
		5437088	KM4X100HC12150M	12	32	63	150	100	36	10	3,24
		5437089	KM4X100HC14095M	14	34	63	95	42	36	10	2,96
		5437110	KM4X100HC14150M	14	34	63	150	92	36	10	3,40
		5437111	KM4X100HC16100M	16	38	63	100	48	39	10	3,06
		5437112	KM4X100HC16150M	16	38	63	150	96	39	10	3,50
		5437113	KM4X100HC18100M	18	40	63	100	48	39	10	3,08
		5437114	KM4X100HC18150M	18	40	63	150	96	39	10	3,57
		5437115	KM4X100HC20105M	20	42	63	105	54	41	10	3,15
		5437116	KM4X100HC20150M	20	42	63	150	100	41	10	3,60
		5437117	KM4X100HC25115M	25	50	63	115	51	47	10	3,54
		5437118	KM4X100HC25200M	25	50	63	200	137	47	10	4,79
		5437119	KM4X100HC32120M	32	60	63	120	59	51	10	3,82
		5437120	KM4X100HC32200M	32	60	63	200	139	51	10	5,55

122	92	4	124

Hydraulic Chucks

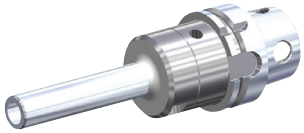
SLIM LINE, XS • KM4X™

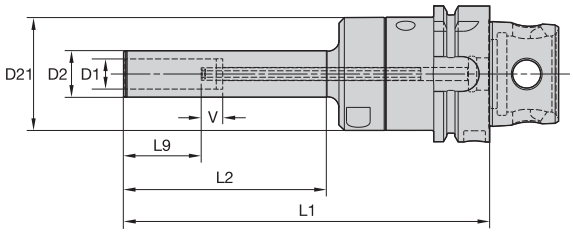




CSMS	order number	catalogue number	D1	D2	D21	D22	L1	L2	L21	L9	V	kg
KM4X63												
	5479913	KM4X63HCSLT06160M	6	14	20	44	160	35	85	27	10	1,38
	5479914	KM4X63HCSLT08160M	8	16	20	44	160	35	85	27	10	1,39
KM4X100												
	5437138	KM4X100HCSLT06200M	6	14	20	44	200	35	85	27	10	3,37
	5437139	KM4X100HCSLT08200M	8	16	20	44	200	35	85	27	10	3,37

SLIM LINE • KM4X



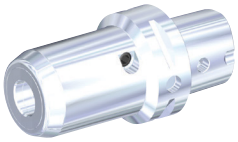


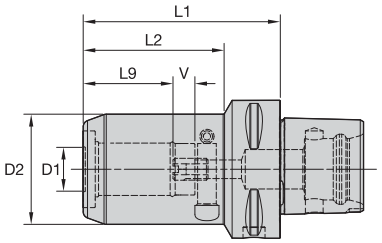
CSMS	order number	catalogue number	D1	D2	D21	L1	L2	L9	V	kg
KM4X63										
	5479915	KM4X63HCSLT10160M	10	18	44	160	85	31	10	1,37
	5479912	KM4X63HCSL12170M	12	20	44	170	95	36	10	1,41
	5549202	KM4X63HCSL14170M	14	22	52	170	95	36	10	1,64
	5549203	KM4X63HCSL16170M	16	24	52	170	95	39	10	1,66
	5549204	KM4X63HCSL18170M	18	26	52	170	95	39	10	1,70
	5549205	KM4X63HCSL20170M	20	28	52	170	95	41	10	1,74
KM4X100										
	5437400	KM4X100HCSLT10200M	10	18	44	200	85	31	10	3,36
	5437401	KM4X100HCSL12200M	12	20	44	200	95	36	10	3,27
	5437402	KM4X100HCSL14200M	14	22	52	200	95	36	10	3,64
	5437403	KM4X100HCSL16200M	16	24	52	200	95	39	10	3,65
	5437404	KM4X100HCSL18200M	18	26	52	200	95	39	10	3,69
	5437405	KM4X100HCSL20200M	20	28	52	200	95	41	10	3,72

122	92	4	124

Hydraulic Chucks

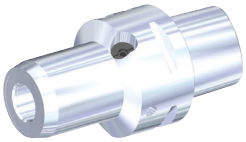
HYDROFORCE™ HIGH-TORQUE LINE • PSC

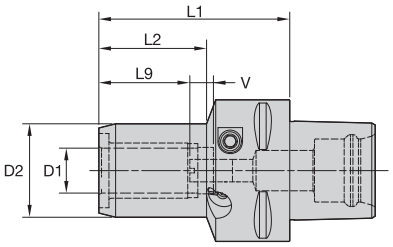




CSMS	order number	catalogue number	D1	D2	L1	L2	L9	V	kg
PSC63									
	6048239	**PSC63HCTHT20090M**	20	50	90	64	41	10	1,64
	6048251	**PSC63HCTHT32095M**	32	80	95	95	51	10	3,08

HIGH-PERFORMANCE LINE • PSC



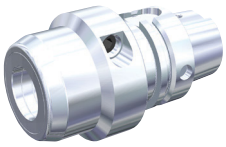


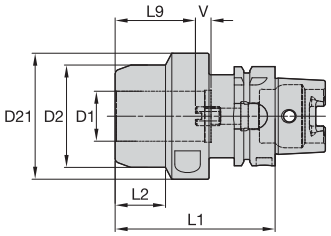
CSMS	order number	catalogue number	D1	D2	L1	L2	L9	V	kg
PSC50									
	6338251	**PSC50HC06065M**	6	26	65	30	27	10	0,69
	6338148	**PSC50HC08065M**	8	28	65	30	27	10	0,71
	6338147	**PSC50HC10070M**	10	30	70	36	31	10	0,75
	6338146	**PSC50HC12075M**	12	32	75	40	36	10	0,80
	6338149	**PSC50HC14075M**	14	34	75	43	36	10	0,79
	6338145	**PSC50HC16080M**	16	38	80	47	39	10	0,90
	6338150	**PSC50HC18080M**	18	40	80	47	39	10	0,92
	6338144	**PSC50HC20085M**	20	42	80	47	41	10	1,01
PSC63									
	4092131	**PSC63HC06070M**	6	26	70	33	27	10	1,15
	4113745	**PSC63HC08070M**	8	28	70	33	27	10	1,17
	4113746	**PSC63HC10075M**	10	30	75	36	31	10	1,24
	4113747	**PSC63HC12080M**	12	32	80	41	36	10	1,28
	4113748	**PSC63HC14080M**	14	34	80	43	36	10	1,27
	4113749	**PSC63HC16080M**	16	38	80	48	39	10	1,26
	4113750	**PSC63HC18080M**	18	40	80	47	39	10	1,29
	4113751	**PSC63HC20085M**	20	42	85	48	41	10	1,41
	4113752	**PSC63HC25095M**	25	50	95	51	47	10	1,74
	4113803	**PSC63HC32100M**	32	60	100	59	51	10	2,02

122	92	4	124

Hydraulic Chucks

HYDROFORCE™ HIGH-TORQUE LINE • HSK A



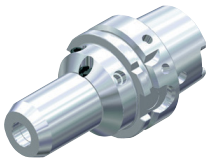


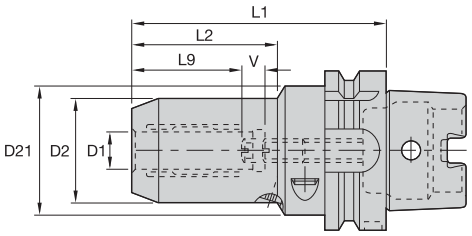
CSMS	order number	catalogue number	D1	D2	D21	L1	L2	L9	V	kg
HSK63A										
	5520975	**HSK63AHCTHT20090M**	20	53	–	90	64	41	10	1,54
	6048237	**HSK63AHCTHT32100M**	32	65	80	100	32	51	10	2,25
HSK100A										
	5520976	**HSK100AHCTHT20090M**	20	65	–	90	61	41	10	3,38
	5520977	**HSK100AHCTHT32100M**	32	80	–	100	71	51	10	4,29
NEW	**6381929**	**HSK100AHCTHT50150M**	50	100	105	150	76	71	10	6,32
HSK125A										
	5883440	**HSK125AHCTHT20095M**	20	65	–	95	66	41	10	4,77
	5883511	**HSK125AHCTHT32105M**	32	80	–	105	76	51	10	5,76
NEW	**6381971**	**HSK125AHCTHT50155M**	50	100	105	155	86	71	10	9,79

122	92	4	124

Hydraulic Chucks

HIGH-PERFORMANCE LINE • HSK A



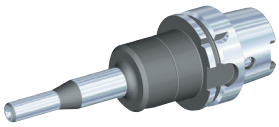


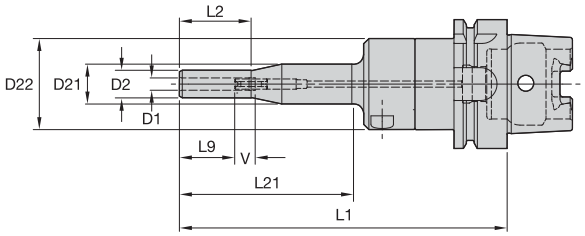
CSMS	order number	catalogue number	D1	D2	D21	L1	L2	L9	V	kg
HSK40A										
	1960118	HSK40AHC06080M	6	26	32	80	35	27	10	0,45
	1960119	HSK40AHC08080M	8	28	32	80	36	27	10	0,46
	1960120	HSK40AHC10085M	10	30	32	85	40	31	10	0,51
	1960121	HSK40AHC12090M	12	32	32	90	43	36	10	0,54
NEW	6482791	HSK40AHC14100M	14	34	50	100	42	36	10	0,77
NEW	6482792	HSK40AHC16100M	16	38	50	100	47	39	10	0,82
NEW	6482793	HSK40AHC18100M	18	40	50	100	47	39	10	0,84
NEW	6482794	HSK40AHC20100M	20	42	50	100	48	41	10	0,86
HSK50A										
	1245473	HSK50AHC06080M	6	26	40	80	35	27	10	0,80
	1245474	HSK50AHC08080M	8	28	40	80	36	27	10	0,90
	1245475	HSK50AHC10085M	10	30	40	85	41	31	10	0,71
	1245476	HSK50AHC12090M	12	32	40	90	47	36	10	1,30
HSK63A										
	1245440	HSK63AHC06080M	6	26	50	80	33	27	10	1,00
NEW	6482800	HSK63AHC06150M	6	26	50	150	105	27	10	1,27
	1245441	HSK63AHC08080M	8	28	50	80	34	27	10	1,10
NEW	6482801	HSK63AHC08150M	8	28	50	150	105	27	10	1,33
	1245477	HSK63AHC10085M	10	30	50	85	39	31	10	1,10
NEW	6482802	HSK63AHC10150M	10	30	50	150	105	31	10	1,39
	1245478	HSK63AHC12090M	12	32	50	90	45	36	10	2,00
NEW	6482803	HSK63AHC12150M	12	32	50	150	105	36	10	1,45
	1245479	HSK63AHC14090M	14	34	50	90	46	36	10	2,00
NEW	6482804	HSK63AHC14150M	14	34	50	150	105	36	10	1,51
	1245480	HSK63AHC16095M	16	38	50	95	52	39	10	2,00
NEW	6482805	HSK63AHC16150M	16	38	50	150	105	39	10	1,67
	1245481	HSK63AHC18095M	18	40	50	95	52	39	10	2,10
NEW	6482806	HSK63AHC18150M	18	40	50	150	105	39	10	1,75
	1191019	HSK63AHC20100M	20	42	50	100	58	41	10	2,10
NEW	6482807	HSK63AHC20150M	20	42	50	150	105	41	10	1,83
	1245482	HSK63AHC25120M	25	50	63	120	51	47	10	1,99
	1192226	HSK63AHC32125M	32	60	63	125	59	51	10	2,27
HSK80A										
	1960133	HSK80AHC08085M	8	28	50	85	36	27	10	1,52
	1960135	HSK80AHC12095M	12	32	50	95	43	36	10	1,61
	1960136	HSK80AHC14095M	14	34	50	95	43	36	10	1,63
	1960137	HSK80AHC16100M	16	38	50	100	46	39	10	1,74
	1960138	HSK80AHC18100M	18	40	50	100	48	39	10	1,75
	1960139	HSK80AHC20105M	20	42	50	105	54	41	10	1,83
	1960140	HSK80AHC25115M	25	50	63	115	51	47	10	2,43
	1960141	HSK80AHC32125M	32	60	63	125	59	51	10	2,83
HSK100A										
	1245483	HSK100AHC06085M	6	26	63	85	33	27	10	2,57
	2229193	HSK100AHC06150M	6	26	63	150	90	27	10	2,96
	1245484	HSK100AHC08085M	8	28	63	85	33	27	10	2,59
	2215823	HSK100AHC08150M	8	28	63	150	90	27	10	3,03
	1245485	HSK100AHC10090M	10	30	63	90	38	31	10	2,64
	2229194	HSK100AHC10150M	10	30	63	150	94	31	10	3,00
	1245486	HSK100AHC12095M	12	32	63	95	41	36	10	2,68
	2229195	HSK100AHC12150M	12	32	63	150	100	36	10	2,94
	1245487	HSK100AHC14095M	14	34	63	95	42	36	10	2,68
	2229196	HSK100AHC14150M	14	34	63	150	92	36	10	3,11
	1245488	HSK100AHC16100M	16	38	63	100	48	39	10	2,78
	2229197	HSK100AHC16150M	16	38	63	150	96	39	10	3,20
	1245489	HSK100AHC18100M	18	40	63	100	48	39	10	2,80
	2229198	HSK100AHC18150M	18	40	63	150	96	39	10	3,28
	1245490	HSK100AHC20105M	20	42	63	105	54	41	10	2,87
	2229199	HSK100AHC20150M	20	42	63	150	100	41	10	3,31
	1245491	HSK100AHC25115M	25	50	63	115	51	47	10	3,26
	2229200	HSK100AHC25200M	25	50	63	200	137	47	10	4,50
	1245492	HSK100AHC32120M	32	60	63	120	59	51	10	3,55
	2229201	HSK100AHC32200M	32	60	63	200	139	51	10	5,27

122	92	4	124

Hydraulic Chucks

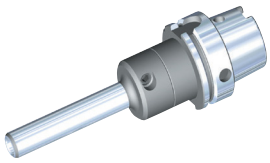
SLIM LINE, XS • HSK A

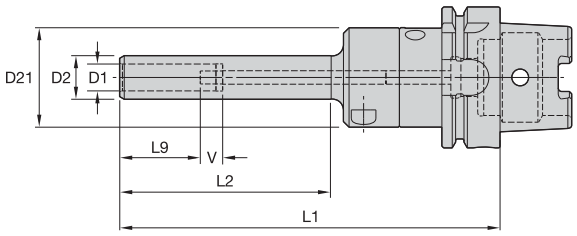




CSMS	order number	catalogue number	D1	D2	D21	D22	L1	L2	L21	L9	V	kg
HSK40A												
	3061264	**HSK40AHCSLT06160M**	6	14	20	44	160	35	85	27	10	0,81
	3061265	**HSK40AHCSLT08160M**	8	16	20	44	160	35	85	27	10	0,82
HSK63A												
	2639015	**HSK63AHCSLT06160M**	6	14	20	44	160	35	85	27	10	1,29
	2868501	**HSK63AHCSLT08160M**	8	16	20	44	160	35	85	27	10	1,30
HSK100A												
	3061086	**HSK100AHCSLT06200M**	6	14	20	44	200	35	85	27	10	3,08
	3061087	**HSK100AHCSLT08200M**	8	16	20	44	200	35	85	27	10	3,09

SLIM LINE • HSK A



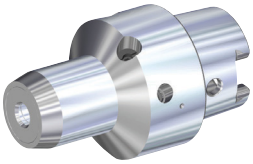


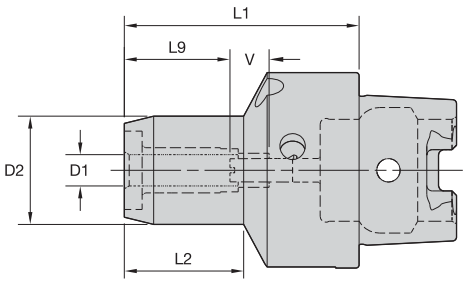
CSMS	order number	catalogue number	D1	D2	D21	L1	L2	L9	V	kg
HSK40A										
	3061266	**HSK40AHCSLT10160M**	10	18	44	160	85	31	10	0,80
	3061267	**HSK40AHCSLT12170M**	12	20	44	170	95	36	10	0,86
	3061268	**HSK40AHCSLT14170M**	14	22	52	170	95	36	10	1,02
HSK63A										
	2638477	**HSK63AHCSLT10160M**	10	18	44	160	85	31	10	1,28
	2458200	**HSK63AHCSL12170M**	12	20	44	170	95	36	10	1,33
	2541833	**HSK63AHCSL14170M**	14	22	52	170	95	36	10	1,56
	2458202	**HSK63AHCSL16170M**	16	24	52	170	95	39	10	1,58
	2541834	**HSK63AHCSL18170M**	18	26	52	170	95	39	10	1,62
	2458203	**HSK63AHCSL20170M**	20	28	52	170	95	41	10	1,66
HSK100A										
	3061088	**HSK100AHCSLT10200M**	10	18	44	200	85	31	10	3,07
	3061089	**HSK100AHCSL12200M**	12	20	44	200	95	36	10	2,99
	3061090	**HSK100AHCSL14200M**	14	22	52	200	95	36	10	3,36
	3061091	**HSK100AHCSL16200M**	16	24	52	200	95	39	10	3,37
	3061092	**HSK100AHCSL18200M**	18	26	52	200	95	39	10	3,41
	3061263	**HSK100AHCSL20200M**	20	28	52	200	95	41	10	3,45

122	92	4	124

Hydraulic Chucks

HIGH-PERFORMANCE LINE • HSK C



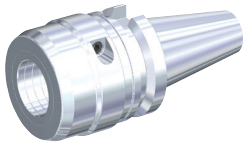


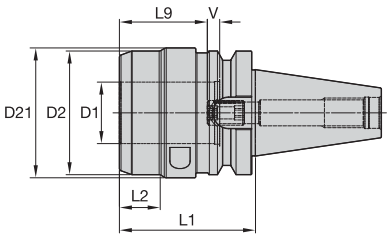
CSMS	order number	catalogue number	D1	D2	L1	L2	L9	V	kg
HSK32C									
	1245412	**HSK32CHC06060M**	6	26	60	33	27	10	0,27
	1245413	**HSK32CHC08060M**	8	28	60	33	27	10	0,29
	1245414	**HSK32CHC10065M**	10	30	65	38	31	10	0,33
	1245415	**HSK32CHC12070M**	12	32	70	43	36	10	0,36
HSK40C									
	1245493	**HSK40CHC06060M**	6	26	60	33	27	10	0,37
	1245494	**HSK40CHC08060M**	8	28	60	33	27	10	0,38
	1245495	**HSK40CHC10065M**	10	30	65	39	31	10	0,42
	1245496	**HSK40CHC12070M**	12	32	70	44	36	10	0,46
HSK50C									
	1245497	**HSK50CHC06060M**	6	26	60	31	27	10	0,53
	1245498	**HSK50CHC08060M**	8	28	60	31	27	10	0,55
	1245499	**HSK50CHC10065M**	10	30	65	36	31	10	0,59
	1245500	**HSK50CHC12075M**	12	32	75	46	36	10	0,65
	1245501	**HSK50CHC14075M**	14	34	75	47	36	10	0,90
	1245502	**HSK50CHC16080M**	16	38	80	53	39	10	1,00
	1245503	**HSK50CHC18080M**	18	40	80	54	39	10	1,00
	1245504	**HSK50CHC20080M**	20	42	80	54	40	10	1,10
HSK63C									
	1245506	**HSK63CHC08060M**	8	28	60	26	27	10	0,90
	1245507	**HSK63CHC10065M**	10	30	65	32	31	10	0,89
	1245508	**HSK63CHC12075M**	12	32	75	43	36	10	0,96
	1245509	**HSK63CHC14075M**	14	34	75	43	36	10	0,97
	1245510	**HSK63CHC16080M**	16	38	80	49	39	10	1,06
	1245511	**HSK63CHC18080M**	18	40	80	50	39	10	1,09
	1245512	**HSK63CHC20080M**	20	42	80	51	41	10	1,10
	1191022	**HSK63CHC32100M**	32	60	100	60	51	10	1,87

122	92	4	124

Hydraulic Chucks

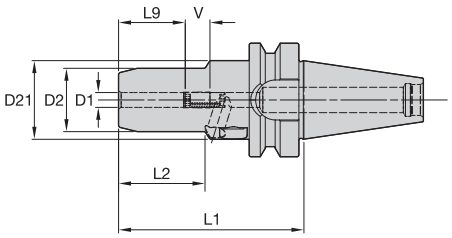
HYDROFORCE™ HIGH-TORQUE LINE • BT AD





CSMS	order number	catalogue number	D1	D2	D21	L1	L2	L9	V	kg
BT40										
	5520971	**BT40HCTHT20070M**	20	58	–	70	43	41	10	1,67
BT50										
	5520972	**BT50HCTHT32090M**	32	80	–	90	52	51	10	5,09
NEW	**6381924**	**BT50HCTHT50110M**	50	100	105	110	33	71	10	6,88

HIGH-PERFORMANCE LINE • BT AD

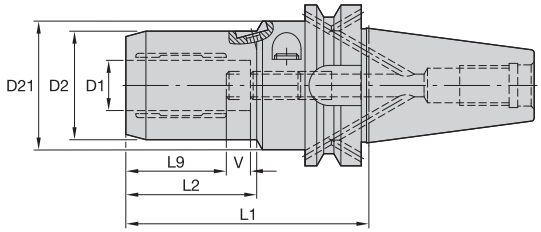


CSMS	order number	catalogue number	D1	D2	D21	L1	L2	L9	V	kg
BT30										
NEW	**6480632**	**BT30HC06075M**	6	26	32	75	35	27	10	0,59
NEW	**6480633**	**BT30HC08075M**	8	28	32	75	35	27	10	0,60
NEW	**6480634**	**BT30HC10080M**	10	30	32	80	38	31	10	0,65
NEW	**6480635**	**BT30HC12085M**	12	32	32	85	40	36	10	0,69
NEW	**6480636**	**BT30HC14100M**	14	34	50	100	43	36	10	1,00
NEW	**6480637**	**BT30HC16100M**	16	38	50	100	47	39	10	1,05
NEW	**6480638**	**BT30HC18100M**	18	40	50	100	47	39	10	1,07
NEW	**6480639**	**BT30HC20100M**	20	42	50	100	48	41	10	1,09

122	92	4	124

Hydraulic Chucks

HIGH-PERFORMANCE LINE • BT AD/B

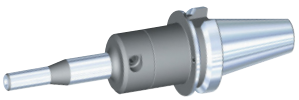


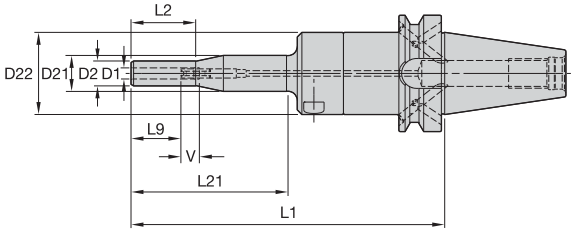
CSMS	order number	catalogue number	D1	D2	D21	L1	L2	L9	V	kg
BT40										
	1315341	**BT40BHC06080M**	6	26	50	80	33	27	10	1,28
	1315342	**BT40BHC08080M**	8	28	50	80	34	27	10	1,30
	1315343	**BT40BHC10085M**	10	30	50	85	35	31	10	1,35
	1315344	**BT40BHC12090M**	12	32	50	90	41	36	10	1,39
	1315345	**BT40BHC14090M**	14	34	50	90	42	36	10	1,40
	1315347	**BT40BHC16090M**	16	38	50	90	47	39	10	1,44
	1315348	**BT40BHC18090M**	18	40	50	90	47	39	10	1,47
	1315349	**BT40BHC20095M**	20	42	50	95	48	41	10	1,54
	1315350	**BT40BHC25115M**	25	50	63	115	51	46	10	2,16
	1315351	**BT40BHC32120M**	32	60	63	120	59	50	10	2,45
BT50										
	1315352	**BT50BHC06090M**	6	26	50	90	33	27	10	2,50
	1315353	**BT50BHC08090M**	8	28	50	90	34	27	10	2,50
	1315354	**BT50BHC10095M**	10	30	50	95	39	31	10	2,50
	1315355	**BT50BHC12100M**	12	32	50	100	45	36	10	2,50
	1315356	**BT50BHC14100M**	14	34	50	100	42	36	10	3,00
	1315357	**BT50BHC16100M**	16	38	50	100	47	39	10	3,00
	1315358	**BT50BHC18100M**	18	40	50	100	47	39	10	3,00
	1315359	**BT50BHC20105M**	20	42	50	105	48	41	10	4,06
	1315360	**BT50BHC25115M**	25	50	63	115	51	46	10	4,00
	1315778	**BT50BHC32120M**	32	60	63	120	59	50	10	4,00

122	92	4	124

Hydraulic Chucks

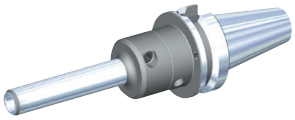
SLIM LINE, XS • BT AD/B

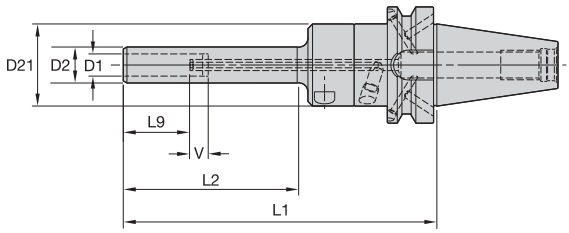




CSMS	order number	catalogue number	D1	D2	D21	D22	L1	L2	L21	L9	V	kg
BT40												
	3019236	BT40BHCSLT06170M	6	14	20	44	170	35	85	27	10	1,69
	3019237	BT40BHCSLT08170M	8	16	20	44	170	35	85	27	10	1,70
BT50												
	3019242	BT50BHCSLT06200M	6	14	20	44	200	35	85	27	10	4,43
	3019243	BT50BHCSLT08200M	8	16	20	44	200	35	85	27	10	4,44

SLIM LINE • BT AD/B



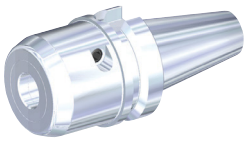


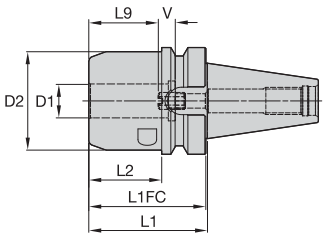
CSMS	order number	catalogue number	D1	D2	D21	L1	L2	L9	V	kg
BT40										
	3019238	BT40BHCSLT10170M	10	18	44	170	85	31	10	1,68
	2634575	BT40BHCSL12170M	12	20	44	170	95	36	10	1,61
	2634576	BT40BHCSL14170M	14	22	52	170	95	36	10	1,83
	2634577	BT40BHCSL16170M	16	24	52	170	95	39	10	1,86
	2634578	BT40BHCSL18170M	18	26	52	170	95	39	10	1,90
	2634579	BT40BHCSL20170M	20	28	52	170	95	41	10	1,94
BT50										
	3019244	BT50BHCSLT10200M	10	18	44	200	85	31	10	4,42
	2634540	BT50BHCSL12200M	12	20	44	200	95	36	10	4,34
	2634541	BT50BHCSL14200M	14	22	52	200	95	36	10	4,66
	2634542	BT50BHCSL16200M	16	24	52	200	95	39	10	4,68
	2634573	BT50BHCSL18200M	18	26	52	200	95	39	10	4,72
	2634574	BT50BHCSL20200M	20	28	52	200	95	41	10	4,76

122	92	4	124

Hydraulic Chucks

HYDROFORCE™ HIGH-TORQUE LINE • BTKV AD



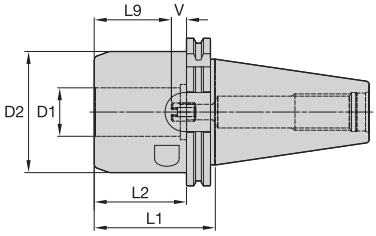


CSMS	order number	catalogue number	D1	D2	L1	L1FC	L2	L9	V	kg
BTKV40										
	5520993	**BTKV40HCTHT20070M**	20	58	70	69	43	41	10	1,62
BTKV50										
	5520994	**BTKV50HCTHT32090M**	32	80	90	89	52	51	10	5,13
NEW	**6381925**	**BTKV50HCTHT50110M**	50	100	110	109	35	71	10	6,87

122	92	4	124

Hydraulic Chucks

HYDROFORCE™ HIGH-TORQUE LINE • DV AD

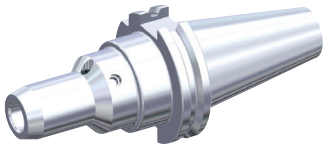


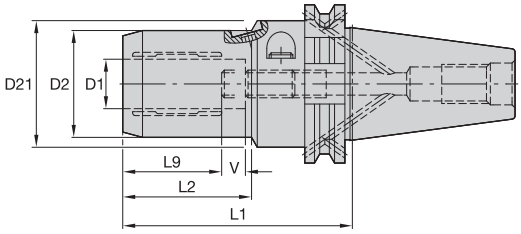
CSMS	order number	catalogue number	D1	D2	L1	L2	L9	V	kg
DV40									
	5520973	**DV40HCTHT20070M**	20	58	70	51	41	10	1,58
DV50									
	5520974	**DV50HCTHT32080M**	32	80	80	61	51	10	4,45
NEW	**6381928**	**DV50HCTHT50090M**	50	100	90	26	71	10	5,34

122	92	4	124

Hydraulic Chucks

HIGH-PERFORMANCE LINE • DV AD/B



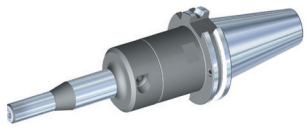


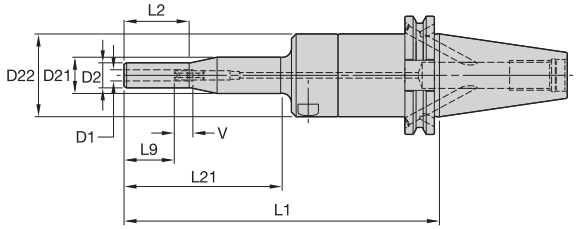
CSMS	order number	catalogue number	D1	D2	D21	L1	L2	L9	V	kg
DV40										
	1245443	**DV40BHC06072M**	6	26	50	72	33	30	10	1,12
NEW	**6480640**	**DV40BHC06150M**	6	26	50	150	105	30	10	1,51
	1245444	**DV40BHC08072M**	8	28	50	72	34	30	10	1,13
NEW	**6480641**	**DV40BHC08150M**	8	28	50	150	105	30	10	1,57
	1245445	**DV40BHC10077M**	10	30	50	77	39	35	10	1,17
NEW	**6480642**	**DV40BHC10150M**	10	30	50	150	105	35	10	1,63
	1237451	**DV40BHC12077M**	12	32	50	77	40	35	10	1,19
NEW	**6480643**	**DV40BHC12150M**	12	32	50	150	105	35	10	1,63
	1245446	**DV40BHC14082M**	14	34	50	82	46	40	10	1,23
NEW	**6480644**	**DV40BHC14150M**	14	34	50	150	105	40	10	1,74
	1237452	**DV40BHC16082M**	16	38	50	82	47	40	10	1,28
NEW	**6480645**	**DV40BHC16150M**	16	38	50	150	105	40	10	1,91
	1245447	**DV40BHC18082M**	18	40	50	82	47	40	10	1,31
NEW	**6480646**	**DV40BHC18150M**	18	40	50	150	105	40	10	1,99
	1191013	**DV40BHC20082M**	20	42	50	82	48	40	10	1,33
NEW	**6480647**	**DV40BHC20150M**	20	42	50	150	105	40	10	2,07
	1245448	**DV40BHC25117M**	25	50	63	117	51	51	10	2,16
	1245449	**DV40BHC32117M**	32	60	63	117	59	51	10	2,34
DV50										
	1245450	**DV50BHC06072M**	6	26	50	72	33	30	10	2,87
	1245451	**DV50BHC08072M**	8	28	50	72	34	30	10	2,88
	1191014	**DV50BHC10077M**	10	30	50	77	39	35	10	2,92
	1191015	**DV50BHC12077M**	12	32	50	77	40	35	10	2,93
	1245452	**DV50BHC14082M**	14	34	50	82	46	40	10	2,96
	1245453	**DV50BHC16082M**	16	38	50	82	47	40	10	3,02
	1245454	**DV50BHC18082M**	18	40	50	82	47	40	10	3,04
	1191016	**DV50BHC20082M**	20	42	50	82	48	40	10	3,06
	1245455	**DV50BHC25117M**	25	50	63	117	51	51	10	4,03
	1197514	**DV50BHC32117M**	32	60	63	117	59	51	10	4,21

122	92	4	124

Hydraulic Chucks

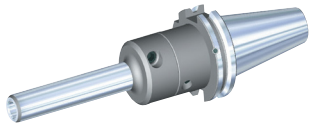
SLIM LINE, XS • DV AD/B

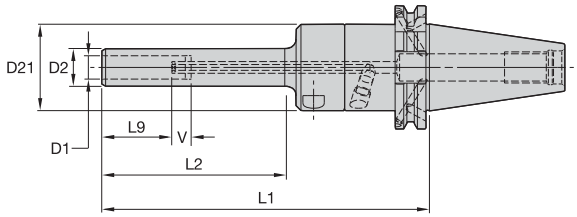




CSMS	order number	catalogue number	D1	D2	D21	D22	L1	L2	L21	L9	V	kg
DV40												
	3019233	**DV40BHCSLT06170M**	6	14	20	44	170	35	85	27	10	1,64
	3019234	**DV40BHCSLT08170M**	8	16	20	44	170	35	85	27	10	1,65
DV50												
	3019239	**DV50BHCSLT06200M**	6	14	20	44	200	35	85	27	10	3,81
	3019240	**DV50BHCSLT08200M**	8	16	20	44	200	35	85	27	10	3,81

SLIM LINE • DV AD/B



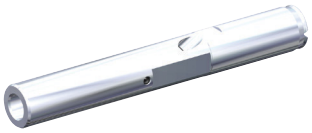


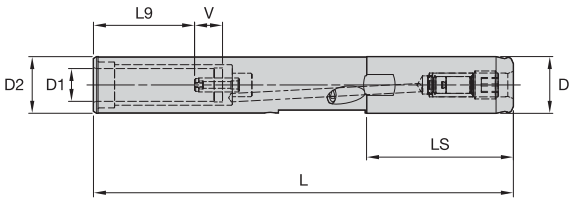
CSMS	order number	catalogue number	D1	D2	D21	L1	L2	L9	V	kg
DV40										
	3019235	**DV40BHCSLT10170M**	10	18	44	170	85	31	10	1,63
	2634535	**DV40BHCSL12170M**	12	20	44	170	95	36	10	1,54
	2634536	**DV40BHCSL14170M**	14	22	52	170	95	36	10	1,77
	2634537	**DV40BHCSL16170M**	16	24	52	170	95	39	10	1,79
	2634538	**DV40BHCSL18170M**	18	26	52	170	95	39	10	1,83
	2634539	**DV40BHCSL20170M**	20	28	52	170	95	41	10	1,87
DV50										
	3019241	**DV50BHCSLT10200M**	10	18	44	200	85	31	10	3,80
	2634420	**DV50BHCSL12200M**	12	20	44	200	95	36	10	3,57
	2634421	**DV50BHCSL14200M**	14	22	52	200	95	36	10	3,98
	2634422	**DV50BHCSL16200M**	16	24	52	200	95	39	10	4,00
	2634533	**DV50BHCSL18200M**	18	26	52	200	95	39	10	4,04
	2634534	**DV50BHCSL20200M**	20	28	52	200	95	41	10	4,08

122	92	4	124

Hydraulic Chucks

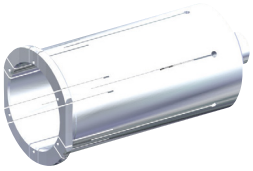
HYDRAULIC EXTENSIONS

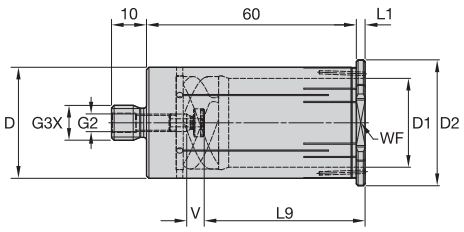




order number	catalogue number	D1	D	D2	L	LS	L9	V	kg
6340072	SS200HCT12150M	12	20	20	150	53	36	10	0,30

HYDROFORCE™ SAFE-λOCK® REDUCER SLEEVES



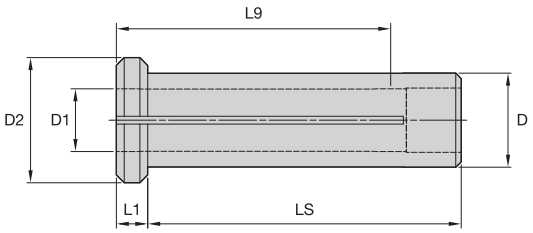


order number	catalogue number	D1	D	D2	L1	L9	V	G3X	G2	WF
5998607	32MHCSFC120M	12	32	36	2,5	41	4	M12	M6	32
5998608	32MHCSFC140M	14	32	36	2,5	41	4	M12	M6	32
5998609	32MHCSFC160M	16	32	36	2,5	44	4	M12	M6	32
5998610	32MHCSFC200M	20	32	36	2,5	46	4	M12	M6	32
5998751	32MHCSFC250M	25	32	36	2,5	47	4	M12	M6	32

122	92	4	124

Hydraulic Chucks

REDUCER SLEEVES

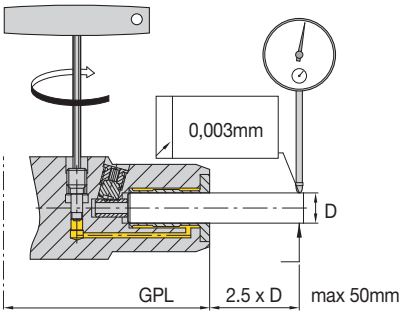


CSMS	order number	catalogue number	D1	D	D2	L1	L9	LS
12M								
	3026450	**12MHC030M**	3	12	16	4	29	40
	3026451	**12MHC040M**	4	12	16	4	29	40
	3026452	**12MHC050M**	5	12	16	4	29	40
	3026643	**12MHC060M**	6	12	16	4	36	40
	3026644	**12MHC070M**	7	12	16	4	37	40
	3026645	**12MHC080M**	8	12	16	4	37	40
	3026646	**12MHC090M**	9	12	16	4	37	40
	3026647	**12MHC100M**	10	12	16	4	40	40
20M								
	3026648	**20MHC030M**	3	20	25	4	28	50
	3026649	**20MHC040M**	4	20	25	4	28	50
	3026650	**20MHC050M**	5	20	25	4	28	50
	3026651	**20MHC060M**	6	20	25	4	36	50
	3026652	**20MHC070M**	7	20	25	4	37	50
	3026653	**20MHC080M**	8	20	25	4	37	50
	3026654	**20MHC090M**	9	20	25	4	38	50
	3026655	**20MHC100M**	10	20	25	4	40	50
	3026656	**20MHC110M**	11	20	25	4	40	50
	3026657	**20MHC120M**	12	20	25	4	45	50
	3026658	**20MHC130M**	13	20	25	4	45	50
	3026659	**20MHC140M**	14	20	25	4	45	50
	3026660	**20MHC150M**	15	20	25	4	45	50
	3026661	**20MHC160M**	16	20	25	4	48	50
25M								
	3026662	**25MHC030M**	3	25	30	4	29	56
	3026663	**25MHC040M**	4	25	30	4	29	56
	3026664	**25MHC050M**	5	25	30	4	29	56
	3026665	**25MHC060M**	6	25	30	4	37	56
	3026666	**25MHC070M**	7	25	30	4	37	56
	3026667	**25MHC080M**	8	25	30	4	37	56
	3026668	**25MHC090M**	9	25	30	4	38	56
	3026669	**25MHC100M**	10	25	30	4	40	56
	3026670	**25MHC120M**	12	25	30	4	46	56
	3026671	**25MHC140M**	14	25	30	4	47	56
	3026672	**25MHC160M**	16	25	30	4	48	56
	3026673	**25MHC180M**	18	25	30	4	48	56
	3026674	**25MHC200M**	20	25	30	4	49	56
32M								
	3026675	**32MHC060M**	6	32	36	4	37	60
	3026676	**32MHC070M**	7	32	36	4	37	60
	3026677	**32MHC080M**	8	32	36	4	37	60
	3026678	**32MHC090M**	9	32	36	4	37	60
	3026679	**32MHC100M**	10	32	36	4	40	60
	3026680	**32MHC110M**	11	32	36	4	41	60
	3026681	**32MHC120M**	12	32	36	4	45	60
	3026682	**32MHC130M**	13	32	36	4	45	60
	3026683	**32MHC140M**	14	32	36	4	46	60
	3026684	**32MHC150M**	15	32	36	4	46	60
	3026685	**32MHC160M**	16	32	36	4	48	60
	3026686	**32MHC170M**	17	32	36	4	48	60
	3026687	**32MHC180M**	18	32	36	4	49	60
	3026691	**32MHC190M**	19	32	36	4	49	60
	3026688	**32MHC200M**	20	32	36	4	50	60
	3026689	**32MHC220M**	22	32	36	4	51	60
	3026690	**32MHC250M**	25	32	36	4	57	60

122	92	4	124

Hydraulic Chucks

RUNOUT ACCURACY



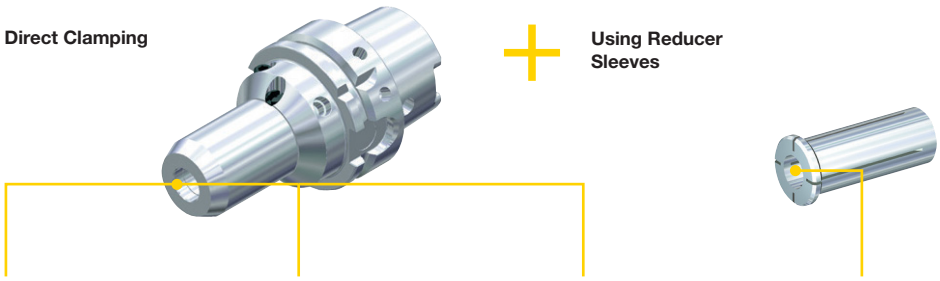
type	clamping Ø D	shank	GPL ≤ mm	≤ mm
HydroForce™	Ø 6–32mm	BT, DV, CV, BTKV, CVKV HSK, KM™, PSC	110	0,003
	Ø >32mm	BT, DV, CV, BTKV, CVKV HSK, KM, PSC	155	0,006
HP	Ø 6–32mm	BT, DV, CV, BTKV, CVKV HSK, KM, PSC	200	0,003
Slim	Ø 6–20mm	BT, DV, CV, BTKV, CVKV HSK, KM, PSC	200	0,006
Extensions	Ø 6–20mm	SS	160	0,003

NOTE: HC reducer can double the runout.

TRANSMITTABLE TORQUE VALUES

clamping Ø mm	HP Nm	Slim + Extensions Nm	HydroForce Nm
6	12	26	–
8	30	50	–
10	40	80	–
12	70	115	–
14	100	160	–
16	135	200	–
18	180	220	–
20	220	230	800
25	500	–	–
32	700	–	2000
50	–	–	2000

CLAMPING RECOMMENDATION



DIN 6535	Direct Clamping			Using Reducer Sleeves
	Ø 6–20mm	Ø 25mm	Ø 32mm	
HA	●	●	●	●
HB	●	○	○	●
	○	○	○	●

NOTE: Highest accuracy obtained with cylindrical shanks.

● Recommended
○ Not Recommended

Hydraulic Chucks

CUTTING TOOL SHANK REQUIREMENTS

type	Ø shank	shank tolerance	roundness	shank surface quality
Metric	3–4mm	h4	0,003mm	Ra min 0,3
	5mm	h6		
	6–50mm	h6		

CLAMPING LENGTH ADJUSTMENT

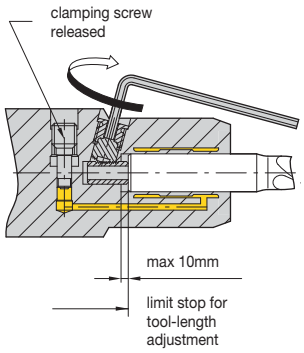
Radial operated

HP:

All back ends

Slim:

All back ends 12–20mm



Axial operated

HydroForce™:

All back ends

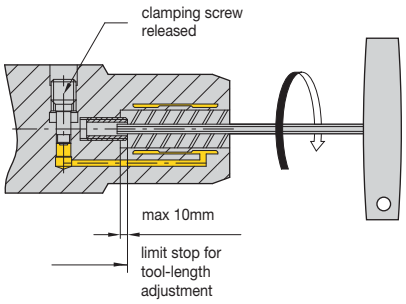
Slim:

All back ends Ø 6–10mm

HSK40 A & C Ø 6–20mm

Extensions:

All back ends

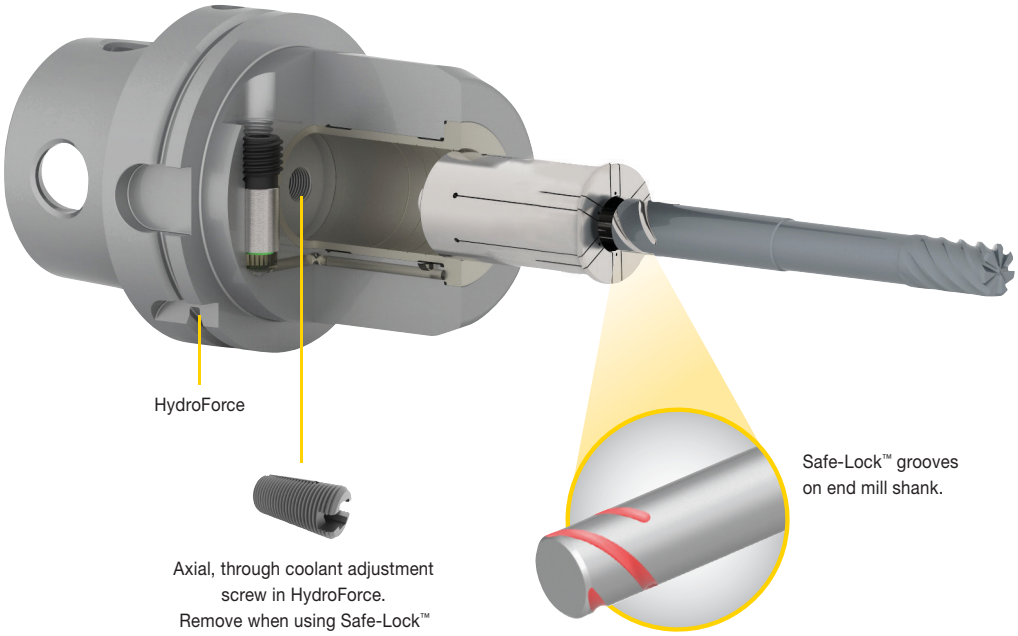


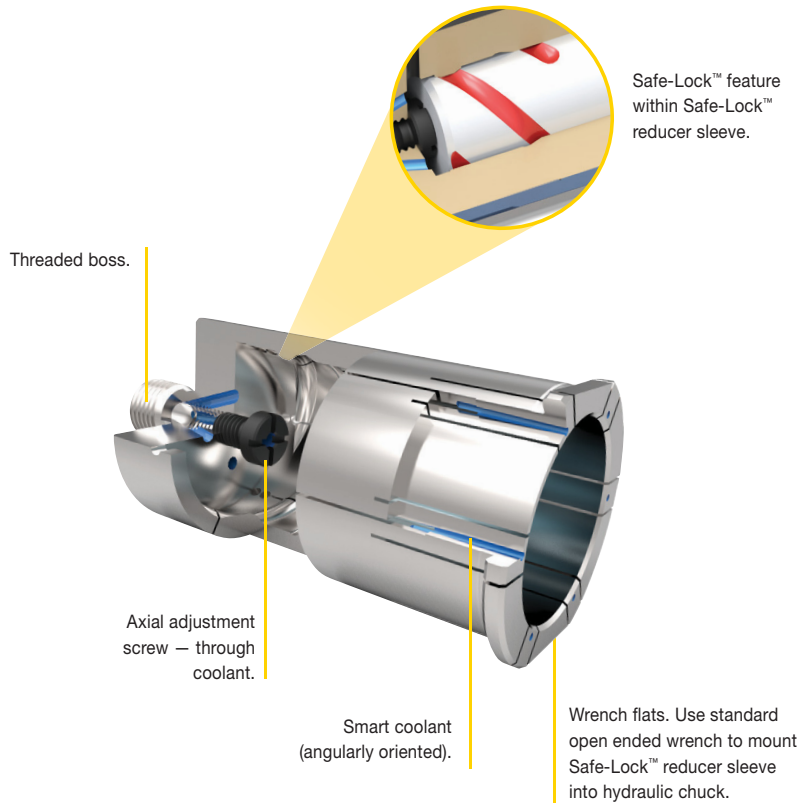
WRENCHES FOR ACTUATION & STOP SCREW ADJUSTMENT

Ø	HP and Extension				HydroForce				Slim							
									Ø 12–20mm				Ø 6–10mm and HSK40 Ø 6–20mm			
metric	actuation wrench	size (mm)	stop screw wrench	size (mm)	actuation wrench	size (mm)	stop screw wrench	size (mm)	actuation wrench	size (mm)	stop screw wrench	size (mm)	actuation wrench	size (mm)	stop screw wrench	size (mm)
6	**170.135**	5	**170.002**	2.5	–	–	–	–	**170.135**	5	–	–	**170.135**	5	**170.002**	2.5
8	**170.135**	5	**170.002**	2.5	–	–	–	–	**170.135**	5	–	–	**170.135**	5	**170.002**	2.5
10	**170.135**	5	**170.002**	2.5	–	–	–	–	**170.135**	5	–	–	**170.135**	5	**170.003**	3
12	**170.135**	5	**170.002**	2.5	–	–	–	–	**170.135**	5	**170.002**	2.5	**170.135**	5	**170.003**	3
14	**170.135**	5	**170.003**	3	–	–	–	–	**170.135**	5	**170.002**	2.5	**170.135**	5	**170.003**	3
16	**170.135**	5	**170.003**	3	–	–	–	–	**170.135**	5	**170.002**	2.5	**170.135**	5	**170.005**	5
18	**170.135**	5	**170.003**	3	–	–	–	–	**170.135**	5	**170.002**	2.5	**170.135**	5	**170.005**	5
20	**170.135**	5	**170.003**	3	**170.135**	5	**170.005**	5	**170.135**	5	**170.002**	2.5	**170.135**	5	**170.005**	5
25	**170.136**	6	**170.004**	4	–	–	–	–	–	–	–	–	–	–	–	–
32	**170.136**	6	**170.004**	4	**170.136**	6	**170.006**	6	–	–	–	–	–	–	–	–
50	–	–	–	–	**170.136**	6	**170.010**	10	–	–	–	–	–	–	–	–

Hydraulic Chucks

HYDROFORCE™ & SAFE-λOCK® REDUCER SLEEVES



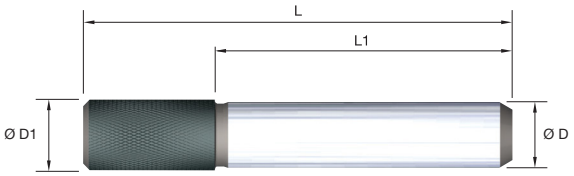


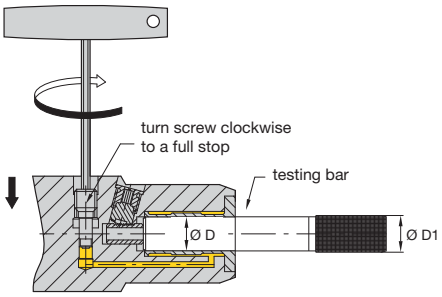
Hydraulic Chucks

MANUAL CLAMPING FUNCTION TEST

Clamping function should be checked with a test pin on a regular basis:

- Remove dirt in the bore with a nylon cleaning brush.
- Insert the test pin into the clamping bore as far as the stop pin/stop screw allow.
- Tighten the hydraulic chuck actuating screw to full stop manually to activate full clamping force.
- Attempt to rotate the test pin by hand. If it rotates freely, please send for repair.

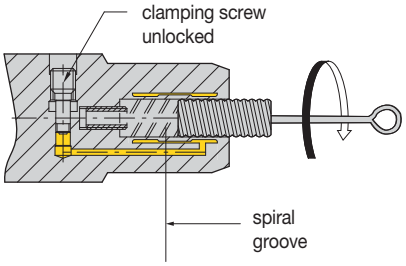




order number	catalogue number	D Clamping Ø mm	D1 mm	L mm	L1 mm
1191037	280.200	6	6.8	61	41
1191038	280.201	8	8.8	61	41
1191039	280.202	10	10.8	65	45
1191040	280.203	12	12.8	70	50
1245409	280.204	14	14.8	70	50
1191041	280.205	16	16.8	73	53
1245410	280.206	18	18.8	73	53
1191042	280.207	20	20.8	75	55
1245411	280.208	25	25.8	81	61
1191043	280.209	32	32.8	85	65

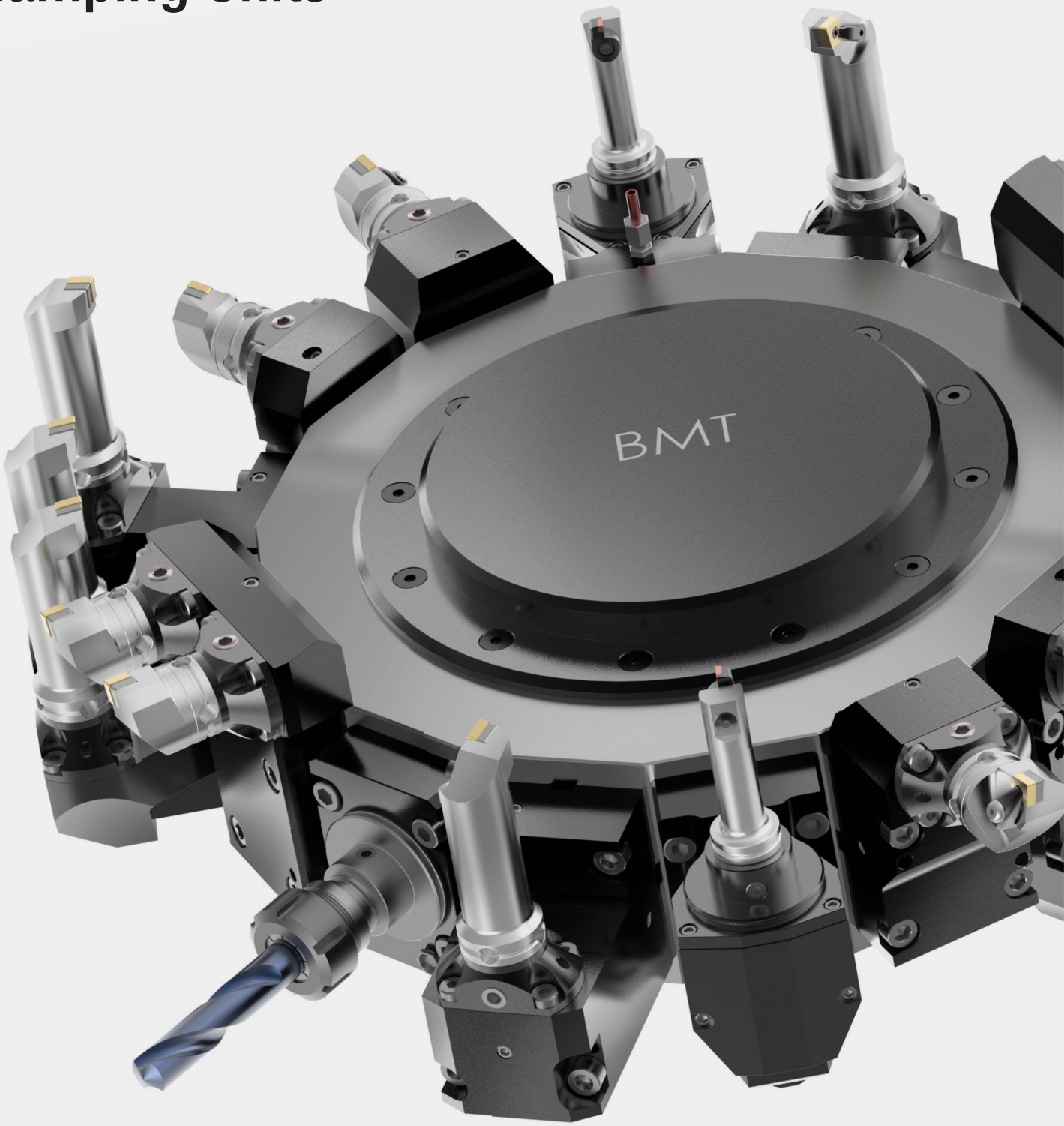
CLEANING RECOMMENDATION

- For optimum torque transmission and runout.
- Easy handling to keep the bore clean and oil-free.
- Recommended bore cleaning after each tool change.



order number	catalogue number	D1
1138729	192.950	6
1138736	192.951	8
1138744	192.952	10
1138752	192.953	12
1138759	192.954	14
1138766	192.955	16
1138914	192.956	18
1138853	192.957	20
1138922	192.958	25
1138930	192.959	32

Turret Adapted Clamping Units



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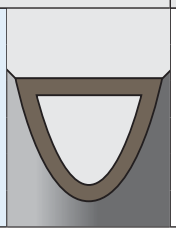
Grade Descriptions

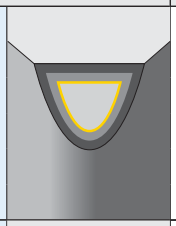
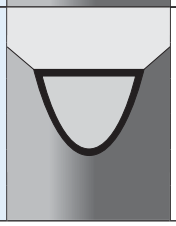
TURNING

wear resistance ⟷ toughness

Coating	Grade Description		05	10	15	20	25	30	35	40	45
KCU25 	**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.	P				■	■	■			
		M				■	■	■			
		K				■	■	■			
		N				■	■	■			
		S				■	■	■			

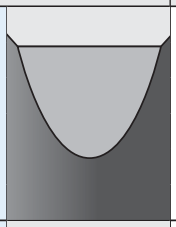
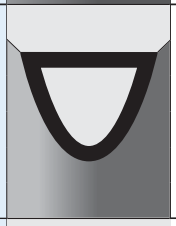
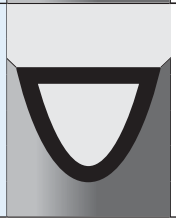
HOLEMAKING

wear resistance ⟷ toughness

Coating	Grade Description		05	10	15	20	25	30	35	40	45
KCU25 	**Composition:** Advanced CVD TiCN-Al_2O_3 coating combined with a tough carbide substrate. **Application:** First choice for steel, stainless steel, and cast iron. This grade offers adequate deformation resistance, excellent edge strength, and superior wear resistance over a wide range of machining conditions for high productivity with very good reliability.	P				■	■	■	■		
		M			■	■	■	■			
		K			■	■	■	■			
KCU40 	**Composition:** Multilayered PVD TiN-TiAlN-coated fine-grain carbide. **Application:** First choice for high reliability in most materials. This grade should be used at medium speeds and high feeds due to sharper cutting edges. As a grade developed for high toughness applications, it withstands interruptions and provides high wear resistance for long tool life. It covers steel, stainless steel, cast iron, and high-temp alloys under certain conditions.	P						■	■	■	■
		M					■	■	■	■	
		K				■	■	■	■		
		S				■	■	■			

SOLID CARBIDE END MILLING

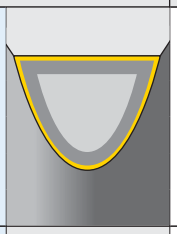
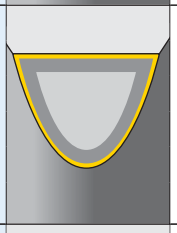
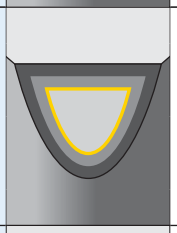
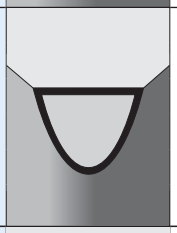
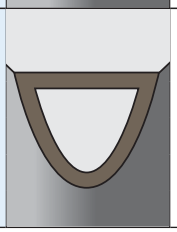
wear resistance ⟷ toughness

Coating	Grade Description		05	10	15	20	25	30	35	40	45
K600 	Carbide grade made from high-quality, micrograin materials for cutting all types of workpiece materials. Very high toughness ensures a controlled wear rate. The micrograin structure enables extremely sharp cutting edges.										
		N			■	■	■	■			
KC639M 	PVD (AlTiN)-coated carbide on a submicron carbide substrate. This hard coating provides outstanding performance in milling hardened materials (58–65 HRC).	P			■	■	■	■			
		H	■	■	■						
KCPM15 	Coated carbide grade with thick PVD coating and optimised chemistry and process for increased wear resistance. Outstanding protection in milling stainless steel to mitigate crater, DOCN (depth-of-cut notching), and flank wear. Excellent performance up to 52 HRC.	P			■	■	■	■			
		M			■	■	■	■			
		K			■	■	■	■			

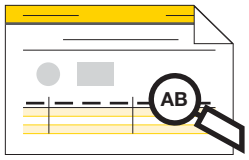
Grade Descriptions

INDEXABLE MILLING

wear resistance ← → toughness

Coating		Grade Description		05	10	15	20	25	30	35	40	45
KC725M		Coated carbide grade with an advanced PVD TiAlN coating. KC725M is a high-performance grade for milling steel, stainless steel, and ductile cast iron. The good thermal shock resistance of the substrate makes this grade ideal for both wet and dry machining. Primarily for use in general and heavy machining.	P						■	■	■	
			M						■	■	■	
			S						■	■	■	
KCSM40		Coated carbide grade with an advanced PVD TiAlN/TiN coating. Premium substrate with newly developed binder composition. KCSM40 is a high-performance grade for titanium, super alloys, and stainless steel. High thermal shock resistance of the substrate makes this grade ideal for wet machining. First choice for roughing and unsuitable cutting conditions.										
			M					■	■	■	■	
			S					■	■	■	■	
KCPK30		Coated carbide grade with CVD multilayer ($TiN/TiCN/Al_2O_3$) and advanced Beyond™ post-coat treatment. Substrate is very tough. KCPK30 has a wide application area in general and roughing milling of steels and cast irons. Performs best dry, but can also be used wet.	P					■	■	■	■	
			K					■	■	■	■	
KCPM40		Coated carbide grade with an advanced PVD TiAlN/AlCrN coating. Tough substrate with excellent capability at higher temperatures. KCPM40™ is the first choice for milling steel and stainless steel. Good thermal shock resistance makes this grade ideal for both wet and dry machining. Primarily for use in general and heavy machining.	P					■	■	■	■	
			M					■	■	■	■	
KCU25		Fine-grained substrate coated with PVD TiN/TiAlN multilayer. First choice for applications with thin to medium chip thickness. This grade works on many workpiece materials, dry and wet.	P			■	■	■	■			
			M			■	■	■				
			K			■	■	■	■			
			N			■	■	■	■			
			S			■	■	■				

KEY TO PRODUCT TABLE COLUMN HEADINGS



You may notice a slight change in the appearance of our product tables and specification charts. In this catalogue, Kennametal introduces a set of short-name codes to improve the readability of tables and drawings. These codes replace full-text descriptions. The full list of codes and their definitions can be found below.

SHORT-NAME CODE	FULL TEXT DESCRIPTION
NEW	NEW product
Ap1 max	Maximum Cutting Depth
CDX	Maximum Depth of Cut
CE	Cutting Edges
CSMS	Connection Style Machine Side
CSWS	Connection Style Workpiece Side
D	Insert: Insert IC Size
D	Milling: Mounting Diameter
D	Toolholder: Shank/Bore Diameter
D1	Milling: Cutter Diameter
D1	Toolholder: Clamping Diameter
D2	Body Diameter 1 Workpiece Side
D21	Body Diameter 2 Workpiece Side
D22	Max Diameter Taper Angle
D5	Body Diameter Machine Side
D6	Hub Diameter
G1	Bolt Circle Thread Size
G2	Stop Screw Thread Size
G3X	Connection Thread Size External
GI	Gage Insert
GPL	General Projection Length
hm	Average Chip Thickness
kg	Weight Kilograms
L	Overall Length
L1	Gage Length
L1	Sleeve: Flange Length
L10	Insert Cutting Edge Length
L1FC	Gage Length Face Contact
L1S	Secondary Gage Length
L2	Usable Length
L21	Usable Length 2
L9	Clamping Length
lbs	Weight Pounds
LI	Insert Length
LS	Shank Length
max RPM	Maximum RPM
RC	Full Radius
RL	Corner Radius Left Hand
RR	Corner Radius Right Hand
Rε	Corner Radius
S	Insert Thickness
SSC	Seat Size Code
T	Limit of Slotting Depth
THUB	Hub Thickness
V	Adjustment Range
W	Cutting Edge Width or Slot Width
WF	Distance Across Flats
Z	Number of Inserts
Z U	Number of Flutes

Material Cross Reference • DIN

P Steel
M Stainless Steel
K Cast Iron

N Non-Ferrous
S High-Temp Alloys

H Hardened Materials
C CFRP Materials

material group	description	content	tensile strength RM (MPa)*	hardness (HB)	hardness (HRC)	material number
P0	Low-Carbon Steels, Long Chipping	C <0,25%	<530	<125	–	–
P1	Low-Carbon Steels, Short Chipping, Free Machining	C <0,25%	<530	<125	–	C15, Ck22, ST37-2, S235JR, 9SMnPb28, GS38
P2	Medium- and High-Carbon Steels	C >0,25%	>530	<220	<25	ST52, S355JR, C35, GS60, Cf53
P3	Alloy Steels and Tool Steels	C >0,25%	600–850	<330	<35	16MnCr5, Ck45, 21CrMoV5-7, 38SMn28
P4	Alloy Steels and Tool Steels	C >0,25%	850–1400	340–450	35–48	100Cr6, 30CrNiMo8, 42CrMo4, C70W2, S6525, X120Mn12
P5	Ferritic, Martensitic, and PH Stainless Steels	–	600–900	<330	<35	100Cr6, 30CrNiMo8, 42CrMo4, C70W2, S6525, X120Mn12
P6	High-Strength Ferritic, Martensitic, and PH Stainless Steels	–	900–1350	350–450	35–48	X102CrMo17, G-X120Cr29
M1	Austenitic Stainless Steel	–	<600	130–200	–	X5CrNi 18 10, X2CrNiMo 17 13 2, G-X25CrNiSi18 9, X15CrNiSi 20 12
M2	High-Strength Austenitic Stainless and Cast Stainless Steels	–	600–800	150–230	<25	X2CrNiMo 13 4, X5NiCr 32 21, X5CrNiNb 18 10, G-X15CrNi 25-20
M3	Duplex Stainless Steel	–	<800	135–275	<30	X8CrNiMo27 5, X2CrNiMoN22 5 3, X20CrNiSi25 4, G-X40CrNiSi27 4
K1	Grey Cast Iron	–	125–500	120–290	<32	GG15, GG25, GG30, GG40, GTW40
K2	Low- and Medium-Strength Ductile Irons (Nodular Irons) and Compacted Graphite Irons (CGI)	–	<600	130–260	<28	GGG40, GTS35
K3	High-Strength Ductile Irons and Austempered Ductile Iron (ADI)	–	>600	180–350	<43	GGG60, GTW55, GTS65
N1	Wrought Aluminium	–	–	–	–	AlMg1, Al99.5, AlCuMg1, AlCuBiPb, AlMgSi1, ALMgSiPb
N2	Low-Silicon Aluminium Alloys and Magnesium Alloys	Si <12,2%	–	–	–	GAlSiCu4, GDAlSi10Mg
N3	High-Silicon Aluminium Alloys and Magnesium Alloys	Si >12,2%	–	–	–	G-ALSi12, G-AlSi17Cu4, G-AlSi21CuNiMg
N4	Copper-, Brass-, Zinc-Based on Machinability Index Range of 70–100	–	–	–	–	CuZn40, Ms60, G-CuSn5ZnPb, CuZn37, CuSi3Mn
N5	Nylon, Plastics, Rubbers, Phenolics, Resins, Fibreglass	–	–	–	–	Lexan®, Hostalen™, Polystyrol, Makrolon®
N6	Carbon, Graphite Composites, CFRP	–	–	–	–	CFK, GFK
N7	Metal Matrix Composites (MMC)	–	–	–	–	–
S1	Iron-Based, Heat-Resistant Alloys	–	500–1200	160–260	25–48	X1NiCrMoCu32 28 7, X12NiCrSi36 16, X5NiCrAlTi31 20, X40CoCrNi20 20
S2	Cobalt-Based, Heat-Resistant Alloys	–	1000–1450	250–450	25–48	Haynes® 188, Stellite® 6,21,31
S3	Nickel-Based, Heat-Resistant Alloys	–	600–1700	160–450	<48	INCONEL® 690, INCONEL 625, Hastelloy®, NIMONIC® 75
S4	Titanium and Titanium Alloys	–	900–1600	300–400	33–48	Ti1, TiAl5Sn2, TiAl6V4, TiAl4Mo4Sn2
H1	Hardened Materials	–	–	–	44–48	GX260NiCr42, GX330NiCr42, GX300CrNiSi952, GX300CrMo153, Hardox® 400
H2	Hardened Materials	–	–	–	48–55	–
H3	Hardened Materials	–	–	–	56–60	–
H4	Hardened Materials	–	–	–	>60	–
C1	CFRP, CFRP/CFRP	–	–	–	–	–
C2	CFRP/Non-Ferrous	–	–	–	–	–
C3	CFRP/High Temp	–	–	–	–	–
C4	CFRP/Stainless Steel	–	–	–	–	–
C5	CFRP/Non-Ferrous/High-Temp	–	–	–	–	–

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METALCUTTING SAFETY

IMPORTANT SAFETY INSTRUCTIONS

Read before using the tools in this catalogue!

Projectile and Fragmentation Hazards:

Modern metalcutting operations involve high spindle and cutter speeds and high temperatures and cutting forces. Hot metal chips may fly off the workpiece during metalcutting. Although cutting tools are designed and manufactured to withstand high cutting forces and temperatures, they can sometimes fragment, particularly if they are subjected to over-stress, severe impact, or other abuse.

To avoid injury:

- Always wear appropriate personal protective equipment, including safety goggles, when operating metalcutting machines or working nearby.
- Always make sure all machine guards are in place.

Breathing and Skin Contact Hazards:

Grinding carbide or other advanced cutting tool materials produces dust or mist containing metallic particles. Breathing this dust or mist — especially over an extended period — can cause temporary or permanent lung disease or make existing medical conditions worse. Contact with this dust or mist can irritate eyes, skin, and mucous membranes and may make existing skin conditions worse.

To avoid injury:

- Always wear breathing protection and safety goggles when grinding.
- Provide ventilation control and collect and properly dispose of dust, mist, or sludge from grinding.
- Avoid skin contact with dust or mist.

For more information, read the applicable Material Safety Data Sheet provided by Kennametal and consult General Industry Safety and Health Regulations, Part 1910, Title 29 of the Code of Federal Regulations.

These safety instructions are general guidelines. Many variables affect machining operations. It is impossible to cover every specific situation. The technical information included in this catalogue and recommendations on machining practices may not apply to your particular operation. For more information, consult the Kennametal Metalcutting Safety booklet, available free from Kennametal at 724 539 5747 or fax 724 539 5439. For specific product safety and environmental questions, contact our Corporate Environmental Health and Safety Office at 724 539 5066 or fax 724 539 5372.

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