

INNOVATIONS **2019 | 01**



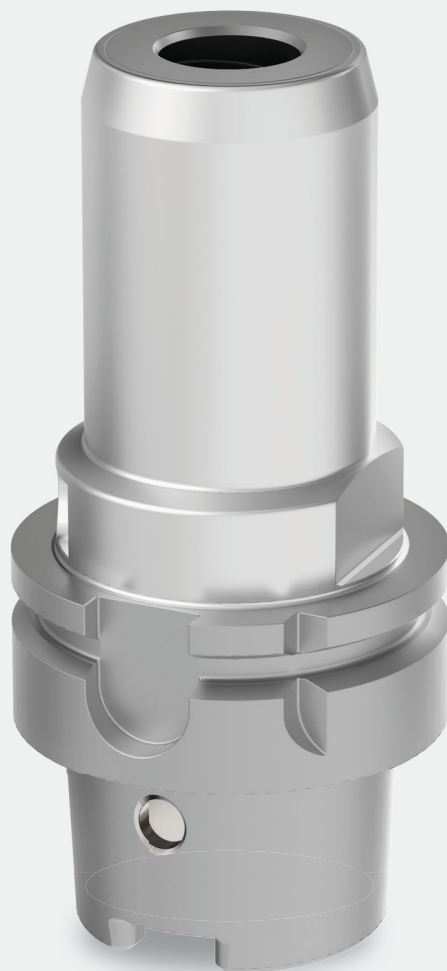
METRIC

Hydraulic Chuck Portfolio

Achieving optimum performance
for round-tool applications.



HydroForce™



High Performance



Slim Line

INNOVATIONS

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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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	Russia (landline)	Russian	8800 5556394	eu.techsupport@kennametal.com
	Russia (cell phone)	Russian	+7 800 5556394	eu.techsupport@kennametal.com
	Sweden	English	0207 99246	na.techsupport@kennametal.com
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	India	English	1 800 103 5227	in.techsupport@kennametal.com
	Japan	English	03 3820 2855	ap-kmt.techsupport@kennametal.com
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	Malaysia	English	1800 812 990	ap-kmt.techsupport@kennametal.com
	New Zealand	English	0800 450 941	ap-kmt.techsupport@kennametal.com
	Singapore	English	1800 6221031	ap-kmt.techsupport@kennametal.com
	Taiwan	English	0800 666 197	ap-kmt.techsupport@kennametal.com
	Thailand	English	1800 4417820	ap-kmt.techsupport@kennametal.com

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	Luxemborg	+32 4 248 48 48	liege.sales@kennametal.com
	Netherlands	+31 0800 44 33 201	netherlands.sales@kennametal.com
	Poland	+48 61 6656501	poland.service@kennametal.com
	Portugal	+351 22 4119 400	porto.service@kennametal.com
	Russia	+7 495 4115386	moscow.information@kennametal.com
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Asia Pacific	Spain	+34 93 586 03 50	barcelona.service@kennametal.com
	Turkey	+90 216 574 4780	tr.information@kennametal.com
	Australia	+61 800 666 667	k-au.service@kennametal.com
	China	+86 400 889 2135	k-cn.service@kennametal.com
	India	+91 800 103 5138	k-bngl.information@kennametal.com
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	Taiwan	+886 4 2350 1920	taiwan.service@kennametal.com
	Thailand	+66 2 642 3455	k-sg.sales@kennametal.com

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Hydraulic Chucks

Applications



Drilling



Reaming



Helix Angle Tapping:
45°



3D Profiling



Side Milling



Slotting



Ramping



Plunge Milling

kennametal.com/Hydraulic-Chucks



High Performance



Slim Line



HydroForce™

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.

HydroForce™

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].

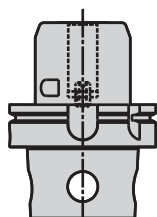
Balanced G2.5 at 25.000 RPM,
delivering precision.

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

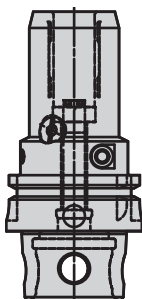
3x higher clamping force
than High-Performance Line.

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

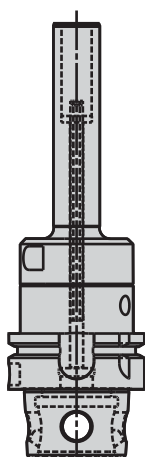
Portfolio



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 • TOOL SELECTION GUIDE

STEP 1	HYDRAULIC CHUCK PORTFOLIO		
	HYDROFORCE™	HIGH PERFORMANCE	SLIM LINE
	High Rigidity	Moderate Rigidity	Low Rigidity
	20, 32, 50mm	6–32mm	6–20mm
Application recommendation	  	  	 

STEP 2	HYDROFORCE HIGH TORQUE						
	KM™	KM4X™	PSC	HSK A	BT	BTKV	DV
							
	10, 12	14	17	18	22	25	26
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
							
	10, 12	15	17	19	21	22, 23	27
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	  						



NOTE: For accessories, spare parts, and technical information, visit kennametal.com or kennametal.com/novo.

HYDRAULIC CHUCKS • TOOL SELECTION GUIDE

STEP 1	HYDRAULIC CHUCK PORTFOLIO		
	HYDROFORCE™	HIGH PERFORMANCE	SLIM LINE
	High Rigidity	Moderate Rigidity	Low Rigidity
	20, 32, 50mm	6–32mm	6–20mm
Application recommendation	       	  	 

STEP 2

	SLIM LINE, XS				
	KM™	KM4X™	HSK A	BT	DV
					
Page(s)	11, 13	16	20	24	28
Connection size	KM63TS KM63XMZ	KM4X63 KM4X100	HSK40A HSK63A HSK100A	BT40 BT50	DV40 DV50
Rigidity	Low Rigidity				
Application recommendation	 				

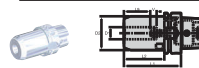
	SLIM LINE				
	KM	KM4X	HSK A	BT	DV
					
Page(s)	11, 13	16	20	24	28
Connection size	KM63TS KM63XMZ	KM4X63 KM4X100	HSK40A HSK63A HSK100A	BT40 BT50	DV40 DV50
Rigidity	Low Rigidity				
Application recommendation	 				



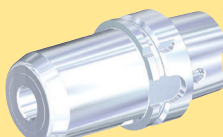
NOTE: For accessories, spare parts, and technical information, visit kenametal.com or kenametal.com/novo.

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.

Hydraulic Chucks		HYDROFORCE™ HIGH-TORQUE LINE • HSK A									
											
SK	SL	SLT	SLT	SLT	SLT	SLT	SLT	SLT	SLT	SLT	SLT
50	63	80	100	125	150	175	200	225	250	275	300
50	63	80	100	125	150	175	200	225	250	275	300
50	63	80	100	125	150	175	200	225	250	275	300

HSK100AHCTHT50150M

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

Hydraulic Chucks		REDUCER SLEEVES									
											
12	16	20	25	32	40	50	63	80	100	125	160
12	16	20	25	32	40	50	63	80	100	125	160
12	16	20	25	32	40	50	63	80	100	125	160

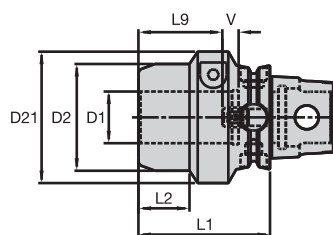
20MHC160M

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™

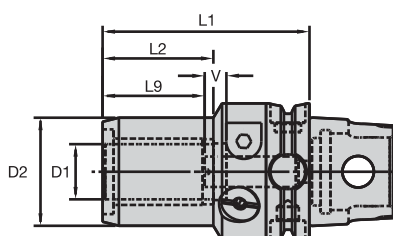


HYDROFORCE™ HIGH-TORQUE LINE • KM-TS™



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

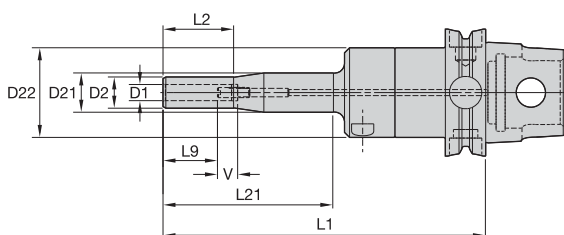
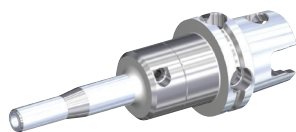
HIGH-PERFORMANCE LINE • KM-TS



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

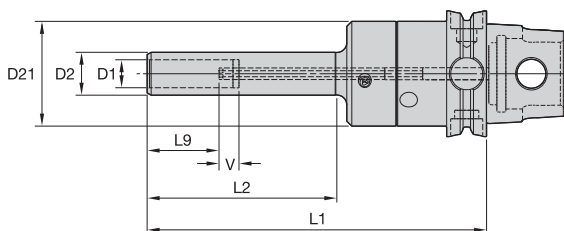
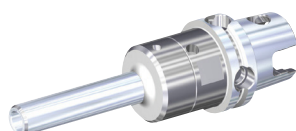


SLIM LINE, XS • KM-TS™



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

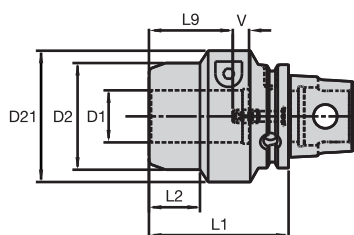
SLIM LINE • KM-TS



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	KM63TSHCSLT12170M	12	20	44	170	95	36	10	1,38
	3055507	KM63TSHCSLT14170M	14	22	52	170	95	36	10	1,64
	3055508	KM63TSHCSLT16170M	16	24	52	170	95	39	10	1,66
	3055509	KM63TSHCSLT18170M	18	26	52	170	95	39	10	1,70
	3055510	KM63TSHCSLT20170M	20	28	52	170	95	41	10	1,74

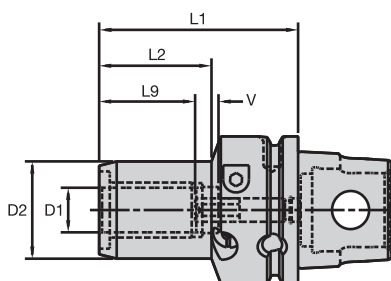
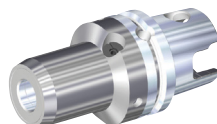
57	8	6	60

HYDROFORCE™ HIGH-TORQUE LINE • KM-XMZ™



CSMS	order number	catalogue number	D1	D2	D21	L1	L2	L9	V	kg
KM63XMZ	5520978	KM63XMZHC32085M	32	65	80	85	31	51	10	2,27

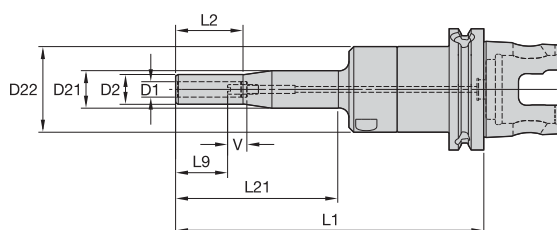
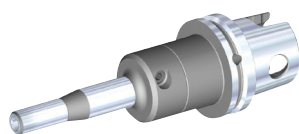
HIGH-PERFORMANCE LINE • KM-XMZ



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

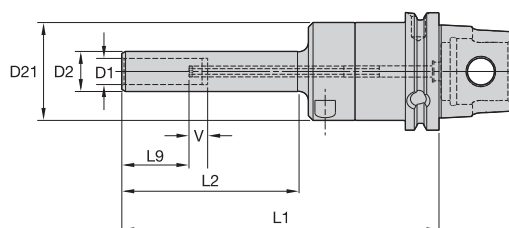
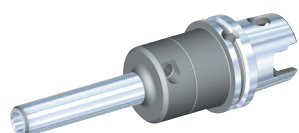
57	8	6	60

SLIM LINE, XS • KM-XMZ™



CSMS	order number	catalogue number	D1	D2	D21	D22	L1	L2	L21	L9	V	kg
KM63XMZ	3055511	KM63XMZHCST06160MY	6	14	20	44	160	35	85	27	10	1,37
	3055512	KM63XMZHCST08160MY	8	16	20	44	160	35	85	27	10	1,38

SLIM LINE • KM-XMZ

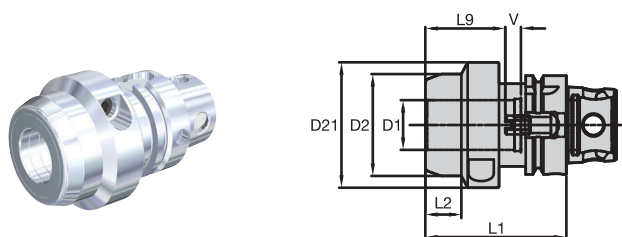


CSMS	order number	catalogue number	D1	D2	D21	L1	L2	L9	V	kg
KM63XMZ	3055513	KM63XMZHCST10160MY	10	18	44	160	85	31	10	1,36
	3055514	KM63XMZHCST12170MY	12	20	44	170	95	36	10	1,40
	3055515	KM63XMZHCST14170MY	14	22	52	170	95	36	10	1,68
	3055516	KM63XMZHCST16170MY	16	24	52	170	95	39	10	1,70
	3055517	KM63XMZHCST18170MY *	18	26	52	170	95	39	10	1,74
	3055518	KM63XMZHCST20170MY	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.

57	8	6	60

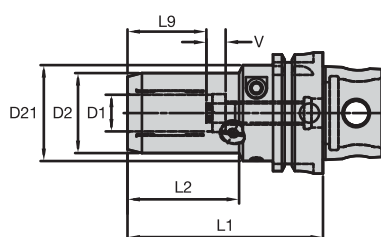
HYDROFORCE™ HIGH-TORQUE LINE • KM4X™



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	KM4X100HCTHT32095M	32	80	—	95	66	51	10	4,37
	NEW 6381972	KM4X100HCTHT50135M	50	100	105	135	56	71	10	6,87

57	8	6	60

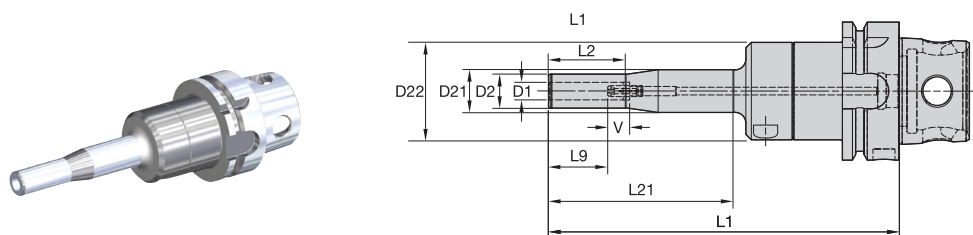
HIGH-PERFORMANCE LINE • KM4X™



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

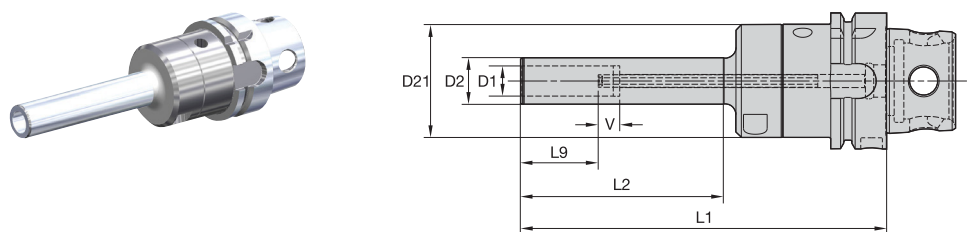
57	8	6	60

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

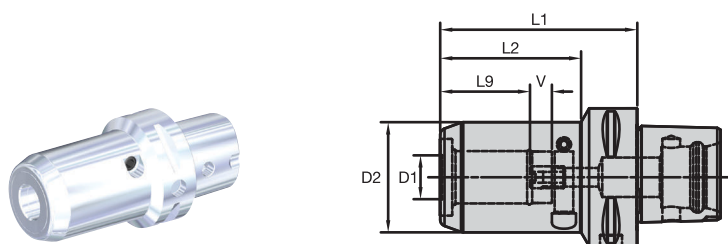
SLIM LINE • KM4X



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	KM4X63HCSLT12170M	12	20	44	170	95	36	10	1,41
	5549202	KM4X63HCSLT14170M	14	22	52	170	95	36	10	1,64
	5549203	KM4X63HCSLT16170M	16	24	52	170	95	39	10	1,66
	5549204	KM4X63HCSLT18170M	18	26	52	170	95	39	10	1,70
	5549205	KM4X63HCSLT20170M	20	28	52	170	95	41	10	1,74
KM4X100	5437400	KM4X100HCSLT10200M	10	18	44	200	85	31	10	3,36
	5437401	KM4X100HCSLT12200M	12	20	44	200	95	36	10	3,27
	5437402	KM4X100HCSLT14200M	14	22	52	200	95	36	10	3,64
	5437403	KM4X100HCSLT16200M	16	24	52	200	95	39	10	3,65
	5437404	KM4X100HCSLT18200M	18	26	52	200	95	39	10	3,69
	5437405	KM4X100HCSLT20200M	20	28	52	200	95	41	10	3,72

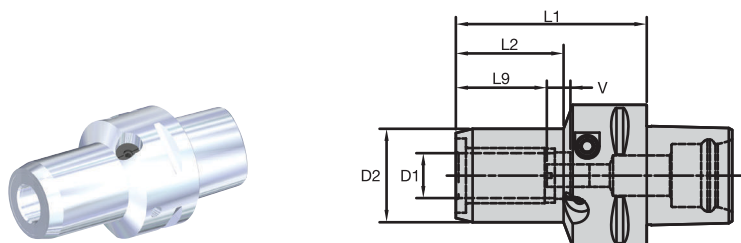
57	8	6	60

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

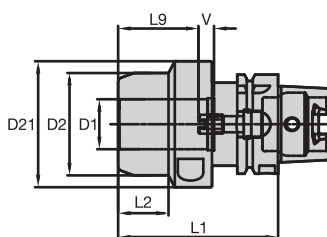
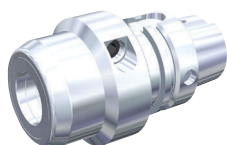
HIGH-PERFORMANCE LINE • PSC



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



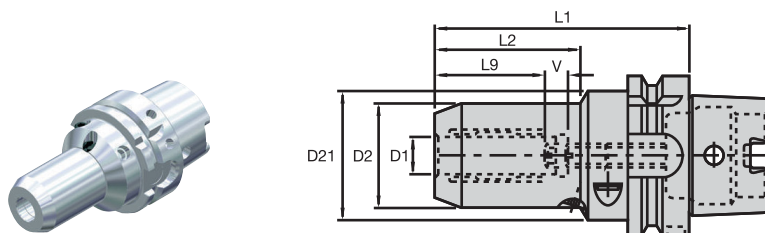
HYDROFORCE™ HIGH-TORQUE LINE • HSK A



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

57	8	6	60

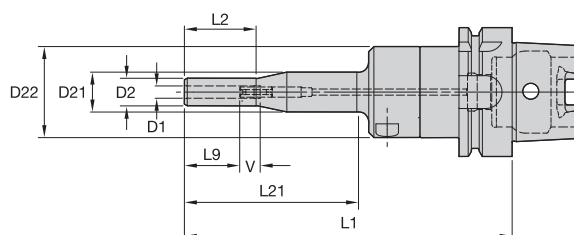
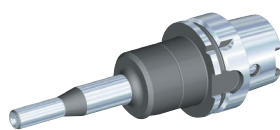
HIGH-PERFORMANCE LINE • HSK A



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	14	34	50	100	42	36	10	0,77
	NEW	6482792	16	38	50	100	47	39	10	0,82
	NEW	6482793	18	40	50	100	47	39	10	0,84
	NEW	6482794	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	6	26	50	150	105	27	10	1,27
	1245441	HSK63AHC08080M	8	28	50	80	34	27	10	1,10
	NEW	6482801	8	28	50	150	105	27	10	1,33
	1245477	HSK63AHC10085M	10	30	50	85	39	31	10	1,10
	NEW	6482802	10	30	50	150	105	31	10	1,39
	1245478	HSK63AHC12090M	12	32	50	90	45	36	10	2,00
	NEW	6482803	12	32	50	150	105	36	10	1,45
	1245479	HSK63AHC14090M	14	34	50	90	46	36	10	2,00
	NEW	6482804	14	34	50	150	105	36	10	1,51
	1245480	HSK63AHC16095M	16	38	50	95	52	39	10	2,00
	NEW	6482805	16	38	50	150	105	39	10	1,67
	1245481	HSK63AHC18095M	18	40	50	95	52	39	10	2,10
	NEW	6482806	18	40	50	150	105	39	10	1,75
	1191019	HSK63AHC20100M	20	42	50	100	58	41	10	2,10
	NEW	6482807	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

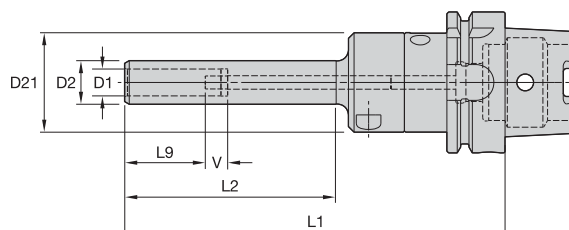
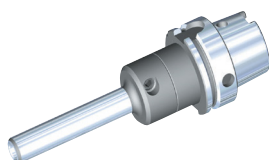


SLIM LINE, XS • HSK A



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

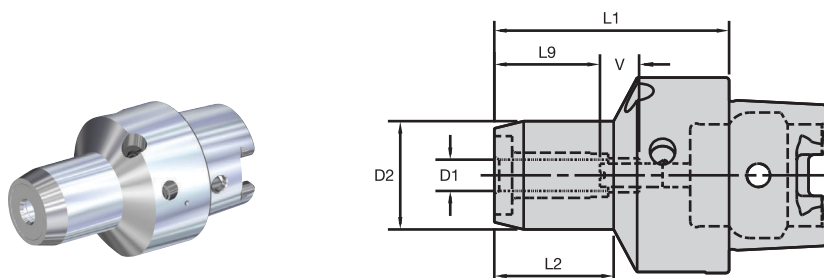
SLIM LINE • HSK A



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	HSK63AHCSLT12170M	12	20	44	170	95	36	10	1,33
	2541833	HSK63AHCSLT14170M	14	22	52	170	95	36	10	1,56
	2458202	HSK63AHCSLT16170M	16	24	52	170	95	39	10	1,58
	2541834	HSK63AHCSLT18170M	18	26	52	170	95	39	10	1,62
	2458203	HSK63AHCSLT20170M	20	28	52	170	95	41	10	1,66
HSK100A	3061088	HSK100AHCSLT10200M	10	18	44	200	85	31	10	3,07
	3061089	HSK100AHCSLT12200M	12	20	44	200	95	36	10	2,99
	3061090	HSK100AHCSLT14200M	14	22	52	200	95	36	10	3,36
	3061091	HSK100AHCSLT16200M	16	24	52	200	95	39	10	3,37
	3061092	HSK100AHCSLT18200M	18	26	52	200	95	39	10	3,41
	3061263	HSK100AHCSLT20200M	20	28	52	200	95	41	10	3,45

57	8	6	60

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



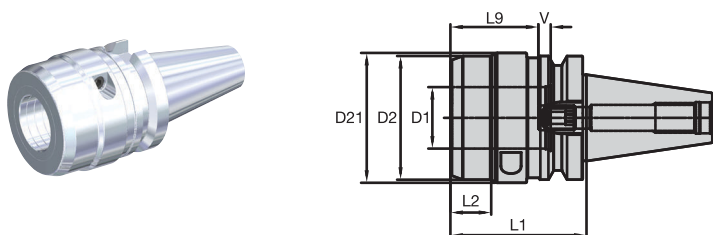
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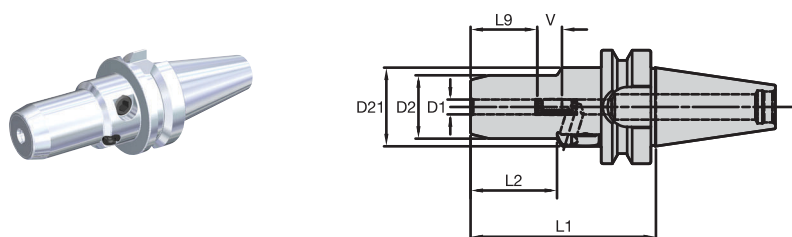
60

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

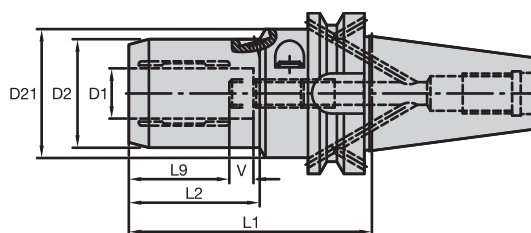
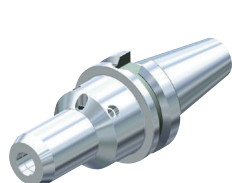
HIGH-PERFORMANCE LINE • BT AD



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

57	8	6	60

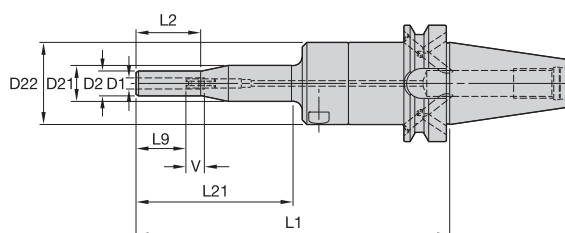
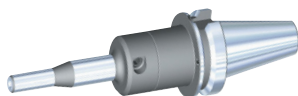
HIGH-PERFORMANCE LINE • BT AD/B



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

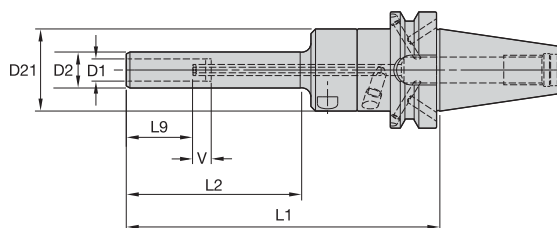
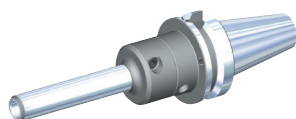
57	8	6	60

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

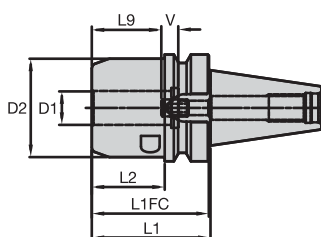
SLIM LINE • BT AD/B



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

57	8	6	60

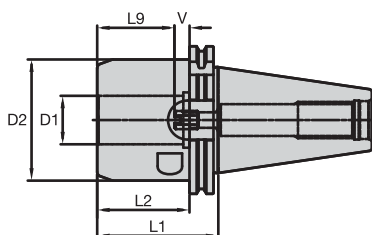
HYDROFORCE™ HIGH-TORQUE LINE • BTKV AD



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

57	8	6	60

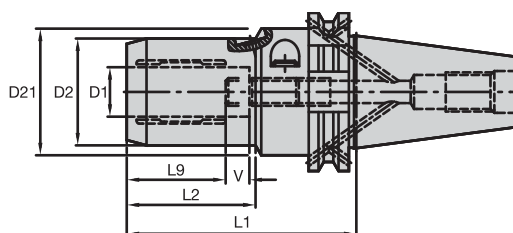
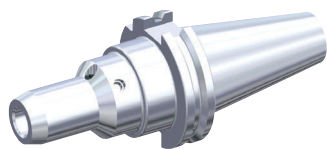
HYDROFORCE™ HIGH-TORQUE LINE • DV AD



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

57	8	6	60

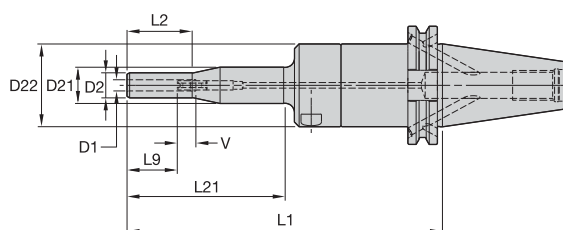
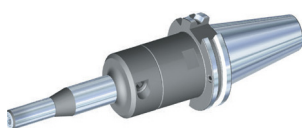
HIGH-PERFORMANCE LINE • DV AD/B



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

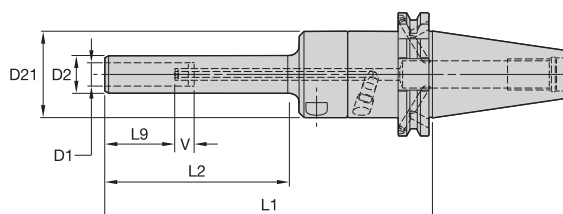
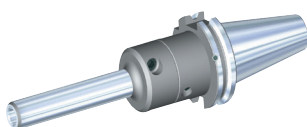
57	8	6	60

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

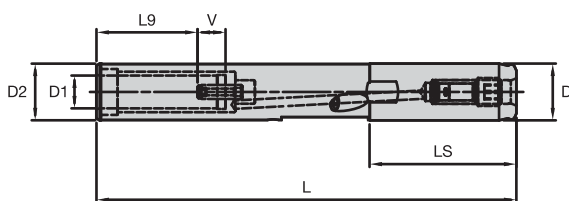
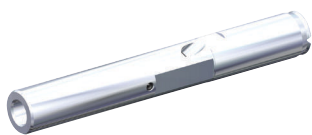
SLIM LINE • DV AD/B



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	DV40BHCSLT12170M	12	20	44	170	95	36	10	1,54
	2634536	DV40BHCSLT14170M	14	22	52	170	95	36	10	1,77
	2634537	DV40BHCSLT16170M	16	24	52	170	95	39	10	1,79
	2634538	DV40BHCSLT18170M	18	26	52	170	95	39	10	1,83
	2634539	DV40BHCSLT20170M	20	28	52	170	95	41	10	1,87
DV50	3019241	DV50BHCSLT10200M	10	18	44	200	85	31	10	3,80
	2634420	DV50BHCSLT12200M	12	20	44	200	95	36	10	3,57
	2634421	DV50BHCSLT14200M	14	22	52	200	95	36	10	3,98
	2634422	DV50BHCSLT16200M	16	24	52	200	95	39	10	4,00
	2634533	DV50BHCSLT18200M	18	26	52	200	95	39	10	4,04
	2634534	DV50BHCSLT20200M	20	28	52	200	95	41	10	4,08

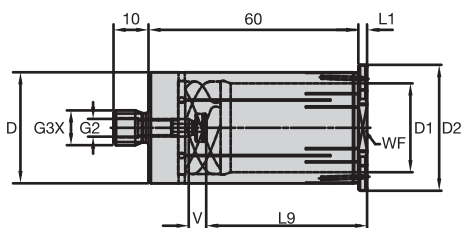
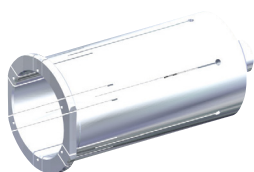
57	8	6	60

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

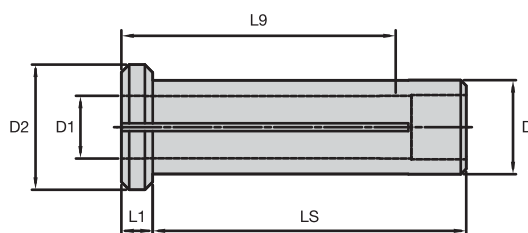
HYDROFORCE™ SAFE-LOCK® REDUCER SLEEVES



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

57	8	6	60

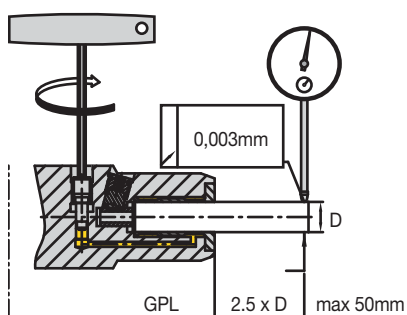
REDUCER SLEEVES



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
20M	3026647	12MHC100M	10	12	16	4	40	40
	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



RUNOUT ACCURACY



type	clamping Ø D	shank	GPL $\leq$ mm	$\leq$ 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

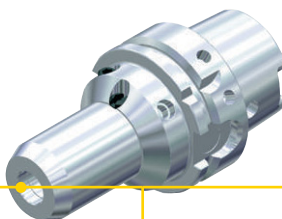
NOTE: HC reducer can double the runout.

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

Direct Clamping



Using Reducer
Sleeves



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

NOTE: Highest accuracy obtained with cylindrical shanks.

● Recommended
○ Not Recommended

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

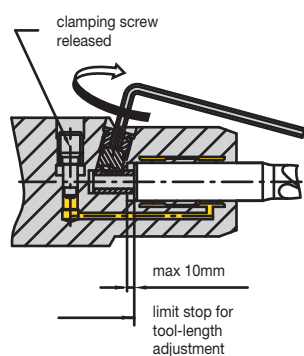
Radial operated

HP:

All back ends

Slim:

All back ends 12–20mm



Axial operated

HydroForce™:

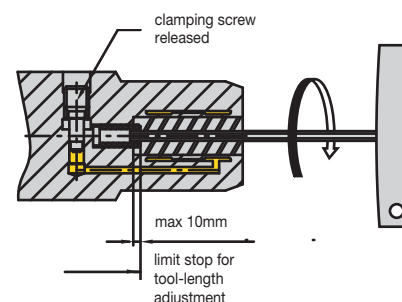
All back ends

Slim:

All back ends Ø 6–10mm
HSK40 A & C Ø 6–20mm

Extensions:

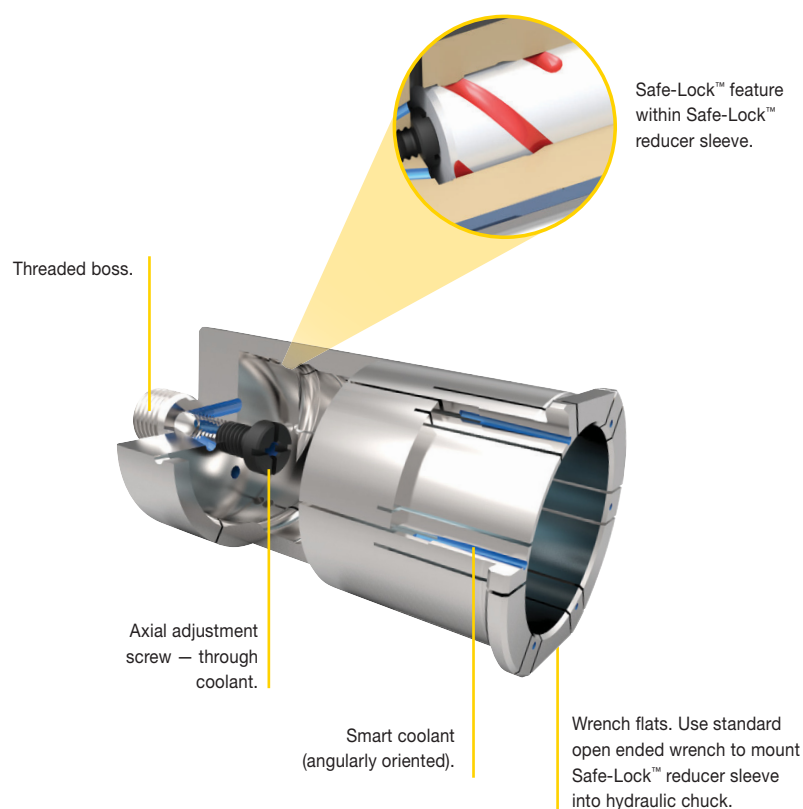
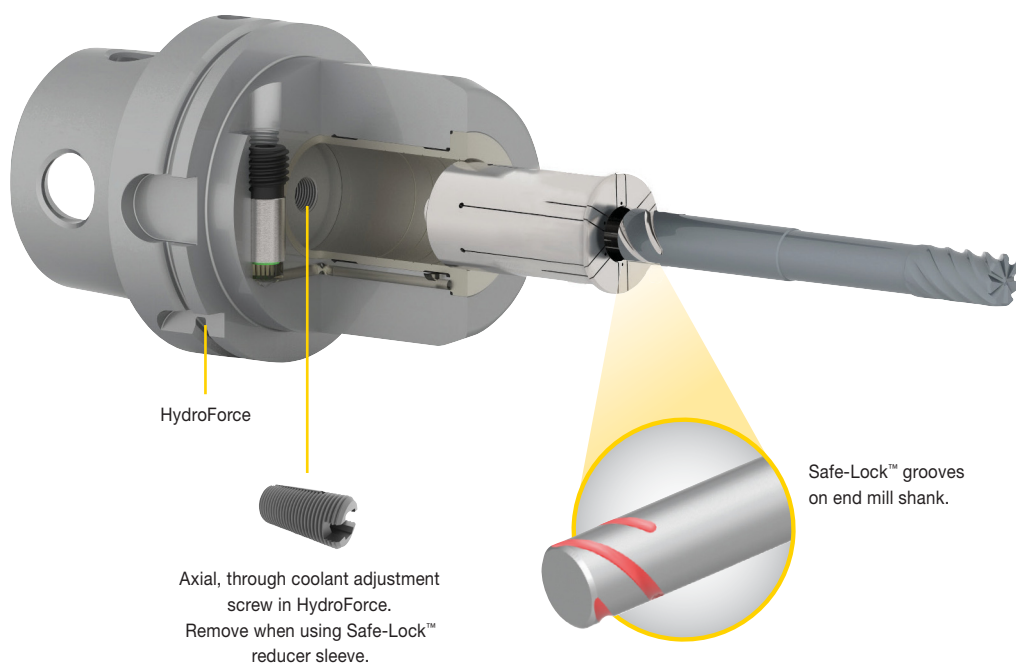
All back ends



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	—	—	—	—	—	—	—	—

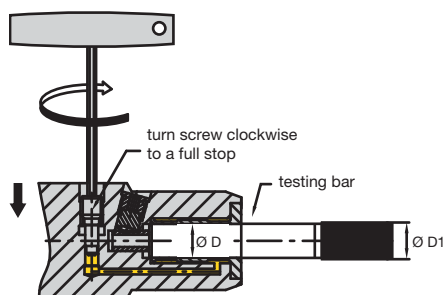
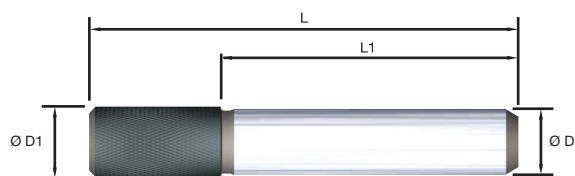
HYDROFORCE™ & SAFE-LOCK® REDUCER SLEEVES



MANUAL CLAMPING FUNCTION TEST

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

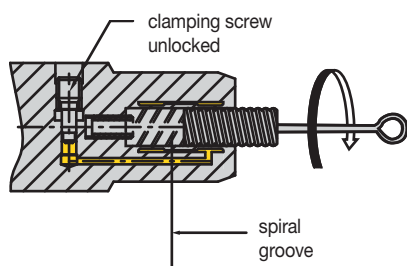
- Remove dirt in the bore with a nylon cleaning brush.
- Insert the test pin into the clamping bore as far as the stop pin/stop screw allow.
- Tighten the hydraulic chuck actuating screw to full stop manually to activate full clamping force.
- Attempt to rotate the test pin by hand. If it rotates freely,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



order number	catalogue number	D Clamping Ø	D1	L	L1
		mm	mm	mm	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

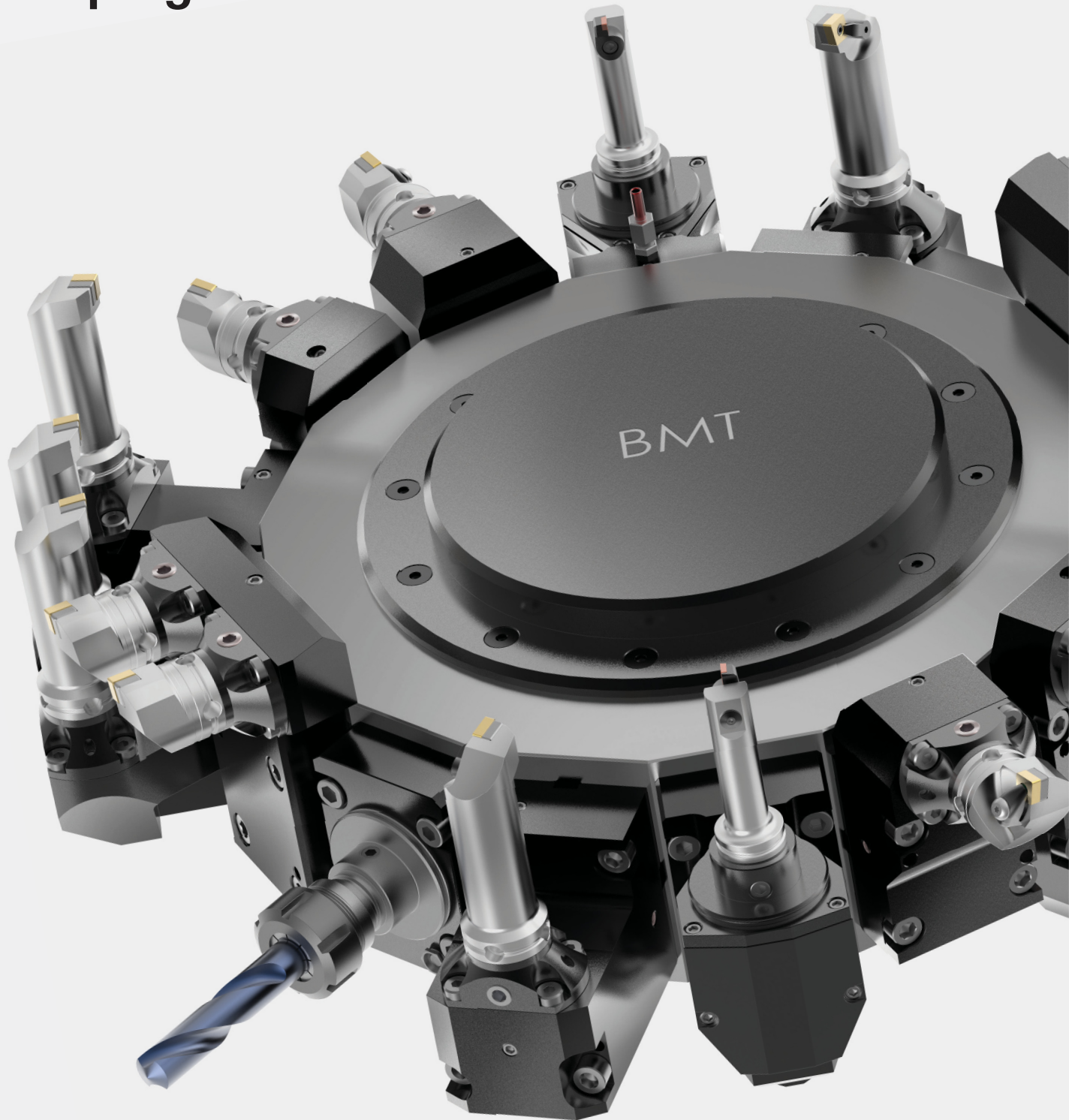
CLEANING RECOMMENDATION

- 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



KNS[®]

Kennametal Narrow Slotting

Materials



Applications



Slotting



Side/Shoulder Milling



Slotting:
Full Radius

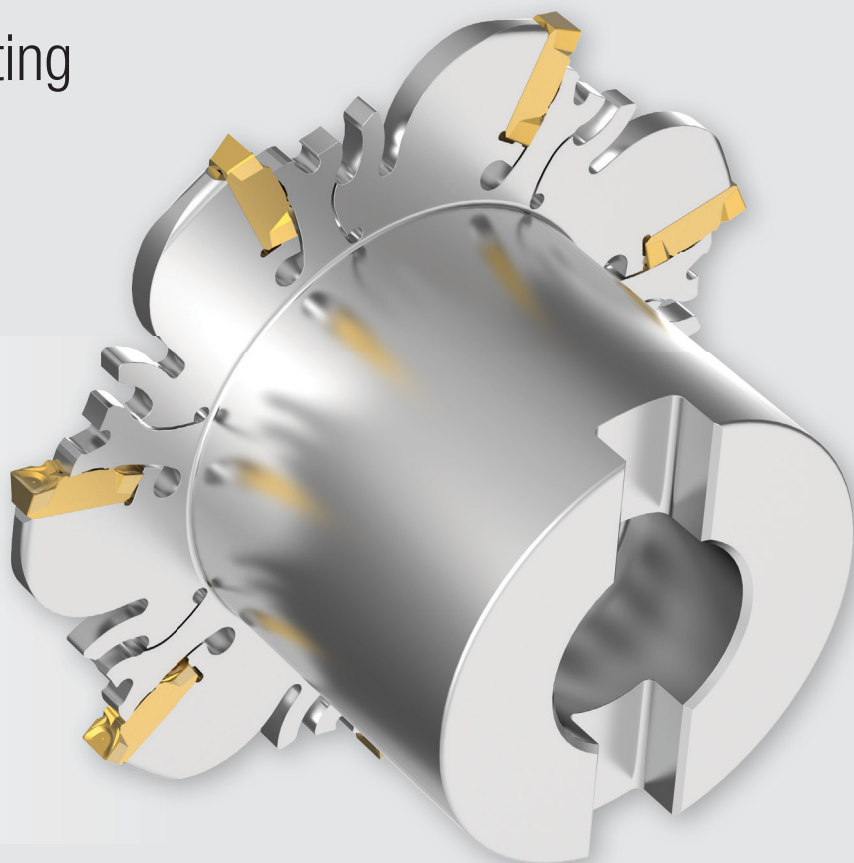


Cut-Off



Slotting:
Gang Milling

kennametal.com/KNS

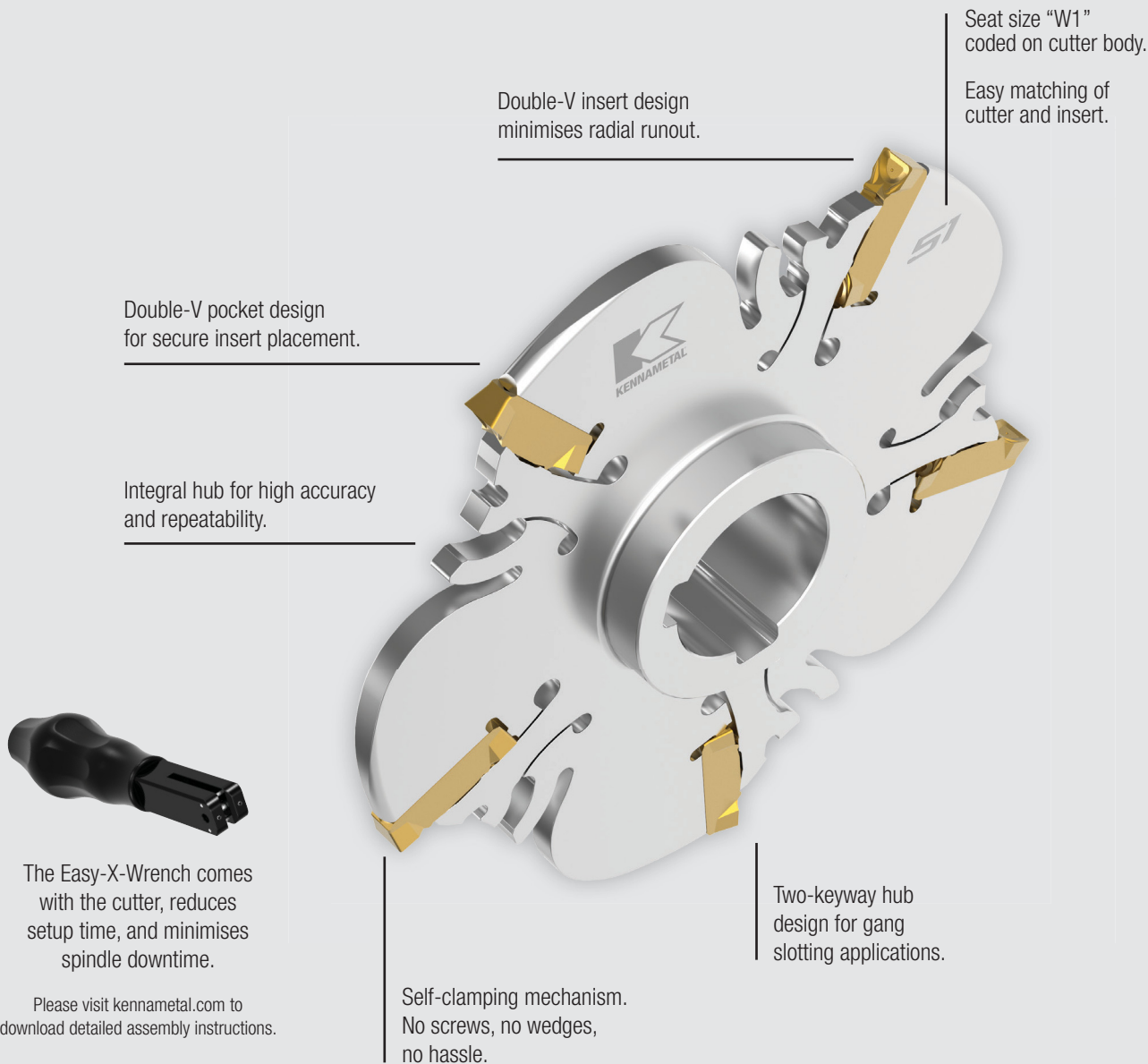


The Double-V Design of the insert and the insert pocket securely holds the insert in place and minimises radial runout.

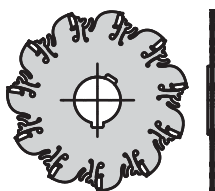
As a result, these stable cutting conditions lead to high slot width accuracy and high repeatability.

A unique self-clamping mechanism ensures easy insert exchange.

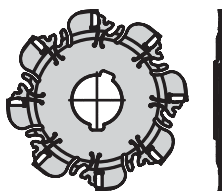
From light to heavy machining, the positive SGP chipbreaker geometry ensures smooth cutting action, and efficient chip evacuation.



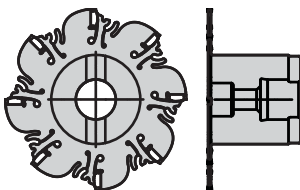
Cutter styles



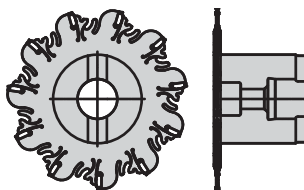
Arbour mount style.



Arbour mount style,
reinforced cutter body.

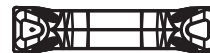


Shell mount style.



Shell mount style,
reinforced cutter body.

Insert Styles



Double-ended insert style
for slots with flat bottom.

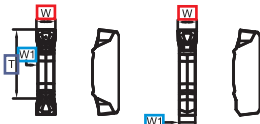
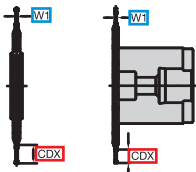


Single-ended insert style for
deep slots with flat bottom.



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

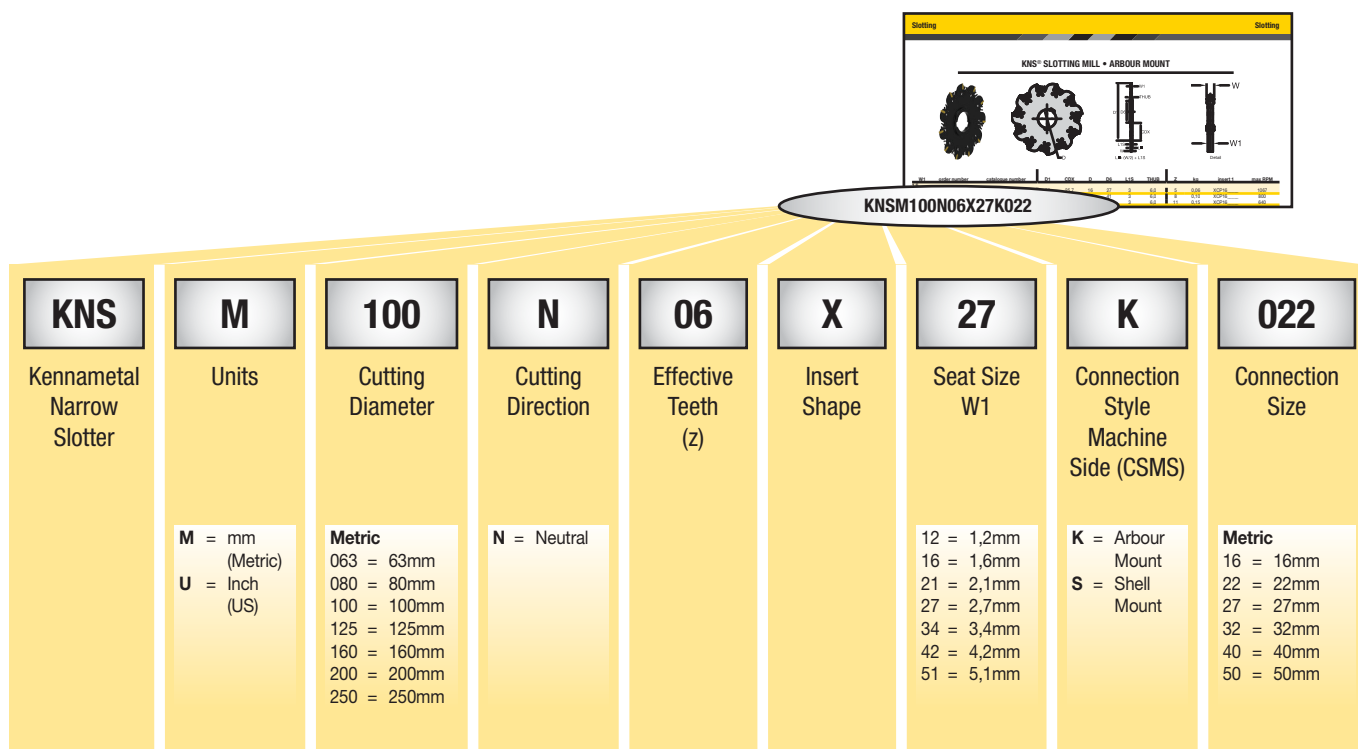
KNS® • TOOL SELECTION GUIDE

KNS KENNAMETAL NARROW SLOTTING MILLS				
	ARBOUR MOUNT	ARBOUR MOUNT • REINFORCED BODY	SHELL MOUNT	SHELL MOUNT • REINFORCED BODY
				
Page	40	40	41	41
Choose your slot width "W"				
"W1" is the seat size. "W1" on insert = "W1" on cutter body. "W" = cutting edge length. 	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. W1 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

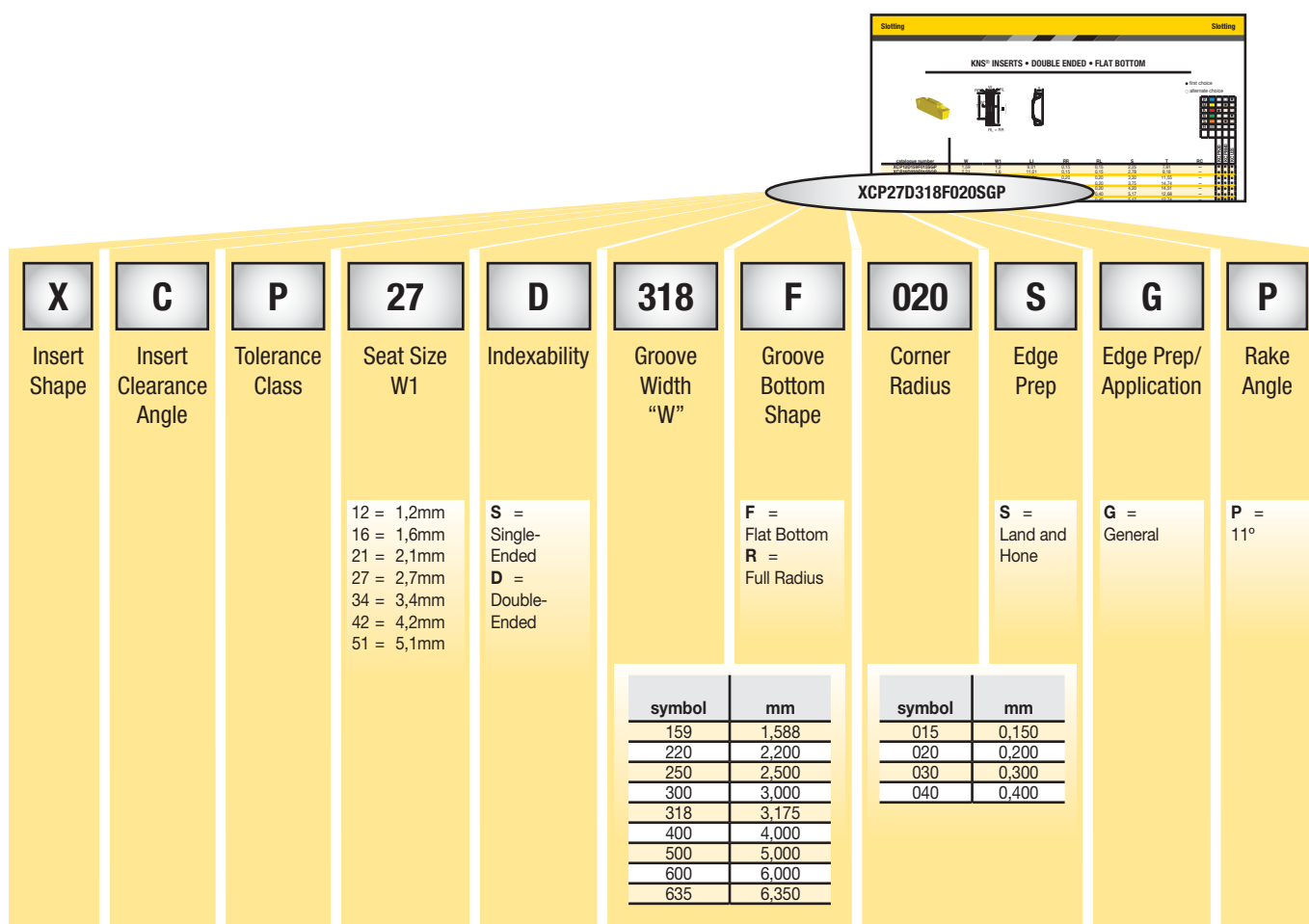


NOTE: For accessories, spare parts, and technical information, visit kennametal.com or kennametal.com/novo.

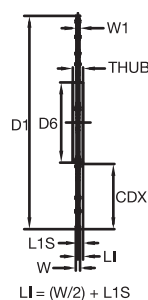
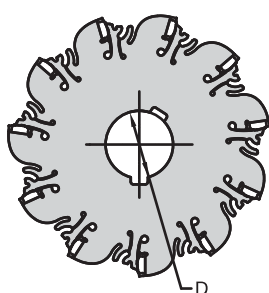
KNS® • CATALOGUE NUMBERING SYSTEM • CUTTERS



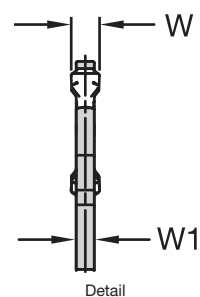
KNS • CATALOGUE NUMBERING SYSTEM • INSERTS



KNS® SLOTTING MILL • ARBOUR MOUNT



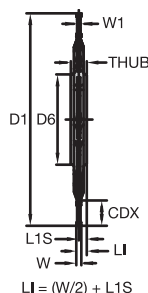
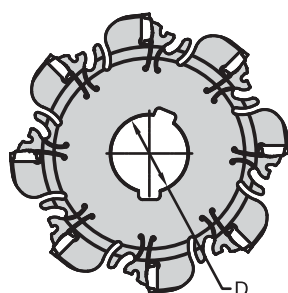
$$LI = (W/2) + L1S$$



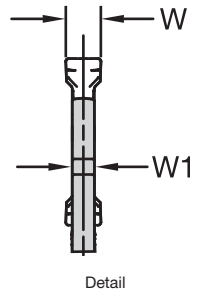
Detail

W1	order number	catalogue number	D1	CDX	D	D6	L1S	THUB	Z	kg	max RPM
1,6	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
2,1	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
2,7	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
3,4	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
4,2	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
5,1	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

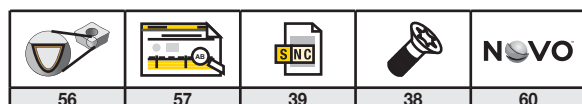


$$LI = (W/2) + L1S$$

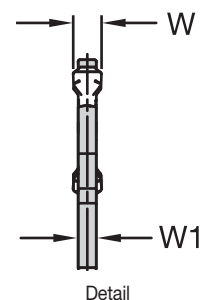
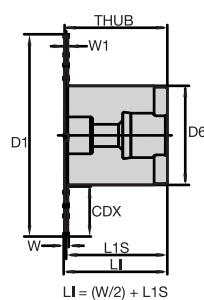
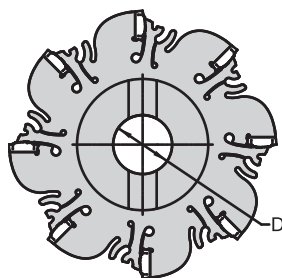


Detail

W1	order number	catalogue number	D1	CDX	D	D6	L1S	THUB	Z	kg	max RPM
1,2	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

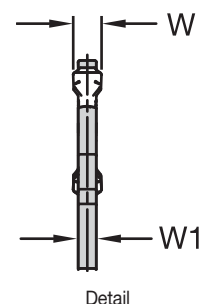
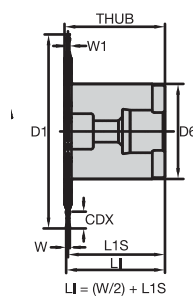
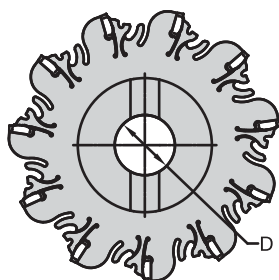


KNS® SLOTTING MILL • SHELL MOUNT

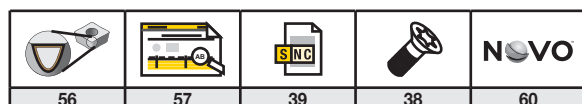


W1	order number	catalogue number	D1	CDX	D	D6	L1S	THUB	Z	kg	max RPM
1,6	5614852	KNSM100R08X16S022	100	24,7	22	49	50	50,8	8	0,73	800
2,1	5614853	KNSM100R07X21S022	100	24,7	22	49	50	51,1	7	0,75	800
2,7	5614854	KNSM125R08X27S032	125	24,7	32	74	60	61,4	8	2,00	640
3,4	5614855	KNSM125R07X34S032	125	25,7	32	72	60	61,7	7	1,94	640
4,2	5614856	KNSM125R07X42S032	125	26,7	32	70	60	62,1	7	1,89	640
5,1	5614857	KNSM125R06X51S032	125	25,7	32	72	60	62,6	6	1,87	640

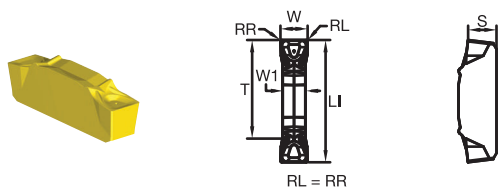
KNS SLOTTING MILL • REINFORCED BODY • SHELL MOUNT



W1	order number	catalogue number	D1	CDX	D	D6	L1S	THUB	Z	kg	max RPM
1,2	5614851	KNSM100R11X12S022	100	9,5	22	49	50	51,8	11	0,78	800



KNS® INSERTS • DOUBLE ENDED • FLAT BOTTOM



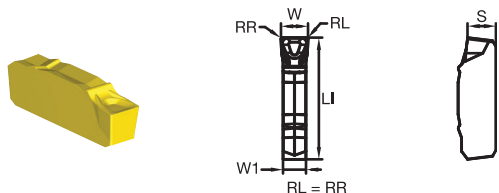
● first choice

○ alternate choice

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

catalogue number	W1	W	LI	RR	RL	S	T	RC	hm	CE	KCPK30	KCPM40	KCU25
XCP12D159F015SGP	1,2	1,59	9,01	0,15	0,15	2,25	7,61	—	0,04	2	●	●	●
XCP16D220F015SGP	1,6	2,21	11,01	0,15	0,15	2,78	9,18	—	0,04	2	●	●	●
XCP21D300F020SGP	2,1	3,01	14,01	0,20	0,20	3,30	11,55	—	0,04	2	●	●	●
XCP27D318F020SGP	2,7	3,18	18,01	0,20	0,20	3,75	14,74	—	0,04	2	●	●	●
XCP34D400F020SGP	3,4	4,01	18,01	0,20	0,20	4,20	14,51	—	0,04	2	●	●	●
XCP51D600F040SGP	5,1	6,01	18,01	0,40	0,40	5,17	12,68	—	0,04	2	●	●	●
XCP51D635F040SGP	5,1	6,36	18,01	0,40	0,40	5,17	12,74	—	0,04	2	●	●	●

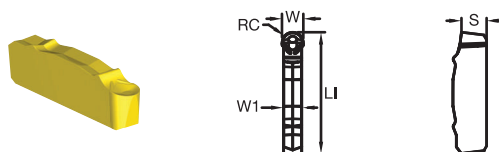
KNS INSERTS • SINGLE ENDED • FLAT BOTTOM



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

catalogue number	W1	W	LI	RR	RL	S	T	RC	hm	CE	KCPK30	KCPM40	KCU25
XCP16S220F015SGP	1,6	2,21	11,00	0,15	0,15	2,78	—	—	0,04	1	●	●	●
XCP21S250F020SGP	2,1	2,50	14,00	0,20	0,20	3,30	—	—	0,04	1	●	●	●
XCP21S300F020SGP	2,1	3,01	14,00	0,20	0,20	3,30	—	—	0,04	1	●	●	●
XCP27S318F020SGP	2,7	3,18	18,00	0,20	0,20	3,75	—	—	0,04	1	●	●	●
XCP34S400F020SGP	3,4	4,01	18,00	0,20	0,20	4,20	—	—	0,04	1	●	●	●
XCP42S500F030SGP	4,2	5,01	18,00	0,30	0,30	4,65	—	—	0,04	1	●	●	●
XCP51S600F040SGP	5,1	6,01	18,00	0,40	0,40	5,17	—	—	0,04	1	●	●	●
XCP51S635F040SGP	5,1	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	●	○	○	○

catalogue number	W1	W	LI	RR	RL	S	T	RC	hm	CE	KCPK30	KCPM40	KCU25
XCP21S300R150SGP	2,1	3,01	14,00	—	—	3,30	—	1,50	0,04	1	●	—	●
XCP27S318R159SGP	2,7	3,18	18,00	—	—	3,75	—	1,59	0,04	1	●	—	●
XCP34S400R200SGP	3,4	4,00	18,00	—	—	4,20	—	2,00	0,04	1	●	—	●

56	57	39	38	60

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.
 $\% = ae/Dc \cdot 100$ (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.

Duo-Lock™

3-Flute, Short-Length-Design Tips

Materials



Applications

FGDF tips



Plunge Milling



Ramping



Slotting



Side Milling/
Shoulder Milling

RFDD tips



Ramping



Slotting



Side Milling/
Shoulder Milling

kennametal.com/Duo-Lock



FGDF Tips — Roughing and finishing with just one tool. Diameter range covers keyway cutting for shaft to hub connections according to ISO standard.

RFDD Tips — High-performance roughing solution with excellent chip evacuation, especially in stainless steel.

The short design and corner radii provide stability and reduce deflection forces.

Ideally suited to perform long-reach applications on mill-turn machines, and driven tooling on lathes.

The unique cutting geometry results in low cutting forces, requiring low power consumption.

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, CV, BT, and DV back ends.

42°/45°/48° variable helix technology
minimises chatter and harmonics.

Chipbreaker profile for
perfect chip evacuation.

Keyway cutter
sizes available.

Unequal flute spacing reduces vibrations
and improves surface finish.

Corner radii increases tool life.
Centre cutting for plunging, ramping,
slotting, and side milling.

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

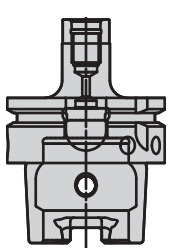
Intelligent thread ensures stress level to
remain below critical values, allowing
>25% higher transmittable torque.

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

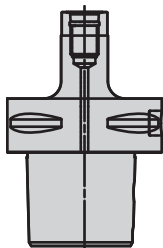
FGDF

RFDD

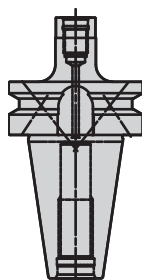
Adaptors



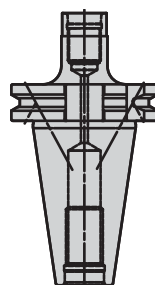
HSK



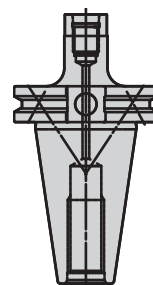
PSC



BT

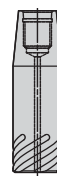


DV

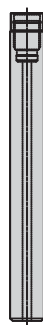
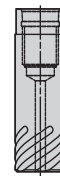


CV

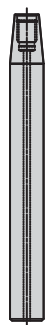
Extensions



SAFE-LOCK®
by HAIMER®



Cut-to-size



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	51	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 [R _c]	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



NOTE: For accessories, spare parts, and technical information, visit kenametal.com or kenametal.com/novo.

DUO-LOCK™ • TOOL SELECTION GUIDE

	HP ROUGHING & FINISHING (CONTINUED)		HP PROFILING	
	MaxiMet™	MaxiMet	HARVI™ Ball Nose	HARVI III Ball Nose
				
Series	ABDF	ABDE	UKBV	UJBV
Page	O28*	O29*	O18*	O19*
Tool type				
Rougher	●	●	●	
Finisher	○	●	○	●
Chamfering				
Main operation				
Workpiece material				
Primary	N	N	P M	S
Secondary			K S H	P M K H
Corner style				
Corner radius [R _c]	—	0,5–4mm	—	—
Corner chamfer width [BCH]	—	—	—	—
Cutter diameter [D1]	10–20mm	10–25mm	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 [A _{p1} max]	15–30mm	15–37,5mm	15–37,5mm	15–37,5mm
Flute helix angle	45°	38°	37°/39°	37°/39°
Number of flutes [ZU]	2	3	4	6
Centre cutting	✓	✓	✓	✓
Additional operations	 	 	 	

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

● Primary

○ Secondary



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DUO-LOCK™ • TOOL SELECTION GUIDE

HP ROUGHING				
	—	—	—	—
				
Series	RFDD	RQDB	RKDF	RQBB
Page	51	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 [R _c]	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 [A _{p1} 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



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DUO-LOCK™ • TOOL SELECTION GUIDE

	HP FINISHING		CHAMFERING	
	—	RSM II™	—	—
				
Series	FMDF	FSDE	XADA	XRDA
Page	O42*	O43*	O48*	O49*
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 [R _c]	0,5–0,75mm	0,5–4mm	—	—
Corner chamfer width [BCH]	—	—	—	—
Cutter diameter [D1]	10–25mm	10–25mm	10–16mm	10–16mm
Length of cut	1,5 x D	1,5 x D	2–4mm	1,5–4mm
Maximum cutting depth [A _{p1} 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.

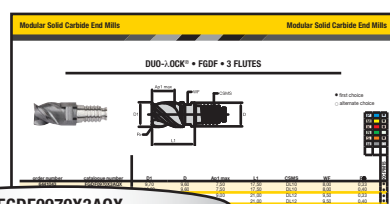
● Primary

○ Secondary



NOTE: For accessories, spare parts, and technical information, visit kennametal.com or kennametal.com/novo.

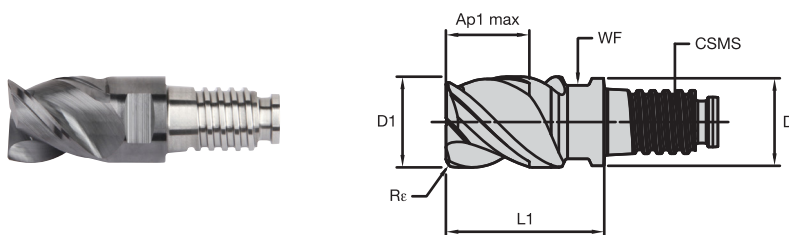
DUO-LOCK™ • CATALOGUE NUMBERING SYSTEM



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

DUO-LOCK™ • FGDF • 3 FLUTES



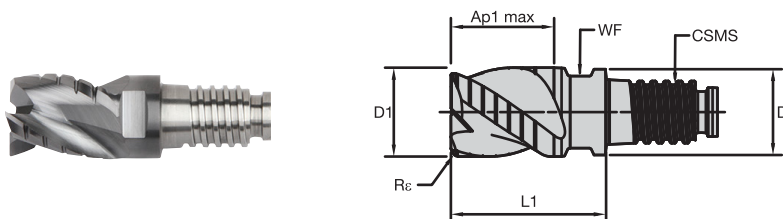
● first choice

○ alternate choice

P	●
M	●
K	●
N	●
S	●
H	○

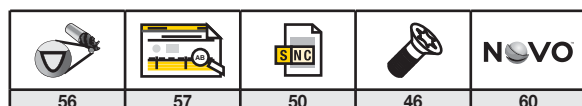
order number	catalogue number	D1	D	Ap1 max	L1	CSMS	WF	Re	KCPM15
6441043	FGDF0970X3AQX	9,70	9,60	7,50	17,50	DL10	8,00	0,33	●
6441029	FGDF1000X3AQD	10,00	9,60	7,50	17,50	DL10	8,00	0,40	●
6441044	FGDF1170X3AQX	11,70	11,50	9,00	21,00	DL12	9,50	0,33	●
6441030	FGDF1200X3AQD	12,00	11,50	9,00	21,00	DL12	9,50	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™ • RFDD • 3 FLUTES

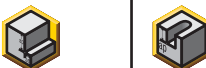


P	●
M	●
K	●
N	●
S	●
H	○

order number	catalogue number	D1	D	Ap1 max	L1	CSMS	WF	Re	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™ • FGDF • 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	0,4 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
M	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
	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
K	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
	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
S	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
	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
H	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
	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%.

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			KCPM15			KCPM15			D1 – Diameter					
				Cutting Speed – vc m/min			Cutting Speed – vc m/min			Cutting Speed – vc m/min								
	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
M	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
	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
K	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
	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
H	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
	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.

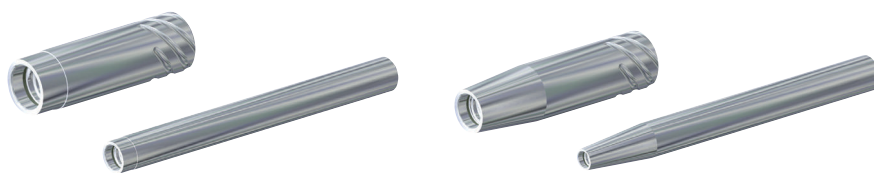
Above parameters are based on ideal conditions. For smaller taper machining centres, please adjust parameters accordingly on diameters >12mm.

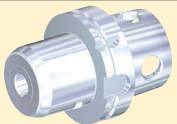
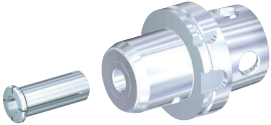
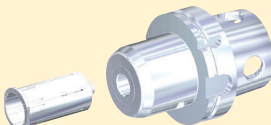
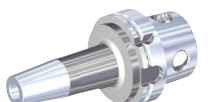
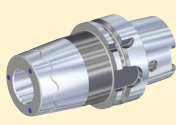
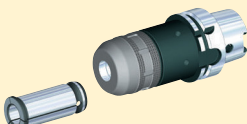
For tools with reach > 3 x D, reduce fz by 20%.

For tools with reach >5 x D, reduce fz by 30%.

For tools with reach >10 x D, reduce Vc and fz by 30%.

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

○ Not recommended

■ Suitable with limitations

— 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.

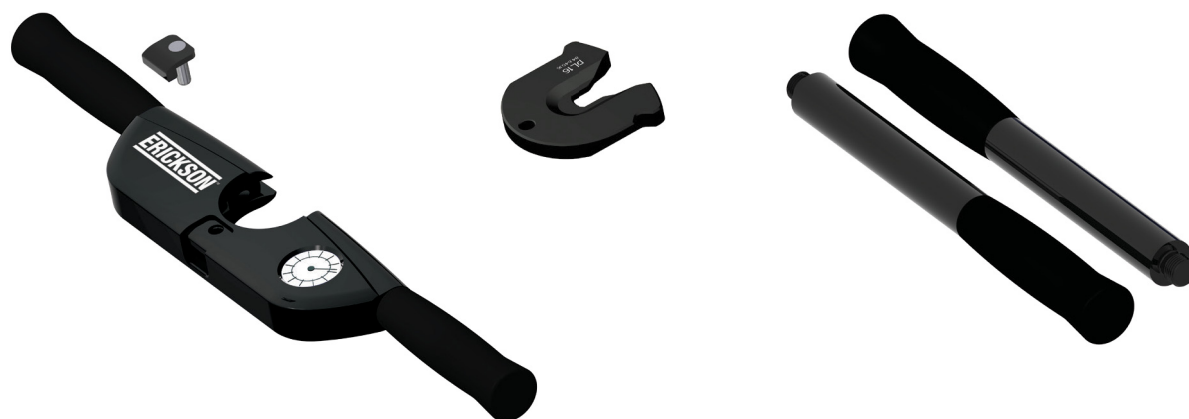
DUO-LOCK™ • SINGLE-HANDED TORQUE WRENCH



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

56	57	50	46	60

DUO-LOCK™ • INTELLIGENT THREAD

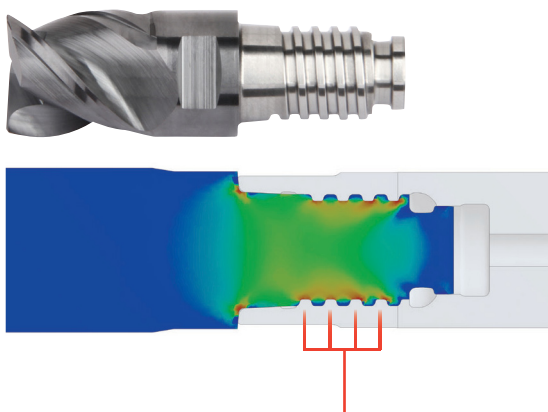
The Duo-Lock™ Intelligent Thread eliminates the force peaks all regular threads have in the first groove.

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

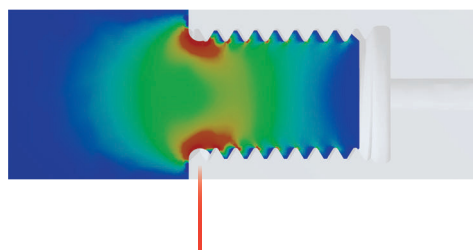
Duo-Lock™ Intelligent Thread



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



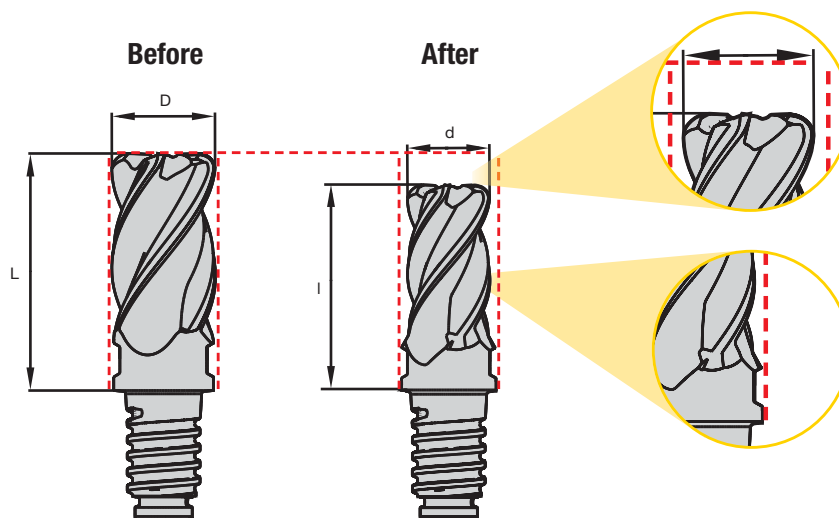
Typical for any regular thread at maximum load.

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.



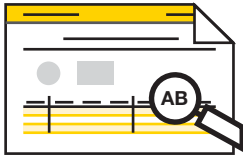
INDEXABLE MILLING

			wear resistance ←————→ toughness											
Coating		Grade Description		05	10	15	20	25	30	35	40	45		
KCPK30		Coated carbide grade with CVD multilayer (TiN/TiCN/Al ₂ O 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											

SOLID CARBIDE END MILLING

Coating		Grade Description	wear resistance ← → toughness									
				05	10	15	20	25	30	35	40	45
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									

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
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
R_c	Corner Radius
S	Insert Thickness
T	Limit of Slotting Depth
THUB	Hub Thickness
V	Adjustment Range
W	Cutting Edge Length or Slot Width
W1	Seat Size
WF	Distance Across Flats
Z	Number of Inserts
Z U	Number of Flutes

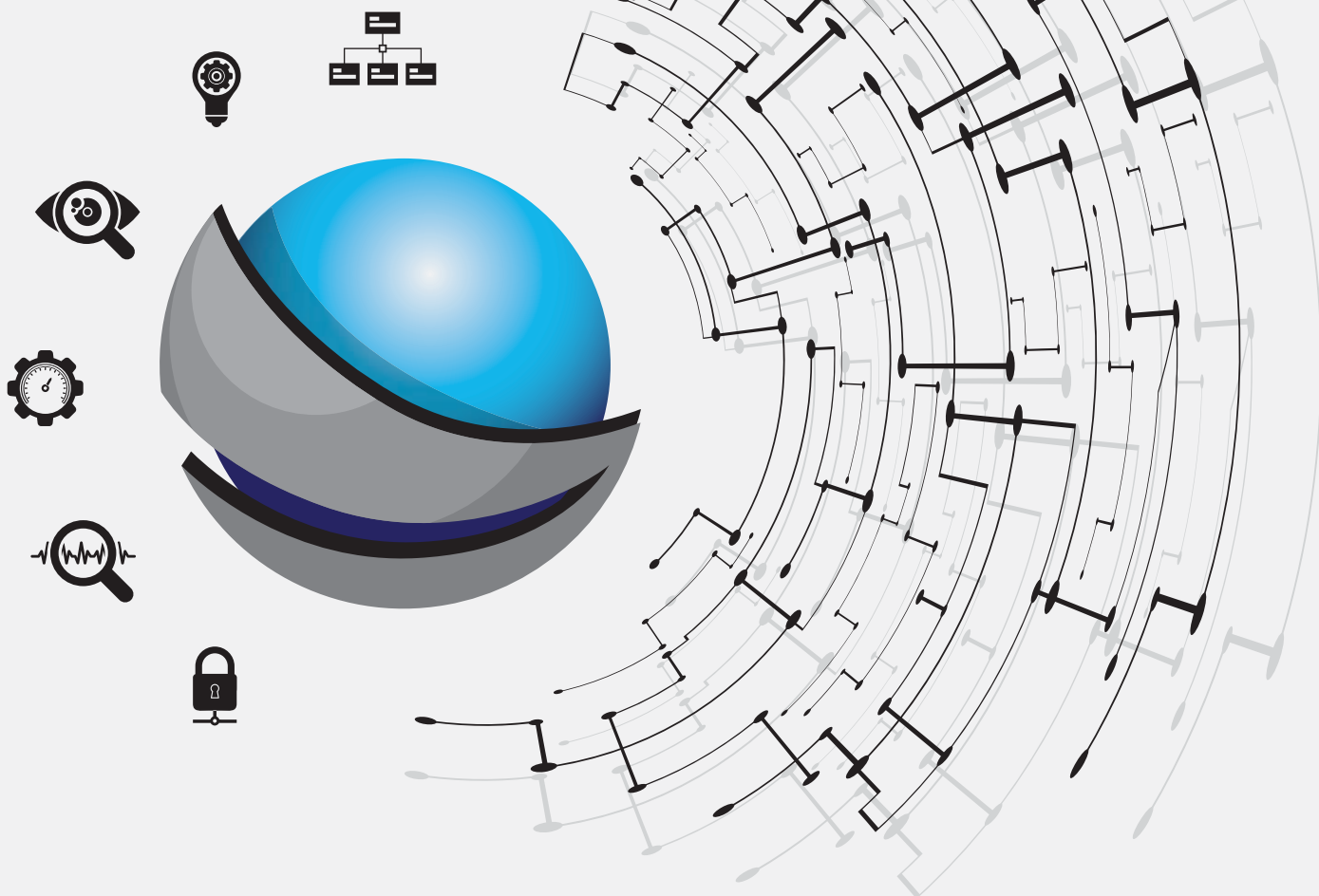
P	Steel
M	Stainless Steel
K	Cast Iron

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%	–	–	–	GAISiCu4, GDAISi10Mg
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	–	–	–	–	–

This image shows a single sheet of white paper with horizontal ruling lines. The lines are evenly spaced and run across the width of the page. There are no margins, text, or other markings on the paper.



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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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INNOVATIONS

WORLD HEADQUARTERS

Kennametal Inc.

600 Grant Street | Suite 5100

Pittsburgh, PA 15219 USA

Tel: 1 800 446 7738

ftmill.service@kennametal.com

EUROPEAN HEADQUARTERS

Kennametal Europe GmbH

Rheingoldstrasse 50

CH 8212 Neuhausen am Rheinfall

Switzerland

Tel: +41 52 6750 100

neuhausen.info@kennametal.com

ASIA-PACIFIC HEADQUARTERS

Kennametal Singapore Pte. Ltd.

3A International Business Park

Unit #01-02/03/05, ICON@IBP

Singapore 609935

Tel: +65 6265 9222

k-sg.sales@kennametal.com

INDIA HEADQUARTERS

Kennametal India Limited

CIN: L27109KA1964PLC001546

8/9th Mile, Tumkur Road

Bangalore - 560 073

Tel: +91 080 22198444 or +91 080 43281444

bangalore.information@kennametal.com



kennametal.com