

KM4X™

The Next Generation
Spindle Connection System



INNOVATIONS
CATALOG **2017**

LEERING®
SINCE 1939 HENGEL

KENNAMETAL®

KM4X™

The newest modular tooling connection offers higher clamping forces and interference levels that lead to a robust connection and extremely high stiffness and bending load capacity resulting in unmatched performance from both lathe and machining centers.



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New Size: KM4X63

➤ KM4X™

The KM4X system is the best large, heavy-duty spindle connection for rigidity because it has superb balance between bending and torsion capabilities from the machine tool.

Choosing What's Right

7/24 ISO Taper



- One surface contact.
- Relatively low stiffness.
- Possible runout due to taper fitment.
- Low axial accuracy.

7/24 Taper Face Contact



- Two surface contact.
- Higher static and dynamic stiffness.
- Higher axial and radial accuracy.
- Rigid system.

HSK



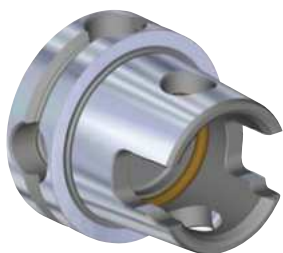
- Two surface contact.
- Higher axial and radial accuracy.
- Less mass — faster quick change and higher speeds.
- Higher stiffness than 7/24 tapers.

➤ **Good**

➤ **Better**

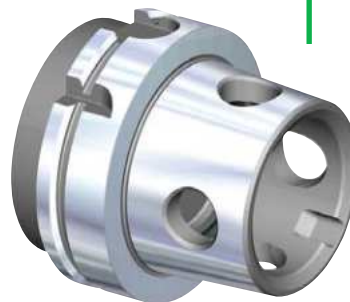
The Next Generation Spindle Connection System

KMTS (ISO)



- Three surface contact.
- Superior static and dynamic stiffness.
- Static and rotating applications.
- Higher speed.
- Higher stiffness than HSK and 7/24 tapers.

KM4X



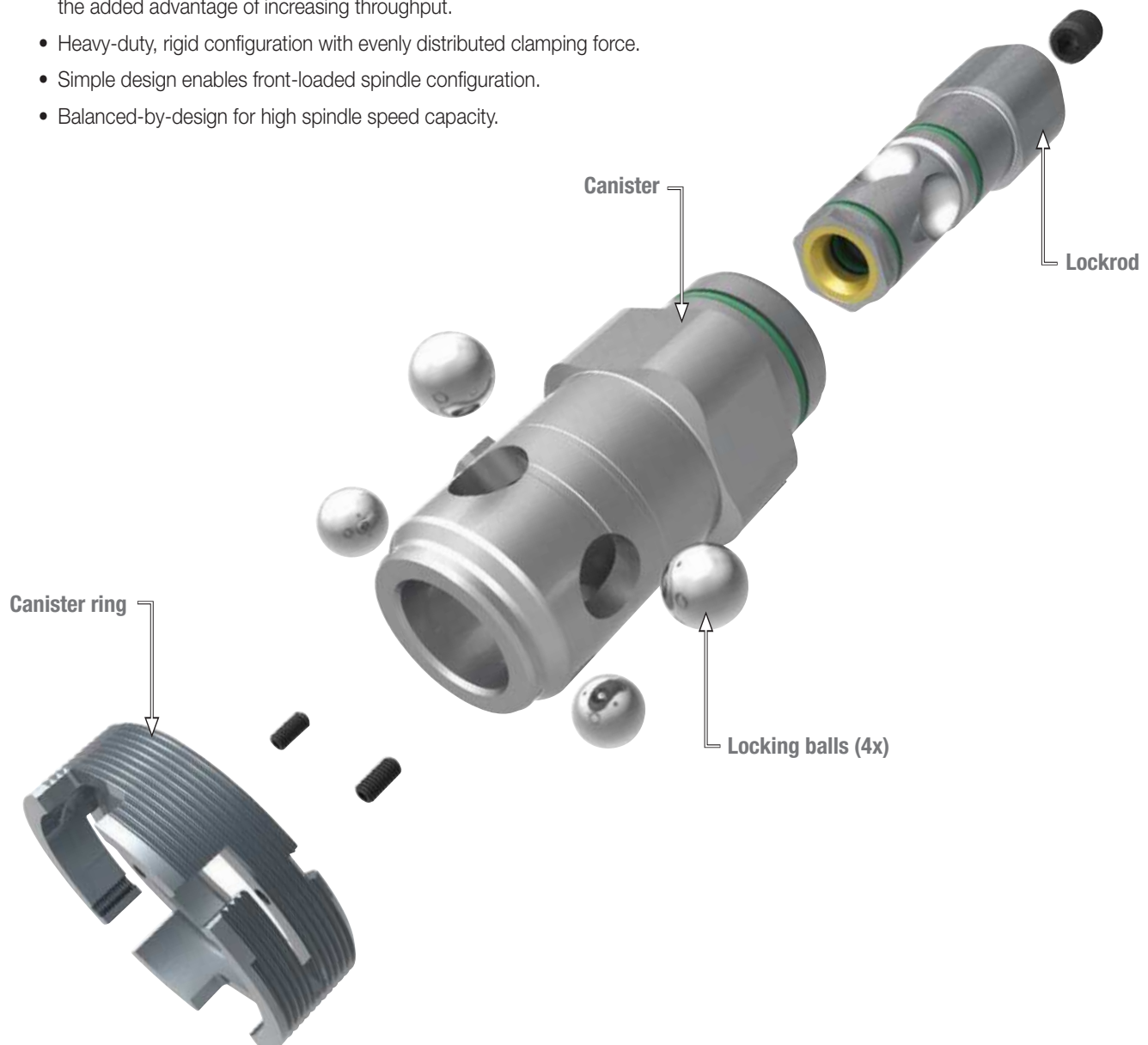
- Three surface contact.
- Superior static and dynamic stiffness.
- Static and rotating applications.
- Highest maximum speed.
- ISO (HSK) tool change groove.
- Sizes available:
 - KM4X63
 - KM4X100
 - KM4X125

The KM4X system is the latest modular tooling connection targeted at heavy-duty machining operations and is a top choice for machining large, structural tough-to-machine materials like titanium for the aerospace industry.

➤ **Best**

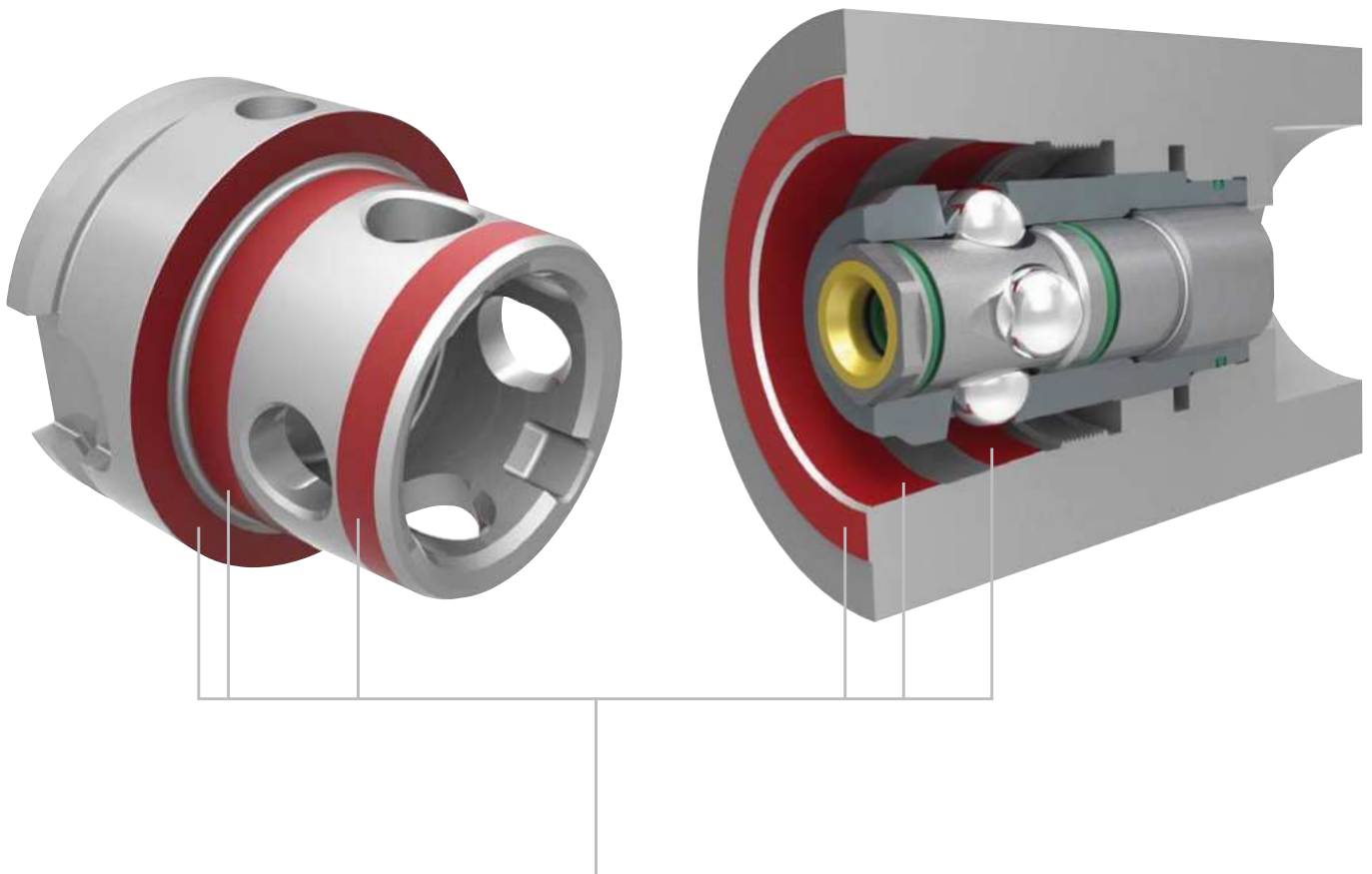
➤ KM4X™ The Latest Innovation in Spindle Interface Technology

- Offers the most rigid connection able to withstand extremely high bending due to a combination of high interference and high clamping forces.
- Provides 3x more bending capacity than comparable face contact systems.
- KM4X is the only connection that maintains stiffness at elevated rotational speeds and is suitable for a range of applications from low speeds with high torque to very high spindle speeds with low torque.
- Maintains a better balance between bending and torsion capabilities.
- The ability to retrofit the KM4X system to an existing machine tool offers the added advantage of increasing throughput.
- Heavy-duty, rigid configuration with evenly distributed clamping force.
- Simple design enables front-loaded spindle configuration.
- Balanced-by-design for high spindle speed capacity.



➤ KM4X™ Rotating Spindle Components

The use of standardized spindle components makes the KM4X system ideal for new machines and retrofitting into existing machines.



The KM4X system's three-surface contact enables improved stability and accuracy. Optimized clamping force distribution and interference fit provides higher stiffness.

➤ Why Bending Load Capacity Is Important

When machining tough materials like titanium, cutting speeds are relatively low due to thermal effects on cutting tools. Over the years, machine tool builders responded to this issue by improving stiffness and damping on spindles and machine structures. Spindles have been designed with abundant torque at low rotational speeds. Nevertheless, the spindle connection has remained the weak link in the system.

The spindle connection must provide torque and bending load capacity compatible with the machine tool specifications and the requirements for higher productivity. It becomes obvious that in end-milling applications where the projection lengths are typically greater, the limiting factor is the bending load capacity of the spindle interface.

The lines on the chart to the right represent the load capacity of HSK, PSC, and the KM4X™ system. The shaded areas represent the typical requirements for heavy-duty applications in various machining processes. The KM4X system is the only system that can deliver the torque and bending capacity required for achieving high-performance machining. Some systems may be able to transmit considerable amounts of torque, but the cutting forces also generate bending moments that exceed the interface's limits before torque limits are exceeded.



IMPORTANT

Information shown on the following charts was developed exclusively for use with KM4X tooling in static conditions. The results are not valid for any other system. To account for cutting force fluctuations in dynamic conditions, a reduction of 20–40% should be applied to the loads shown in charts.

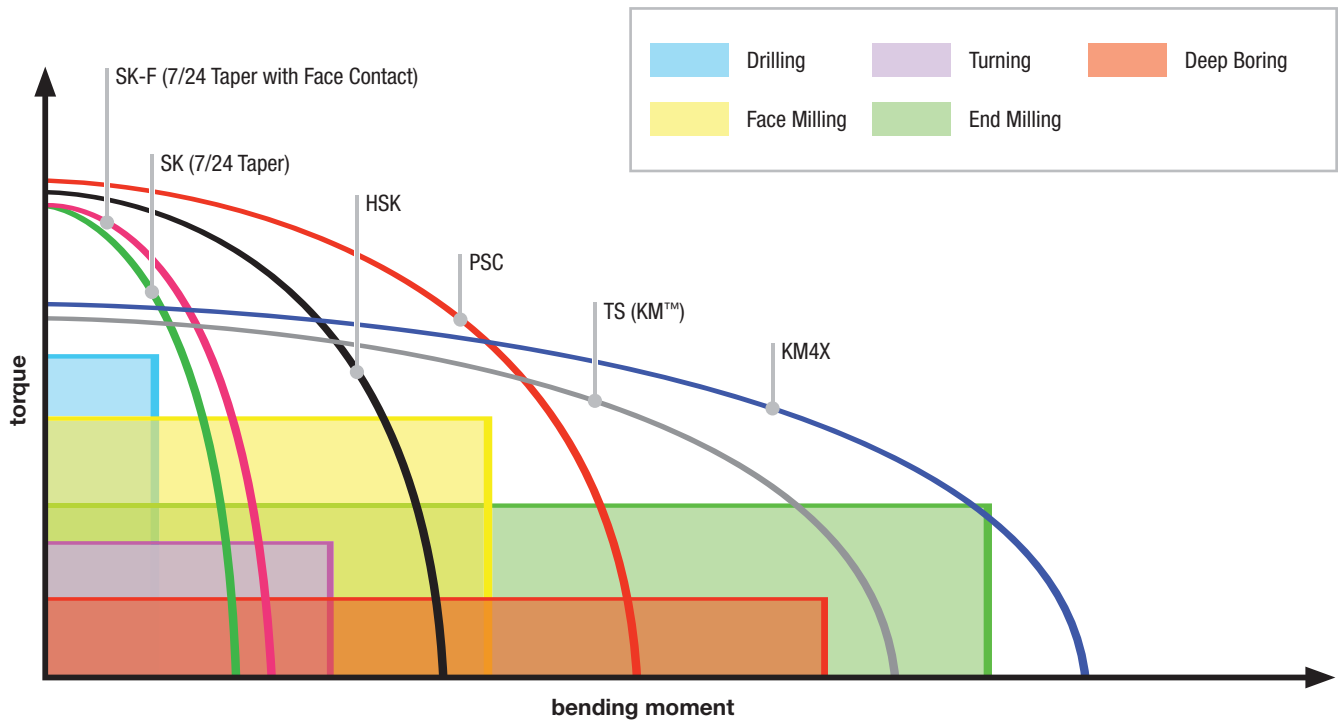
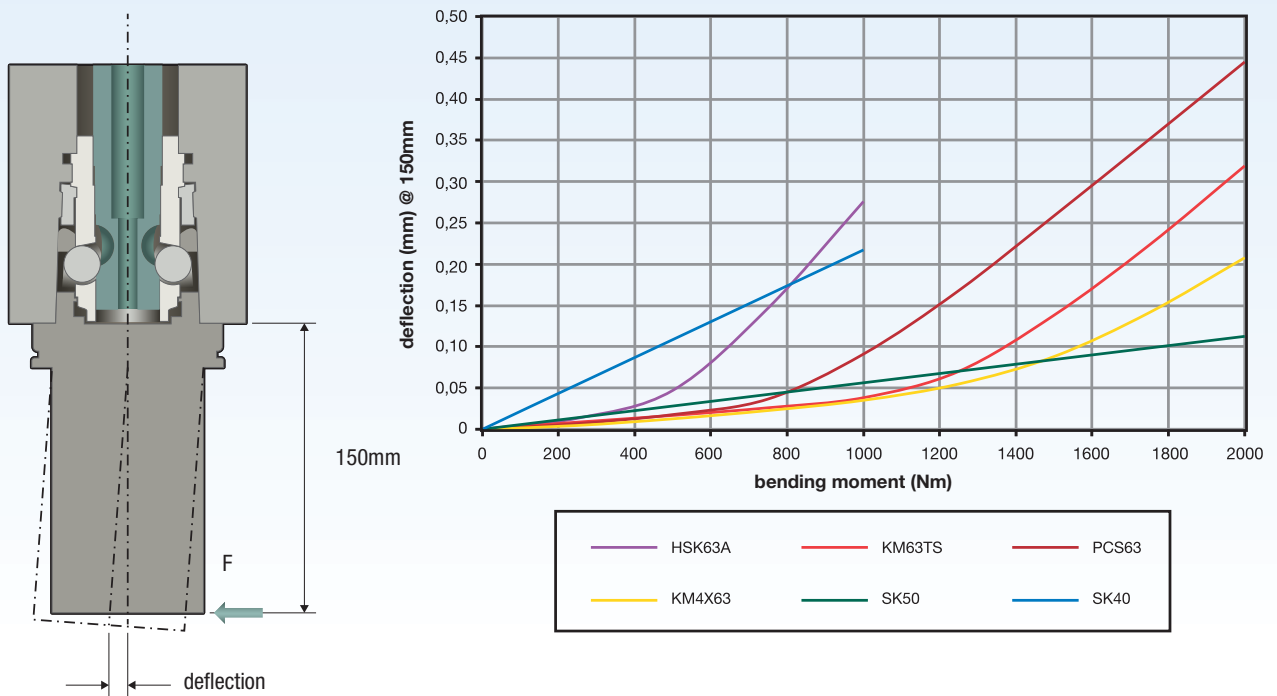
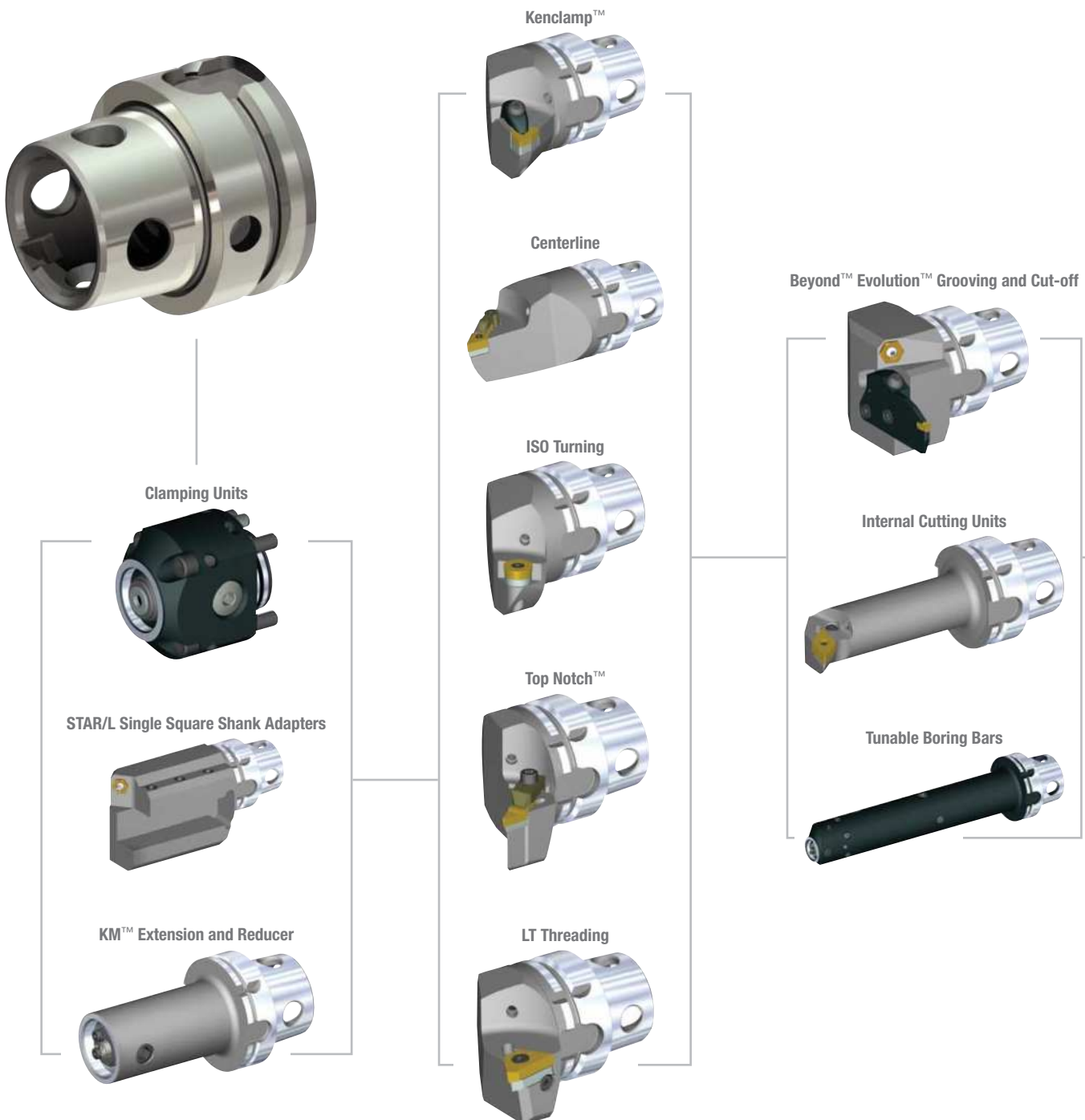


Chart shows load-deflection comparison of steep taper, HSK, PSC, KM-TS™, and KM4X™.



➤ KM4X™ Capability Overview



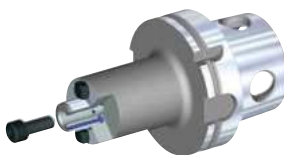
Whistle Notch™ Adapters



End Mill Adapters



Shell Mill Adapters



Screw-On Adapters



Drill Fix™ Adapters



Shrink Fit Adapters



HydroForce™ Adapters



Trendline Adapters



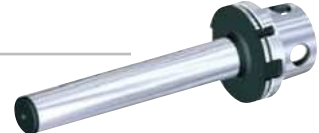
Slim Line Adapters



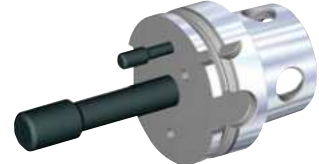
Collet Chuck Adapters



Gage Bars



ATC Adjustment Heads



Min. Max. and Timing Heads



Power Check Adapters



Accessories

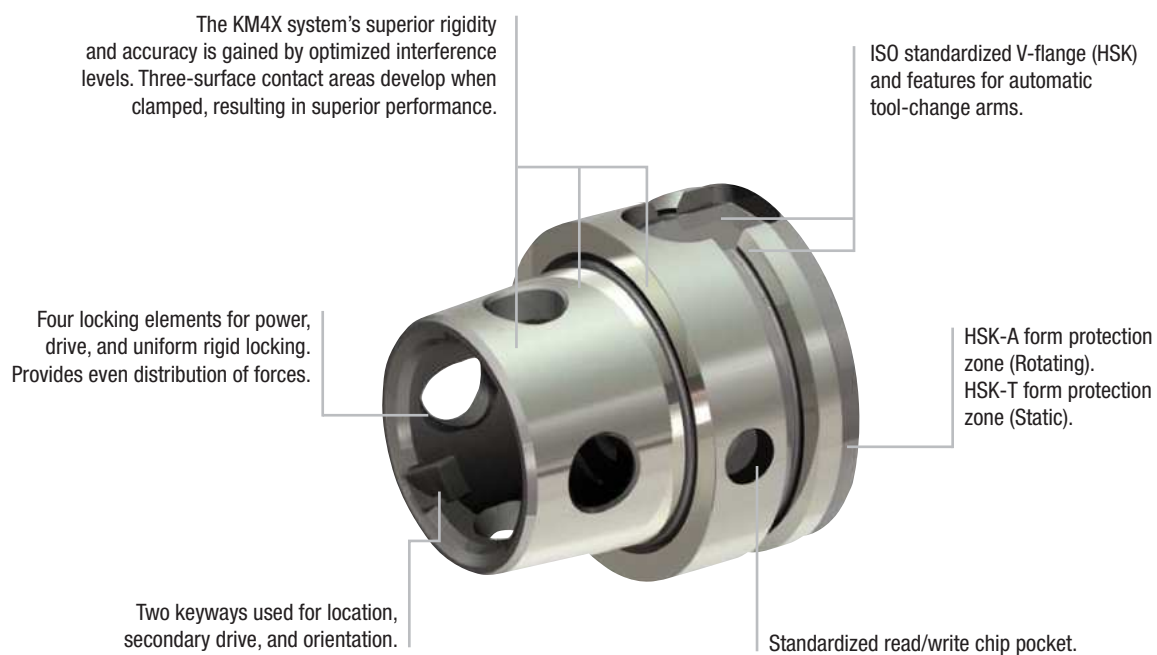


➤ KM4X63 Speed Capability

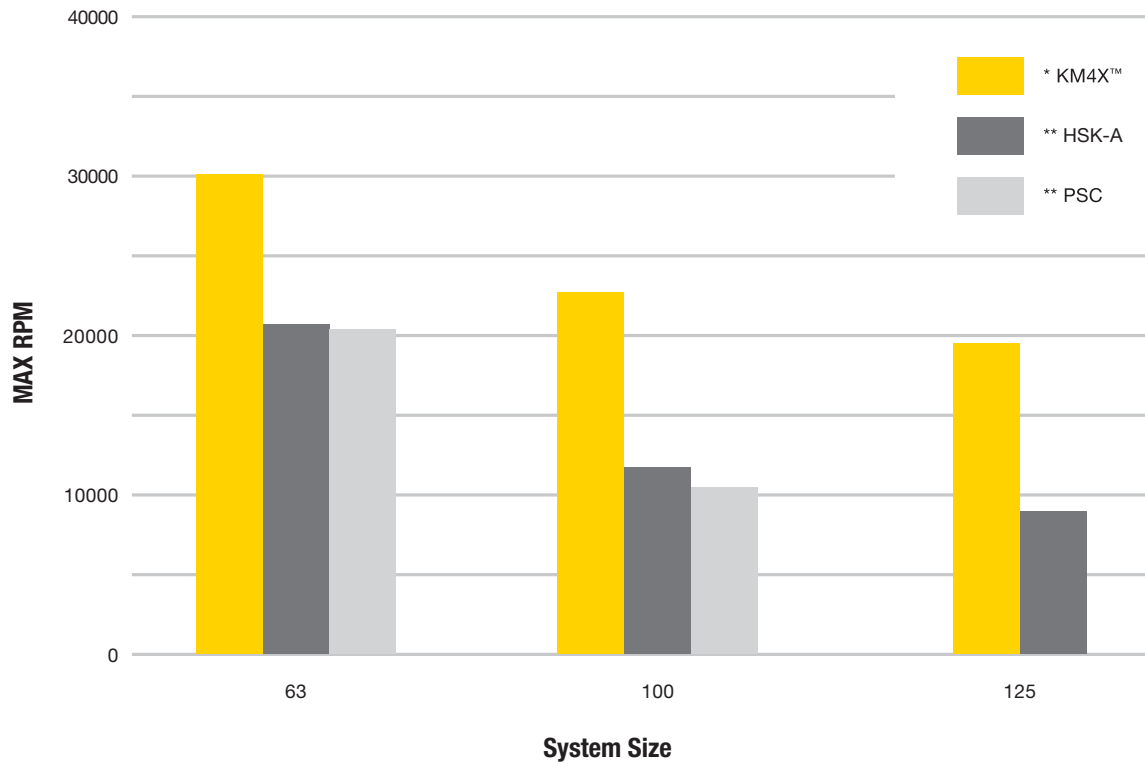
KM4X™ uses more interference between the male and female taper leading to:

- Higher rigidity
 - Better distribution of clamping force between face and taper.
 - More rigid connection that allows for higher bending and torsion loads.
- Higher spindle rotating speed
 - As RPM increases, the spindle taper expands at a faster rate than the tool taper.
 - Higher interference allows for a higher RPM before the two tapers lose contact.

KM4X63 Features



Maximum Allowable RPM



* Calculated value based on theoretical speed when tapers separate.

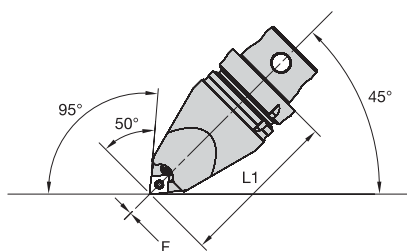
** Data published by Sandvik® at <http://www.sandvik.coromant.com/en-gb/knowledge/tooling-systems/machine-and-tooling-systems-considerations/spindle-selection/recommendations/pages/default.aspx>





KM4X63 • Static and Rotating Tools

KM4X63 • Static and Rotating Tools	B2–B84
KM4X63 Cutting Units.....	B2–B39
KM4X63 Internal Cutting Units.....	B40–B48
KM4X63 Adapters	B49–B52
KM4X63 Shank Tools.....	B54–B74
KM4X-LOC II Clamping Units	B75–B76
KM4X63 Spindle Clamping System	B77–B78
Accessories.....	B79–B84



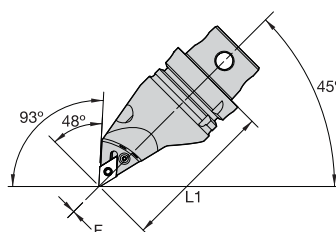
■ PCMN 50° • 95° Application • Centerline • HPC

order number	catalog number	L1		F		gage insert	kg	lbs
		mm	in	mm	in			
6275081	KM4X63PCMNN12115HPC	115	4.528	0	.000	CN..120408/CN..432	2,09	4.60

■ Spare Parts

catalog number	shim	lever screw	shim pin	toggle lever	punch	coolant nozzle	coolant plug	coolant plug	nozzle driver
KM4X63PCMNN12115HPC	512.112	514.123	513.023	511.023	515.018	NZLM4060140	PMP08352	PMP08360	NDS027M

NOTE: KM4X™ coolant unit and wrench are available and must be ordered separately; see page B84.



Left-Hand Tool

KM4X63 Cutting Units

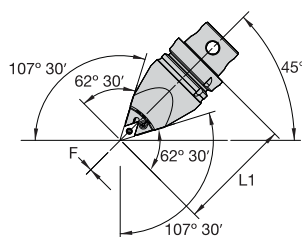
■ PDMN 48° • 93° Application • Centerline • HPC

order number	catalog number	L1		F		gage insert	kg	lbs
		mm	in	mm	in			
left hand								
6275082	KM4X63PDMNL15115HPC	115	4.528	0	.000	DN..150608/DN..442	1,83	4.04

■ Spare Parts

catalog number	        								
	shim	lever screw	shim pin	toggle lever	punch	coolant nozzle	coolant plug	coolant plug	nozzle driver
left hand									
KM4X63PDMNL15115HPC	512.153	514.128	513.023	511.024	515.018	NZLM4060140	PMP08352	PMP08360	NDS027M

NOTE: KM4X™ coolant unit and wrench are available and must be ordered separately; see page B84.



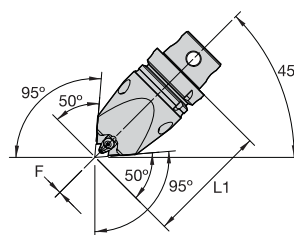
■ PDNN 62° 30' • 107° 30' Application • Centerline • HPC

order number	catalog number	L1		F		gage insert	kg	lbs
		mm	in	mm	in			
6275083	KM4X63PDNNN15115HPC	115	4.528	0	.000	DN..150608/DN..442	1,95	4.31

■ Spare Parts

catalog number	shim	lever screw	shim pin	toggle lever	coolant nozzle	coolant plug	coolant plug	nozzle driver
KM4X63PDNNN15115HPC	512.153	514.128	513.023	511.024	NZLM4060140	PMP08352	PMP08360	NDS027M

NOTE: KM4X™ coolant unit and wrench are available and must be ordered separately; see page B84.



KM4X63 Cutting Units

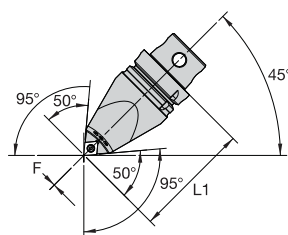
■ DCMN 50° • 95° Application • Centerline • HPC

order number	catalog number	L1		F		gage insert	kg	lbs
		mm	in	mm	in			
6275084	KM4X63DCMNN12115HPC	115	4.528	0	.000	CN..120408/CN..432	2,14	4.71

■ Spare Parts

catalog number							
	shim	shim screw	clamp assembly	pin	coolant nozzle	coolant plug	nozzle driver
KM4X63DCMNN12115HPC	ICSN443	KMSP415IP	CM234R ASSY	SSP025016M	NZLM4060140	PMP08360	NDS027M

NOTE: KM4X™ coolant unit and wrench are available and must be ordered separately; see page B84.



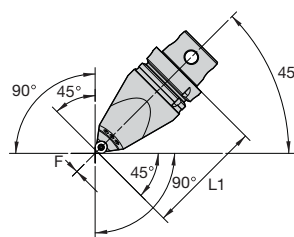
■ SCMC 50° • 95° Application • Centerline • HPC

order number	catalog number	L1		F		gage insert	kg	lbs
		mm	in	mm	in			
6275085	KM4X63SCMCN12115HPC	115	4.528	0	.000	CN..120408/CN..432	2,09	4.60

■ Spare Parts

catalog number					
	insert screw	coolant nozzle	coolant plug	coolant plug	nozzle driver
KM4X63SCMCN12115HPC	MS1158	NZLM4060140	PMP08352	PMP08360	NDS027M

NOTE: KM4X™ coolant unit and wrench are available and must be ordered separately; see page B84.



KM4X63 Cutting Units

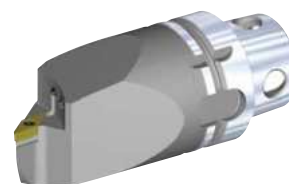
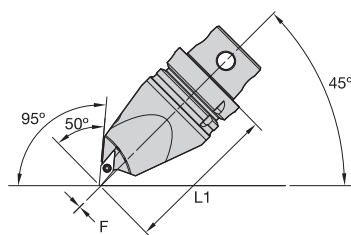
■ SRDC 0° • 45° Application • Centerline • HPC

order number	catalog number	L1		F		gage insert	kg	lbs
		mm	in	mm	in			
6275086	KM4X63SRDCN12115HPC	115	4.528	0	.000	RC..1204M0	2,10	4.63

■ Spare Parts

catalog number							
	insert screw	shim	shim screw	coolant nozzle	coolant plug	coolant plug	nozzle driver
KM4X63SRDCN12115HPC	MS1156	SKRN1203M0	SRS3	NZLM4060140	PMP08352	PMP08360	NDS027M

NOTE: KM4X™ coolant unit and wrench are available and must be ordered separately; see page B84.



Left-Hand Tool

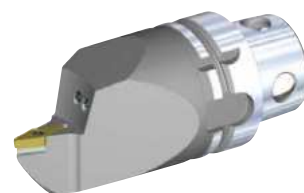
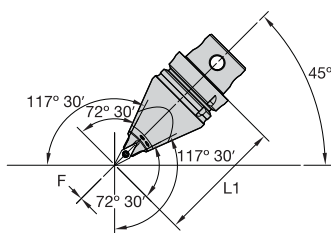
■ **SVMB 50° • 95° Application • Centerline • HPC**

		L1		F				
order number	catalog number	mm	in	mm	in	gage insert	kg	lbs
left hand								
6275087	KM4X63SVMBL16115HPC	115	4.528	0	.000	VB..160408/VB..332	2.03	4.47

■ **Spare Parts**

catalog number							
	insert screw	shim	shim screw	coolant nozzle	coolant plug	coolant plug	nozzle driver
left hand							
KM4X63SVMBL16115HPC	MS1156	SKVN343	SRS3	NZLM4060140	PMP08352	PMP08360	NDS027M

NOTE: KM4X™ coolant unit and wrench are available and must be ordered separately; see page B84.



KM4X63 Cutting Units

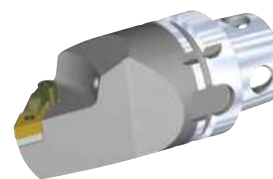
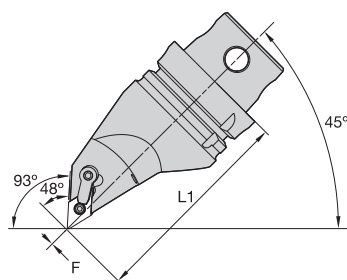
■ SVVB 72° 30' • 117° 30' Application • Centerline • HPC

order number	catalog number	L1		F		gage insert	kg	lbs
		mm	in	mm	in			
6275088	KM4X63SVVB16115HPC	115	4.528	0	.000	VB..160408/VB..332	1,83	4.03

■ Spare Parts

catalog number							
	insert screw	shim	shim screw	coolant nozzle	coolant plug	coolant plug	nozzle driver
KM4X63SVVB16115HPC	MS1156	SKVN343	SRS3	NZLM4060140	PMP08352	PMP08360	NDS027M

NOTE: KM4X™ coolant unit and wrench are available and must be ordered separately; see page B84.



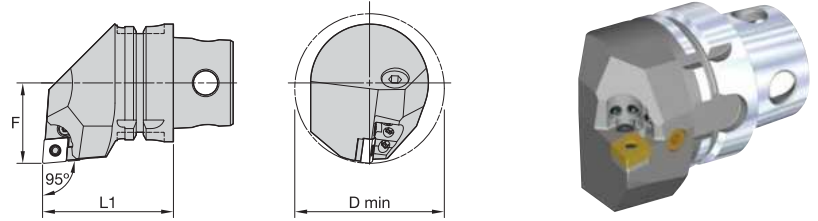
Left-Hand Tool

■ MDMN 48° • 93° Application • Centerline



order number	catalog number	L1		F		gage insert	shim	lock pin	clamp	clamp screw	kg	lbs
		mm	in	mm	in							
right hand												
5552727	KM4X63MDMNR1504115	115	4.528	0	.000	DN..150408/DN..432	IDSN442	KLM46L	CKM23	STCM11	1,82	4.01
5552728	KM4X63MDMNR1506115	115	4.528	0	.000	DN..150608/DN..442	IDSN432	KLM46L	CKM23	STCM11	1,82	4.01
left hand												
5552729	KM4X63MDMNL1504115	115	4.528	0	.000	DN..150408/DN..432	IDSN442	KLM46L	CKM23	STCM11	1,81	3.99
5552730	KM4X63MDMNL1506115	115	4.528	0	.000	DN..150608/DN..442	IDSN432	KLM46L	CKM23	STCM11	1,81	3.99

NOTE: KM4X™ coolant unit and wrench are available and must be ordered separately; see page B84.



KM4X63 Cutting Units

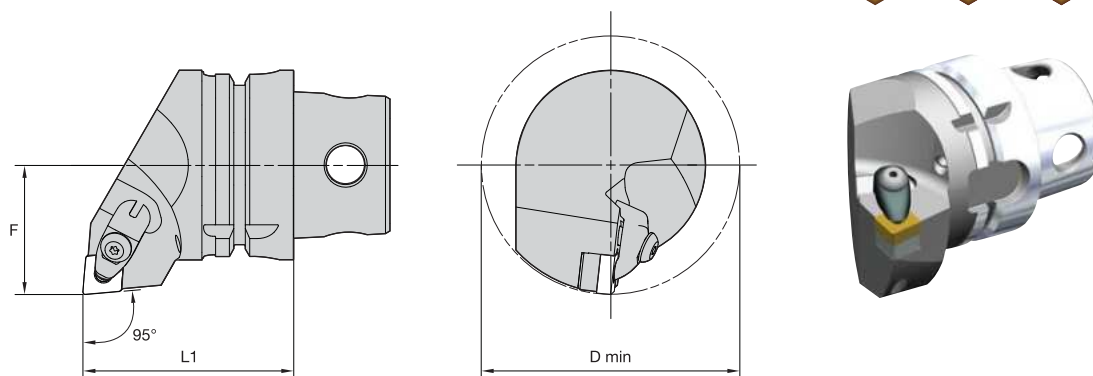
■ PCLN 95° • HPC

		L1		F		D min				
order number	catalog number	mm	in	mm	in	mm	in	gage insert	kg	lbs
right hand										
5720353	KM4X63PCLNR12HPC	70	2.756	43	1.693	80	3.150	CN..120408/CN..432	1,51	3.33
5720355	KM4X63PCLNR16HPC	70	2.756	43	1.693	80	3.150	CN..160612/CN..543	1,49	3.28
left hand										
5720354	KM4X63PCLNL12HPC	70	2.756	43	1.693	80	3.150	CN..120408/CN..432	1,51	3.33
5720356	KM4X63PCLNL16HPC	70	2.756	43	1.693	80	3.150	CN..160612/CN..543	1,49	3.28

■ Spare Parts

catalog number										
	shim	lever screw	shim pin	toggle lever	punch	coolant nozzle	coolant plug	coolant plug	coolant plug	nozzle driver
right hand										
KM4X63PCLNR12HPC	512.112	514.123	513.023	511.023	515.018	NZLM4060140	PMP08352	PMP08360	PMP08361	NDS027M
KM4X63PCLNR16HPC	512.117	514.125	513.025	511.025	515.022	NZLM4060140	PMP08352	PMP08360	PMP08361	NDS027M
left hand										
KM4X63PCLNL12HPC	512.112	514.123	513.023	511.023	515.018	NZLM4060140	PMP08352	PMP08360	PMP08361	NDS027M
KM4X63PCLNL16HPC	512.117	514.125	513.025	511.025	515.022	NZLM4060140	PMP08352	PMP08360	PMP08361	NDS027M

NOTE: Nozzle driver must be purchased separately.
Coolant nozzles with various orifice diameters are available.
KM4X™ coolant unit and wrench are available and must be ordered separately; see page B84.



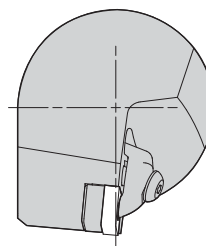
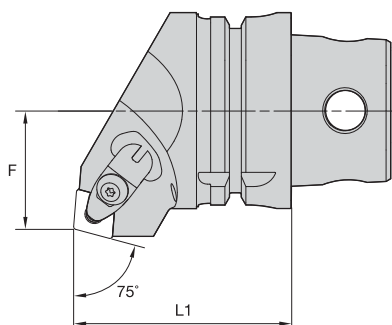
■ **DCLN 95°**

		L1		F		D min				
order number	catalog number	mm	in	mm	in	mm	in	gage insert	kg	lbs
right hand										
5552676	KM4X63DCLNR12KC04	70	2.756	43	1.693	86	3.386	CN..120408/CN..432	1,40	3.08
5543407	KM4X63DCLNR16KC06	70	2.756	43	1.693	86	3.386	CN..160612/CN..543	1,37	3.02
left hand										
5552674	KM4X63DCLNL12KC04	70	2.756	43	1.693	86	3.386	CN..120408/CN..432	1,40	3.09
5552675	KM4X63DCLNL16KC06	70	2.756	43	1.693	86	3.386	CN..160612/CN..543	1,39	3.06

■ **Spare Parts**

				
catalog number	shim	shim screw	clamp assembly	pin
right hand				
KM4X63DCLNR12KC04	ICSN443	KMSP415IP	CM234R ASSY	SSP025016M
KM4X63DCLNR16KC06	ICSN543	KMSP515IP	CM209R ASSY	SSP025018M
left hand				
KM4X63DCLNL12KC04	ICSN443	KMSP415IP	CM234R ASSY	SSP025016M
KM4X63DCLNL16KC06	ICSN543	KMSP515IP	CM209R ASSY	SSP025018M

NOTE: KM4X™ coolant unit and wrench are available and must be ordered separately; see page B84.



KM4X63 Cutting Units

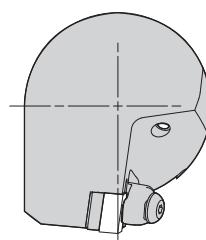
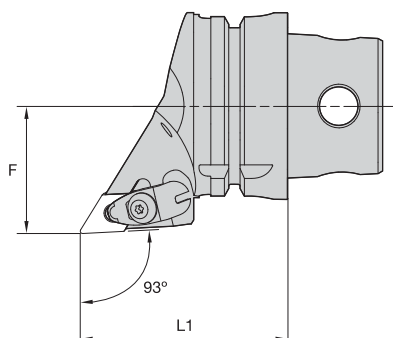
■ DCRN 75°

		L1		F				
order number	catalog number	mm	in	mm	in	gage insert	kg	lbs
right hand								
5543409	KM4X63DCRNR12KC04	70	2.756	38	1.496	CN..120408/CN..432	1,41	3.10
left hand								
5543408	KM4X63DCRNL12KC04	70	2.756	38	1.496	CN..120408/CN..432	1,41	3.12

■ Spare Parts

				
catalog number	shim	shim screw	clamp assembly	pin
right hand				
KM4X63DCRNR12KC04	ICSN443	KMSP415IP	CM234R ASSY	SSP025016M
left hand				
KM4X63DCRNL12KC04	ICSN443	KMSP415IP	CM234R ASSY	SSP025016M

NOTE: KM4X™ coolant unit and wrench are available and must be ordered separately; see page B84.



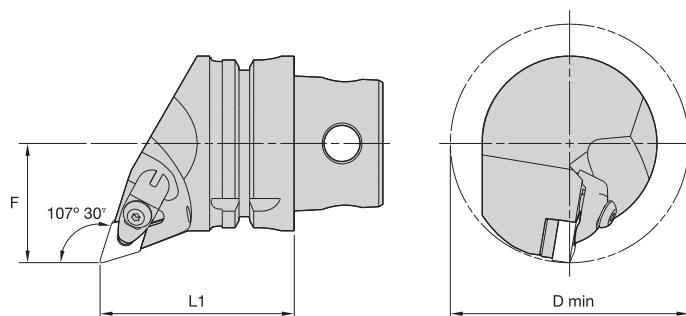
■ DDJN 93°

order number	catalog number	L1		F		gage insert	kg	lbs
		mm	in	mm	in			
right hand								
5552678	KM4X63DDJNR15KC04	70	2.756	43	1.693	DN..150408/DN..432	1,19	2.63
left hand								
5552677	KM4X63DDJNL15KC04	70	2.756	43	1.693	DN..150408/DN..432	1,17	2.57

■ Spare Parts

				
catalog number	shim	shim screw	clamp assembly	pin
right hand				
KM4X63DDJNR15KC04	IDSN443	KMSP415IP	CM234R ASSY	SSP025016M
left hand				
KM4X63DDJNL15KC04	IDSN443	KMSP415IP	CM234R ASSY	SSP025016M

NOTE: KM4X™ coolant unit and wrench are available and must be ordered separately; see page B84.



KM4X63 Cutting Units

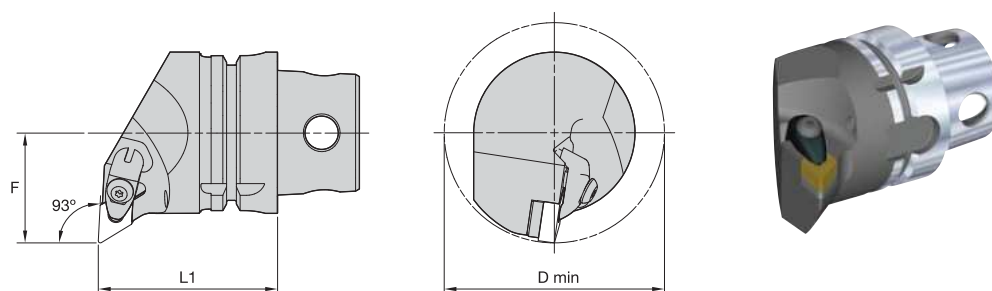
■ DDQN 107° 30'

order number	catalog number	L1		F		D min		gage insert	kg	lbs
		mm	in	mm	in	mm	in			
right hand										
5543453	KM4X63DDQNR15KC04	70	2.756	43	1.693	86	3.386	DN..150408/DN..432	1,29	2.85
left hand										
5543452	KM4X63DDQNL15KC06	70	2.756	43	1.693	86	3.386	DN..150608/DN..442	1,29	2.83

■ Spare Parts

				
catalog number	shim	shim screw	clamp assembly	pin
right hand				
KM4X63DDQNR15KC04	IDSN443	KMSP415IP	CM234R ASSY	SSP025016M
left hand				
KM4X63DDQNL15KC06	IDSN433	KMSP415IP	CM234R ASSY	SSP025016M

NOTE: KM4X™ coolant unit and wrench are available and must be ordered separately; see page B84.



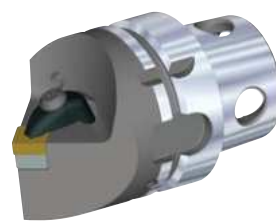
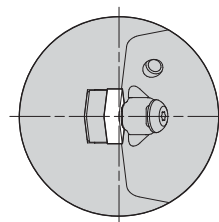
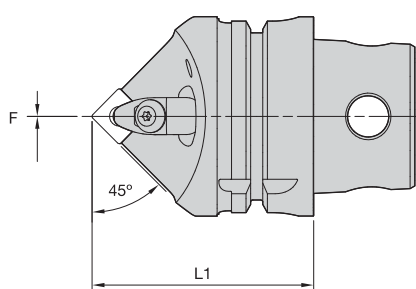
■ DDUN 93°

order number	catalog number	L1		F		D min		gage insert	kg	lbs
		mm	in	mm	in	mm	in			
right hand										
5552712	KM4X63DDUNR15KC04	70	2.756	43	1.693	86	3.386	DN..150408/DN..432	1,41	3.10
left hand										
5552711	KM4X63DDUNL15KC04	70	2.756	43	1.693	86	3.386	DN..150408/DN..432	1,40	3.09

■ Spare Parts

				
catalog number	shim	shim screw	clamp assembly	pin
right hand				
KM4X63DDUNR15KC04	IDSN443	KMSP415IP	CM234R ASSY	SSP025016M
left hand				
KM4X63DDUNL15KC04	IDSN443	KMSP415IP	CM234R ASSY	SSP025016M

NOTE: KM4X™ coolant unit and wrench are available and must be ordered separately; see page B84.



KM4X63 Cutting Units

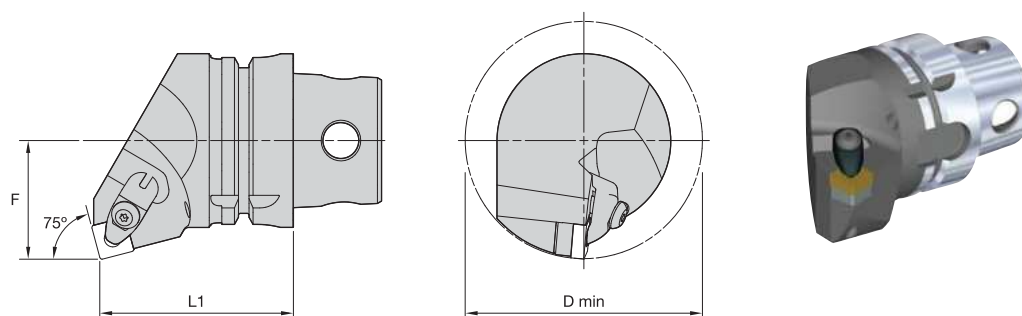
■ DSDN 45°

order number	catalog number	L1		F		gage insert	kg	lbs
		mm	in	mm	in			
5552713	KM4X63DSDNN12KC04	70	2.756	0	.000	SN..120408/SN..432	1,22	2.68

■ Spare Parts

catalog number	shim	shim screw	clamp assembly	pin
KM4X63DSDNN12KC04	ISSN443	KMSP415IP	CM234R ASSY	SSP025016M

NOTE: KM4X™ coolant unit and wrench are available and must be ordered separately; see page B84.



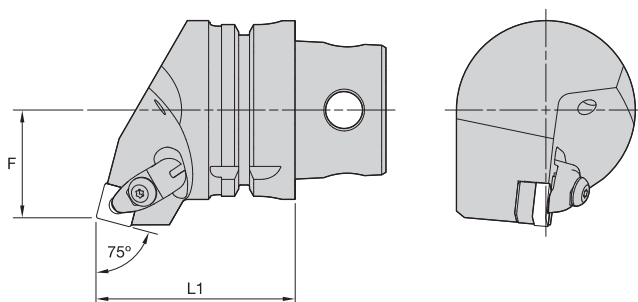
■ **DSKN 75°**

order number	catalog number	L1		F		D min		gage insert	kg	lbs
		mm	in	mm	in	mm	in			
right hand										
5552715	KM4X63DSKNR12KC04	70	2.756	43	1.693	86	3.386	SN..120408/SN..432	1,47	3.24
left hand										
5552714	KM4X63DSKNL12KC04	70	2.756	43	1.693	86	3.386	SN..120408/SN..432	1,46	3.22

■ **Spare Parts**

catalog number				
	shim	shim screw	clamp assembly	pin
right hand				
KM4X63DSKNR12KC04	ISSN443	KMSP415IP	CM234R ASSY	SSP025016M
left hand				
KM4X63DSKNL12KC04	ISSN443	KMSP415IP	CM234R ASSY	SSP025016M

NOTE: KM4X™ coolant unit and wrench are available and must be ordered separately; see page B84.



KM4X63 Cutting Units

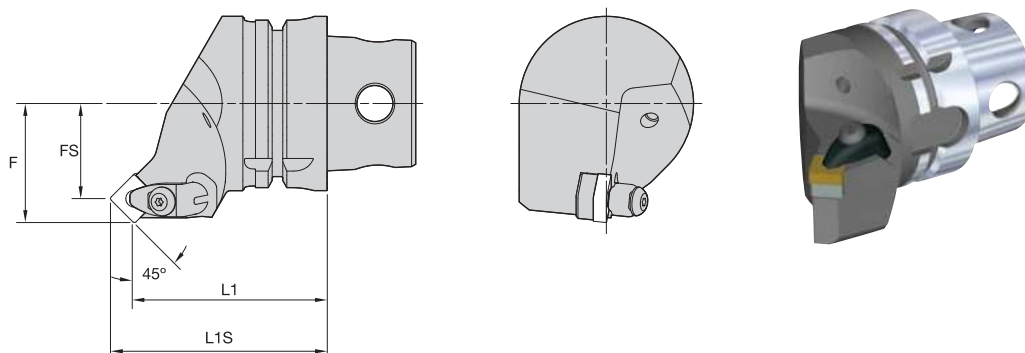
■ DSRN 75°

order number	catalog number	L1		F		gage insert	kg	lbs
		mm	in	mm	in			
right hand								
5552717	KM4X63DSRNR12KC04	70	2.756	38	1.496	SN..120408/SN..432	1,37	3.01
left hand								
5552716	KM4X63DSRNL12KC04	70	2.756	38	1.496	SN..120408/SN..432	1,37	3.01

■ Spare Parts

				
catalog number	shim	shim screw	clamp assembly	pin
right hand				
KM4X63DSRNR12KC04	ISSN443	KMSP415IP	CM234R ASSY	SSP025016M
left hand				
KM4X63DSRNL12KC04	ISSN443	KMSP415IP	CM234R ASSY	SSP025016M

NOTE: KM4X™ coolant unit and wrench are available and must be ordered separately; see page B84.



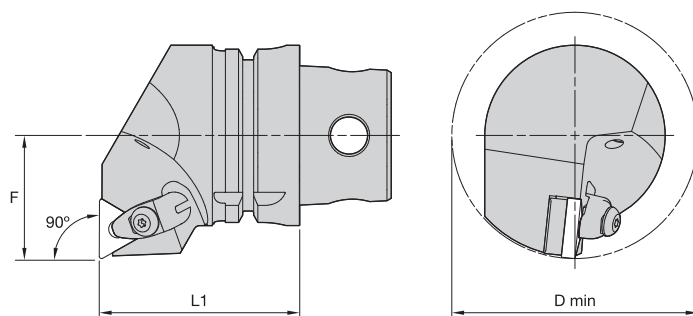
■ **DSSN 45°**

		L1		L1S		F		FS				
order number	catalog number	mm	in	mm	in	mm	in	mm	in	gage insert	kg	lbs
right hand												
5552719	KM4X63DSSNR12KC04	70	2.756	78,3	3.084	43	1.693	35	1.37	SN..120408/SN..432	1,41	3.10
left hand												
5552718	KM4X63DSSNL12KC04	70	2.756	78,3	3.084	43	1.693	35	1.37	SN..120408/SN..432	1,41	3.11

■ **Spare Parts**

				
catalog number	shim	shim screw	clamp assembly	pin
right hand				
KM4X63DSSNR12KC04	ISSN443	KMSP415IP	CM234R ASSY	SSP025016M
left hand				
KM4X63DSSNL12KC04	ISSN443	KMSP415IP	CM234R ASSY	SSP025016M

NOTE: KM4X™ coolant unit and wrench are available and must be ordered separately; see page B84.



KM4X63 Cutting Units

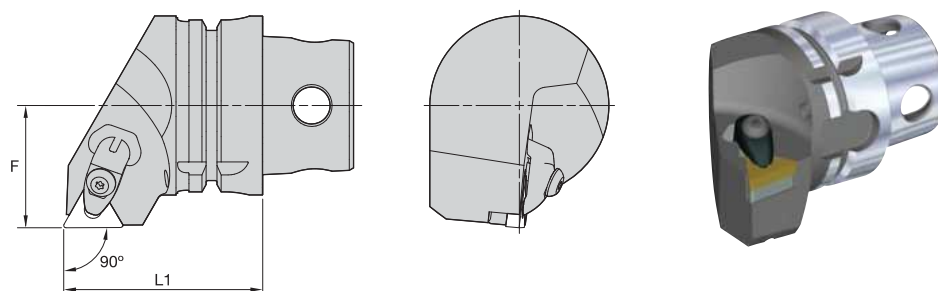
DTFN 90°

order number	catalog number	L1		F		D min		gage insert	kg	lbs
		mm	in	mm	in	mm	in			
right hand										
5552721	KM4X63DTFNR22KC04	70	2.756	43	1.693	86	3.386	TN..220408/TN..432	1,52	3.35
left hand										
5552720	KM4X63DTFNL22KC04	70	2.756	43	1.693	86	3.386	TN..220408/TN..432	1,53	3.36

Spare Parts

				
catalog number	shim	shim screw	clamp assembly	pin
right hand				
KM4X63DTFNR22KC04	ITSN433	KMSP415IP	CM234R ASSY	SSP025016M
left hand				
KM4X63DTFNL22KC04	ITSN433	KMSP415IP	CM234R ASSY	SSP025016M

NOTE: KM4X™ coolant unit and wrench are available and must be ordered separately; see page B84.



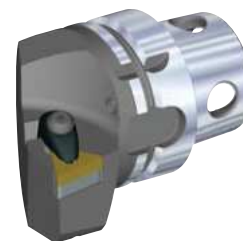
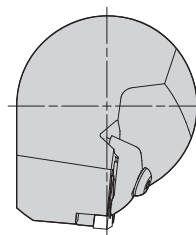
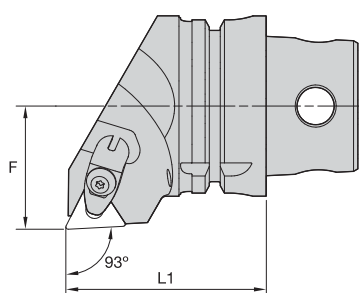
■ DTGN 90°

order number	catalog number	L1		F		gage insert	kg	lbs
		mm	in	mm	in			
right hand								
5552723	KM4X63DTGNR22KC04	70	2.756	43	1.693	TN..220408/TN..432	1,39	3.06
left hand								
5552722	KM4X63DTGNL22KC04	70	2.756	43	1.693	TN..220408/TN..432	1,39	3.06

■ Spare Parts

				
catalog number	shim	shim screw	clamp assembly	pin
right hand				
KM4X63DTGNR22KC04	ITSN433	KMSP415IP	CM234R ASSY	SSP025016M
left hand				
KM4X63DTGNL22KC04	ITSN433	KMSP415IP	CM234R ASSY	SSP025016M

NOTE: KM4X™ coolant unit and wrench are available and must be ordered separately; see page B84.



KM4X63 Cutting Units

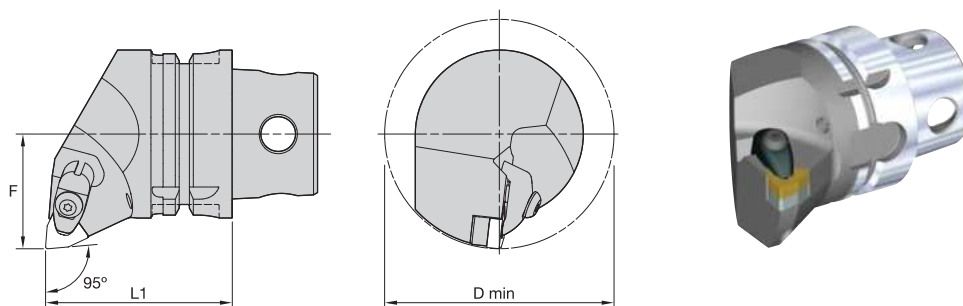
DTJN 93°

		L1		F				
order number	catalog number	mm	in	mm	in	gage insert	kg	lbs
right hand								
5552725	KM4X63DTJNR22KC04	70	2.756	43	1.693	TN..220408/TN..432	1,39	3.06
left hand								
5552724	KM4X63DTJNL22KC04	70	2.756	43	1.693	TN..220408/TN..432	1,39	3.06

Spare Parts

				
catalog number	shim	shim screw	clamp assembly	pin
right hand				
KM4X63DTJNR22KC04	ITSN433	KMSP415IP	CM234R ASSY	SSP025016M
left hand				
KM4X63DTJNL22KC04	ITSN433	KMSP415IP	CM234R ASSY	SSP025016M

NOTE: KM4X™ coolant unit and wrench are available and must be ordered separately; see page B84.



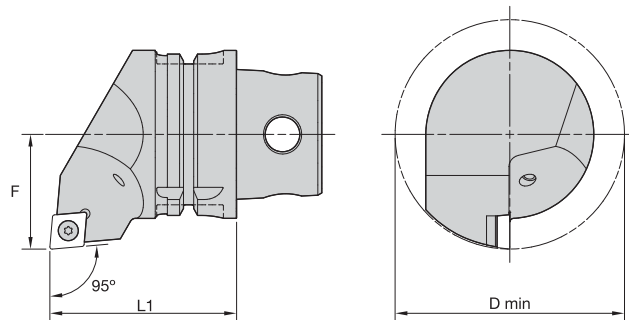
■ DWLN 95°

order number	catalog number	L1		F		D min		gage insert	kg	lbs
		mm	in	mm	in	mm	in			
right hand										
5552726	KM4X63DWLNR08KC04	70	2.756	43	1.69	86	3.386	WN..080408/WN..432	1,45	3.20
left hand										
5543455	KM4X63DWLNL08KC04	70	2.756	43	1.69	86	3.386	WN..080408/WN..432	1,46	3.22

■ Spare Parts

				
catalog number	shim	shim screw	clamp assembly	pin
right hand				
KM4X63DWLNR08KC04	IWSN443	KMSP415IP	CM234R ASSY	SSP025016M
left hand				
KM4X63DWLNL08KC04	IWSN443	KMSP415IP	CM234R ASSY	SSP025016M

NOTE: KM4X™ coolant unit and wrench are available and must be ordered separately; see page B84.



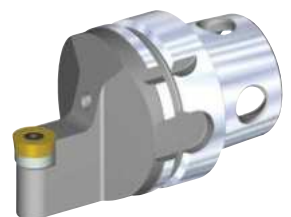
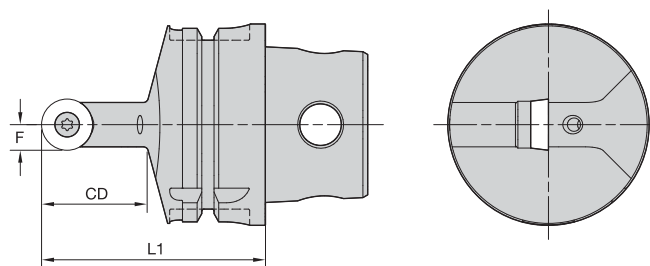
KM4X63 Cutting Units

■ SCLC 95°



order number	catalog number	L1		F		D min		gage insert	insert screw	shim	shim screw	kg	lbs
		mm	in	mm	in	mm	in						
right hand													
5552437	KM4X63SCLCR12	70	2.756	43	1.693	86	3.386	CC..120408/CC..432	MS1158	SKCP453	SRS4	1,40	3.09
left hand													
5552435	KM4X63SCLCL12	70	2.756	43	1.693	86	3.386	CC..120408/CC..432	MS1158	SKCP453	SRS4	1,40	3.09

NOTE: KM4X™ coolant unit and wrench are available and must be ordered separately; see page B84.

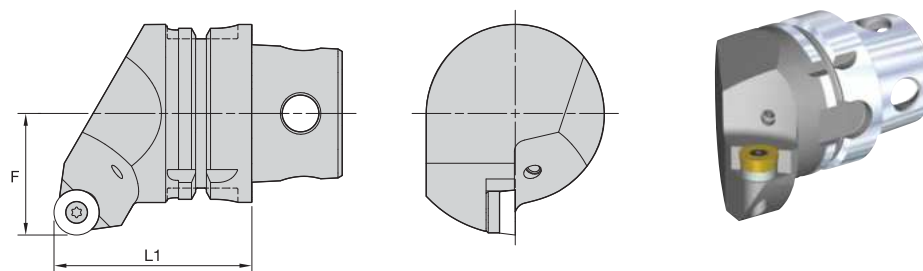


■ SRDC 0°



order number	catalog number	L1		F		CD		gage insert	shim	shim screw	kg	lbs
		mm	in	mm	in	mm	in					
5552441	KM4X63SRDCN16	70	2.756	8	.315	33	1.299	RC..1605M0	SKRN160400	SRS5	1,01	2.23

NOTE: KM4X™ coolant unit and wrench are available and must be ordered separately; see page B84.

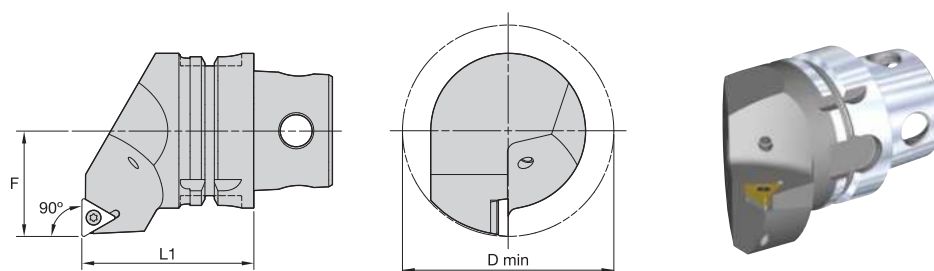


SRGC 0°

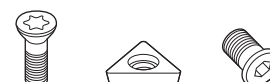


order number	catalog number	L1		F		gage insert	shim	shim screw	kg	lbs
		mm	in	mm	in					
right hand										
5552445	KM4X63SRGCR16	70	2.756	43	1.693	RC..1605M0	SKRN160400	SRS5	1,40	3.08
left hand										
5552443	KM4X63SRGCL16	70	2.756	43	1.693	RC..1605M0	SKRN160400	SRS5	1,40	3.08

NOTE: KM4X™ coolant unit and wrench are available and must be ordered separately; see page B84.

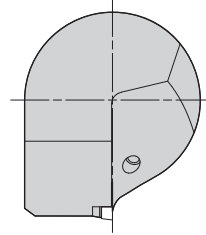
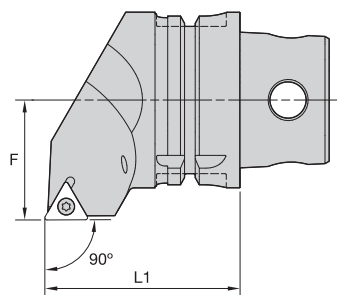


STFC 90°



order number	catalog number	L1		F		D min		gage insert	insert screw	shim	shim screw	kg	lbs
		mm	in	mm	in	mm	in						
right hand													
5552407	KM4X63STFCR16	70	2.756	43	1.693	86	3.386	TC..16T308/TC..3252	MS1156	SKTP343	SRS3	1,43	3.15
left hand													
5552405	KM4X63STFCL16	70	2.756	43	1.693	86	3.386	TC..16T308/TC..3252	MS1156	SKTP343	SRS3	1,43	3.15

NOTE: KM4X™ coolant unit and wrench are available and must be ordered separately; see page B84.



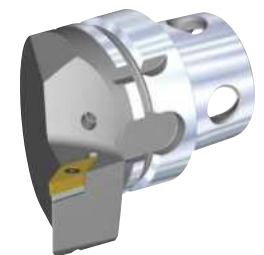
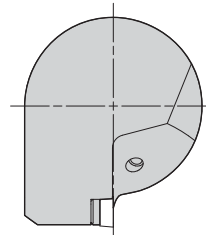
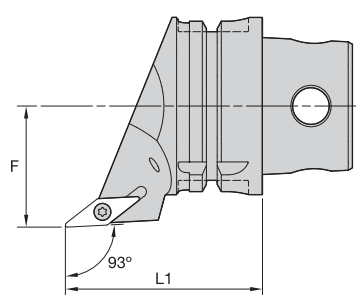
KM4X63 Cutting Units

■ STGC 90°



order number	catalog number	L1		F		gage insert	insert screw	shim	shim screw	kg	lbs
		mm	in	mm	in						
right hand											
5552431	KM4X63STGCR16	70	2.756	43	1.693	TC..16T308/TC..3252	MS1156	SKTP343	SRS3	1,44	3.17
left hand											
5552409	KM4X63STGCL16	70	2.756	43	1.693	TC..16T308/TC..3252	MS1156	SKTP343	SRS3	1,44	3.17

NOTE: KM4X™ coolant unit and wrench are available and must be ordered separately; see page B84.

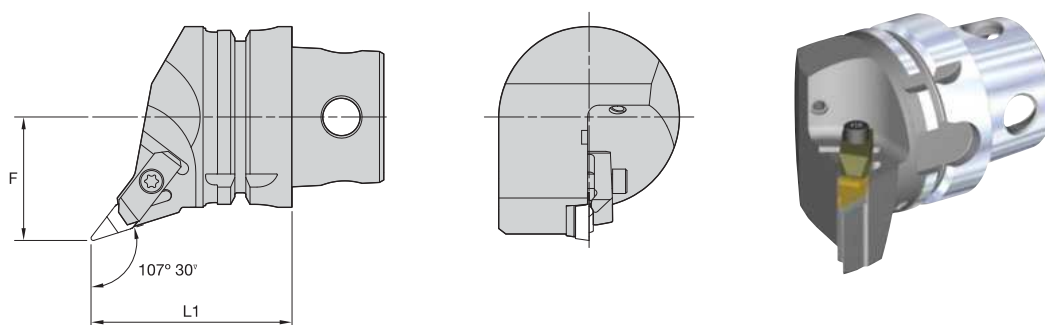


■ SVJB 93°



order number	catalog number	L1		F		gage insert	insert screw	shim	shim screw	kg	lbs
		mm	in	mm	in						
right hand											
5552439	KM4X63SVJBR16	70	2.756	43	1.693	VB..160408/VB..332	MS1156	SKVN343	SRS3	1,18	2.62
left hand											
5552433	KM4X63SVJBL16	70	2.756	43	1.693	VB..160408/VB..332	MS1156	SKVN343	SRS3	1,18	2.61

NOTE: KM4X™ coolant unit and wrench are available and must be ordered separately; see page B84.



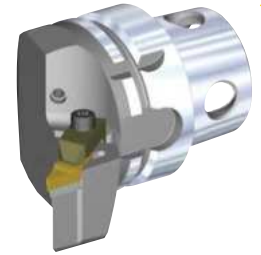
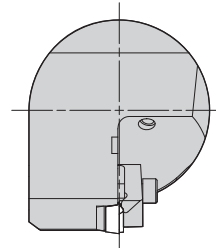
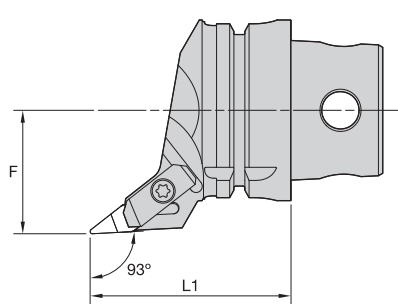
■ NVHC 107° 30'

		L1		F				
order number	catalog number	mm	in	mm	in	gage insert	kg	lbs
right hand								
5577819	KM4X63NVHCR16	70	2.756	43	1.693	VCGR160408/VPGR332	1,24	2.73
left hand								
5577818	KM4X63NVHCL16	70	2.756	43	1.693	VCGR160408/VPGR332	1,24	2.73

■ Spare Parts

				
catalog number	shim	shim screw	clamp	clamp screw
right hand				
KM4X63NVHCR16	SM812	MS959	CM113	MS1489
left hand				
KM4X63NVHCL16	SM812	MS959	CM114	MS1489

NOTE: KM4X™ coolant unit and wrench are available and must be ordered separately; see page B84.



KM4X63 Cutting Units

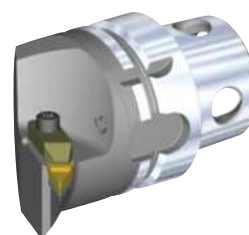
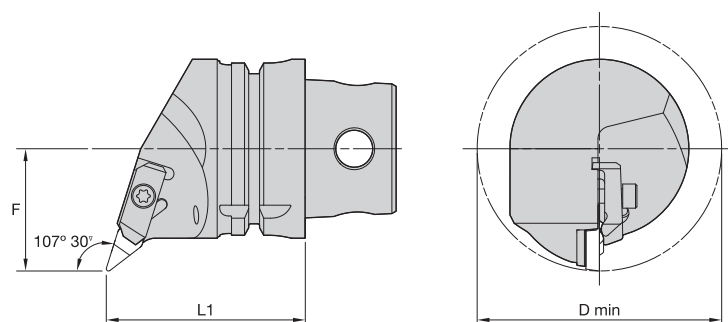
■ NVJC 93°

		L1		F				
order number	catalog number	mm	in	mm	in	gage insert	kg	lbs
right hand								
5577821	KM4X63NVJCR16	70	2.756	43	1.693	VCGR160408/VPGR332	1,12	2.47
left hand								
5577820	KM4X63NVJCL16	70	2.756	43	1.693	VCGR160408/VPGR332	1,12	2.47

■ Spare Parts

				
catalog number	shim	shim screw	clamp	clamp screw
right hand				
KM4X63NVJCR16	SM812	MS959	CM113	MS1489
left hand				
KM4X63NVJCL16	SM812	MS959	CM114	MS1489

NOTE: KM4X™ coolant unit and wrench are available and must be ordered separately; see page B84.



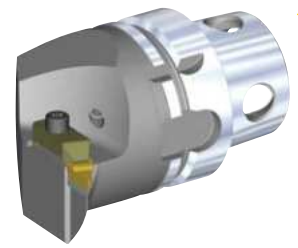
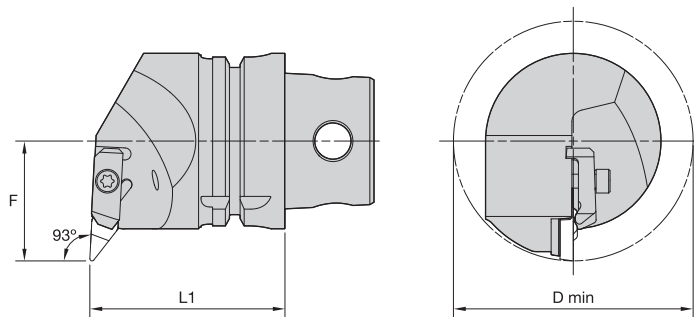
■ NVQC 107°30'

order number	catalog number	L1		F		D min		gage insert	kg	lbs
		mm	in	mm	in	mm	in			
right hand										
5577823	KM4X63NVQCR16	70	2.756	43	1.693	86	3.386	VCGR160408/VPGR332	1,30	2.87
left hand										
5577822	KM4X63NVQCL16	70	2.756	43	1.693	86	3.386	VCGR160408/VPGR332	1,30	2.87

■ Spare Parts

				
catalog number	shim	shim screw	clamp	clamp screw
right hand				
KM4X63NVQCR16	SM812	MS959	CM113	MS1489
left hand				
KM4X63NVQCL16	SM812	MS959	CM114	MS1489

NOTE: KM4X™ coolant unit and wrench are available and must be ordered separately; see page B84.



KM4X63 Cutting Units

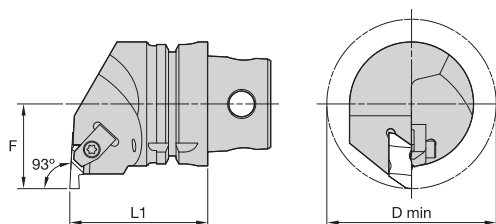
■ NVUC 93°

		L1		F		D min				
order number	catalog number	mm	in	mm	in	mm	in	gage insert	kg	lbs
right hand										
5577825	KM4X63NVUCR16	70	2.756	43	1.693	86	3.386	VCGR160408/VPGR332	1,48	3.26
left hand										
5577824	KM4X63NVUCL16	70	2.756	43	1.693	86	3.386	VCGR160408/VPGR332	1,48	3.27

■ Spare Parts

				
catalog number	shim	shim screw	clamp	clamp screw
right hand				
KM4X63NVUCR16	SM812	MS959	CM113	MS1489
left hand				
KM4X63NVUCL16	SM812	MS959	CM114	MS1489

NOTE: KM4X™ coolant unit and wrench are available and must be ordered separately; see page B84.

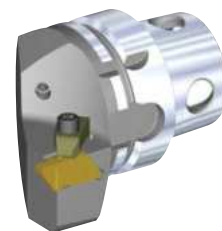
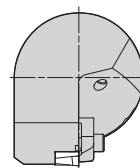
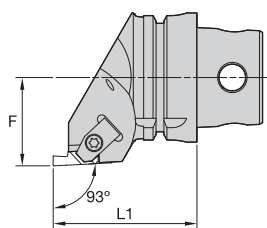


■ NE 93°



order number	catalog number	L1		F		D min		gage insert	clamp	clamp screw	kg	lbs
		mm	in	mm	in	mm	in					
right hand												
5577811	KM4X63NER3	70	2.756	43	1.693	86	3.386	NG3L	CM73	MS1489	1,39	3.07
5577812	KM4X63NER4	70	2.756	43	1.693	86	3.386	NG4L	CM73	MS1489	1,42	3.12
5577813	KM4X63NER5	70	2.756	43	1.693	86	3.386	NG5L	CM81	MS1490	1,40	3.09
left hand												
5577688	KM4X63NEL3	70	2.756	43	1.693	86	3.386	NG3R	CM-72	MS1489	1,39	3.07
5577689	KM4X63NEL4	70	2.756	43	1.693	86	3.386	NG4R	CM-72	MS1489	1,42	3.12
5577810	KM4X63NEL5	70	2.756	43	1.693	86	3.386	NG5R	CM80	MS1490	1,42	3.14

NOTE: KM4X™ coolant unit and wrench are available and must be ordered separately; see page B84.



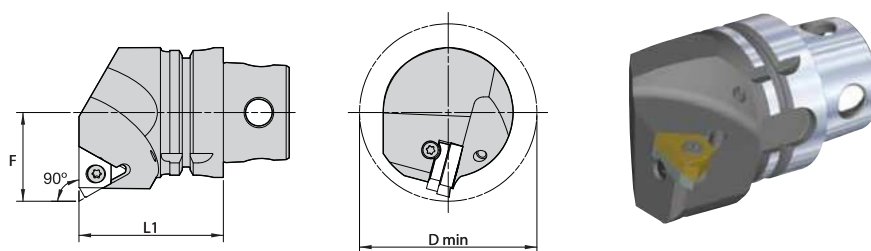
KM4X63 Cutting Units

■ NS 93°

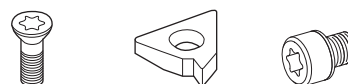


order number	catalog number	L1		F		gage insert	clamp	clamp screw	kg	lbs
		mm	in	mm	in					
right hand										
5577816	KM4X63NSR3	70	2.756	43	1.693	NG3R	CM-72	MS1489	1,21	2.67
5577817	KM4X63NSR4	70	2.756	43	1.693	NG4R	CM-72	MS1489	1,25	2.75
left hand										
5577814	KM4X63NSL3	70	2.756	43	1.693	NG3L	CM73	MS1489	1,21	2.67
5577815	KM4X63NSL4	70	2.756	43	1.693	NG4L	CM73	MS1489	1,25	2.75

NOTE: KM4X™ coolant unit and wrench are available and must be ordered separately; see page B84.

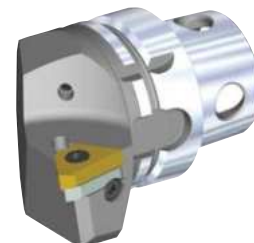
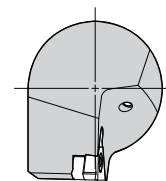
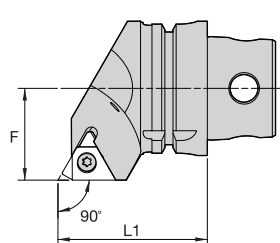


■ LSE-N 90° • Internal Only



		L1		F		D min							
order number	catalog number	mm	in	mm	in	mm	in	gage insert	insert screw	shim	shim screw	kg	lbs
right hand													
5578530	KM4X63LSER16N	70	2.756	43	1.693	86	3.386	LT16NR	SSA3T	SMYI3	SSY3T	1,53	3.37
5578531	KM4X63LSER22N	70	2.756	43	1.693	86	3.386	LT22NR	SSA4T	SMYI4	SSY4T	1,51	3.33
5543562	KM4X63LSER27N	70	2.756	43	1.693	86	3.386	LT27NR	SSA5T	SMYI5	SSY5T	1,56	3.43
left hand													
5578518	KM4X63LSEL16N	70	2.756	43	1.693	86	3.386	LT16NL	SSA3T	SMYE3	SSY3T	1,53	3.36
5543561	KM4X63LSEL22N	70	2.756	43	1.693	86	3.386	LT22NL	SSA4T	SMYE4	SSY4T	1,51	3.32
5578519	KM4X63LSEL27N	70	2.756	43	1.693	86	3.386	LT27NL	SSA5T	SMYE5	SSY5T	1,58	3.48

NOTE: KM4X™ coolant unit and wrench are available and must be ordered separately; see page B84.

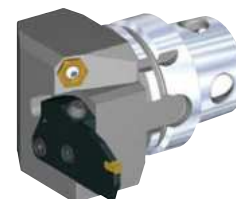
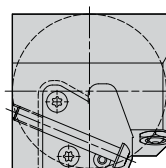
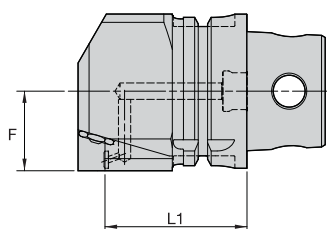


KM4X63 Cutting Units

■ LSS 90°


order number	catalog number	L1		F		gage insert	insert screw	shim	shim screw	kg	lbs
		mm	in	mm	in						
right hand											
5578536	KM4X63LSSR16	70	2.756	43	1.693	LT16ER	SSA3T	SMYE3	SSY3T	1,43	3.14
5543563	KM4X63LSSR22	70	2.756	43	1.693	LT22ER	SSA4T	SMYE4	SSY4T	1,39	3.06
5543564	KM4X63LSSR27	70	2.756	43	1.693	LT27ER	SSA5T	SMYE5	SSY5T	1,38	3.05
left hand											
5578532	KM4X63LSSL16	70	2.756	43	1.693	LT16EL	SSA3T	SMYI3	SSY3T	1,43	3.14
5578533	KM4X63LSSL22	70	2.756	43	1.693	LT22EL	SSA4T	SMYI4	SSY4T	1,39	3.07
5578535	KM4X63LSSL27	70	2.756	43	1.693	LT27EL	SSA5T	SMYI5	SSY5T	1,38	3.05

NOTE: KM4X™ coolant unit and wrench are available and must be ordered separately; see page B84.



■ KGME • End Mount • 50C

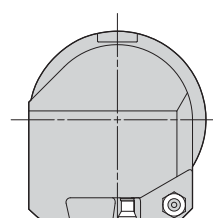
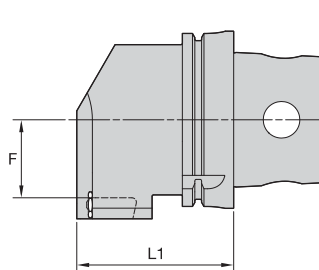


		L1		F							
order number	catalog number	mm	in	mm	in	cartridge size	blade screw	nozzle	clamp screw	kg	lbs
right hand											
6000404	KM4X63KGMER50C	58,0	2.283	32,5	1.280	50	MS1162	PMT04525	MS2002	1,85	4.08
left hand											
6000405	KM4X63KGMEL50C	58,0	2.283	32,5	1.280	50	MS1162	PMT04525	MS2002	1,85	4.08

NOTE: Right-hand holder uses left-hand blades.

M50 blade and clamp screw torque equals 71–88 in. lbs. (8–10 Nm).

KKM4X™ coolant unit and wrench are available and must be ordered separately; see page B84.



■ KGMS • Side Mount • 50C

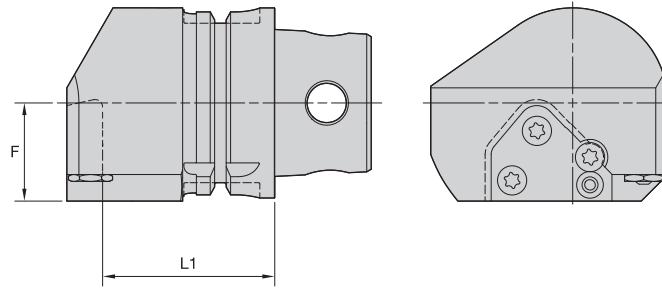


		L1		F							
order number	catalog number	mm	in	mm	in	cartridge size	blade screw	nozzle	clamp screw	kg	lbs
right hand											
6000407	KM4X63KGMSR50C	73,5	2.894	31,0	1.220	50	MS1162	PMT04525	MS2002	1,86	4.11
left hand											
6000408	KM4X63KGMSL50C	73,5	2.894	31,0	1.220	50	MS1162	PMT04525	MS2002	1,86	4.11

NOTE: Right-hand holder uses right-hand blades.

M50 blade and clamp screw torque equals 71–88 in. lbs. (8–10 Nm).

KKM4X™ coolant unit and wrench are available and must be ordered separately; see page B84.



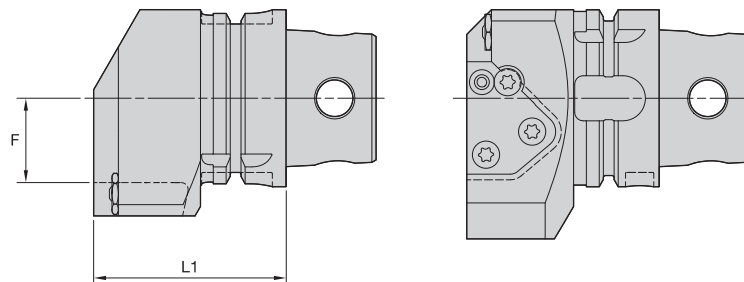
KM4X63 Cutting Units

■ KGME • End Mount • 65C

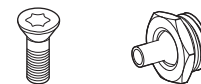


order number	catalog number	L1		F		cartridge size	blade screw	nozzle	kg	lbs
		mm	in	mm	in					
right hand										
5543555	KM4X63KGMER65C	57,0	2.244	32,5	1.280	65	MS1163	PMT04525	1,87	4.13
left hand										
5543553	KM4X63KGME65C	57,0	2.244	32,5	1.280	65	MS1163	PMT04525	1,87	4.13

NOTE: Right-hand holder uses left-hand blades.
 M65 blade and clamp screw torque equals 159–177 in. lbs. (18–20 Nm).
 KM4X™ coolant unit and wrench are available and must be ordered separately; see page B84.

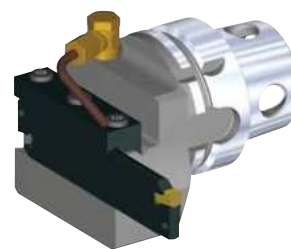
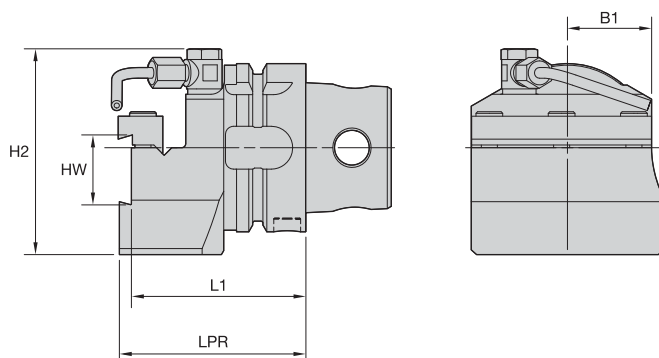


■ KGMS • Side Mount • 65C



order number	catalog number	L1		F		cartridge size	blade screw	nozzle	kg	lbs
		mm	in	mm	in					
right hand										
5543560	KM4X63KGMSR65C	68,5	2.697	30,0	1.181	65	MS1163	PMT04525	2,04	4.49
left hand										
5543558	KM4X63KGMSL65C	68,5	2.697	30,0	1.181	65	MS1163	PMT04525	2,04	4.49

NOTE: Right-hand cutting units use right-hand blades.
 KM4X™ coolant unit and wrench are available and must be ordered separately; see page B84.
 M65 blade and clamp screw torque equals 159–177 in. lbs. (18–20 Nm).



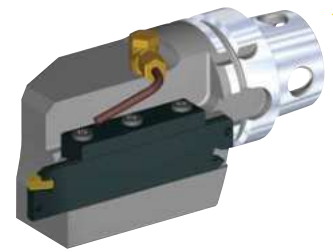
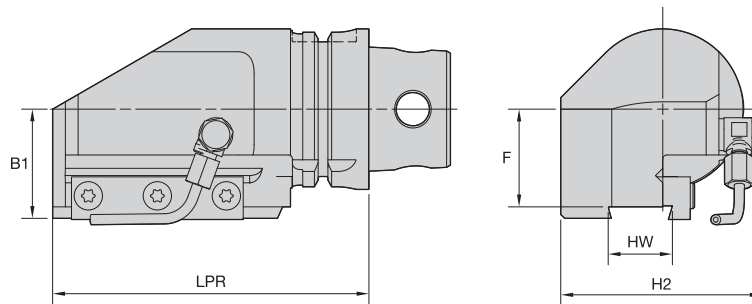
■ BE • End Mount

		L1		LPR		H2		HW		B1		cartridge size	cartridge 1	kg	lbs
order number	catalog number	mm	in	mm	in	mm	in	mm	in	mm	in				
right hand															
5578513	KM4X63BER4	65,3	2.571	69,8	2.748	77	3.03	26	1.024	31,5	1.240	26	A2BN..26...	1,87	4.13
left hand															
5578512	KM4X63BEL4	65,3	2.571	69,8	2.748	77	3.03	26	1.024	31,5	1.240	26	A2BN..26...	1,87	4.13

■ Spare Parts

				
catalog number	clamp	clamp screw	coolant tube	coolant swivel base
right hand				
KM4X63BER4	CGS4	MS1595	12649910900	12649910800
left hand				
KM4X63BEL4	CGS4	MS1595	12649910900	12649910800

NOTE: KM4X™ coolant unit and wrench are available and must be ordered separately; see page B84.



KM4X63 Cutting Units

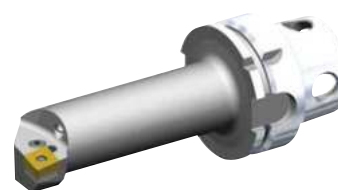
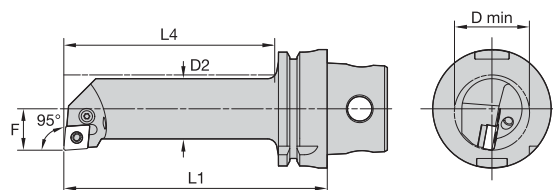
■ BS • Side Mount

order number	catalog number	LPR		H2		HW		B1		F		cartridge size	cartridge 1	kg	lbs
		mm	in	mm	in	mm	in	mm	in	mm	in				
right hand															
5578516	KM4X63BSR4	124,0	4.882	79	3.11	26	1.024	42,8	1.685	38,30	1.508	26	A2BN..26...	3,19	7.04
5578517	KM4X63BSR5	144,6	5.691	84	3.31	32	1.260	42,8	1.685	37,30	1.469	32	A2BN..32...	3,92	8.64
left hand															
5578514	KM4X63BSL4	124,0	4.882	79	3.11	26	1.024	42,8	1.685	38,30	1.508	26	A2BN..26...	3,19	7.04
5578515	KM4X63BSL5	144,6	5.691	84	3.31	32	1.260	42,8	1.685	37,30	1.469	32	A2BN..32...	3,92	8.64

■ Spare Parts

				
catalog number	clamp	clamp screw	coolant tube	coolant swivel base
right hand				
KM4X63BSR4	CGS4	MS1595	12649910900	12649910800
KM4X63BSR5	CGS5	MS1595	12649910900	12649910800
left hand				
KM4X63BSL4	CGS4	MS1595	12649910900	12649910800
KM4X63BSL5	CGS5	MS1595	12649910900	12649910800

NOTE: KM4X™ coolant unit and wrench are available and must be ordered separately; see page B84.



PCLN 95°

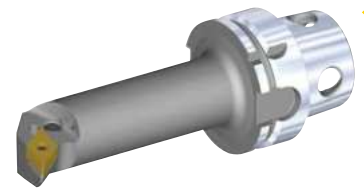
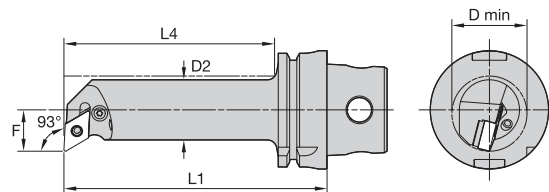
		D2		D min		F		L4		L1				
order number	catalog number	mm	in	mm	in	mm	in	mm	in	mm	in	gage insert	kg	lbs
right hand														
5589481	KM4X63S25KPCLNR12	25	.98	32	1.260	17	.669	88	3.48	125	4.921	CN..120408/CN..432	1,11	2.45
5589463	KM4X63S32LPCLNR12	32	1.26	40	1.575	22	.866	112	4.42	140	5.512	CN..120408/CN..432	1,36	3.00
5589475	KM4X63S40LPCLNR12	40	1.58	50	1.969	27	1.063	114	4.49	140	5.512	CN..120408/CN..432	1,72	3.79
5589469	KM4X63S50PPCLNR12	50	1.97	63	2.480	35	1.378	144	5.67	170	6.693	CN..120408/CN..432	2,68	5.91
left hand														
5589480	KM4X63S25KPCLNL12	25	.98	32	1.260	17	.669	88	3.48	125	4.921	CN..120408/CN..432	1,11	2.44
5589462	KM4X63S32LPCLNL12	32	1.26	40	1.575	22	.866	112	4.42	140	5.512	CN..120408/CN..432	1,11	2.44
5589474	KM4X63S40LPCLNL12	40	1.58	50	1.969	27	1.063	114	4.49	140	5.512	CN..120408/CN..432	1,72	3.79
5589468	KM4X63S50PPCLNL12	50	1.97	63	2.480	35	1.378	144	5.67	170	6.693	CN..120408/CN..432	2,68	5.91

Spare Parts



catalog number	shim	lever screw	shim pin	toggle lever	punch
right hand					
KM4X63S25KPCLNR12	—	514.122	—	511.022	—
KM4X63S32LPCLNR12	512.112	514.123	513.023	511.023	515.018
KM4X63S40LPCLNR12	512.112	514.123	513.023	511.023	515.018
KM4X63S50PPCLNR12	512.112	514.123	513.023	511.023	515.018
left hand					
KM4X63S25KPCLNL12	—	514.122	—	511.022	—
KM4X63S32LPCLNL12	512.112	514.123	513.023	511.023	515.018
KM4X63S40LPCLNL12	512.112	514.123	513.023	511.023	515.018
KM4X63S50PPCLNL12	512.112	514.123	513.023	511.023	515.018

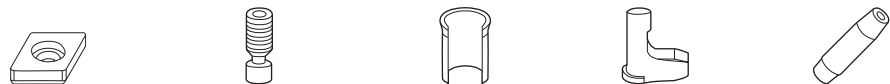
NOTE: KM4X™ coolant unit and wrench are available and must be ordered separately; see page B84.



■ PDUN 93°

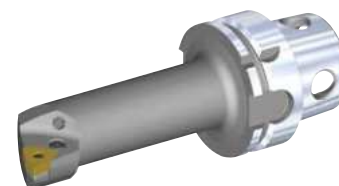
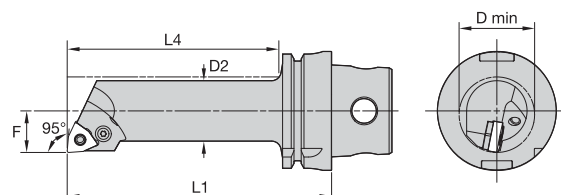
		D2		D min		F		L4		L1				
order number	catalog number	mm	in	mm	in	mm	in	mm	in	mm	in	gage insert	kg	lbs
right hand														
5589483	KM4X63S25KPDUNR11	25	.98	32	1.260	17	.669	88	3.48	125	4.921	DN..110408/DN..332	1,11	2.45
5589465	KM4X63S32LPDUNR15	32	1.26	40	1.575	22	.866	112	4.42	140	5.512	DN..150608/DN..442	1,35	2.97
5589477	KM4X63S40LPDUNR15	40	1.58	50	1.969	27	1.063	114	4.49	140	5.512	DN..150608/DN..442	1,70	3.75
5589471	KM4X63S50PPDUNR15	50	1.97	63	2.480	35	1.378	144	5.67	170	6.693	DN..150608/DN..442	2,71	5.96
left hand														
5589482	KM4X63S25KPDUNL11	25	.98	32	1.260	17	.669	88	3.48	125	4.921	DN..110408/DN..332	1,11	2.45
5589464	KM4X63S32LPDUNL15	32	1.26	40	1.575	22	.866	112	4.42	140	5.512	DN..150608/DN..442	1,35	2.97
5589476	KM4X63S40LPDUNL15	40	1.58	50	1.969	27	1.063	114	4.49	140	5.512	DN..150608/DN..442	1,70	3.76
5589470	KM4X63S50PPDUNL15	50	1.97	63	2.480	35	1.378	144	5.67	170	6.693	DN..150608/DN..442	2,71	5.97

■ Spare Parts



catalog number	shim	lever screw	shim pin	toggle lever	punch
right hand					
KM4X63S25KPDUNR11	—	514.112	—	511.015	—
KM4X63S32LPDUNR15	512.153	514.128	513.023	511.024	515.018
KM4X63S40LPDUNR15	512.153	514.128	513.023	511.024	515.018
KM4X63S50PPDUNR15	512.153	514.128	513.023	511.024	515.018
left hand					
KM4X63S25KPDUNL11	—	514.112	—	511.015	—
KM4X63S32LPDUNL15	512.153	514.128	513.023	511.024	515.018
KM4X63S40LPDUNL15	512.153	514.128	513.023	511.024	515.018
KM4X63S50PPDUNL15	512.153	514.128	513.023	511.024	515.018

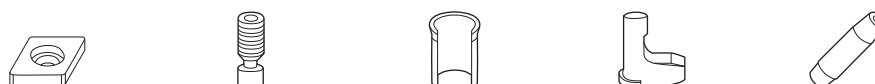
NOTE: KM4X™ coolant unit and wrench are available and must be ordered separately; see page B84.



■ PWLN 95°

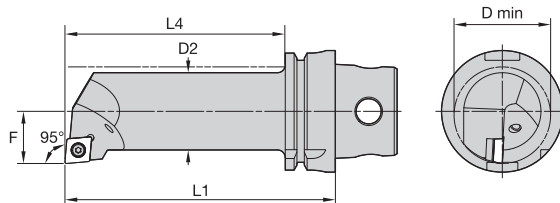
		D2		D min		F		L4		L1				
order number	catalog number	mm	in	mm	in	mm	in	mm	in	mm	in	gage insert	kg	lbs
right hand														
5589485	KM4X63S25KPWLNRO8	25	.98	32	1.260	17	.669	88	3.48	125	4.921	WN..080408/WN..432	1,11	2.45
5589467	KM4X63S32LPWLNRO8	32	1.26	40	1.575	22	.866	112	4.42	140	5.512	WN..080408/WN..432	1,34	2.95
5589479	KM4X63S40LPWLNRO8	40	1.58	50	1.969	27	1.063	114	4.49	140	5.512	WN..080408/WN..432	1,69	3.74
5589473	KM4X63S50PPWLNRO8	50	1.97	63	2.480	35	1.378	144	5.67	170	6.693	WN..080408/WN..432	2,63	5.81
left hand														
5589484	KM4X63S25KPWLNLO8	25	.98	32	1.260	17	.669	88	3.48	125	4.921	WN..080408/WN..432	1,11	2.45
5589466	KM4X63S32LPWLNLO8	32	1.26	40	1.575	22	.866	112	4.42	140	5.512	WN..080408/WN..432	1,34	2.95
5589478	KM4X63S40LPWLNLO8	40	1.58	50	1.969	27	1.063	114	4.49	140	5.512	WN..080408/WN..432	1,69	3.74
5589472	KM4X63S50PPWLNLO8	50	1.97	63	2.480	35	1.378	144	5.67	170	6.693	WN..080408/WN..432	2,64	5.81

■ Spare Parts



catalog number	shim	lever screw	shim pin	toggle lever	punch
right hand					
KM4X63S25KPWLNRO8	—	514.122	—	511.022	—
KM4X63S32LPWLNRO8	512.135	514.123	513.023	511.023	515.018
KM4X63S40LPWLNRO8	512.135	514.123	513.023	511.023	515.018
KM4X63S50PPWLNRO8	512.135	514.123	513.023	511.023	515.018
left hand					
KM4X63S25KPWLNLO8	—	514.122	—	511.022	—
KM4X63S32LPWLNLO8	512.135	514.123	513.023	511.023	515.018
KM4X63S40LPWLNLO8	512.135	514.123	513.023	511.023	515.018
KM4X63S50PPWLNLO8	512.135	514.123	513.023	511.023	515.018

NOTE: KM4X™ coolant unit and wrench are available and must be ordered separately; see page B84.



KM4X63 Internal Cutting Units

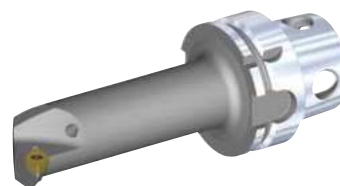
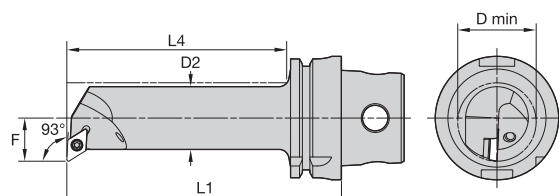
■ SCLC 95°

order number	catalog number	D2		D min		F		L4		L1		gage insert	kg	lbs
		mm	in	mm	in	mm	in	mm	in	mm	in			
right hand														
5637824	KM4X63S40LSCLCR12	40	1.575	50	1.969	27	1.063	114	4.49	140	5.512	CC..120408/CC..432	1,72	3.80
left hand														
5637823	KM4X63S40LSCLCL12	40	1.575	50	1.969	27	1.063	114	4.49	140	5.512	CC..120408/CC..432	1,72	3.80

■ Spare Parts

			
catalog number	insert screw	shim	shim screw
right hand			
KM4X63S40LSCLCR12	MS1158	SKCP453	SRS4
left hand			
KM4X63S40LSCLCL12	MS1158	SKCP453	SRS4

NOTE: KM4X™ coolant unit and wrench are available and must be ordered separately; see page B84.



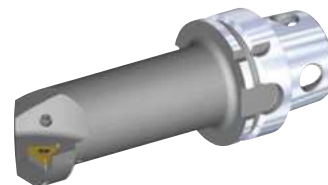
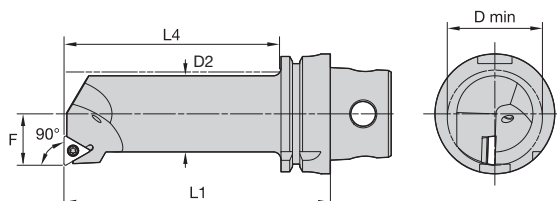
SDUC 93°

		D2		D min		F		L4		L1				
order number	catalog number	mm	in	mm	in	mm	in	mm	in	mm	in	gage insert	kg	lbs
right hand														
5637822	KM4X63S32LSDUCR11	32	1.260	40	1.575	22	.866	112	4.42	140	5.512	DC..11T308/DC..3252	1,36	3.00
left hand														
5637821	KM4X63S32LSDUCL11	32	1.260	40	1.575	22	.866	112	4.42	140	5.512	DC..11T308/DC..3252	1,36	3.00

Spare Parts

			
catalog number	insert screw	shim	shim screw
right hand			
KM4X63S32LSDUCR11	MS1156	SKDP343	SRS3
left hand			
KM4X63S32LSDUCL11	MS1156	SKDP343	SRS3

NOTE: KM4X™ coolant unit and wrench are available and must be ordered separately; see page B84.



KM4X63 Internal Cutting Units

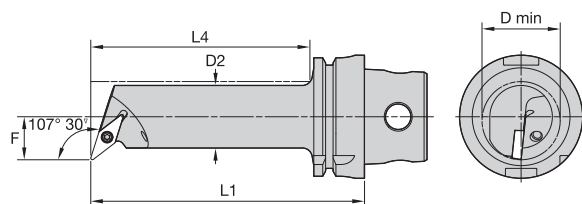
STFC 90°

		D2		D min		F		L4		L1				
order number	catalog number	mm	in	mm	in	mm	in	mm	in	mm	in	gage insert	kg	lbs
right hand														
5637826	KM4X63S40LSTFCR16	40	1.575	50	1.969	27	1.063	114	4.49	140	5.512	TC..16T308/TC..3252	1,73	3.82
left hand														
5637825	KM4X63S40LSTFCL16	40	1.575	50	1.969	27	1.063	114	4.49	140	5.512	TC..16T308/TC..3252	1,73	3.82

Spare Parts

			
catalog number	insert screw	shim	shim screw
right hand			
KM4X63S40LSTFCR16	MS1156	SKTP343	SRS3
left hand			
KM4X63S40LSTFCL16	MS1156	SKTP343	SRS3

NOTE: KM4X™ coolant unit and wrench are available and must be ordered separately; see page B84.



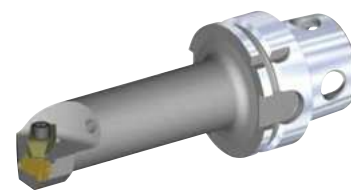
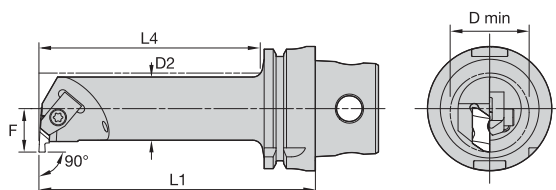
■ SVQB 107° 30'

		D2		D min		F		L4		L1				
order number	catalog number	mm	in	mm	in	mm	in	mm	in	mm	in	gage insert	kg	lbs
right hand														
5637828	KM4X63S32LSVQBR16	32	1.260	40	1.575	22	.866	112	4.42	140	5.512	VB..160408	1,35	2.97
left hand														
5637827	KM4X63S32LSVQBL16	32	1.260	40	1.575	22	.866	112	4.42	140	5.512	VB..160408	1,35	2.97

■ Spare Parts

		
catalog number		insert screw
right hand	KM4X63S32LSVQBR16	MS1155
left hand	KM4X63S32LSVQBL16	MS1155

NOTE: KM4X™ coolant unit and wrench are available and must be ordered separately; see page B84.



KM4X63 Internal Cutting Units

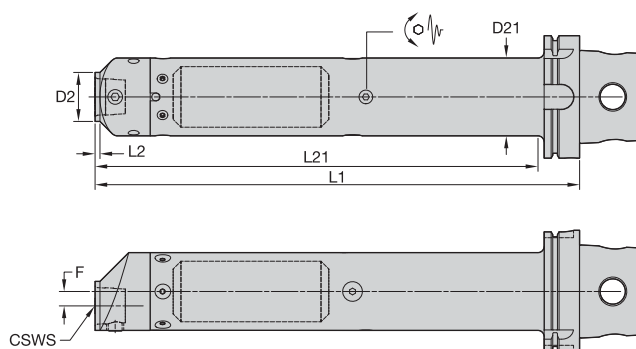
■ NE 90°

order number	catalog number	D2		D min		F		L4		L1		gage insert	kg	lbs
		mm	in	mm	in	mm	in	mm	in	mm	in			
right hand														
5639129	KM4X63S32LNER3	32	1.260	40	1.575	22	.866	112	4.42	140	5.512	NG3L	1,35	2.98
left hand														
5639128	KM4X63S32LNEL3	32	1.260	40	1.575	22	.866	112	4.42	140	5.512	NG3R	1,35	2.98

■ Spare Parts

	catalog number		clamp		clamp screw
right hand					
	KM4X63S32LNER3		CM73		MS1489
left hand					
	KM4X63S32LNEL3		CM-72		MS1489

NOTE: KM4X™ coolant unit and wrench are available and must be ordered separately; see page B84.

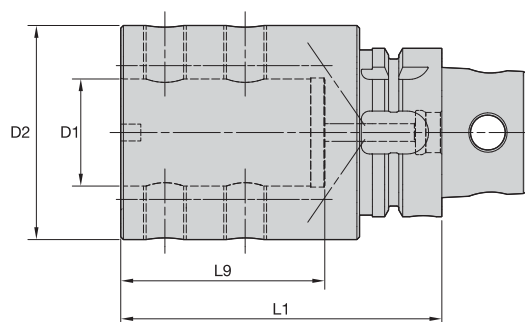


■ TTB Tunable Bar



order number	catalog number	CSWS system size	D2 mm	D2 in	D21 mm	D21 in	F mm	F in	L1 mm	L1 in	L2 mm	L2 in	L21 mm	L21 in	Nm	ft. lbs.	spare parts package
5639334	KM4X63D40TTB20KM40	KM40	40,00	1.575	63,50	2.500	11,75	.463	513,92	20.233	4,00	.157	513,92	20.233	12-16	9-12	KM40PKG3S
5639333	KM4X63D40TTB15KM40	KM40	40,00	1.575	63,50	2.500	11,75	.463	386,92	15.233	4,00	.157	386,92	15.233	12-16	9-12	KM40PKG3S
5521089	KM4X63D32TTB12KM40	KM40	40,00	1.575	50,80	2.000	5,00	.197	310,71	12.233	4,00	.157	284,76	11.211	12-16	9-12	KM40PKG3S
5639332	KM4X63D28TTB14KM40	KM40	40,00	1.575	44,45	1.750	0,00	.000	361,52	14.233	4,00	.157	335,57	13.211	12-16	9-12	KM40PKG3S
5639331	KM4X63D24TTB9KM40	KM40	40,00	1.575	38,10	1.500	0,00	.000	234,55	9.234	205,60	8.095	—	—	12-16	9-12	KM40PKG3S

NOTE: KM4X™ coolant unit and wrench are available and must be ordered separately; see page B84.



KM4X63 Adapters

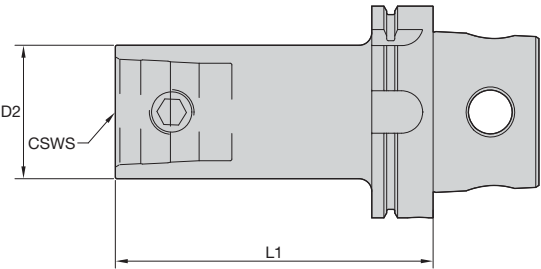
■ BA Metric

order number	catalog number	D1	D2	L1	L9	clamp screw	nozzle	wrench size clamp screw	Nm	kg
5543412	KM4X63BA40120M	40	80	120	76	MS1947	SB09530PWZ1012	8 mm	125	3,51

■ BA Inch

order number	catalog number	D1	D2	L1	L9	clamp screw	nozzle	wrench size clamp screw	ft. lbs.	lbs
5543411	KM4X63BA150472	1 1/2	3.15	4.724	2.99	MS1947	SB09530PWZ1012	8 mm	90	7.89

NOTE: Do not over tighten clamp screw; use torque recommendations above.
 Supplied with clamp screw.
 Clamp screw wrench not included.
 For boring bar reducers, reference Innovations Master Catalog Tooling Systems 2013 A-12-02809, page A570.
 KM4X™ coolant unit and wrench are available and must be ordered separately; see page B84.

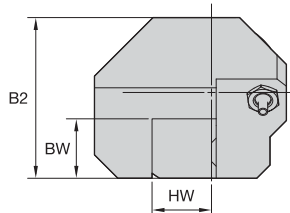
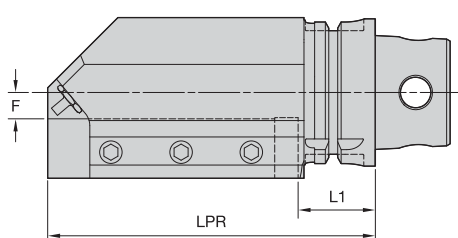


KM™ Reducer



order number	catalog number	CSWS system size	D2		L1		wrench size actuation screw	actuation screw torque (Nm)	actuation screw torque (ft. lbs.)	spare parts package	kg	lbs
			mm	in	mm	in						
5552338	KM4X63KM40065M	KM40	40	1.575	65	2.559	6 mm	12-16	9-12	KM40PKG3S	1,02	2.24
6273053	KM4X63KM40120M	KM40	40	1.575	120	4.724	6 mm	12-16	9-12	KM40PKG3S	1,54	3.40
5552334	KM4X63KM50080M	KM50	50	1.969	80	3.150	10 mm	27-34	20-25	KM50PKG3S	1,34	2.96
6273051	KM4X63KM50150M	KM50	50	1.969	150	5.906	10 mm	27-34	20-25	KM50PKG3S	2,40	5.30
5552336	KM4X63KM63120M	KM63	63	2.480	120	4.725	12 mm	47-54	35-40	KM63PKG3S	2,47	5.43
6273057	KM4X63KM2520075M	KM2520	25	.984	75	2.953	5 mm	19-22	14-16	KM2520NRPKG	0,88	1.94
6273055	KM4X63KM3225100M	KM3225	32	1.260	100	3.937	6 mm	12-16	9-12	KM3225NRPKG	1,12	2.48

NOTE: KM4X™ coolant unit and wrench are available and must be ordered separately; see page B84.



KM4X63 Adapters

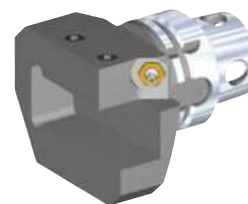
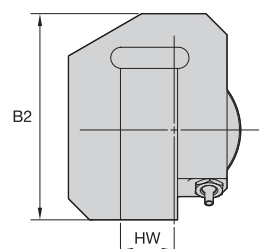
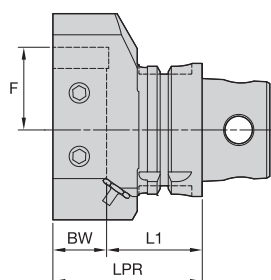
STAR/L • Metric

order number	catalog number	B2	BW	F	HW	L1	LPR	nozzle	cup point socket set screw	Nm	kg
right hand											
5638011	KM4X63STAR2525M	68	25	11	25	35	140	PMT04526	MS1950	55	4,04
left hand											
5638010	KM4X63STAL2525M	68	25	11	25	35	140	PMT04526	MS1950	55	4,04

STAR/L • Inch

order number	catalog number	B2	BW	F	HW	L1	LPR	nozzle	cup point socket set screw	ft. lbs.	lbs
right hand											
5638012	KM4X63STAR16	2.683	1.000	.443	1.000	1.299	5.512	PMT04526	MS1950	40	8.92
left hand											
5638013	KM4X63STAL16	2.683	1.000	.443	1.000	1.299	5.512	PMT04526	MS1950	40	8.91

NOTE: Right-handed cutting units use right-handed tools.
KM4X™ coolant unit and wrench are available and must be ordered separately; see page B84.



■ ETAR/L • Metric



order number	catalog number	B2	BW	F	HW	L1	LPR	nozzle	cup point socket set screw	Nm	kg
right hand											
5637957	KM4X63ETAR2525M	98	25	-38	25	45	70	PMT04526	MS1950	6,20	2,25
left hand											
5637956	KM4X63ETAL2525M	98	25	-38	25	45	70	PMT04526	MS1950	6,20	2,25

■ ETAR/L • Inch



order number	catalog number	B2	BW	F	HW	L1	LPR	nozzle	cup point socket set screw	in. lbs.	lbs
right hand											
5637958	KM4X63ETAR16	3.839	1.000	-1.539	1.000	1.781	2.781	PMT04526	MS1950	55	5.00
left hand											
5637959	KM4X63ETAL16	3.839	1.000	-1.539	1.000	1.781	2.781	PMT04526	MS1950	55	5.00

NOTE: Right-handed cutting units use left-handed tools.
KM4X™ coolant unit and wrench are available and must be ordered separately; see page B84.

NOVO KNOWS SEARCH

Searching for a tool by using the outdated method of a catalog has been replaced with the Advise and Select functions from NOVO™ — saving you time and money.

ADVISE

Uses a rules-based approach to provide cutting tool recommendations:

- Define Machining Feature (face milling, slotting, blind hole, etc.)
- Apply Constraint Requirements (geometric, material, tolerance, etc.)
- Set Machining Sequence (single or multi-step operations, rough then finish, etc.)
- Receive Ranked Results

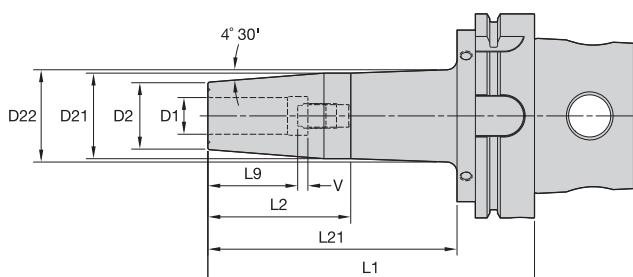
SELECT

A method of selecting cutting tools from a tree structure via a hierarchy or parametric search:

- If you know which product you are looking for, a quick search can be performed by just the catalog number or product description.
- Smart filters significantly reduce the amount of potential tooling solutions.
- After the tool is selected, NOVO also provides cutting and adaptive item options that fit with your solution.

NOVO can ensure you have the right tools on your machines, in the right sequence. Resulting in flawless execution that accelerates every job, and maximizes every shift. kennametal.com/novo

- 30–50% higher clamping torque compared to GP line.
- Balanceable — fine tune with optional M6 set screws.
- Suitable for carbide only, designated by groove in front face.
- 10 kW power or greater Shrink Fit device must be used.



Cutting Tool Shank Requirements

metric (ISO standard)

cutting tool shank diameter	tolerance	
12, 14, 16, & 18	h6	0,000/-0,011
20 & 25	h6	0,000/-0,013
32, 40, & 50	h6	0,000/-0,016

■ HPV TT HT • Metric



order number	catalog number	D1	D2	D21	D22	L1	L2	L9	L21	V	stop screw	wrench size stop screw	kg
5552363	KM4X63HPVTTH03080M	3	9	15	—	80	45	14	—	10	TTSS05014M	2.5 mm	0,90
5552364	KM4X63HPVTTH04080M	4	9	15	—	80	45	15	—	10	TTSS05014M	2.5 mm	0,90
5552365	KM4X63HPVTTH05080M	5	9	15	—	80	45	15	—	10	TTSS06014M	3 mm	0,89
5552366	KM4X63HPVTTH06080M	6	21	27	—	80	54	26	—	10	TTSS05014M	2.5 mm	0,92
5552367	KM4X63HPVTTH06120M	6	21	27	—	120	85	26	—	10	TTSS05014M	2.5 mm	1,19
5552368	KM4X63HPVTTH06160M	6	21	27	1	160	50	26	125	10	TTSS05014M	2.5 mm	1,42
5552369	KM4X63HPVTTH08080M	8	21	27	—	80	54	26	—	10	TTSS06014M	3 mm	0,91
5552380	KM4X63HPVTTH08120M	8	21	27	—	120	85	26	—	10	TTSS06014M	3 mm	1,18
5552381	KM4X63HPVTTH08160M	8	21	27	1	160	50	26	125	10	TTSS06014M	3 mm	1,42
5552382	KM4X63HPVTTH10085M	10	24	31	—	85	59	31	—	10	TTSS08014M	4 mm	0,99
5552383	KM4X63HPVTTH10120M	10	24	32	—	120	85	31	—	10	TTSS08014M	4 mm	1,29
5552384	KM4X63HPVTTH10160M	10	24	32	1	160	63	31	125	10	TTSS08014M	4 mm	1,58
5552385	KM4X63HPVTTH12090M	12	24	32	—	90	64	36	—	10	TTSS10014M	5 mm	1,00
5552386	KM4X63HPVTTH12120M	12	24	32	—	120	85	36	—	10	TTSS10014M	5 mm	1,27
5552387	KM4X63HPVTTH12160M	12	24	32	1	160	63	36	125	10	TTSS10014M	5 mm	1,57
5552388	KM4X63HPVTTH14090M	14	27	34	—	90	64	36	—	10	TTSS10014M	5 mm	1,05
5552389	KM4X63HPVTTH14120M	14	27	34	—	120	85	36	—	10	TTSS10014M	5 mm	1,34
5552390	KM4X63HPVTTH14160M	14	27	34	2	160	57	36	125	10	TTSS10014M	5 mm	1,68
5552391	KM4X63HPVTTH16095M	16	27	34	—	95	69	39	—	10	TTSS12014M	6 mm	1,06
5552392	KM4X63HPVTTH16120M	16	27	34	—	120	85	39	—	10	TTSS12014M	6 mm	1,31

(continued)

(HPV TT HT • Metric — continued)



order number	catalog number	D1	D2	D21	D22	L1	L2	L9	L21	V	stop screw	wrench size stop screw	kg
5552393	KM4X63HPVTTHT16160M	16	27	34	2	160	57	39	125	10	TTSS12014M	6 mm	1,66
5552394	KM4X63HPVTTHT18095M	18	33	42	—	95	69	39	—	10	TTSS12014M	6 mm	1,23
5552395	KM4X63HPVTTHT18120M	18	33	42	—	120	85	39	—	10	TTSS12014M	6 mm	1,54
5552396	KM4X63HPVTTHT18160M	18	33	42	2	160	69	39	125	10	TTSS12014M	6 mm	2,02
5552397	KM4X63HPVTTHT20100M	20	33	42	—	100	74	41	—	10	TTSS16014M	8 mm	1,25
5552398	KM4X63HPVTTHT20120M	20	33	42	—	120	85	41	—	10	TTSS16014M	8 mm	1,51
5552399	KM4X63HPVTTHT20160M	20	33	42	2	160	69	41	125	10	TTSS16014M	8 mm	1,98
5552400	KM4X63HPVTTHT25115M	25	44	53	—	115	89	47	—	10	TTSS16014M	8 mm	1,83
5552401	KM4X63HPVTTHT25160M	25	44	53	—	160	134	47	—	10	TTSS16014M	8 mm	2,58
5552402	KM4X63HPVTTHT32120M	32	44	53	—	120	94	51	—	10	TTSS16014M	8 mm	1,75
5552403	KM4X63HPVTTHT32160M	32	44	53	—	160	134	51	—	10	TTSS16014M	8 mm	2,42

NOTE: Do not overheat. Overheating will destroy the accuracy and functionality of the toolholder.

Supplied with stop screw.

Optional M6-1.0P x 5 lg fine-balancing screw set (10 pieces) available. Order number: MS1276PKG. Must be ordered separately.

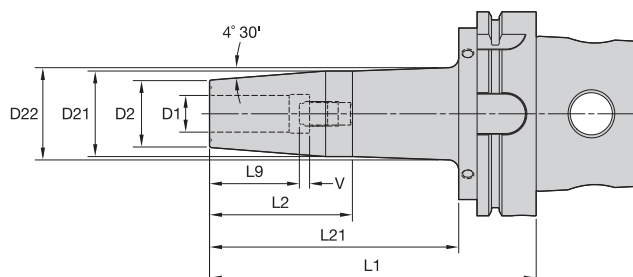
For Shrink Fit Toolholder technical information, reference the Kennametal Innovations Master Catalog Tooling Systems 2013 (A-12-02809); page M78.

Adjusting stop screw gage, reference the Kennametal Innovations Master Catalog Tooling Systems 2013 (A-12-02809); page M81.

Shrink Fit accessories, reference the Kennametal Innovations Master Catalog Tooling Systems 2013 (A-12-02809); page L12-L13.

KM4X™ coolant unit and wrench are available and must be ordered separately; see page B84.

- 30–50% higher clamping torque compared to GP line.
- Balanceable — fine tune with optional M6 set screws.
- Suitable for carbide only, designated by groove in front face.
- 10 kW power or greater Shrink Fit device must be used.



Cutting Tool Shank Requirements

inch (industry standard)

cutting tool shank diameter	tolerance
1/2 & 5/8	.0000/- .0004
3/4, 7/8, 1, 1-1/4, & 1-1/2	.0000/- .0005

■ HPV TT HT • Inch



order number	catalog number	D1	D2	D21	D22	L1	L2	L9	L21	V	stop screw	wrench size stop screw	lbs
5552330	KM4X63HPVTTH025315	1/4	.83	1.06	—	3.150	2.128	1.02	—	.39	TTSS05014M	2.5 mm	2.01
5552331	KM4X63HPVTTH025472	1/4	.83	1.06	—	4.724	3.348	1.02	—	.39	TTSS05014M	2.5 mm	2.61
5552333	KM4X63HPVTTH025630	1/4	.83	1.06	1.27	6.299	1.970	1.02	4.92	.39	TTSS05014M	2.5 mm	3.14
5552335	KM4X63HPVTTH031315	5/16	.83	1.06	—	3.150	2.128	1.02	—	.39	TTSS06014M	3 mm	2.00
5552337	KM4X63HPVTTH031472	5/16	.83	1.06	—	4.724	3.348	1.02	—	.39	TTSS06014M	3 mm	2.60
5552339	KM4X63HPVTTH031630	5/16	.83	1.06	1.27	6.299	1.970	1.02	4.92	.39	TTSS06014M	3 mm	3.12
5552341	KM4X63HPVTTH038335	3/8	.95	1.24	—	3.347	2.325	1.22	—	.39	TTSS08014M	4 mm	2.17
5552343	KM4X63HPVTTH038472	3/8	.95	1.26	—	4.724	3.348	1.22	—	.39	TTSS08014M	4 mm	2.84
5552345	KM4X63HPVTTH038630	3/8	.95	1.26	1.43	6.299	2.480	1.22	4.92	.39	TTSS08014M	4 mm	3.49
5552346	KM4X63HPVTTH044354	7/16	.95	1.26	—	3.543	2.522	1.42	—	.39	TTSS10014M	5 mm	2.21
5552347	KM4X63HPVTTH044472	7/16	.95	1.26	—	4.724	3.348	1.42	—	.39	TTSS10014M	5 mm	2.81
5552348	KM4X63HPVTTH050354	1/2	.95	1.26	—	3.543	2.522	1.42	—	.39	TTSS10014M	5 mm	2.18
5552349	KM4X63HPVTTH050472	1/2	.95	1.26	—	4.724	3.348	1.42	—	.39	TTSS10014M	5 mm	2.79
5552350	KM4X63HPVTTH050630	1/2	.95	1.26	1.43	6.299	2.480	1.42	4.92	.39	TTSS10014M	5 mm	3.44
5552351	KM4X63HPVTTH056354	9/16	1.06	1.34	—	3.543	2.522	1.42	—	.39	TTSS10014M	5 mm	2.30
5552352	KM4X63HPVTTH062374	5/8	1.06	1.34	—	3.740	2.719	1.54	—	.39	TTSS12014M	6 mm	2.33
5552353	KM4X63HPVTTH062472	5/8	1.06	1.34	—	4.724	3.343	1.54	—	.39	TTSS12014M	6 mm	2.89
5552354	KM4X63HPVTTH062630	5/8	1.06	1.34	1.52	6.299	2.240	1.54	4.92	.39	TTSS12014M	6 mm	3.65
5552355	KM4X63HPVTTH075394	3/4	1.30	1.65	—	3.937	2.915	1.61	—	.39	TTSS16014M	8 mm	2.78
5552356	KM4X63HPVTTH075630	3/4	1.30	1.65	1.80	6.299	2.720	1.61	4.92	.39	TTSS16014M	8 mm	4.40

(continued)

(HPV TT HT • Inch — continued)



order number	catalog number	D1	D2	D21	D22	L1	L2	L9	L21	V	stop screw	wrench size stop screw	lbs
5552357	KM4X63HPVTTHT088394	7/8	1.30	1.65	—	3.937	2.915	1.61	—	.39	TTSS16014M	8 mm	2.69
5552358	KM4X63HPVTTHT088630	7/8	1.30	1.65	1.80	6.299	2.720	1.61	4.92	.39	TTSS16014M	8 mm	4.31
5552359	KM4X63HPVTTHT100453	1	1.73	2.07	—	4.528	3.506	1.85	—	.39	TTSS16014M	8 mm	4.02
5552360	KM4X63HPVTTHT100630	1	1.73	2.07	—	6.299	5.278	1.85	—	.39	TTSS16014M	8 mm	5.67
5552361	KM4X63HPVTTHT125472	1 1/4	1.73	2.07	—	4.724	3.703	2.01	—	.39	TTSS16014M	8 mm	3.87
5552362	KM4X63HPVTTHT125630	1 1/4	1.73	2.07	—	6.299	5.278	2.01	—	.39	TTSS16014M	8 mm	5.34

NOTE: Do not overheat. Overheating will destroy the accuracy and functionality of the toolholder.

Supplied with stop screw.

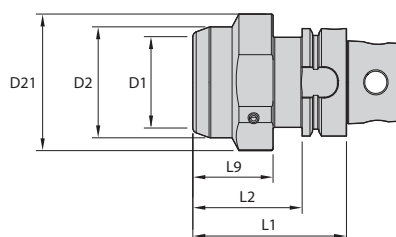
Optional M6-1.0P x 5 lg fine-balancing screw set (10 pieces) available. Order number: MS1276PKG. Must be ordered separately.

For Shrink Fit Toolholder technical information, reference the Kennametal Innovations Master Catalog Tooling Systems 2013 (A-12-02809); page M78.

Adjusting stop screw gage, reference the Kennametal Innovations Master Catalog Tooling Systems 2013 (A-12-02809); page M81.

Shrink Fit accessories, reference the Kennametal Innovations Master Catalog Tooling Systems 2013 (A-12-02809); page L12-L13.

KM4X™ coolant unit and wrench are available and must be ordered separately; see page B84.



L9: minimum clamping length
V: maximum adjusting length



Cutting Tool Shank Requirements
metric (ISO standard)

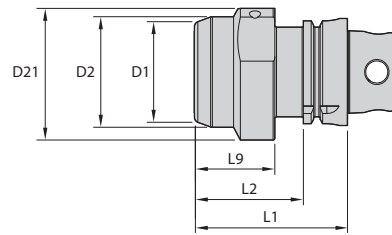
cutting tool shank diameter	tolerance	
6	h6	0,000/-0,008
8 & 10	h6	0,000/-0,009
12, 14, 16, & 18	h6	0,000/-0,011
20	h6	0,000/-0,013

■ HCT HT • Metric



order number	catalog number	D1	D2	D21	L1	L2	L9	V	actuation wrench	wrench size actuation screw	wrench size stop screw	kg
5520990	KM4X63HCTHT20090M	20	52,5	—	90	64	41	10	170.135	5 mm	5 mm	1,63
6048253	KM4X63HCTHT32090M	32	65,0	80	90	23	51	10	170.136	6 mm	6 mm	2,05

NOTE: Do not over torque actuation screw. Tighten by hand until stop is felt.
Supplied with stop screw.
Actuation wrench must be ordered separately.
Reduction sleeves are available and must be ordered separately.
Safe-Lock™ sleeves are available and must be ordered separately.
KM4X™ coolant unit and wrench are available and must be ordered separately; see page B84.



L9: minimum clamping length
 V: maximum adjusting length



KM4X63 Shank Tools

Cutting Tool Shank Requirements

inch (industry standard)

cutting tool shank diameter	tolerance
1/4, 5/16 & 3/8	.0000/- .0004
7/16, 1/2, 9/16, 5/8, & 11/16	.0000/- .0004
3/4, 7/8, 1, & 1-1/4	.0000/- .0005

■ HCT HT • Inch



order number	catalog number	D1	D2	D21	L1	L2	L9	V	actuation wrench	wrench size actuation screw	wrench size stop screw	lbs
5521071	KM4X63HCTHT075350	.750	2.067	—	3.500	2.478	1.618	.394	170.135	5 mm	5 mm	3.57
6048254	KM4X63HCTHT125354	1.250	2.559	3.150	3.543	.906	2.008	.394	170.136	6 mm	6 mm	4.53

NOTE: Do not over torque actuation screw. Tighten by hand until stop is felt.

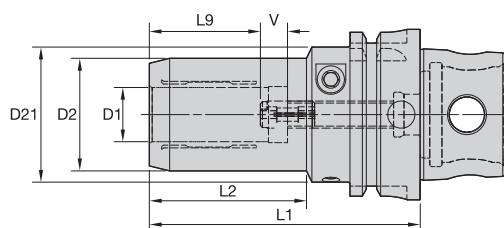
Supplied with stop screw.

Actuation wrench must be ordered separately.

Reduction sleeves are available and must be ordered separately.

Safe-Lock™ sleeves are available and must be ordered separately.

KM4X™ coolant unit and wrench are available and must be ordered separately; see page B84.



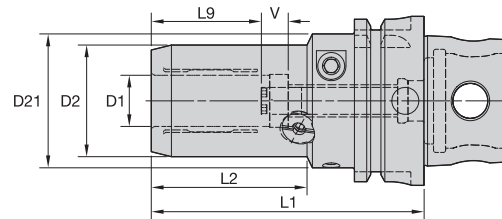
L9: minimum clamping length
V: maximum adjusting length



■ HC Trend Line • Metric

order number	catalog number	D1	D2	D21	L1	L2	L9	V	actuation wrench	wrench size actuation screw	length adjustment wrench	wrench size stop screw	kg
5479916	KM4X63HCT06080M	6	26	50	80	33	27	10	170.135	5 mm	170.003	3 mm	1,10
5552286	KM4X63HCT06150M	6	26	50	150	105	27	10	170.135	5 mm	170.003	3 mm	1,35
5552287	KM4X63HCT08080M	8	28	50	80	34	27	10	170.135	5 mm	170.003	3 mm	1,11
5552288	KM4X63HCT08150M	8	28	50	150	105	27	10	170.135	5 mm	170.003	3 mm	1,42
5479917	KM4X63HCT10085M	10	30	50	85	39	31	10	170.135	5 mm	170.003	3 mm	1,15
5552289	KM4X63HCT10150M	10	30	50	150	105	31	10	170.135	5 mm	170.003	3 mm	1,49
5479918	KM4X63HCT12090M	12	32	50	90	45	36	10	170.135	5 mm	170.003	3 mm	1,19
5552290	KM4X63HCT12150M	12	32	50	150	105	36	10	170.135	5 mm	170.003	3 mm	1,54
5552291	KM4X63HCT14090M	14	34	50	90	46	36	10	170.135	5 mm	170.005	5 mm	1,20
5552292	KM4X63HCT14150M	14	34	50	150	105	36	10	170.135	5 mm	170.005	5 mm	1,59
5479919	KM4X63HCT16095M	16	38	50	95	52	39	10	170.135	5 mm	170.003	3 mm	1,30
5552293	KM4X63HCT16150M	16	38	50	150	105	39	10	170.135	5 mm	170.005	5 mm	1,76
5552294	KM4X63HCT18095M	18	40	50	95	52	39	10	170.135	5 mm	170.005	5 mm	1,33
5552295	KM4X63HCT18150M	18	40	50	150	105	39	10	170.135	5 mm	170.005	5 mm	1,84
5479950	KM4X63HCT20100M	20	42	50	100	58	41	10	170.135	5 mm	170.003	3 mm	1,40
5552296	KM4X63HCT20150M	20	42	50	150	105	41	10	170.135	5 mm	170.005	5 mm	1,92
5552297	KM4X63HCT25120M	25	50	63	120	51	47	10	170.136	6 mm	170.005	5 mm	2,09
5552298	KM4X63HCT32125M	32	60	63	125	59	51	10	170.136	6 mm	170.005	5 mm	2,37

NOTE: Do not over torque actuation screw. Tighten by hand until stop is felt.
Supplied with stop screw.
Actuation wrench must be ordered separately.
Reduction sleeves are available and must be ordered separately.
KM4X™ coolant unit and wrench are available and must be ordered separately; see page B84.



L9: minimum clamping length
V: maximum adjusting length

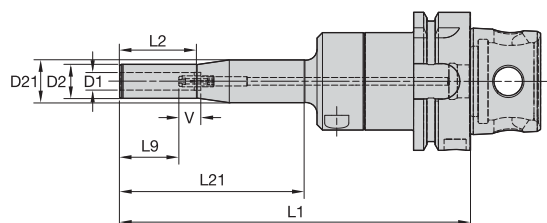


KM4X63 Shank Tools

■ HC • Inch

order number	catalog number	D1	D2	D21	L1	L2	L9	V	 wrench size actuation screw	 wrench size actuation screw	length adjustment wrench	wrench size stop screw	lbs
5549163	KM4X63HC025325	1/4	1.01	1.96	3.250	1.30	1.06	.39	170.135	5 mm	170.002	2.5 mm	2.50
5549164	KM4X63HC038338	3/8	1.17	1.96	3.380	1.54	1.22	.39	170.135	5 mm	170.002	2.5 mm	2.56
5549165	KM4X63HC050350	1/2	1.24	1.96	3.500	1.75	1.42	.39	170.135	5 mm	170.002	2.5 mm	2.57
5549166	KM4X63HC062375	5/8	1.48	1.96	3.750	2.03	1.54	.39	170.135	5 mm	170.003	3 mm	2.86
5549167	KM4X63HC075400	3/4	1.64	1.96	4.000	2.28	1.61	.39	170.135	5 mm	170.003	3 mm	2.96
5549168	KM4X63HC100475	1	1.95	2.47	4.750	2.01	1.85	.39	170.136	6 mm	170.004	4 mm	4.59
5549169	KM4X63HC125500	1 1/4	2.35	2.47	5.000	2.32	2.01	.39	170.136	6 mm	170.004	4 mm	5.32

NOTE: Do not over torque actuation screw. Tighten by hand until stop is felt.
Supplied with stop screw.
Actuation wrench must be ordered separately.
Reduction sleeves are available and must be ordered separately.
KM4X™ coolant unit and wrench are available and must be ordered separately; see page B84.



L9: minimum clamping length
V: maximum adjusting length



■ HCSLT • Metric (SLT)

order number	catalog number	D1	D2	D21	L1	L2	L9	L21	V	actuation wrench	wrench size actuation screw	length adjustment wrench	wrench size stop screw	kg
5479913	KM4X63HCSLT06160M	6	14	20	160	35	27	90	10	170.135	5 mm	170.002	2.5 mm	1,38
5479914	KM4X63HCSLT08160M	8	16	20	160	35	27	90	10	170.135	5 mm	170.002	2.5 mm	1,39
5479915	KM4X63HCSLT10160M	10	18	44	160	85	31	134	10	170.135	5 mm	170.003	3 mm	1,37

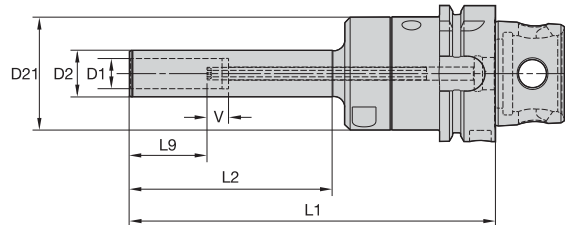
NOTE: Do not over torque actuation screw. Tighten by hand until stop is felt.

Supplied with stop screw.

Actuation wrench must be ordered separately.

Reduction sleeves are available and must be ordered separately.

KM4X™ coolant unit and wrench are available and must be ordered separately; see page B84.



L9: minimum clamping length
 V: maximum adjusting length



KM4X63 Shank Tools

■ HCSLT • Metric (SL)

order number	catalog number	D1	D2	D21	L1	L2	L9	V	actuation wrench	wrench size actuation screw	length adjustment wrench	wrench size stop screw	kg
5479912	KM4X63HCSLT12170M	12	20	44	170	95	36	10	170.135	5 mm	170.002	2.5 mm	1,41
5549202	KM4X63HCSLT14170M	14	22	52	170	95	36	10	170.135	5 mm	170.002	2.5 mm	1,64
5549203	KM4X63HCSLT16170M	16	24	52	170	95	39	10	170.135	5 mm	170.002	2.5 mm	1,66
5549204	KM4X63HCSLT18170M	18	26	52	170	95	39	10	170.135	5 mm	170.002	2.5 mm	1,70
5549205	KM4X63HCSLT20170M	20	28	52	170	95	41	10	170.135	5 mm	170.002	2.5 mm	1,74

NOTE: Do not over torque actuation screw. Tighten by hand until stop is felt.

Supplied with stop screw.

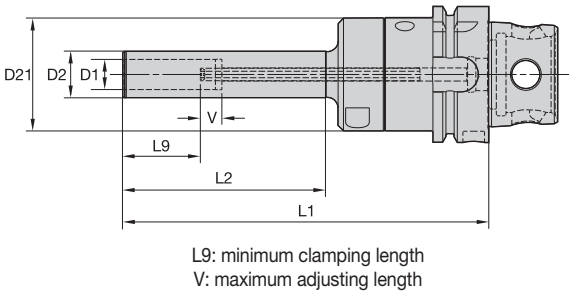
Actuation wrench must be ordered separately.

Reduction sleeves are available and must be ordered separately.

KM4X™ coolant unit and wrench are available and must be ordered separately; see page B84.



KM4X63 Shank Tools



■ HCSLT • Inch (SL)

order number	catalog number								wrench size actuation screw	wrench size actuation screw	length adjustment wrench	wrench size stop screw	lbs
		D1	D2	D21	L1	L2	L9	V					
5549200	KM4X63HCSL050669	1/2	.81	2.07	6.693	3.74	1.42	.39	170.135	5 mm	170.002	2.5 mm	3.59
5549201	KM4X63HCSL075669	3/4	1.06	2.07	6.693	3.74	1.61	.39	170.135	5 mm	170.002	2.5 mm	3.83

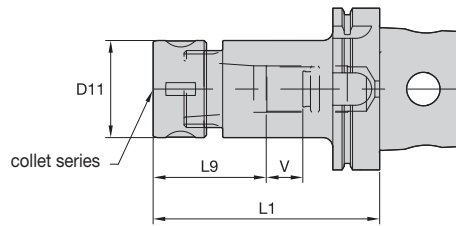
NOTE: Do not over torque actuation screw. Tighten by hand until stop is felt.

Supplied with stop screw.

Actuation wrench must be ordered separately.

Reduction sleeves are available and must be ordered separately.

KM4X™ coolant unit and wrench are available and must be ordered separately; see page B84.



KM4X63 Shank Tools

TG collet series	mm		in	
	min	max	min	max
TG50	1,1	13,5	1/32	17/32
TG75	2,6	20,0	3/64	3/4
TG100	2,6	25,5	5/64	1

■ TG Collet Chuck

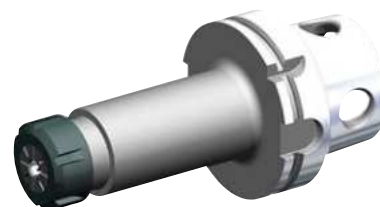
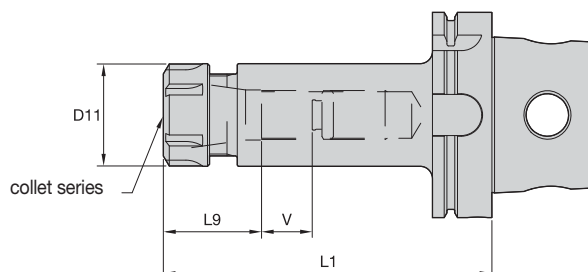
order number	catalog number	collet series	D11		L1		L9		V		kg	lbs
			mm	in	mm	in	mm	in	mm	in		
5548989	KM4X63TG050100M	TG50	38	1.50	100	3.937	42	1.65	21	.83	1,18	2.60
5549160	KM4X63TG050160M	TG50	38	1.50	160	6.300	42	1.65	58	2.29	1,67	3.68
5549161	KM4X63TG075115M	TG75	50	1.97	115	4.528	54	2.13	16	.63	1,72	3.80
5549162	KM4X63TG100135M	TG100	60	2.36	135	5.315	70	2.76	17	.67	2,10	4.64

■ Spare Parts



catalog number	locknut	locknut wrench	locknut maximum torque (Nm)	locknut maximum torque (ft. lbs.)	stop screw	wrench size stop screw	stop screw cone cap
KM4X63TG050100M	LNA050M	HSW34M	68	50	SS056041G	4mm & 5/32	SSCC056
KM4X63TG050160M	LNA050M	HSW34M	68	50	SS056041G	4mm & 5/32	SSCC056
KM4X63TG075115M	LNA075M	HSW45M	136	100	SS081041G	4mm & 5/32	SSCC081
KM4X63TG100135M	LNA100M	HSW58M	203	150	SS112041G	4mm & 5/32	SSCC112

NOTE: Collet must be loaded into locknut first. Before loading into the chuck body, insert the cutting tool, then tighten to the recommended tightening torque.
 Collet chuck technical section, see page M98 of the Kennametal Innovations Master Catalog Tooling Systems (A-12-02809).
 Supplied with locknut and stop screw.
 Locknut wrench must be ordered separately.
 Interchangeable coolant-style locknuts and coolant disks are available and must be ordered separately; see page L19 of the Kennametal Innovations Master Catalog Tooling Systems (A-12-02809).
 Stop screw coolant caps are available and must be ordered separately; see pages L34–L35 of the Kennametal Innovations Master Catalog Tooling Systems (A-12-02809).
 ER standard straight-bore collets, see page J50 of the Kennametal Innovations Master Catalog Tooling Systems (A-12-02809).
 ER tap collets, see pages J58–J59 of the Kennametal Innovations Master Catalog Tooling Systems (A-12-02809).
 ER TCT tension-only tap collets, see page J60 of the Kennametal Innovations Master Catalog Tooling Systems (A-12-02809).
 KM4X™ coolant unit and wrench are available and must be ordered separately; see page B84.



ER collet series	Collet Capacity			
	mm		in	
	min	max	min	max
ER25	1,0	16,0	.04	.63
ER32	2,0	20,0	.08	.81
ER40	3,0	26,0	.12	1.00

■ ER Collet Chuck

order number	catalog number	collet series	D11		L1		L9		V		kg	lbs
			mm	in	mm	in	mm	in	mm	in		
5549544	KM4X63ER16060M	ER16	28	1.10	60	2.360	32	1.26	4	.16	0,81	1.78
5472274	KM4X63ER16100M	ER16	28	1.10	100	3.937	32	1.26	44	1.73	0,98	2.16
5552079	KM4X63ER16120M	ER16	28	1.10	120	4.724	32	1.26	53	2.09	1,06	2.34
5472275	KM4X63ER20100M	ER20	34	1.34	100	3.937	36	1.42	37	1.46	1,08	2.37
5552280	KM4X63ER25065M	ER25	42	1.65	65	2.559	29	1.15	—	—	0,92	2.02
5472276	KM4X63ER25100M	ER25	42	1.65	100	3.937	37	1.46	30	1.18	1,24	2.74
5552281	KM4X63ER25120M	ER25	42	1.65	120	4.724	40	1.57	40	1.58	1,42	3.13
5552282	KM4X63ER32065M	ER32	50	1.97	65	2.559	34	1.35	—	—	0,96	2.12
5472277	KM4X63ER32100M	ER32	50	1.97	100	3.937	45	1.77	22	.87	1,43	3.16
5552283	KM4X63ER32120M	ER32	50	1.97	120	4.724	45	1.77	32	1.26	1,66	3.67
5552284	KM4X63ER40065M	ER40	63	2.48	65	2.559	38	1.51	—	—	1,08	2.38
5552285	KM4X63ER40120M	ER40	63	2.48	120	4.724	54	2.13	21	.82	1,82	4.02

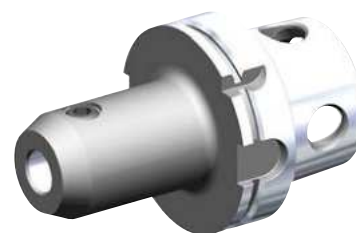
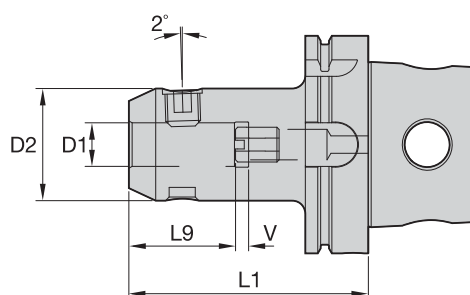
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(ER Collet Chuck with Round Locknut — continued)

Spare Parts

catalog number						counterbore collet torque		straight collet torque	
	locknut	hexnut	locknut wrench	hexnut wrench	stop screw	Nm	ft. lbs.	Nm	ft. lbs.
KM4X63ER16060M	—	LNHSER16M	—	OEW25M	SS44038G	32	24	56	42
KM4X63ER16100M	—	LNHSER16M	—	OEW25M	SS44038G	32	24	56	42
KM4X63ER16120M	—	LNHSER16M	—	OEW25M	SS44038G	32	24	56	42
KM4X63ER20100M	—	LNHSER20M	—	OEW30M	SS56041G	40	30	80	59
KM4X63ER25065M	LNSE25M	—	ER25WM	—	—	—	—	104	77
KM4X63ER25100M	LNSE25M	—	ER25WM	—	SS75041G	—	—	104	77
KM4X63ER25120M	LNSE25M	—	ER25WM	—	SS75041G	—	—	104	77
KM4X63ER32065M	LNSE32M	—	ER32WM	—	—	—	—	136	100
KM4X63ER32100M	LNSE32M	—	ER32WM	—	SS94041G	—	—	136	100
KM4X63ER32120M	LNSE32M	—	ER32WM	—	SS94041G	—	—	136	100
KM4X63ER40065M	LNSE40M	—	ER40WM	—	—	—	—	176	130
KM4X63ER40120M	LNSE40M	—	ER40WM	—	SS112041G	—	—	176	130

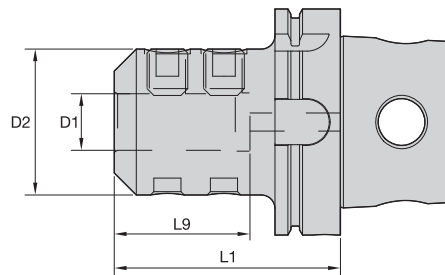
NOTE: KM4X™ coolant unit and wrench are available and must be ordered separately; see page B84.



■ WN • Whistle Notch Adapter • Metric

order number	catalog number	D1	D2	L1	L9	V	lock screw	wrench size lock screw	lock screw maximum torque (Nm)	stop screw	wrench size stop screw	kg
5552735	KM4X63WN06080M	6	25	80	30	10	SS03M012	3 mm	7	571.060	2.5 mm	0,90
5552736	KM4X63WN08080M	8	28	80	30	10	SS03M014	4 mm	15	571.067	3.0 mm	0,95
5552737	KM4X63WN10080M	10	35	80	35	10	SS03M018	5 mm	25	571.068	4.0 mm	1,07
5552738	KM4X63WN12090M	12	42	90	40	10	SS03M023	6 mm	35	571.074	5.0 mm	1,32
5552739	KM4X63WN14090M	14	44	90	40	10	SS03M023	6 mm	35	571.074	5.0 mm	1,37
5552760	KM4X63WN16100M	16	48	100	43	10	SS03M025	6 mm	50	571.075	6.0 mm	1,61
5552761	KM4X63WN18100M	18	50	100	43	10	SS03M025	6 mm	50	571.075	6.0 mm	1,68
5552762	KM4X63WN20100M	20	52	100	45	10	SS03M026	8 mm	95	571.076	6.0 mm	1,73
5552763	KM4X63WN25110M	25	65	110	50	10	SS03M027	10 mm	135	571.077	6.0 mm	2,36

NOTE: Do not overtighten lock screw; use torque recommendations above.
Supplied with lock screw and stop screw.
Lock screw or stop screw wrenches not included.
KM4X™ coolant unit and wrench are available and must be ordered separately; see page B84.



KM4X63 Shank Tools

■ EM • Metric



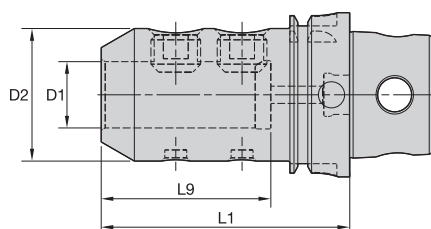
order number	catalog number	D1	D2	L1	L9	lock screw	wrench size lock screw	lock screw maximum torque (Nm)	kg
5472193	KM4X63EM06065M	6	25	65	40	SS03M012	3 mm	7	0,85
5549522	KM4X63EM08065M	8	28	65	40	SS03M014	4 mm	15	0,88
5549525	KM4X63EM10065M	25	35	65	45	SS03M018	5 mm	25	0,96
5472194	KM4X63EM12080M	12	42	80	50	SS03M023	6 mm	35	1,22
5549527	KM4X63EM14080M	14	44	80	50	SS03M023	6 mm	35	1,26
5549529	KM4X63EM16068M	16	48	68	53	SS03M025	6 mm	50	1,08
5472195	KM4X63EM16080M	16	48	80	53	SS03M025	6 mm	50	1,35
5549541	KM4X63EM18080M	18	50	80	53	SS03M025	6 mm	52	1,39
5472196	KM4X63EM20080M	20	52	80	55	SS03M026	8 mm	95	1,42
5549542	KM4X63EM25105M	25	65	105	60	SS03M027	10 mm	142	2,28
5472197	KM4X63EM25110M	25	65	110	60	SS03M027	10 mm	142	2,39
5549543	KM4X63EM32108M	32	72	108	65	SS03M029	10 mm	245	2,57
5472198	KM4X63EM32110M	32	72	110	65	SS03M029	10 mm	245	2,64

NOTE: Do not overtighten lock screw; use torque recommendations above.

Supplied with lock screw.

Lock screw wrench not included.

KM4X™ coolant unit and wrench are available and must be ordered separately; see page B84.



■ EM • Inch



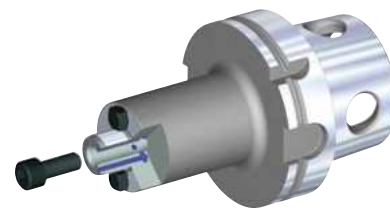
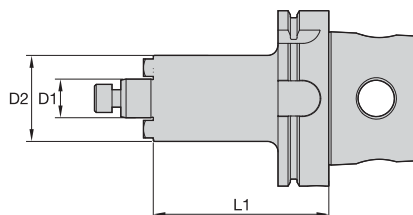
order number	catalog number	D1	D2	L1	L9	lock screw	wrench size lock screw	lock screw maximum torque (ft. lbs.)	lbs
5472173	KM4X63EM025300	1/4	1.00	3.000	1.70	ELS025025PKG	1/8	8	1.99
5472174	KM4X63EM038300	3/8	1.00	3.000	1.73	ELS038031PKG	3/16	15	1.95
5549519	KM4X63EM050216	1/2	1.38	2.598	1.97	ELS044038PKG	7/32	20	2.07
5472175	KM4X63EM050300	1/2	1.38	3.000	1.97	ELS044038PKG	7/32	20	2.24
5549520	KM4X63EM062275	5/8	1.63	2.750	2.09	ELS056050PKG	1/4	38	2.33
5549521	KM4X63EM075275	3/4	1.75	2.750	2.22	ELS062050PKG	5/16	70	2.38
5472176	KM4X63EM075375	3/4	1.75	3.750	2.22	ELS062050PKG	5/16	70	3.07
5549523	KM4X63EM088275	7/8	2.00	2.750	2.22	ELS062050PKG	5/16	70	2.61
5549524	KM4X63EM100359	1	2.00	3.583	2.56	ELS075056PKG	3/8	110	3.17
5472177	KM4X63EM100375	1	2.00	3.750	2.56	ELS075056PKG	3/8	110	3.27
5549526	KM4X63EM125354	1 1/4	2.50	4.250	2.51	ELS075062PKG	3/8	120	4.73
5472178	KM4X63EM125425	1 1/4	2.50	4.250	2.51	ELS075062PKG	3/8	120	4.72
5549528	KM4X63EM150462	1 1/2	2.75	4.626	2.93	ELS075069PKG	3/8	180	5.54

NOTE: Do not overtighten lock screw; use torque recommendations above.

Supplied with lock screw.

Lock screw wrench not included.

KM4X™ coolant unit and wrench are available and must be ordered separately; see page B84.



KM4X63 Shank Tools

■ SMC • Metric

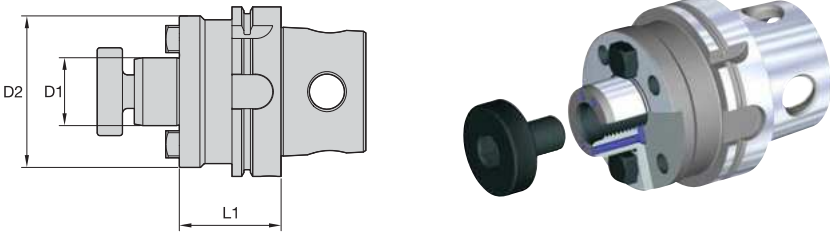


order number	catalog number	D1	D2	L1	lock screw	drive key	wrench size lock screw	kg
5545229	KM4X63SMC22050M	22	49	50	MS1234	KDK22M	8 mm	1,14
5545390	KM4X63SMC27060M	27	60	60	KLSS27M	KDK27M	10 mm	1,51
5545391	KM4X63SMC32060M	32	78	60	KLSS32M	KDK32M	14 mm	1,85
5545392	KM4X63SMC40060M	40	83	60	KLSS40M	KDK40M	17 mm	2,21

NOTE: KM4X™ coolant unit and wrench are available and must be ordered separately; see page B84.



KM4X63 Shank Tools

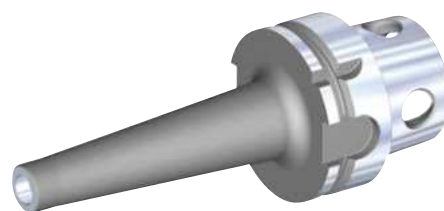
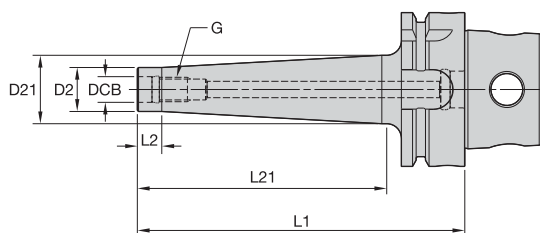


■ SMC • Inch



order number	catalog number	D1	D2	L1	lock screw	drive key	wrench size lock screw	lbs
5545393	KM4X63SMC050200	1/2	1.44	2.00	KLS05	KDK04	3/16	2.08
5545394	KM4X63SMC075200	3/4	1.75	2.00	KLS07	KDK05	1/4	2.37
5545395	KM4X63SMC100225	1	2.75	2.25	KLS10	KDK06	5/16	3.30
5545396	KM4X63SMC125225	1 1/4	2.88	2.25	KLS12	KDK08	5/16	3.58
5545397	KM4X63SMC150225	1 1/2	3.81	1.07	KLS15	KDK10	3/8	4.80

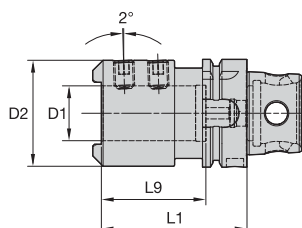
NOTE: Do not overtighten lock screw.
 Supplied with lock screw and drive keys.
 Lock screw wrench not included.
 KM4X™ coolant unit and wrench are available and must be ordered separately; see page B84.



ST

order number	catalog number	DCB	D2	D21	G	L1	L2	L21	kg
5552404	KM4X63ST06059M	6,5	10	11	M6 X 1	59	10	33	0,74
5552406	KM4X63ST06084M	6,5	10	12	M6 X 1	84	10	58	0,75
5552408	KM4X63ST06109M	6,5	10	14	M6 X 1	109	10	83	0,78
5552430	KM4X63ST08059M	8,5	13	15	M8 X 1.25	59	10	33	0,75
5552432	KM4X63ST08084M	8,5	13	18	M8 X 1.25	84	10	58	0,79
5552434	KM4X63ST08109M	8,5	13	23	M8 X 1.25	109	10	83	0,87
5552436	KM4X63ST08134M	8,5	13	23	M8 X 1.25	134	10	108	0,91
5552438	KM4X63ST10059M	10,5	18	20	M10 X 1.5	59	10	33	0,78
5552440	KM4X63ST10084M	10,5	18	25	M10 X 1.5	84	10	58	0,87
5552442	KM4X63ST10109M	10,5	18	25	M10 X 1.5	109	10	83	0,87
5552444	KM4X63ST10134M	10,5	18	28	M10 X 1.5	134	10	108	1,04
5552446	KM4X63ST12059M	12,5	21	24	M12 X 1.75	59	10	33	0,80
5552447	KM4X63ST12084M	12,5	21	24	M12 X 1.75	84	10	58	0,87
5552448	KM4X63ST12109M	12,5	21	28	M12 X 1.75	109	10	83	1,00
5552449	KM4X63ST12134M	12,5	21	31	M12 X 1.75	134	10	108	1,13
5552450	KM4X63ST16059M	17,0	24	33	M16 X 2.0	59	10	33	0,83
5552451	KM4X63ST16084M	17,0	24	33	M16 X 2.0	84	10	58	0,96
5552452	KM4X63ST16109M	17,0	24	33	M16 X 2.0	109	10	83	1,08
5552453	KM4X63ST16134M	17,0	24	33	M16 X 2.0	134	10	108	1,20

NOTE: KM4X™ coolant unit and wrench are available and must be ordered separately; see page B84.

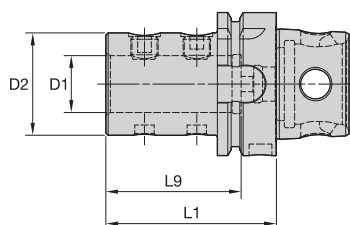


■ WD • With Drive



order number	catalog number	D1		D2		L1		L9		clamp screw	wrench size clamp screw	clamp screw torque (Nm)	clamp screw torque (ft. lbs.)	kg
		mm	in	mm	in	mm	in	mm	in					
5500004	KM4X63WD32085M	32	1.26	62	2.44	85	3.35	61	2.40	SS03M023	6 mm	35	26	1,64

NOTE: Do not overtighten clamp screw.
 Supplied with clamp screw.
 Clamp screw wrench not included.
 KM4X™ coolant unit and wrench are available and must be ordered separately; see page B84.

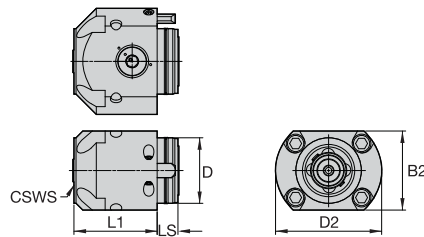


■ DAT



order number	catalog number	D1		D2		L1		L9		cone-point clamp screw	clamp screw	wrench size clamp screw	clamp screw torque (Nm)	clamp screw torque (ft. lbs.)	kg	lbs
		mm	in	mm	in	mm	in	mm	in							
5552340	KM4X63DAT25075M	25	.98	45	1.77	75	2.95	60	2.34	12166903700	12166903900	6 mm	40	30	1,10	2.42
5552342	KM4X63DAT32080M	32	1.26	50	1.97	80	3.15	64	2.50	12166903700	12166903900	6 mm	40	30	1,15	2.53
5552344	KM4X63DAT40105M	40	1.58	60	2.36	105	4.13	74	2.89	12166903800	12166904000	8 mm	50	37	1,64	3.61

NOTE: Do not overtighten clamp screw.
 Supplied with clamp screw.
 Clamp screw wrench not included.
 KM4X™ coolant unit and wrench are available and must be ordered separately; see page B84.



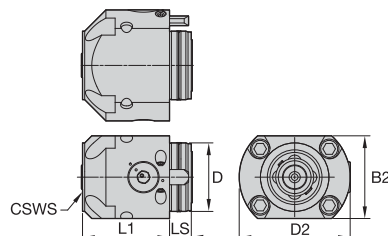
KM4X-LOC II Clamping Units

■ CL2NS-EF • Flange Mount, Side Access



order number	catalog number	CSWS system size	D	D2	B2	L1	LS	wrench size actuation screw	mounting screw	kg
5544251	KM4X63CL2NSEF	KM4X63	63	102	76	80	20	10 mm	MS-1262	3,83

NOTE: For mounting dimensions, reference the Kennametal Innovations Master Catalog Tooling Systems 2013 (A-12-02809); see page M53, same mounting as KM63.
 For technical information, reference the Kennametal Innovations Master Catalog Tooling Systems 2013 (A-12-02809); see pages M32–M33.
 For For actuation wrench, reference the Kennametal Innovations Master Catalog Tooling Systems 2013 (A-12-02809); see page L53.



■ CL2NT-EF • Flange Mount, Top Access

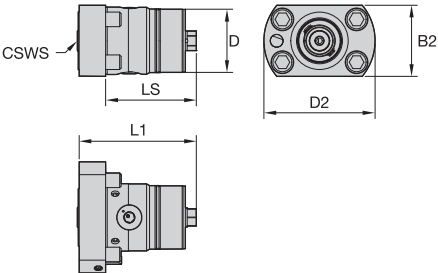


order number	catalog number	CSWS system size	D	D2	B2	L1	LS	wrench size actuation screw	mounting screw	kg
5544252	KM4X63CL2NTEF	KM4X63	63	102	76	80	20	10 mm	MS-1262	3,82

NOTE: For mounting dimensions, reference the Kennametal Innovations Master Catalog Tooling Systems 2013 (A-12-02809); see page M53, same mounting as KM63.
 For technical information, reference the Kennametal Innovations Master Catalog Tooling Systems 2013 (A-12-02809); see pages M32–M33.
 For For actuation wrench, reference the Kennametal Innovations Master Catalog Tooling Systems 2013 (A-12-02809); see page L53.



KM4X-LOC II Clamping Units

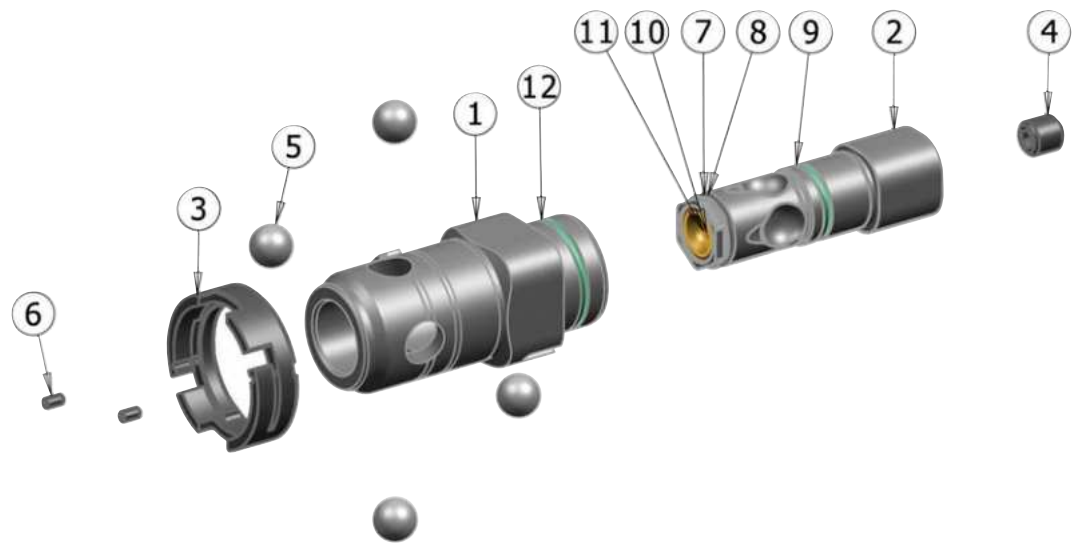


■ **CL2NS-BC • Boring Cartridge • Side Access**



order number	catalog number	CSWS system size	D	D2	B2	L1	LS	wrench size actuation screw	mounting screw	kg
5881394	KM4X63CL2NSBC5010B	KM4X63	74	122	78	30	100	10 mm	MS1239	4,16

NOTE: For technical information, reference the Kennametal Innovations Master Catalog Tooling Systems 2013 (A-12-02809); see pages M32–M33.
 For mounting dimensions, reference the Kennametal Innovations Master Catalog Tooling Systems 2013 (A-12-02809); see page M57, same mounting as KM63.
 For For actuation wrench, reference the Kennametal Innovations Master Catalog Tooling Systems 2013 (A-12-02809); see page L53.

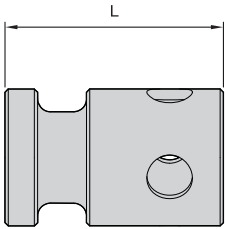


KIT

order number	catalog number	description
6241045	KM4X63NCASP	KM4X63 Spindle Kit
6241046	KM4X63SPPKG	KM4X63 Spindle Repair Kit

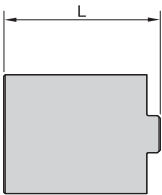
detail number	description	quantity
1	canister	1
2	lockrod	1
3	canister ring	1
4	modified set screw	1
5	chrome ball	4
6	set screw	2
7	O-ring	1
8	back-up ring	1
9	O-ring	1
10	O-ring	1
11	back-up ring	2
12	O-ring	1

NOTE: Standard kit contains items 1–12.
 Repair package contains items 7–12.
 Assembly and disassembly tools sold separately; see page B78.



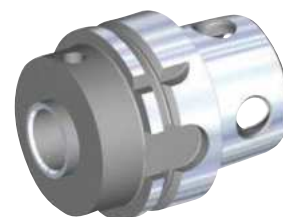
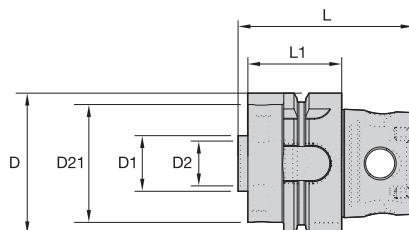
■ Removal Tool

order number	catalog number	L		kg	lbs
		mm	in		
5701918	KM4X63CR60124639	67,00	2.64	0,29	0.63



■ Assembly Tool

order number	catalog number	L		kg	lbs
		mm	in		
5701917	KM4X63SPA60115788	58,00	2.28	0,24	0.54



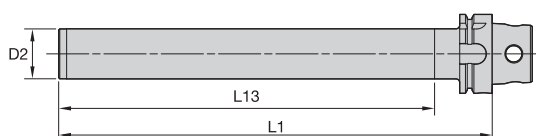
Accessories

■ Probe Adapter

order number	catalog number	D		D1		D2		D21		L		L1		kg
		mm	in	mm	in	mm	in	mm	in	mm	in	mm	in	
5990571	KM4X63RP40042M	63,00	2.478	11,20	.441	39,75	1.565	—	—	74	2.9114	42	2	0,87
5718464	KM4X63RP60042M	63,00	2.478	20,06	.790	24,90	.9803	52,75	2.0768	78	3.0846	42	2	0,87

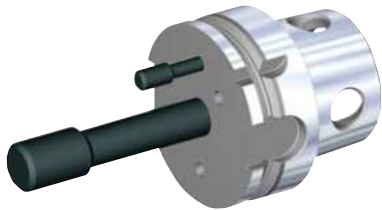
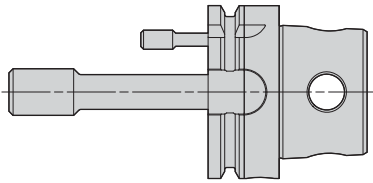
Gaging

- For acceptance testing on machine tool spindles.
- 0,003mm (.0001") maximum circular runout.
- Precision ground.



■ GB Gage Bar

order number	catalog number	D2		L1		L13		kg
		mm	in	mm	in	mm	in	
5477456	KM4X63GB40346M	40	1.57	346	13.62	300	12	3,88
5552461	KM4X63GB50350M	50	1.97	350	13.78	304	12	5,65
5552462	KM4X63GB63120M	63	2.48	120	4.72	68	3	2,90

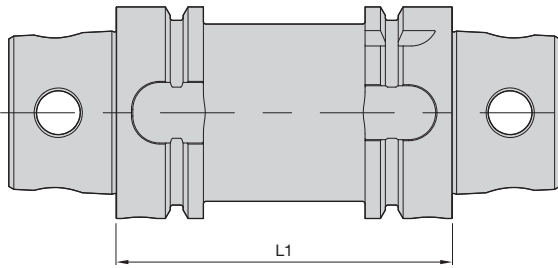


■ ATCP

order number	catalog number	kg	lbs
5477455	KM4X63ATCP	0,82	1.80

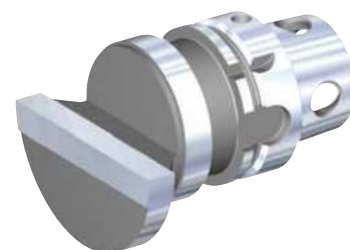
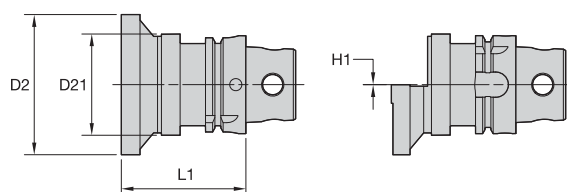
NOTE: Fine adjustment gage for automatic tool changer arm, used for center adjustment and angular adjustment.

Min. Max. Head



■ Min. Max. Head

order number	catalog number	L1		kg	lbs
		mm	in		
5477453	KM4X63MINMAX	100	4	2,30	5.06

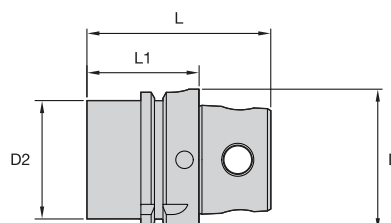


Accessories

■ Timing Head

order number	catalog number	D2		D21		L1		H1		kg	lbs
		mm	in	mm	in	mm	in	mm	in		
5477452	KM4X63TIM	90	3.543	65	2.559	80	3.150	0	.000	1,83	4.04

Balancing Plug

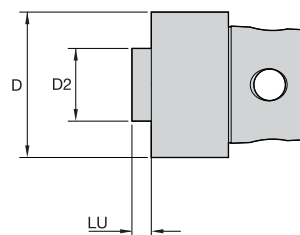


■ Balancing Plug

order number	catalog number	D		D2		L		L1		kg	lbs
		mm	in	mm	in	in	mm	in	mm		
5548441	KM4X63BALPLUG	63	2.500	53	2.077	3	81,950	2	50,000	2,14	4.71



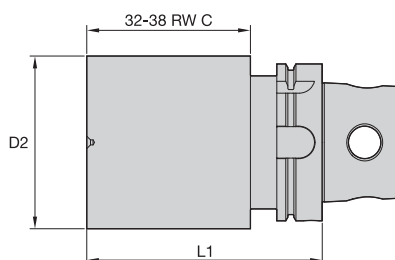
Accessories



■ Power Check Adapter

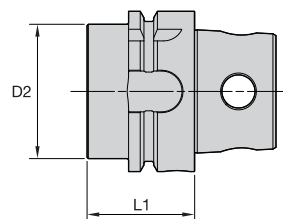
order number	catalog number	D		D2		LU		kg	lbs
		mm	in	mm	in	mm	in		
6195752	KM4X63POWC2M16	63	2.480	30	1.181	8,00	.315	0,84	1.84

Blanks



■ BN Blanks

order number	catalog number	D2		L1		hardness range	kg	lbs
		mm	in	mm	in			
5477451	KM4X63BN65200M	65	2.559	200	7.874	32#38 RC	5,10	11.24
5477450	KM4X63BN115150M	115	4.528	150	5.906	32#38 RC	9,73	21.46



Accessories

■ Plugs

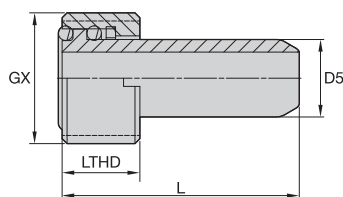
order number	catalog number	D2		L1		kg	lbs
		mm	in	mm	in		
5552332	KM4X63P	53	2.077	32	1.258	1,01	2.23

Spindle Wiper



■ Spindle Wiper

order number	catalog number	system size	D2		LU	
			mm	in	mm	in
6127226	KM4XSW63	KM4X63	30	1.18	32	1.26

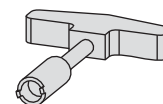
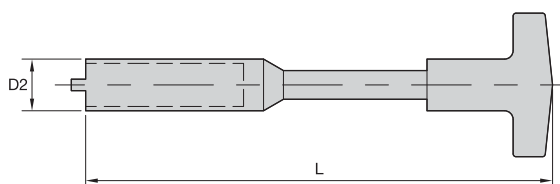


Coolant Supply Assembly Units

order number	catalog number	LTHD		L		D5		GX	kg	lbs
		mm	in	mm	in	mm	in			
5572428	HPCA16	10	.374	29	1.141	9	.373	M16 X 1.0	0,02	0.04

NOTE: Optional coolant tube for coolant pressure above 100 bar.
Max coolant pressure 200 bar.
Uses wrench 170.196.

Coolant Supply Assembly Wrench



Coolant Supply Assembly Wrench

order number	catalog number	D2		L		recommended torque (Nm)	recommended torque (ft. lbs.)
		mm	in	mm	in		
1132992	170.196	14,5	.57	114	4.49	15	11

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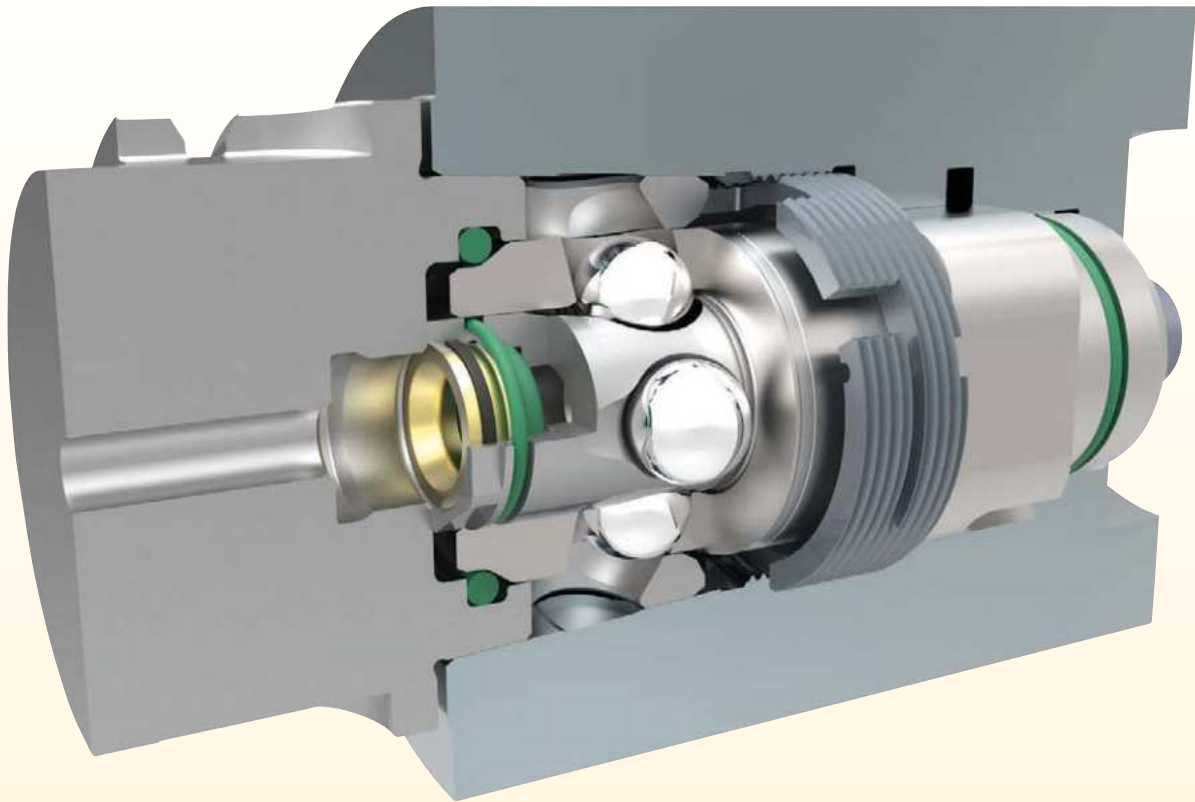
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➤ Technical Manual

KM4X™



Technical Manual

Safety Instructions	C2
KM4X System Overview.....	C3–C8
2.1 Features.....	C4–C6
2.2 Component List.....	C7
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➤ 1. Safety Instructions

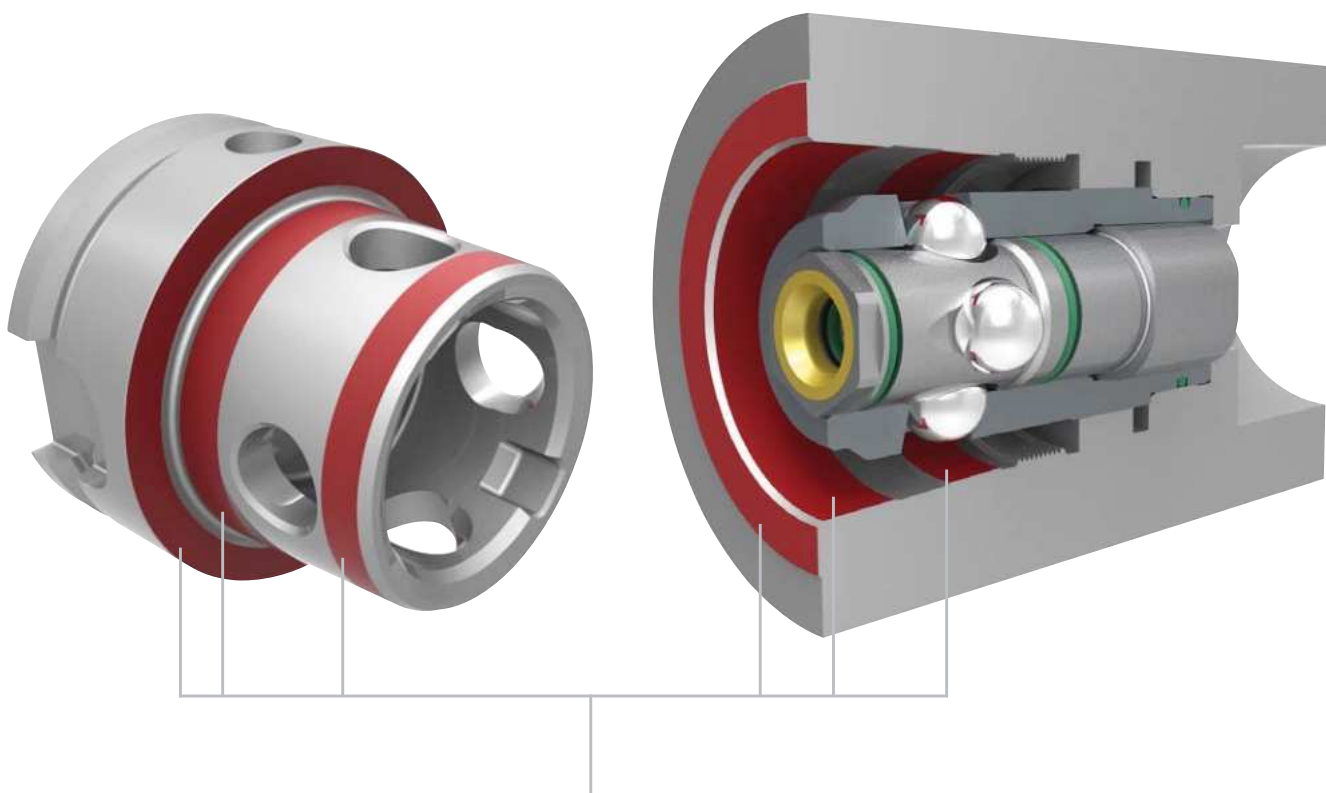


READ THIS FIRST

- Stored energy — Often, machines include sources of stored energy, including, but not limited to, springs, hydraulics, and pneumatics. Use caution when handling, assembling, and disassembling.
- Always use proper protective equipment when handling, working on, or around any machine.
- Ensure that all employees are properly trained.
- Under no circumstances should modifications be made to the components unless specified otherwise.
- Be mindful of both connection and machine limitations.
- 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 manual 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.

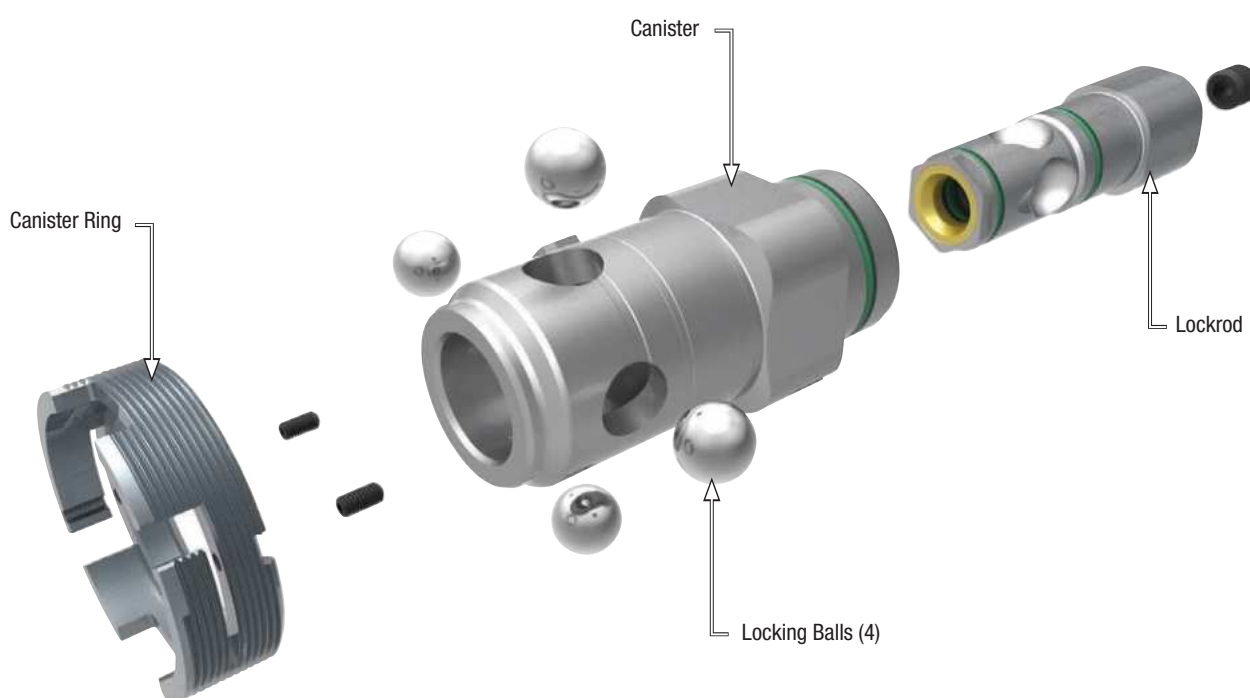
➤ 2. KM4X™ System Overview

- Rigid configuration through optimum interference and higher clamping force.
- Evenly distributed clamping force.
- Simple design allows for front-loaded spindle configurations.
- Balanced-by-design for high spindle speed capability.
- Designed with turning, boring, drilling, and milling in mind.
- Capable of performing in a wide range of operations from low speed to high torque or high speed to low torque.
- Easily adaptable into spindles currently using HSK.
 - Same ATC gripper design.
- Higher mechanical advantage yields greater clamping force without requiring elevated levels of pull back force.
- Minimal loss of clamping force after continuous use.
- Eliminates concerns of fatiguing and sticking fingers.
- Higher maximum speed capabilities — Maintains taper contact at high speeds due to the use of interference.



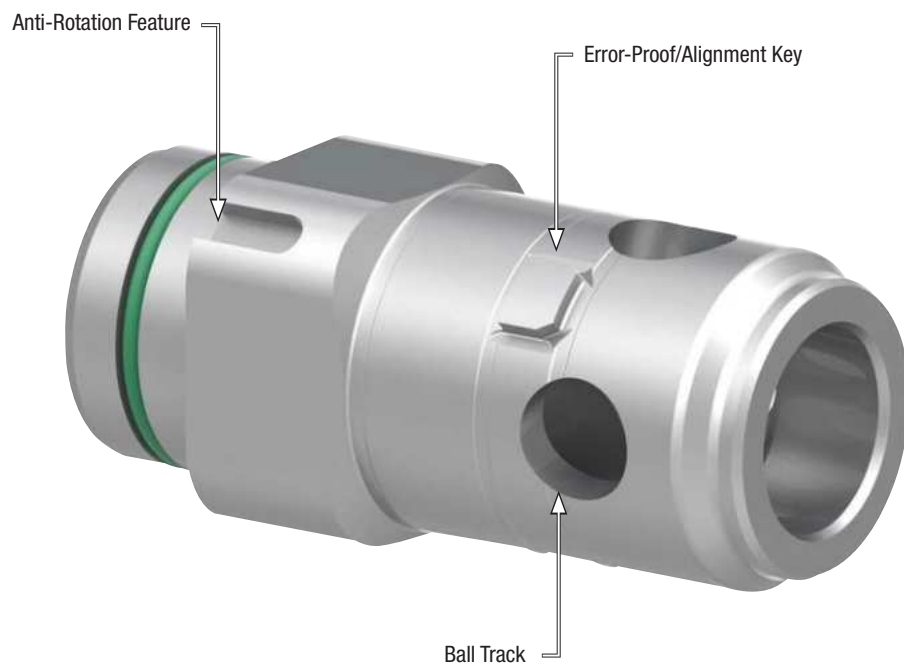
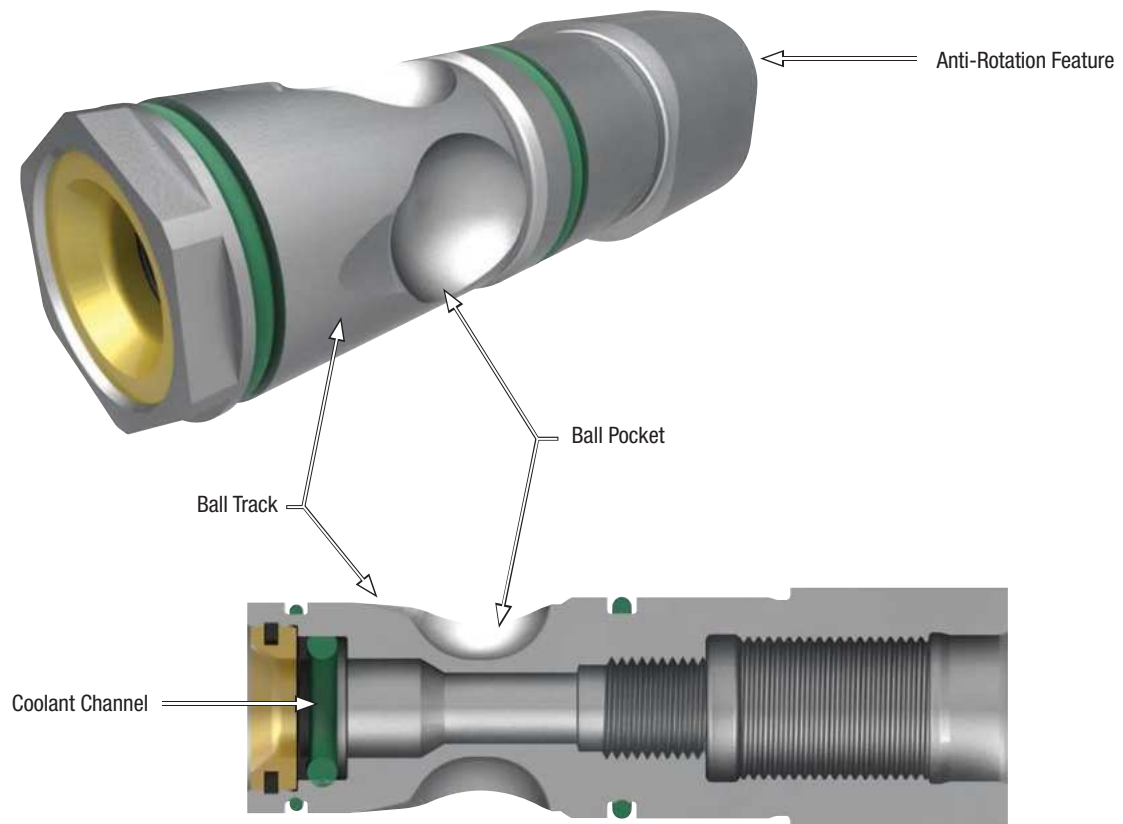
KM4X™ three-surface contact for improved stability and accuracy, optimized clamping force distribution, and interference fit provides higher stiffness.

2.1 Features



(continued)

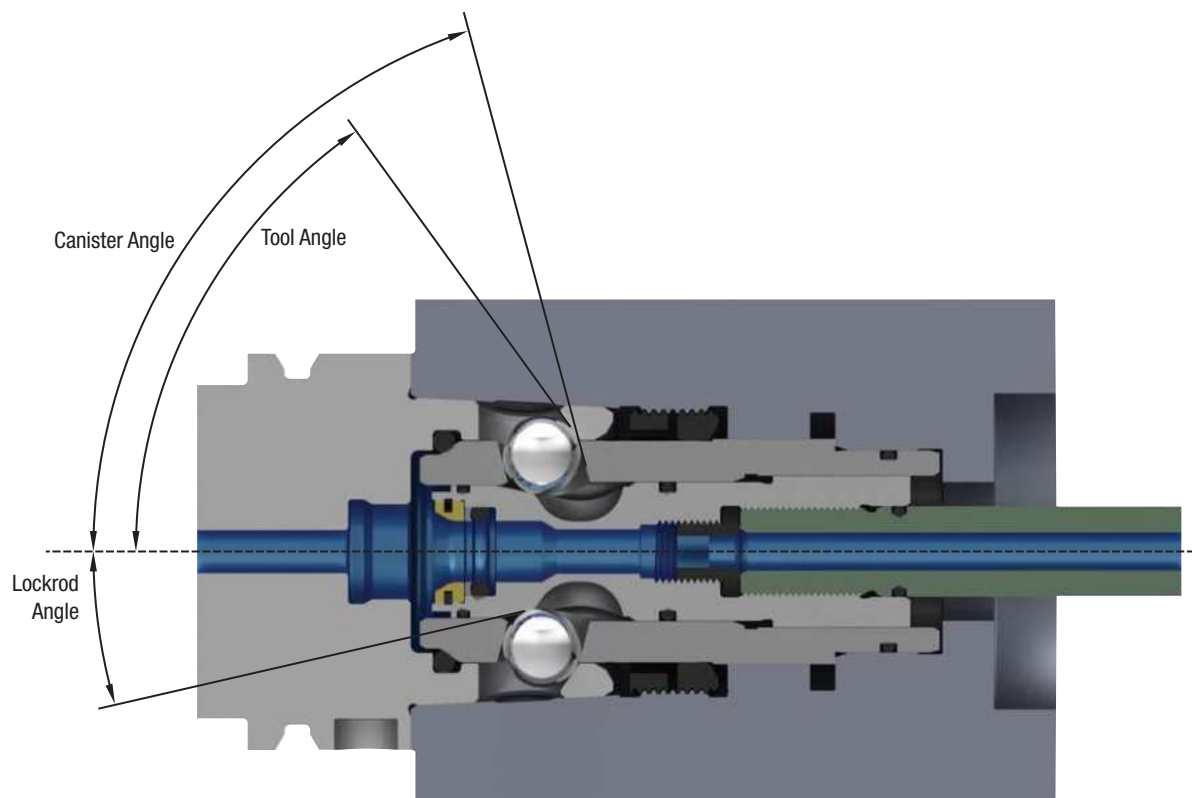
(2.1 Features — continued)



(continued)

(2.1 Features — continued)

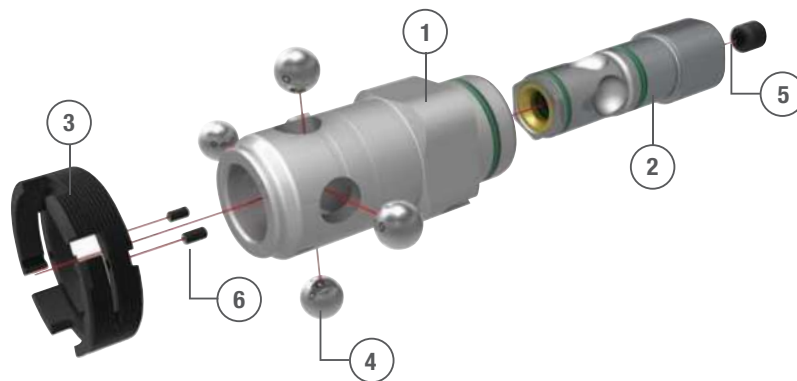
What are the various geometric features of the clamping system?



	Lockrod Angle	Canister Angle	Tool Angle
KM4X63	12.5	75	55
KM4X100	12	80	60
KM4X125	12	80	60

Lockrod ramp and canister angles will affect the mechanical advantage by changing the ratio between the radial displacement of the locking elements (balls) and the axial displacement of the lockrod.

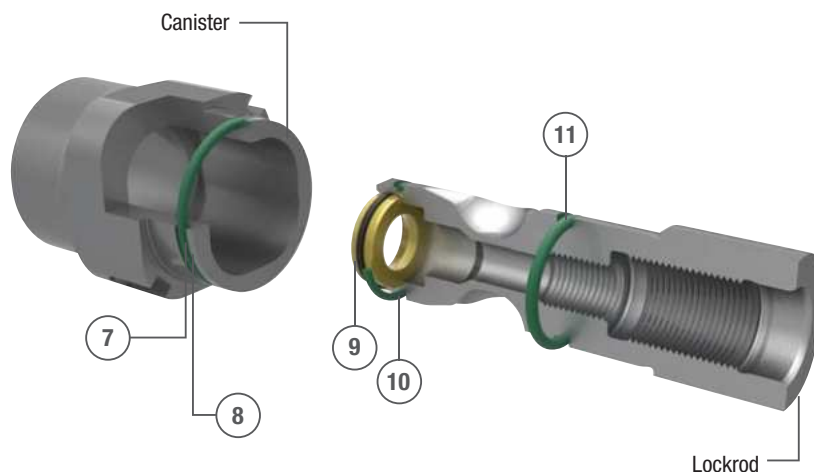
2.2 Component List



■ Main Components • Order Number

Component		KM4X63	KM4X100	KM4X125
*	Spindle Component Set	6241045	6241047	–
1	Canister	–	–	5635347
2	Lockrod	–	–	5635348
3	Canister Ring	–	–	5635349
4	Locking Ball	–	–	5701919
5	Lockrod Set Screw	–	–	5635362
6	Set Screw	–	–	5701940

NOTE: Spindle component set contains items 1–13.



■ O-Ring/Seals • Order Number

Component		KM4X63	KM4X100	KM4X125
*	Repair Package	6241046	6241048	–
7	Canister O-Ring	–	–	5111548
8	Canister Backup Ring	–	–	5701941
9	Lockrod O-Ring	–	–	3858207
10	Lockrod Backup O-Ring	–	–	–
11	Rear Lockrod O-Ring	–	–	2042999
12	HP Coolant O-Ring	–	–	1150482
13	HP Coolant Backup Ring	–	–	2042999

NOTE: Standard repair package contains items 7–13; items 12 and 13 are not shown.

2.3 Spindle Accessories

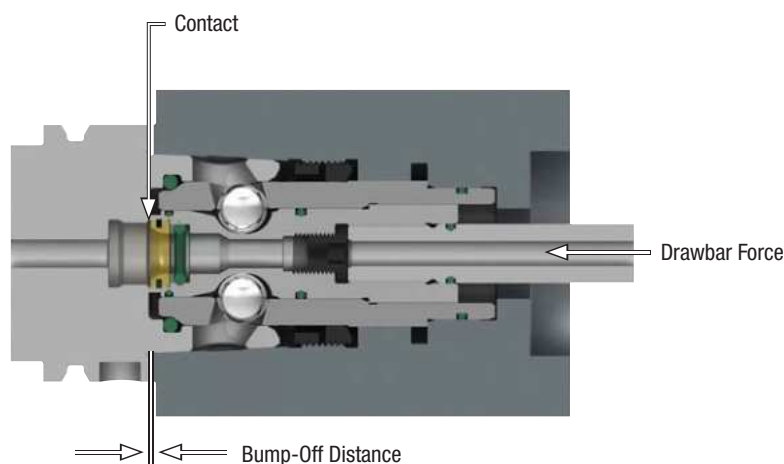
Accessory		KM4X63	KM4X100	KM4X125
Clamping Force Meter Adapter		6195752	6195753	6195754
Balancing Plug		5548441	6064389	6064132
Gage Bar		5477456 5552461 5552462	4160529	5636974
Canister Removal Tool		5701918	6064492	6064493
Clamping Force Meter		OTT Power Check II 0-75kN 95.103.1 36.9.2 M16		OTT Power Check II 25-200kN 95.103.137.9.2 M35
Spindle Assembly Tool		5701917	5500757	5635361
ATC Alignment Tool		5477455	5555435	5636975
Min. Max. Tool		5477453	5555434	6064494
Centerline Tool		5477452	5555433	6247267
Spindle Wiper		6127226	6127227	6127228

➤ 3. Operations

3.1 Clamping Sequence

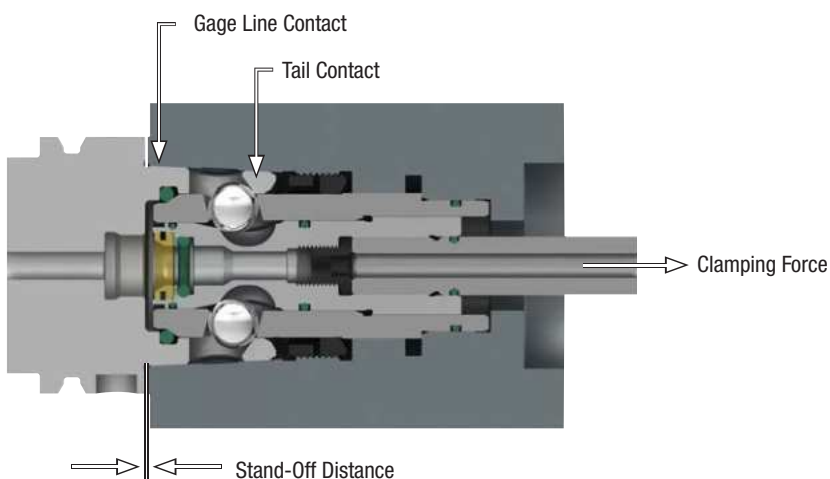
1. Initial position: In this position, a tool can be inserted.

- The drawbar is actuated to the released position, allowing the locking balls to drop into their pockets on the lockrod.
- The tool is inserted into the spindle until its inner face contacts the lockrod.
- There is no face or taper contact in this position.



2. First contact position: In this position, the clamping components make their first contact with the taper of the tool.

- The drawbar begins to retract, causing the locking balls to climb out of their pockets and begin traveling onto the lockrod ramps.
- As the locking balls rise, they begin to draw the tool into the taper.
- Stand-off is the distance between the two gage faces when the two tapers make first contact. This gap is a result of the interference between the two tapers.

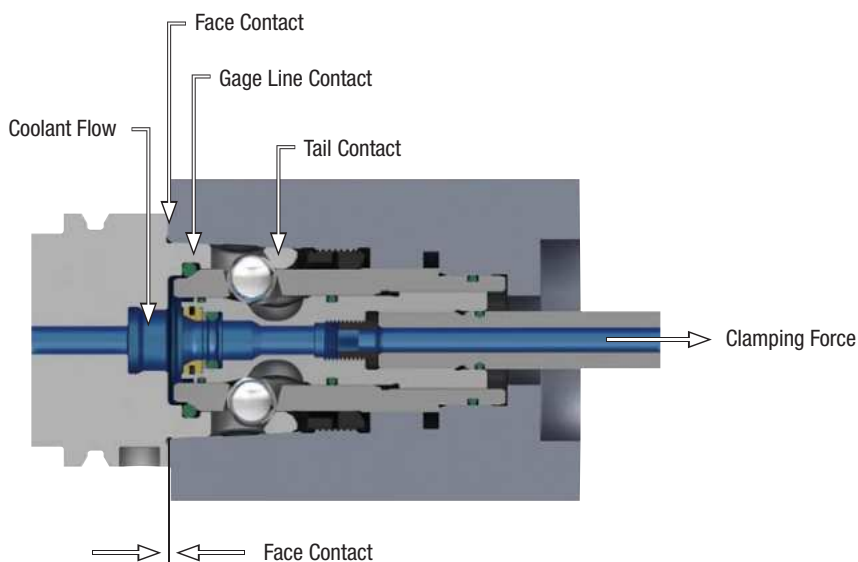


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(3.1 Clamping Sequence — continued)

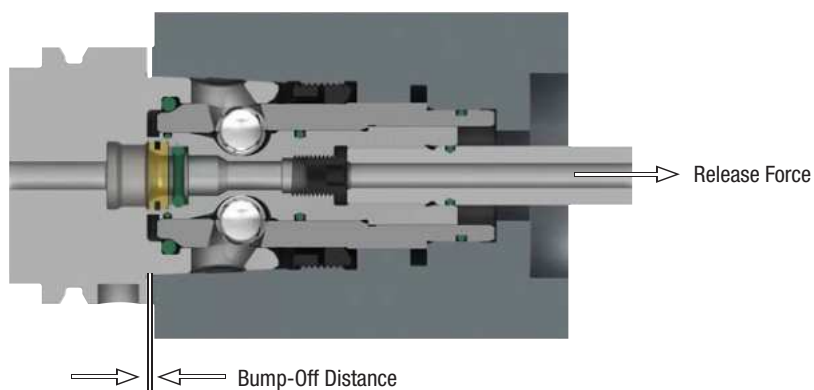
3. Locked position: In this position, the tool is drawn into the spindle and the clamping system is no longer moving.

- The drawbar continues to retract, causing the tool to be pulled farther into the spindle.
- Three areas of contact are created; two on the taper and the third on the face.



4. Tool Release: In this position, the clamping components have moved to the release position and the lockrod has moved forward to bump off the tool.

- The drawbar is actuated to the released position, allowing the locking balls to drop into their pockets on the lockrod.
- The lockrod pushes the tool out of the spindle.
- There is no face or taper contact in this position and the tool is free to be removed from the machine.

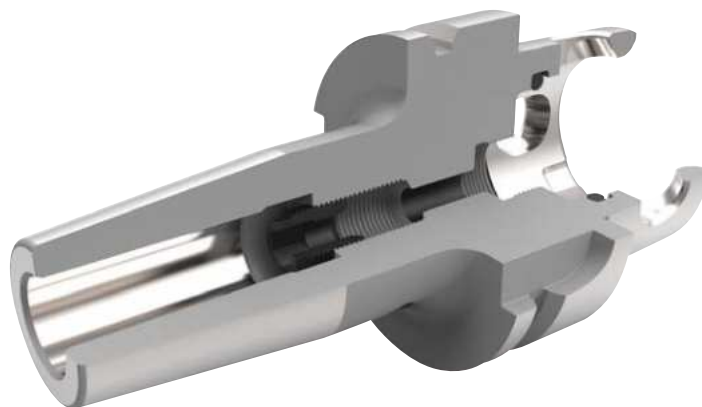


3.2 Coolant Capability

Through-the-tool coolant is standard with all KM4X™ toolholders. The coolant enters through the center of the drawbar and flows to the tool via the lockrod.

Standard Design Coolant

The standard KM4X™ system is capable of 1500 psi [100 bar] coolant through the tool.



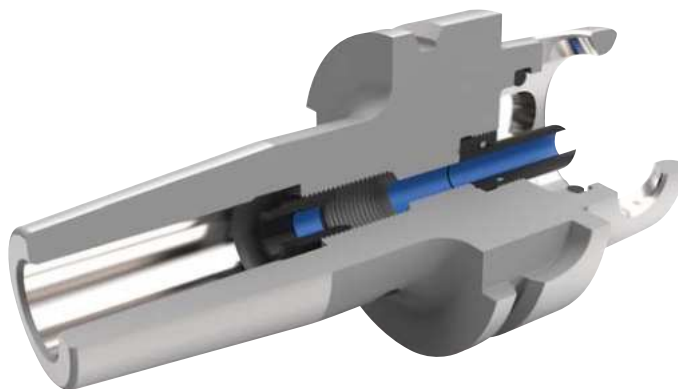
■ Taper O-Ring

System	Catalog Number	Order Number
KM4X63	OR01234139V90	1608616
KM4X100	OR01850210V90	1608617
KM4X125	OR02475210V90	5478334

Standard Design With High-Pressure Coolant

With the addition of the high-pressure coolant assembly, the maximum coolant pressure can be increased to 3000 psi [200 bar].

To install, simply thread the complete assembly into the existing threaded hole inside the tool's taper.



System	High-Pressure Coolant Assembly	Coolant Assembly Wrench
KM4X63	5572428	1132992
KM4X100	5572427	1127524
KM4X125	5572426	1132993

➤ 4. Technical Specifications

4.1 System Specifications

System Size	KM4X63	KM4X100	KM4X125
Flange Diameter (mm)	63	100	125
Taper Gage Diameter (mm)	48,026	75,043	95,054
Flange Thickness (mm)	25	29	29
Taper Length (mm)	32	50	63
Taper Ratio	10:1	10:1	10:1
Nominal Interference Diameter (mm)	0,022	0,046	0,058
Stand-Off Range (mm)	0,16–0,28	0,38–0,54	0,49–0,67
Maximum Bending Moment, Static (Nm) ¹	2100	6000	9000
Maximum Torque, Static (Nm) ¹	1700	5500	8000
Maximum RPM ²	30000	21400	16700
Clamping Force Range (kN) ³	36–58	90–110	135–165
Minimum Drawbar Force (kN) ³	7.5	18	27
KM4X Taper Release Force (kN) ⁴	12	25,3	40
Mechanical Advantage	4,8:1	5,0:1	5,0:1
Total Stroke (mm)	9,5	13	16,3
Nominal Bump-off Position (mm) ⁵	1	1,2	1,5
Point of First Tangency (mm) ⁶	4,0	6,8	8,5
Theoretical Clamping Position (mm) ⁷	5,0	8	10
End of Stroke Position (mm) ⁸	8,5	11,8	14,8
Radial Repeatability (mm)	0,0025	0,0025	0,003
Axial Repeatability (mm)	0,002	0,002	0,002
Maximum Coolant Pressure (bar) ⁹	200	200	200
Through Coolant Hole Diameter (mm)	7	10	16

¹ Only 60–80% of the static limits should be used in real conditions.

² Maximum rotational speed when spindle and tool tapers lose contact, calculated at minimum material condition for a generic spindle design. Actual results may vary.

³ Clamping force should never be outside the recommended range. Minimum drawbar force is the minimum clamping force divided by the Mechanical Advantage (M.A.) and must be available for the entire stroke.

⁴ Frictional force only (spring pack not included). May vary with lubricity condition, cleanliness, and taper interference. An additional 20% available reserve is recommended.

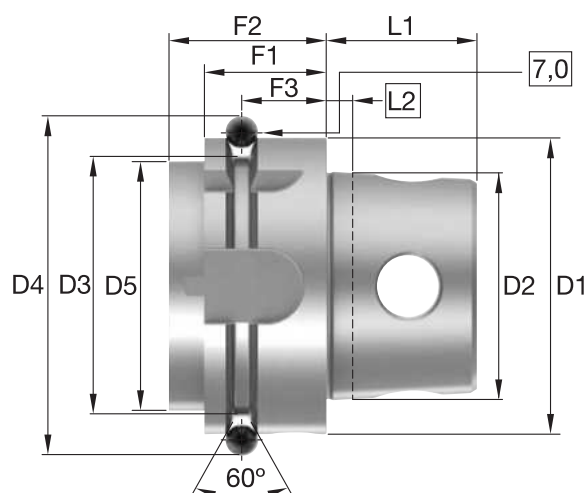
⁵ The distance between the tool face and receptacle face when lockrod is in its most forward position.

⁶ Point where the locking balls are making contact with the lockrod, canister, and cutting tool. The gap between the tool face and receptacle face is closed (no face contact pressure).

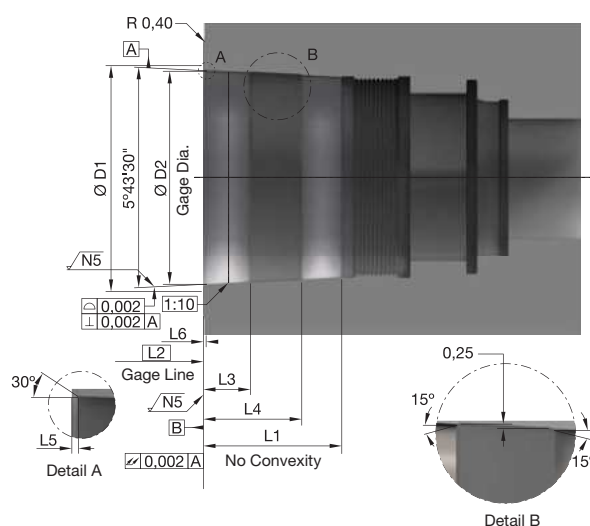
⁷ Distance from spindle face to lockrod front face when fully clamped with tool in place. Value does not include component tolerances and will tend to increase with use. For reference only.

⁸ Location of the lockrod when fully retracted with no tool in place.

⁹ High-pressure coolant assembly (see section 3.2).



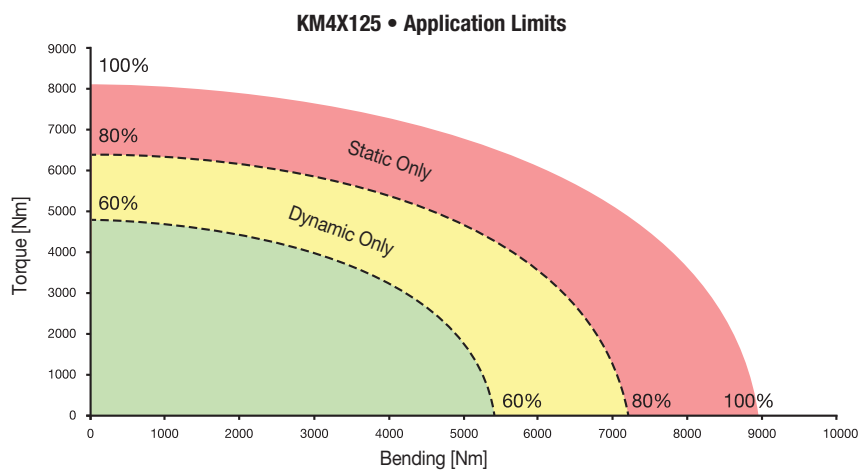
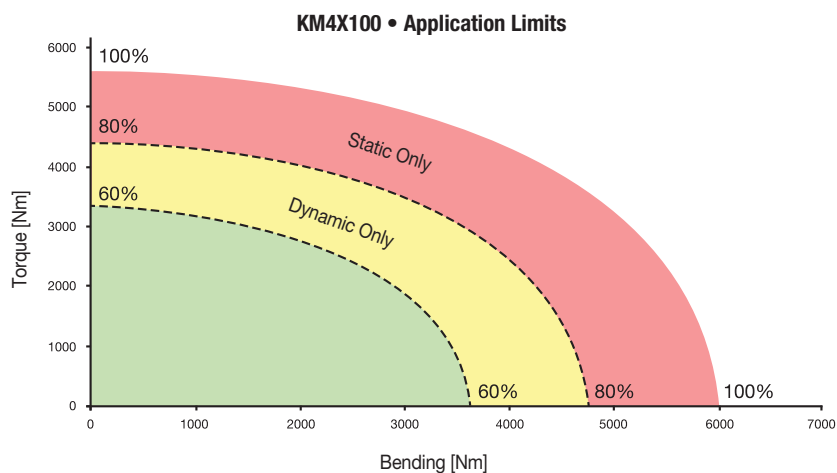
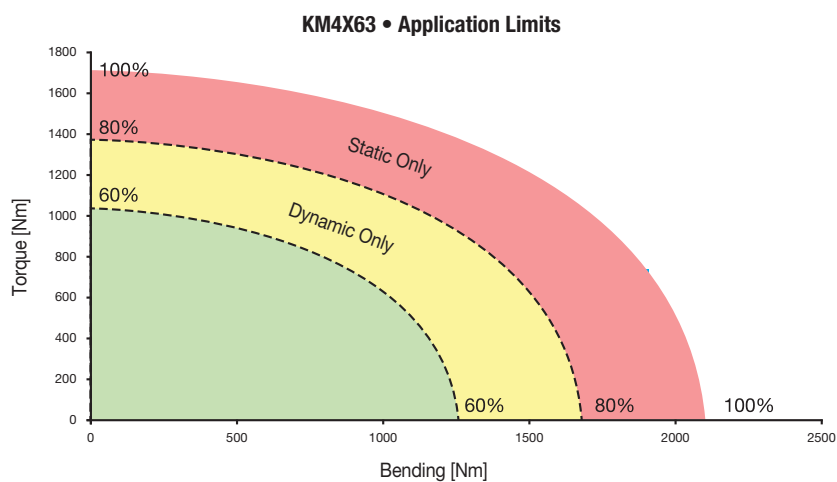
System Size	D1	D2	D3	D4	D5 (max)	F1	F2 (min)	F3	L1	L2
KM4X63	63,0	48,026	54,95	72,25	62,0	26,0	30,5	18,0	32,0	6,3
KM4X100	100,0	75,043	91,95	109,7	85,0	29,0	45,0	20,0	50,0	10,0
KM4X125	125,0	95,054	116,95	134,7	111,0	29,0	45,0	20,0	63,0	12,5



System Size	D1	D2	L1	L2	L3	L4	L5	L6
KM4X63	63	48,004	33	6,3	13	23	1	0,55
KM4X100	100	74,997	50	10	17,45	35,91	1,5	0,55
KM4X125	125	94,997	62,96	12,5	21	42	1,5	0,65

4.4 Application Limits

The KM4X™ tooling connection is an extremely rigid and stable system that is specifically designed to supply consistent results. As with any mechanical coupling, the KM4X™ connection has limits that, if exceeded, could result in mechanical damage to the connection and/or its components. To help you stay within these limits, Kennametal has established operating regions for each system size. These regions are defined by the maximum torque capability and the maximum bending capability of each system size. At no point should the connection be used at the maximum static bending and maximum static torque conditions.

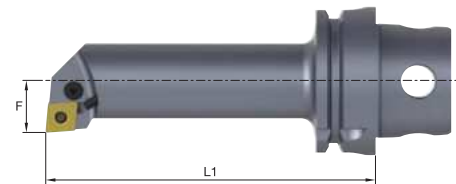
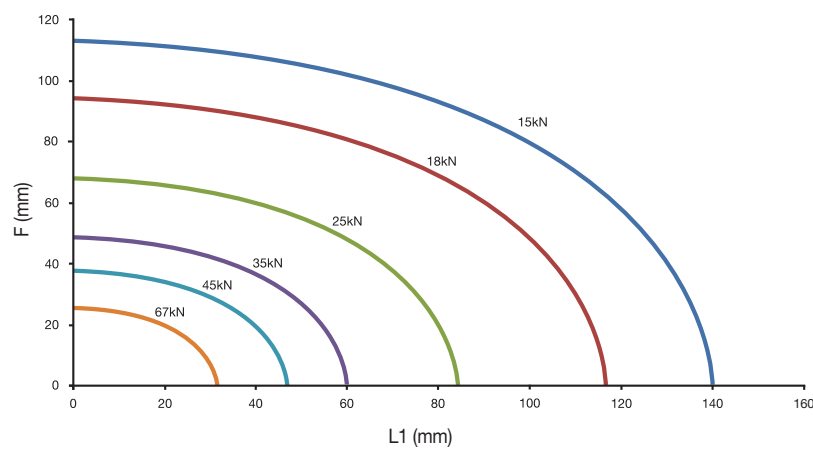


(continued)

(4.4 Application Limits – continued)

The KM4X™ tooling connection is an extremely rigid and stable system that is specifically designed to supply consistent results. As with any mechanical coupling, the KM4X™ connection has limits that, if exceeded, could result in mechanical damage to the connection and/or its components. To help you stay within these limits, Kennametal has established maximum safe tangential loads for each system size. These loads are described as a certain amount of force at a given “F” and “L1” dimension for each system size.

Maximum Tangential Load for KM4X63



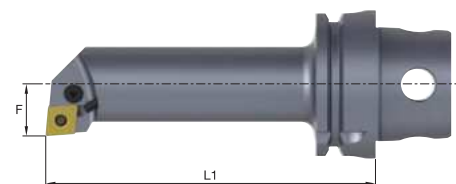
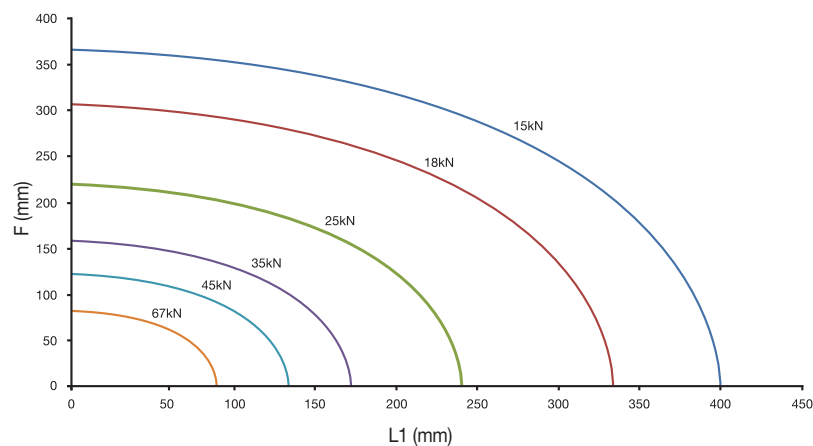
To account for load fluctuations in dynamic conditions, a force multiplier of 0,6 to 0,8 should be used.

L1 = Distance in millimeters from tool tip to face of clamping unit or spindle.
F = Distance in millimeters from tool tip to centerline of taper.

P = Maximum static tangential force in newtons.

$$P = \frac{1700000}{\sqrt{(0.81L1)^2 + F^2}}$$

Maximum Tangential Load for KM4X100



To account for load fluctuations in dynamic conditions, a force multiplier of 0,6 to 0,8 should be used.

L1 = Distance in millimeters from tool tip to face of clamping unit or spindle.
F = Distance in millimeters from tool tip to centerline of taper.

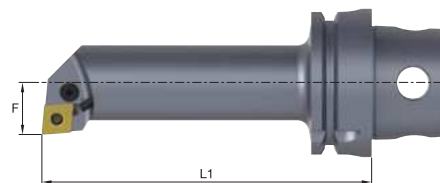
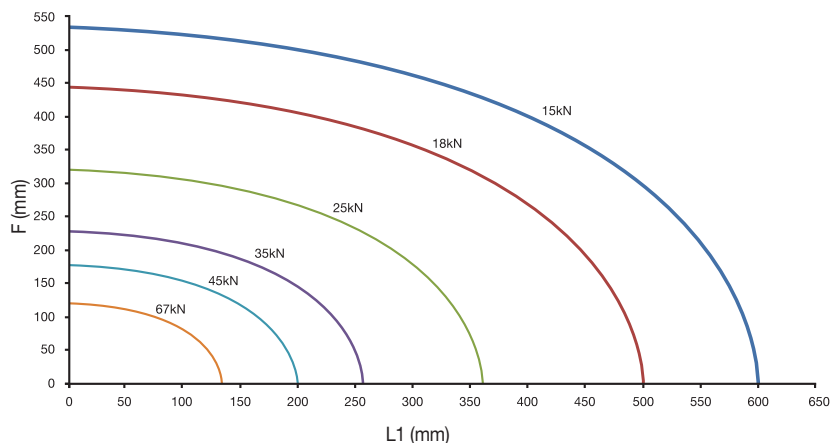
P = Maximum static tangential force in newtons.

$$P = \frac{5500000}{\sqrt{(0.92L1)^2 + F^2}}$$

(continued)

(4.4 Application Limits — continued)

Maximum Tangential Load for KM4X125



To account for load fluctuations in dynamic conditions, a force multiplier of 0,6 to 0,8 should be used.

L1 = Distance in millimeters from tool tip to face of clamping unit or spindle.

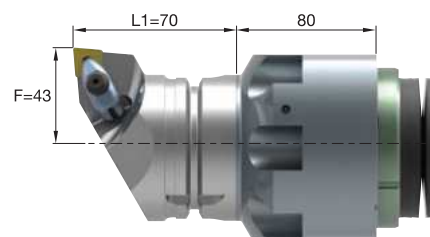
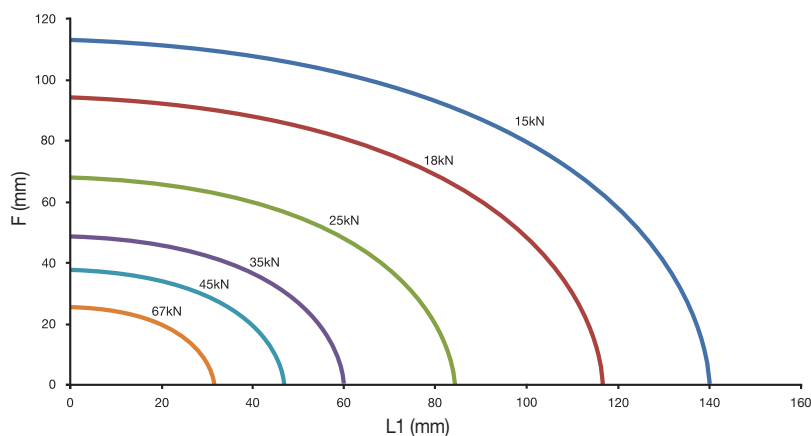
F = Distance in millimeters from tool tip to centerline of taper.

P = Maximum static tangential force in newtons.

$$P = \frac{8000000}{\sqrt{(0.89L1)^2 + F^2}}$$

4.5 Application Limits • Example

Maximum Tangential Load for KM4X63



$$P = \frac{1700000}{\sqrt{(0.81L1)^2 + F^2}}$$

Equation provided on page C15 for KM4X63.
(Only for KM™ and KM4X™. Varies by system and size.)

$$P = \frac{1700000}{\sqrt{(0.81 * (70))^2 + (43)^2}} = 23889,5 \text{ N}$$

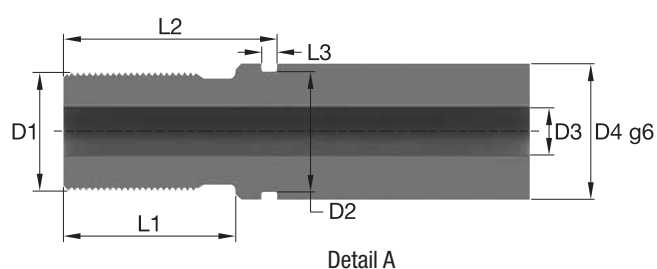
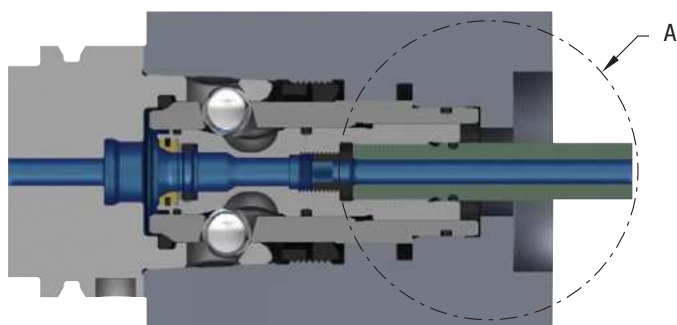
Maximum **static** tangential load.

$$23889,5 \text{ N} * 0,6 = 14333,7 \text{ N}$$

Apply a factor of 60–80% to account for **dynamic** conditions experienced during actual cutting. 60% is used in this example as a worst-case scenario.

➤ 5. Spindle Design

5.1 Drawbar Connection



System Size	D1	D2	D3	D4	L1	L2	L3	O-Ring
KM4X63	M14 x 1	12,15	6	14,3	21,5	26	2,1	11 x 1,5
KM4X100	M20 x 1	19,25	10	23	29	36	3,4	18 x 2,5
KM4X125	M24 x 1,5	24,95	16	28,7	39	46	3,4	24 x 2,5

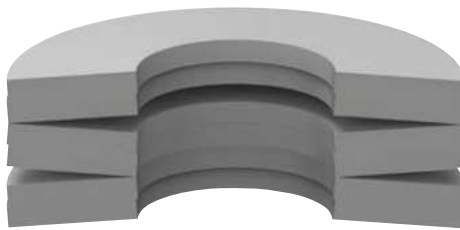
NOTE: O-Ring: Viton, 80 Shore A.

* This configuration is a suggestion, not a requirement.

5.2 Spring Pack Design

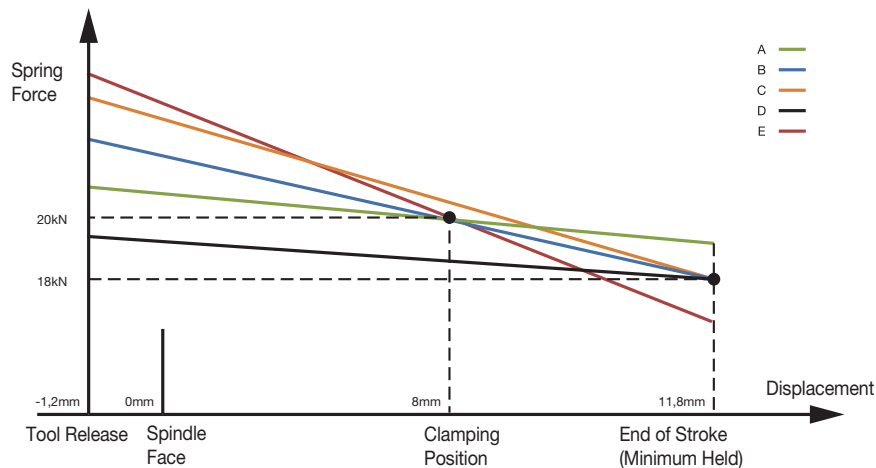
Spring selection should follow the basic guidelines below:

- Use the largest possible diameter to increase fatigue life and reduce spring pack length.
- For a given disc spring diameter and thickness, the longer the stack, the longer the life.
- Parallel stacking (spring sets in series) allows for shorter spring packs and higher spring force; however, a friction factor is introduced between the springs.
- Maximum number of springs stacked in parallel should be three, unless specified otherwise.
- Larger number of sets reduces spring pack force at tool release.
- Spring pack force at the “clamped without tool” position should be greater than or equal to the minimum clamping force divided by the mechanical advantage.
- Spring pack force at the clamped position should be greater than or equal to the nominal clamping force divided by the mechanical advantage.



This is a representation of three sets of springs that have two springs in parallel.

5.3 Spring Pack Design Example for KM4X100



Design A: Preferred design. Less variation in clamping force and lower force at tool release position; 20kN at clamping position and more than 18kN at the end of stroke (minimum held). Longer spring life than designs B, C, and E.

Design B: Good solution. 20kN at clamping position and 18kN at end of stroke.

Design C: Higher resultant spring constant. Designed to provide 18kN at the end of the stroke (required), providing higher than nominal clamping force and higher force at tool release. Lower spring life, but also good design.

Design D: Designed to provide 18kN at the end of the stroke (required), providing lower than nominal clamping force at clamping position and low force at tool release. Highest spring fatigue life. Acceptable solution when clamping force is not a major concern. Longest spring life.

Design E: Nominal clamping force achieved at clamping position, but resultant spring constant (stiffness) is excessive and minimum force at the end of the stroke cannot be achieved. Low spring life and high spring force at tool release position. This design must be avoided.

➤ 6. Instructions

6.1 Pre-Installation Checklist

1. Safety

- ☐ Review location specific safety regulations prior to any work.

2. Mechanical

- ☐ Components are clean and free of contaminates, burs, and chips.
- ☐ Component set is complete.
- ☐ The female taper is manufactured according to specification.
- ☐ All required assembly and inspection tools are readily available.

3. Electrical

- ☐ Ensure that the external power supply is correctly connected to the spindle.

4. Hydraulic

- ☐ Hydraulic oil is according to specification.
- ☐ Pressure set to recommendation.

5. Pneumatic

- ☐ Pressure set to recommendation.

6. Coolant

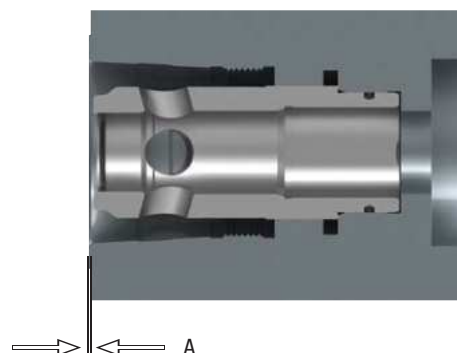
- ☐ Corrosion protection according to DIN 51360 section 2: 2 hours.
- ☐ Elastomer Compatibility — no change to shore hardness and/or elongation.
- ☐ Non-ferrous metal compatibility; no corrosion on copper, brass, and aluminum parts.
- ☐ Glue residue after slow evaporation at 50°. Non-sticky. No residue. Easily removable.



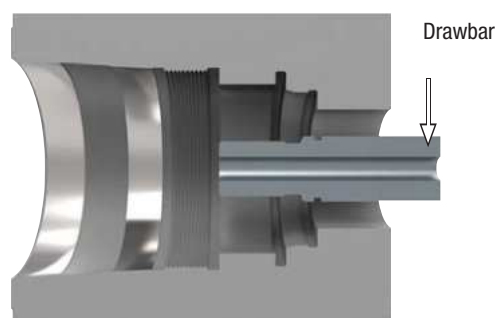
6.2 Installation

1. Insert the canister into the spindle. Check distance "A" from the gage face. Remove the canister.

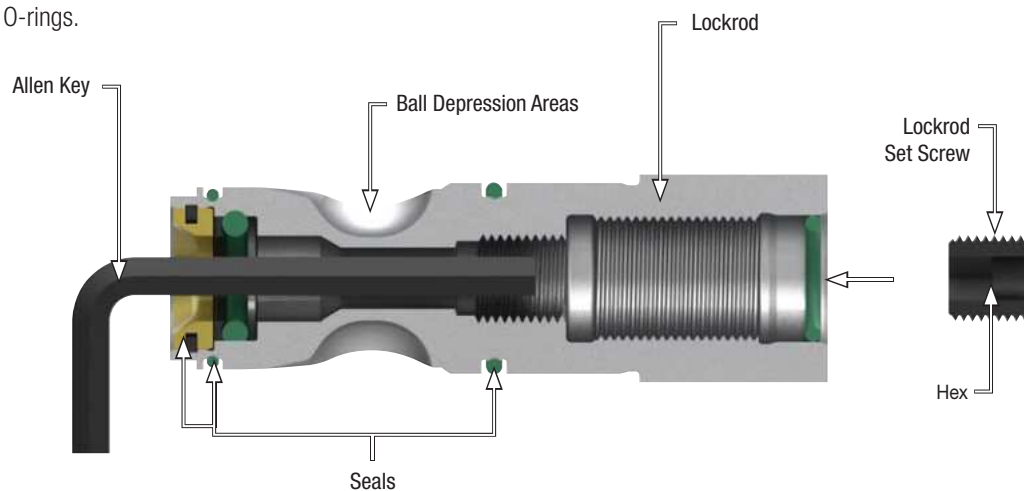
System Size	Distance "A"	
	Min (mm)	Max (mm)
KM4X63	1,35	1,65
KM4X100	1,10	1,40
KM4X125	1,41	1,71



2. Extend the drawbar to the tool release position.



3. Grease the O-rings and backup rings with Kluber Paste ME 31–52, then install on the lockrod. Mount the lockrod set screw into the lockrod making sure it seats in the bottom of the threaded hole. For maximum coolant flow, do not install the locknut set screw. Coat the entire outside surface of the lockrod with grease using a coarse-bristled assembly brush. This should include ball depression areas and O-rings.



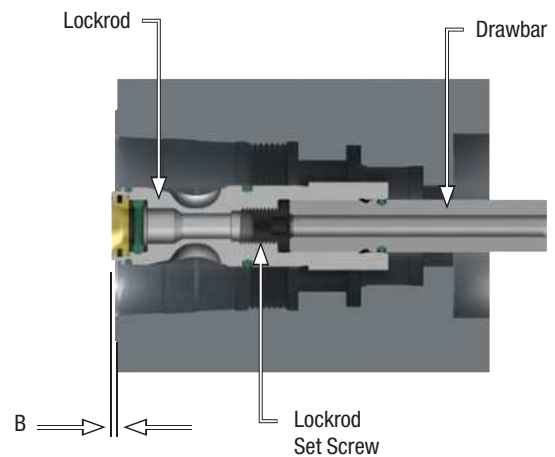
System Size	Allen Size (mm)
KM4X63	5,00
KM4X100	8,00
KM4X125	10,00

(continued)

(6.2 Installation — continued)

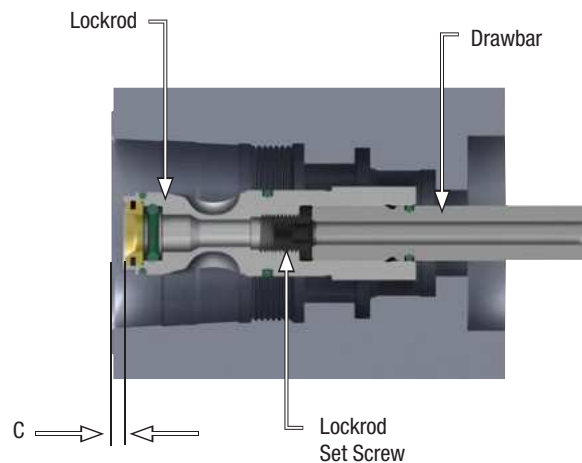
4. Thread the lockrod on to the extended drawbar.
The end of the lockrod should extend distance “B” beyond the spindle gage face.

System Size	Distance “B”	
	Min (mm)	Max (mm)
KM4X63	0,9	1,1
KM4X100	1,1	1,3
KM4X125	1,4	1,6

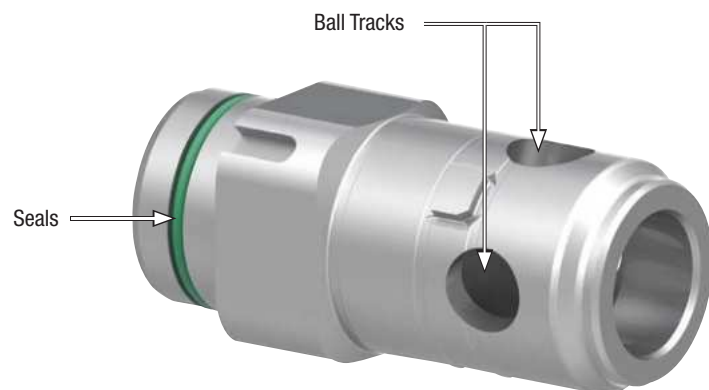


5. Move the drawbar to the “clamped without tool” position and verify that the end of stroke position is achieved, then check distance “C”. Move the drawbar to the “tool release position” again before proceeding to the next step.

System Size	Distance “C”	
	Min (mm)	Max (mm)
KM4X63	8,4	8,6
KM4X100	11,7	11,9
KM4X125	14,7	14,9

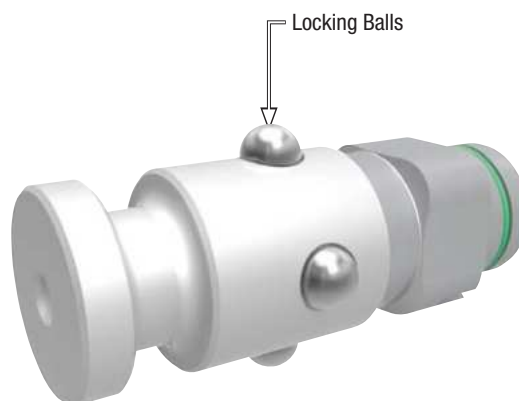


6. Install the canister seals, and apply Kluber Paste ME 31–52 grease to the seals, the canister’s ball track holes and all internal surfaces of the canister.



(6.2 Installation — continued)

7. Evenly coat the (4) locking balls with grease. Position the canister inside the canister removal tool (see spindle accessories, page C8) and insert the (4) locking balls into their respective holes in the canister and canister removal tool.

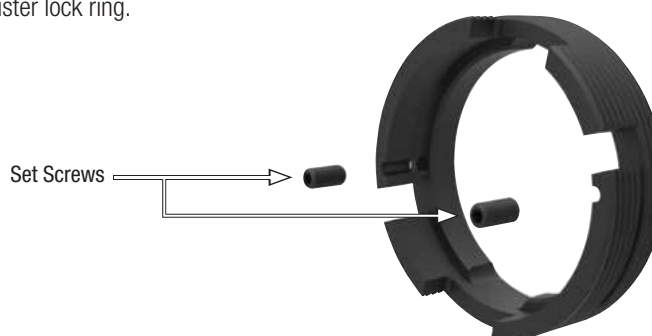


8. Slide the canister into the spindle to its final mounted position in the spindle bore (bottom of anti-rotation feature). It may be necessary to move the canister slightly in a radial direction to line up the canister's anti-rotation feature. Rotate the canister removal tool to unlock it from the canister and remove the tool.

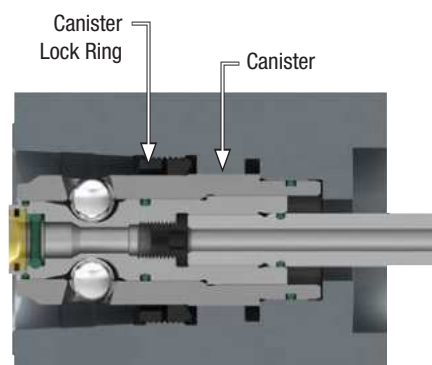
* In case the canister needs to be removed, it is recommended to use the canister removal tool. Insert the canister removal tool over the canister, aligning the slot with the canister key until it stops, then rotate it counterclockwise to engage with the canister key. Pull the canister removal tool straight out. This tool is designed to interlock with the error-proof/alignment feature on the canister.



9. Loosen, but do not remove, the (2) set screws from the canister lock ring. Apply anti-seize to threads on canister lock ring.



10. Slide the canister lock ring over the canister. To put it in contact with the internal spindle threads, it may be necessary to use the spindle assembly tool to spin the canister lock ring until it lines up with the error-proof/alignment key on the canister. Once the canister lock ring is lined up, it can be pushed back into contact with the internal spindle threads. You may then begin to tighten the ring with the spindle assembly tool.



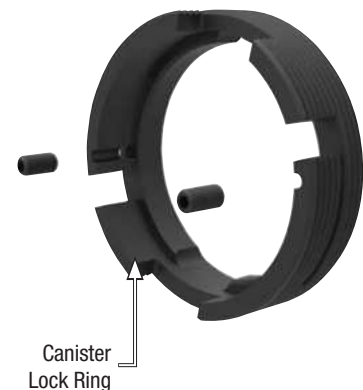
(continued)

(6.2 Installation — continued)

11. Using the spindle assembly tool and a qualified torque wrench, tighten the canister lock ring in a clockwise direction until you reach the torque listed below. Once torqued to the correct value, tighten the (2) set screws into the canister ring to lock the ring in place. For KM4X100 and KM4X125, the set screws can be tightened by turning them clockwise while KM4X63 requires the screws to be turned counterclockwise to tighten. Cycle the spindle approximately 10 times to ensure proper seating.

■ Canister Ring Tightening Torque

System Size	Torque (Nm)
KM4X63	75
KM4X100	200
KM4X125	350

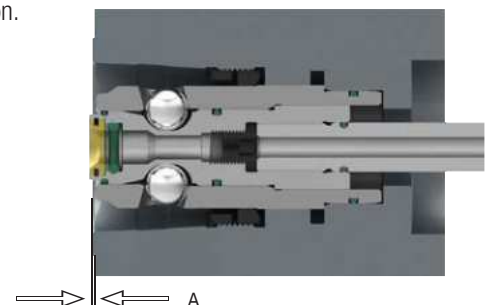


System Size	Allen Size (mm)
KM4X63	1,50
KM4X100	2,00
KM4X125	2,00

12. With the canister properly seated, the distance (A) from the spindle gage face to the front nose of the canister should be as listed below. Compare with your results from step 1 to ensure that the lockrod is not holding the canister outward.

* If "A" is too small, it is possible that the lockrod is holding the canister outward. Try retightening the canister ring with the drawbar in the "clamped without tool" position.

System Size	Distance "A"	
	Min (mm)	Max (mm)
KM4X63	1,35	1,65
KM4X100	1,10	1,40
KM4X125	1,41	1,71



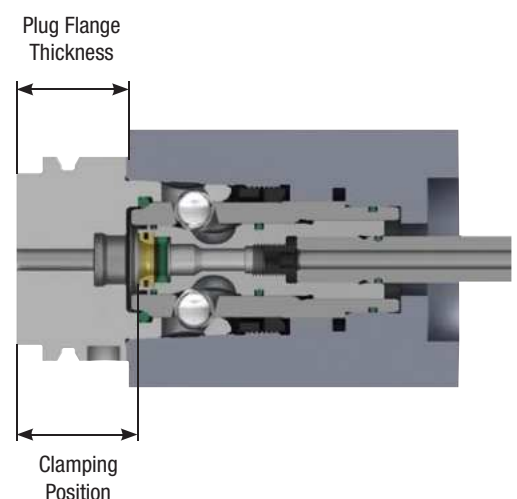
13. Clamp the minimum and maximum gage in the spindle. Use a depth micrometer to measure from the end of the plug, through the hole, to the face of the lockrod. Subtract the thickness of the plug flange from this measurement to find the clamped position of the lockrod relative to the face of the spindle.

See below for suggested clamping positions:

■ Lockrod Position without Plug

System Size	Min (mm)	Max (mm)
KM4X63	4,5	7,0
KM4X100	7,0	8,5
KM4X125	8,0	10,0

NOTE: Recorded values should be greater than the minimum and less than the maximum.



(6.2 Installation — continued)

14. If the clamping location is not acceptable, adjustments to the canister position “A” will be necessary. To do so, remove the clamping components (see section 6.2). If the lockrod is clamping at a distance greater than the maximum, material needs removed from the canister to move the canister farther into the spindle. If the lockrod is clamping at a distance less than the minimum, a shim is needed to move the canister toward the spindle face. The chart below shows an approximate amount of clamping position change with 0.1mm change in shim thickness. After making adjustments, reassemble and repeat measurements. The shim stock can be ground to a custom thickness.

System Size	Clamping Position Change* (mm)	Shim Order Number
KM4X63	0,85	5701914
KM4X100	1,00	5413745
KM4X125	1,00	5635360

* Lockrod clamping position change with 0,1mm change in shim thickness.

15. With the plug clamped, use an Allen wrench (size 5mm for KM4X63, 8mm for KM4X100, and 10mm for KM4X125) to tighten the lockrod set screw.

System Size	Allen Size (mm)	Torque (Nm)
KM4X63	5,00	25,00
KM4X100	8,00	50,00
KM4X125	10,00	75,00

16. Using the OTT® PowerCheck II clamping force meter and KM4X™ taper/collar adapter, measure the clamping force. Measurements should be recorded after 60 seconds. If the clamping force is not within the ranges provided, the clamping position may still need to be adjusted.

	KM4X63	KM4X100	KM4X125
Clamping Force Range (kN)	36–58	90–110	135–165



6.3. Disassembly Instructions

1. Remove tool from spindle.
2. Clean spindle with clean wipe or spindle wiper.
3. Loosen, but do not remove, the (2) set screws from the canister ring.
4. Using the spindle assembly tool, loosen and remove the canister ring.
An Allen wrench can be used with the set screws to assist in removal.
NOTE: The canister ring must pass over the error-proof/alignment feature on the canister.
5. Move lockrod to "tool release" position.
6. Use the canister removal tool to pull the canister and locking balls out of the spindle.
7. Unscrew the lockrod using the lockrod set screw or the hex feature on the lockrod.
NOTE: The lockrod set screw will eventually stop against the lockrod, keep turning to remove the lockrod.

6.4. Maintenance

- Poor maintenance can lead to spindle damage. Regular preventative maintenance can help prolong the life of the tooling connection. If service is required, ensure that it is done in a clean environment as foreign contaminants can have detrimental effect on clamping components. The following steps can prolong the life of spindle components:
 - Use a clean wipe or spindle wiper to clean the internal taper. (Compressed air should not be used as it may force debris into the ball pockets).
 - Regularly clean tools, tool holders, and tool tapers.
 - Check the level and quality of the spindle lubricant and coolant.
 - Balance your tools.
 - Cotton swabs can be used weekly to add grease to the balls when the clamping mechanism is in the "clamped without tool" position.
 - The clamping force should be checked monthly in accordance with Kennametal procedure KCT0750. Reference assembly step 16.
 - The clamping position should be checked monthly. Reference assembly step 4, 12, and 13.
- If a major issue arises, completely disassemble and reassemble the clamping components. Inspect for wear and fatigue of clamping components and seals. Order replacement parts as needed.
- In case of any damage, the exchange of the complete clamping set is recommended.
- If further assistance is needed, contact customer support.

➤ 7. Frequently Asked Questions



What is the min. max. tool?

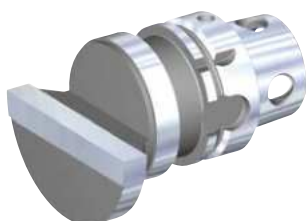
One side of this tool is manufactured to the minimum material condition, while the other side to the maximum material condition. The machine tool builder can set the position of the sensors that check the “clamped with tool” position. It can also be used to check the lockrod position during clamping (see step 13 on page C23).

Attention: The “clamped with tool” position of the drawbar may vary over time due a normal movement of the clamping position on the ramp of the lockrod.



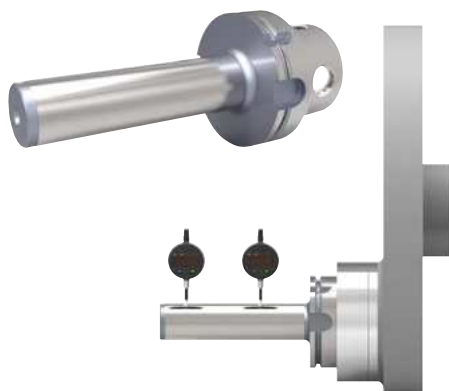
What is the balancing plug?

The balancing plug is designed to be used for two functions. Primarily, the balancing plug is used during troubleshooting to ensure that a spindle is in balance and that it is not causing any vibration. It can be used to test for coolant flow through the spindle.



What is the Center Alignment Tool?

The center alignment tool is used to check the spindle center and spindle orientation. The tool can also be used to verify tool presetters. This gage is said to be a “universal” gage because it has so many practical uses.



What is the gage bar and how do I use it?

A gage bar is used as a quick tool to ensure that a spindle is running accurately. This tool should be used during setup of a machine. It can also be used after a crash, and it is suggested that the gage bar be used as part of spindle maintenance. A gage bar is used for optimum machine accuracy. Components must be accurately positioned in the total machine process. The gage bar is used to set the centerline of the tool position and identify the runout of rotating spindles.

(continued)



What is the clamping force gage?

For safety and maintenance reasons, the clamping force should frequently be checked.

The clamping force gage is able to support each KM4X™ system size by using different KM4X™ clamping force adapters.

This handheld device is easy to insert into the machine spindle or clamping unit to directly read the total clamping force. It should be used to setup a new spindle, to qualify a crashed or rebuilt spindle, and for monthly spindle preventative maintenance.



What is the ATC alignment tool?

The alignment tool is used to adjust the ATC gripper position with relation to the magazine and clamping unit or spindle. Improper alignment can affect repeatability of tools and result in abnormal wear.

To install the tool, clamp the male part into the spindle and place the gripper part into the ATC. Run the machine's ATC program until it reaches its final position in the tool change area.

Insert the centerline gage pin into the alignment tool. The alignment is correct when the pin passes through both halves. If not, adjust the spindle or ATC position. The two halves should be flush and parallel to each other.

With the centerline gage pin inserted, insert the angle gage pin. If the pin passes through both halves, the system is fully aligned. If not, adjust the ATC or spindle until the pin passes.



What do I do if my spindle experiences leakage issues?

If your spindle is leaking, disassemble the spindle and inspect the seals. Replace any compromised seals. Clean off the seals and re-lubricate. Reassemble the spindle and check for leaks. Contact customer support if problems persist.

(continued)

(7. Frequently Asked Questions — continued)



Are there any presetting devices equipped with KM4X™?

The following presetting adapters are available upon request:

System Size	Company	Order Number
KM4X63	Kelch®	5568445
	Zoller®	5696067
KM4X100	Zoller®	5537644
	Zoller®	5425500



Are there any balancing adapters for KM4X™?

The following balancing adapters are available through Haimer®.

System Size	Company	Item Number
KM4X63	Haimer®	80.261.KM63.4X
KM4X100	Haimer®	80.261.KM100.4X



What can I use to locate my workpiece position?

KM4X™ adapters with a Renishaw® probe allow users to check and measure the raw and finished workpieces at the machine.

System Size	Catalog Number	Probe Size	Order Number
KM4X63	KM4X63RP40042M	40	5990571
KM4X63	KM4X63RP60042M	60	5718464
KM4X100	KM4X100RP60045M	60	6198617
KM4X125	KM4X125RP60045M	60	6198618

(continued)

(7. Frequently Asked Questions — continued)



40 Size Probes

Renishaw® Probe	Repeatability (mm)	Probe Type	L1_ASSY KM4X63 (mm)	L1_ASSY KM4X100 (mm)	L1_ASSY KM4X125 (mm)
OLP40	0.001	Kinematic	100.3	–	–
OMP40-2	0.001	Kinematic	92.0	–	–
OMP40M	0.001-0.002	Kinematic	96.0	–	–
OMP400	0.00025	Rengage®	92.0	–	–
RLP40	0.001	Kinematic	93.0	–	–
RMP40	0.001	Kinematic	92.0	–	–
RMP40M	0.001-0.002	Kinematic	96.0	–	–

60 Size Probes

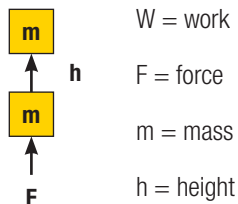
Renishaw® Probe	Repeatability (mm)	Probe Type	L1_ASSY KM4X63 (mm)	L1_ASSY KM4X100 (mm)	L1_ASSY KM4X125 (mm)
MP11	0.001	Kinematic	117.70	120.7	120.7
MP700	0.00025	Rengage®	157.70	160.7	160.7
OMP60	0.001	Kinematic	118.00	121.00	121.00
OMP60M	0.001-0.002	Kinematic	109.25	112.25	112.25
OMP600	0.00025	Rengage®	118.00	121.00	121.00
OSP60	0.001	Sprint	142.60	145.6	145.6
RMP60	0.001	Kinematic	118.00	121.00	121.00
RMP60M	0.001-0.002	Kinematic	109.25	112.25	112.25
RMP600	0.00025	Rengage®	118.57	121.57	121.57

(continued)

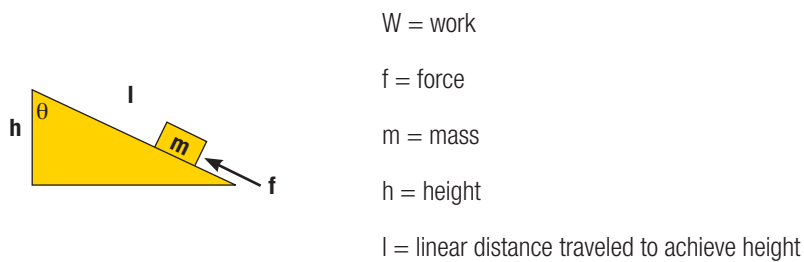
What is Mechanical Advantage?

In this example of a simple machine, work is the product of force and displacement. Work is described as the power needed to force an object to move a given linear distance.

- (1) $W_1 = F * h$ In this example, the linear distance is (h).



- (2) $W_2 = f * l$ Using an inclined plane as our example, we take notice of the work required to move a linear distance (l). Due to the distance (l) being more than (h), less force is required to move the same mass.



- (3) $W_1 = W_2$ The work required to move the mass in example one equates to the force required to move the same mass in example 2.

- (4) $F * h = f * l$ Substitute equations (1) and (2) into (3).

(5) $\frac{F}{f} = \frac{l}{h}$

- (6) $\frac{F}{f} = MA$ In this example, mechanical advantage is defined as a multiplier used to relate two different forces.

- (7) $MA = \frac{l}{h}$ That multiplier is governed by the ratio between length and height (or simply the angle created between the two).

(continued)

What is Mechanical Advantage?

Mechanical advantage is the ratio of the clamping force divided by the lockrod force. Where (f) is the lockrod force and (F) is the clamping force.

Within the KM4X™ system, there are 3 inclined planes (angles): the lockrod angle, the canister angle, and the tool angle.

What is the maximum coolant volume flow?

Using the equation below for volume flow and assuming a flow factor of 0.6 for an orifice, the table below can provide a rough estimate of maximum coolant flow (L/min).

$$Q = d^2 * \sqrt{P} * 0.659 * f$$

System Size	Diameter (mm)	Pressure (bar)				
		50	100	150	200	250
KM4X63	7	137	194	237	274	306
KM4X100	10	280	395	484	559	625
KM4X125	16	716	1012	1240	1432	1600

NOTE: These values are based on coolant diameter through the lockrod.

Could the maximum permissible contact pressure of the material be exceeded through the high clamping forces?

Based upon extensive calculations, the operating stresses for KM4X™ are well within the permissible limits.

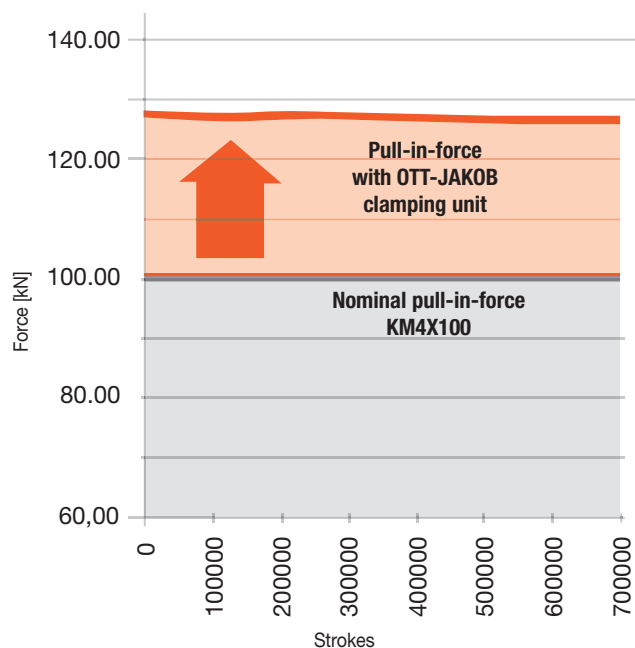
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(7. Frequently Asked Questions — continued)

How many tool changes can be done until the ball track or the tool taper gets worn by the pressure and the friction?

In a typical setup, the springs of the drawbar will fatigue before wear or fatigue becomes an issue for the clamping components. KM4X™ has been tested with a clamping force over 15% of the maximum force. A life of about 1 million cycles was achieved without changing the tool or using grease.

The following are results from an independent cyclic test of KM4X100:



Why is the stiffness of KM4X™ higher in comparison to HSK?

The rigidity of the KM4X™ system is about 2.5 times higher than that of HSK. This is achieved by higher interference, higher clamping force, and the overall distribution of the interference zones.

On KM4X™ and KMTS™, the taper interference zones are split into two areas, providing better support. HSK appears to have a larger taper contact zone, but the contact happens on a much shorter taper. The keys on the spindle often force MTBs to use a design with clearance in the back of the HSK taper. This not only reduces the stiffness but also causes higher stresses internally on the taper in the corner where the fingers pull. HSK tapers can break off completely in that location during heavy duty applications.

(continued)

(7. Frequently Asked Questions — continued)

What do I do if I am concerned with spindle expansion?

Due to the taper interference and clamping force, as the tool is clamped there will be slight radial expansion of the spindle. The amount of expansion is dependent on the amount of interference, the clamping force, and design of the spindle.

Upon request, engineering support and estimations of spindle expansion can be provided for individual designs.



➤ 8. Glossary

Ball Track

Angled, cylindrical surface which is found on cutting units, the lockrods, and the canisters. These surfaces make contact with the locking balls.

Ball Track System

The combination of ball tracks found in the canister, lockrod, and cutting unit along with the locking balls. This provides the clamping force in the KM™ system. Elastic deformation of the ball tracks allow the locking forces to be spread out over a surface roughly assuming the shape of an oval, eliminating point contact with the locking balls.

Bump Off

The act of pushing a cutting unit out of a clamping unit. This is necessary due to the interference fit between the external and internal tapers of the system. The frontend of the lockrod pushes the cutting unit out of the clamping unit as it travels to its most forward position, “tool release”.

Canister

A cylindrical component of the clamping mechanism whose function is to contain the lockrod and the locking balls. The canister is fixed within the clamping mechanism body and constrains the locking balls axially within the mechanism. The locking balls are contained in ball tracks located in a radial direction from the lockrod axis. The canister may also contain drive keys or positioning keys to correspond with slots in the KM™ cutting units.

Clamping Force

The axial force that pulls, or draws, a cutting unit into the clamping unit. This force is the product of the force applied to the lockrod and the mechanical advantage developed by the clamping mechanism.

Error Proofing

A feature based on the orientation key to ensure that a KM™ cutting unit can only be clamped in one radial orientation.

First Tangency

Point where the locking balls make first contact with the lockrod, canister, and cutting tool while clamping. The gap between the tool face and receptacle face is closed (no face contact pressure).

Fretting

A form of wear caused by repetitive movement between two contacting surfaces relative to each other. This results in the formation of micro cracks and rapid oxidation on the surface. In severe cases, the transfer of metal between the internal and external tapers will be seen. This can occur as a result of overloading the joint, severe or prolonged chatter, or low clamping force.

Interference Level

The difference between the gage diameters of a cutting unit's external taper and a clamping unit's internal taper.

KM™

The initials stand for Kennametal Modular. The first truly universal tooling system designed for use in all machine shop applications. Suitable for static and rotating tools on lathes, rotating tools on machining centers (including high speed), and modular machining center packages. It offers accuracy in all directions, rigidity and flexibility of application. It is based on a 1:10 taper with interference fit and is clamped with a ball track system. Developed jointly with Krupp WIDIA, it was first publicly displayed at the EMO show in Milan in 1987. It is currently offered in six sizes: KM32, KM40, KM50, KM63, KM80, and KM100.

KM4X™

The next generation of KM™, using the same ball track system design as current KM units. KM4X™ has 4 locking elements for better distribution of clamping force and rigidity. It is currently offered in three sizes: KM4X63, KM4X100, and KM4X125.

Locking Balls

Hardened precision chrome alloy steel ball used as part of the clamping mechanism to clamp a cutting unit.

(continued)

Lockrod

A cylindrical component contained in the canister as part of the clamping mechanism. It contains the ball tracks to drive the locking balls in an outward direction to clamp the cutting unit.

Lockrod Force

The force supplied to the lockrod to drive the locking balls and clamp a cutting unit. Lockrod force can be supplied in various ways. Screw threads, springs, hydraulic cylinders, and low-pressure air mechanisms have all been used to provide lockrod force.

Mechanical Advantage

The ratio of clamping force divided by lockrod force. The value for the mechanical advantage of a KM™ clamping unit is related to the cutting unit ball track angle, the canister ball track angle, and the lockrod ball track angle.

Minimum Held

Position where the lockrod is at its maximum displacement while retracting and springs are at minimum compression. Also referred to as the end of stroke position or “clamped without tool” position.

Orientation Key

A key like feature found on the canister that, in conjunction with the slot in a KM™ cutting unit, provides proper orientation of the cutting unit or tool before clamping.

Relieved Taper

The internal taper of a KM™ clamping unit has a relief machined into it that divides the taper into front and back ends. The relief serves two purposes: it is related to the ball track in the cutting unit so that the hole coming through the external taper does not scuff the internal taper. It also reduces the amount of taper contact between the two tapers allowing the use of optimized interference levels with less clamping force required to seat the gage faces.

Reserve Stroke

The amount of lockrod stroke available from the clamped position, with a cutting unit in place, to the minimum held position in the KM™ clamping unit. Primarily used in the design and evaluation of a KM™ clamping mechanism.

Stand Off

The distance between the gage face of a cutting unit and the gage face of a clamping unit when the tapers first come in contact with one another. Since the taper rate of the KM™ system is 1:10, the measurement is exactly 10 times the amount of interference between the two taper gage diameters.

Stroke

The maximum distance that a lockrod can travel in a KM™ clamping unit. This distance is usually determined by the travel of the lockrod between a front or release stop and a rear or clamping stop.

Visit kennametal.com for additional contact information for locations.

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- **United States**
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- **Mexico**
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➤ 10. Information Request Form

KM4X — Information Request

Requestor: _____

☐ Quote

☐ Request for
Technical
Information

☐ Request for
Technical
Support

Machine Type: _____

Current Interfaces: _____

Interface Size:

☐ KM4X63

☐ KM4X100

☐ KM4X125

Operation:

☐ Milling

☐ Turning

☐ Multi Task

Spindle Length: _____ mm

Spindle Diameter: _____ mm

Maximum RPM: _____ RPM

Coolant Pressure: _____ bar ☐ No Coolant

Cleaning Air: _____ bar ☐ No Cleaning Air

Tool Release Force: _____ kN

Machine Side Stroke Limitation Available:

Front Stop: ☐ Yes ☐ No

Rear Stop: ☐ Yes ☐ No

Please send the form to your local customer sales representative.



Metalcutting Safety

IMPORTANT SAFETY INSTRUCTIONS

Read before using the tools in this catalog!

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 catalog 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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