

MAPAL Competence – Clamping Systems



Perfectly yours.

Clamping Systems from MAPAL

With the perfect connection
for optimum results



In the progressive area of cutting operations on components, precision tools from MAPAL provide a guarantee of maximum economy. Their efficiency lies in innovative systems, modern cutting materials and the highest accuracy in tool production. In addition the tools are specifically matched for the most part to the application to provide the best possible solution with minimum compromise, even for complex tasks.











When using the tools, connection to the machine spindle, and therefore the clamping technique, often plays a role which is undervalued. When fine machining components extremely good results can be achieved with maximum concentricity. However the effect when boring or milling is also very significant and lower, radial variations can have a positive direct effect on tool life.

MAPAL's programme of clamping systems offers the perfect solution for every application and a connection which provides the tool with the concentricity and repeatable accuracy it requires in use.

From expanding chucks to thermal expanding chucks, from polygon chucks and mechanical chucks for cylindrical shanks to adaptors and flanges with the MAPAL KS clamping cartridge, MAPAL's competence in clamping covers a wide variety of systems.



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From spindle to blade

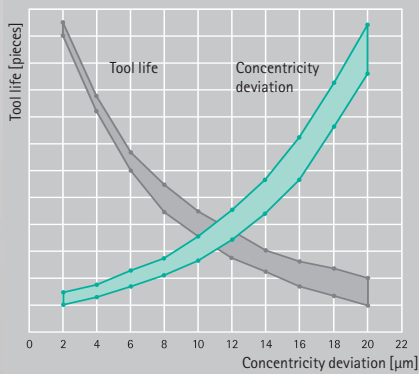
A perfect connection between tool and machine is the basis for an optimum machining result. This means that the clamping device is just as vital as the tool itself. The required concentricity and repeatable accuracy in a machining operation is affected quite decisively by the precision and rigidity of the clamping device used.

MAPAL clamping systems

Simplicity, precision and speed together with flexibility, security and economics – those are the demands placed on systems in modern production technology. Based on this knowledge, MAPAL developed its own, highly accurate connections and also participated in promoting and advancing the development of the HSK system. Since then the standardised HSK hol-

low taper shank connection has become widespread and has been successful against other connection systems.

Maximum concentricity and repeatable accuracy by using the short taper, together with high rigidity from the face connection, provide the right prerequisites to allow the efficiency of modern precision tools to be fully revealed.



Effect of concentricity deviation on tool life



The HFS® Head Fitting System developed by MAPAL is the extension of the HSK system into the smaller diameter ranges. With the same design features – short taper and face connection – the HFS® is ideally suited for replaceable head systems and modular tools.

With the HSK and HFS® replaceable head systems, concentricity and angular errors, which are caused by other components in the overall system or occur because of wear, cannot be compensated for. With longer tools in particular it is often impossible to achieve the quality levels required. The modular connection developed by MAPAL has proved itself an excellent method for these cases over many years. Using

adjusting screws incorporated into the connection system both concentricity and angular errors can be corrected extremely well

MAPAL HSK clamping system

MAPAL offers a complete system of HSK clamping devices for use on machining centres, special machines and transfer units, right through to modern turning centres. The programme of HSK precision chucks is rounded off by a wide range of extensions and reducing elements plus adaptors and flange adaptors. This opens up numerous possibilities for modular tool systems and for adapting to individual machine types.

One important component of the MAPAL HSK clamping system is the KS clamping cartridges. The manual clamping mechanism provides maximum draw-in and clamping forces which can be reliably achieved as a result of their simple, robust construction. Within the KS clamping system programme two special clamping cartridges have also been standardised; these are suitable for use with minimal lubrication or for maximum coolant pressures.



The KS clamping cartridge

At the heart of MAPAL HSK clamping devices



MAPAL took an active part in HSK clamping technology right from the start and supplies an extensive and universal programme of HSK clamping devices for manual and automatic tool clamping.

While the standardised, hollow taper shank and face connection in the HSK clamping system are responsible for maximum accuracy and rigidity, high bending and torque resistance are also determined by the clamping system.

High clamping forces do not just guarantee the absorption of high cutting forces but also allow stable static and dynamic behaviour to be maintained

when lower cutting forces are applied in precision machining, even where there are large tool overhangs. The required surface quality and tolerances can then be economically produced.

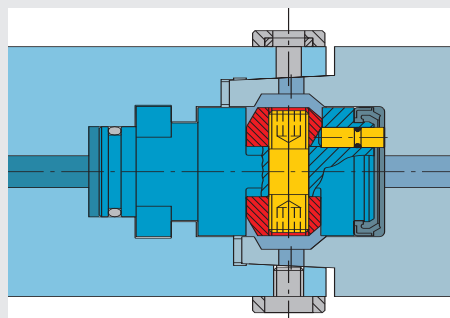
At the heart of the MAPAL HSK clamping devices – and a guarantee for optimum transfer of the cutting forces – is the KS clamping cartridge. This is used on spindles and basic holders, directly or with an adaptor flange.

In addition to the standard version, MAPAL has also included clamping cartridges for applications with minimal lubrication and for high pressure use (see pages 8-9).

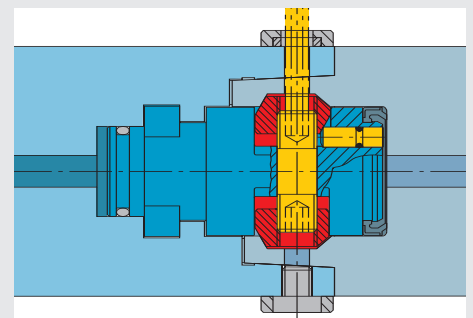
Fitting and function

The KS clamping cartridge is held by means of a bayonet fitting and secured with a heavy-duty holding pin. When clamping is being carried out the two clamping jaws are moved radially outwards using a clockwise screw. The jaws then lie against the 30° clamping shoulder on the hollow shank and produce axial and radial clamping forces.

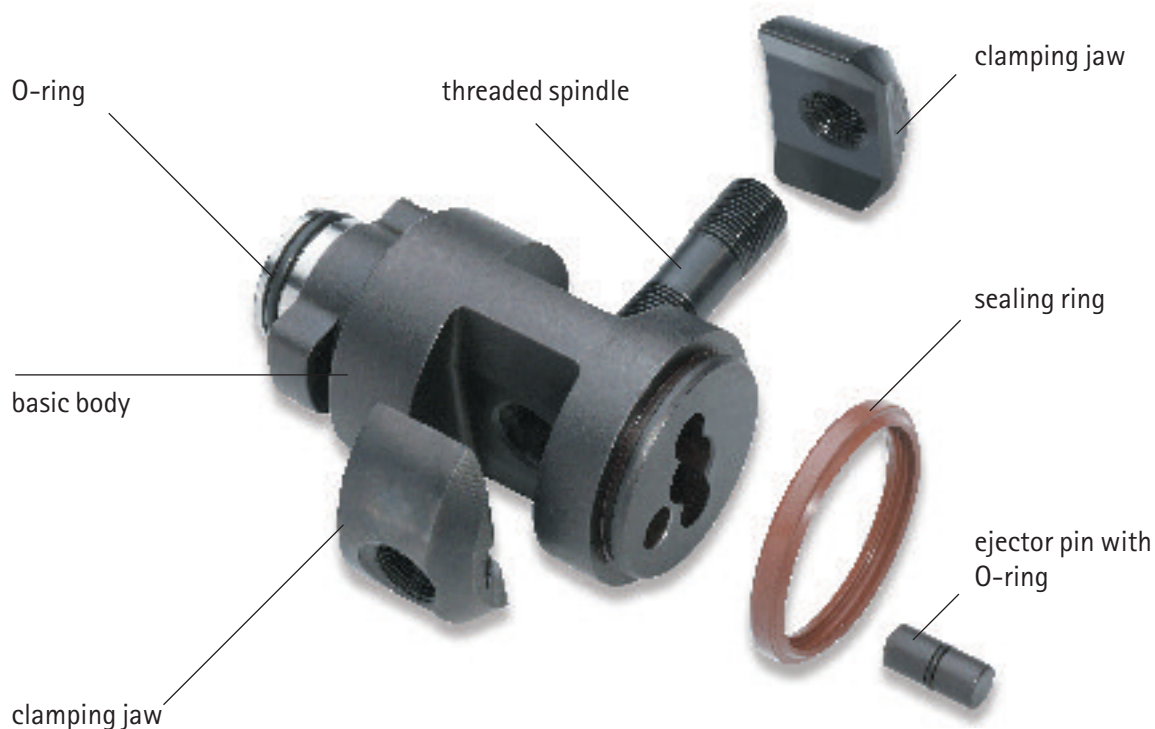
To release the tool an ejector pin is activated which pushes the tool out of the connection.



Released

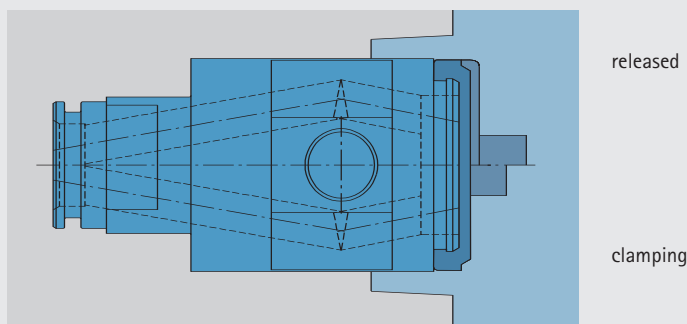


Clamped

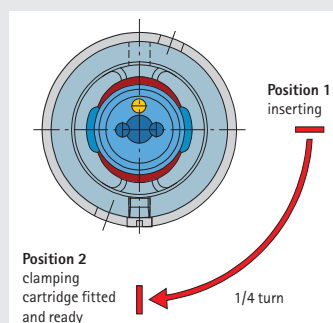


The principal features of the KS clamping cartridge:

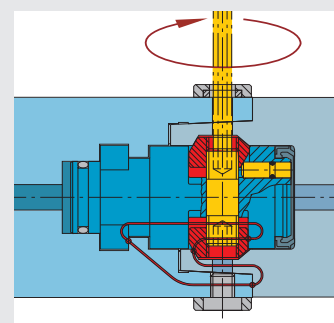
- simple design with very few individual parts
- rigid construction with optimum flow of force from the bayonet over the body of the cartridge to the clamping jaws; this helps transfer high clamping forces
- Four surface clamping for maximum clamping force and concentricity
- Safe seal – even for maximum clamping force – due to seal on face side
- Clamping cartridge is fitted with an easy bayonet fitting instead of screw fit with a high torque
- 100% torque transfer because of ideal surface contact on the milled drive elements
- User-friendly operation from side
- “Totally fool-proof” – not possible to assemble wrongly, from fitting the cartridge right up to changing the tool.



The sealing



Easy to fit



Optimum flow of force

The KS clamping cartridge

for applications using minimal lubrication (MLC)



MAPAL is a pioneer in the development of precision tools and the clamping technology this involves for dry machining and machining with minimal lubrication. In addition to the specific removal of chips, a standardised MLC system is at the centre of the system which guarantees unobstructed throughput of the air and oil mixture from the spindle onto the tool blade.

When designing clamping devices for operations using minimal lubrication, central throughput of the lubricant aerosol through the machine spindle, adaptor and tool wherever possible is of decisive importance. Any precipitation of the aerosol along the way must be avoided. With conventional HSK clamping cartridges this was only possible until now if the clamping was applied behind the hollow taper shank. However, this extended the length of the spindle's overhang.

Taking these specific conditions into account, MAPAL offers a standardised

clamping unit for use with minimal lubrication. Great significance is given to the special KS clamping cartridge for applications using minimal lubrication (MLC). With the MAPAL system the aerosol is passed through centrally and without hindrance and the clamping applied in the bore provided for in the standard.

Technical details

The MLC clamping unit from MAPAL consists of the KS clamping cartridge for minimal lubrication applications and an adaptor tube through which the aerosol is passed onto the tool. To allow all the customer's requirements to be met, MAPAL offers three different connection methods on the machine for the adaptor tube:

- **Adaptor tube with spigot connection**

The aerosol is passed from the spindle onto the clamping device outside the clamping cartridge. The adaptor tube protrudes beyond the cartridge.

- **Adaptor tube with bore connection**

The aerosol is passed through the cartridge. The adaptor on the spindle side goes into the cartridge.

- **Plugs**

For use with KS clamping cartridges for applications with minimal lubrication if these are used without adaptor tubes. The aerosol is passed through a plastic hose from the mixing unit directly onto the tool.

Principal features of MAPAL KS clamping cartridge for applications with minimal lubrication (MLC):

- Aerosol supplied centrally
- Direct clamping applied in the bore provided for in the standard
- Easy changeover to MLC: compatible with conventional KS clamping cartridges
- Can be used for single or double supply lines

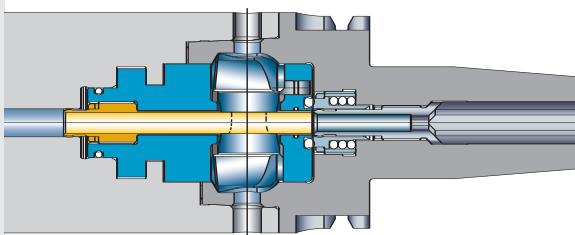
for high pressure applications

The MAPAL clamping cartridge programme is rounded off with the high pressure clamping cartridges which are designed for pressures of up to 150 bar.

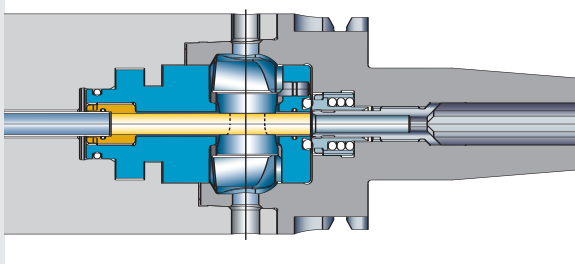


Connection options on machine for KS clamping cartridge for use with minimal lubrication:

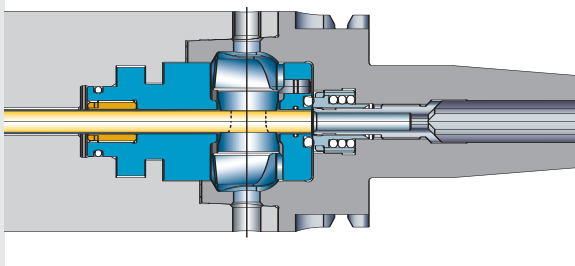
Adaptor tube with spigot connection



Adaptor tube with bore connection

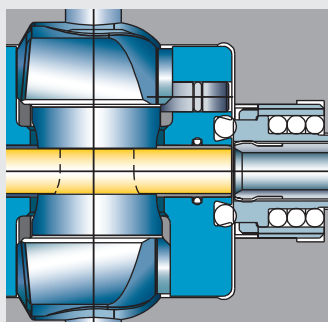


Plugs and plastic supply hose through device

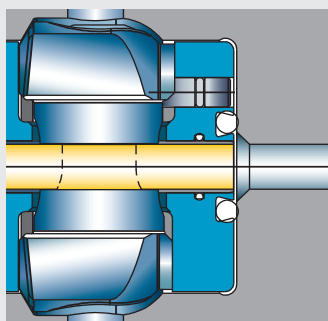


Internal seal for optimum sealing with manual and automatic clamping devices:

The MAPAL KS clamping cartridge also has an important detail on the face side for MLC applications: the sealing ring on the face side is incorporated into the cartridge. With this MAPAL ensures that the clamping cartridge is equally suited for clamping HSK-A and HSK-C tools.



Seal for HSK-A tools



Seal for HSK-C tools

MAPAL HFS[®] – Head Fitting System

The brilliantly simple connection for simply brilliant tool concepts



The rapid establishment of the HSK clamping system worldwide has provided a technological leap forward in the precision tool industry in issues of stability and concentricity. For tool head connections, however, there are still a large number of different connection systems.

With the HFS[®] Head Fitting System MAPAL has now brought a connection for tool heads onto the market which adapts elements of the HSK clamping system to the particular needs of replaceable heads.

The principal features of the HFS connection are:

- Taper
- Face connection
- Positive drive
- Coolant supply onto the blade

HFS[®] guarantees high precision and performance with which changeover accuracy and concentricity of less than 3 µm can be reliably achieved in production, setting new standards in economy, user comfort and quality of machining results.

Tools with HFS connections are no weaker or less accurate than a monolith tool. On the contrary, a tool with HFS[®] is to some extent superior to a monolith tool since tools with HFS[®] have a higher rigidity than monolith tools because of the extraordinary precision of this type of connection. Despite this the tool head is also produced as a standard part and can therefore be manufactured in comparatively large quantities and with maximum precision.

For modern production set-ups the outstanding effect of consistency in performance, including tool life, is achieved to the best possible level with HFS[®].

Universal combination options

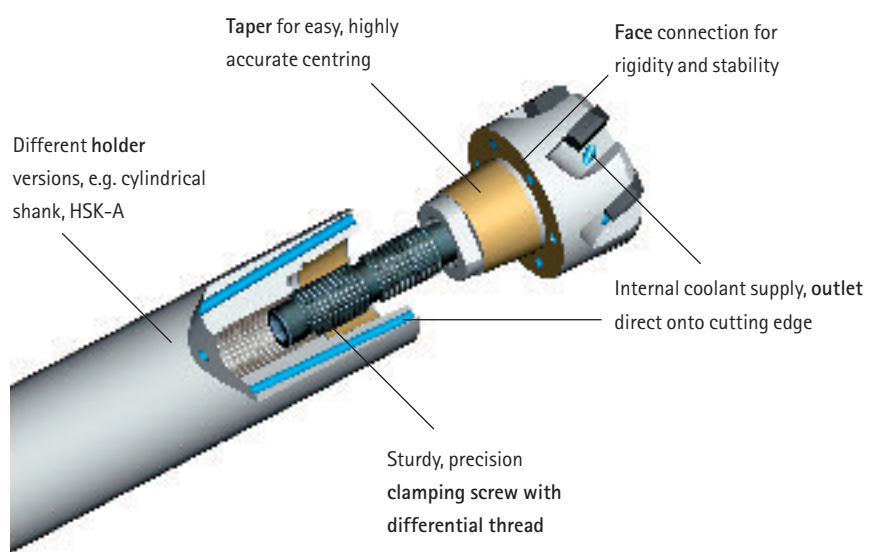
The design of the MAPAL HFS[®] offers the best possible conditions for the tool to be tailored precisely to specific requirements. This means that the whole tool can be made up of combinations of various materials such as steel or carbide. In designing combination tools the precise concentricity can also be fully utilised and various cutting systems joined together – for example a brazed tool with a basic holder for inserts.

For tools with large jumps between diameters, HFS[®] allows the components of the tool to be produced separately on suitable production equipment and using the best possible clamping set-up for each one.

A brief summary of the advantages:

- Changeover accuracy and concentricity of less than 3 μm
- Simple, high precision centring with taper
- High rigidity and stability with optimised vibration damping properties
- Long tool life and excellent machining results as a result of vibration damping on material
- Extremely compact, rotationally symmetrical design; suitable for high spindle speeds
- Simple, direct coolant supply through the connection directly onto the blade, making it particularly suitable for use with minimal lubrication (MLC)
- Modular design allows maximum universal use
- Easy handling when changing the tool head using clockwise/anti-clockwise screw and eccentric pins

MAPAL HFS axial clamping system



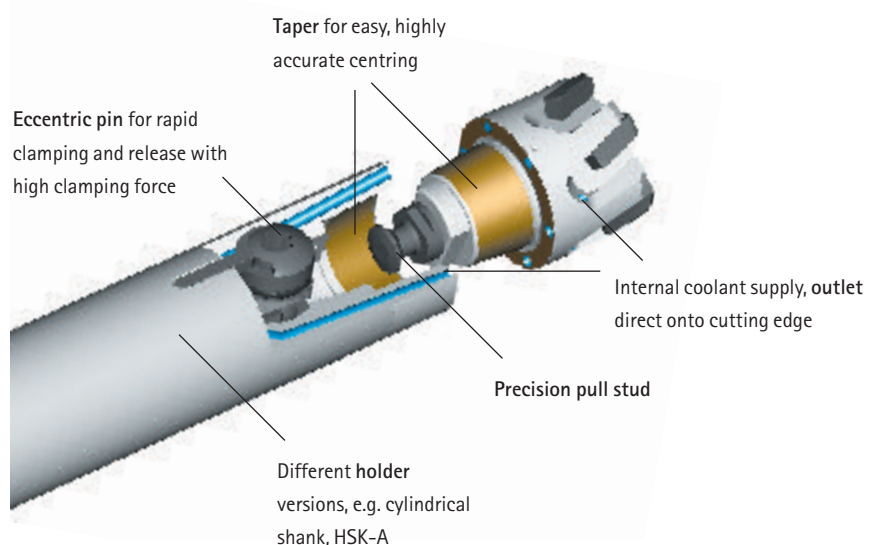
MAPAL HFS replaceable head holders available with two different clamping systems:

For holders with **axial clamping** the system is applied from the rear through the shank and away from the machine. The tool head is drawn in with a sturdy differential screw, radially aligned to high precision and held in the exact position. Releasing the tool head is also automatic and simple by turning in the reverse direction.

A further significant development in the holder system is **radial clamping**, which provides clear advantages in tool change times and the amount of handling without any change in precision. The radial clamping system consists of an eccentric pin in the holder and a pull stud fitted on the head. The replaceable head is clamped or released by a quarter turn of the eccentric pin. Changing the heads can be carried out quickly, easily and on the machine.

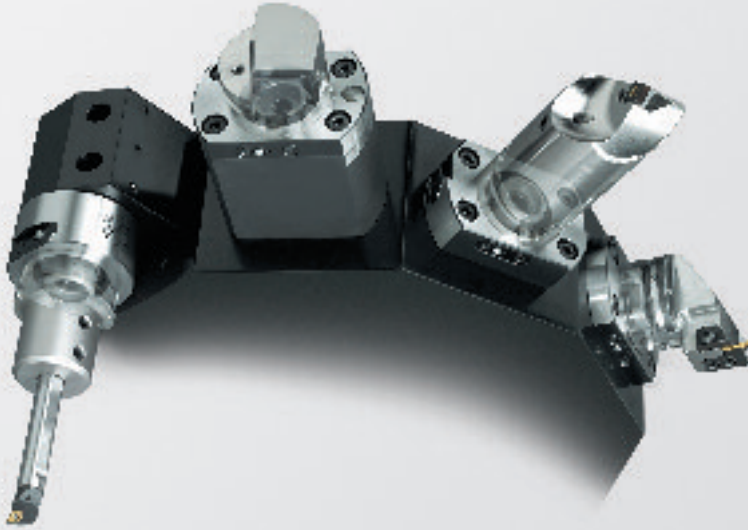
MAPAL HFS radial clamping system:

Head change fast, easy and basically on the machine:



HSK

The standardised hollow taper shank



Since the development and standardisation of the HSK system, the spread and use of this connection has been extremely rapid. The HSK offers high precision and rigidity, is very sturdy and simple in both construction and manufacture. This has meant that the connection methods previously used have been increasingly pushed out of high performance production systems. In addition to these technical advantages, easy access across the industry to this independently standardised connection has also contributed to the successful spread of the HSK.

Several versions of the HSK have been standardised, each of them suitable for specific requirements. Whether on machining centres with automatic tool change systems or on special machines and transfer lines with manual tool clamping, the HSK has become successfully established for rotating tools.

HSK on turning machines and turning/milling centres

The developing of turning machines into modern turning and milling centres for the complete machining of parts has also opened up new areas of use for the HSK system. The standard for HSK-T was specially developed and adapted for use with stationary tools on turning machines. Compared to other HSK versions the play on the drive elements is limited, so that there is minimum effect on the cutting edge position.

MAPAL also offers new manual clamping systems for use on turning machines. The new HSK clamping units are designed so that extremely high clamping forces can be safely used. At the same time good central access allows elements to be passed on for additional functions on the tool. For example motor-driven tools can also be used on the turret with manual clamping.

HSK-A/C to DIN 29893-1 + DIN 69063-1	
HSK-T (standard in draft) to ISO / CD 12164-3 + ISO / CD 12164-4 and ICTM standard	

By using HSK clamping systems on turning machines and on rotating turrets, unproductive ancillary times can be dramatically reduced and an enormous potential for rationalisation identified. The extraordinarily high accuracy in changing the HSK connection allows 'sister' tools to be used which have been preset at the setting station, measured and the used directly on the turret. This means there is no need for samples to be produced or adjustments to be made.

Detailed information can be found in our special catalogue "MAPAL Clamping Systems for Turning Machines and Turning and Milling Centres".

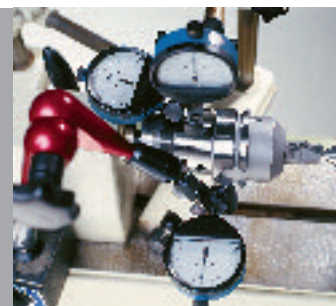


Competence in Design and Production

Key factors for innovative tools

The basic prerequisite for efficient precision tools is competent design with significant knowledge and experience at the latest technical level. However, conversion into production must also be to the same high level. Only in this way will tools emerge of the highest quality and precision.

Recognition of this also applies for tool holders, adaptors and clamping devices and in particular for modular design, complex special tools. At MAPAL modern methods and machines, together with highly qualified personnel, are used along the whole production chain – from design to production. And this is what guarantees maximum precision.

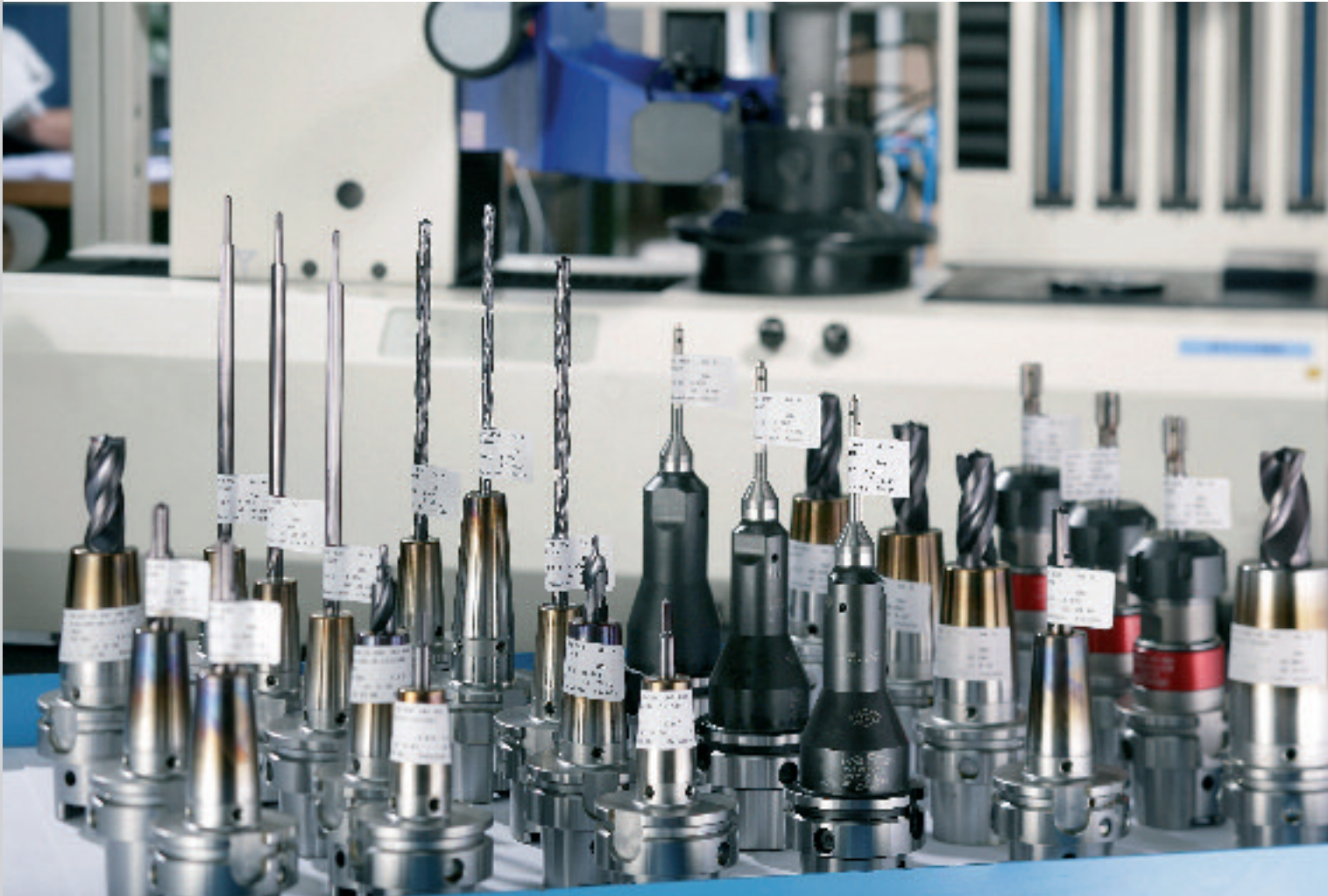


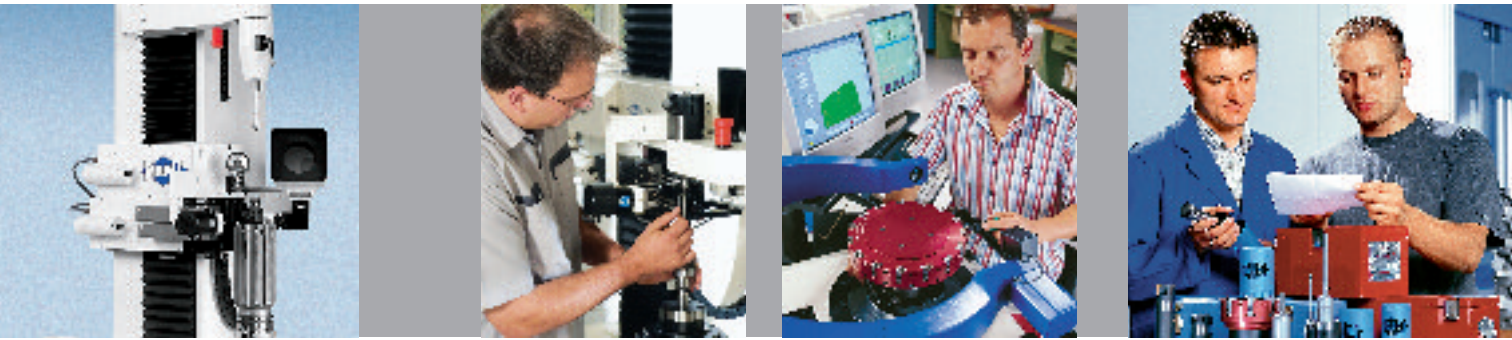
Tools ready for use

Complete service for projects

Within overall projects MAPAL has specialised for some time in project managing and designing the complete tool system which is needed to machine parts which are ready to assemble. The range of tools within projects of this kind extends from simple boring tools and milling cutters to complex special tools. The appropriate tool holders, clamping devices and adaptors are also included in the project management work.

When planning the production processes and the design for the tools, particular value is placed by MAPAL specialists on the optimum machining results and times. This comprehensive approach brings significant advantages for the customer bringing process costs and not tool costs to the fore.





A further decisive factor for the function of precision tools is their correct assembly and setting. It is only in this way that trouble-free function and performance can be guaranteed. All assembly and adjustment work within the overall project is carried out by MAPAL and the customer is then supplied with the tools ready to use. The equipment used is the very latest tech-

nology and all current machines and clamping systems are available. Qualified personnel carry out the work and document the data. Each step is fully comprehensible and transparent.

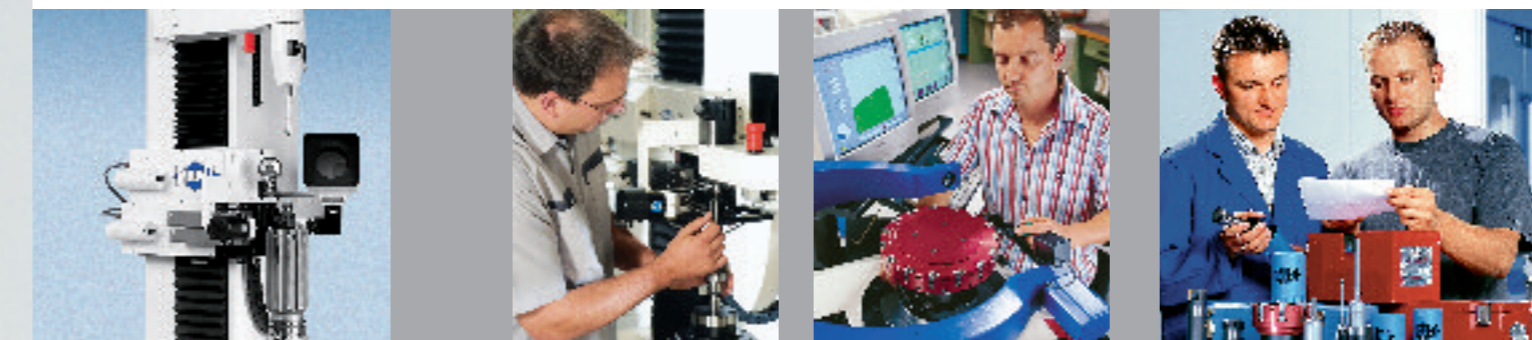
The MAPAL KS clamping cartridges have proved extremely successful with manual tool clamping for HSK shanks for some time. Their compact, simple and reliable construction guarantees maximum clamping and draw-in forces are applied. The clamping cartridges are available in all HSK sizes and also in versions which are modified for special applications.



MAPAL Competence – Clamping Systems
 Programme summary and selection table

	Flange module			HSK-A to DIN 69893-1			HSK-C to DIN 69893-1			ISO to DIN 698971			BT to JIS B 6339 (Japanese industrial standard)			CAT-V to ASME 85.50-1994 (US standard)			Cylindrical shank			
	Series	Ref. code	Page	Series	Ref. code	Page	Series	Ref. code	Page	Series	Ref. code	Page	Series	Ref. code	Page	Series	Ref. code	Page	Series	Ref. code	Page	
Chucks																						
Toolholder for cylindrical shank with location	Angled clamping face, Radial alignment	MN5529	24	Lateral clamp face	MN5080 – MN5089	38–39	Angled clamping face	MN5300 – MN5309	66–67	Lateral clamping face	MN1100 – MN1109	82–83	Lateral clamping face	MN1340 – MN1349	98	Precision adaptor for MAPAL NC reamers	MN1004	109				
	Angled clamping face, Radial/angular alignment	MN5529	25	Angled clamping face Alignment facility	MN5100 – MN5109 MN5113 – MN5119	40–41 46				Angled clamping face Precision adaptor for MAPAL NC reamers	MN1110 – MN1119 MN1005	84 85										
Chucks for collets				Standard clamping nuts	MN5135 – MN5141	42, 44	Standard clamping nuts	MN5335 – MN5341	68, 70				Standard clamping nuts	MN1330 – MN1333	100							
				Clamping nuts for int. coolant	MN5135 – MN5141	43, 45	Clamping nuts for int. coolant	MN5335 – MN5341	69, 71													
Hydraulic chucks	Radial/angular alignment	MN5863 – MN5869	26	Axial tool length adjustment	MN5160 – MN5169	48–49	Axial tool length adjustment	MN5360 – MN5369	72	Axial tool length adjustment	MN1130 – MN1139	86	Axial tool length adjustment	MN1160 – MN1169	101							
				Radial tool length adjustment	MN5190 – MN5199	47	Radial tool length adjustment	MN5390 – MN5399	73													
Thermal expanding chucks	Radial/angular alignment	MN5830 – MN5833	27	Thermal expanding chuck	MN5820 – MN5829	50–51	Thermal expanding chuck	MN5840 – MN5849	74	Thermal expanding chuck	MN1120 – MN1129	87–88	Thermal expanding chuck	MN1300 – MN1309	102–103							
Polygon chucks				TRIBOS-S	MN5850 – MN5859	52	TRIBOS-S	MN5850 – MN5859	52	TRIBOS-S	MN1140 – MN1149	89	TRIBOS-S	MN1310 – MN1319	104							
				TRIBOS-R	MN5880 – MN5889	53–54	TRIBOS-R	MN5880 – MN5889	53–54	TRIBOS-R	MN1170 – MN1179	90	TRIBOS-R	MN1320 – MN1329	105							
Milling cutter arbors				For milling tools with length/cross slot	MN5040 – MN5045	55				For milling tools with larger mounting ø	MN1180 – MN1185	91	For milling cutter with larger mounting ø	MN1350 – MN1353	106							
				For milling tools with larger mounting ø	MN5050 – MN5055	56																
Tapping chuck				Softsynchro®	MN5073 – MN5076	57																
Adaptors/holders																						
KS adaptor flanges	Radial alignment	MN5520	28																			
	Radial/angular alignment	MN5523	29																			
KS adaptor flanges	Radial alignment	MN5521	30																			
	Radial/angular alignment	MN5522	31																			
	For short spindles	MN5524	32																			
Extensions				HSK extensions	MN5025 – MN5026	58	HSK extensions	MN5725 – MN5726	75													
Reducers				HSK reducers	MN5030 – MN5034	59	HSK reducers	MN5730 – MN5734	76													
HSK adaptors				On module	MN5090 – MN5095	62																
KS ISO location shanks										On HSK-C	MN5510 – MN5511	92–93	On HSK-C	MN5512	107	On HSK-C	MN5514	110				
										On module	MN1020 – MN1025	94–95	On module	MN1022	108	On module	MN1023	111				
HFS holders	Axial clamping	HFS 920 / HFS 921	33–34	Axial clamping	HFS 940 / HFS 945	60	Axial clamping	HFS 959/964/960/965	77													
	Radial clamping	HFS 920R/HFS 921R	35	Radial clamping	HFS 940R / HFS 945R	61	Radial clamping	HFS 959/960/964/965/ 959R/960R/964R/965R	78													
Blanks																						
HSK blanks				HSK blanks	MN5591 – MN5598	63	HSK blanks	MN5571 – MN5578	79													

Floating holders/ self-adjusting floating holders		
Series	Ref. code	Page
Floating holders		
For cyl. shank with lateral clamping face		
Location shank HSK-A	PH 219 - PH 222	120
Location shank HSK-C	PH 224 - PH 227	122
Location shank ISO	PH 200 - PH 206	124
Location shank with lateral clamping face	PH 411 - PH 425, PH 330 - PH 337, PH 310 - PH 316	126 127 128
Location shank VDI	PH 300 - PH 302	130
Scully Jones type location shank	PH 250 - PH 253	132
Location shank	PH 350 - PH 352	133
Coromont Capto		
Location shank KM-UTS	PH 360 - PH 362	134
Location shank ABS	PH 240 - PH 242	135
Collet holder with clamping nut for int. coolant		
Location shank HSK-A	PH 229 - PH 232	121
Location shank HSK0-	PH 234 - PH 237	123
Location shank ISO	PH 210 - PH 216	125
Location shank with lateral clamping face	PH 319 - PH 328	129
Location shank VDI	PH 305 - PH 307	131
Self-adjusting floating holders		
For cyl. shanks with lateral clamping face		
Location shank with lateral clamping face	APH 311 - APH 315	136
Location shank VDI	APH 300 - APH 302	138
Collet holder with clamping nut for int. coolant		
Location shank with lateral clamping face	APH 322 - APH 328	137
Location shank VDI	APH 305 - APH 307	139



Introduction

A further decisive factor for the function of precision tools is their correct assembly and setting. It is only in this way that trouble-free function and performance can be guaranteed. All assembly and adjustment work within the overall project is carried out by MAPAL and the customer is then supplied with the tools ready to use. The equipment used is the very latest tech-

nology and all current machines and clamping systems are available. Qualified personnel carry out the work and document the data. Each step is fully comprehensible and transparent.

The MAPAL KS clamping cartridges have proved extremely successful with manual tool clamping for HSK shanks for some time. Their compact, simple and reliable construction guarantees maximum clamping and draw-in forces are applied. The clamping cartridges are available in all HSK sizes and also in versions which are modified for special applications.



Selection tables





Clamping devices with flange module

MAPAL clamping devices with flange module are recommended for machining conditions under which concentricity and angular errors on the machine spindle have to be corrected. These are adjusted radially with alignment elements and then produce extremely high accuracies.

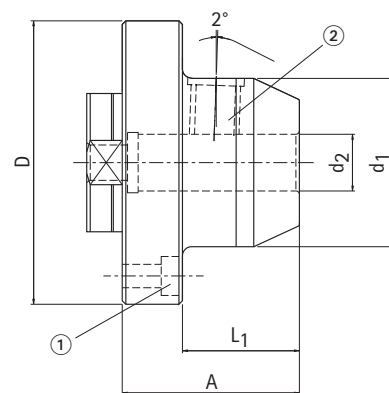
The use of adaptors and flanges which can be aligned allows the high changeover accuracies provided by the HSK system to be transferred to spindles and ISO holders. In addition interchangeable adaptors can be easily replaced if damage or wear occurs. At the heart of these flanges and adaptors are the MAPAL KS clamping cartridges, which allow maximum load. The milled key blocks allow maximum torque transfer.

The adaptor flanges in the MN5520 and MN5523 series are combined with ISO basic holders and even allow high run-out accuracy for machines using ISO adaptors.



Adaptors for cylindrical shanks with angled clamping face with radial alignment

Module connection size for MN5000-30



Module diameter D	Clamping diameter d ₂	d ₁	Dimensions		Weight kg	Order No.
			A	L ₁		
80	12	42	48	31	1,0	MN5529-11
80	16	48	50	33	1,1	MN5529-12
80	20	52	52	35	1,1	MN5529-13
100	25	63	80	59	2,5	MN5529-14
100	32	72	80	59	2,7	MN5529-15

Spares for module adaptor

Module diameter D	Quantity required	Cylindrical screw	
		① ISO 4762	Order No.
80	4	M6x20 – 12,9	10003619
100	4	M8x25 – 12,9	10003637

Clamping screw DIN 1835-B

Clamping diameter d ₂	Quantity required	Clamping screw	
		② size	Order No.
12	1	M12x14	30002947
16	1	M14x16	10004136
20	1	M16x16	10004137
25	2	M18x2x20	10004141
32	2	M20x2x20	10004129

Dimensions in mm.

Use:

For holding milling tools and drills with cylindrical shank and angled clamping face (2°) to DIN 1835 Form E and DIN 6535 Form HE.

Supply includes:

clamping screw and cylindrical screw fitted (to hold chuck).

Design:

Can be adjusted for precise concentricity by means of threaded pins (for alignment) on the machine spindle and on HSK or ISO adaptor.

The bore tolerance is much reduced compared to DIN 1835 (d^{H4}) to produce accurate machining results of the highest quality.

Note:

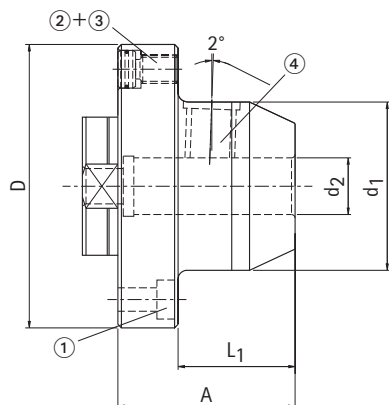
From clamping diameter d₂ = 25 mm 2 clamping screws are provided.

Balance:

G 6.3 at 3,000 min⁻¹

Adaptors for cylindrical shanks with angled clamping face with radial and angular alignment

Module connection size for MN5000-34



Module diameter D	Clamping diameter d ₂	d ₁	Dimensions		Weight kg	Order No.
			A	L ₁		
80	12	42	48	31	1,0	MN5529-21
80	16	48	50	33	1,1	MN5529-22
80	20	52	52	35	1,1	MN5529-23
100	25	63	80	59	2,5	MN5529-24
100	32	72	80	59	2,7	MN5529-25

Spares for module adaptor

Module diameter D	Quantity required	① Cylindrical screw		② Thrust pad		③ Threaded pin	
		ISO 4762	Order No.	Ref. code	Order No.	Ref. code	Order No.
80	4	M6x20 - 12,9	10003619	K10086-14	10040108	K2865-164	10075074
100	4	M8x25 - 12,9	10003637	K10086-04	10075116	K2865-514	10075100

Clamping screw DIN 1835-B

Clamping diameter d ₂	Quantity required	④ Clamping screw	
		Size	Order No.
12	1	M12x14	30002947
16	1	M14x16	10004136
20	1	M16x16	10004137
25	2	M18x2x20	10004141
32	2	M20x2x20	10004129

Dimensions in mm

Use:

For holding milling tools and drills with cylindrical shank and angled clamping face (2°) to DIN 1835 Form E and DIN 6535 Form HE.

Supply includes:

clamping screw and cylindrical screw fitted (to hold chuck) and alignment screw (thrust pad and threaded pin).

Design:

Can be precisely set in radial run-out by using threaded pins (for alignment) on the machine spindle and on HSK or ISO adaptor.

Can be precisely set in face run-out using alignment screws (thrust pad and threaded pin) in the expanding chuck.

The bore tolerance is much reduced compared to DIN 1835 (d^{H4}) to produce machining results of the highest quality.

Note:

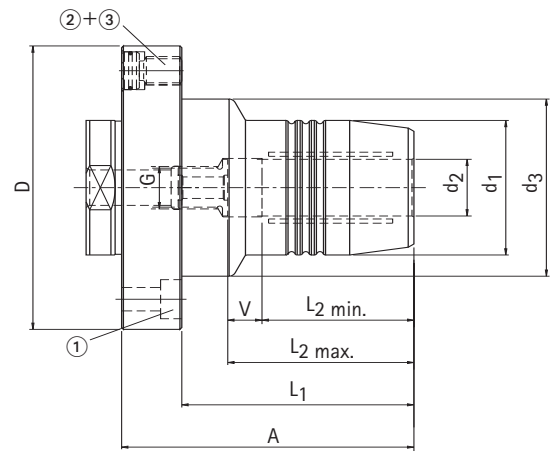
From clamping diameter d₂ = 25 mm 2 clamping screws are provided.

Balance:

G 6.3 at 3,000 min⁻¹

Hydraulic chucks with radial and angular alignment

Module connection size for MN5000-34



Module diameter D	Clamping diameter d ₂	Dimensions							Adjustment path V	Weight kg	Order No.
		d ₁	d ₃	A	L ₁	L ₂ min.	L ₂ max.	G			
80	12	32	50	77,5	60,5	37,5	47,5	M10x1	10	1,2	MN5863-12
80	16	38	50	82,5	65,5	42,5	52,5	M12x1	10	1,3	MN5865-16
80	20	42	50	82,5	65,5	42,5	52,5	M16x1	10	1,4	MN5867-20
100	25	57	63	100,0	79,0	51,5	61,5	M16x1	10	2,8	MN5868-25
117	32	64	75	103,0	82,0	55,0	65,0	M16x1	10	3,7	MN5869-32

Spares for module adaptor

Module diameter D	Quantity required	① Cylindrical screw		② Thrust pad		③ Threaded pin	
		ISO 4762	Order No.	Ref. code	Order No.	Ref. code	Order No.
80	4	M6x20 – 12,9	10003619	K10086-14	10040108	K2865-164	10075074
100	4	M8x25 – 12,9	10003637	K10086-04	10075116	K2865-514	10075100
117	4	M8x25 – 12,9	10003637	K10086-04	10075116	K2865-514	10075100

Dimensions in mm.

Use:

For clamping tools with smooth cylindrical shanks to DIN 6535 (Form HA) up to \varnothing 32 mm and with recesses to DIN 1835 (Form B, E) and DIN 6535 (Form HB, HE) directly and without adaptor sleeve in the clamping diameter. The clamping diameter is designed for a tool tolerance h6 with $d_2 = 12$ mm to $d_2 = 32$ mm.

Supply includes:

Supplied complete with length adjustment screw, clamping screw, cylindrical screw (for holding chuck) and alignment screw (thrust pad and threaded pin)

Design:

Maximum tool life and quality production results when used for smooth cylindrical shanks to DIN 1835 Form A and DIN 6535 Form HA.

With an overhang length of

2.5 x D (max. 50 mm), concentricity of 0.003 mm.

Can be precisely set in radial run-out by using threaded pins (for alignment) on the machine spindle and on HSK or ISO adaptor.

Can be precisely set in face run-out using alignment screws (thrust pad and threaded pin) in the expanding chuck.

When using cylindrical shanks with angled clamping surface (Form E and Form HE), this may affect accuracy.

Note:

Chuck with axial tool length adjustment:

Coolant supply through central hole.

For adaptor sleeves see page 171.

(when using adaptor sleeves, this may effect accuracy).

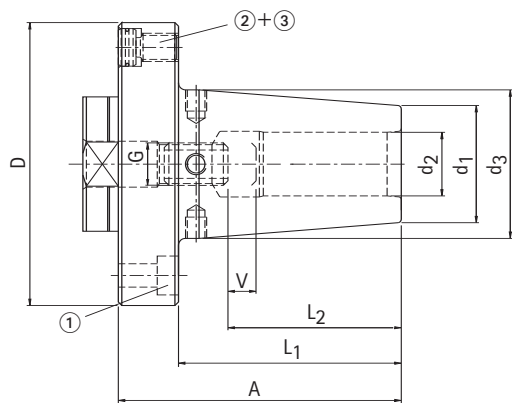
Length adjustment screws and clamping screws can be supplied on request.

Balance:

G 6.3 at 12,000 min⁻¹

Thermal expanding chucks with radial and angular alignment

Module connection size for MN5000-34



Module diameter D	Clamping diameter d ₂	Dimensions						Adjustment path V	Weight kg	Length adjustment screw		Thermal expanding chuck
		d ₁	d ₃	A	L ₁	L ₂	G			Size	Order No.	
60	6	21	27	70	57	36	M5	10	0,7	M5x16-45H	10049051	MN5830-06
60	8	21	27	70	57	36	M6	10	0,7	M6x16-45H	10049052	MN5830-08
60	10	24	32	70	57	41	M8x1	10	0,7	M8x1x16-45H	10049053	MN5830-10
60	12	24	32	70	57	46	M10x1	10	0,7	M10x1x18-45H	10049056	MN5830-12
70	14	27	34	75	60	46	M10x1	10	1,0	M10x1x18-45H	10049056	MN5831-14
70	16	27	34	75	60	49	M12x1	10	1,0	M12x1x18-45H	10049059	MN5831-16
80	18	33	42	80	63	49	M12x1	10	1,4	M12x1x18-45H	10049059	MN5832-18
80	20	33	42	80	63	51	M16x1	10	1,3	M16x1x18-45H	10067787	MN5832-20
100	25	44	53	80	59	57	M16x1	10	2,3	M16x1x22-45H	10067681	MN5833-25
100	32	44	53	80	59	61	M16x1	10	2,2	M16x1x22-45H	10067681	MN5833-32

Spares for module adaptor

Module diameter D	Quantity required	① Cylindrical screw		② Thrust pad		③ Threaded pin	
		ISO 4762	Order No.	Ref. code	Order No.	Ref. code	Order No.
60	4	M5x16 - 12,9	10003601	K10086-14	10040108	K2865-904	10040109
70	4	M6x20 - 12,9	10003619	K10086-14	10040108	K2865-904	10040109
80	4	M6x20 - 12,9	10003619	K10086-14	10040108	K2865-164	10075074
100	4	M8x25 - 12,9	10003637	K10086-04	10075116	K2865-514	10075100

Dimensions in mm.

Supply includes:

Length adjustment screw with bore fitted.

Design:

Can be precisely set in radial run-out by using threaded pins (for alignment) on the machine spindle and on HSK or SK adaptors.

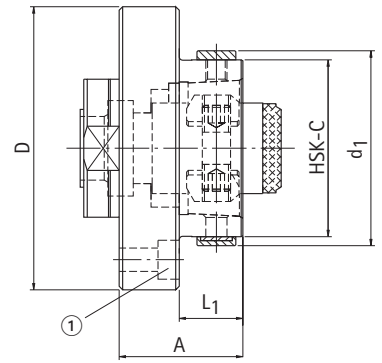
Can be precisely set in face run-out using alignment screws (thrust pad and threaded pin) in the expanding chuck.

The clamping diameter is designed for a shank tolerance h6.

Balance:

G 6.3 at 3,000 min⁻¹

KS Adaptor flanges with radial alignment



Module connection size for MN5000-30

Module diameter D	Nominal size HSK-C	d_1	Dimensions		Weight kg	Order No.
			A	L_1		
60	32	37	26	13	0,4	MN5520-05-K
70	40	45	30	15	0,6	MN5520-06-K
80	50	55	35	18	0,9	MN5520-07-K
100	63	70	43	22	1,8	MN5520-08-K
117	80	87	50	29	2,7	MN5520-09-K
140	100	110	70	42	4,9	MN5520-10-K

Spares for module adaptor

Module diameter D	Quantity required	Cylindrical screw	
		① ISO 4762	Order No.
60	4	M5x16 - 12,9	10003601
70	4	M6x20 - 12,9	10003619
80	4	M6x20 - 12,9	10003619
100	4	M8x25 - 12,9	10003637
117	4	M8x25 - 12,9	10003637
140	4	M10x30 - 12,9	10003660

Dimensions in mm.

Use:

For fitting onto the machine spindle or on HSK or ISO adaptors for holding HSK tools

Supply includes:

clamping cartridge, stop ring and cylindrical screw (for holding KS adaptor flange)

Design:

Can be precisely set in radial run-out by using threaded pins (for alignment) on the machine spindle and on HSK or SK adaptors.

Note:

For suitable clamping cartridges see pages 142-143.

For stop rings see page 145.

For fitting dimensions see technical notes/tables.

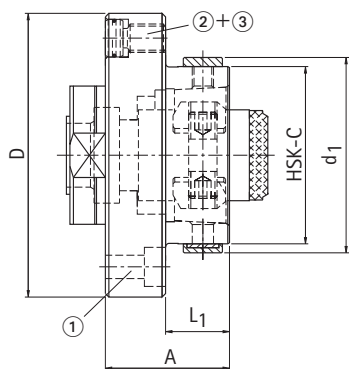
On request the adaptor flanges can be supplied with KS clamping cartridge for use with minimal lubrication. For this an M is added to the order number, e.g. MN5523-08-KM.

Balance:

G 6.3 at 3,000 min⁻¹

KS Adaptor flanges with radial and angular alignment

Module connection size for MN5000-34



Module diameter D	Nominal size HSK-C	d ₁	Dimensions		Weight kg	Order No.
			A	L ₁		
60	32	37	26	13	0,4	MN5523-05-K
70	40	45	30	15	0,6	MN5523-06-K
80	50	55	35	18	0,9	MN5523-07-K
100	63	70	43	22	1,8	MN5523-08-K
117	80	87	50	29	2,7	MN5523-09-K
140	100	110	70	42	4,9	MN5523-10-K

Spares for module adaptor

Module diameter D	Quantity required	① Cylindrical screw		② Thrust pad		③ Threaded pin	
		ISO 4762	Order No.	Ref. code	Order No.	Ref. code	Order No.
60	4	M5x16 - 12,9	10003601	K10086-14	10040108	K2865-904	10040109
70	4	M6x20 - 12,9	10003619	K10086-14	10040108	K2865-904	10040109
80	4	M6x20 - 12,9	10003619	K10086-14	10040108	K2865-164	10075074
100	4	M8x25 - 12,9	10003637	K10086-04	10075116	K2865-514	10075100
117	4	M8x25 - 12,9	10003637	K10086-04	10075116	K2865-514	10075100
140	4	M10x30 - 12,9	10003660	K10086-04	10075116	K2865-34	10075099

Dimensions in mm.

Use:

For fitting onto the machine spindle or on HSK or ISO adaptors for holding HSK tools

Design:

Can be precisely set in radial run-out by using threaded pins (for alignment) on the machine spindle and on HSK or ISO adaptors. Can be precisely set in face run-out using alignment screws (thrust pad and threaded pin) in the adaptor flange.

Supply includes:

clamping cartridge, alignment screw (thrust pad and threaded pin), stop ring and cylindrical screw (for holding KS adaptor flange)

Note:

For suitable clamping cartridges see pages 142-143.

For stop rings see page 145.

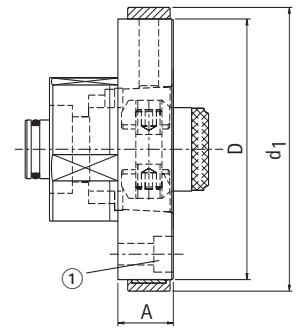
For fitting dimensions see technical notes/tables.

On request the adaptor flanges can be supplied with KS clamping cartridge for use with minimal lubrication. For this an M is added to the order number, e.g. MN5523-08-KM.

Balance:

G 6.3 at 3,000 min⁻¹

KS Adaptor flanges with radial alignment



Module connection size
for internal spindle contour MN5000-36

Module diameter D	Nominal size HSK-C	Dimensions		Weight kg	Order No.
		d ₁	A		
55	32	61	13	0,4	MN5521-05-K
63	40	70	15	0,6	MN5521-06-K
80	50	87	17	0,9	MN5521-07-K
100	63	108	21	1,6	MN5521-08-K
117	80	125	21	2,4	MN5521-09-K
140	100	150	28	4,5	MN5521-10-K

Spares for module adaptor

Module diameter D	Quantity required	Cylindrical screw	
		① ISO 4762	Order No.
55	6	M5x16 - 12,9	10003601
63	6	M5x20 - 12,9	10003603
80	6	M6x20 - 12,9	10003619
100	6	M8x25 - 12,9	10003637
117	6	M8x25 - 12,9	10003637
140	6	M10x30 - 12,9	10003660

Dimensions in mm.

Use:

For fitting onto the machine spindle for holding HSK tools

Supply includes:

clamping cartridge, stop ring and cylindrical screw (for holding KS adaptor flange)

Design:

Can be precisely set in radial run-out by using threaded pins (for alignment) on the machine spindle

Note:

For suitable clamping cartridges see pages 142-143.

For stop rings see page 145.

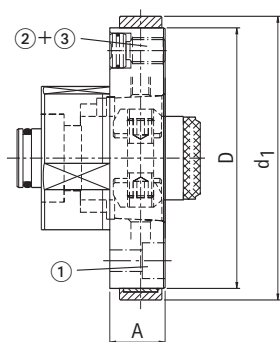
For fitting dimensions see technical notes/tables.

On request the adaptor flanges can be supplied with KS clamping cartridge for use with minimal lubrication. For this an M is added to the order number, e.g. MN5521-08-KM.

Balance:

G 6.3 at 3,000 min⁻¹

KS Adaptor flanges with radial and angular alignment



Module connection size
for internal spindle contour MN5000-37

Module diameter D	Nominal size HSK-C	Dimensions		Weight kg	Order No.
		d ₁	A		
55	32	61	13	0,4	MN5524-05-K
63	40	70	15	0,6	MN5524-06-K
80	50	87	17	0,9	MN5524-07-K
100	63	108	21	1,6	MN5524-08-K
117	80	125	21	2,4	MN5524-09-K
140	100	150	28	4,5	MN5524-10-K

Spares for module adaptor

Module diameter D	Quantity required	① Cylindrical screw		② Thrust pad		③ Threaded pin	
		ISO 4762	Order No.	Ref. code	Order No.	Ref. code	Order No.
55	6	M5x16 - 12,9	10003601	K10086-24	10075115	K2865-144	10075101
63	6	M5x20 - 12,9	10003603	K10086-24	10075115	K2865-144	10075101
80	6	M6x20 - 12,9	10003619	K10086-14	10040108	K2865-164	10075074
100	6	M8x25 - 12,9	10003637	K10086-04	10075116	K2865-514	10075100
117	6	M8x25 - 12,9	10003637	K10086-04	10075116	K2865-514	10075100
140	6	M10x30 - 12,9	10003660	K10086-04	10075116	K2865-34	10075099

Dimensions in mm.

Use:

For fitting onto the machine spindle for holding HSK tools

Design:

Can be precisely set in radial run-out by using threaded pins (for alignment) on the machine spindle and on HSK or ISO adaptor. Can be precisely set in face run-out using alignment screws (thrust pad and threaded pin) in the adaptor flange.

Supply includes:

clamping cartridge, alignment screw (thrust pad and threaded pin), stop ring and cylindrical screw (for holding KS adaptor flange)

Note:

For suitable clamping cartridges see pages 142-143.

For stop rings see page 145.

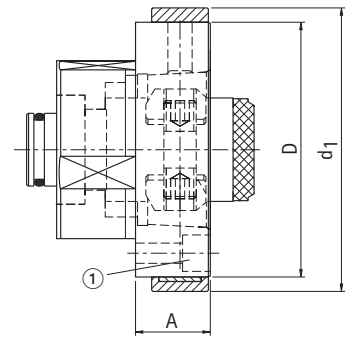
For fitting dimensions see technical notes/tables.

On request the adaptor flanges can be supplied with KS clamping cartridge for use with minimal lubrication. For this an M is added to the order number, e.g. MN5524-08-KM.

Balance:

G 6.3 at 3,000 min⁻¹

KS Adaptor flanges for short spindles with radial alignment



Module connection size
for internal spindle contour MN5000-38

Module diameter D	Nominal size HSK-C	Dimensions		Weight kg	Order No.
		d ₁	A		
40	32	45	12	0,2	MN5522-05-K
50	40	55	15	0,3	MN5522-06-K
63	50	70	18,5	0,6	MN5522-07-K
80	63	87	24	1,2	MN5522-08-K

Spares for module adaptor

Module diameter D	Quantity required	① Cylindrical screws	
		ISO 4762	Order No.
40	6	M3x16 - 12,9	10003572
50	6	M4x20 - 12,9	10003588
63	6	M5x25 - 12,9	10003605
80	6	M6x30 - 12,9	10003621

Dimensions in mm.

Use:

For fitting onto short spindles (DIN 69002) for holding HSK tools

Supply includes:

clamping cartridge, stop ring and cylindrical screw (for holding KS adaptor flange)

Design:

Can be precisely set in radial run-out by using threaded pins (for alignment) on the machine spindle.

Note:

For suitable clamping cartridges see pages 142-143.

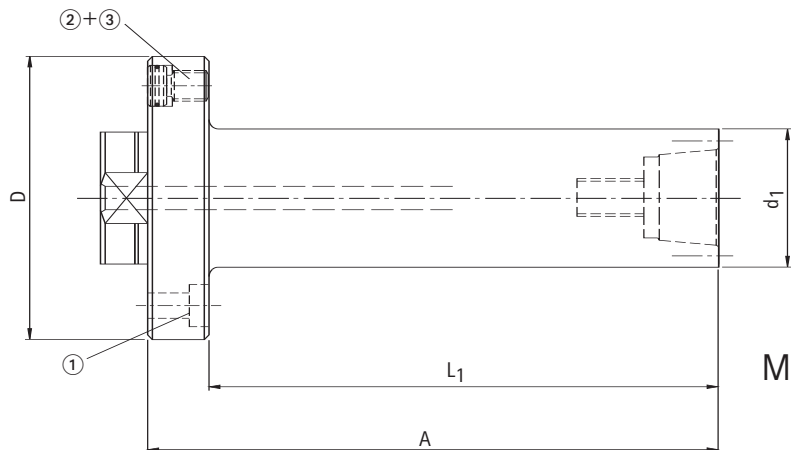
For stop rings see page 145.

For fitting dimensions see technical notes/tables.

On request the adaptor flanges can be supplied with KS clamping cartridge for use with minimal lubrication. For this an M is added to the order number, e.g. MN5522-08-KM.

Balance:

G 6.3 at 3,000 min⁻¹



HFS holders with axial clamping system with radial and angular alignment

Module connection size for MN5000-34

HFS 920: long version

Module diameter D	HFS size	Face contact d_1	Dimensions		Weight kg	Ref. code	Order No.
			A	L_1			
60	10	15	81	68	0,4	HFS 920-10	30010264
60	12	17,8	100,5	87,5	0,5	HFS 920-12	30010265
60	14	20,5	101,5	88,5	0,5	HFS 920-14	30010266
60	16	23,2	122	109	0,6	HFS 920-16	30010267
60	20	29,3	121	108	0,8	HFS 920-20	30010268
60	24	39	133	120	1,2	HFS 920-24	30010269

Spares for module adaptor

Module diameter D	Quantity required	① Cylindrical screw		② Thrust pad		③ Threaded pin	
		ISO 4762	Order No.	Ref. code	Order No.	Ref. code	Order No.
60	4	M5x16 - 12.9	10003601	K10086-14	10040108	K2865-904	10040109

Dimensions in mm.

Use:

For fitting onto the machine spindle or on HSK or ISO adaptors for holding tools with HFS connection.

Supply includes:

Holder with threaded spindle, hexagonal key, cylindrical screw (for securing holder), alignment screw (thrust pad and threaded pin).

Design:

Can be precisely set in radial run-out by using threaded pins (for alignment) on the machine spindle and on HSK or ISO adaptor. Can be precisely set in face run-out using alignment screws (thrust pad and threaded pin) in the HFS replaceable head holder.

Note:

For accessories and spares see page 162.

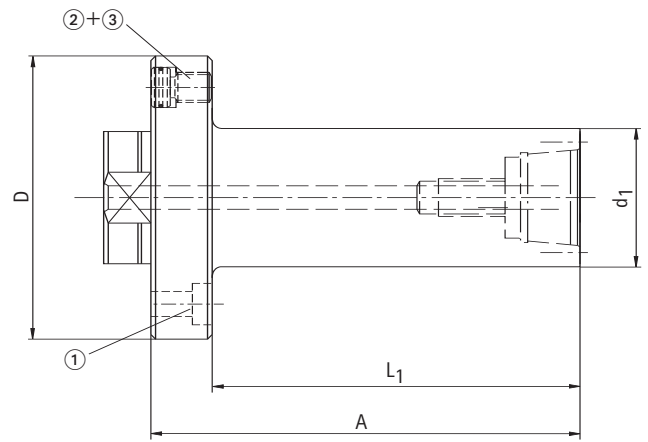
For suitable torque wrench and hexagonal key see pages 150-152.

Balance:

G 6.3 at 3,000 min⁻¹

HFS holders with axial clamping system with radial and angular alignment

Module connection size for MN5000-34



HFS 921 : short version

Module diameter D	HFS size	Face contact d ₁	Dimensions A		Weight L ₁	Ref. code kg	Order No.
60	10	15	49	36	0,4	HFS 921-10	30027896
60	12	17,8	58,5	45,5	0,4	HFS 921-12	30027897
60	14	20,5	62,5	49,5	0,4	HFS 921-14	30027898
60	16	23,2	72	59	0,5	HFS 921-16	30027899
60	20	29,3	71	58	0,6	HFS 921-20	30027900
60	24	39	84	71	0,8	HFS 921-24	30027901

Spares for module adaptor

Module diameter D	Quantity required	① Cylindrical screw		② Thrust pad		③ Threaded pin	
		ISO 4762	Order No.	Ref. code	Order No.	Ref. code	Order No.
60	4	M5x16 - 12.9	10003601	K10086-14	10040108	K2865-904	10040109

Dimensions in mm.

Use:

For fitting onto the machine spindle or on HSK or ISO adaptors for holding tools with HFS connection.

Supply includes:

Holder with threaded spindle, hexagonal key, cylindrical screw (for securing holder), alignment screw (thrust pad and threaded pin).

Design:

Can be precisely set in radial run-out by using threaded pins (for alignment) on the machine spindle and on HSK or ISO adaptor. Can be precisely set in face run-out using alignment screws (thrust pad and threaded pin) in the HFS replaceable head holder.

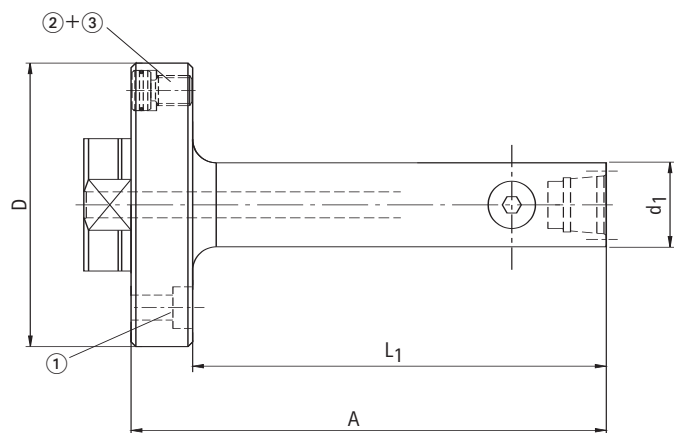
Note:

For accessories and spares see page 162.

For suitable torque wrench and hexagonal key see pages 150-152.

Balance:

G 6.3 at 3,000 min⁻¹



HFS holders with axial clamping system with radial and angular alignment

Module connection size for MN5000-34

HFS 920R: long version

Module diameter D	HFS size	Face contact d ₁	Dimensions		Weight kg	Ref. code	Order No.
			A	L ₁			
60	12	17,8	100,5	87,5	0,5	HFS 920R-12	30078130
60	14	20,5	101,5	88,5	0,5	HFS 920R-14	30078131
60	16	23,2	122	109	0,6	HFS 920R-16	30078132
60	20	29,3	121	108	0,8	HFS 920R-20	30080152

HFS 920R: short version

Module diameter D	HFS size	Face contact d ₁	Dimensions		Weight kg	Ref. code	Order No.
			A	L ₁			
60	12	17,8	58,5	45,5	0,4	HFS 921R-12	30078133
60	14	20,5	62,5	49,5	0,4	HFS 921R-14	30078134
60	16	23,2	72	59	0,5	HFS 921R-16	30078135
60	20	29,3	71	58	0,5	HFS 921R-20	30080154

Spares for module adaptor

Module diameter D	Quantity required	① Cylindrical screw ISO 4762		② Thrust pad		③ Threaded pin	
		Größe	Order No.	Ref. code	Order No.	Ref. code	Order No.
60	4	M5x16 - 12,9	10003601	K10086-14	10040108	K2865-904	10040109

Dimensions in mm.

Use:

For fitting onto the machine spindle or on HSK or ISO adaptors for holding tools with HFS connection.

Supply includes:

Holder with threaded spindle, hexagonal key, cylindrical screw (for securing holder), alignment screw (thrust pad and threaded pin).

Design:

Can be precisely set in radial run-out by using threaded pins (for alignment) on the machine spindle and on HSK or SK adaptor.

Can be precisely set in face run-out using alignment screws (thrust pad and threaded pin) in the HFS replaceable head holder.

Recommendation:

To allow fast tool head change with the radial clamping system, at least 1 additional pull stud should be ordered.

Note:

For accessories and spares see page 162.

For suitable torque wrench and hexagonal key see pages 150-152.

Balance:

G 6.3 at 3,000 min⁻¹



Toolholders with HSK-A

Toolholders with shanks and gripper elements under DIN 69893, Form HSK-A, are suitable for both manual and automatic changing. They can be used not only directly on machining centres but also combined with manual routines. The uniform nature of HSK gives the HSK clamping devices a universal character.

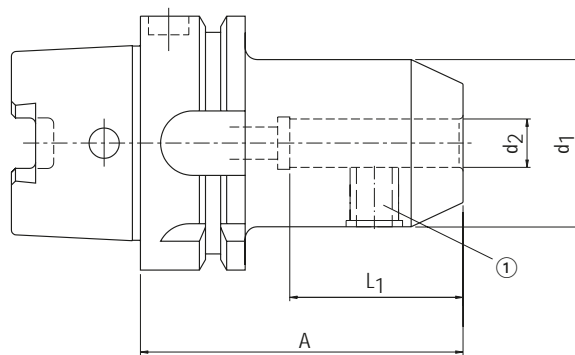
The HSK programme of toolholders allows all the clamping elements to be selected which are needed to fully equip machining centres.

By combining the HSK-A toolholders with extensions and reducers in form HSK-C, numerous types of modular types can be put together as required.



Toolholder for cylindrical shanks with lateral clamping face to DIN 69882-4

Location shank HSK-A to DIN 69893-1



Nominal size HSK-A	Clamping diameter d ₂	d ₁	diameter A	L ₁	Weight kg	Order No.
50	6	25	65	37	0,7	MN5080-07-K
50	8	28	65	37	0,8	MN5081-07-K
50	10	35	65	41	0,8	MN5082-07-K
50	12	42	80	46	1,2	MN5083-07-K
50	14	44	80	46	1,3	MN5084-07-K
50	16	48	80	49	1,3	MN5085-07-K
50	18	50	80	49	1,4	MN5086-07-K
50	20	52	80	51	1,5	MN5087-07-K
63	6	25	65	37	0,9	MN5080-08-K
63	8	28	65	37	1,0	MN5081-08-K
63	10	35	65	41	1,0	MN5082-08-K
63	12	42	80	46	1,7	MN5083-08-K
63	14	44	80	46	1,7	MN5084-08-K
63	16	48	80	49	1,7	MN5085-08-K
63	18	50	80	49	1,8	MN5086-08-K
63	20	52	80	51	1,8	MN5087-08-K
63	25	65	110	59	2,5	MN5088-08-K
63	32	72	110	63	2,7	MN5089-08-K
80	6	25	80	37	2,8	MN5080-09-K
80	8	28	80	37	3,0	MN5081-09-K
80	10	35	80	41	3,2	MN5082-09-K
80	12	42	80	46	3,2	MN5083-09-K
80	14	44	80	46	3,3	MN5084-09-K
80	16	48	100	49	3,5	MN5085-09-K
80	18	50	100	49	3,5	MN5086-09-K
80	20	52	100	51	3,7	MN5087-09-K
80	25	65	100	59	3,8	MN5088-09-K
80	32	72	110	63	4,2	MN5089-09-K

Toolholder for cylindrical shanks with lateral clamping face to DIN 69882-4

Location shank HSK-A to DIN 69893-1

Nominal size HSK-A	Clamping diameter d_2	d_1	Dimensions		Weight kg	Order No.
			A	L_1		
100	6	25	80	37	3,0	MN5080-10-K
100	8	28	80	37	3,2	MN5081-10-K
100	10	35	80	41	3,4	MN5082-10-K
100	12	42	80	46	3,4	MN5083-10-K
100	14	44	80	46	3,5	MN5084-10-K
100	16	48	100	49	3,8	MN5085-10-K
100	18	50	100	49	3,8	MN5086-10-K
100	20	52	100	51	3,9	MN5087-10-K
100	25	65	100	59	4,0	MN5088-10-K
100	32	72	100	63	4,1	MN5089-10-K

Spares

for clamping diameter d_2	Clamping screw	
	① DIN 1835-B	Order No.
6	M6x9	10060983
8	M8x9	10042517
10	M10x12	10004134
12	M12x14	30002947
14	M12x14	30002947
16	M14x16	10004136
18	M14x16	10004136
20	M16x16	10004137
25	M18x2x20	10004141
32	M20x2x20	10004129

Dimensions in mm.

Use:

For holding milling tools and drills with cylindrical shank and lateral clamping face to DIN 1835 Form B and to DIN 6535 Form HB.

Supply includes:

With clamping screw fitted: coolant tube not included.

Design:

Permissible concentricity deviation of hollow taper shank to clamping diameter $d_2 = 0.003$ mm

The bore tolerance is much reduced compared to DIN 1835 (d_2^{H4}) to produce extremely high accurate machining results.

Note:

From clamping diameter $d_2 = 25$ mm 2 clamping screws are provided.

For coolant tube details see page 148.

For notes on preventing mix-ups and on fine balancing see technical notes.

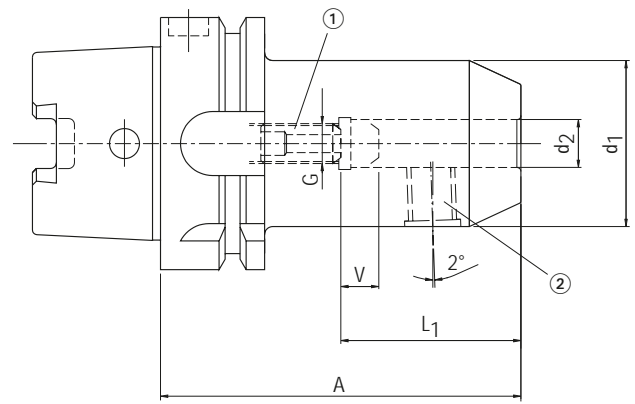
For retro-fitting clamping devices with data carriers see page 179.

Balance:

G 6.3 at 3,000 min⁻¹

Toolholder for cylindrical shanks with angled clamping face to DIN 69882-5

Location shank HSK-A to DIN 69893-1



Nominal size HSK-A	Clamping diameter d ₂	Dimensions				Adjustment path V	Weight kg	① Order No. length adjustment screw	Order No.
		d ₁	A	L ₁	G				
50	6	25	80	36	M5	10	0,8	LS0516-01	MN5100-07-K
50	8	28	80	36	M6	10	0,9	LS0616-01	MN5101-07-K
50	10	35	80	40	M8	10	0,9	LS0816-02	MN5102-07-K
50	12	42	90	45	M10	10	1,3	LS1020-03	MN5103-07-K
50	14	44	90	45	M10	10	1,4	LS1020-03	MN5104-07-K
50	16	48	90	48	M12	10	1,4	LS1220-03	MN5105-07-K
50	18	50	90	48	M12	10	1,6	LS1220-03	MN5106-07-K
50	20	52	100	50	M16	10	1,7	LS1620-02	MN5107-07-K
63	6	25	80	36	M5	10	1,0	LS0516-01	MN5100-08-K
63	8	28	80	36	M6	10	1,1	LS0616-01	MN5101-08-K
63	10	35	80	40	M8	10	1,1	LS0815-01	MN5102-08-K
63	12	42	90	45	M10	10	2,0	LS1020-03	MN5103-08-K
63	14	44	90	45	M10	10	2,0	LS1020-03	MN5104-08-K
63	16	48	100	48	M12	10	2,0	LS1220-03	MN5105-08-K
63	18	50	100	48	M12	10	2,1	LS1220-03	MN5106-08-K
63	20	52	100	50	M16	10	2,1	LS1620-02	MN5107-08-K
63	25	65	110	56	M20	10	2,6	LS2025-01	MN5108-08-K
63	32	72	110	60	M20	10	2,8	LS2025-01	MN5109-08-K
80	6	25	90	36	M5	10	3,2	LS0516-01	MN5100-09-K
80	8	28	90	36	M6	10	3,3	LS0616-01	MN5101-09-K
80	10	35	90	40	M8	10	3,6	LS0815-01	MN5102-09-K
80	12	42	100	45	M10	10	3,6	LS1020-02	MN5103-09-K
80	14	44	100	45	M10	10	3,8	LS1020-02	MN5104-09-K
80	16	48	100	48	M12	10	3,8	LS1220-03	MN5105-09-K
80	18	50	100	48	M12	10	3,8	LS1220-03	MN5106-09-K
80	20	52	110	50	M16	10	4,0	LS1625-01	MN5107-09-K
80	25	65	110	56	M20	10	4,2	LS2025-03	MN5108-09-K
80	32	72	120	60	M20	10	4,3	LS2025-03	MN5109-09-K

Toolholder for cylindrical shanks with angled clamping face to DIN 69882-5

Location shank HSK-A to DIN 69893-1

Nominal size HSK-A	Clamping diameter d_2	Dimensions				Adjustment path V	Weight kg	① Order No. length adjustment screw	Order No.
		d_1	A	L_1	G				
100	6	25	90	36	M5	10	3,4	LS0516-01	MN5100-10-K
100	8	28	90	36	M6	10	3,5	LS0616-01	MN5101-10-K
100	10	35	90	40	M8	10	3,8	LS0815-01	MN5102-10-K
100	12	42	100	45	M10	10	3,8	LS1020-02	MN5103-10-K
100	14	44	100	45	M10	10	4,0	LS1020-02	MN5104-10-K
100	16	48	100	48	M12	10	4,0	LS1220-02	MN5105-10-K
100	18	50	100	48	M12	10	4,0	LS1220-02	MN5106-10-K
100	20	52	110	50	M16	10	4,2	LS1625-01	MN5107-10-K
100	25	65	120	56	M20	10	4,4	LS2025-03	MN5108-10-K
100	32	72	120	60	M20	10	4,5	LS2025-03	MN5109-10-K

Spares

for clamping diameter d_2	② Clamping screw	
	DIN 1835-B	Order No.
6	M6x9	10060983
8	M8x9	10042517
10	M10x12	10004134
12	M12x14	30002947
14	M12x14	30002947
16	M14x16	10004136
18	M14x16	10004136
20	M16x16	10004137
25	M18x2x20	10004141
32	M20x2x20	10004129

Dimensions in mm.

Use:

For holding milling tools and drills with cylindrical shank and angled clamping face (2°) to DIN 1835 Form E and to DIN 6535 Form HE.

Supply includes:

With clamping screw and length adjustment screw fitted; coolant tube not included.

Design:

Permissible concentricity deviation of hollow taper shank to clamping diameter $d_2 = 0.003$ mm.

The bore tolerance is much reduced compared to DIN 1835 (d_2^{H4}) to produce extremely high accurate machining results.

Note:

From clamping diameter $d_2 = 25$ mm 2 clamping screws are provided.

For coolant tube details see page 148.

For notes on preventing mix-ups and on fine balancing see technical notes.

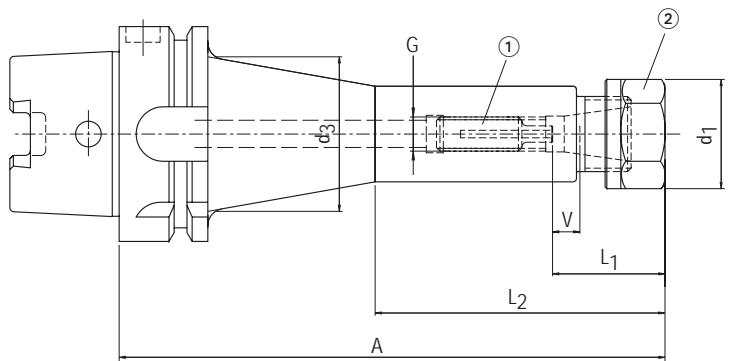
For retro-fitting clamping devices with data carriers see page 179.

Balance:

G 6.3 at 3,000 min⁻¹

Chucks for collets to DIN 69882-6

Location shank HSK-A to DIN 69893-1



Nominal size HSK-A	Clamping diameter	Nominal size	Dimensions						Adjustment path V	Weight kg	Order No.
			d ₁	d ₃	A	L ₁	L ₂	G			
50	0,5-10	ER-16	28	-	100	27	-	M10	10	0,8	MN5135-07-K
63	0,5-10	ER-16	28	-	100	27	-	M10	10	1,1	MN5135-08-K
63	0,5-10	ER-16	28	45	160	27	85	M10	10	1,6	MN5136-08-K
80	0,5-10	ER-16	28	-	100	27	-	M12	10	1,8	MN5135-09-K
80	0,5-10	ER-16	28	45	160	27	85	M12	10	2,0	MN5136-09-K
100	0,5-10	ER-16	28	-	100	27	-	M12	10	2,4	MN5135-10-K
100	0,5-10	ER-16	28	45	160	27	85	M12	10	2,9	MN5136-10-K

Spares

For nominal size HSK-A	① Length adjustment screw (through bore for coolant) Clamping diameter			② Clamping nut ISO 15488	
	2,8 - 5 Order No.	4,8 - 7 Order No.	6,8 - 10 Order No.	Nominal size	Order No.
50, 63	LS1040-01	LS1040-05	LS1040-06	ER-16	10013273
80, 100	LS1240-01	LS1240-02	LS1240-03	ER-16	10013273

Dimensions in mm.

Supply includes:

Supplied complete with clamping nut to ISO 15488; length adjustment screw, coolant tube and clamping jaws not included.

Design:

Permissible concentricity deviation for hollow taper shank to internal taper 0.003 mm.

Note:

Chucks have a through hole with internal thread for the length adjustment screw.

For suitable collets see pages 164-167.

For coolant tube see page 148.

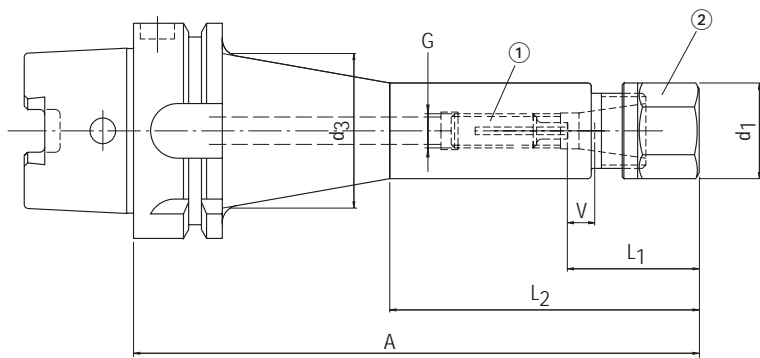
For assembly spanner see page 153.

For notes on preventing mix-ups and on fine balancing see technical notes.

For retro-fitting clamping devices with data carriers see page 179.

Balance:

G 6.3 at 3,000 min⁻¹



Chucks for collets with clamping nuts for internal coolant supply (HI-Q/ERC)

Location shank HSK-A
to DIN 69893-1

Nominal size HSK-A	Clamping diameter	Nominal size	Dimensions						Adjustment path V	Weight kg	Order No.
			d ₁	d ₃	A	L ₁	L ₂	G			
50	0,5-10	ER-16	28	-	105	32	-	M10	10	0,7	MN5135-17-K
63	0,5-10	ER-16	28	-	105	32	-	M10	10	1,0	MN5135-18-K
63	0,5-10	ER-16	28	45	165	32	90	M10	10	1,5	MN5136-18-K
80	0,5-10	ER-16	28	-	105	32	-	M12	10	1,7	MN5135-19-K
80	0,5-10	ER-16	28	45	165	32	90	M12	10	1,9	MN5136-19-K
100	0,5-10	ER-16	28	-	105	32	-	M12	10	2,3	MN5135-20-K
100	0,5-10	ER-16	28	45	165	32	90	M12	10	2,8	MN5136-20-K

Spares

For nominal size HSK-A	① Length adjustment screw (through bore for coolant) Clamping diameter			② Clamping nut HI-Q/ERC ISO 15488	
	2,8 - 5 Order No.	4,8 - 7 Order No.	6,8 - 10 Order No.	Nominal size	Order No.
50, 63	LS1040-01	LS1040-05	LS1040-06	ERC-16	10007862
80, 100	LS1240-01	LS1240-02	LS1240-03	ERC-16	10007862

Dimensions in mm.

Supply includes:

Supplied complete with clamping nut for internal coolant (HI-Q/ERC); washer, length adjustment screw, coolant tube and clamping jaws not included.

Design:

Permissible concentricity deviation for hollow taper shank to internal taper 0.003 mm.

Note:

Chucks have a through hole with internal thread for the length adjustment screw.

For suitable collets and washers for internal coolant supply see pages 164-167 and 169-170.

For coolant tube see page 148.

For assembly spanner see page 153.

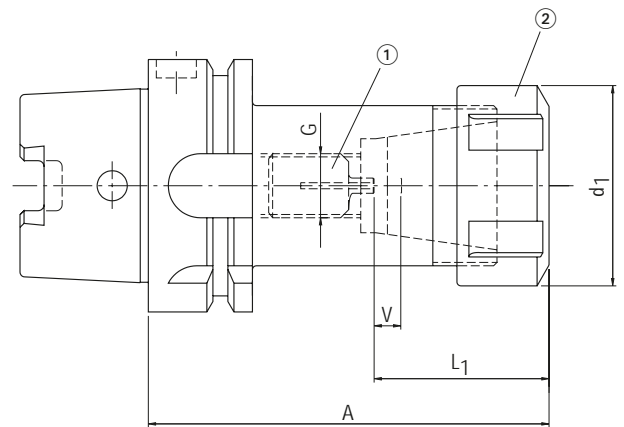
For notes on preventing mix-ups and on fine balancing see technical notes.

For retro-fitting clamping devices with data carriers see page 179.

Balance:

G 6.3 at 3,000 min⁻¹

Chucks for collets to DIN 69882-6



Location shank HSK-A to DIN 69893-1

Nominal size HSK-A	Clamping diameter	Nominal size	d ₁	Dimensions			Adjustment path V	Weight kg	Order No.
				A	L ₁	G			
50	2-20	ER-32	50	100	40	M16	10	1,4	MN5140-07-K
63	2-20	ER-32	50	100	40	M16	10	1,5	MN5140-08-K
63	3-26	ER-40	63	120	58	M16	10	1,6	MN5141-08-K
80	2-20	ER-32	50	100	40	M16	10	1,7	MN5140-09-K
80	3-26	ER-40	63	120	58	M16	10	2,3	MN5141-09-K
100	2-20	ER-32	50	100	40	M16	10	2,7	MN5140-10-K
100	3-26	ER-40	63	120	58	M16	10	3,3	MN5141-10-K

Spares

For nominal size HSK-A	Clamping diameter	① Length adjustment screw (through bore for coolant)					② Clamping nut ISO 15488	
		Clamping diameter					Nominal size	Order No.
		3,8 - 7 Order No.	6,8 - 10 Order No.	9,8 - 13 Order No.	12,8 - 20 Order No.	19,9 - 26 Order No.		
50, 63	2-20	LS1630-05	LS1630-06	LS1630-07	LS1630-09	–	ER-32	10023401
63	3-26	LS1630-05	LS1630-06	LS1630-07	LS1630-09	LS1630-02	ER-40	10022176
80, 100	2-20	LS1630-04	LS1630-03	LS1630-08	LS1630-10	–	ER-32	10023401
80, 100	3-26	LS1630-04	LS1630-03	LS1630-08	LS1630-10	LS1630-01	ER-40	10022176

Dimensions in mm.

Supply includes:

Supplied complete with clamping nut to ISO 15488; length adjustment screw, coolant tube and clamping jaws not included.

Design:

Permissible concentricity deviation for hollow taper shank to internal taper 0.003 mm.

Note:

Chucks have a through hole with internal thread for the length adjustment screw.

For suitable collets see pages 164-167.

For coolant tube see page 148.

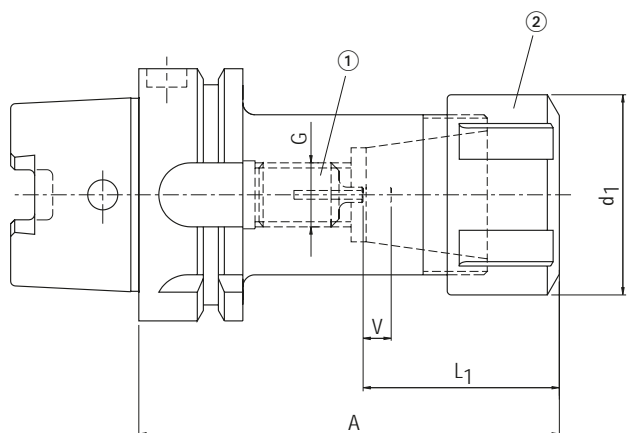
For assembly spanner see page 153.

For notes on preventing mix-ups and on fine balancing see technical notes.

For retro-fitting clamping devices with data carriers see page 179.

Balance:

G 6.3 at 3,000 min⁻¹



Chucks for collets with clamping nuts for internal coolant supply (HI-Q/ERC)

Location shank HSK-A to DIN 69893-1

Nominal size HSK-A	Clamping diameter	Nominal size	d ₁	Dimensions			Adjustment path V	Weight kg	Order No.
				A	L ₁	G			
50	2-20	ER-32	50	105	45	M16	10	1,3	MN5140-17-K
63	2-20	ER-32	50	105	45	M16	10	1,4	MN5140-18-K
63	3-26	ER-40	63	125	63	M16	10	1,5	MN5141-18-K
80	2-20	ER-32	50	105	45	M16	10	1,6	MN5140-19-K
80	3-26	ER-40	63	125	63	M16	10	2,2	MN5141-19-K
100	2-20	ER-32	50	105	45	M16	10	2,6	MN5140-20-K
100	3-26	ER-40	63	125	63	M16	10	3,2	MN5141-20-K

Spares

For nominal size HSK-A	Clamping diameter	① Length adjustment screw (through bore for coolant) Clamping diameter					② Clamping nut HI-Q/ERC ISO 15488	
		3,8 - 7 Order No.	6,8 - 10 Order No.	9,8 - 13 Order No.	12,8 - 20 Order No.	19,9 - 26 Order No.	Nominal size	Order No.
50, 63	2-20	LS1630-05	LS1630-06	LS1630-07	LS1630-09	–	ERC-32	10007923
63	3-26	LS1630-05	LS1630-06	LS1630-07	LS1630-09	LS1630-02	ERC-40	10008010
80, 100	2-20	LS1630-04	LS1630-03	LS1630-08	LS1630-10	–	ERC-32	10007923
80, 100	3-26	LS1630-04	LS1630-03	LS1630-08	LS1630-10	LS1630-01	ERC-40	10008010

Dimensions in mm.

Supply includes:

Supplied complete with clamping nut for internal coolant (HI-Q/ERC); washer, length adjustment screw, coolant tube and clamping jaws not included.

Design:

Permissible concentricity deviation for hollow taper shank to internal taper 0.003 mm.

Note:

Chucks have a through hole with internal thread for the length adjustment screw.

For suitable collets and washer for internal coolant supply see pages 164-167 and 169-170.

For coolant tube see page 148.

For assembly spanners see page 153.

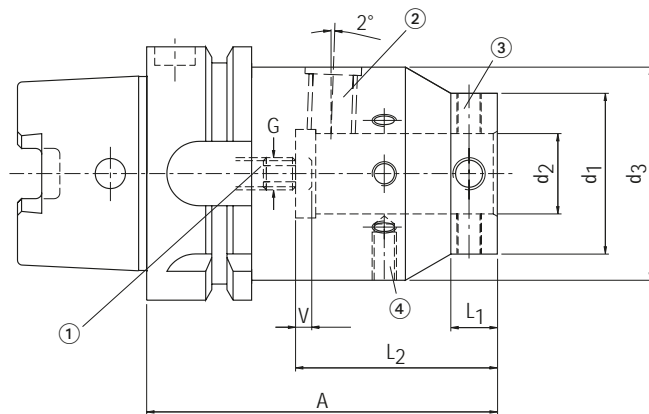
For notes on preventing mix-ups and on fine balancing see technical notes.

For retro-fitting clamping devices with data carriers see page 179.

Balance:

G 6.3 at 3,000 min⁻¹

Toolholder for cylindrical shanks with alignment facility



Location shank HSK-A to DIN 69893-1

Nominal size HSK-A	Clamping diameter d ₂	Dimensions						Adjustment path V	Weight kg	Order No.
		d ₁	d ₃	A	L ₁	L ₂	G			
63	12	28	44,5	75	10	40	M8	4	1,1	MN5113-08-K
63	16	32	48	75	10	40	M8	4	1,2	MN5115-08-K
63	18	34	50	85	10	45	M8	4	1,3	MN5116-08-K
63	20	40	53	85	11,5	50	M8x1	4	1,4	MN5117-08-K
63	25	48	64	105	15,5	65	M8	4	2,0	MN5118-08-K
63	32	52	63	108	15,5	70	M8	4	1,9	MN5119-08-K
80	12	28	44,5	80	10	40	M8	4	1,6	MN5113-09-K
80	16	32	48	80	10	40	M12	4	1,7	MN5115-09-K
80	18	34	50	85	10	45	M12	4	2,4	MN5116-09-K
80	20	40	53	90	11,5	50	M12	4	2,4	MN5117-09-K
80	25	48	64	105	15,5	65	M12	4	2,5	MN5118-09-K
80	32	52	63	110	15,5	70	M12	4	2,6	MN5119-09-K
100	16	32	48	80	10	40	M12	4	2,6	MN5115-10-K
100	18	34	50	90	10	45	M12	4	2,6	MN5116-10-K
100	20	40	53	90	11,5	50	M12	4	2,7	MN5117-10-K
100	25	48	64	105	15,5	65	M12	4	2,8	MN5118-10-K
100	32	52	63	110	15,5	70	M12	4	2,9	MN5119-10-K

Spares

for clamping diameter d ₂	Nominal size HSK-A	① Length adjustment screw		② Clamping screw		③ Alignment screw		④ Balancing screw	
		Quantity required	Order No.	Quantity required	Order No.	Quantity required	Order No.	Quantity required	Order No.
12	63, 80	1	K2865-1334	2	10004133	4	10003913	6	10036770
16, 18	63	1	K2865-1334	2	10004134	4	10003913	6	10036770
16, 18	80, 100	1	LS1212-02	2	10004134	4	10003913	6	10036770
20	63	1	K2865-1334	2	10004135	4	10003520	6	10036770
20	80, 100	1	LS1212-02	2	10004135	4	10003520	6	10036770
25, 32	63	1	K2865-1334	2	10003478	4	10003523	6	10036770
25, 32	80, 100	1	LS1212-02	2	10003478	4	10003523	6	10036770

Dimensions in mm.

Recommendations for use:

For holding brazed fine and rough boring tools.

Design:

Permissible concentricity deviation for hollow taper shank to clamping diameter d₂ = 0.003 mm.

The bore tolerance is designed for H4. For best concentricity results four alignment screws are also applied to the clamping bore.

Supply includes:

Clamping, balancing, alignment and length adjustment screws; coolant tube not included.

Note:

The length adjustment screw has a through hole for coolant.

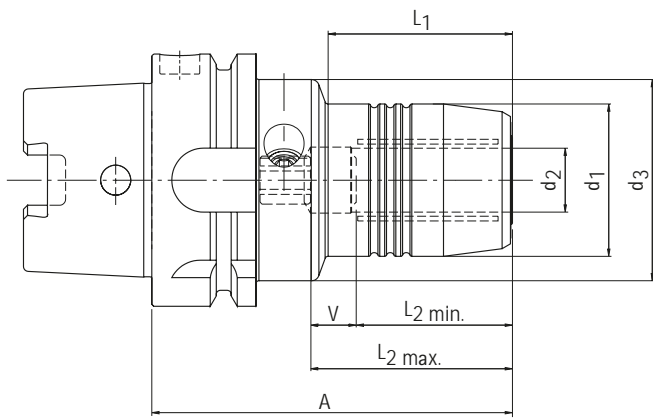
For coolant tube see page 148.

For notes on preventing mix-ups and on fine balancing see technical notes.

For retro-fitting clamping devices with data carriers see page 179.

Balance:

G 6.3 at 3,000 min⁻¹



Hydraulic chucks to DIN 69882-7

with radial tool length adjustment
Location shank HSK-A to DIN 69893-1

Nominal size HSK-A	Clamping diameter d ₂	Dimensions						Adjustment path V	Weight kg	Order No.
		d ₁	d ₃	A	L ₁	L ₂ min.	L ₂ max.			
50	6	26	40	80	35	27	37	10	0,8	MN5190-07-KF
50	8	28	40	80	36	27	37	10	0,8	MN5191-07-KF
50	10	30	40	85	38	31	41	10	0,8	MN5192-07-KF
50	12	32	40	90	40	36	46	10	0,8	MN5193-07-KF
50	14	34	40	90	46	36	46	10	0,8	MN5194-07-KF
50	16	38	53	95	36,5	39	49	10	1,2	MN5195-07-KF
50	18	40	57	95	36,5	39	49	10	1,2	MN5196-07-KF
50	20	42	60	100	39	41	51	10	1,2	MN5197-07-KF
63	6	26	50	80	33	27	37	10	1,1	MN5190-08-KF
63	8	28	50	80	33	27	37	10	1,1	MN5191-08-KF
63	10	30	50	85	38	31	41	10	1,1	MN5192-08-KF
63	12	32	50	90	40	36	46	10	1,2	MN5193-08-KF
63	14	34	50	90	46	36	46	10	1,2	MN5194-08-KF
63	16	38	50	95	51	39	49	10	1,3	MN5195-08-KF
63	18	40	50	95	52	39	49	10	1,3	MN5196-08-KF
63	20	42	50	100	51	41	51	10	1,4	MN5197-08-KF
63	25	57	63	120	54,5	47	57	10	2,2	MN5198-08-KF
63	32	64	75	125	57,5	51	61	10	2,7	MN5199-08-KF
100	6	26	63	85	33	27	37	10	2,7	MN5190-10-KF
100	8	28	63	85	33	27	37	10	2,7	MN5191-10-KF
100	10	30	63	90	36	31	41	10	2,8	MN5192-10-KF
100	12	32	63	95	40	36	46	10	2,8	MN5193-10-KF
100	14	34	63	95	41	36	46	10	2,8	MN5194-10-KF
100	16	38	63	100	46	39	49	10	2,9	MN5195-10-KF
100	18	40	63	100	46	39	49	10	2,8	MN5196-10-KF
100	20	42	75	105	51	41	51	10	3,2	MN5197-10-KF
100	25	57	75	115	55,5	47	57	10	3,9	MN5198-10-KF
100	32	64	75	120	63,5	51	61	10	4,1	MN5199-10-KF

Dimensions in mm:

Use:

For clamping tools with smooth cylindrical shanks to DIN 6535 (Form HA) up to $\varnothing 32$ mm and with recesses to DIN 1835 (Form B, E) and DIN 6535 (Form HB, HE) directly and without adaptor sleeve in the clamping diameter.

The clamping diameter is designed for a tool tolerance of h6 with $d_2 = 6$ mm to $d_2 = 32$ mm.

Supply includes:

Supplied complete with length adjustment screw; coolant tube not included.

Design:

Maximum tool life and quality production results when used for smooth cylindrical shanks to DIN 1835 Form A and DIN 6535 HA. With an overhang length of 2.5 x D (max. 50 mm), concentricity of 0.003 mm.

When using cylindrical shanks with angled clamping surface (Form E and Form HE), this may affect accuracy.

Note:

Chuck with radial tool length adjustment: Coolant supply through central hole.

For adaptor sleeves to reduce clamping diameter see page 171.

(Using adaptor sleeves, this may adversely effect accuracy).

For coolant tube see page 148.

Set for length adjustment available on request.

For notes on preventing mix-ups and on fine balancing see technical notes.

For retro-fitting clamping devices with data carriers see page 179.

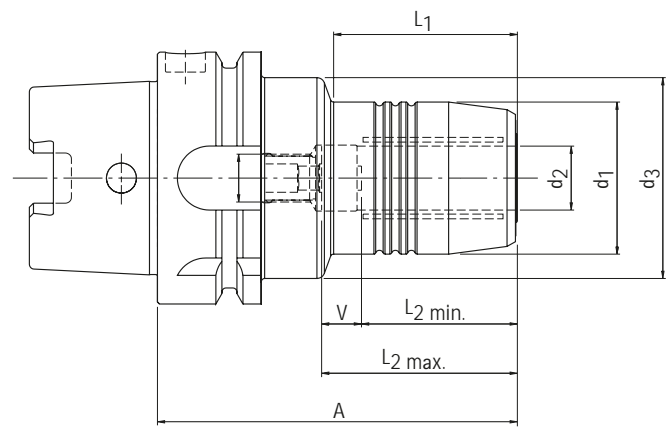
Balance:

HSK-A 50 – 63: G 6.3 at 15,000 min⁻¹

HSK-A 100: G 6.3 at 12,000 min⁻¹

Hydraulic chucks to DIN 69882-7

with axial tool length adjustment
Location shank HSK-A to DIN 69893-1



Nominal size HSK-A	Clamping diameter d ₂	Dimensions							Adjustment path V	Weight kg	Order No.
		d ₁	d ₃	A	L ₁	L ₂ min.	L ₂ max.	G			
40	6	26	33,5	70	36	27	37	M5	10	0,4	MN5160-06-KF
40	8	28	33,5	70	36	27	37	M6	10	0,5	MN5161-06-KF
40	10	30	33,5	75	42	31	41	M6	10	0,5	MN5162-06-KF
40	12	32	33,5	80	48	36	46	M6	10	0,5	MN5163-06-KF
50	6	26	40	70	28	27	37	M5	10	0,7	MN5160-07-KF
50	8	28	40	70	28	27	37	M6	10	0,7	MN5161-07-KF
50	10	30	40	75	34	31	41	M8x1	10	0,7	MN5162-07-KF
50	12	32	40	85	44	36	46	M10x1	10	0,8	MN5163-07-KF
50	14	34	40	85	44	36	46	M10x1	10	0,8	MN5164-07-KF
50	16	38	53	90	30	39	49	M12x1	10	1,0	MN5165-07-KF
50	18	40	57	90	30	39	49	M12x1	10	1,1	MN5166-07-KF
50	20	42	60	90	29	41	51	M16x1	10	1,1	MN5167-07-KF
63	6	26	50	70	24	27	37	M5	10	1,0	MN5160-08-KF
63	6	26	50	150	103	27	37	M5	10	1,4	MN5160-18-KF
63	6	26	50	200	153	27	37	M5	10	1,6	MN5160-28-KF
63	8	28	50	70	25	27	37	M6	10	1,0	MN5161-08-KF
63	8	28	50	150	104	27	37	M6	10	1,4	MN5161-18-KF
63	8	28	50	200	154	27	37	M6	10	1,6	MN5161-28-KF
63	10	30	50	80	35	31	41	M8x1	10	1,1	MN5162-08-KF
63	10	30	50	150	104	31	41	M8x1	10	1,5	MN5162-18-KF
63	10	30	50	200	154	31	41	M8x1	10	1,7	MN5162-28-KF
63	12	32	50	85	40	36	46	M10x1	10	1,1	MN5163-08-KF
63	12	32	50	150	105	36	46	M10x1	10	1,5	MN5163-18-KF
63	12	32	50	200	155	36	46	M10x1	10	1,8	MN5163-28-KF
63	14	34	50	85	40	36	46	M10x1	10	1,1	MN5167-08-KF
63	14	34	50	150	105	36	46	M10x1	10	1,6	MN5167-18-KF
63	14	34	50	200	155	36	46	M10x1	10	1,9	MN5167-28-KF
63	16	38	50	90	46	39	49	M12x1	10	1,2	MN5164-08-KF
63	16	38	50	150	106	39	49	M12x1	10	1,8	MN5164-18-KF
63	16	38	50	200	156	39	49	M12x1	10	2,2	MN5164-28-KF
63	18	40	50	90	47	39	49	M12x1	10	1,3	MN5168-08-KF
63	18	40	50	150	107	39	49	M12x1	10	1,8	MN5168-18-KF
63	18	40	50	200	157	39	49	M12x1	10	2,3	MN5168-28-KF
63	20	42	50	90	48	41	51	M16x1	10	1,3	MN5165-08-KF
63	20	42	50	150	108	41	51	M16x1	10	1,9	MN5165-18-KF
63	20	42	50	200	158	41	51	M16x1	10	2,4	MN5165-28-KF
63	25	57	63	120	59	47	57	M16x1	10	2,2	MN5166-08-KF
63	32	64	75	125	63	51	61	M16x1	10	2,7	MN5169-08-KF

Dimensions in mm.

Hydraulic chucks to DIN 69882-7

with axial tool length adjustment
Location shank HSK-A to DIN 69893-1

Nominal size HSK-A	Clamping diameter d ₂	Dimensions							Adjustment path V	Weight kg	Order No.
		d ₁	d ₃	A	L ₁	L ₂ min.	L ₂ max.	G			
80	6	26	50	70	24	27	37	M5	10	1,5	MN5160-09-KF
80	8	28	50	70	24	27	37	M6	10	1,5	MN5161-09-KF
80	10	30	50	80	35	31	41	M8x1	10	1,6	MN5162-09-KF
80	12	32	50	85	40	36	46	M10x1	10	1,6	MN5163-09-KF
80	14	34	50	85	40	36	46	M10x1	10	1,6	MN5164-09-KF
80	16	38	50	95	51	39	49	M12x1	10	1,7	MN5165-09-KF
80	18	40	50	95	51	39	49	M12x1	10	1,8	MN5166-09-KF
80	20	42	50	95	52	41	51	M16x1	10	1,8	MN5167-09-KF
80	25	57	63	110	65	47	57	M16x1	10	2,6	MN5168-09-KF
80	32	64	75	125	63	51	61	M16x1	10	3,3	MN5169-09-KF
100	6	26	50	75	26	27	37	M5	10	2,5	MN5160-10-KF
100	8	28	50	75	26	27	37	M6	10	2,5	MN5161-10-KF
100	10	30	50	90	42	31	41	M8x1	10	2,5	MN5162-10-KF
100	12	32	50	95	47	36	46	M10x1	10	2,6	MN5163-10-KF
100	14	34	50	95	47	36	46	M10x1	10	2,6	MN5164-10-KF
100	16	38	50	100	53	39	49	M12x1	10	2,7	MN5165-10-KF
100	18	40	50	100	53	39	49	M12x1	10	2,8	MN5166-10-KF
100	20	42	50	105	59	41	51	M16x1	10	2,8	MN5167-10-KF
100	25	57	63	110	62	47	57	M16x1	10	3,7	MN5168-10-KF
100	32	64	75	110	62	51	61	M16x1	10	3,8	MN5169-10-KF

Dimensions in mm:

Use:

For clamping tools with smooth cylindrical shanks to DIN 6535 (Form HA) up to \varnothing 32 mm and with recesses to DIN 1835 (Form B, E) and DIN 6535 (Form HB, HE) directly and without adaptor sleeve in the clamping diameter.

The clamping diameter is designed for a tool tolerance of h6 with $d_2 = 6$ mm to $d_2 = 32$ mm.

Supply includes:

Supplied complete with length adjustment screw; coolant tube not included.

Design:

Maximum tool life and quality production results when used for smooth cylindrical shanks to DIN 1835 Form A and DIN 6535 Form HA. With an overhang length of 2.5 x D (max. 50 mm), concentricity of 0.003 mm.

When using cylindrical shanks with angled clamping surface (Form E and Form HE), this may affect accuracy.

Note:

Chuck with axial tool length adjustment.

Coolant supply via central through hole.

For adaptor sleeves to reduce clamping diameter see page 171. (When using adaptor sleeves, this may effect accuracy).

For coolant tube see page 148.

Length adjustment screw available on request.

For notes on preventing mix-ups and on fine balancing see technical notes.

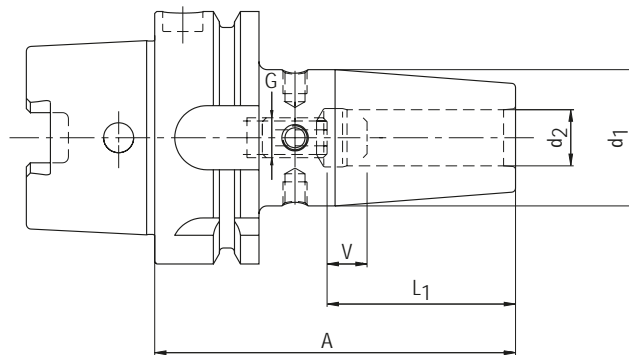
For retro-fitting clamping devices with data carriers see page 179.

Balance:

HSK-A 40 – 63: G 6.3 at 15,000 min⁻¹

HSK-A 80-100: G 6.3 at 12,000 min⁻¹

Thermal expanding chucks to DIN 69882-8



Location shank HSK-A to DIN 69893-1

Nominal size HSK-A	Clamping diameter d ₂	Dimensions				Adjustment path V	Weight kg	Order No.
		d ₁	A	L ₁	G			
50	6	27	80	36	M5	10	0,70	MN5820-07-K
50	8	27	80	36	M6	10	0,75	MN5821-07-K
50	10	32	85	41	M8x1	10	0,80	MN5822-07-K
50	12	32	90	46	M10x1	10	0,80	MN5823-07-K
50	14	34	90	46	M10x1	10	0,90	MN5824-07-K
50	16	34	95	49	M12x1	10	0,90	MN5825-07-K
50	18	42	95	49	M12x1	10	0,95	MN5826-07-K
50	20	42	100	51	M16x1	10	1,10	MN5827-07-K
63	6	27	80	36	M5	10	1,00	MN5820-08-K
63	6	27	120	36	M5	10	1,05	MN5820-18-K
63	6	27	160	36	M5	10	1,40	MN5820-28-K
63	8	27	80	36	M6	10	0,90	MN5821-08-K
63	8	27	120	36	M6	10	1,05	MN5821-18-K
63	8	27	160	36	M6	10	1,30	MN5821-28-K
63	10	32	85	41	M8x1	10	0,90	MN5822-08-K
63	10	32	120	41	M8x1	10	1,20	MN5822-18-K
63	10	32	160	41	M8x1	10	1,50	MN5822-28-K
63	12	32	90	46	M10x1	10	1,00	MN5823-08-K
63	12	32	120	46	M10x1	10	1,15	MN5823-18-K
63	12	32	160	46	M10x1	10	1,50	MN5823-28-K
63	14	34	90	46	M10x1	10	1,00	MN5824-08-K
63	14	34	120	46	M10x1	10	1,25	MN5824-18-K
63	14	34	160	46	M10x1	10	1,60	MN5824-28-K
63	16	34	95	49	M12x1	10	0,95	MN5825-08-K
63	16	34	120	49	M12x1	10	1,20	MN5825-18-K
63	16	34	160	49	M12x1	10	1,70	MN5825-28-K
63	18	42	95	49	M12x1	10	1,10	MN5826-08-K
63	18	42	120	49	M12x1	10	1,50	MN5826-18-K
63	18	42	160	49	M12x1	10	1,80	MN5826-28-K
63	20	42	100	51	M16x1	10	1,15	MN5827-08-K
63	20	42	120	51	M16x1	10	1,45	MN5827-18-K
63	20	42	160	51	M16x1	10	1,80	MN5827-28-K
63	25	53	115	57	M16x1	10	1,30	MN5828-08-K
63	25	53	160	57	M16x1	10	1,90	MN5828-28-K
63	32	53	120	61	M16x1	10	1,60	MN5829-08-K
63	32	53	160	61	M16x1	10	1,80	MN5829-28-K
80	6	27	85	36	M5	10	1,25	MN5820-09-K
80	6	27	160	36	M5	10	1,80	MN5820-29-K

Dimensions in mm.

Thermal expanding chucks to DIN 69882-8

Location shank HSK-A to DIN 69893-1

Nominal size HSK-A	Clamping diameter d ₂	Dimensions				Adjustment path V	Weight kg	Order No.
		d ₁	A	L ₁	G			
80	8	27	85	36	M6	10	1,25	MN5821-09-K
80	8	27	160	36	M6	10	1,80	MN5821-29-K
80	10	32	90	41	M8x1	10	1,35	MN5822-09-K
80	10	32	160	41	M8x1	10	2,00	MN5822-29-K
80	12	32	95	46	M10x1	10	1,35	MN5823-09-K
80	12	32	160	46	M10x1	10	1,95	MN5823-29-K
80	14	34	95	46	M10x1	10	1,45	MN5824-09-K
80	14	34	160	46	M10x1	10	2,10	MN5824-29-K
80	16	34	100	49	M12x1	10	1,50	MN5825-09-K
80	16	34	160	49	M12x1	10	2,10	MN5825-29-K
80	18	42	100	49	M12x1	10	1,50	MN5826-09-K
80	18	42	160	49	M12x1	10	2,30	MN5826-29-K
80	20	42	105	51	M16x1	10	1,60	MN5827-09-K
80	20	42	160	51	M16x1	10	2,30	MN5827-29-K
80	25	53	115	57	M16x1	10	1,70	MN5828-09-K
80	25	53	160	57	M16x1	10	2,95	MN5828-29-K
80	32	53	120	61	M16x1	10	1,60	MN5829-09-K
80	32	53	160	61	M16x1	10	2,55	MN5829-29-K

100	6	27	85	36	M5	10	2,15	MN5820-10-K
100	6	27	160	36	M5	10	2,50	MN5820-30-K
100	8	27	85	36	M6	10	2,15	MN5821-10-K
100	8	27	160	36	M6	10	2,60	MN5821-30-K
100	10	32	90	41	M8x1	10	2,25	MN5822-10-K
100	10	32	160	41	M8x1	10	2,90	MN5822-30-K
100	12	32	95	46	M10x1	10	2,25	MN5823-10-K
100	12	32	160	46	M10x1	10	2,80	MN5823-30-K
100	14	34	95	46	M10x1	10	2,30	MN5824-10-K
100	14	34	160	46	M10x1	10	3,00	MN5824-30-K
100	16	34	100	49	M12x1	10	2,30	MN5825-10-K
100	16	34	160	49	M12x1	10	3,00	MN5825-30-K
100	18	42	100	49	M12x1	10	2,50	MN5826-10-K
100	18	42	160	49	M12x1	10	3,00	MN5826-30-K
100	20	42	105	51	M16x1	10	2,55	MN5827-10-K
100	20	42	160	51	M16x1	10	3,35	MN5827-30-K
100	25	53	115	57	M16x1	10	3,10	MN5828-10-K
100	25	53	160	57	M16x1	10	3,60	MN5828-30-K
100	32	53	120	61	M16x1	10	3,30	MN5829-10-K
100	32	53	160	61	M16x1	10	3,40	MN5829-30-K

Dimensions in mm.

Design:

Permissible concentricity deviation for hollow taper shank to clamping diameter d₂ = 0.003 mm.

The clamping diameter is designed for a shank tolerance H6.

Supply includes:

Length adjustment screw with through hole. Fine balancing screw and coolant tube not included.

Note:

For coolant tube see page 148.

For tool extensions see page 172.

Length adjustment screw and fine balancing screw available on request.

For notes on preventing mix-ups and on fine balancing see technical notes.

For retro-fitting clamping devices with data carriers see page 179.

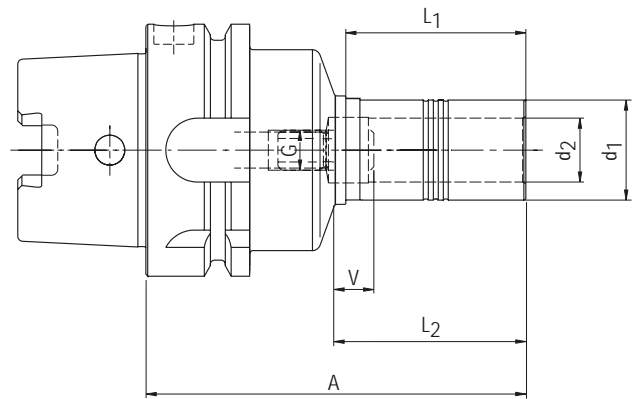
Balance:

HSK-A 50-63: G 6.3 at 18,000 min⁻¹

HSK-A 80-100: G 6.3 at 12,000 min⁻¹

Polygon chucks TRIBOS-S for fine and light machining

Location shank HSK-A to DIN 69893-1



Nominal size HSK-A	Clamping diameter d ₂	Dimensions					Adjustment path V	Weight kg	Ref. code	Order No.
		d ₁	A	L ₁	L ₂	G				
63	6	10	80	35	37	M5	10	0,7	MN5850-08-K	10024312
63	8	13	80	35	37	M6	10	0,7	MN5851-08-K	10047915
63	10	16	85	40	42	M8x1	10	0,8	MN5852-08-K	10007171
63	12	19	90	45	47	M8x1	10	0,8	MN5853-08-K	10023098
63	14	22	90	45	47	M10x1	10	0,9	MN5854-08-K	10024313
63	16	25	95	45	48	M10x1	10	0,9	MN5855-08-K	10024314
63	18	28	95	45	48	M10x1	10	1,1	MN5856-08-K	10024315
63	20	30	100	45	52	M10x1	10	1,1	MN5857-08-K	10024301
63	25	36	95	45	57	M10x1	10	1,1	MN5858-08-K	10053169
63	32	45	100	45	61	M10x1	10	1,2	MN5859-08-K	10063542

Torque transmission	
Clamping diameter d ₂	Minimum torque
6	4,5 Nm
8	12 Nm
10	20 Nm
12	30 Nm
14	50 Nm
16	70 Nm
18	100 Nm
20	150 Nm
25	200 Nm
32	280 Nm

Torque details given for shank tolerance h6.

Dimensions in mm.

Use:

For fine and light machining. For clamping cylindrical shanks Form HA, HB, HE to DIN 6535

Supply includes:

Length adjustment screw; coolant tube not included.

Note:

For adaptor sleeves for clamping diameter reduction see page 174.

For clamping fixture required see page 175.

For reducing sleeves for clamping fixture see page 176.

For coolant tube see page 148.

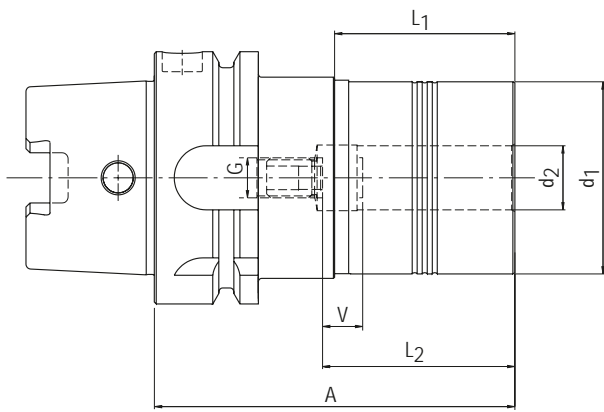
Length adjustment screw available on request.

For notes on preventing mix-ups and on fine balancing see technical notes.

For retro-fitting clamping devices with data carriers see page 179.

Balance:

HSK-A 63: G 6.3 at 15,000 min⁻¹



Polygon chucks TRIBOS-R for heavy duty machining

Location shank HSK-A to DIN 69893-1

Nominal size HSK-A	Clamping diameter d ₂	Dimensions					Adjustment path V	Weight kg	Ref. code	Order No.
		d ₁	A	L ₁	L ₂	G				
63	6	25	70	35	37	M5	10	0,9	MN5880-08-K	10066245
63	6	25	150	35	37	M5	10	1,4	MN5880-18-K	10075119
63	6	25	200	35	37	M5	10	1,7	MN5880-28-K	10075121
63	8	28	70	35	37	M6	10	0,9	MN5881-08-K	10066246
63	8	28	150	35	37	M6	10	1,4	MN5881-18-K	10075153
63	8	28	200	35	37	M6	10	1,7	MN5881-28-K	10075154
63	10	35	80	40	42	M8x1	10	0,9	MN5882-08-K	10066247
63	10	35	150	40	42	M8x1	10	1,6	MN5882-18-K	10075155
63	10	35	200	40	42	M8x1	10	1,9	MN5882-28-K	10075156
63	12	42	85	45	47	M8x1	10	0,9	MN5883-08-K	10066248
63	12	42	150	45	47	M8x1	10	1,8	MN5883-18-K	10075158
63	12	42	200	45	47	M8x1	10	2,1	MN5883-28-K	10075159
63	14	48	85	45	47	M10x1	10	0,9	MN5884-08-K	10066249
63	14	48	150	45	47	M10x1	10	1,8	MN5884-18-K	10075160
63	14	48	200	45	47	M10x1	10	2,1	MN5884-28-K	10075162
63	16	48	90	45	48	M10x1	10	1,3	MN5885-08-K	10066251
63	16	48	150	45	48	M10x1	10	2,1	MN5885-18-K	10075164
63	16	48	200	45	48	M10x1	10	2,4	MN5885-28-K	10075165
63	18	48	90	45	48	M10x1	10	1,3	MN5886-08-K	10066252
63	18	48	150	45	48	M10x1	10	2,1	MN5886-18-K	10075167
63	18	48	200	45	48	M10x1	10	2,4	MN5886-28-K	10075169
63	20	48	90	45	52	M10x1	10	1,3	MN5887-08-K	10066253
63	20	48	150	45	52	M10x1	10	2,0	MN5887-18-K	10075171
63	20	48	200	45	52	M10x1	10	2,3	MN5887-28-K	10075173
63	25	60	105	45	57	M10x1	10	1,4	MN5888-08-K	10066258
63	25	60	150	45	57	M10x1	10	2,6	MN5888-18-K	10075175
63	25	60	200	45	57	M10x1	10	2,9	MN5888-28-K	10075176
63	32	67	110	45	61	M10x1	10	1,5	MN5889-08-K	10075177
63	32	67	150	45	61	M10x1	10	3,0	MN5889-18-K	10075178
63	32	67	200	45	61	M10x1	10	3,3	MN5889-28-K	10075180

Polygon chucks TRIBOS-R for heavy duty machining

Location shank HSK-A to DIN 69893-1

Nominal size HSK-A	Clamping diameter d ₂	Dimensions					Adjustment path V	Weight kg	Ref. code	Order No.
		d ₁	A	L ₁	L ₂	G				
100	12	42	95	45	47	M8x1	10	3,6	MN5883-10-K	10078426
100	20	48	100	45	52	M10x1	10	3,8	MN5887-10-K	10078427
100	25	60	105	45	57	M10x1	10	4,1	MN5888-10-K	10078428
100	32	67	110	45	61	M10x1	10	4,3	MN5889-10-K	10078429

Torque transmission	
d ₂	Minimum torque
6	8 Nm
8	14 Nm
10	24 Nm
12	40 Nm
14	80 Nm
16	120 Nm
18	180 Nm
20	240 Nm
25	270 Nm
32	350 Nm

Torque details given for shank tolerance h6.

Dimensions in mm.

Use:

For heavy duty machining.

For clamping cylindrical shanks Form HA, HB,

HE to DIN 6535.

Supply includes:

Length adjustment screw; coolant tube not included.

Note:

For adaptor sleeves for clamping diameter reduction see page 174.

For tool extensions see page 173.

For clamping fixture required see page 175.

For reducing sleeves for clamping fixture see page 177

For coolant tube see page 148.

Length adjustment screw available on request.

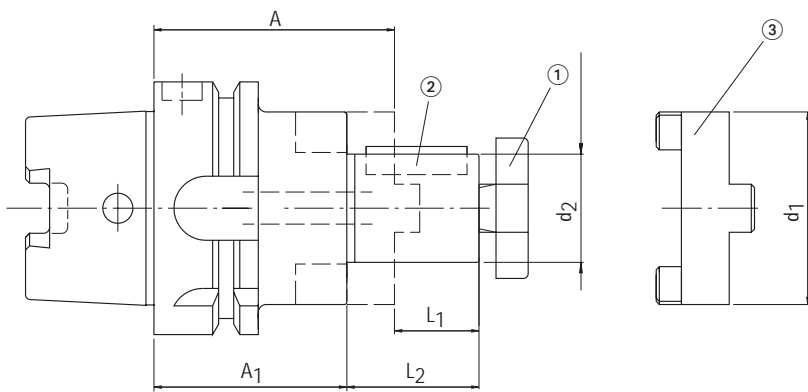
For notes on preventing mix-ups and on fine balancing see technical notes.

For retro-fitting clamping devices with data carriers see page 179.

Balance:

HSK-A 63: G 6.3 at 15,000 min⁻¹

HSK-A 100: G6.3 at 12,000 min⁻¹



Milling cutter arbors for milling cutters with longitudinal or cross slot to DIN 69882-1

Location shank HSK-A
to DIN 69893-1

Nominal size HSK-A	Arbor diameter d ₂	d ₁	Dimensions				Weight kg	Order No.
			A	A ₁	L ₁	L ₂		
50	16	32	50	40	17	27	0,7	MN5040-07-K
50	22	40	50	38	19	31	0,8	MN5041-07-K
50	27	48	65	53	21	33	1,0	MN5042-07-K
50	32	58	65	51	24	38	1,2	MN5043-07-K
63	16	32	60	50	17	27	0,9	MN5040-08-K
63	22	40	60	48	19	31	1,0	MN5041-08-K
63	27	48	60	48	21	33	1,2	MN5042-08-K
63	32	58	60	46	24	38	1,4	MN5043-08-K
63	40	70	70	56	27	41	1,8	MN5044-08-K
80	16	32	60	50	17	27	2,1	MN5040-09-K
80	22	40	60	48	19	31	2,3	MN5041-09-K
80	27	48	60	48	21	33	2,5	MN5042-09-K
80	32	58	60	46	24	38	2,7	MN5043-09-K
80	40	70	70	56	27	41	3,1	MN5044-09-K
100	16	32	60	50	17	27	2,4	MN5040-10-K
100	22	40	60	48	19	31	2,6	MN5041-10-K
100	27	48	60	48	21	33	2,8	MN5042-10-K
100	32	58	60	46	24	38	3,0	MN5043-10-K
100	40	70	70	56	27	41	3,4	MN5044-10-K
100	50	90	80	64	30	46	3,8	MN5045-10-K

Spares

For arbor diameter d ₂	① Cutter clamping screw		② Feather key (but with pressure thread)		③ Driving ring	
	DIN 6367	Order No.	DIN 6885-1	Order No.	DIN 6366-1	Order No.
16	M8	10007286	4x4x20	10008713	Gr. 16	10008712
22	M10	10006016	6x6x25	10004544	Gr. 22	10032860
27	M12	10005164	7x7x25	10022371	Gr. 27	10018128
32	M16	10004065	8x7x28	10013711	Gr. 32	10076829
40	M20	10004066	10x8x32	10004754	Gr. 40	10004785
50	M24	10010417	12x8x36	10028850	Gr. 50	10076830

Dimensions in mm.

Supply includes:

Cutter clamping screw; feather key with pressure thread and driving ring;
coolant tube not included.

Design:

Permissible concentricity deviation for hollow taper shank to arbor
d₂ = 0.01 mm

Note:

Milling adaptor rings to DIN 2084 available on request.

For coolant tube see page 148.

For assembly keys see page 153.

For notes on preventing mix-ups and on fine balancing see technical notes.

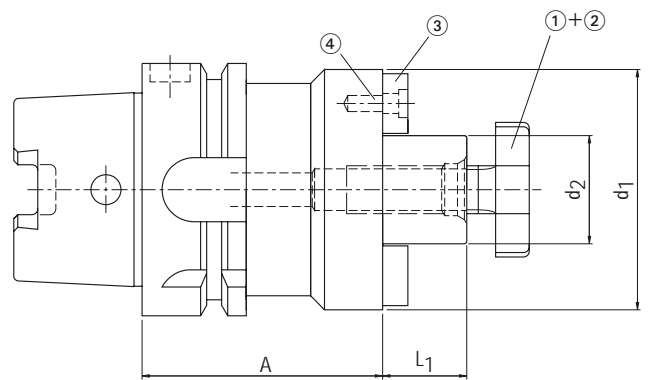
For retro-fitting clamping devices with data carriers see page 179.

Balance:

G 6.3 at 3,000 min⁻¹

Milling cutter arbors with large contact face to DIN 69882-3

Location shank HSK-A to DIN 69893-1



Nominal size HSK-A	Arbor diameter d ₂	Dimensions			Weight kg	Order No. with cutter clamping screw ¹	Ref. code excluding cutter clamping screw ²	Order No.
		d ₁	A	L ₁				
50	22	50	60	19	0,9	MN5050-07-K	–	–
50	27	60	60	21	1,1	MN5051-07-K	–	–
63	22	50	50	19	1,1	MN5050-08-K	MN5050-58-K	10066802
63	27	60	60	21	1,3	MN5051-08-K	MN5051-58-K	10066803
63	32	78	60	24	1,4	MN5052-08-K	MN5052-58-K	10066804
63*	40	89	60	27	1,9	MN5053-08-K	MN5053-58-K	10066805
63*	60**	140	70	27	4,2	–	MN5055-58-K	10067153
80	22	50	50	19	2,3	MN5050-09-K	MN5050-59-K	10066806
80	27	60	50	21	2,5	MN5051-09-K	MN5051-59-K	10066808
80	32	78	60	24	2,6	MN5052-09-K	MN5052-59-K	10066810
80*	40	89	60	27	3,6	MN5053-09-K	MN5053-59-K	10066811
100	22	50	50	19	2,5	MN5050-10-K	MN5050-60-K	10066812
100	27	60	50	21	2,7	MN5051-10-K	MN5051-60-K	10066813
100	32	78	50	24	2,8	MN5052-10-K	MN5052-60-K	10066814
100*	40	89	60	27	3,8	MN5053-10-K	MN5053-60-K	10066815
100	50	120	70	30	4,9	MN5054-10-K	MN5054-60-K	10066816
100*	60	140	70	40	5,5	MN5055-10-K	MN5055-60-K	10066817

Spares

For arbor diameter d ₂	① Cutter clamping screw		② Cutter clamping screw with int. coolant (e.g. for MAPAL WWS milling heads)	③ Key block		④ Holding screw	
	DIN 6367	Order No.	Order No.	Ref. code	Order No.	ISO 4762	Order No.
22	M10	10006016	7-03008-01	MT1013-01	10005640	M4x10 - 12.9	10003583
27	M12	10005164	7-03008-02	MT1215-01	10005165	M4x16 - 12.9	10003586
32	M16	10004065	7-03008-03	MT1422-01	10004063	M5x16 - 12.9	10003601
40	M20	10004066	7-03008-04	MT1623-01	10004064	M5x16 - 12.9	10003601
50	M24	10010417	–	MT1832-01	30139744	M8x16 - 12.9	10003634
60	M30	10017544	–	MT2625-01	10010103	M12x25 - 12.9	10003675

Dimensions in mm.

Supply includes:

¹ with key blocks and cutter clamping screw in place to DIN 6367.

² with key blocks in place, does not include cutter clamping screw.

Design:

Permissible concentricity deviation for hollow taper shank to arbor
d₂ = 0.01 mm. 6 balancing screws on periphery.

Note:

The sizes marked* also have 4 threaded holes for holding cutter heads with tool clamping to DIN 2079.

**d₂ = 60 mm for nominal size HSK-A 63: max. milling head diameter D 250 mm, no balancing bores on periphery.

For assembly keys see page 153.

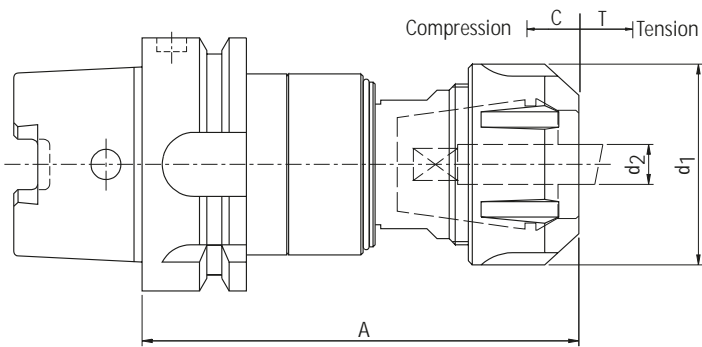
For coolant tube see page 148.

For notes on preventing mix-ups and on fine balancing see technical notes.

For retro-fitting clamping devices with data carriers see page 179.

Balance:

G 6.3 at 3,000 min⁻¹



Softsynchro tapping chucks

Location shank HSK-A to DIN 69893-1

Nominal size HSK-A	for tap drills		Nominal size	d ₁	Dimensions			Weight kg	Ref. code	Order No.
	Thread size	Shank diameter d ₂			A	C	T			
50	M4-M12	4,5-10	ER-20 (GB)	34	93,5	0,5	0,5	0,7	MN5073-07-K	10021638
50	M4-M20	4,5-16	ER-32 (GB)	50	116,3	0,5	0,5	1,1	MN5075-07-K	10079476
63	M4-M12	4,5-10	ER-20 (GB)	34	95,5	0,5	0,5	0,9	MN5073-08-K	10026941
63	M4-M20	4,5-16	ER-32 (GB)	50	108,8	0,5	0,5	1,3	MN5075-08-K	10035367
63	M12-M30	9-22	ER-40 (GB)	63	146,5	0,7	0,7	2,3	MN5076-08-K	10034751
80	M4-M12	4,5-10	ER-20 (GB)	34	100	0,5	0,5	1,2	MN5073-09-K	10051778
80	M4-M20	4,5-16	ER-32 (GB)	50	113,3	0,5	0,5	2,1	MN5075-09-K	10079477
80	M12-M30	9-22	ER-40 (GB)	63	136	0,7	0,7	3,1	MN5076-09-K	10079478
100	M4-M12	4,5-10	ER-20 (GB)	34	102	0,5	0,5	2,3	MN5073-10-K	10022511
100	M4-M20	4,5-16	ER-32 (GB)	50	115,3	0,5	0,5	2,7	MN5075-10-K	10023150
100	M12-M30	9-22	ER-40 (GB)	63	138	0,7	0,7	3,2	MN5076-10-K	10079479

Dimensions in mm.

Use:

For safe, fast clamping of tap drills.

To compensate for any differences in pitch which occur between the synchronous spindle and the tap drill.

Supply includes:

Supplied complete with clamping nut for internal coolant supply and hexagonal key.

Does not include collet, washer and coolant tube.

Design:

With internal coolant supply.

Note:

Other versions available on request.

For tapping collets and washers to suit internal coolant supply see pages 168-170.

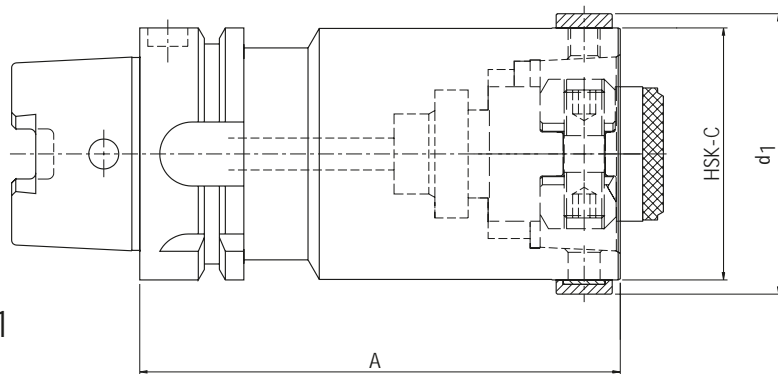
For coolant tube see page 148.

For hexagonal keys see page 153.

For notes on preventing mix-ups and on fine balancing see technical notes.

For retro-fitting clamping devices with data carriers see page 179.

HSK extensions



Location shank HSK-A to DIN 69893-1

Nominal size HSK-A	Nominal size HSK-C	Dimensions		Weight kg	Order No.
		d ₁	A ± 0,05		
50	50	55	80	1,2	MN5025-07-K
50	50	55	100	1,4	MN5026-07-K
63	63	70	80	1,6	MN5025-08-K
63	63	70	120	2,4	MN5026-08-K
80	80	87	100	3,7	MN5025-09-K
80	80	87	160	6,1	MN5026-09-K
100	100	110	140	6,5	MN5025-10-K
100	100	110	200	8,9	MN5026-10-K

Dimensions in mm.

Supply includes:

Supplied complete with clamping cartridge and stop ring; coolant tube not included.

Design:

Permissible concentricity deviation for hollow taper shank to internal taper 0.005 mm.

Note:

For clamping cartridges see pages 142-143.

For stop rings see page 145.

For coolant tube see page 148.

On request the extensions can be supplied with KS clamping cartridge for use with minimal lubrication. For this an M is added to the order number, e.g. MN5025-08-KM.

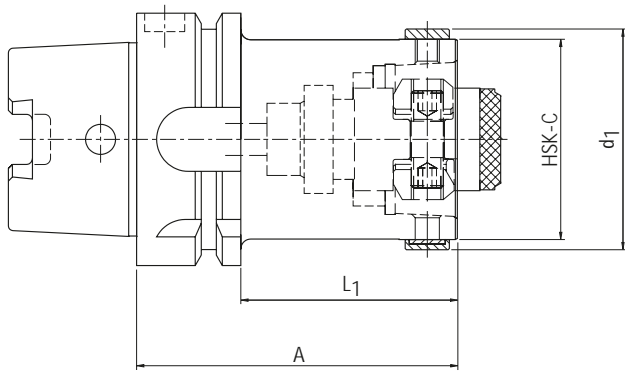
For notes on preventing mix-ups and on fine balancing see technical notes.

For retro-fitting clamping devices with data carriers see page 179.

Balance:

G 6.3 at 3,000 min⁻¹

HSK reducers



Location shank HSK-A to DIN 69893-1

Nominal size HSK-A	Nominal size HSK-C	d ₁	Dimensions A ± 0.05	L ₁	Weight kg	Order No.
50	32	37	60	34	0,8	MN5030-07-K
50	40	45	70	44	0,9	MN5031-07-K
63	32	37	70	44	1,0	MN5030-08-K
63	40	45	80	54	1,1	MN5031-08-K
63	50	55	80	54	1,2	MN5032-08-K
80	40	45	80	54	1,3	MN5031-09-K
80	50	55	80	54	1,5	MN5032-09-K
80	63	70	90	64	1,8	MN5033-09-K
100	50	55	80	51	1,7	MN5032-10-K
100	63	70	100	71	2,0	MN5033-10-K
100	80	87	100	71	2,5	MN5034-10-K

Dimensions in mm.

Supply includes:

Supplied complete with clamping cartridge and stop ring; coolant tube not included.

Design:

Permissible concentricity deviation for hollow taper shank to internal taper 0.005 mm.

Note:

For clamping cartridges see pages 142-143.

For stop rings see page 145.

For coolant tube see page 148.

On request the reducers can be supplied with KS clamping cartridge for use with minimal lubrication. For this an M is added to the order number, e.g. MN5030-08-KM.

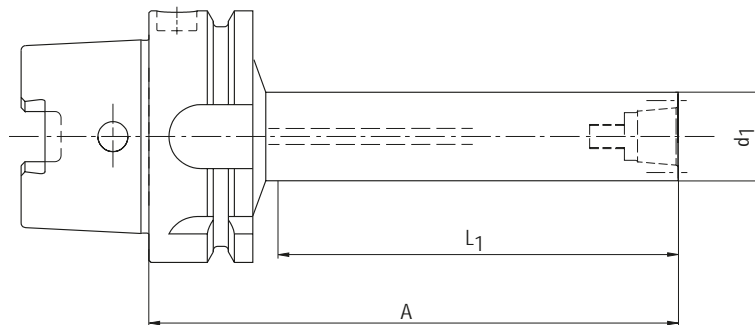
For notes on preventing mix-ups and on fine balancing see technical notes.

For retro-fitting clamping devices with data carriers see page 179.

Balance:

G 6.3 at 3,000 min⁻¹

HFS Holders with axial clamping system



Location shank HSK-A to DIN 69893-1

HFS 940: long version

Nominal size HSK-A	HFS size	Face contact d_1	Dimensions		Weight kg	Ref. code	Order No.
			A	L_1			
63	10	15	117	87	0,9	HFS 940-10	30010272
63	12	17,8	132,5	103	0,9	HFS 940-12	30010273
63	14	20,5	131,5	103	1,0	HFS 940-14	30010275
63	16	23,2	163	132	1,2	HFS 940-16	30010276
63	20	29,3	188	159	1,5	HFS 940-20	30010280
63	24	39	207	178	2,3	HFS 940-24	30010286

HFS 945: short version

Nominal size HSK-A	HFS size	Face contact d_1	Dimensions		Weight kg	Ref. code	Order No.
			A	L_1			
63	10	15	77	47	0,8	HFS 945-10	30010283
63	12	17,8	92,5	63	0,8	HFS 945-12	30010285
63	14	20,5	91,5	63	0,9	HFS 945-14	30010287
63	16	23,2	112	81	1,0	HFS 945-16	30010288
63	20	29,3	111	82	1,1	HFS 945-20	30010289
63	24	39	109	80	1,4	HFS 945-24	30010291

Dimensions in mm.

Supply includes:

Holder with threaded spindle and hexagonal key.

Note:

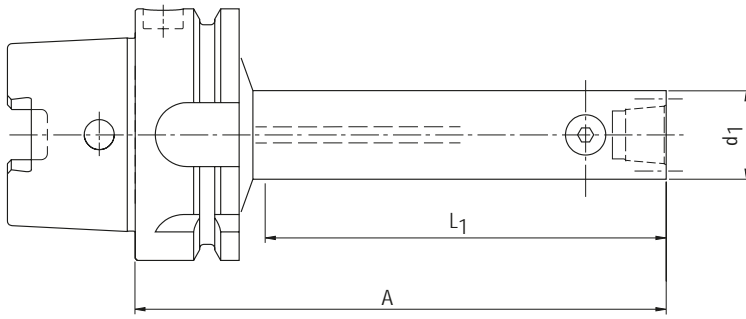
For coolant tube and assembly spanner see pages 148 and 150-151
(not included in supply).

For accessories and spares see page 162.

For suitable torque wrench and hexagonal key see pages 150-152.

Balance:

G 6.3 at 3,000 min⁻¹



HFS Holders with radial clamping system

Location shank HSK-A to DIN 69893-1

HFS 940R: long version

Nominal size HSK-A	HFS size	Face contact d_1	Dimensions		Weight kg	Ref. code	Order No.
			A	L_1			
63	12	17,8	132,5	100	0,9	HFS 940R-12	30078136
63	14	20,5	131,5	100	1,0	HFS 940R-14	30078137
63	16	23,2	163	130	1,2	HFS 940R-16	30078138
63	20	29,3	188	160	1,6	HFS 940R-20	30080156

HFS 945R: short version

Nominal size HSK-A	HFS size	Face contact d_1	Dimensions		Weight kg	Ref. code	Order No.
			A	L_1			
63	12	17,8	92,5	60	0,8	HFS 945R-12	30078139
63	14	20,5	91,5	60	0,9	HFS 945R-14	30078140
63	16	23,2	112	80	1,0	HFS 945R-16	30078141
63	20	29,3	111	80	1,1	HFS 945R-20	30080157

Dimensions in mm.

Supply includes:

Holder with pull studs, hexagonal key, open-end wrench for pull studs.

Recommendation:

To allow replaceable heads to be changed quickly with the radial clamping system, at least 1 additional pull stud should be ordered.

Note:

For coolant tube and assembly spanner see pages 148 and 150-151 (not included in supply).

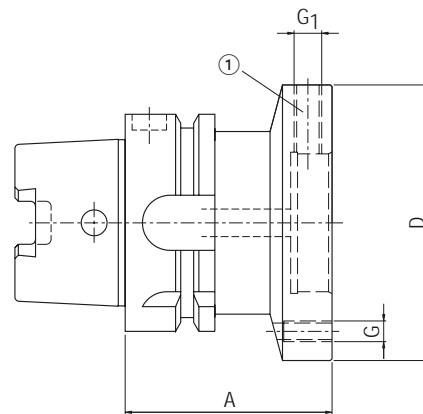
For accessories and spares see page 162.

For suitable torque wrench and hexagonal key see pages 150-152.

Balance:

G 6.3 at 3,000 min⁻¹

HSK Module Adaptors



Location shank HSK-A to DIN 69893-1

Nominal size HSK-A	Module diameter D	Dimensions			Weight kg	Order No.
		A	G	G ₁		
50	60	60	M5	M8x1	0,9	MN5090-07-K
50	70	60	M6	M8x1	1,0	MN5091-07-K
50	80	60	M6	M8x1	1,1	MN5092-07-K
63	60	60	M5	M8x1	1,3	MN5090-08-K
63	70	60	M6	M8x1	1,4	MN5091-08-K
63	80	60	M6	M8x1	1,5	MN5092-08-K
63	100	65	M8	M10x1	2,1	MN5093-08-K
63	117	65	M8	M10x1	2,5	MN5094-08-K
80	60	50	M5	M8x1	1,6	MN5090-09-K
80	70	60	M6	M8x1	2,0	MN5091-09-K
80	80	60	M6	M8x1	2,1	MN5092-09-K
80	100	65	M8	M10x1	2,6	MN5093-09-K
80	117	65	M8	M10x1	3,1	MN5094-09-K
80	140	75	M10	M10x1	4,2	MN5095-09-K
100	60	55	M5	M8x1	2,8	MN5090-10-K
100	70	55	M6	M8x1	2,8	MN5091-10-K
100	80	55	M6	M8x1	3,0	MN5092-10-K
100	100	65	M8	M10x1	3,7	MN5093-10-K
100	117	65	M8	M10x1	4,0	MN5094-10-K
100	140	75	M10	M10x1	5,2	MN5095-10-K

Spares

For module diameter D	Quantity required	① Size	Threaded pin Ref. code	Order No.
60-80	4	M8x1x16	K2865-24	10075355
100-140	4	M10x1x20	K2865-34	10075099

Dimensions in mm.

Supply includes:

Supplied complete with threaded pins for aligning concentricity;
does not include coolant tube.

Note:

For coolant tube see page 148.

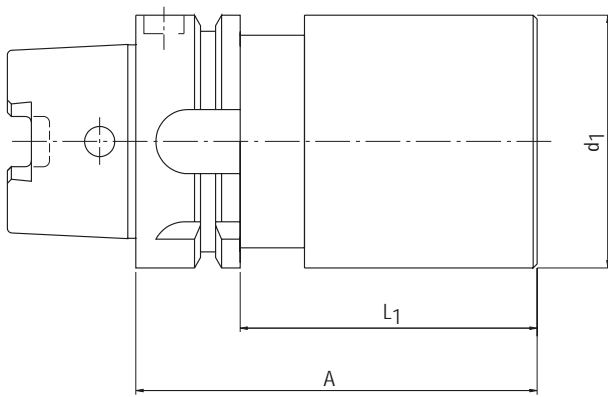
For notes on preventing mix-ups and on fine balancing see technical notes.

For retro-fitting clamping devices with data carriers see page 179.

Balance:

G 6.3 at 3,000 min⁻¹

HSK Blanks



Location shank HSK-A to DIN 69893-1

Nominal size HSK-A	Dimensions		L ₁	Order No. Version 1	Order No. Version 2
	d ₁	A			
50	53	100	74	MN5591-07-K	MN5591-57-K
50	53	200	174	MN5595-07-K	MN5595-57-K
50	83	175	149	MN5598-07-K	MN5598-57-K
63	63	100	74	MN5591-08-K	MN5591-58-K
63	63	200	174	MN5595-08-K	MN5595-58-K
63	102	175	149	MN5598-08-K	MN5598-58-K
80	83	100	74	MN5591-09-K	MN5591-59-K
80	83	200	174	MN5595-09-K	MN5595-59-K
80	127	200	174	MN5598-09-K	MN5598-59-K
100	102	100	71	MN5591-10-K	MN5591-510-K
100	102	200	171	MN5595-10-K	MN5595-510-K
100	127	200	171	MN5598-10-K	MN5598-510-K

Dimensions in mm.

Version 1:

Rough turned and milled.

In the HSK area, grinding allowance from HSK 32 to HSK 80 = 0.2 mm, from HSK 100 upwards = 0.3 mm on the taper and 0.15 mm on the face.

Unhardened and unground.

Blank front section unhardened and unground for further processing.

Version 2:

Taper including collar hardened and finish ground.

Blank front section unhardened and unground for further processing.

Important note regarding Version 2:

Excessive cutting and any application of heat on finished blanks can lead to unacceptable distortion on the HSK shank.

Claims against warranty can therefore only be made on blanks which have not been processed.

Supply:

Does not include coolant tube.

Note:

If extensive cutting is carried out on the blank front section we recommend Version 1 be used and the HSK be finish ground as the final operation.

Further sizes available on request.

For coolant tube see page 148.

Material:

42CrMo54

Toolholders with HSK-C

The toolholder programme for hollow shanks in the HSK-C form offers wide-ranging opportunities for use in batch production on special machines to universal application as a modular clamping system,

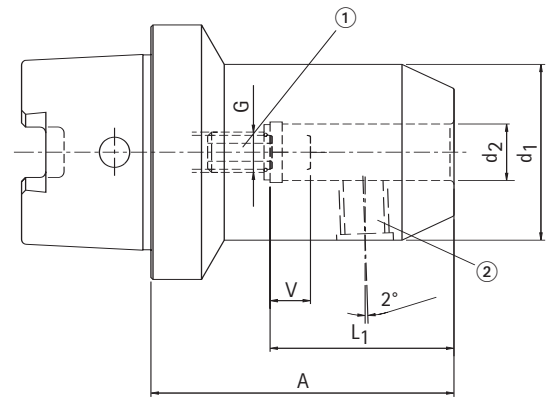
The KS clamping cartridge using with extensions and reducing elements (reducers) allows optimum transfer of bending and torque moments. The high quality of MAPAL toolholders produces results of the highest accuracy.

The high repeatable and changeover accuracy with the HSK connection also produces high quality results in production, even when using combination tools with several connecting elements.



Toolholders for cylindrical shanks with angled clamping surface to DIN 69882-5

Location shank HSK-C to DIN 69893-1



Nominal size HSK-C	Clamping diameter d ₂	Dimensions				Adjustment path V	Weight kg	① Order No. Length adjustment screw	Order No.
		d ₁	A	L ₁	G				
32	6	25	60	36	M5	10	0,2	LS0516-01	MN5300-05-K
32	8	28	60	36	M6	10	0,3	LS0616-01	MN5301-05-K
32	10	35	65	40	M8	10	0,3	LS0815-01	MN5302-05-K
40	6	25	60	36	M5	10	0,3	LS0516-01	MN5300-06-K
40	8	28	60	36	M6	10	0,3	LS0616-01	MN5301-06-K
40	10	35	65	40	M8	10	0,5	LS0815-01	MN5302-06-K
40	12	42	70	45	M10	8	0,6	LS1016-01	MN5303-06-K
40	14	44	70	45	M10	8	0,7	LS1016-01	MN5304-06-K
40	16	48	75	48	M12	8	0,8	LS1219-01	MN5305-06-K
50	6	25	60	36	M5	8	0,5	LS0514-01	MN5300-07-K
50	8	28	60	36	M6	8	0,5	LS0614-01	MN5301-07-K
50	10	35	65	40	M8	8	0,6	LS0815-01	MN5302-07-K
50	12	42	75	45	M10	10	0,8	LS1016-01	MN5303-07-K
50	14	44	75	45	M10	10	0,9	LS1016-01	MN5304-07-K
50	16	48	80	48	M12	10	1,0	LS1219-01	MN5305-07-K
50	18	50	80	48	M12	10	1,0	LS1219-01	MN5306-07-K
50	20	52	80	50	M16	8	1,1	LS1620-01	MN5307-07-K
63	6	25	60	36	M5	8	0,7	LS0514-01	MN5300-08-K
63	8	28	60	36	M6	8	0,9	LS0614-01	MN5301-08-K
63	10	35	65	40	M8	8	1,0	LS0815-01	MN5302-08-K
63	12	42	75	45	M10	10	1,2	LS1016-01	MN5303-08-K
63	14	44	75	45	M10	10	1,2	LS1016-01	MN5304-08-K
63	16	48	80	48	M12	10	1,7	LS1219-01	MN5305-08-K
63	18	50	80	48	M12	10	1,8	LS1219-01	MN5306-08-K
63	20	52	80	50	M16	8	2,0	LS1620-01	MN5307-08-K
63	25	65	95	56	M20	8	2,4	LS2025-02	MN5308-08-K
63	32	72	100	60	M20	8	2,6	LS2025-02	MN5309-08-K

Dimensions in mm.

Toolholders for cylindrical shanks with angled clamping surface to DIN 69882-5

Location shank HSK-C to DIN 69893-1

Nominal size HSK-C	Clamping diameter d_2	Dimensions				Adjustment path V	Weight kg	① Order No. Length adjust- ment screw	Order No.
		d_1	A	L_1	G				
80	6	25	65	36	M5	10	1,2	LS0516-01	MN5300-09-K
80	8	28	65	36	M6	10	1,2	LS0616-01	MN5301-09-K
80	10	35	70	40	M8	10	1,4	LS0815-01	MN5302-09-K
80	12	42	75	45	M10	8	1,7	LS1016-01	MN5303-09-K
80	14	44	75	45	M10	8	1,7	LS1016-01	MN5304-09-K
80	16	48	80	48	M12	10	1,8	LS1219-01	MN5305-09-K
80	18	50	80	48	M12	10	1,8	LS1219-01	MN5306-09-K
80	20	52	85	50	M16	10	1,9	LS1620-01	MN5307-09-K
80	25	65	95	56	M20	10	3,6	LS2025-02	MN5308-09-K
80	32	72	100	60	M20	10	4,0	LS2025-02	MN5309-09-K
100	6	25	65	36	M5	10	1,3	LS0516-01	MN5300-10-K
100	8	28	65	36	M6	10	1,3	LS0616-01	MN5301-10-K
100	10	35	70	40	M8	10	1,5	LS0815-01	MN5302-10-K
100	12	42	75	45	M10	8	1,7	LS1016-01	MN5303-10-K
100	14	44	75	45	M10	8	1,7	LS1016-01	MN5304-10-K
100	16	48	80	48	M12	8	1,8	LS1219-01	MN5305-10-K
100	18	50	80	48	M12	8	1,9	LS1219-01	MN5306-10-K
100	20	52	85	50	M16	10	2,0	LS1620-01	MN5307-10-K
100	25	65	95	56	M20	10	3,8	LS2025-02	MN5308-10-K
100	32	72	100	60	M20	10	4,3	LS2025-02	MN5309-10-K

Spares

For clamping diameter d_2	② Clamping screw	
	DIN 1835-B	Order No.
6	M6x9	10060983
8	M8x9	10042517
10	M10x12	10004134
12	M12x14	30002947
14	M12x14	30002947
16	M14x16	10004136
18	M14x16	10004136
20	M16x16	10004137
25	M18x2x20	10004141
32	M20x2x20	10004129

Dimensions in mm.

Use:

For holding milling tools and drills with cylindrical shank and angled clamping face (2°) to DIN 1835 Form E and DIN 6535 Form HE.

Supply includes:

Clamping screw and cylindrical screw fitted (to hold chuck).

Design:

Permissible concentricity deviation for hollow taper shank to clamping diameter $d_2 = 0.003$ mm. The bore tolerance is much reduced compared to DIN 1835 (d_2^{H4}) to produce extremely high accurate machining results.

Note:

From clamping diameter $d_2 = 25$ mm two clamping screws are provided.

The length adjustment screws have through holes for coolant.

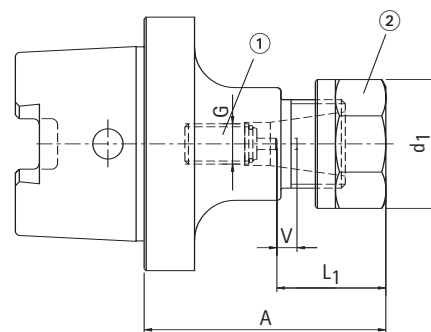
For notes on preventing mix-ups and on fine balancing see technical notes.

Balance:

G 6.3 at 3,000 min⁻¹

Chucks for collets to DIN 69882-6

Location shank HSK-C to DIN 69893-1



Nominal size HSK-C	Clamping diameter	Nominal size	Dimensions				Adjustment path V	Weight kg	Order No.
			d ₁	A	L ₁	G			
32	0,5-10	ER-16	28	60	27	M8	5	0,4	MN5335-05-K
40	0,5-10	ER-16	28	60	27	M10	5	0,4	MN5335-06-K
50	0,5-10	ER-16	28	60	27	M10	5	0,5	MN5335-07-K
63	0,5-10	ER-16	28	60	27	M10	5	0,7	MN5335-08-K
63	0,5-10	ER-16	28	100	27	M10	5	1,3	MN5336-08-K
80	0,5-10	ER-16	28	100	27	M10	5	1,6	MN5335-09-K
100	0,5-10	ER-16	28	100	27	M10	5	2,5	MN5335-10-K

Spares

For nominal size HSK-C	① Length adjustment screw (through bore for coolant) Clamping diameter			② Clamping nut ISO 15488	
	2,8 - 5 Order No.	4,8 - 7 Order No.	6,8 - 10 Order No.	Nominal size	Order No.
32	LS0823-01	LS0823-02	LS0823-03	ER-16	10013273
40 - 100	LS1023-01	LS1023-02	LS1023-03	ER-16	10013273

Supply includes:

Supplied complete with clamping nut to ISO 15488; length adjustment screw and clamping jaws not included.

Design:

Permissible concentricity deviation for hollow taper shank to internal taper 0.003 mm.

Note:

Chucks have a through hole with internal thread for the length adjustment screw.

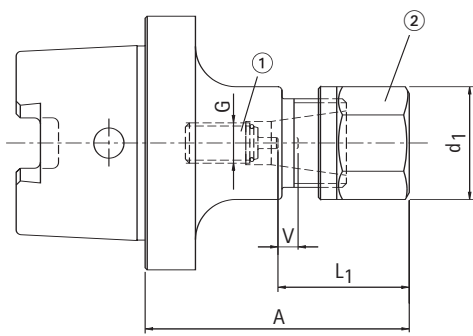
For suitable collets see page 164-167

For assembly keys see page 153.

For notes on preventing mix-ups and on fine balancing see technical notes.

Balance:

G 6.3 at 3,000 min⁻¹



Chucks for collets with clamping nuts for internal coolant supply (HI-Q/ERC)

Location shank HSK-C to DIN 69893-1

Nominal size HSK-C	Clamping diameter	Nominal size	Dimensions				Adjustment path V	Weight kg	Order No.
			d ₁	A	L ₁	G			
32	0,5-10	ER-16	28	65	32	M8	5	0,3	MN5335-15-K
40	0,5-10	ER-16	28	65	32	M10	5	0,3	MN5335-16-K
50	0,5-10	ER-16	28	65	32	M10	5	0,4	MN5335-17-K
63	0,5-10	ER-16	28	65	32	M10	5	0,6	MN5335-18-K
63	0,5-10	ER-16	28	105	32	M10	5	1,2	MN5336-18-K
80	0,5-10	ER-16	28	105	32	M10	5	1,5	MN5335-19-K
100	0,5-10	ER-16	28	105	32	M10	5	2,4	MN5335-20-K

Spares

For nominal size HSK-C	① Length adjustment screw (through bore for coolant) Clamping diameter			② Clamping nut HI-Q/ERC ISO 15488	
	2,8 - 5 Order No.	4,8 - 7 Order No.	6,8 - 10 Order No.	Nominal size	Order No.
32	LS0823-01	LS0823-02	LS0823-03	ERC-16	10007862
40 - 100	LS1023-01	LS1023-02	LS1023-03	ERC-16	10007862

Dimensions in mm.

Supply includes:

Supplied complete with clamping nut for internal coolant (HI-Q/ERC); washer, length adjustment screw and clamping jaws not included.

Design:

Permissible concentricity deviation for hollow taper shank to internal taper 0.003 mm.

Note:

Chucks have a through hole with internal thread for the length adjustment screw.

For suitable collets see pages 164-167.

For assembly keys see page 153.

For washers see pages 169-170.

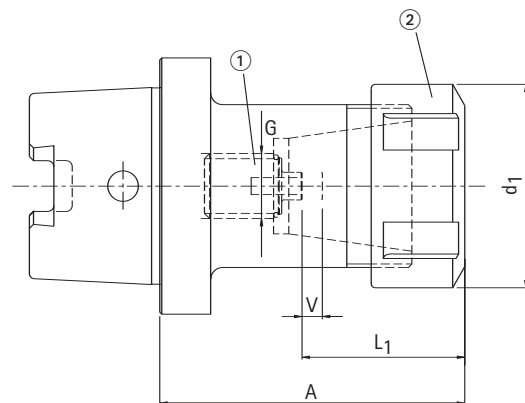
For notes on preventing mix-ups and on fine balancing see technical notes.

Balance:

G 6.3 at 3,000 min⁻¹

Chucks for collets to DIN 69882-6

Location shank HSK-C to DIN 69893-1



Nominal size HSK-C	Clamping diameter	Nominal size	Dimensions				Adjustment path V	Weight kg	Order No.
			d ₁	A	L ₁	G			
40	2-20	ER-32	50	75	40	M12	5	0,7	MN5340-06-K
50	2-20	ER-32	50	75	40	M16	5	0,8	MN5340-07-K
50	3-26	ER-40	63	80	46	M16	5	0,9	MN5341-07-K
63	2-20	ER-32	50	75	40	M16	5	1,0	MN5340-08-K
63	3-26	ER-40	63	80	46	M16	5	1,3	MN5341-08-K
80	2-20	ER-32	50	80	40	M16	5	1,4	MN5340-09-K
80	3-26	ER-40	63	85	46	M16	5	1,7	MN5341-09-K
100	2-20	ER-32	50	80	40	M16	5	2,2	MN5340-10-K
100	3-26	ER-40	63	90	46	M16	5	2,4	MN5341-10-K

Spares

For nominal size HSK-C	Clamping diameter	① Length adjustment screw (through bore for coolant) Clamping diameter					② Clamping nut ISO 15488	
		3,8 - 7 Order No.	6,8 - 10 Order No.	9,8 - 13 Order No.	12,8 - 20 Order No.	19,9 - 26 Order No.	Nominal size	Order No.
40	2-20	LS1225-01	LS1225-02	LS1224-01	LS1224-01	-	ER-32	10023401
50 - 100	2-20	LS1624-01	LS1624-02	LS1624-03	LS1624-04	-	ER-32	10023401
50 - 100	3-26	LS1624-01	LS1624-02	LS1624-03	LS1624-04	LS1624-05	ER-40	10022176

Dimensions in mm.

Supply includes:

Supplied complete with clamping nut to ISO 15488; length adjustment screw and clamping jaws not included.

Design:

Permissible concentricity deviation for hollow taper shank to internal taper 0.003 mm.

Note:

Chucks have a through hole with internal thread for the length adjustment screw.

For collets see pages 164-167.

For assembly keys see page 153.

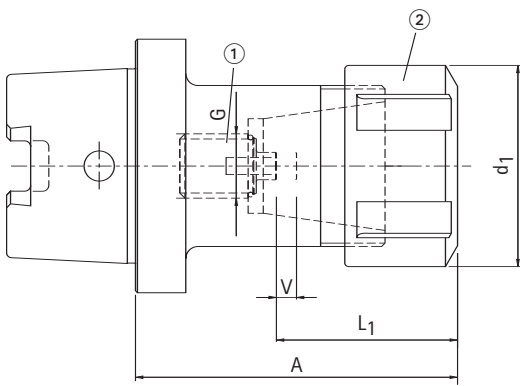
For notes on preventing mix-ups and on fine balancing see technical notes.

Balance:

G 6.3 at 3,000 min⁻¹

Chucks for collets with clamping nuts for internal coolant supply (HI-Q/ERC)

Location shank HSK-C to DIN 69893-1



Nominal size HSK-C	Clamping diameter	Nominal size	Dimensions				Adjustment path V	Weight kg	Order No.
			d ₁	A	L ₁	G			
40	2-20	ER-32	50	80	45	M12	5	0,6	MN5340-16-K
50	2-20	ER-32	50	80	45	M16	5	0,7	MN5340-17-K
50	3-26	ER-40	63	85	51	M16	5	0,8	MN5341-17-K
63	2-20	ER-32	50	80	45	M16	5	0,9	MN5340-18-K
63	3-26	ER-40	63	85	51	M16	5	1,2	MN5341-18-K
80	2-20	ER-32	50	85	45	M16	5	1,3	MN5340-19-K
80	3-26	ER-40	63	90	51	M16	5	1,6	MN5341-19-K
100	2-20	ER-32	50	85	45	M16	5	2,1	MN5340-20-K
100	3-26	ER-40	63	95	51	M16	5	2,3	MN5341-20-K

Spares

For nominal size HSK-C	Clamping diameter	① Length adjustment screw (through bore for coolant) Clamping diameter					② Clamping nut HI-Q/ERC ISO 15488	
		3,8 - 7	6,8 - 10	9,8 - 13	12,8 - 20	19,9 - 26	Nominal size	Order No.
		Order No.	Order No.	Order No.	Order No.	Order No.		
40	2-20	LS1225-01	LS1225-02	LS1224-01	LS1224-01	-	ER-32	10007923
50 - 100	2-20	LS1624-01	LS1624-02	LS1624-03	LS1624-04	-	ER-32	10007923
50 - 100	3-26	LS1624-01	LS1624-02	LS1624-03	LS1624-04	LS1624-05	ER-40	10008010

Dimensions in mm.

Supply includes:

Supplied complete with clamping nut for internal coolant (HI-Q/ERC);
length adjustment screw, washer and clamping jaws not included.

Design:

Permissible concentricity deviation for hollow taper shank to internal taper
0.003 mm.

Note:

Chucks have a through hole with internal thread for the length adjustment
screw.

For suitable collets see pages 164-167.

For assembly keys see page 153.

For washers see pages 169-170.

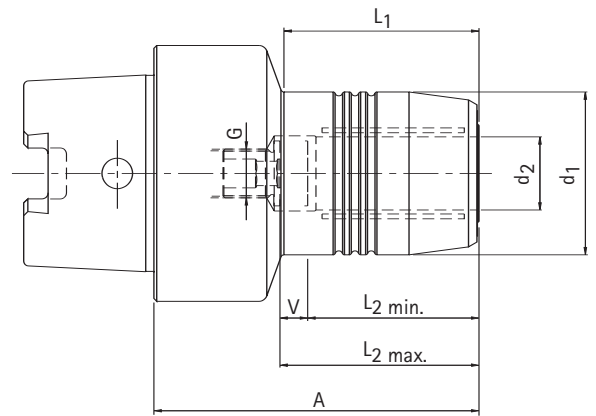
For notes on preventing mix-ups and on fine balancing see technical notes.

Balance:

G 6.3 at 3,000 min⁻¹

Expanding chucks to DIN 69882-7

with axial tool length adjustment
Location shank HSK-C to DIN 69893-1



Nominal size HSK-C	Clamping diameter d ₂	Dimensions						Adjustment path V	Weight kg	Order No.
		d ₁	A	L ₁	L ₂ min.	L ₂ max.	G			
40	6	26	60	35	27	37	M5	10	0,4	MN5360-06-KF
40	8	28	60	36	27	37	M6	10	0,4	MN5361-06-KF
40	10	30	65	41	31	41	M6	10	0,5	MN5362-06-KF
40	12	32	70	47	36	46	M6	10	0,5	MN5363-06-KF
50	6	26	60	30	27	37	M5	10	0,6	MN5360-07-KF
50	8	28	60	30	27	37	M6	10	0,6	MN5361-07-KF
50	10	30	65	35	31	41	M8x1	10	0,7	MN5362-07-KF
50	12	32	75	44	36	46	M10x1	10	0,7	MN5363-07-KF
50	14	34	75	46	36	46	M10x1	10	0,7	MN5366-07-KF
50	16	38	80	51	39	49	M12x1	10	0,8	MN5364-07-KF
50	18	40	80	51	39	49	M12x1	10	0,9	MN5367-07-KF
50	20	42	80	52	41	51	M16x1	10	0,9	MN5365-07-KF
63	6	26	60	25	27	37	M5	10	0,9	MN5360-08-KF
63	8	28	60	25	27	37	M6	10	0,9	MN5361-08-KF
63	10	30	65	31	31	41	M8x1	10	1,0	MN5362-08-KF
63	12	32	75	41	36	46	M10x1	10	1,0	MN5363-08-KF
63	14	34	75	42	36	46	M10x1	10	1,1	MN5366-08-KF
63	16	38	80	48	39	49	M12x1	10	1,1	MN5364-08-KF
63	18	40	80	48	39	49	M12x1	10	1,2	MN5367-08-KF
63	20	42	80	49	41	51	M16x1	10	1,2	MN5365-08-KF
63	25	57	95	63	47	57	M16x1	10	1,8	MN5368-08-KF
63	32	63	100	-	51	61	M12x1	10	2,0	MN5369-08-KF

Dimensions in mm.

Use:

For clamping tools with smooth cylindrical shanks to DIN 6535 (Form HA) up to \varnothing 32 mm and with recesses to DIN 1835 (Form B, E) and DIN 6535 (Form HB, HE) directly and without adaptor sleeve in the clamping diameter.

The clamping diameter is designed for a tool tolerance h6 with $d_2 = 6$ mm to $d_2 = 32$ mm.

Supply:

Supplied complete with length adjustment screw.

Design:

Maximum tool life and quality production results when used for smooth cylindrical shanks to DIN 1835 Form A and DIN 6535 Form HA.

With an overhang length of $2.5 \times D$ (max. 50 mm), concentricity of 0.003 mm. When using cylindrical shanks with angled clamping surface (Form E and Form HE), this may adversely affect accuracy.

Note:

Chuck with axial tool length adjustment.

Coolant supply via central through hole.

For adaptor sleeves to reduce clamping diameter see page 171.

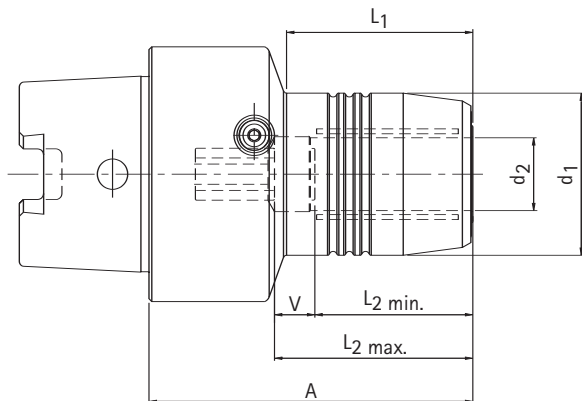
(Using adaptor sleeves, this may effect accuracy).

Length adjustment screw available on request.

For notes on preventing mix-ups and on fine balancing see technical notes.

Balance:

G 6.3 at $15,000 \text{ min}^{-1}$



Hydraulic chucks to DIN 69882-7

with radial tool length adjustment
Location shank HSK-C to DIN 69893-1

Nominal size HSK-C	Clamping diameter d ₂	Dimensions					Adjustment path V	Weight kg	Order No.
		d ₁	A	L ₁	L ₂ min.	L ₂ max.			
40	6	26	60	30	25,6	35,6	10	0,4	MN5390-06-KF
40	8	28	60	30	25,6	35,6	10	0,4	MN5391-06-KF
40	10	30	65	35	29,6	39,6	10	0,5	MN5392-06-KF
40	12	32	70	40	35	45	10	0,5	MN5393-06-KF
50	6	26	60	30	25,6	35,6	10	0,6	MN5390-07-KF
50	8	28	60	30	25,6	35,6	10	0,6	MN5391-07-KF
50	10	30	65	35	29,6	39,6	10	0,6	MN5392-07-KF
50	12	32	75	40	35,6	45,6	10	0,8	MN5393-07-KF
50	14	34	75	40	35,6	45,6	10	0,9	MN5394-07-KF
50	16	38	80	50	39	49	10	0,8	MN5395-07-KF
50	18	40	80	50	39	49	10	0,9	MN5396-07-KF
50	20	42	80	50	40,6	50,6	10	0,9	MN5397-07-KF
63	6	26	60	25	25,6	35,6	10	0,9	MN5390-08-KF
63	8	28	60	25	25,6	35,6	10	1,0	MN5391-08-KF
63	10	30	65	31	29,6	39,6	10	1,0	MN5392-08-KF
63	12	32	75	40	35,6	45,6	10	1,1	MN5393-08-KF
63	14	34	75	40	35,6	45,6	10	1,1	MN5394-08-KF
63	16	38	80	46	39	49	10	1,2	MN5395-08-KF
63	18	40	80	46	39	49	10	1,2	MN5396-08-KF
63	20	42	80	48	40,6	50,6	10	1,2	MN5397-08-KF
63	25	57	95	59,5	47	57	10	1,8	MN5398-08-KF
63	32	62,5	100	60,5	51	61	10	2,4	MN5399-08-KF

Dimensions in mm.

Use:

For clamping tools with smooth cylindrical shanks to DIN 6535 (Form HA) up to $\varnothing 32$ mm and with recesses to DIN 1835 (Form B, E) and DIN 6535 (Form HB, HE) directly and without adaptor sleeve in the clamping diameter.

The clamping diameter is designed for a tool tolerance h6 with $d_2 = 6$ mm to $d_2 = 32$ mm.

Supply:

Supplied complete with length adjustment screw.

Design:

Maximum tool life and quality production results when used for smooth cylindrical shanks to DIN 1835 Form A and DIN 6535 Form HA.

With an overhang length of $2.5 \times D$ (max. 50 mm), concentricity of 0.003 mm.

When using cylindrical shanks with angled clamping surface (Form E and Form HE), this may affect accuracy.

Note:

Chuck with radial tool length adjustment.

Coolant supply via central through hole.

For adaptor sleeves to reduce clamping diameter see page 171.

(Using adaptor sleeves, this may adversely effect accuracy).

Length adjustment screw set available on request.

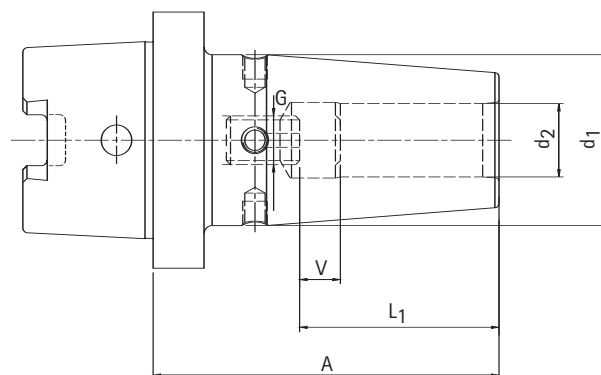
For notes on preventing mix-ups and on fine balancing see technical notes.

Balance:

G 6.3 at $15,000 \text{ min}^{-1}$

Thermal expanding chucks to DIN 69882-8

Location shank HSK-C to DIN 69893-1



Nominal size HSK-C	Clamping diameter d ₂	Dimensions				Adjustment path V	Weight kg	Order No.
		d ₁	A	L ₁	G			
32	6	26	65	36	M5	10	0,3	MN5840-05-K
32	8	26	65	36	M6	10	0,3	MN5841-05-K
32	10	30	65	41	M8x1	10	0,3	MN5842-05-K
32	12	32	75	46	M10x1	10	0,3	MN5843-05-K
40	6	30	70	36	M5	10	0,3	MN5840-06-K
40	8	30	70	36	M6	10	0,3	MN5841-06-K
40	10	33,5	70	41	M8x1	10	0,4	MN5842-06-K
40	12	35	80	46	M10x1	10	0,4	MN5843-06-K
40	14	38	80	46	M10x1	10	0,5	MN5844-06-K
40	16	38	80	49	M12x1	10	0,5	MN5845-06-K
50	6	30	70	36	M5	10	0,5	MN5840-07-K
50	8	30	70	36	M6	10	0,4	MN5841-07-K
50	10	33	75	41	M8x1	10	0,5	MN5842-07-K
50	12	34	80	46	M10x1	10	0,5	MN5843-07-K
50	14	37	80	46	M10x1	10	0,6	MN5844-07-K
50	16	38,5	85	49	M12x1	10	0,6	MN5845-07-K
50	18	44,5	85	49	M12x1	10	0,8	MN5846-07-K
50	20	45	90	51	M16x1	10	0,8	MN5847-07-K
63	6	30	70	36	M5	10	0,6	MN5840-08-K
63	8	30	70	36	M6	10	0,6	MN5841-08-K
63	10	34	75	41	M8x1	10	0,7	MN5842-08-K
63	12	34	80	46	M10x1	10	0,7	MN5843-08-K
63	14	36	80	46	M10x1	10	0,8	MN5844-08-K
63	16	36	85	49	M12x1	10	0,8	MN5845-08-K
63	18	44	85	49	M12x1	10	0,9	MN5846-08-K
63	20	45	90	51	M16x1	10	1,0	MN5847-08-K
63	25	53	100	57	M16x1	10	1,4	MN5848-08-K
63	32	53	110	61	M16x1	10	1,4	MN5849-08-K

Dimensions in mm.

Supply includes:

Length adjustment screw with through hole already in place. Fine balancing screw not included.

Design:

Permissible concentricity deviation for hollow taper shank to clamping diameter $d_2 = 0.003$ mm.

The clamping diameter is designed for a shank tolerance H6.

Note:

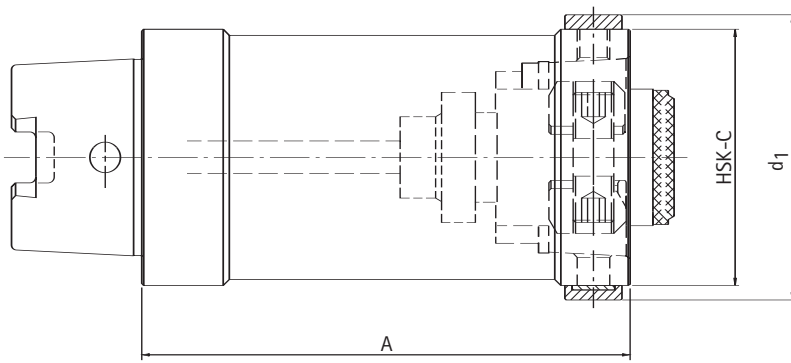
For tool extensions see page 172.

Length adjustment screw and fine balancing screw available on request.

For notes on preventing mix-ups and on fine balancing see technical notes.

Balance:

G 6.3 at 18,000 min⁻¹



HSK extensions

Location shank HSK-C
to DIN 69893-1

Nominal size HSK-C	Nominal size HSK-C	Dimensions		Weight kg	Order No.
		d_1	$A \pm 0,05$		
32	32	37	50	0,2	MN5725-05-K
32	32	37	70	0,3	MN5726-05-K
40	40	45	60	0,5	MN5725-06-K
40	40	45	80	0,7	MN5726-06-K
50	50	55	60	1,1	MN5725-07-K
50	50	55	100	1,5	MN5726-07-K
63	63	70	80	1,9	MN5725-08-K
63	63	70	120	2,8	MN5726-08-K
80	80	87	80	3,4	MN5725-09-K
80	80	87	120	4,8	MN5726-09-K
100	100	110	100	5,7	MN5725-10-K
100	100	110	160	9,6	MN5726-10-K

Dimensions in mm.

Supply:

Supplied complete with clamping cartridge and stop ring.

Design:

Permissible concentricity deviation for hollow taper shank to internal taper
0.005 mm.

Note:

For clamping cartridges see pages 142-143.

For stop rings see page 145.

On request the extensions can be supplied with KS clamping cartridge for use with minimal lubrication. For this an M is added to the order number, e.g. MN5725-08-KM.

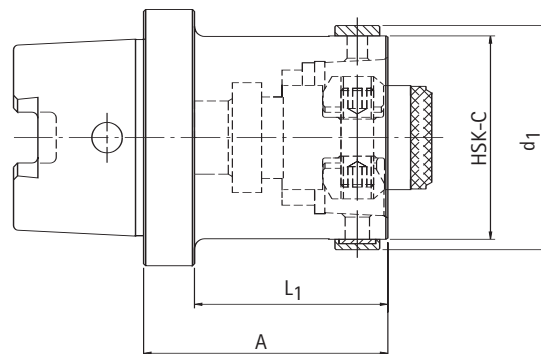
For notes on preventing mix-ups and on fine balancing see technical notes.

Balance:

G 6.3 at 3,000 min⁻¹

HSK reducers

Location shank HSK-C to DIN 69893-1



Nominal size HSK-C	Nominal size HSK-C	d ₁	Dimensions A ± 0,05	L ₁	Weight kg	Order No.
40	32	37	50	40	0,4	MN5730-06-K
50	32	37	50	37,5	0,6	MN5730-07-K
50	40	45	60	47,5	0,8	MN5731-07-K
63	32	37	50	30	0,7	MN5730-08-K
63	40	45	60	47,5	0,9	MN5731-08-K
63	50	55	60	47,5	1,0	MN5732-08-K
80	40	45	60	44	1,2	MN5731-09-K
80	50	55	80	64	1,4	MN5732-09-K
80	63	70	80	64	2,0	MN5733-09-K
100	50	55	80	64	1,6	MN5732-10-K
100	63	70	80	64	2,1	MN5733-10-K
100	80	87	100	84	4,2	MN5734-10-K

Dimensions in mm.

Supply includes:

Supplied complete with clamping cartridge and stop ring.

Design:

Permissible concentricity deviation for hollow taper shank to internal taper 0.005 mm.

Note:

For clamping cartridges see pages 142-143.

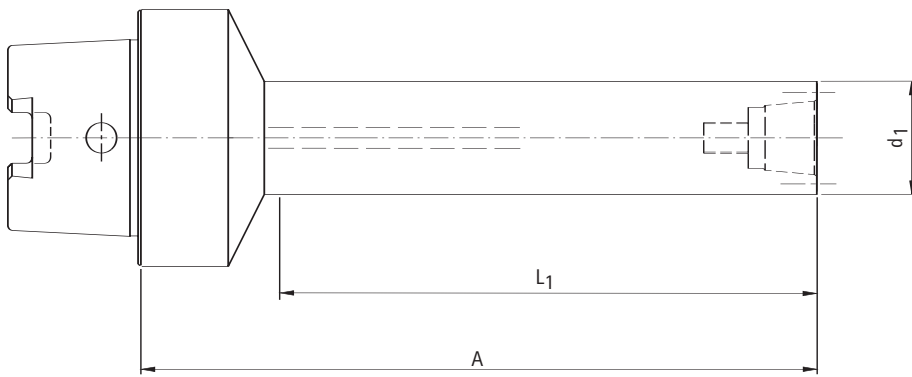
For stop rings see page 145.

On request the reducers can be supplied with KS clamping cartridge for use with minimal lubrication. For this an M is added to the order number, e.g. MN5730-08-KM.

For notes on preventing mix-ups and on fine balancing see technical notes.

Balance:

G 6.3 at 3,000 min⁻¹



HFS Holders with axial clamping system

Location shank HSK-C
to DIN 69893-1

HFS 964, HFS 965: long version

Nominal size HSK-C	Nominal size HFS	Face contact d_1	Dimensions		Weight kg	Ref. code	Order No.
			A	L_1			
50	10	15	117	92	0,5	HFS 964-10	30015319
50	12	17,8	132,5	108	0,6	HFS 964-12	30015320
50	14	20,5	131,5	108	0,7	HFS 964-14	30015321
50	16	23,2	163	140	0,9	HFS 964-16	30015322
50	20	29,3	188	167	1,2	HFS 964-20	30015323
50	24	39	207	188	2,1	HFS 964-24	30015324
63	10	15	117	92	0,8	HFS 965-10	30015335
63	12	17,8	132,5	108	0,8	HFS 965-12	30015336
63	14	20,5	131,5	108	0,9	HFS 965-14	30015337
63	16	23,2	163	140	1,1	HFS 965-16	30015338
63	20	29,3	188	167	1,4	HFS 965-20	30015339
63	24	39	207	188	2,3	HFS 965-24	30015340

HFS 959, HFS 960: short version

Nominal size HSK-C	Nominal size HFS	Face contact d_1	Dimensions		Weight kg	Ref. code	Order No.
			A	L_1			
50	10	15	77	52	0,5	HFS 959-10	30015327
50	12	17,8	92,5	68	0,5	HFS 959-12	30015328
50	14	20,5	91,5	68	0,6	HFS 959-14	30015329
50	16	23,2	112	89	0,7	HFS 959-16	30015330
50	20	29,3	111	90	0,8	HFS 959-20	30015331
50	24	39	109	90	1,2	HFS 959-24	30015332
63	10	15	77	52	0,7	HFS 960-10	30015343
63	12	17,8	92,5	68	0,8	HFS 960-12	30015344
63	14	20,5	91,5	68	0,8	HFS 960-14	30015345
63	16	23,2	112	89	0,9	HFS 960-16	30015346
63	20	29,3	111	90	1,0	HFS 960-20	30015347
63	24	39	109	90	1,4	HFS 960-24	30015348

Dimensions in mm.

Supply includes:

Holder with threaded spindle and hexagonal key.

Note:

For accessories and spares see page 162.

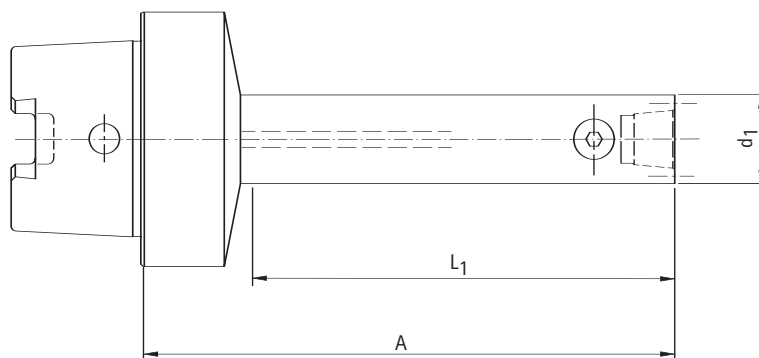
For appropriate torque wrench and hexagonal key see pages 150-152.

Balance:

G 6.3 at 3,000 min⁻¹

HFS Holders with radial clamping system

Location shank HSK-C
to DIN 69893-1



HFS 964R, HFS 965R: long version

Nominal size HSK-C	Nominal size HFS	Face contact d_1	Dimensions		Weight kg	Ref. code	Order No.
			A	L_1			
50	12	17,8	132,5	110	0,6	HFS 964R-12	30078142
50	14	20,5	131,5	108	0,7	HFS 964R-14	30078143
50	16	23,2	163	140	0,9	HFS 964R-16	30078144
50	20	29,3	188	165	1,2	HFS 964R-20	30080158
63	12	17,8	132,5	107	0,8	HFS 965R-12	30078148
63	14	20,5	131,5	108	0,9	HFS 965R-14	30078149
63	16	23,2	163	140	1,1	HFS 965R-16	30078150
63	20	29,3	188	165	1,4	HFS 965R-20	30080171

HFS 959R, HFS 960R: short version

Nominal size HSK-C	Nominal size HFS	Face contact d_1	Dimensions		Weight kg	Ref. code	Order No.
			A	L_1			
50	12	17,8	92,5	70	0,5	HFS 959R-12	30078145
50	14	20,5	91,5	68	0,6	HFS 959R-14	30078146
50	16	23,2	112	89	0,7	HFS 959R-16	30078147
50	20	29,3	111	89	0,8	HFS 959R-20	30080159
63	12	17,8	92,5	67	0,8	HFS 960R-12	30078151
63	14	20,5	91,5	68	0,8	HFS 960R-14	30078152
63	16	23,2	112	89	0,9	HFS 960R-16	30078153
63	20	29,3	111	89	1,0	HFS 960R-20	30080172

Dimensions in mm.

Supply includes:

Holder with pull studs, hexagonal key and open-end wrench for pull studs.

Recommendation:

To allow replaceable heads to be changed quickly with the radial clamping system, at least 1 additional pull stud should be ordered.

Note:

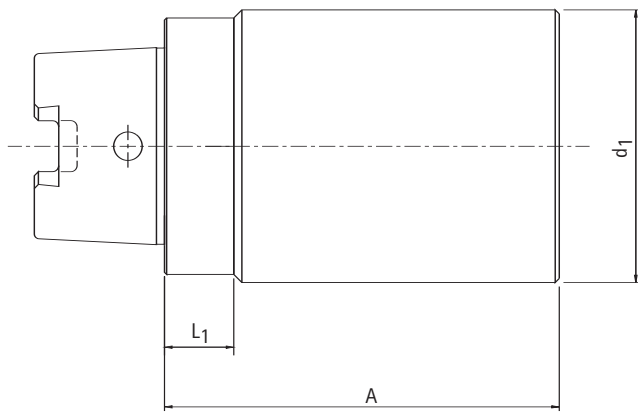
For accessories and spares see page 162.

For suitable torque wrench and hexagonal key see pages 150-152.

Balance:

G 6.3 at 3,000 min⁻¹

HSK Blanks



Location shank HSK-C to DIN 69893-1

Nominal size HSK-C	Nominal d_1	dimensions		Order No. Version 1	Order No. Version 2
		A	L_1		
32	34	100	10	MN5571-05-K	MN5571-55-K
32	34	200	10	MN5575-05-K	MN5575-55-K
32	53	150	10	MN5578-05-K	MN5578-55-K
40	40	100	10	MN5571-06-K	MN5571-56-K
40	40	200	10	MN5575-06-K	MN5575-56-K
40	63	150	10	MN5578-06-K	MN5578-56-K
50	53	100	12,5	MN5571-07-K	MN5571-57-K
50	53	200	12,5	MN5575-07-K	MN5575-57-K
50	83	175	12,5	MN5578-07-K	MN5578-57-K
63	63	100	12,5	MN5571-08-K	MN5571-58-K
63	63	200	12,5	MN5575-08-K	MN5575-58-K
63	102	175	12,5	MN5578-08-K	MN5578-58-K
80	80	100	16	MN5571-09-K	MN5571-59-K
80	80	200	16	MN5575-09-K	MN5575-59-K
80	127	200	16	MN5578-09-K	MN5578-59-K
100	100	100	16	MN5571-10-K	MN5571-510-K
100	100	200	16	MN5575-10-K	MN5575-510-K
100	127	200	16	MN5578-10-K	MN5578-510-K

Dimensions in mm.

Version 1:

Rough turned and milled.

In the HSK area, grinding allowance from HSK 32 to HSK 80 = 0.2 mm, from HSK 100 upwards = 0.3 mm on the taper and 0.15 mm on the face.

Unhardened and unground.

Blank front section unhardened and unground for further processing.

Version 2:

Taper including collar hardened and finish ground.

Blank front section unhardened and unground for further processing.

Important note regarding Version 2:

Excessive cutting and any application of heat on finished blanks can lead to unacceptable distortion on the HSK shank.

Claims against warranty can therefore only be made on blanks which have not been processed.

Note:

If extensive cutting is carried out on the blank front section we recommend Version 1 be used and the HSK be finish ground as the final operation.

Further sizes available on request.

Material:

42CrMo54



Toolholders with steep taper (ISO) to DIN 69871

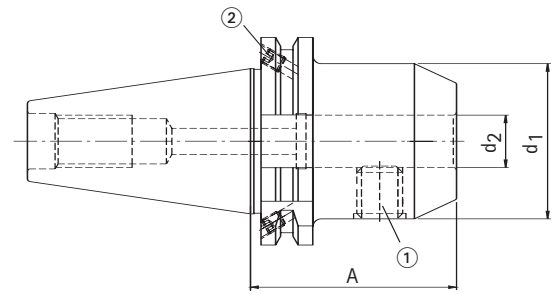
MAPAL has a wide range of products in the area of steep taper (ISO) toolholders and adaptors to DIN 69871.

In addition to all the current versions, there are also steep taper adaptors which, when combined with MN5520 or MN5523 adaptor flanges, ensure greater concentricity.



Toolholders for cylindrical shanks with lateral clamping surface

ISO location shank to DIN 68971 AD/B



Nominal size ISO	Clamping diameter d_2	Dimensions		Weight kg	Ref. code	Order No.
		d_1	A			
40	6	25	50	0,9	MN1100-02	10059555
40	6	25	100	1,1	MN1100-12	10060644
40	6	25	160	1,3	MN1100-22	10060645
40	8	28	50	1,0	MN1101-02	10060646
40	8	28	100	1,1	MN1101-12	10060647
40	8	28	160	1,4	MN1101-22	10060648
40	10	35	50	1,0	MN1102-02	10060649
40	10	35	100	1,4	MN1102-12	10060650
40	10	35	160	1,8	MN1102-22	10060651
40	12	42	50	1,2	MN1103-02	10060652
40	12	42	100	1,7	MN1103-12	10060653
40	12	42	160	2,2	MN1103-22	10060654
40	14	44	50	1,2	MN1104-02	10060655
40	14	44	100	1,7	MN1104-12	10060656
40	14	44	160	2,5	MN1104-22	10060657
40	16	48	63	1,3	MN1105-02	10060658
40	16	48	100	1,7	MN1105-12	10060660
40	16	48	160	2,7	MN1105-22	10060661
40	18	50	63	1,3	MN1106-02	10060662
40	18	50	100	1,9	MN1106-12	10060663
40	18	50	160	2,8	MN1106-22	10060664
40	20	52	63	1,3	MN1107-02	10059554
40	20	52	100	1,8	MN1107-12	10060666
40	20	52	160	2,8	MN1107-22	10060667
40	25	65	100	2,3	MN1108-02	10060668
40	25	65	160	3,9	MN1108-12	10060669
40	32	72	100	2,6	MN1109-02	10064102
50	6	25	63	2,8	MN1100-04	10073656
50	6	25	100	3,1	MN1100-14	10073657
50	6	25	160	3,5	MN1100-24	10073658
50	8	28	63	2,8	MN1101-04	10073659
50	8	28	100	3,3	MN1101-14	10073660
50	8	28	160	3,7	MN1101-24	10073661
50	10	35	63	2,9	MN1102-04	10073662
50	10	35	100	3,3	MN1102-14	10073663
50	10	35	160	3,8	MN1102-24	10073664
50	12	42	63	3,1	MN1103-04	10073665
50	12	42	100	3,4	MN1103-14	10073666
50	12	42	160	3,9	MN1103-24	10073667

Dimensions in mm.

Toolholders for cylindrical shanks with lateral clamping surface

ISO location shank to DIN 68971 AD/B

Nominal size ISO	Clamping diameter d_2	Dimensions		Weight kg	Ref. code	Order No.
		d_1	A			
50	14	44	63	3,2	MN1104-04	10073668
50	14	44	100	3,5	MN1104-14	10073669
50	14	44	160	4,2	MN1104-24	10073670
50	16	48	63	3,4	MN1105-04	10073671
50	16	48	100	4,0	MN1105-14	10073672
50	16	48	160	4,5	MN1105-24	10073673
50	18	50	63	3,2	MN1106-04	10073674
50	18	50	100	4,9	MN1106-14	10073675
50	18	50	160	4,6	MN1106-24	10073676
50	20	52	63	3,2	MN1107-04	10073677
50	20	52	100	4,0	MN1107-14	10073678
50	20	52	160	4,6	MN1107-24	10073679
50	25	65	80	4,0	MN1108-04	10073680
50	25	65	160	5,8	MN1108-14	10073681
50	32	72	100	5,9	MN1109-04	10059057
50	32	72	160	6,5	MN1109-14	10073682

Spares

For clamping diameter d_2	① Clamping screw	
	DIN 1835-B	Order No.
6	M6x9	10060983
8	M8x9	10042517
10	M10x12	10004134
12, 14	M12x14	30002947
16, 18	M14x16	10004136
20	M16x16	10004137
25	M18x2x20	10004141
32	M20x2x20	10004129

For nominal size ISO	Quantity required	② Threaded pin	
		MN620-A	Order No.
40	2	M5x4	10036757
50	2	M6x6	10036769

Dimensions in mm.

Use:

For holding milling tools and drills with cylindrical shank and lateral clamping face to DIN 1835 Form B and DIN 6535 Form HB.

Supply includes:

Clamping screw fitted; pull studs not included.

Bores for coolant supply Form B are stopped with threaded pins when delivered.

Design:

Permissible concentricity deviation for taper to clamping diameter

$d_2 = 0.003$ mm.

The bore tolerance is much reduced compared to DIN 1835 (d_2^{H4}) to produce machining results of the highest accuracy.

Note:

From clamping diameter $d_2 = 25$ mm two clamping screws are provided.

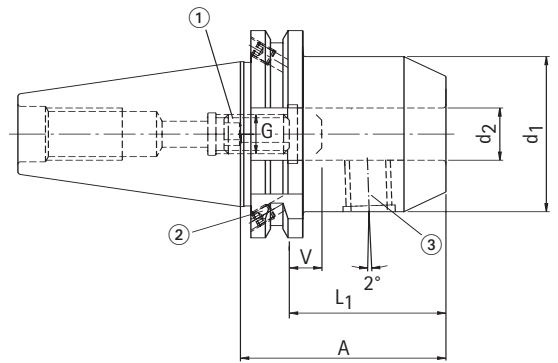
For pull studs see page 163.

Balance:

G 6.3 at 12,000 min⁻¹

Toolholders for cylindrical shanks with angled clamping surface

ISO location shank to DIN 68971 AD/B



Nominal size ISO	Clamping diameter d_2	Dimensions				Adjustment path	Weight kg	① Order No. Length adj.	Ref. code	Order No. screw
		d_1	A	L_1	G					
40	6	25	50	36	M5	10	0,9	LS0520-01	MN1110-02	10060812
40	8	28	50	36	M6	10	1,0	LS0620-01	MN1111-02	10060813
40	10	35	50	40	M8	10	1,0	LS0816-02	MN1112-02	10060814
40	12	42	50	45	M10	10	1,2	LS1020-03	MN1113-02	10060815
40	14	44	50	45	M10	10	1,2	LS1020-03	MN1114-02	10060817
40	16	48	63	48	M12	10	1,3	LS1220-03	MN1115-02	10060818
40	18	50	63	48	M12	10	1,4	LS1220-03	MN1116-02	10060819
40	20	52	63	50	M16	10	1,4	LS1620-02	MN1117-02	10060820
40	25	65	100	56	M20	10	2,3	LS2025-03	MN1118-02	10060822
40	32	72	100	60	M20	10	2,1	LS2025-03	MN1119-02	10073683
50	6	25	63	36	M5	10	2,8	LS0520-01	MN1110-04	10073684
50	8	28	63	36	M6	10	2,8	LS0620-01	MN1111-04	10073685
50	10	35	63	40	M8	10	2,9	LS0816-02	MN1112-04	10073686
50	12	42	63	45	M10	10	3,0	LS1020-03	MN1113-04	10073687
50	14	44	63	45	M10	10	3,1	LS1020-03	MN1114-04	10073688
50	16	48	63	48	M12	10	3,1	LS1220-03	MN1115-04	10073689
50	18	50	63	48	M12	10	3,1	LS1220-03	MN1116-04	10073690
50	20	52	63	50	M16	10	3,2	LS1620-02	MN1117-04	10073691
50	25	65	80	56	M20	10	3,9	LS2025-03	MN1118-04	10073692
50	32	72	100	60	M20	10	4,1	LS2025-03	MN1119-04	10073693

Spares

For clamping diameter d_2	② Clamping screw	
	DIN 1835-B	Order No.
6	M6x9	10060983
8	M8x9	10042517
10	M10x12	10004134
12, 14	M12x14	30002947
16, 18	M14x16	10004136
20	M16x16	10004137
25	M18x2x20	10004141
32	M20x2x20	10004129

For nominal size ISO	Quantity required	③ Threaded pin	
		MN620-A	Order No.
40	2	M5x4	10036757
50	2	M6x6	10036769

Dimensions in mm.

Use:

For holding milling tools and drills with cylindrical shank and angled clamping face (2°) to DIN 1835 Form E and DIN 6535 Form HE.

Supply includes:

Clamping screw and length adjustment screw; pull studs not included.

Bores for coolant supply Form B are stopped with threaded pins when delivered.

Design:

Permissible concentricity deviation for taper to clamping diameter d_2 0.003 mm.

The bore tolerance is much reduced compared to DIN 1835 (d_2^{H4}) to produce extremely high accurate machining results.

Note:

From clamping diameter $d_2 = 25$ mm two clamping screws are provided.

The length adjustment screws have a through hole for coolant.

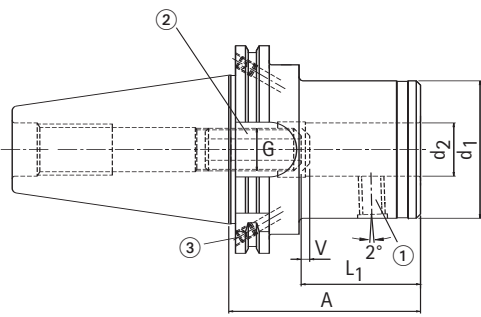
For pull studs see page 163.

Balance:

G 6.3 at 12,000 min⁻¹

Toolholders for cylindrical shanks with angled clamping surface

ISO location shank to DIN 68971 AD/B
Precision holder for MAPAL NC reamers



Nominal size ISO	Clamping diameter d_2	d_1	Dimensions			Adjustment path V	Weight kg	Ref. code	Order No.
			A	L_1	G				
40	16	48	80	50	M12x1,25	4	1,6	MN1005-02	10058633
40	20	50	80	50	M16x1,5	4	1,9	MN1005-12	10058644
40	25	65	95	56	M20x1,5	4	2,3	MN1005-22	10058647
45	16	48	80	48	M12x1,25	4	2,1	MN1005-03	10058634
45	20	52	85	50	M16x1,5	4	2,3	MN1005-13	10058645
45	25	63	90	56	M20x1,5	4	2,5	MN1005-23	10058648
45	40	80	104	70	M20x1,5	4	2,8	MN1005-33	10058650
50	16	48	80	48	M12x1,25	4	2,8	MN1005-04	10058636
50	20	52	85	50	M16x1,5	4	3,1	MN1005-14	10058646
50	25	65	90	56	M20x1,5	4	3,3	MN1005-24	10058649
50	40	80	104	70	M20x1,5	4	4,1	MN1005-34	10058651

Spares

For clamping diameter d_2	① Clamping screw		② Length adjustment screw	
	DIN 1835-B	Order No.	Size	Order No.
16	M10x12	10004134	M12x1,25x35	K2865-2764
20	M12x14	30002947	M16x1,5x40	K2865-2774
25	M12x14	30002947	M20x1,5x45	K2865-2784
40	M12x14	30002947	M20x1,5x45	K2865-2784

For nominal size ISO	Quantity required	③ Threaded pin	
		MN620-A	Order No.
40	2	M5x6	10036759
45	2	M5x6	10036759
50	2	M6x8	10036770

Dimensions in mm.

Use:

For holding milling tools and drills with cylindrical shank and angled clamping face (2°) to DIN 1835 Form E.

Supply includes:

Clamping screw and length adjustment screw ; pull studs not included.

Bores for coolant supply Form B are stopped with threaded pins when delivered.

Design:

Permissible concentricity deviation for taper to clamping diameter

d_2 0.003 mm.

The bore tolerance is much reduced compared to DIN 1835 (d^{H5}) to produce machining results of the highest accuracy.

Note:

From clamping diameter $d_2 = 40$ mm two clamping screws are provided.

The length adjustment screws have a through hole for coolant.

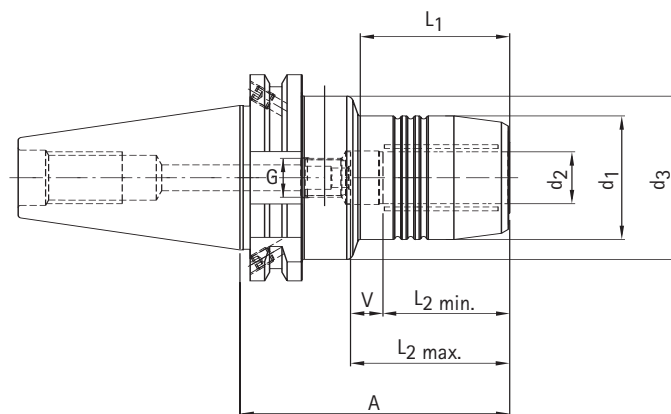
For pull studs see page 163.

Balance:

G 6.3 at 3,000 min-1

Hydraulic chucks

with axial tool length adjustment
ISO location shank to DIN 69871 AD/B



Nominal size ISO	Clamping diameter d_2	Dimensions							Adjustment path V	Weight kg	Ref. code	Order No.
		d_1	d_3	A	L_1	L_2 min.	L_2 max.	G				
40	6	26	49,5	80,5	29,5	27	37	M5	10	1,4	MN1130-02	10005031
40	8	28	49,5	80,5	30,0	27	37	M6	10	1,4	MN1131-02	10004839
40	10	30	49,5	80,5	31,0	31	41	M8x1	10	1,4	MN1132-02	10005026
40	12	32	49,5	80,5	31,5	36	46	M10x1	10	1,4	MN1133-02	10005028
40	16	38	49,5	80,5	33,0	39	49	M12x1	10	1,4	MN1135-02	10004962
40	20	42	49,5	80,5	34,0	41	51	M16x1	10	1,4	MN1137-02	10004361
40	25	55	66	80,5	22,0	47	57	M16x1	10	1,8	MN1138-02	10005027
40	32	63	80	80,5	25,5	51	61	M16x1	10	2,0	MN1139-02	10045802
50	20	42	49,5	80,5	34,0	41	51	M16x1	10	3,3	MN1137-04	10005379
50	32	72	-	81	-	51	61	M16x1	10	4,1	-	10005030

Dimensions in mm.

Use:

For clamping tools with smooth cylindrical shanks to DIN 6535 (Form HA) up to \varnothing 32 mm and with recesses to DIN 1835 (Form B, E) and DIN 6535 (Form HB, HE) directly and without adaptor sleeve in the clamping diameter.

The clamping diameter is designed for a tool tolerance of h6 with $d_2 = 6$ mm to $d_2 = 32$ mm.

Supply includes:

Supplied complete with length adjustment screw; pull studs not included.
Bores for coolant supply Form B are stopped with threaded pins when delivered.

Design:

Maximum tool life and quality production results when used for smooth cylindrical shanks to DIN 1835 Form A and DIN 6535 Form HA.

With an overhang length of 2.5 x D (max. 50 mm), concentricity of 0.003 mm.

When using cylindrical shanks with angled clamping surface (Form E and Form HE), this may affect accuracy.

Note:

Chuck with axial tool length adjustment.

Coolant supply via central through hole.

For adaptor sleeves to reduce clamping diameter see page 171.
(Using adaptor sleeves, this may effect accuracy).

For pull studs see page 163.

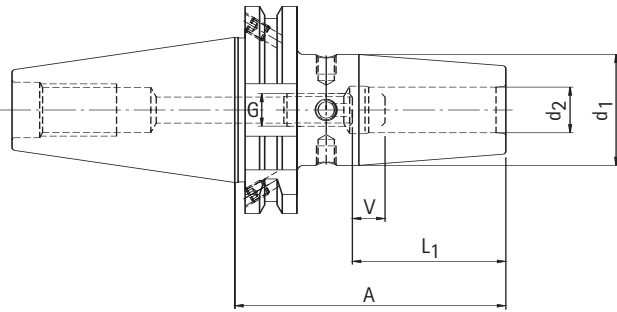
Length adjustment screw available on request.

Balance:

G 6.3 at 15,000 min⁻¹

Thermal expanding chucks

ISO location shank to DIN 69871 AD/B



Nominal size ISO	Clamping diameter d_2	Dimensions				Adjustment path V	Weight kg	Ref. code	Order No.
		d_1	A	L_1	G				
40	6	27	80	36	M5	10	1,0	MN1120-02	10051956
40	6	27	130	36	M5	10	1,2	MN1120-12	10060698
40	6	27	160	36	M5	10	1,4	MN1120-22	10060699
40	8	27	80	36	M6	10	1,0	MN1121-02	10051954
40	8	27	130	36	M6	10	1,2	MN1121-12	10053776
40	8	27	160	36	M6	10	1,4	MN1121-22	10060700
40	10	32	80	42	M8x1	10	1,1	MN1122-02	10051953
40	10	32	130	42	M8x1	10	1,3	MN1122-12	10053779
40	10	32	160	42	M8x1	10	1,6	MN1122-22	10060701
40	12	32	80	47	M10x1	10	1,1	MN1123-02	10051955
40	12	32	130	47	M10x1	10	1,3	MN1123-12	10053948
40	12	32	160	47	M10x1	10	1,6	MN1123-22	10060722
40	14	34	80	47	M10x1	10	1,1	MN1124-02	10059003
40	14	34	130	47	M10x1	10	1,4	MN1124-12	10060723
40	14	34	160	47	M10x1	10	1,7	MN1124-22	10060724
40	16	34	80	50	M12x1	10	1,1	MN1125-02	10053864
40	16	34	130	50	M12x1	10	1,4	MN1125-12	10060725
40	16	34	160	50	M12x1	10	1,6	MN1125-22	10060726
40	18	42	80	50	M12x1	10	1,2	MN1126-02	10060727
40	18	42	130	50	M12x1	10	1,5	MN1126-12	10060728
40	18	42	160	50	M12x1	10	1,7	MN1126-22	10060729
40	20	42	80	52	M16x1	10	1,2	MN1127-02	10053464
40	20	42	130	52	M16x1	10	1,5	MN1127-12	10060730
40	20	42	160	52	M16x1	10	2,0	MN1127-22	10060731
40	25	53	100	58	M16x1	10	1,6	MN1128-02	10060732
40	25	53	130	58	M16x1	10	1,8	MN1128-12	10060733
40	25	53	160	58	M16x1	10	2,6	MN1128-22	10060734

Thermal expanding chucks

ISO location shank to DIN 69871 AD/B

Nominal size ISO	Clamping diameter d ₂	Dimensions				Adjustment path V	Weight kg	Ref. code	Order No.
		d ₁	A	L ₁	G				
50	6	27	80	36	M5	10	2,9	MN1120-04	10073714
50	6	27	130	36	M5	10	3,0	MN1120-14	10060531
50	6	27	160	36	M5	10	3,3	MN1120-24	10073715
50	8	27	80	36	M6	10	2,9	MN1121-04	10060542
50	8	27	130	36	M6	10	3,0	MN1121-14	10060543
50	8	27	160	36	M6	10	3,3	MN1121-24	10060544
50	10	32	80	42	M8x1	10	3,0	MN1122-04	10021635
50	10	32	130	42	M8x1	10	3,2	MN1122-14	10060545
50	10	32	160	42	M8x1	10	3,5	MN1122-24	10073718
50	12	32	80	47	M10x1	10	2,9	MN1123-04	10022409
50	12	32	130	47	M10x1	10	3,1	MN1123-14	10060546
50	12	32	160	47	M10x1	10	3,5	MN1123-24	10073720
50	14	34	80	47	M10x1	10	3,0	MN1124-04	10067172
50	14	34	130	47	M10x1	10	3,2	MN1124-14	10060547
50	14	34	160	47	M10x1	10	3,5	MN1124-24	10073722
50	16	34	80	50	M12x1	10	2,9	MN1125-04	10021636
50	16	34	130	50	M12x1	10	3,2	MN1125-14	10060548
50	16	34	160	50	M12x1	10	3,6	MN1125-24	10073724
50	18	42	80	50	M12x1	10	3,0	MN1126-04	10067173
50	18	42	130	50	M12x1	10	3,5	MN1126-14	10060549
50	18	42	160	50	M12x1	10	3,9	MN1126-24	10060550
50	20	42	80	52	M16x1	10	3,0	MN1127-04	10022408
50	20	42	130	52	M16x1	10	3,5	MN1127-14	10060551
50	20	42	160	52	M16x1	10	4,0	MN1127-24	10060552
50	25	53	100	58	M16x1	10	3,6	MN1128-04	10073728
50	25	53	130	58	M16x1	10	4,5	MN1128-14	10060553
50	25	53	160	58	M16x1	10	4,1	MN1128-24	10073729
50	32	53	100	58	M16x1	10	3,4	MN1129-04	10073730
50	32	53	130	58	M16x1	10	3,9	MN1129-14	10060555
50	32	53	160	58	M16x1	10	4,5	MN1129-24	10073731

Dimensions in mm.

Supply includes:

Length adjustment screw with through hole; fine balancing screw; pull studs not included.

Bores for coolant supply to Form B closed off when delivered.

Design:

Permissible concentricity deviation for hollow taper shank to clamping diameter $d_2 = 0.003$ mm.

The clamping diameter is designed for a shank tolerance H6.

Note:

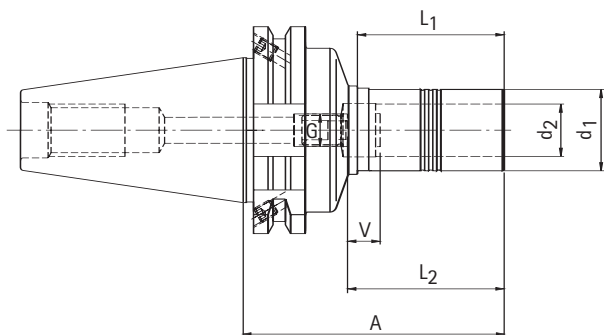
For tool extensions see page 172.

Pull studs see page 163.

Length adjustment screw and fine balancing screw available on request.

Balance:

G 6.3 at 15,000 min⁻¹



Polygon chucks TRIBOS-S for fine and light machining ISO location shank to DIN 69871 AD/B

Nominal size ISO	Clamping diameter d ₂	Dimensions					Adjustment path V	Weight kg	Ref. code	Order No.
		d ₁	A	L ₁	L ₂	G				
40	6	10	80	35	37	M5	10	0,9	MN1140-02	10060631
40	8	13	80	35	37	M6	10	1,0	MN1141-02	10060632
40	10	16	80	40	42	M8x1	10	1,0	MN1142-02	10060633
40	12	19	80	45	47	M8x1	10	1,0	MN1143-02	10060634
40	14	22	80	45	47	M10x1	10	1,0	MN1144-02	10060635
40	16	25	80	45	48	M10x1	10	1,0	MN1145-02	10060636
40	18	28	80	45	48	M10x1	10	1,1	MN1146-02	10060637
40	20	30	80	45	52	M10x1	10	1,1	MN1147-02	10060638
40	25	36	80	45	57	M10x1	10	1,1	MN1148-02	10060639
40	32	45	80	45	61	M10x1	10	1,3	MN1149-02	10073492

Torque transmission	
d ₂	Minimum torque
6	5 Nm
8	12 Nm
10	20 Nm
12	30 Nm
14	50 Nm
16	70 Nm
18	100 Nm
20	150 Nm
25	200 Nm
32	280 Nm

Torque details given for shank tolerance h6.

Dimensions in mm.

Use:

For fine and light machining. For clamping cylindrical shanks Form HA, HB, HE to DIN 6535.

Supply includes:

Length adjustment screw; pull studs not included.

Bore for coolant supply to Form B stopped off with threaded pins when delivered.

Note:

For adaptor sleeves for clamping diameter reduction see page 174.

For tool extensions see page 173.

For clamping fixture required see page 175.

For reducing sleeves for clamping fixture see page 176.

For pull studs see page 163.

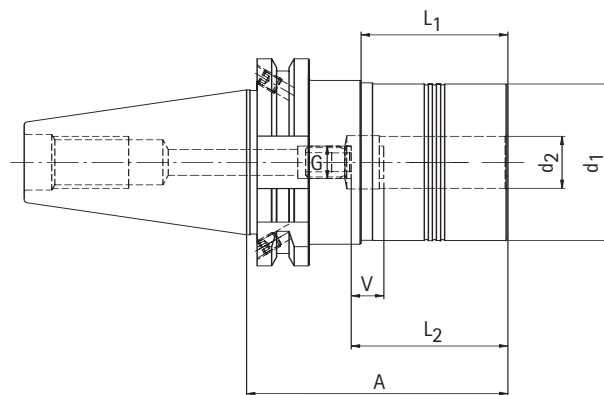
Length adjustment screw available on request.

Balance:

G 6.3 at 15,000 min⁻¹

Polygon chucks TRIBOS-R for heavy duty machining

ISO location shank to DIN 69871 AD/B



Nominal size ISO	Clamping diameter d ₂	Dimensions					Adjustment path V	Weight kg	Ref. code	Order No.
		d ₁	A	L ₁	L ₂	G				
40	6	25	70	35	37	M5	10	1,1	MN1170-02	10078615
40	8	28	70	35	37	M6	10	1,1	MN1171-02	10078617
40	10	35	75	40	42	M8x1	10	1,1	MN1172-02	10078618
40	12	42	80	45	47	M8x1	10	1,1	MN1173-02	10078619
40	14	48	80	45	47	M10x1	10	1,1	MN1174-02	10078620
40	16	48	80	45	48	M10x1	10	1,2	MN1175-02	10078621
40	18	48	80	45	48	M10x1	10	1,2	MN1176-02	10078623
40	20	48	80	45	52	M10x1	10	1,2	MN1177-02	10078624
40	25	60	100	45	57	M10x1	10	1,5	MN1178-02	10078625
40	32	67	100	45	61	M10x1	10	1,6	MN1179-02	10078627
50	10	35	80	40	42	M8x1	10	4,0	MN1172-04	10078628
50	12	42	80	45	47	M8x1	10	4,0	MN1173-04	10078629
50	14	48	80	45	47	M10x1	10	4,1	MN1174-04	10078631
50	16	48	80	45	48	M10x1	10	4,1	MN1175-04	10078632
50	18	48	80	45	48	M10x1	10	4,1	MN1176-04	10078633
50	20	48	80	45	52	M10x1	10	4,1	MN1177-04	10078634
50	25	60	80	45	57	M10x1	10	4,3	MN1178-04	10078636
50	32	67	80	45	61	M10x1	10	4,5	MN1179-04	10078637

Torque transmission	
d ₂	Minimum torque
6	8 Nm
8	14 Nm
10	24 Nm
12	40 Nm
14	80 Nm
16	120 Nm
18	180 Nm
20	240 Nm
25	270 Nm
32	350 Nm

Torque details given for shank tolerance h6.

Dimensions in mm.

Use:

For heavy duty machining.

For clamping cylindrical shanks Form HA, HB, HE to DIN 6535.

Supply includes:

Length adjustment screw; pull studs not included.

Bores for coolant supply stopped off with threaded pins when delivered.

Note:

For adaptor sleeves for clamping diameter reduction see page 174.

For tool extensions see page 173.

For clamping fixture required see page 175.

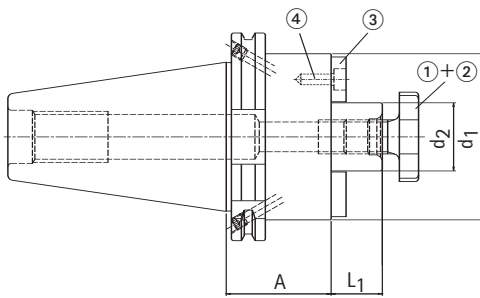
For reducing sleeves for clamping fixture see page 177.

For pull studs see page 163.

Length adjustment screw available on request.

Balance:

G 6.3 at 15,000 min⁻¹



Milling cutter arbors with large face contact

ISO location shank to DIN 69871 AD/B

Nominal size ISO	Arbor diameter d ₂	Dimensions			Weight kg	With milling cutter clamping screw ¹		With milling cutter clamping screw ²	
		d ₁	A	L ₁		Ref. code	Order No.	Ref. code	Order No.
40	22	50	35	19	1,1	MN1180-02	10066833	MN1180-52	10066837
40	27	50	35	21	1,1	MN1181-02	10066834	MN1181-52	10066838
40	32	78	50	24	1,7	MN1182-02	10066835	MN1182-52	10066839
40*	40	89	50	27	1,9	MN1183-02	10066836	MN1183-52	10066840
40*	60**	140	70	40	4,3			MN1185-52	10011328
50	22	50	35	19	3,1	MN1180-04	10073552	MN1180-54	10073747
50	27	60	35	21	3,3	MN1181-04	10073743	MN1181-54	10073748
50	32	78	35	24	3,7	MN1182-04	10073744	MN1182-54	10073749
50	40	89	50	27	4,3	MN1183-04	10073745	MN1183-54	10073750
50	60	140	70	40	5,0	MN1185-04	10073746	MN1185-54	10073751

Spares

For arbor diameter d ₂	① Cutter clamping screw		② Cutter clamping screw with int. coolant (e.g. for MAPAL WWS milling heads) Order No.	③ Key block		④ Holding screw	
	DIN 6367	Order No.		Ref. code	Order No.	ISO 4762	Order No.
22	M10	10006016	7-03008-01	MT1013-01	10005640	M4x10 - 12.9	10003583
27	M12	10005164	7-03008-02	MT1215-01	10005165	M4x16 - 12.9	10003586
32	M16	10004065	7-03008-03	MT1422-01	10004063	M5x16 - 12.9	10003601
40	M20	10004066	7-03008-04	MT1623-01	10004064	M5x16 - 12.9	10003601
60	M30	10017544	-	MT2625-01	10010103	M12x25 - 12.9	10003675

Dimensions in mm.

Supply includes:

¹ with key blocks and cutter clamping screw in place to DIN 6367.

Pull studs not included.

² with key blocks in place, does not include cutter clamping screw and pull studs.

Bores for coolant supply to Form B closed with threaded pins when supplied.

Design:

Permissible concentricity deviation for hollow taper shank to arbor

d₂ = 0.01 mm.

Note:

The sizes marked* also have 4 threaded holes for holding cutter heads with tool clamping to DIN 2079.

**d₂ = 60 mm for nominal size ISO40: max. milling head diameter D 250 mm.

For assembly keys see page 153.

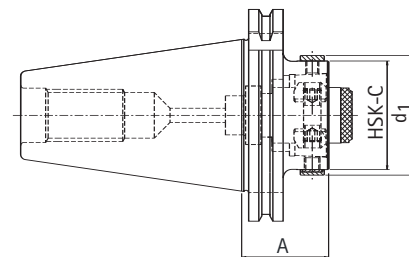
For pull studs see page 163.

Balance:

G 6.3 at 3,000 min⁻¹

KS-ISO Location shanks

ISO location shank
to DIN 69871 Form AD



Nominal size ISO	Nominal size HSK-C	Dimensions		Weight kg	Order No.
		d ₁	A		
30	32	37	40	0,5	MN5510-05-K
30	40	45	60	0,9	MN5510-06-K
40	32	37	40	1,0	MN5510-15-K
40	40	45	40	1,0	MN5510-16-K
40	50	55	60	1,4	MN5510-17-K
40	63	70	75	1,8	MN5510-18-K
45	32	37	40	1,5	MN5510-25-K
45	40	45	40	1,6	MN5510-26-K
45	50	55	40	1,8	MN5510-27-K
45	63	70	60	2,2	MN5510-28-K
45	80	87	80	3,0	MN5510-29-K
50	32	37	40	2,7	MN5510-35-K
50	40	45	40	2,8	MN5510-36-K
50	50	55	40	2,9	MN5510-37-K
50	63	70	40	3,0	MN5510-38-K
50	80	87	80	4,6	MN5510-39-K
50	100	110	95	6,1	MN5510-310-K

Dimensions in mm.

Use:

For use on machine spindle for holding HSK tools.

Supply includes:

Supplied complete with clamping cartridge and stop ring; pull studs not included.

Design:

Permissible concentricity of steep taper to HSK internal taper 0.003 mm.

Note:

For clamping cartridges see pages 142-143.

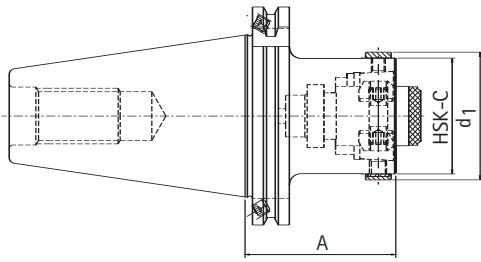
For stop rings see page 145.

For pull studs see page 163.

On request the extensions can be supplied with KS clamping cartridge for use with minimal lubrication. For this an M is added to the order number, e.g. MN5510-18-KM.

Balance:

G 6.3 at 3,000 min⁻¹



KS-ISO Location shanks

ISO location shank
to DIN 69871 Form AD

Nominal size ISO	Nominal size HSK-C	Dimensions		Weight kg	Order No.
		d ₁	A		
30	32	37	55	0,6	MN5511-05-K
30	40	45	60	0,8	MN5511-06-K
40	32	37	55	1,1	MN5511-15-K
40	40	45	60	1,1	MN5511-16-K
40	50	55	65	1,4	MN5511-17-K
40	63	70	75	1,9	MN5511-18-K
45	32	37	55	1,7	MN5511-25-K
45	40	45	60	1,9	MN5511-26-K
45	50	55	75	2,5	MN5511-27-K
45	63	70	75	2,6	MN5511-28-K
45	80	87	85	3,4	MN5511-29-K
50	32	37	55	2,9	MN5511-35-K
50	40	45	60	3,0	MN5511-36-K
50	50	55	65	3,2	MN5511-37-K
50	63	70	75	3,8	MN5511-38-K
50	80	87	85	4,8	MN5511-39-K
50	100	110	100	6,3	MN5511-310-K

Dimensions in mm.

Use:

For use on machine spindle for holding HSK tools.

Supply includes:

Supplied complete with clamping cartridge and stop ring; pull studs not included.

Design:

Permissible concentricity of steep taper to HSK internal taper 0.003 mm.

Note:

For clamping cartridges see pages 142-143.

For stop rings see page 145.

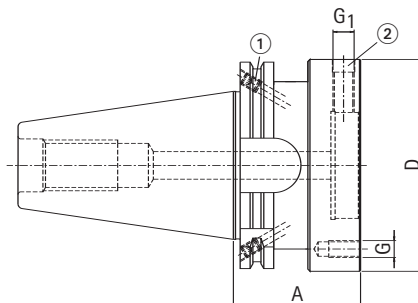
For pull studs see page 163.

Balance:

G 6.3 at 3,000 min⁻¹

ISO Location shanks

ISO location shank to DIN 69871 Form AD/B



Nominal size ISO	Modular diameter D	Dimensions			Form	Weight kg	Ref. Code	Order No.
		A	G	G ₁				
30*	60	50	M5	M8x1	AD	0,8	-	MN1020-05
30*	60	50	M5	M8x1	B	0,8	-	MN1021-05
30*	70	50	M6	M8x1	AD	0,9	-	MN1020-06
30*	70	50	M6	M8x1	B	0,9	-	MN1021-06
40	60	50	M5	M8x1	AD/B	1,3	MN1025-15	10058658
40	70	50	M6	M8x1	AD/B	1,4	MN1025-16	10058660
40	80	55	M6	M8x1	AD/B	1,7	MN1025-17	10058661
40	100	60	M8	M10x1	AD/B	2,2	MN1025-18	10058662
45	60	50	M5	M8x1	AD/B	2,8	MN1025-25	10058663
45	70	50	M6	M8x1	AD/B	2,9	MN1025-26	10058664
45	80	55	M6	M8x1	AD/B	3,1	MN1025-27	10058665
45	100	60	M8	M10x1	AD/B	3,3	MN1025-28	10058666
45	117	60	M8	M10x1	AD/B	3,5	MN1025-29	10058667
50	60	50	M5	M8x1	AD/B	3,2	MN1025-35	10058669
50	70	50	M6	M8x1	AD/B	3,4	MN1025-36	10058670
50	80	50	M6	M8x1	AD/B	3,6	MN1025-37	10058671
50	100	60	M8	M10x1	AD/B	4,4	MN1025-38	10058672
50	117	60	M8	M10x1	AD/B	4,5	MN1025-39	10058673
50	140	60	M10	M10x1	AD/B	4,7	MN1025-310	10058675

Spares

For nominal size ISO	Quantity required	① Threaded pin MN620-B	
		Order No.	
40	2	M5x6	10036759
45	2	M5x6	10036759
50	2	M6x8	10036770

For module diameter D	Quantity required	② Threaded pin Order No.	
60-80	4	K2865-24	
100-140	4	K2865-34	

Dimensions in mm.

Use:

For use on machine spindle for holding KS adaptor flange, thermal expanding chuck, hydraulic chuck, chuck for cylindrical shanks or tools with modular shank to MN 5000-30 or MN 5000-34.

Supply:

Supplied complete with threaded pins for adjusting concentricity; pull studs not included.

Bores for coolant supply to Form B closed off with threaded pins when delivered.

Design:

*ISO size ISO30 cannot be supplied in AD/B combination version.

Because of the threaded pins, concentricity of an adaptor or tool which has been fitted can be precisely adjusted to the steep taper.

Note:

For suitable KS adaptor flanges MN 5520 and MN 5523, see pages 28 and 29.

For suitable thermal expanding chucks see page 27.

For suitable hydraulic chucks see page 26.

For suitable chucks for cyl. shanks see pages 24-25.

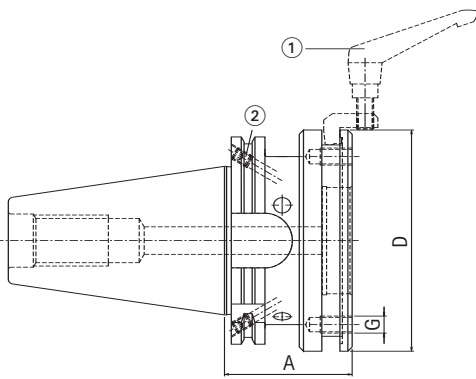
For pull studs see page 163.

Balance:

G 6.3 at 3,000 min⁻¹

ISO Location shanks

ISO location shank
to DIN 69871 Form AD/B



Nominal size SK	Modular diameter D	d ₁	Dimensions		Weight kg	Ref. Code	Order No.
			A	G			
40	60	63	50	M5	1,4	MN1035-15	10058652
40	80	84	55	M6	2,0	MN1035-17	10058653
40	100	104	60	M8	2,8	MN1035-18	10058654
50	60	63	50	M5	3,6	MN1035-35	10058655
50	80	84	60	M6	4,0	MN1035-37	10058656
50	100	104	60	M8	4,8	MN1035-38	10058657

Spares

For module diameter D	① Adjusting element for radial alignment Order No.	Quantity required	② Threaded pin	
			MN620-B	Order No.
60	MN5993-60	2	M5x6	10036759
80	MN5993-80	2	M5x6	10036759
100	MN5993-100	2	M6x8	10036770

Dimensions in mm.

Use:

For use on machine spindle for holding KS adaptor flange, thermal expanding chuck, hydraulic chuck for cylindrical shanks or tools with modular shank to MN 5000-30 or MN 5000-34.

Supply:

Includes adjusting element; pull studs not included.

Bores for coolant supply to Form B closed off with threaded pins when delivered.

Design:

Because of the threaded pins, concentricity of an adaptor or tool which has been fitted can be precisely adjusted to the steep taper.

Note:

For suitable KS adaptor flanges MN 5520 and MN 5523, see pages 28 and 29.

For suitable thermal expanding chucks see page 27.

For suitable hydraulic chucks see page 26.

For suitable chucks for cyl. shanks see pages 24-25.

For pull studs see page 163.

Balance:

G 6.3 at 3,000 min⁻¹



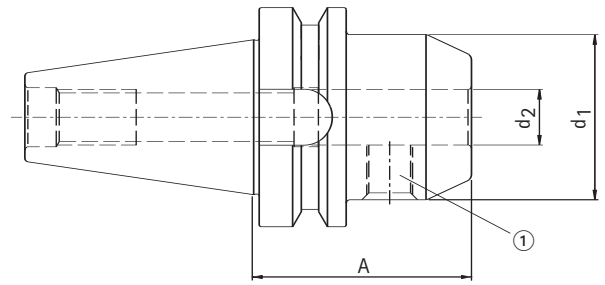
Toolholders with BT and V flanged holders

Steep taper adaptors for the Japanese markets are produced under JIS B6339. MAPAL offers an extensive standard programme of toolholders and adaptors with BT location shanks.

The range of chucks and adaptors produced under ASME B5.50 for the US market can be found on page 109.



Toolholders for cylindrical shanks with lateral clamping face to DIN 69882-4



Location shank BT to JIS B 6339

Nominal size BT	Clamping diameter d_2	Dimensions		Weight kg	Ref. code	Order No.
		d_1	A			
40	6	25	50	1,1	MN1340-02	10073633
40	8	28	50	1,2	MN1341-02	10073634
40	10	35	63	1,2	MN1342-02	10073635
40	12	42	63	1,3	MN1343-02	10073636
40	14	44	63	1,4	MN1344-02	10073637
40	16	48	63	1,4	MN1345-02	10073638
40	18	50	63	1,4	MN1346-02	10073639
40	20	52	63	1,4	MN1347-02	10073640
40	25	65	90	2,3	MN1348-02	10053062
40	32	72	100	2,8	MN1349-02	10073641

Spares

for clamping diameter d_2	Clamping screw	
	DIN 1835-B	Order No.
6	M6x9	10060983
8	M8x9	10042517
10	M10x12	10004134
12	M12x14	30002947
14	M12x14	30002947
16	M14x16	10004136
18	M14x16	10004136
20	M16x16	10004137
25	M18x2x20	10004141
32	M20x2x20	10004129

Dimensions in mm.

Use:

For holding milling tools and drills with cylindrical shank and lateral clamping face to DIN 1835 Form B and to DIN 6535 Form HB.

Supply includes:

With clamping screw fitted; pull studs not included.

Design:

Permissible concentricity deviation of hollow taper shank to clamping diameter $d_2 = 0.003$ mm

Note:

From clamping diameter $d_2 = 25$ mm 2 clamping screws are provided.

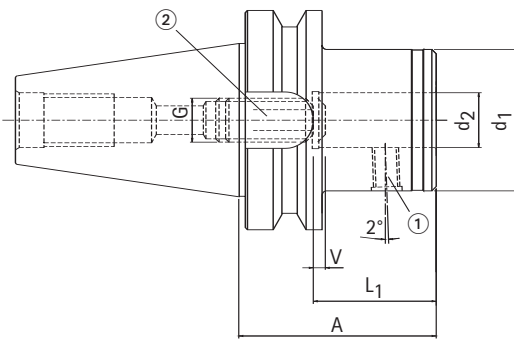
For pull studs see page 163.

Balance:

G 6.3 at 3,000 min⁻¹

Toolholders for cylindrical shanks with angled clamping face to DIN 69882-5

Location shank BT to JIS B 6339
Precision holder for MAPAL NC reamers



Nominal size BT	Clamping diameter d_2	Dimensions				Adjustment path V	Weight kg	Order No.
		d_1	A	L_1	G			
30	16	48	75	48	M12x1,25	4	1,1	MN1003-01
30	20	52	75	50	M16x1,5	4	1,2	MN1003-11
40	16	48	80	48	M12x1,25	4	2,3	MN1003-02
40	20	52	80	50	M16x1,5	4	2,4	MN1003-12
40	25	65	80	56	M20x1,5	4	2,6	MN1003-22
45	16	48	85	48	M12x1,25	4	3,2	MN1003-03
45	20	52	85	50	M16x1,5	4	3,3	MN1003-13
50	16	48	90	48	M12x1,25	4	4,9	MN1003-04
50	20	52	90	50	M16x1,5	4	4,4	MN1003-14
50	25	65	90	56	M20x1,5	4	4,7	MN1003-24

Spares

for clamping diameter d_2	① Clamping screw		② Length adjustment screw	
	DIN 1835-B	Order No.	Size	Order No.
16	M10x12	10004134	M12x1,25x30	K2865-44
20	M12x14	30002947	M16x1,5x35	K2865-64
25	M12x14	30002947	M20x1,5x40	K2865-84

Dimensions in mm.

Use:

For holding MAPAL NC reamers with cylindrical shank and angled clamping face (2°) similar to DIN 1835 Form E.

Supply includes:

With clamping screw fitted and length adjustment screw. Pull studs not included.

Design:

Permissible concentricity deviation of taper to clamping diameter d_2 0.003 mm. The bore tolerance is much reduced compared to 0.003 mm to produce machining results of the highest accuracy.

Note:

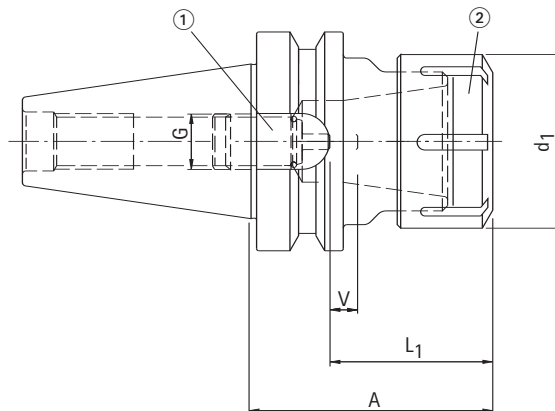
The length adjustment screws have a through hole for coolant.

For pull studs see page 163.

Balance:

G 6.3 at 3,000 min⁻¹

Chucks for collets



Location shank BT to JIS B 6339

Nominal size BT	Clamping diameter	Nominal size	Dimensions				Adjustment path V	Weight kg	Ref. code	Order No.
			d ₁	A	L ₁	G				
40	0,5-10	ER-16	28	70	27	M10	10	1,1	MN1330-02	10073408
40	0,5-10	ER-16	28	100	27	M10	10	1,3	MN1330-12	10073410
40	2-20	ER-32	50	70	40	M16	10	1,3	MN1332-02	10073411
40	3-26	ER-40	63	80	58	M16	10	1,5	MN1333-02	10073412

Spare

Nominal size BT	Clamping range	Nominal size	① Length adjustment screw (through bore for coolant)					② Clamping nut ISO 15488 Order No.
			Order No.	Order No.	Order No.	Order No.	Order No.	
			ø 2,8-5	ø 4,8-7	ø 6,8-10			
40-50	0,5-10	ER-16	LS1040-01	LS1040-05	LS1040-06			10013273
			ø 3,8-7	ø 6,8-10	ø 9,8-13	ø 12,8-20	ø 19,9-26	
40-50	2-20	ER-32	LS1630-05	LS1630-06	LS1630-07	LS1630-09	-	10023401
40-50	3-26	ER-40	LS1630-05	LS1630-06	LS1630-07	LS1630-09	LS1630-02	10022176

Dimensions in mm.

Use:

For clamping tools with cylindrical shank in ER collets.

Supply includes:

Supplied complete with clamping nut to ISO 15488; length adjustment screw, clamping jaw and pull studs not included.

Design:

Permissible concentricity deviation to taper to internal taper 0.003 mm.

Note:

Chucks have a through hole with internal thread for the length adjustment screw.

For suitable collets see pages 164-167.

For assembly spanner see page 153.

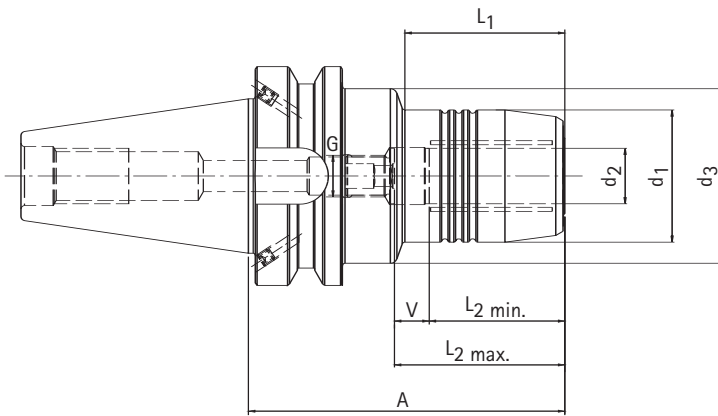
For pull studs see page 163.

Balance:

G 6.3 at 3,000 min⁻¹

Hydraulic chucks

with axial tool length adjustment
Location shank BT to JIS B 6339



Nominal size BT	Clamping diameter d ₂	Dimensions							Adjustment path V	Weight kg	Ref. No.	Order No.
		d ₁	d ₃	A	L ₁	L ₂ min.	L ₂ max.	G				
40	6	26	44,5	90	43	27	37	M5	10	1,4	MN1160-02	10066005
40	8	28	44,5	90	44,5	27	37	M6	10	1,4	MN1161-02	10030174
40	10	30	44,5	90	44,5	31	41	M8x1	10	1,4	MN1162-02	10030173
40	12	32	44,5	90	44,5	36	46	M10x1	10	1,4	MN1163-02	10012953
40	16	38	44,5	90	47,5	39	49	M12x1	10	1,4	MN1165-02	10054263
40	20	42	44,5	90	47,5	41	51	M16x1	10	1,5	MN1167-02	10019858
40	32	63	80	83	25,5	51	61	M16x1	10	4,5	MN1169-02	10027600
50	12	32	44,5	90	34	36	46	M10x1	10	4,0	MN1163-04	10041613
50	20	42	44,5	90	34	41	51	M16x1	10	4,0	MN1167-04	10023449

Dimensions in mm.

Use:

For clamping tools with smooth cylindrical shanks to DIN 6535 (Form HA) up to \varnothing 32 mm and with recesses to DIN 1835 (Form B, E) and DIN 6535 (Form HB, HE) directly and without adaptor sleeve in the clamping diameter.

The clamping diameter is designed for a tool tolerance of h6 with $d_2 = 6$ mm to $d_2 = 32$ mm.

Supply includes:

Supplied complete with length adjustment screw; pull studs not included.

Bores for coolant supply stopped off with threaded pins when delivered.

Design:

Maximum tool life and quality production results when used for smooth cylindrical shanks to DIN 1835 Form A and DIN 6535 Form HA.

With an overhang length of $2.5 \times D$ (max. 50 mm), concentricity of 0.003 mm.

When using cylindrical shanks with angled clamping surface (Form E and Form HE), this may adversely affect accuracy.

Note:

Chuck with axial tool length adjustment.

Coolant supply via central through hole.

For adaptor sleeves to reduce clamping diameter see page 171. (Using adaptor sleeves, this may affect accuracy).

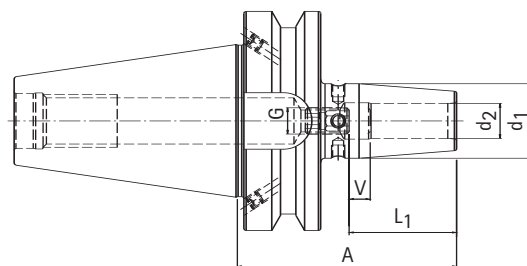
For pull studs see page 163.

Length adjustment screw available on request.

Balance:

G 6.3 at 15,000 min⁻¹

Thermal expanding chucks



Location shank BT
to JIS B 6339

Nominal size BT	Clamping diameter d ₂	Dimensions				Adjustment path V	Weight kg	Ref. code	Order No.
		d ₁	A	L ₁	G				
40	6	27	90	36	M5	10	1,1	MN1300-02	10073652
40	6	27	130	36	M5	10	1,5	MN1300-12	10073783
40	6	27	160	36	M5	10	1,5	MN1300-22	10073784
40	8	27	90	36	M6	10	1,2	MN1301-02	10073786
40	8	27	130	36	M6	10	1,5	MN1301-12	10073787
40	8	27	160	36	M6	10	1,6	MN1301-22	10073788
40	10	32	90	42	M8x1	10	1,2	MN1302-02	10073792
40	10	32	130	42	M8x1	10	1,6	MN1302-12	10073793
40	10	32	160	42	M8x1	10	1,6	MN1302-22	10073794
40	12	32	90	47	M10x1	10	1,2	MN1303-02	10073796
40	12	32	130	47	M10x1	10	1,6	MN1303-12	10073797
40	12	32	160	47	M10x1	10	1,7	MN1303-22	10073798
40	14	34	90	47	M10x1	10	1,3	MN1304-02	10073800
40	14	34	130	47	M10x1	10	1,7	MN1304-12	10073801
40	14	34	160	47	M10x1	10	1,9	MN1304-22	10073802
40	16	34	90	50	M12x1	10	1,3	MN1305-02	10073804
40	16	34	130	50	M12x1	10	1,7	MN1305-12	10073805
40	16	34	160	50	M12x1	10	1,8	MN1305-22	10073806
40	18	42	90	50	M12x1	10	1,3	MN1306-02	10073808
40	18	42	130	50	M12x1	10	1,8	MN1306-12	10073809
40	18	42	160	50	M12x1	10	2,1	MN1306-22	10073810
40	20	42	90	52	M16x1	10	1,5	MN1307-02	10073812
40	20	42	130	52	M16x1	10	1,9	MN1307-12	10073813
40	20	42	160	52	M16x1	10	2,1	MN1307-22	10073814
40	25	53	90	58	M16x1	10	1,8	MN1308-02	10073816
40	25	53	130	58	M16x1	10	2,0	MN1308-12	10073817
40	25	53	160	58	M16x1	10	2,9	MN1308-22	10073818

Thermal expanding chucks

Location shank BT
to JIS B 6339

Nominal size BT	Clamping diameter d_2	Dimensions				Adjustment path V	Weight kg	Ref. code	Order No.
		d_3	A	L_1	G				
50	6	27	100	36	M5	10	2,5	MN1300-04	10073820
50	6	27	130	36	M5	10	2,8	MN1300-14	10073821
50	6	27	160	36	M5	10	3,2	MN1300-24	10073822
50	8	27	100	36	M6	10	2,5	MN1301-04	10073823
50	8	27	130	36	M6	10	2,9	MN1301-14	10073824
50	8	27	160	36	M6	10	3,2	MN1301-24	10073825
50	10	32	100	42	M8x1	10	2,7	MN1302-04	10073826
50	10	32	130	42	M8x1	10	2,9	MN1302-14	10073827
50	10	32	160	42	M8x1	10	3,3	MN1302-24	10073828
50	12	32	100	47	M10x1	10	2,7	MN1303-04	10073829
50	12	32	130	47	M10x1	10	3,1	MN1303-14	10073830
50	12	32	160	47	M10x1	10	3,4	MN1303-24	10073831
50	14	34	100	47	M10x1	10	2,9	MN1304-04	10073832
50	14	34	130	47	M10x1	10	3,1	MN1304-14	10073833
50	14	34	160	47	M10x1	10	3,4	MN1304-24	10073834
50	16	34	100	50	M12x1	10	2,9	MN1305-04	10073835
50	16	34	130	50	M12x1	10	3,2	MN1305-14	10073836
50	16	34	160	50	M12x1	10	3,5	MN1305-24	10073837
50	18	42	100	50	M12x1	10	3,0	MN1306-04	10073838
50	18	42	130	50	M12x1	10	3,2	MN1306-14	10073839
50	18	42	160	50	M12x1	10	3,6	MN1306-24	10073840
50	20	42	100	52	M16x1	10	3,1	MN1307-04	10073841
50	20	42	130	52	M16x1	10	3,3	MN1307-14	10073842
50	20	42	160	52	M16x1	10	3,6	MN1307-24	10073843
50	25	53	100	58	M16x1	10	3,6	MN1308-04	10073844
50	25	53	130	58	M16x1	10	3,8	MN1308-14	10073845
50	25	53	160	58	M16x1	10	4,0	MN1308-24	10073846
50	32	53	100	58	M16x1	10	3,9	MN1309-04	10073847
50	32	53	130	58	M16x1	10	4,1	MN1309-14	10073848
50	32	53	160	58	M16x1	10	4,4	MN1309-24	10073849

Dimensions in mm.

Supply includes:

Length adjustment screw with through hole already in place.

Fine balancing screw and coolant hose not included.

Bores for coolant supply stopped off when delivered.

Design:

Permissible concentricity deviation for hollow taper shank

to clamping diameter $d_2 = 0.003$ mm.

The clamping diameter is designed for a shank tolerance H6.

Note:

For tool extensions see page 172.

For pull studs see page 163.

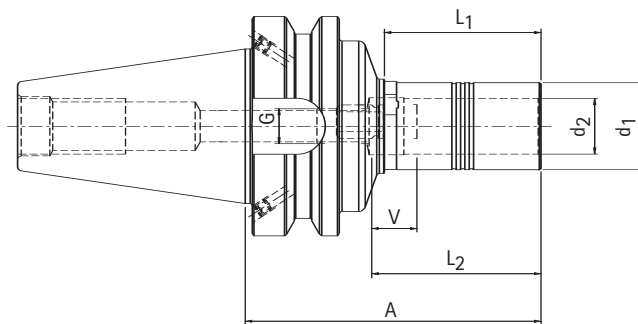
Length adjustment screw and fine balancing screw available on request.

Balance:

G 6.3 at 15,000 min⁻¹

Polygon chucks TRIBOS-S for fine and light machining

Location shank BT to JIS B 6339



Nominal size BT	Clamping diameter d ₂	Dimensions					Adjustment path V	Weight kg	Ref. code	Order No.
		d ₁	A	L ₁	L ₂	G				
40	6	10	80	35	37	M5	10	0,9	MN1310-02	10073443
40	8	13	80	35	37	M6	10	1,0	MN1311-02	10073444
40	10	16	80	40	42	M8x1	10	1,0	MN1312-02	10073445
40	12	19	85	45	47	M8x1	10	1,0	MN1313-02	10073446
40	14	22	85	45	47	M10x1	10	1,0	MN1314-02	10073447
40	16	25	85	45	48	M10x1	10	1,0	MN1315-02	10073448
40	18	28	85	45	48	M10x1	10	1,1	MN1316-02	10073449
40	20	30	85	45	52	M10x1	10	1,1	MN1317-02	10073450
40	25	36	85	45	57	M10x1	10	1,2	MN1318-02	10073451
40	32	45	85	45	61	M10x1	10	1,4	MN1319-02	10073452

Torque transmission	
Clamping diameter d ₂	Minimum torque
6	5 Nm
8	12 Nm
10	20 Nm
12	30 Nm
14	50 Nm
16	70 Nm
18	100 Nm
20	150 Nm
25	200 Nm
32	280 Nm

Torque details given for shank tolerance h6.

Dimensions in mm.

Use:

For fine and light machining.

For clamping cylindrical shanks

Form HA, HB, HE to DIN 6535.

Supply includes:

Length adjustment screw; pull studs not included.

Bores for coolant supply stopped off with threaded pins when delivered.

Note:

For adaptor sleeves for clamping diameter reduction see page 174.

For tool extensions see page 173

For clamping fixture required see page 175.

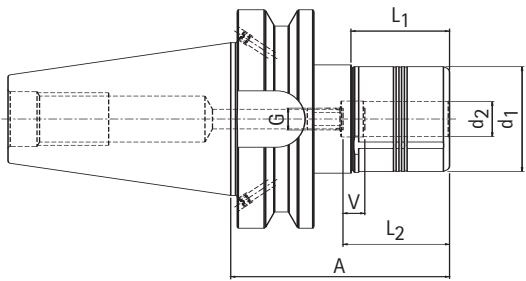
For reducing sleeves for clamping fixture see page 176.

For pull studs see page 163.

Length adjustment screw available on request.

Balance:

G 6.3 at 15,000 min⁻¹



Polygon chucks TRIBOS-S for heavy duty machining

Location shank BT to JIS B 6339

Nominal size BT	Clamping diameter d_2	Dimensions					Adjustment path V	Weight kg	Ref. code	Order No.
		d_1	A	L_1	L_2	G				
40	6	25	80	35	37	M5	10	1,2	MN1320-02	10073453
40	8	28	80	35	37	M6	10	1,2	MN1321-02	10073454
40	10	35	85	40	42	M8x1	10	1,2	MN1322-02	10073455
40	12	42	90	45	47	M8x1	10	1,2	MN1323-02	10073456
40	14	48	90	45	47	M10x1	10	1,3	MN1324-02	10073457
40	16	48	90	45	48	M10x1	10	1,3	MN1325-02	10073458
40	18	48	90	45	48	M10x1	10	1,3	MN1326-02	10073459
40	20	48	90	45	52	M10x1	10	1,3	MN1327-02	10073460
40	25	60	105	45	57	M10x1	10	1,5	MN1328-02	10073461
40	32	67	110	45	61	M10x1	10	1,7	MN1329-02	10073462

50	10	35	100	40	42	M8x1	10	4,2	MN1322-04	10073463
50	12	42	100	45	47	M8x1	10	4,2	MN1323-04	10073464
50	14	48	100	45	47	M10x1	10	4,2	MN1324-04	10073465
50	16	48	100	45	48	M10x1	10	4,4	MN1325-04	10073466
50	18	48	100	45	48	M10x1	10	4,2	MN1326-04	10073467
50	20	48	100	45	52	M10x1	10	4,3	MN1327-04	10073468
50	25	60	100	45	57	M10x1	10	4,7	MN1328-04	10073469
50	32	67	100	45	61	M10x1	10	5,1	MN1329-04	10073470

Torque transmission	
Clamping diameter d_2	Minimum torque
6	8 Nm
8	14 Nm
10	24 Nm
12	40 Nm
14	80 Nm
16	120 Nm
18	180 Nm
20	240 Nm
25	270 Nm
32	350 Nm

Torque details given for shank tolerance h6.

Dimensions in mm.

Use:

For heavy duty machining.

For clamping cylindrical shanks Form HA, HB,
HE to DIN 6535.

Supply includes:

Length adjustment screw; pull studs not included.

Bores for coolant supply stopped off with threaded pins when delivered.

Note: For adaptor sleeves for clamping diameter reduction see page 174.

For tool extensions see page 173.

For clamping fixture required see page 175.

For reducing sleeves for clamping fixture see page 176.

For pull studs see page 163.

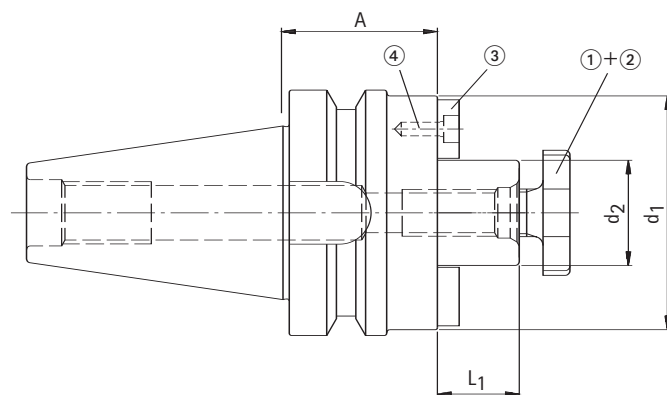
Length adjustment screw available on request.

Balance:

G 6.3 at 15,000 min⁻¹

Milling cutter arbors with large face contact

Location shank BT to JIS B 6339



Nominal size BT	Arbor diameter d_2	d_1	Dimensions		Weight kg	Ref. code	Order No.
			A	L_1			
40	22	50	40	19	1,3	MN1350-02	10073629
40	27	60	40	21	1,4	MN1351-02	10073630
40	32	78	50	24	2,1	MN1352-02	10073631
40*	40	89	50	27	2,4	MN1353-02	10073632

Spares

For arbor diameter d_2	① Cutter clamping screw		② Cutter clamping screw with int. coolant (e.g. for MAPAL WWS milling heads)	③ Key block		④ Holding screw	
	DIN 6367	Order No.	Order No.	Ref. code	Order No.	ISO 4762	Order No.
22	M10	10006016	7-03008-01	MT1013-01	10005640	M4x10-12.9	10003583
27	M12	10005164	7-03008-02	MT1215-01	10005165	M4x16-12.9	10003586
32	M16	10004065	7-03008-03	MT1422-01	10004063	M5x16-12.9	10003601
40	M20	10004066	7-03008-04	MT1623-01	10004064	M5x16-12.9	10003601

Dimensions in mm.

Supply includes:

With key blocks and cutter clamping screw to DIN 6367.

Pulls studs not included.

Design:

Permissible concentricity deviation for taper to arbor diameter d_2 0.01 mm.

Note:

The sizes marked * also have 4 threaded holes for holding cutter heads with tool clamping to DIN 2079.

For assembly spanners see page 153.

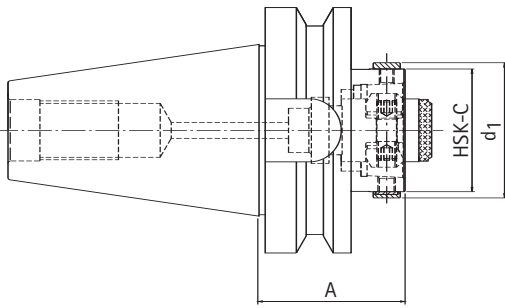
For pull studs see page 163.

Balance:

G 6.3 at 3,000 min⁻¹

KS-ISO Location shanks

Steep taper location shank
to BT to JIS B 6339



Nominal size BT	Nominal size HSK-C	Dimensions		Weight kg	Order No.
		d ₁	A		
30	32	37	40	0,5	MN5512-05-K
30	40	45	40	0,9	MN5512-06-K
40	32	37	40	1,0	MN5512-15-K
40	40	45	40	1,0	MN5512-16-K
40	50	55	50	1,4	MN5512-17-K
40	63	70	70	1,8	MN5512-18-K
45	32	37	50	1,5	MN5512-25-K
45	40	45	50	1,6	MN5512-26-K
45	50	55	50	1,8	MN5512-27-K
45	63	70	60	2,2	MN5512-28-K
45	80	87	80	3,0	MN5512-29-K
50	32	37	50	2,7	MN5512-35-K
50	40	45	50	2,8	MN5512-36-K
50	50	55	60	2,9	MN5512-37-K
50	63	70	60	3,0	MN5512-38-K
50	80	87	60	4,6	MN5512-39-K
50	100	110	90	6,1	MN5512-310-K

Dimensions in mm.

Use:

For use on machine spindle for holding HSK tools.

Supply includes:

Supplied complete with clamping cartridge and stop ring;
pull studs not included.

Design:

Permissible concentricity deviation of steep taper to
HSK internal taper 0.003 mm.

Note:

For clamping cartridges see pages 142-143.

For stop rings see page 154.

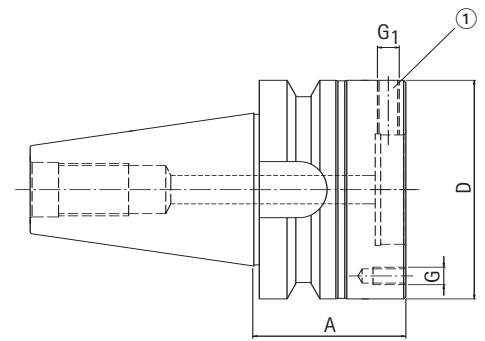
For pull studs see page 163.

On request the extensions can be supplied with KS clamping cartridge for
use with minimal lubrication. For this an M is added to the order number,
e.g. MN5512-18-KM.

Balance:

G 6.3 at 3,000 min⁻¹

ISO Location shanks



Location shank BT to JIS B 6339

Nominal size BT	Module diameter D	A	Dimensions		Weight kg	Order No.
			G	G ₁		
30	60	40	M5	M8x1	0,7	MN1022-05
30	70	40	M6	M8x1	0,8	MN1022-06
40	60	55	M5	M8x1	1,5	MN1022-15
40	70	55	M6	M8x1	1,6	MN1022-16
40	80	65	M6	M8x1	2,0	MN1022-17
40	100	70	M8	M10x1	2,6	MN1022-18
45	60	65	M5	M8x1	3,0	MN1022-25
45	70	65	M6	M8x1	3,1	MN1022-26
45	80	65	M6	M8x1	3,3	MN1022-27
45	100	75	M8	M10x1	3,5	MN1022-28
45	117	75	M8	M10x1	4,4	MN1022-29
50	60	70	M5	M8x1	4,8	MN1022-35
50	70	70	M6	M8x1	4,9	MN1022-36
50	80	70	M6	M8x1	5,1	MN1022-37
50	100	70	M8	M10x1	5,3	MN1022-38
50	117	80	M8	M10x1	6,3	MN1022-39
50	140	80	M10	M10x1	6,6	MN1022-310

Spares

For module diameter D	Quantity required	① Threaded pin Order No.
60-80	4	K2865-24
100-140	4	K2865-34

Dimensions in mm.

Use:

For use on machine spindle for holding KS adaptor flange, thermal expanding chuck, expanding chuck, chuck for cylindrical shanks or tools with modular shank to MN 5000-30 or MN 5000-34.

Supply includes:

Supplied complete with threaded pins for adjusting concentricity; pull studs not included.

Design:

Because of the threaded pins concentricity of an adaptor or tool which has been fitted can be precisely adjusted to the steep taper.

Note:

For suitable KS adaptor flanges MN 5520 and MN 5523, see pages 28 and 29.

For suitable thermal expanding chucks see page 27.

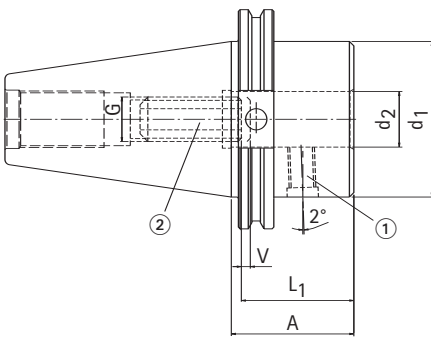
For suitable expanding chucks see page 26.

For suitable chucks for cyl. shanks see pages 24-15.

For pull studs see page 163.

Balance:

G 6.3 at 3,000 min⁻¹



Toolholders for cylindrical shanks with angled clamping surface

Location shank to ASME B5.50–1994
Precision adaptor for MAPAL NC reamers

Nominal size	Clamping diameter d_2	d_1	Dimensions			Adjustment path V	Weight kg	Order No.
			A	L_1	G			
40	16	48	70	48	M12x1,25	4	1,5	MN1004-02
40	20	52	75	50	M16x1,5	4	1,6	MN1004-12
40	25	65	80	56	M20x1,5	4	1,9	MN1004-22
50	16	70	55	48	M12x1,25	4	3,6	MN1004-04
50	20	70	55	50	M16x1,5	4	3,6	MN1004-14
50	25	70	55	56	M20x1,5	4	3,5	MN1004-24

Spares

For clamping diameter d_2	① Clamping screw		② Length adjustment screw	
	DIN 1835-B	Order No.	Size	Order No.
16	M10x16-45H	10003951	M12x1,25x30	K2865-44
20	M12x16-45H	10003948	M16x1,5x35	K2865-64
25	M12x20-45H	10004663	M20x1,5x40	K2865-84

Dimensions in mm.

Use:

For holding milling tools and drills with cylindrical shank and angled clamping face (2°) to DIN 1835 Form E.

Supply includes:

Clamping screw and length adjustment screw included.

Pull studs not included.

Design:

Permissible concentricity deviation for hollow taper shank to clamping diameter d_2 0.003 mm.

The bore tolerance is much reduced to produce extremely high accurate machining results.

Note:

The length adjustment screws have through holes for coolant.

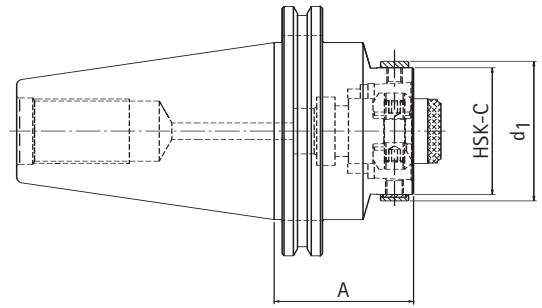
For pull studs see page 163.

Balance:

G 6.3 at 3,000 min⁻¹

KS-ISO Location shanks

Steep taper location shank to ASME B5.50- 1994



Nominal size	Nominal size HSK-C	Dimensions		Weight	Order No.
		d ₁	A		
30	32	37	45	0,6	MN5514-05-K
30	40	45	60	0,9	MN5514-06-K
40	32	37	50	1,1	MN5514-15-K
40	40	45	50	1,1	MN5514-16-K
40	50	55	60	1,4	MN5514-17-K
40	63	70	75	1,8	MN5514-18-K
45	32	37	50	1,7	MN5514-25-K
45	40	45	50	1,8	MN5514-26-K
45	50	55	55	2,0	MN5514-27-K
45	63	70	60	2,2	MN5514-28-K
45	80	87	80	3,0	MN5514-29-K
50	32	37	50	2,8	MN5514-35-K
50	40	45	50	2,9	MN5514-36-K
50	50	55	55	3,0	MN5514-37-K
50	63	70	55	3,2	MN5514-38-K
50	80	87	80	4,6	MN5514-39-K
50	100	110	95	6,1	MN5514-310-K

Dimensions in mm.

Use:

For use on machine spindle for holding HSK tools.

Supply includes:

Supplied complete with clamping cartridge and stop ring; pull studs not included.

Design:

Permissible concentricity deviation of steep taper to HSK internal taper 0.003 mm.

Note:

For clamping cartridges see pages 142-143

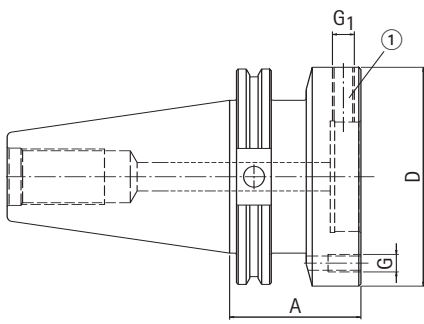
For stop rings see page 145.

For pull studs see page 163.

On request the extensions can be supplied with KS clamping cartridge for use with minimal lubrication. For this an M is added to the order number, e.g. MN5514-18-KM.

Balance:

G 6.3 at 3,000 min⁻¹



ISO Location shanks

Location shank ASME B5.50- 1994

Nominal size	Module diameter D	A	Dimensions		Weight kg	Order No.
			G	G ₁		
30	60	50	M5	M8x1	0,8	MN1023-05
30	70	50	M6	M8x1	0,9	MN1023-06
40	60	50	M5	M8x1	1,3	MN1023-15
40	70	50	M6	M8x1	1,4	MN1023-16
40	80	55	M6	M8x1	1,7	MN1023-17
40	100	60	M8	M10x1	2,2	MN1023-18
45	60	50	M5	M8x1	2,8	MN1023-25
45	70	50	M6	M8x1	2,9	MN1023-26
45	80	55	M6	M8x1	3,1	MN1023-27
45	100	60	M8	M10x1	3,3	MN1023-28
45	117	60	M8	M10x1	3,5	MN1023-29
50	60	50	M5	M8x1	3,2	MN1023-35
50	70	50	M6	M8x1	3,4	MN1023-36
50	80	50	M6	M8x1	3,6	MN1023-37
50	100	60	M8	M10x1	4,4	MN1023-38
50	117	60	M8	M10x1	4,5	MN1023-39
50	140	60	M10	M10x1	4,7	MN1023-310

Spares

For module diameter D	Quantity required	① Threaded pin Order No.
60-80	4	K2865-24
100-140	4	K2865-34

Dimensions in mm.

Use:

For use on machine spindle for holding KS adaptor flange, thermal expanding chuck, hydraulic chuck, chuck for cylindrical shanks or tools with modular shank to MN 5000-30 or MN 5000-34.

Supply includes:

Supplied complete with threaded pins for adjusting concentricity; pull studs not included.

Design:

Because of the threaded pins concentricity of an adaptor or tool which has been fitted can be precisely adjusted to the steep taper.

Note:

For suitable KS adaptor flanges MN 5520 and MN 5523, see pages 28 and 29.

For suitable thermal expanding chucks see page 27.

For suitable hydraulic chucks see page 26.

For suitable chucks for cylindrical shanks see pages 24-25.

For pull studs see page 163.

Balance:

G 6.3 at 3,000 min⁻¹



Toolholders with cylindrical shank

The programme of MAPAL HFS holders for clamping tool heads is completed by holders with cylindrical shanks in Form A.

Softsynchro tapping chucks with location shank to DIN 1835 Form B+E can also be found in this chapter.



HFS Holders with axial clamping system

Location shank to MN623



HFS 900: long version

Nominal size D	Nominal size HFS	Face contact d ₁	Dimensions		Weight kg	Ref. code	Order No.
			A	L ₁			
20	10	15	110	50	0,3	HFS 900-10	30010248
20	12	17,8	129,5	50	0,4	HFS 900-12	30010249
20	14	20,5	130,5	50	0,5	HFS 900-14	30010250
25	16	23,2	151	60	0,7	HFS 900-16	30010251
25	20	29,3	150	60	1,0	HFS 900-20	30010252
32	24	39	206	60	2,1	HFS 900-24	30010253

HFS 905: short version

Nominal size D	Nominal size HFS	Face contact d ₁	Dimensions		Weight kg	Ref. code	Order No.
			A	L ₁			
20	10	15	49	50	0,2	HFS 905-10	30010256
20	12	17,8	68,5	50	0,3	HFS 905-12	30010257
20	14	20,5	69,5	50	0,3	HFS 905-14	30010258
25	16	23,2	90	60	0,5	HFS 905-16	30010259
25	20	29,3	89	60	0,7	HFS 905-20	30010260
32	24	39	107	60	1,3	HFS 905-24	30010261

HFS 905C: extra short version

Nominal size D	Nominal size HFS	Face contact d ₁	Dimensions		Weight kg	Ref. code	Order No.
			A	L ₁			
20	12	17,8	32	50	0,2		30078683

Dimensions in mm.
Supply includes:
Holder with threaded spindle, hexagonal key.

Notes:
For accessories and spares see page 162.
For suitable torque wrenches and hexagonal keys see pages 150-152.
Balance:
G6.3 at 3,000 min⁻¹



HFS Holders with radial clamping system

Location shank to MN623

HFS 900R: long version

Nominal size D	Nominal size HFS	Face contact d ₁	Dimensions		Weight kg	Ref. code	Order No.
			A	L ₁			
20	12	17,8	129,5	50	0,4	HFS 900R-12	30078110
20	14	20,5	130,5	50	0,4	HFS 900R-14	30078115
25	16	23,2	151	60	0,7	HFS 900R-16	30078116
25	20	29,3	150	60	0,9	HFS 900R-20	30080112

HFS 905R: short version

Nominal size D	Nominal size HFS	Face contact d ₁	Dimensions		Weight kg	Ref. code	Order No.
			A	L ₁			
20	12	17,8	68,5	50	0,3	HFS 905R-12	30078117
20	14	20,5	69,5	50	0,3	HFS 905R-14	30078118
25	16	23,2	90	60	0,5	HFS 905R-16	30078119
25	20	29,3	89	60	0,6	HFS 905R-20	30080151

HFS 905RC: extra short version

Nominal size D	Nominal size HFS	Face contact d ₁	Dimensions		Weight kg	Ref. code	Order No.
			A	L ₁			
20	12	17,8	35	50	0,2		30115560

Dimensions in mm.

Supply includes:

Holder with threaded spindle, hexagonal key and open-end wrench for pull studs.

Recommendation:

To enable quick tool head replacement with the radial clamping system, at least 1 additional pull stud should be ordered.

Notes:

For accessories and spares see page 162.

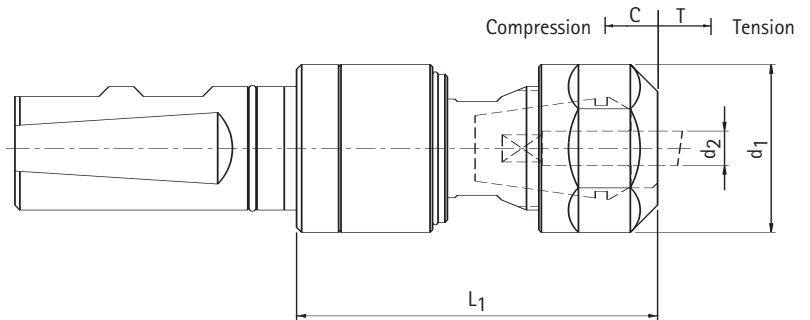
For suitable torque wrenches and hexagonal keys see pages 150-152.

Balance:

G 6.3 at 3,000 min⁻¹

Softsynchro tapping chucks

Location shank to DIN 1835 B+E



Nominal size HSK-A	for tap drills		Clamping range	Nominal size	Dimensions				Weight kg	Ref. code	Order No.
	Thread size	Shank diameter d ₂			d ₁	L ₁	C	T			
25	M4-M12	4,5-10	1-13	ER-20 (GB)	34	73	0,5	0,5	0,3	MN1403-08	10015373
25	M4-M20	4,5-16	2-20	ER-32 (GB)	50	87,3	0,5	0,5	1,4	MN1405-08	10063621
32	M12-M30	7-22	3-26	ER-40 (GB)	63	113,5	0,7	0,7	2,8	MN1406-09	10057697

Dimensions in mm.

Use:

For safe, fast clamping of tap drills.

To compensate for any differences in pitch which occur between the synchronous spindle and the tap drill.

Supply includes:

Supplied complete with clamping nut for internal coolant supply and hexagonal key.

Does not include collet and washer.

Design:

With internal coolant supply.

Note:

Other versions available on request.

For tapping collets and washers to suit internal coolant supply see pages 168-170.

For hexagonal keys see page 153.



Floating holders

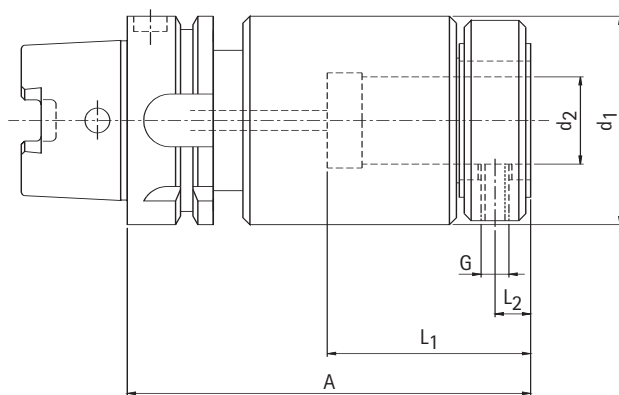
The MAPAL "Wellach System" floating holders have been specially designed for high speed reaming. These compensate for axial and angular displacement and in doing so guarantee optimum machining results with high cutting speeds and long tool life.

To produce higher machining values and even better results, the floating holders can be combined with MAPAL self-adjusting floating holders which will reduce the pendulum movement required by the floating holder and therefore minimise radial play.



Floating holders for cylindrical shanks with lateral clamping face

Location shank HSK-A to DIN 69893-1



Nominal size HSK-A	Clamping diameter d_2	d_1	A	Dimensions			Radial play	Order No.
				L_1	L_2	G		
32	16	49	100	40	9,5	M8	0,08	PH219/06/08
40	16	49	100	40	9,5	M8	0,08	PH220/06/08
50	16	49	107	40	9,5	M8	0,08	PH221/06/08
63	16	49	93	40	9,5	M8	0,08	PH222/06/08
32	20	49	110	50	9,5	M8	0,08	PH219/08/08
40	20	49	110	50	9,5	M8	0,08	PH220/08/08
50	20	49	117	50	9,5	M8	0,08	PH221/08/08
63	20	49	103	50	9,5	M8	0,08	PH222/08/08
40	25	59	121	60	9,5	M10	0,08	PH220/09/08
50	25	59	128	60	9,5	M10	0,08	PH221/09/08
63	25	59	128	60	9,5	M10	0,08	PH222/09/08

Radial play 0.02 mm for HSC machining

Nominal size HSK-A	Clamping diameter d_2	d_1	A	Dimensions			Radial play	Order No.
				L_1	L_2	G		
32	16	49	100	40	9,5	M8	0,02	PH219/06/02
40	16	49	100	40	9,5	M8	0,02	PH220/06/02
50	16	49	107	40	9,5	M8	0,02	PH221/06/02
63	16	49	93	40	9,5	M8	0,02	PH222/06/02
32	20	49	110	50	9,5	M8	0,02	PH219/08/02
40	20	49	110	50	9,5	M8	0,02	PH220/08/02
50	20	49	117	50	9,5	M8	0,02	PH221/08/02
63	20	49	103	50	9,5	M8	0,02	PH222/08/02
40	25	59	121	60	9,5	M10	0,02	PH220/09/02
50	25	59	128	60	9,5	M10	0,02	PH221/09/02
63	25	59	128	60	9,5	M10	0,02	PH222/09/02

Dimensions in mm.

Use:

For holding tools with cylindrical shank and lateral clamping face.

Supply includes:

With holding ring and holding screw (threaded pin ISO 4028).

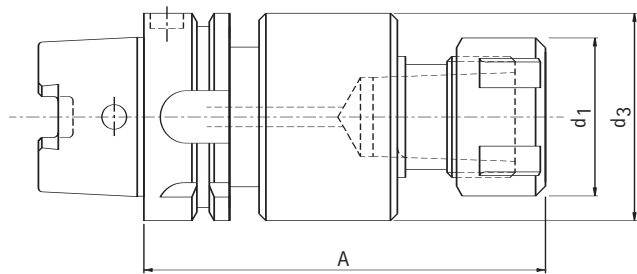
Design:

With central coolant supply.

Note:

For coolant hoses see page 148.

For holding ring and holding screw (threaded pin ISO 4028) see page 178.



Floating holders with collet holder with clamping nuts for internal coolant supply (HI-Q/ERC)

Location shank HSK-A to DIN 69893-1

Nominal size HSK-A	Clamping range	Nominal size	Dimensions			Radial play	Order No.
			d ₁	d ₃	A		
32	1-13	ER-20	34	49,5	110	0,05	PH229/10/05
40	1-13	ER-20	34	49,5	110	0,05	PH230/10/05
50	1-13	ER-20	34	49,5	117	0,05	PH231/10/05
63	1-13	ER-20	34	49,5	103	0,05	PH232/10/05
32	1-16	ER-25	42	59	120	0,05	PH229/20/05
40	1-16	ER-25	42	59	120	0,05	PH230/20/05
50	1-16	ER-25	42	59	127	0,05	PH231/20/05
63	1-16	ER-25	42	59	127	0,05	PH232/20/05
40	2-20	ER-32	50	64	127	0,05	PH230/30/05
50	2-20	ER-32	50	64	134	0,05	PH231/30/05
63	2-20	ER-32	50	64	134	0,05	PH232/30/05

Dimensions in mm.

Supply includes:

Complete with clamping nut for internal coolant supply (HI-Q/ERC);
does not include washer and collet.

Design:

With central coolant supply.

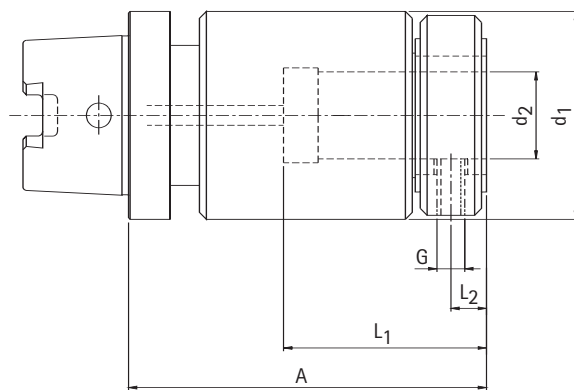
Note:

For suitable collets and washers for internal coolant supply see pages 164-167
and 169-170. Washers are only available from \varnothing 3 mm.

For assembly keys see page 153.

For coolant hoses see page 148.

Floating holders for cylindrical shanks with lateral clamping face



Location shank HSK-A to DIN 69893-1

Nominal size HSK-A	Clamping diameter d_2	d_1	A	Dimensions			Radial play	Order No.
				L_1	L_2	G		
32	16	49	77	40	9,5	M8	0,08	PH224/06/08
40	16	49	77	40	9,5	M8	0,08	PH225/06/08
50	16	49	80	40	9,5	M8	0,08	PH226/06/08
63	16	49	80	40	9,5	M8	0,08	PH227/06/08
32	20	49	87	50	9,5	M8	0,08	PH224/08/08
40	20	49	87	50	9,5	M8	0,08	PH225/08/08
50	20	49	90	50	9,5	M8	0,08	PH226/08/08
63	20	49	90	50	9,5	M8	0,08	PH227/08/08
50	25	59	98	60	9,5	M10	0,08	PH226/09/08
63	25	59	101	60	9,5	M10	0,08	PH227/09/08

Radial play 0.02 mm for HSC machining

Nominal size HSK-A	Clamping diameter d_2	d_1	A	Dimensions			Radial play	Order No.
				L_1	L_2	G		
32	16	49	77	40	9,5	M8	0,02	PH224/06/02
40	16	49	77	40	9,5	M8	0,02	PH225/06/02
50	16	49	80	40	9,5	M8	0,02	PH226/06/02
63	16	49	80	40	9,5	M8	0,02	PH227/06/02
32	20	49	87	50	9,5	M8	0,02	PH224/08/02
40	20	49	87	50	9,5	M8	0,02	PH225/08/02
50	20	49	90	50	9,5	M8	0,02	PH226/08/02
63	20	49	90	50	9,5	M8	0,02	PH227/08/02
50	25	59	98	60	9,5	M10	0,02	PH226/09/02
63	25	59	101	60	9,5	M10	0,02	PH227/09/02

Dimensions in mm.

Use:

For holding tools with cylindrical shank and lateral clamping face.

Supply includes:

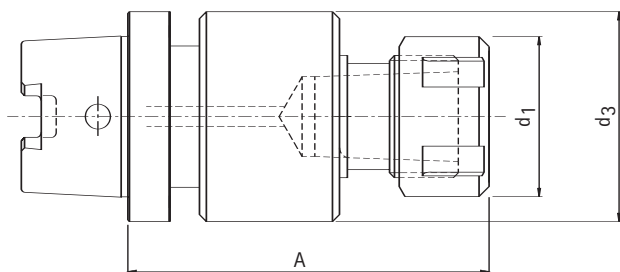
With holding ring and holding screw (threaded pin ISO 4028).

Design:

With central coolant supply.

Note:

For holding ring and holding screw (threaded pin ISO 4028) see page 178.



Floating holders with collet holder with clamping nuts for internal coolant supply (HI-Q/ERC)

Location shank HSK-A to DIN 69893-1

Nominal size HSK-A	Clamping range	Nominal size	Dimensions			Radial play	Order No.
			d ₁	d ₃	A		
32	1-13	ER-20	34	49,5	87	0,05	PH234/10/05
40	1-13	ER-20	34	49,5	87	0,05	PH235/10/05
50	1-13	ER-20	34	49,5	90	0,05	PH236/10/05
63	1-13	ER-20	34	49,5	90	0,05	PH237/10/05
32	1-16	ER-25	42	59	97	0,05	PH234/20/05
40	1-16	ER-25	42	59	97	0,05	PH235/20/05
50	1-16	ER-25	42	59	97	0,05	PH236/20/05
63	1-16	ER-25	42	59	100	0,05	PH237/20/05
40	2-20	ER-32	50	64	104	0,05	PH235/30/05
50	2-20	ER-32	50	64	104	0,05	PH236/30/05
63	2-20	ER-32	50	64	107	0,05	PH237/30/05

Dimensions in mm.

Supply includes:

Complete with clamping nut for internal coolant supply (HI-Q/ERC);
does not include washer and collet.

Design:

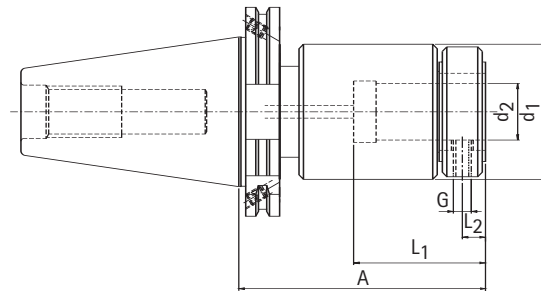
With central coolant supply.

Note:

For suitable collets and washers for internal coolant supply see pages 164-167
and 169-170. Washers are only available from \varnothing 3 mm.

For assembly keys see page 153.

Floating holders for cylindrical shanks with lateral clamping face



ISO location shank to DIN 69871

Steep taper DIN 69871 AD

Nominal size ISO	Clamping diameter d_2	d_1	A	Dimensions			Radial play	Order No.
				L_1	L_2	G		
40	16	49	95	40	9,5	M8	0,05	PH200/06/05
40	20	49	105	50	9,5	M8	0,05	PH200/08/05
40	25	59	121	60	9,5	M10	0,05	PH200/09/05
50	16	49	99	40	9,5	M8	0,05	PH201/06/05
50	20	49	109	50	9,5	M8	0,05	PH201/08/05
50	25	59	118	60	9,5	M10	0,05	PH201/09/05

Steep taper DIN 69871 B

Nominal size ISO	Clamping diameter d_2	d_1	A	Dimensions			Radial play	Order No.
				L_1	L_2	G		
40	16	49	95	40	9,5	M8	0,05	PH205/06/05
40	20	49	105	50	9,5	M8	0,05	PH205/08/05
40	25	59	121	60	9,5	M10	0,05	PH205/09/05
50	16	49	99	40	9,5	M8	0,05	PH206/06/05
50	20	49	109	50	9,5	M8	0,05	PH206/08/05
50	25	59	118	60	9,5	M10	0,05	PH206/09/05

Dimensions in mm.

Use:

For holding tools with cylindrical shank and lateral clamping face.

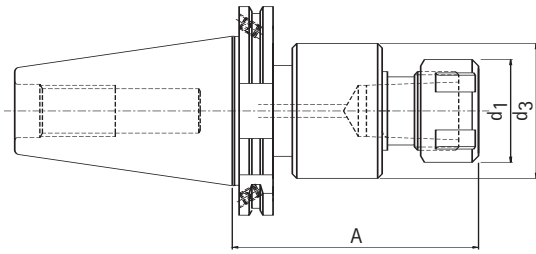
Supply includes:

With holding ring and holding screw (threaded pin ISO 4028);
pull studs not included.

Note:

For pull studs see page 163.

For holding ring and holding screw (threaded pin ISO 4028)
see page 178.



Floating holders with collet holder with clamping nuts for internal coolant supply (HI-Q/ERC)

ISO location shank to DIN 69871

Steep taper DIN 69871 AD

Nominal size ISO	Clamping range	Nominal size	Dimensions			Radial play	Order No.
			d ₁	d ₃	A		
40	1-16	ER-25	42	59	119	0,05	PH210/20/05
50	1-16	ER-25	42	59	116	0,05	PH211/20/05

Steep taper DIN 69871 B

Nominal size ISO	Clamping range	Nominal size	Dimensions			Radial play	Order No.
			d ₁	d ₃	A		
40	1-16	ER-25	42	59	119	0,05	PH215/20/05
50	1-16	ER-25	42	59	116	0,05	PH216/20/05

Dimensions in mm.

Supply includes:

Complete with clamping nut for internal coolant supply (HI-Q/ERC);
does not include washer and collet; does not include pull studs.

Note:

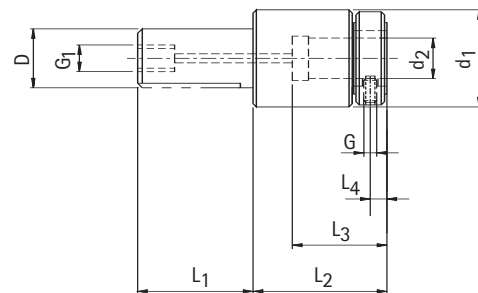
For suitable collets and washers for internal coolant supply see pages 164-167
and 169-170. Washers are only available from \varnothing 3 mm.

For assembly keys see page 153.

For coolant hoses see page 148.

Mini floating holders for cylindrical shanks with lateral clamping face

Location shank with radial clamping screw



with angular adjustment

Nominal size D	Clamping diameter d ₂	Dimensions							Angular adjustment	Radial play	Order No.
		d ₁	L ₁	L ₂	L ₃	L ₄	G ₁	G			
16	10	30	30	35	20	5	1/8"	M5	30'	0,12	PH411/03/12
19,05	10	30	30	35	20	5	1/8"	M5	30'	0,12	PH412/03/12
20	10	30	30	35	20	5	1/8"	M5	30'	0,12	PH413/03/12
25	10	30	30	35	20	5	1/8"	M5	30'	0,12	PH414/03/12
25,4	10	30	30	35	20	5	1/8"	M5	30'	0,12	PH415/03/12

with angular adjustment

Nominal size D	Clamping diameter d ₂	Dimensions							Angular adjustment	Radial play	Order No.
		d ₁	L ₁	L ₂	L ₃	L ₄	G ₁	G			
16	10	30	30	35	20	5	1/8"	M5	–	0,12	PH421/03/12
19,05	10	30	30	35	20	5	1/8"	M5	–	0,12	PH422/03/12
20	10	30	30	35	20	5	1/8"	M5	–	0,12	PH423/03/12
25	10	30	30	35	20	5	1/8"	M5	–	0,12	PH424/03/12
25,4	10	30	30	35	20	5	1/8"	M5	–	0,12	PH425/03/12

Dimensions in mm.

Supply:

For holding tools with cylindrical shank and lateral clamping face.

Supply includes:

With holding ring and holding screw
(threaded pin ISO 4028).

Design:

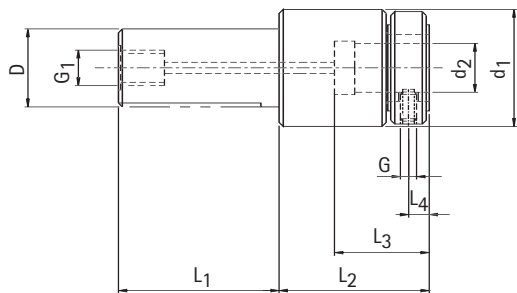
With central coolant supply.

Note:

For holding ring and holding screw
(threaded pin ISO 4028) see page 178.

Floating holders for cylindrical shanks with lateral clamping face

Location shank with radial clamping screw



Nominal size D	Clamping diameter d ₂	Dimensions							Angular adjustment	Radial play	Order No.
		d ₁	L ₁	L ₂	L ₃	L ₄	G ₁	G			
20	10	38,5	40	46	25	6	1/8"	M6	30'	0,08	PH331/03/08
25	10	38,5	40	46	25	6	1/4"	M6	30'	0,08	PH332/03/08
25,4	10	38,5	40	46	25	6	1/4"	M6	30'	0,08	PH333/03/08
30	10	38,5	40	46	25	6	3/8"	M6	30'	0,08	PH334/03/08
32	10	38,5	40	46	25	6	3/8"	M6	30'	0,08	PH336/03/08
19,05	16	38,5	46	39,5	26	6	1/8"	M6	-	0,08	PH330/06/08
20	16	49	46	46	29	7	1/8"	M8	30'	0,10	PH331/06/10
25	16	49	46	46	29	7	1/4"	M8	30'	0,10	PH332/06/10
25,4	16	49	46	46	29	7	1/4"	M8	30'	0,10	PH333/06/10
30	16	49	46	46	29	7	3/8"	M8	30'	0,10	PH334/06/10
32	16	49	46	46	29	7	3/8"	M8	30'	0,10	PH336/06/10
20	20	49	46	46	29	7	1/8"	M8	30'	0,12	PH331/08/12
25	20	49	46	46	29	7	1/4"	M8	30'	0,12	PH332/08/12
25,4	20	49	46	46	29	7	1/4"	M8	30'	0,12	PH333/08/12
30	20	49	46	46	29	7	3/8"	M8	30'	0,12	PH334/08/12
32	20	49	46	46	29	7	3/8"	M8	30'	0,12	PH336/08/12
25	25	59	48	51	34	7	1/4"	M8	30'	0,12	PH332/09/12
25,4	25	59	48	51	34	7	1/4"	M8	30'	0,12	PH333/09/12
30	25	59	48	51	34	7	3/8"	M8	30'	0,12	PH334/09/12
31,75	25	59	48	51	34	7	3/8"	M8	30'	0,12	PH335/09/12
32	25	59	48	51	34	7	3/8"	M8	30'	0,12	PH336/09/12
40	25	59	48	51	34	7	1/2"	M8	30'	0,12	PH337/09/12

Dimensions in mm.

Use:

For holding tools with cylindrical shank and lateral clamping face.

Supply includes:

With holding ring and holding screw
(threaded pin ISO 4028).

Design:

With central coolant supply.

Note:

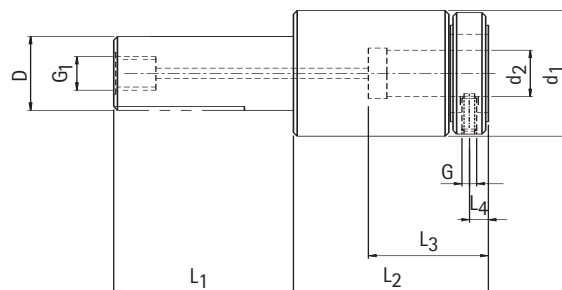
For holding ring and holding screw (threaded pin
ISO 4028) see page 178.

Clamping face width for
automatic reamers:

ø 19.05, ø 20	8 mm
ø 25 – ø 25.4	10 mm
ø 30 – ø 40	12 mm

Floating holders for cylindrical shanks with lateral clamping face

Location shank with radial clamping screw



Nominal size D	Clamping diameter d ₂	Dimensions						Angular adjustment	Radial play	Order No.	
		d ₁	L ₁	L ₂	L ₃	L ₄	G ₁				G
20	16	49	50	65	40	9,5	1/8"	M8	30'	0,10	PH310/06/10
25	16	49	60	65	40	9,5	1/4"	M8	30'	0,10	PH311/06/10
25,4	16	49	60	65	40	9,5	1/4"	M8	30'	0,10	PH312/06/10
30	16	49	60	65	40	9,5	3/8"	M8	30'	0,10	PH313/06/10
32	16	49	80	65	40	9,5	3/8"	M8	30'	0,10	PH314/06/10
40	16	49	80	65	40	9,5	1/2"	M8	30'	0,10	PH315/06/10
40	16	49	150	65	40	9,5	1/2"	M8	30'	0,10	PH316/06/10
20	20	49	50	75	50	9,5	1/8"	M8	30'	0,12	PH310/08/12
25	20	49	60	75	50	9,5	1/4"	M8	30'	0,12	PH311/08/12
25,4	20	49	60	75	50	9,5	1/4"	M8	30'	0,12	PH312/08/12
30	20	49	60	75	50	9,5	3/8"	M8	30'	0,12	PH313/08/12
32	20	49	80	75	50	9,5	3/8"	M8	30'	0,12	PH314/08/12
40	20	49	80	75	50	9,5	1/2"	M8	30'	0,12	PH315/08/12
40	20	49	150	75	50	9,5	1/2"	M8	30'	0,12	PH316/08/12
25	25	59	60	85	60	9,5	1/4"	M10	30'	0,12	PH311/09/12
25,4	25	59	60	85	60	9,5	1/4"	M10	30'	0,12	PH312/09/12
30	25	59	60	85	60	9,5	3/8"	M10	30'	0,12	PH313/09/12
32	25	59	80	85	60	9,5	3/8"	M10	30'	0,12	PH314/09/12
40	25	59	80	85	60	9,5	1/2"	M10	30'	0,12	PH315/09/12
40	25	59	150	85	60	9,5	1/2"	M10	30'	0,12	PH316/09/12

Dimensions in mm.

Use:

For holding tools with cylindrical shank and lateral clamping face.

Supply includes:

With holding ring and holding screw (threaded pin ISO 4028).

Design:

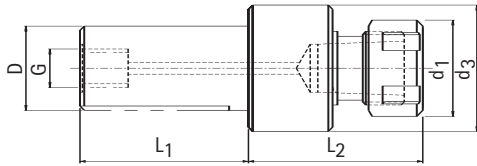
With central coolant supply.

Note:

For holding ring and holding screw (threaded pin ISO 4028) see page 178.

Clamping face width for automatic reamers:

ø 20	8 mm
ø 25 – ø 30	10 mm
ø 32 – ø 40	12 mm



Floating holders with collet holder with clamping nuts for internal coolant supply (HI-Q/ERC)

Location shank with radial clamping screw

Nominal size D	Clamping diameter	Nominal size	Dimensions					Angular adjustment	Radial play	Order No.
			d ₁	d ₃	L ₁	L ₂	G			
16	1-13	ER-20	34	49,5	40	74	1/8"	30'	0,06	PH319/10/06
19,05	1-13	ER-20	34	49,5	50	74	1/8"	30'	0,06	PH320/10/06
20	1-13	ER-20	34	49,5	50	74	1/8"	30'	0,06	PH321/10/06
25	1-13	ER-20	34	49,5	60	74	1/4"	30'	0,08	PH322/10/08
25,4	1-13	ER-20	34	49,5	60	74	1/4"	30'	0,10	PH323/10/10
19,05	1-16	ER-25	42	59	50	84	1/8"	30'	0,06	PH320/20/06
20	1-16	ER-25	42	59	50	84	1/8"	30'	0,06	PH321/20/06
25	1-16	ER-25	42	59	60	84	1/4"	30'	0,08	PH322/20/08
25,4	1-16	ER-25	42	59	60	84	1/4"	30'	0,10	PH323/20/10
30	1-16	ER-25	42	59	60	84	3/8"	30'	0,08	PH324/20/08
31,75	1-16	ER-25	42	59	80	84	3/8"	30'	0,08	PH325/20/08
32	1-16	ER-25	42	59	80	84	3/8"	30'	0,10	PH326/20/10
38,1	1-16	ER-25	42	59	80	84	3/8"	30'	0,12	PH327/20/12
40	1-16	ER-25	42	59	80	84	1/2"	30'	0,12	PH328/20/12
31,75	2-20	ER-32	50	64	80	91	3/8"	30'	0,08	PH325/30/08
32	2-20	ER-32	50	64	80	91	3/8"	30'	0,10	PH326/30/10
38,1	2-20	ER-32	50	64	80	91	3/8"	30'	0,12	PH327/30/12
40	2-20	ER-32	50	64	80	91	1/2"	30'	0,12	PH328/30/12

Dimensions in mm.

Supply includes:

Complete with clamping nut for internal coolant supply (HI-Q/ERC);
does not include washer and collet.

Design:

With central coolant supply.

Note:

For suitable collets and washers for internal coolant supply see pages
164 - 167 and 169 - 170. Washers are only available from ø 3 mm.

For assembly keys see page 153.

Clamping face width:

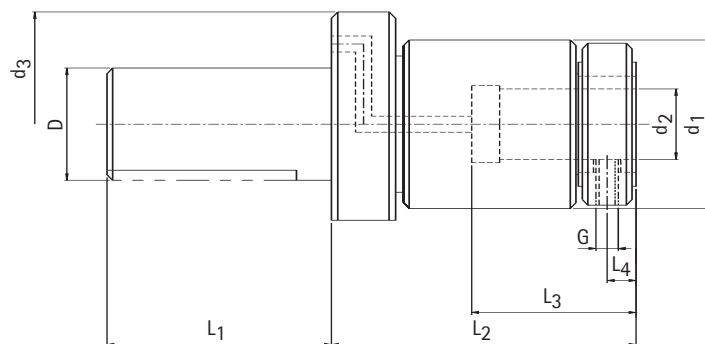
ø 16 - ø 20 8 mm

ø 25 - ø 30 10 mm

ø 31.75 - ø 40 12 mm

Floating holders for cylindrical shanks with lateral clamping face

Location shank "VDI"
to ISO 10889-1 (without serration)



Nominal size D	Clamping diameter d ₂	Dimensions							Angular adjustment	Radial play	Order No.
		d ₁	d ₃	L ₁	L ₂	L ₃	L ₄	G			
30	16	49	68	55	92	40	9,5	M8	30'	0,08	PH300/06/08
40	16	49	83	63	92	40	9,5	M8	30'	0,08	PH301/06/08
30	20	49	68	55	102	50	9,5	M8	30'	0,10	PH300/08/10
40	20	49	83	63	102	50	9,5	M8	30'	0,10	PH301/08/10
50	20	49	98	78	102	50	9,5	M8	30'	0,10	PH302/08/10
30	25	59	68	55	111	60	9,5	M10	30'	0,12	PH300/09/12
40	25	59	83	63	111	60	9,5	M10	30'	0,12	PH301/09/12
50	25	59	98	78	111	60	9,5	M10	30'	0,12	PH302/09/12

Dimensions in mm.

Use:

For holding tools with cylindrical shank and lateral clamping face.

Supply includes:

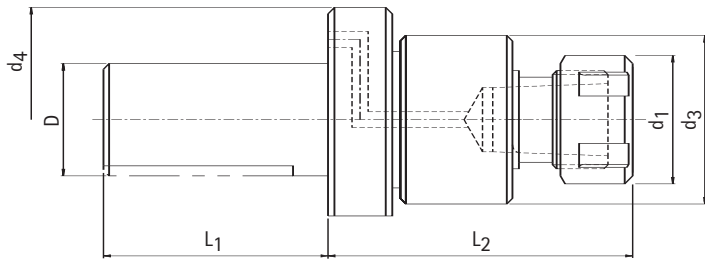
With holding ring and holding screw
(threaded pin ISO 4028).

Design:

With central coolant supply.

Note:

For holding ring and holding screw
(threaded pin ISO 4028) see page 178.



Floating holders with collet holder with clamping nuts for internal coolant supply (HI-Q/ERC)

Location shank "VDI"
to ISO 10889-1 (without serration)

Nominal size D	Clamping diameter	Nominal size	Dimensions					Angular adjustment	Radial play	Order No.
			d ₁	d ₃	d ₄	L ₁	L ₂			
30	1-16	ER-25	42	59	68	55	109	30'	0,08	PH305/20/08
40	1-16	ER-25	42	59	83	63	109	30'	0,10	PH306/20/10
50	1-16	ER-25	42	59	98	78	109	30'	0,12	PH307/20/12
40	2-20	ER-32	50	64	83	63	116	30'	0,10	PH306/30/10
50	2-20	ER-32	50	64	98	78	116	30'	0,12	PH307/30/12

Dimensions in mm.

Supply includes:

Complete with clamping nut for internal coolant supply (HI-Q/ERC);
does not include washer and collet.

Design:

With central coolant supply

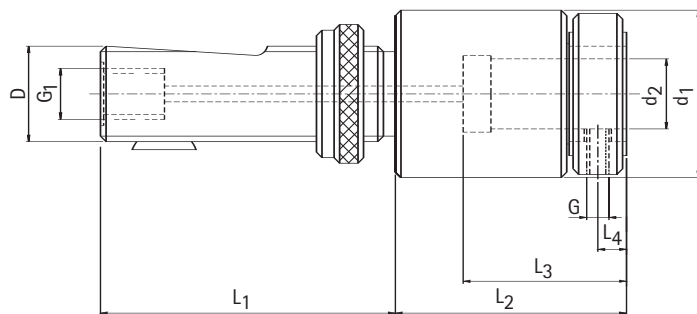
Note:

For suitable collets and washers for internal coolant supply see pages
164-167 and 169-170. Washers are only available from \varnothing 3 mm.

For assembly keys see page 153.

Floating holders for cylindrical shanks with lateral clamping face

Automotive shank to DIN 6327-1



Nominal size D	Clamping diameter d ₂	Dimensions							Radial play	Order No.
		d ₁	L ₁	L ₂	L ₃	L ₄	G ₁	G		
Tr 16 x 1,5	10	38,5	85	46	25	6	1/8"	M6	0,15	PH250/03/15
Tr 20 x 2	10	38,5	88	46	25	6	1/8"	M6	0,15	PH251/03/15
Tr 20 x 2	16	49	88	65	40	9,5	1/4"	M8	0,20	PH251/06/20
Tr 28 x 2	16	49	95	65	40	9,5	1/4"	M8	0,20	PH252/06/20
Tr 36 x 2	16	49	118	65	40	9,5	1/2"	M8	0,20	PH253/06/20
Tr 20 x 2	20	49	88	75	50	9,5	1/4"	M8	0,20	PH251/08/20
Tr 28 x 2	20	49	95	75	50	9,5	3/8"	M8	0,20	PH252/08/20
Tr 36 x 2	20	49	118	75	50	9,5	1/2"	M8	0,20	PH253/08/20

Dimensions in mm.

Use:

For holding tools with cylindrical shank and lateral clamping face.

Supply includes:

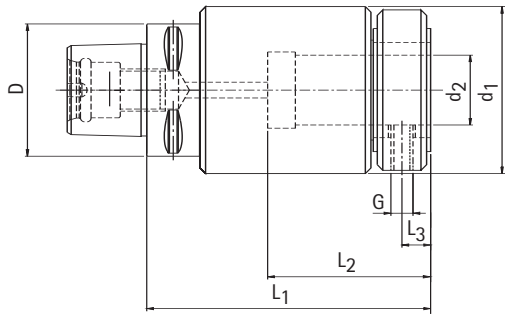
With holding ring and holding screw (threaded pin ISO 4028).

Design:

With central coolant supply.

Note:

For holding ring and holding screw (threaded pin ISO 4028) see page 178.



Floating holders for cylindrical shanks with lateral clamping face

Coromant Capto location shank

Nominal size D	Clamping diameter d ₂	Dimensions					Radial play	Order No.
		d ₁	L ₁	L ₂	L ₃	G		
C4 ø 40	16	49	88	40	9,5	M8	0,08	PH350/06/08
C5 ø 50	16	49	88	40	9,5	M8	0,08	PH351/06/08
C6 ø 63	16	49	88	40	9,5	M8	0,08	PH352/06/08
C4 ø 40	20	49	98	50	9,5	M8	0,08	PH350/08/08
C5 ø 50	20	49	98	50	9,5	M8	0,08	PH351/08/08
C6 ø 63	20	49	98	50	9,5	M8	0,08	PH352/08/08
C4 ø 40	25	59	110	60	9,5	M10	0,08	PH350/09/08
C5 ø 50	25	59	110	60	9,5	M10	0,08	PH351/09/08
C6 ø 63	25	59	110	60	9,5	M10	0,08	PH352/09/08

Dimensions in mm.

Use:

For holding tools with cylindrical shank and lateral clamping face.

Supply includes:

With holding ring and holding screw (threaded pin ISO 4028).

Design:

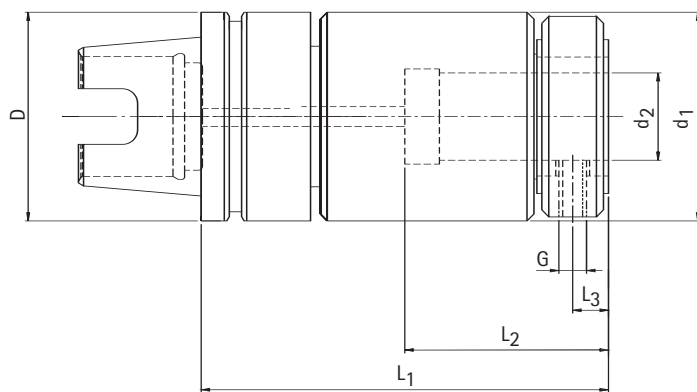
With central coolant supply.

Note:

For holding ring and holding screw
(threaded pin ISO 4028) see page 178.

Floating holders for cylindrical shanks with lateral clamping face

KM-UTS location shank



Nominal size D	Clamping diameter d ₂	Dimensions					Radial play	Order No.
		d ₁	L ₁	L ₂	L ₃	G		
40	16	49	95	40	9,5	M8	0,08	PH360/06/08
50	16	49	95	40	9,5	M8	0,08	PH361/06/08
63	16	49	95	40	9,5	M8	0,08	PH362/06/08
40	20	49	105	50	9,5	M8	0,08	PH360/08/08
50	20	49	105	50	9,5	M8	0,08	PH361/08/08
63	20	49	105	50	9,5	M8	0,08	PH362/08/08
40	25	59	115	60	9,5	M10	0,08	PH360/09/08
50	25	59	115	60	9,5	M10	0,08	PH361/09/08
63	25	59	115	60	9,5	M10	0,08	PH362/09/08

Dimensions in mm.

Use:

For holding tools with cylindrical shank and lateral clamping face.

Supply includes:

With holding ring and holding screw (threaded pin ISO 4028).

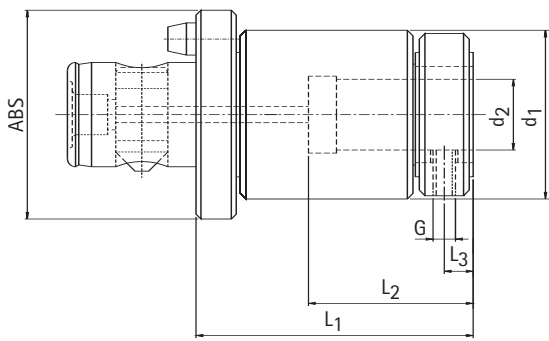
Design:

With central coolant supply.

Note:

For holding ring and holding screw

(threaded pin ISO 4028) see page 178.



Floating holders for cylindrical shanks with lateral clamping face

ABS location shank

Nominal size ABS	Clamping diameter d_2	d_1	Dimensions			G	Radial play	Order No.
			L_1	L_2	L_3			
40	16	49	77	40	9,5	M8	0,08	PH240/06/08
40	20	49	87	50	9,5	M8	0,08	PH240/08/08
40	25	59	98	60	9,5	M10	0,08	PH240/09/08
50	16	49	77	40	9,5	M8	0,08	PH241/06/08
50	20	49	87	50	9,5	M8	0,08	PH241/08/08
50	25	59	91	60	9,5	M10	0,08	PH241/09/08
63	16	49	78	40	9,5	M8	0,08	PH242/06/08
63	20	49	88	50	9,5	M8	0,08	PH242/08/08
63	25	59	98	60	9,5	M10	0,08	PH242/09/08

Radial play 0.02 mm for HSC machining

Nominal size ABS	Clamping diameter d_2	d_1	Dimensions			G	Radial play	Order No.
			L_1	L_2	L_3			
40	16	49	77	40	9,5	M8	0,02	PH240/06/02
40	20	49	87	50	9,5	M8	0,02	PH240/08/02
40	25	59	98	60	9,5	M10	0,02	PH240/09/02
50	16	49	77	40	9,5	M8	0,02	PH241/06/02
50	20	49	87	50	9,5	M8	0,02	PH241/08/02
50	25	59	91	60	9,5	M10	0,02	PH241/09/02
63	16	49	78	40	9,5	M8	0,02	PH242/06/02
63	20	49	88	50	9,5	M8	0,02	PH242/08/02
63	25	59	98	60	9,5	M10	0,02	PH242/09/02

Dimensions in mm.

Use:

For holding tools with cylindrical shank and lateral clamping face.

Supply includes:

With holding ring and holding screw (threaded pin ISO 4028).

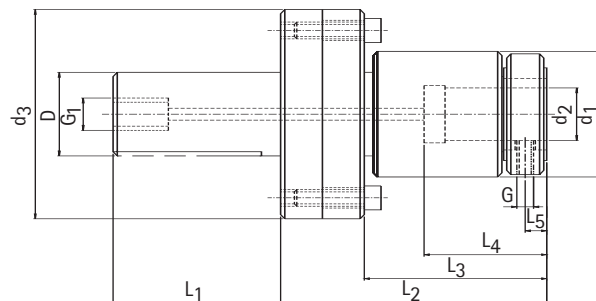
Design:

With central coolant supply.

Note:

For holding ring and holding screw (threaded pin ISO 4028) see page 178.

Self-adjusting floating holders for cylindrical shanks with lateral clamping face



Location shank with radial clamping screw

Nominal size D	Clamping diameter d ₂	Dimensions										Angular adjustment	Radial play	Order No.
		d ₁	d ₃	L ₁	L ₂	L ₃	L ₄	L ₅	G ₁	G				
25	16	49	80	50	93	60	40	9,5	1/4"	M8	30'	0,05	APH311/06/05	
25,4	16	49	80	50	93	60	40	9,5	1/4"	M8	30'	0,05	APH312/06/05	
30	16	49	80	60	93	60	40	9,5	3/8"	M8	30'	0,05	APH313/06/05	
32	16	49	80	80	93	60	40	9,5	3/8"	M8	30'	0,05	APH314/06/05	
40	16	49	80	80	93	60	40	9,5	1/2"	M8	30'	0,05	APH315/06/05	
25	20	49	80	50	103	70	50	9,5	1/4"	M8	30'	0,05	APH311/08/05	
25,4	20	49	80	50	103	70	50	9,5	1/4"	M8	30'	0,05	APH312/08/05	
30	20	49	80	60	103	70	50	9,5	3/8"	M8	30'	0,05	APH313/08/05	
32	20	49	80	80	103	70	50	9,5	3/8"	M8	30'	0,05	APH314/08/05	
40	20	49	80	80	103	70	50	9,5	1/2"	M8	30'	0,05	APH315/08/05	
25	25	59	90	50	115	80	60	9,5	1/4"	M10	30'	0,05	APH311/09/05	
25,4	25	59	90	50	115	80	60	9,5	1/4"	M10	30'	0,05	APH312/09/05	
30	25	59	90	60	115	80	60	9,5	3/8"	M10	30'	0,05	APH313/09/05	
32	25	59	90	80	115	80	60	9,5	3/8"	M10	30'	0,05	APH314/09/05	
40	25	59	90	80	115	80	60	9,5	1/2"	M10	30'	0,05	APH315/09/05	

Dimensions in mm.

Use:

For holding tools with cylindrical shank and lateral clamping face.

Supply includes:

With holding ring and holding screw (threaded pin ISO 4028).

Design:

With central coolant supply.

Note:

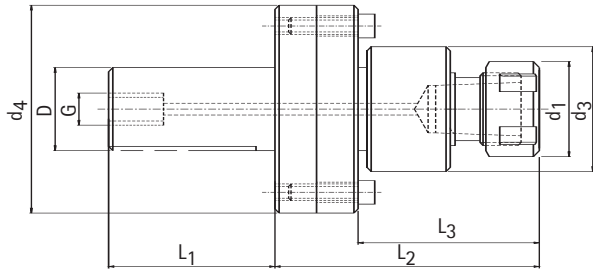
For holding ring and holding screw
(threaded pin ISO 4028) see page 178.

Clamping face width:

ø 25 – ø 25.4 13 mm

ø 30 – ø 32 15 mm

ø 40 17 mm



Self-adjusting floating holders with collet holder with clamping nuts for internal coolant supply (HI-Q/ERC)

Location shank with radial clamping screw

Nominal size D	Clamping diameter	Nominal size	Dimensions							Angular adjust- ment	Radial play	Order No.
			d ₁	d ₃	d ₄	L ₁	L ₂	L ₃	G			
25	1-16	ER-25	42	59	90	50	113	80	1/4"	30'	0,05	APH322/20/05
25,4	1-16	ER-25	42	59	90	50	113	80	1/4"	30'	0,05	APH323/20/05
30	1-16	ER-25	42	59	90	60	113	80	3/8"	30'	0,05	APH324/20/05
31,75	1-16	ER-25	42	59	90	60	113	80	3/8"	30'	0,05	APH325/20/05
32	1-16	ER-25	42	59	90	80	113	80	3/8"	30'	0,05	APH326/20/05
38,1	1-16	ER-25	42	59	90	80	113	80	3/8"	30'	0,05	APH327/20/05
40	1-16	ER-25	42	59	90	80	113	80	1/2"	30'	0,05	APH328/20/05

Dimensions in mm.

Supply includes:

Complete with clamping nut for internal clamping supply (HI-Q/ERC);
washer and collet not included.

Design:

With central coolant supply.

Note:

For suitable collets and washers for internal coolant supply see pages 164-167
and 169-170.

Washers are only available from \varnothing 3 mm.

For assembly keys see page 153.

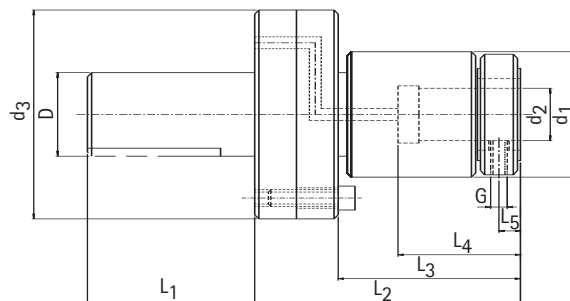
Clamping face width:

\varnothing 25 - \varnothing 25.4 13 mm

\varnothing 30 - \varnothing 32 15 mm

\varnothing 40 17 mm

Self-adjusting floating holders for cylindrical shanks with lateral clamping face



Location shank "VDI"
to ISO10889-1 (without serration)

Nominal size D	Clamping diameter d ₂	Dimensions								Angular adjustment	Radial play	Order No.
		d ₁	d ₃	L ₁	L ₂	L ₃	L ₄	L ₅	G			
30	16	49	80	55	104	60	40	9,5	M8	30'	0,05	APH300/06/05
40	16	49	80	63	104	60	40	9,5	M8	30'	0,05	APH301/06/05
30	20	49	80	55	114	70	50	9,5	M8	30'	0,05	APH300/08/05
40	20	49	80	63	114	70	50	9,5	M8	30'	0,05	APH301/08/05
30	25	59	90	55	126	80	60	9,5	M10	30'	0,05	APH300/09/05
40	25	59	90	63	126	80	60	9,5	M10	30'	0,05	APH301/09/05
50	25	59	98	78	126	80	60	9,5	M10	30'	0,05	APH302/09/05

Dimensions in mm.

Use:

For holding tools with cylindrical shank and lateral clamping face.

Supply includes:

With holding ring and holding screw (threaded pin ISO 4028).

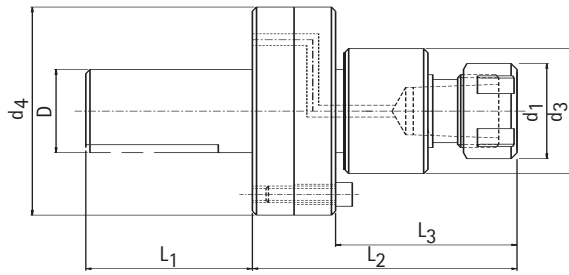
Design:

With central coolant supply.

Note:

For holding ring and holding screw

(threaded pin ISO 4028) see page 178.



Self-adjusting floating holders with collet holder with clamping nuts for internal coolant supply

Location shank "VDI"
to ISO 10889-1 (without serration)

Nominal size D	Clamping diameter	Nominal size	Dimensions						Angular adjustment	Radial play	Order No.
			d ₁	d ₃	d ₄	L ₁	L ₂	L ₃			
30	1-16	ER-25	42	59	90	55	124	80	30'	0,05	APH305/20/05
40	1-16	ER-25	42	59	90	63	124	80	30'	0,05	APH306/20/05
50	1-16	ER-25	42	59	98	78	124	80	30'	0,05	APH307/20/05

Dimensions in mm.

Supply includes:

Complete with clamping nut for internal clamping supply (HI-Q/ERC);
washer and collet not included.

Design:

With central coolant supply.

Note:

For suitable collets and washers for internal coolant supply see pages 164-167
and 169-170.

Washers are only available from \varnothing 3 mm.

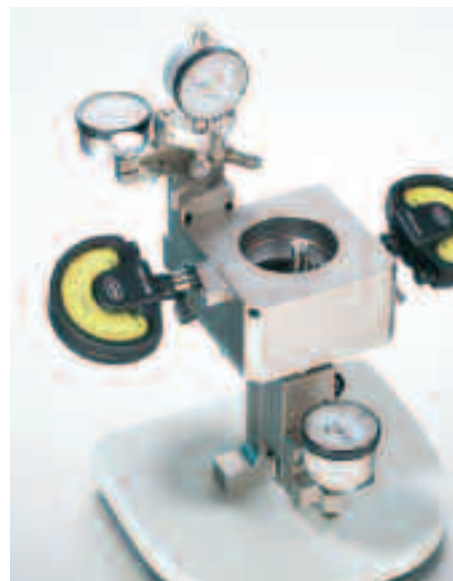
For assembly keys see page 153.



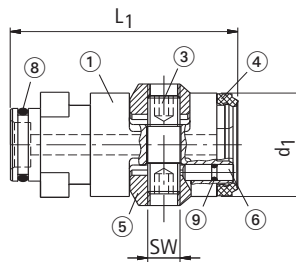
Accessories and Spares

The broad programme of accessories and spares represents a practical extension to the actual programme of clamping systems and offers spares and additional parts, plus support items, for both tools and on the spindles which make their use easy, safe and reliable.

For the final user and also for the machine or spindle manufacturer valuable ancillary items can be supplied, such as spanners and collets for assembly, cleaning items, gauges and measuring equipment. In addition add-on parts are also available which the users can use to replace or complete the systems or for their own constructions.



KS Clamping cartridges



Standard version

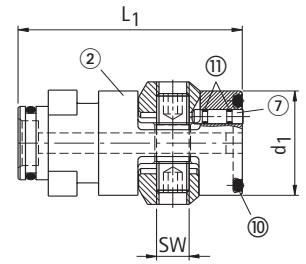
Nominal size HSK-C	Dimensions			Weight gr	Order No.
	d ₁	L ₁	SW		
32	16,6	44	3	52	KS32-05
40	20,6	49	3	86	KS40-06
50	25,6	56	4	152	KS50-07
63	33,6	65	5	288	KS63-08
80	41,6	75	6	525	KS80-09
100	52,6	94	8	1.031	KS100-10

Use:

For mounting on machine spindles and adaptors, for manual clamping of HSK tools.

Note:

If individual tools are damaged, the clamping cartridges can be replaced on request as a repair replacement.



Version for high pressure use up to 150 bar

Nominal size HSK-C	Dimensions			Weight gr	Order No.
	d ₁	L ₁	SW		
32	16,6	44	3	52	KS32-05-D
40	20,6	49	3	86	KS40-06-D
50	25,6	56	4	152	KS50-07-D
63	33,6	65	5	288	KS63-08-D
80	41,6	75	6	525	KS80-09-D
100	52,6	94	8	1.031	KS100-10-D

Use:

Suitable for coolant pressures up to 150 bar.

Note:

If individual tools are damaged, the clamping cartridges can be replaced on request as a repair replacement.

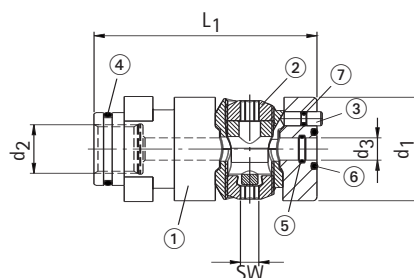
Individual parts

Nominal size HSK-C	Basic body		③ Threaded spindle Order No.	④ Sealing ring (Viton®) Order No.	⑤ Clamping jaw set Order No.	Ejector pin	
	① standard Order No.	② high pressure Order No.				⑥ standard Order No.	⑦ high pressure Order No.
32	PA32-05	PA32-05-D	G32-05	DA32-05	BA32-05	AA32-05	AA32-05-D
40	PA40-06	PA40-06-D	G40-06	DA40-06	BA40-06	AA40-06	AA40-06-D
50	PA50-07	PA50-07-D	G50-07	DA50-07	BA50-07	AA50-07	AA50-07-D
63	PA63-08	PA63-08-D	G63-08	DA63-08	BA63-08	AA63-08	AA63-08-D
80	PA80-09	PA80-09-D	G80-09	DA80-09	BA80-09	AA80-09	AA80-09-D
100	PA100-10	PA100-10-D	G100-10	DA100-10	BA100-10	AA100-10	AA100-10-D

Nominal size HSK-C	O-ring (Viton®)							
	1 ⑧		2 ⑨		3 ⑩		4 ⑪	
	Size	Order No.	Size	Order No.	Size	Order No.	Size	Order No.
32	9x2	10002624	1,2x0,7	10041145	11x2,5	10080870	1,2x0,7	10041145
40	11x2	10002531	1,5x0,75	10002522	13x3,5	10080348	1,5x0,75	10002522
50	14x2	10002540	2x1	10002556	18x3	10017007	2x1	10002556
63	16x2	10002548	4x1	10002588	20x4,5	10064580	2x1	10002556
80	19x2	10002554	5x1	10002597	27x5	10075536	3x1	10002576
100	25x2	10002568	5x1	10002597	37x5,5	10081048	5x1	10002597

Dimensions in mm.

KS Clamping cartridges



Version for use with minimal lubrication (MLC)

Nominal size HSK-C	d ₁	d ₂	Dimensions d ₃	L ₁	SW	Weight gr	Order No.
40	20,6	M10x1	4,5	48,2	3	86	KS40-06-M
50	25,6	M12x1	5,5	55,2	4	152	KS50-07-M
63	33,6	M12x1	7	64,25	5	288	KS63-08-M
80	41,6	M16x1	10	74,75	6	525	KS80-09-M
100	52,6	M18x1	12	94,35	8	1.031	KS100-10-M

Use:

For mounting on machine spindles and adaptors, for optimum central supply of minimal lubrication with manual clamping for HSK tool shanks.
Suitable for one or two channel versions.

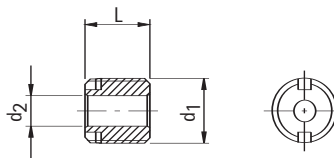
Supply:

Plugs and/or adaptor tube not included in the supply.

Individual parts

Nominal size HSK-C	Basic body ① Order No.	Clamping ② jaw set Order No.	Ejector ③ pin Order No.	O-ring							
				1 ④ Size	Order No.	2 ⑤ Size	Order No.	3 ⑥ Size	Order No.	4 ⑦ Size	Order No.
40	PA40-06-M	BA40-06-M	AA40-06-M	11x2	10002531	4,5x1	10022811	5,6x1,8	10030959	1,5x0,75	10002522
50	PA50-07-M	BA50-07-M	AA50-07-M	15x1,5	10015683	5,5x1	10023027	6x2	10002610	2x1	10002556
63	PA63-08-M	BA63-08-M	AA63-08-M	16x2	10002548	7x1	10015672	9x3	10016970	2x1	10002556
80	PA80-09-M	BA80-09-M	AA80-09-M	19x2	10002554	10x2	10002525	11x3,5	10073206	3x1	10002576
100	PA100-10-M	BA100-10-M	AA100-10-M	25x2	10002568	12x2	10002535	14x4	10078885	4x1	10002588

Accessories for KS Clamping cartridges for use with minimal lubrication (MLC)



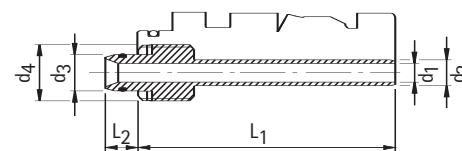
Plugs

Nominal size HSK-C	Dimensions			Order No.
	d ₁	d ₂	L	
40	M10x1	4,6	10	MN5201-16
50	M12x1	5,6	12	MN5201-17
63	M12x1	7,1	14	MN5201-18
80	M16x1	10,1	14	MN5201-19
100	M18x1	12,1	14	MN5201-20

Use:
For MLC clamping systems if these are used without adaptor tube.
With plastic tube from mixing unit to tool.

Note:
For suitable assembly spanners see page 152.

Adaptor hose for spigot connection

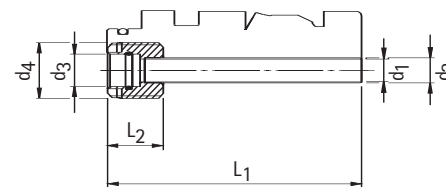


Nominal size HSK-C	Dimensions						Ref. code	Order No.
	d ₁	d ₂	d ₃	d ₄	L ₁	L ₂		
40	3,5	4,5	5,8	M10x1	48,05	7	MN5202-16	10079503
50	4	5,5	7,8	M12x1	55,05	7	MN5202-17	10079504
63	4	7	7,8	M12x1	64,05	7	MN5202-18	10077739
80	8	10	11,3	M16x1	74,55	8	MN5202-19	10080904
100	10	12	13,8	M18x1	94,25	10	MN5202-20	10080905

Use:
For clear passage and throughput of lubrication (MLC).

Note:
For suitable assembly spanners see page 152.

Adaptor hose for bore connection

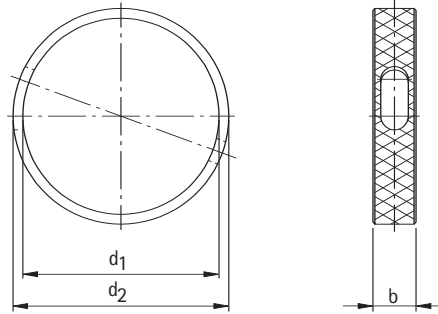


Nominal size HSK-C	Dimensions						Ref. code	Order No.
	d ₁	d ₂	d ₃	d ₄	L ₁	L ₂		
40	4	4,5	5,1	M10x1	48,05	10	MN5202-36	10080906
50	5	5,5	7,1	M12x1	55,05	12	MN5202-37	10080907
63	6	7	7,1	M12x1	64,05	14	MN5202-38	10080908
80	8	10	10,1	M16x1	74,55	14	MN5202-39	10080909
100	10	12	12,1	M18x1	94,25	14	MN5202-40	10080910

Use:
For clear passage and throughput of lubrication used (MLC).

Note:
For suitable assembly spanners see page 152.

RE brass rings



Nominal size HSK-C	Dimensions			Holding screw Order No.	Stop ring Order No.
	d ₁	d ₂	b		
32	32	37	9	VE32-05	RE32-05
32	40	45	9	VE32-05	RE40-06
32	55	61	9	VE32-05	RE32-15
40	40	45	9	VE32-05	RE40-06
40	50	55	11	VEZ32-05	RE50-07
40	63	70	10	VE32-05	RE40-16
50	50	55	11	VE50-07	RE50-07
50	63	70	14	VEZ50-07	RE63-08
50	80	87	13	VE50-07	RE50-17
63	63	70	14	VE63-08	RE 63-08
63	80	87	14	VE63-08	RE 80-09
63	100	108	15	VE63-08	RE 63-18
80	80	87	14	VE63-08	RE80-09
80	100	110	18	VEZ63-08	RE100-10
80	117	125	17	VE63-08	RE80-19
100	100	110	18	VE100-10	RE100-10
100	125	135	18	VE100-10	RE125-11
100	140	150	18	VE100-10	RE100-20

Dimensions in mm.

Use:

For manual stopping of clamping bore on HSK spindles and adaptors.

Supply includes:

Stop rings; holding screw not included.

Suitable holdings screws (see table) can be ordered additionally.

Note:

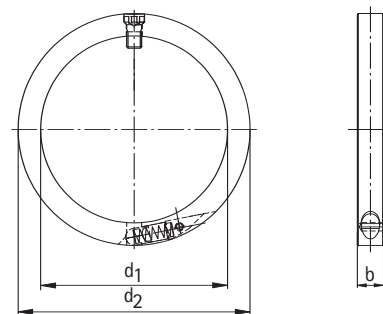
When selecting stop rings and holding screws, check nominal HSK size and dimension d₂.

Material:

Stop ring – brass

Holding screw – steel

Sealing rings, centrifugal rings



RA sealing ring

Nominal size HSK-C	Dimensions			Holding screw Order No.	Stop Order No.	Sealing ring complete Order No.
	d ₁	d ₂	b			
32	32	43	9	K5796-04	K5701-03	RA32-05
32	55	68	9	K5796-04	K5701-03	RA32-15
32	40	52	9	K5796-04	K5701-03	RA32-25
40	40	55	9	K5796-04	K5703-03	RA40-06
40	63	79	9	K5796-04	K5703-03	RA40-16
40	50	65	9	K5796-04	K5703-03	RA40-26
50	50	67	11	K5796-14	K5705-03	RA50-07
50	80	98	11	K5796-14	K5705-03	RA50-17
50	63	80	11	K5796-14	K5705-03	RA50-27
63	63	85	14	K5796-24	K5707-03	RA63-08
63	100	124	14	K5796-24	K5707-03	RA63-18
63	80	103	14	K5796-24	K5707-03	RA63-28
80	80	105	14	K5796-24	K5709-03	RA80-09
80	117	143	14	K5796-24	K5709-03	RA80-19
100	100	130	18	K5796-34	K5711-03	RA100-10
100	140	170	18	K5796-34	K5711-03	RA100-20
125	125	155	18	K5796-34	K5711-03	RA125-11

Dimensions in mm.

Use:

For automatic stopping of clamping bore on HSK spindles and adaptors.

Supply includes:

Complete with stop and holding screw.

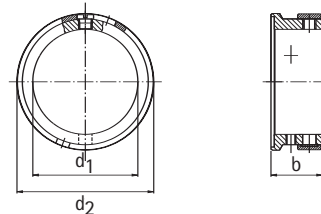
Note:

When selecting sealing rings, check nominal HSK size and dimension d₂.

Material:

Steel (stop and screw)

Sealing rings, centrifugal rings



SE centrifugal ring

Nominal size HSK-C	Dimensions			Holding screw Order No.	Stop ring Order No.	Threaded pin		Centrifugal ring complete Order No.
	d ₁	d ₂	b			ISO 4027	Order No.	
25	25	38	15,5	K4767-84	K5851-93	M4x5-45H	10003897	SE25-04
32	32	43	19,5	K4767-64	K5851-43	M4x5-45H	10003897	SE32-05
32	32	48	19,5	K4767-64	K5851-43	M4x5-45H	10003897	SE32-15
40	40	57	21	VE32-05	K5851-53	M5x6-45H	10003905	SE40-06
50	50	70	24	VE50-07	K5851-63	M6x8-45H	10003912	SE50-07
63	63	82	31	K4767-74	K5851-73	M6x8-45H	10003912	SE63-08

Dimensions in mm.

Use:

For manual stopping of clamping bore on HSK spindles to DIN 69002.

Supply includes:

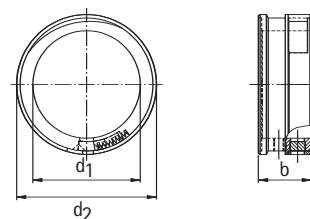
With complete stop and threaded pin.

Note:

The centrifugal ring is held with 3 threaded pins. Please note when ordering.

Material:

Steel



SR centrifugal ring

Nominal size HSK-C	Dimensions			Plug Order No.	Threaded pin		Centrifugal ring complete Order No.
	d ₁	d ₂	b		ISO 4027	Order No.	
32	25	38	15,5	K9011-03	M4x5-45H	10003897	SR32-05
32	32	43	18,8	K5701-03	M4x5-45H	10003897	SR32-15
40	40	57	20,8	K5703-03	M5x6-45H	10003905	SR40-06
50	50	70	23,8	K5705-03	M6x8-45H	10003912	SR50-07
63	63	82	30,8	auf Anfrage	M6x8-45H	10003912	SR63-08

Dimensions in mm.

Use:

For automatic stopping of clamping bore on HSK spindles and adaptors.

Supply includes:

Complete with stop and holding screw.

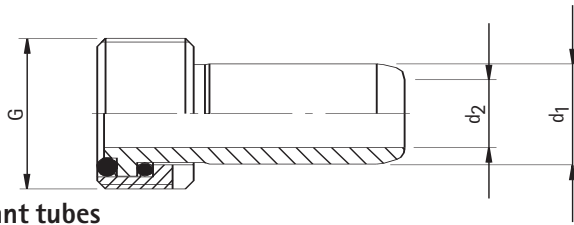
Note:

The centrifugal ring is held with 3 threaded pins. Please note when ordering.

Material:

Steel

Coolant tubes, blanking plugs, blanking caps



Coolant tubes

Nominal size HSK-A	G	Dimensions		Order No.
		d ₁	d ₂	
32	M10x1	6	3,5	MN5218-05
40	M12x1	8	5	MN5218-06
50	M16x1	10	6,4	MN5218-07
63	M18x1	12	8	MN5218-08
80	M20x1,5	14	10	MN5218-09
100	M24x1,5	16	12	MN5218-10

Supply includes:

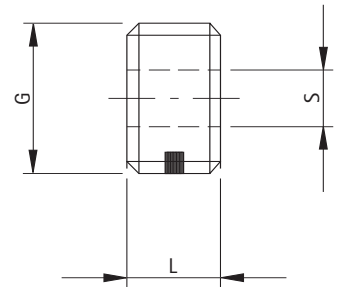
Coolant tube with 2 O-rings and locking collar.

Design:

Easy angular movement 1°, self-centring, axial seal.

Note:

Designed in accordance with DIN 69895.



Blanking plugs

Nominal size HSK-A	G	Dimensions		Order No.
		L	S	
32	M10x1	5,5	4	SB32-05R
40	M12x1	7,5	5	SB40-06R
50	M16x1	9,5	6	SB50-07R
63	M18x1	11,5	8	SB63-08R
80	M20x1,5	13,5	10	SB80-09R
100	M24x1,5	15,5	12	SB100-10R

Use:

For closing tapped bore in HSK tool holders if no coolant tube is being used.

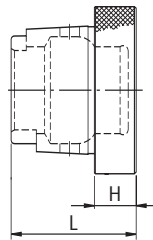
Design:

With plastic insert to hold screw firmly.

Material:

Stainless steel.

Blanking caps



Nominal size HSK	Dimensions		Order No.
	L	H	
32	23	10	MN5220-05-K
40	26	10	MN5220-06-K
50	33	12,5	MN5220-07-K
63	38	12,5	MN5220-08-K
80	48	16	MN5220-09-K
100	56	16	MN5220-10-K

Use:

For closing tapped bore in HSK tool holders if no coolant tube is being used.

Design:

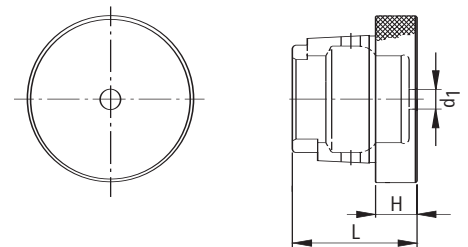
Not balanced.

Note:

For closing fast rotating HSK holders, HSK balancing gauges (see page 157) are recommended.

Dimensions in mm.

Blanking caps



Nominal size HSK	Dimensions			Order No.
	d ₁	L	H	
32	3	23	10	MN5220-15-K
40	3	26	10	MN5220-16-K
50	4	33	12,5	MN5220-17-K
63	6	38	12,5	MN5220-18-K
80	7	48	16	MN5220-19-K
100	7	56	16	MN5220-110-K

Use:

For closing spindle holders without fitting tool.

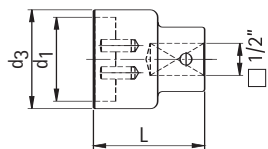
Version:

Not balanced, with central coolant hole.

Note:

For closing fast rotating HSK holders, HSK balancing gauges (see page 157) are recommended.

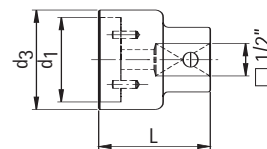
KS spanners, KS assembly keys



KS spanners

Nominal size HSK-C	Dimensions			Order No.
	d ₁	d ₃	L	
32	17	22	45	MN5216-05
40	21	26	45	MN5216-06
50	26	32	45	MN5216-07
63	34	40	45	MN5216-08
80	42	48	45	MN5216-09
100	53	60	45	MN5216-10

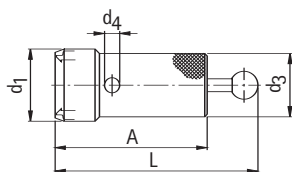
Use:
For locking and unlocking KS clamping cartridges.
Note:
With reducing element 3/8" – 1/2" MN5216-20 (shown above),
the spanner fits the torque key MN5215-01.



KS spanners for use with min. lubrication (MLC)

Nominal size HSK-C	Dimensions			Order No.
	d ₁	d ₃	L	
40	21	26	45	MN5216-36
50	26	32	45	MN5216-37
63	34	40	45	MN5216-38
80	42	48	45	MN5216-39
100	53	60	45	MN5216-40

Use:
For locking and unlocking KS clamping cartridges for use with minimal
lubrication (MLC).
Note:
With reducing element 3/8" – 1/2" MN5216-20 (shown above),
the spanner fits the torque key MN5215-01



KS assembly key

Nominal size HSK-C	Dimensions					Order No.
	d ₁	d ₃	d ₄	A	L	
32	24	24	6	74	95	MN5219-05
40	30	30	7	85	105	MN5219-06
50	38	38	8	96	115	MN5219-07
63	48	48	10	107	130	MN5219-08
80	57	50	12	120	150	MN5219-09
100	73	52	14	135	168	MN5219-10

Use:
For locking and unlocking KS clamping cartridges (standard and high pressure).
Using the assembly collets makes it easy to fit and dismantle the cartridges,
even with multi-spindle heads.
Note:
Using an extension rod, which is passed through the bore d₄, makes locking
and unlocking the cartridge much easier.
Supply includes:
No extension rod included.
Material:
Gripper jaws and assembly blade in hardened steel.

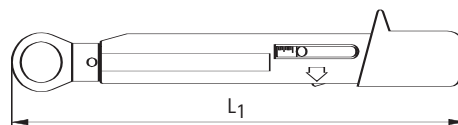
Dimensions in mm.

KS assembly key for use with min. lubrication (MLC)

Nominal size HSK-C	Dimensions					Order No.
	d ₁	d ₃	d ₄	A	L	
40	30	30	7	85	105	MN5219-106
50	38	38	8	96	115	MN5219-107
63	48	48	10	107	130	MN5219-108
80	57	50	12	120	150	MN5219-109
100	73	52	14	135	168	MN5219-110

Use:
For locking and unlocking KS clamping cartridges for use with minimal
lubrication (MLC).
Using the assembly collets makes it easy to fit and dismantle the cartridges,
even with multi-spindle heads.
Note:
Using an extension rod, which is passed through the bore d₄, makes locking
and unlocking the cartridge much easier.
Supply includes:
No extension rod included.
Material:
Gripper jaws and assembly blade in hardened steel.

Torque wrenches & assembly keys



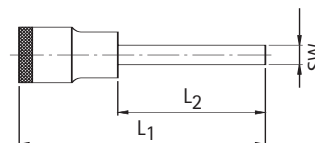
Torque wrenches

Nominal size		Dimensions L ₁	Torque range (Nm)	Ref. code	Order No.
HSK-C	HFS				
50 - 80	16-24	260	8 - 40	MN5215-00	30148986*
50 - 80	16-24	260	8 - 40	MN5215-01	10040126**
100	-	340	10 - 60	MN5215-40	10074788**
100	-	340	10 - 60	MN5215-41	30149001***

Use:
For clamping KS clamping cartridges and tightening replaceable heads.

Supply includes:
 * As a set with replaceable hexagonal inserts (SW4,5,6).
 ** Torque wrench without hexagonal insert.
 *** As set with replaceable hexagonal insert (SW8).
 Design:
 With switchover ratchet, drive 3/8"

Hexagonal inserts



Nominal size		Dimensions			Ref. code	Order No.
HSK-C	HFS	L ₁	L ₂	SW		
50	16-20	60	35	4	MN5215-07	10040123
63	24	70	45	5	MN5215-08	10040124
80	-	75	50	6	MN5215-09	10074792
100	-	88	63	8	MN5215-10	10071793

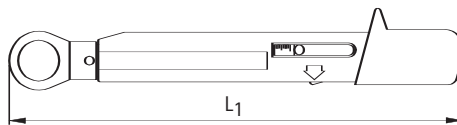
Use:
For torque wrenches
 Design:
 Drive 3/8"

Clamping moments

Nominal size		Permissible torques
HSK	HFS	
25	10	4 Nm
32	12,14	6 Nm
40	-	7 Nm
50	16,20	15 Nm
63	24	20 Nm
80	-	30 Nm
100	-	50 Nm

Dimensions in mm.

Torque wrenches & assembly keys



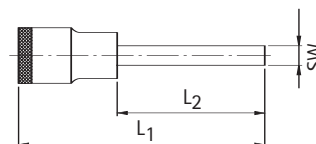
Torque wrenches

Nominal size		Dimensions L ₁	Torque range (Nm)	Ref. code	Order No.
HSK-C	HFS				
32 - 40	12-14	210	4 - 20	MN5215-29	30149002*
32 - 40	12-14	210	4 - 20	MN5215-30	10040125**

Use:
For clamping KS clamping cartridges and tightening replaceable heads.

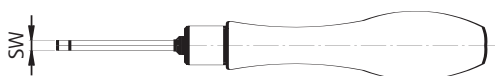
Supply includes:
* As a set with replaceable hexagonal inserts (SW3).
** Torque wrench without hexagonal insert.
Design:
With switchover ratchet, drive 1/4"

Hexagonal inserts



Nominal size		Dimensions L ₁	Dimensions L ₂	SW	Ref. code	Order No.
HSK-C	HFS					
32 - 40	12-14	55	30	3	MN5215-31	10040122

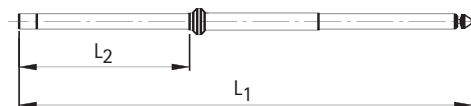
Use:
For torque wrenches
Design:
Drive 1/4"



Torque keys, fixed, with blade

Nominal size HFS	SW	Torque moment range (Nm)	Order No.
10	2,5	4	10044842

Design:
Fixed, with blade



Blades for torque keys

Nominal size HFS	Dimensions		Order No.
	L ₁	L ₂	
10	175	70	10044839

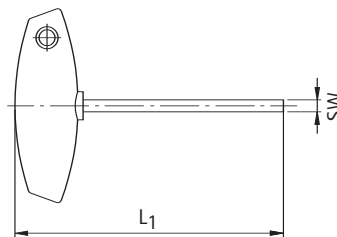
Design:
For torque keys

Clamping moments

Nominal size		Permissible torques
HSK	HFS	
25	10	4 Nm
32	12,14	6 Nm
40	-	7 Nm

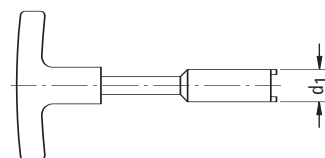
Dimensions in mm.

Assembly keys



Hexagonal T-keys

Key width SW	Nominal size HFS	L ₁	Short version		Long version	
			Ref. code	Order No.	L ₁	Order No.
2,5	10	100	-	10006233	200	10032722
3	12-14	100	MN5221-31	10006234	200	10025313
4	16-20	100	MN5221-32	10006235	200	10018010
5	24	100	MN5221-33	10006236	200	10013350
6		100	MN5221-34	10006237		
8		100	MN5221-35	10006238		



Assembly keys

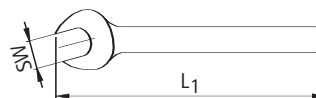
Nominal size HSK	Dimension d ₁	for coolant tubes		d ₁	For stops/adaptor tubes for KS clamping cartridge for use with MLC.	
		Ref. code	Order No.		Ref. code	Order No.
32	9	MN5217-05	10074750	-	-	-
40	11	MN5217-06	10074751	9	MN5217-21	10079521
50	15	MN5217-07	10074752	11	MN5217-22	10079522
63	17	MN5217-08	10040110	11	MN5217-22	10079522
80	18	MN5217-09	10074774	15	MN5217-23	10079523
100	22	MN5217-10	10074775	17	MN5217-24	10079525

Use:

For fitting and dismantling coolant tubes and adaptor tubes for KS MLC clamping cartridges (minimal lubrication).

Dimensions in mm.

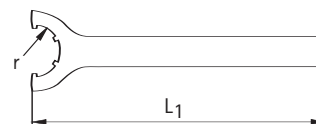
Spanner DIN 894



Clamping range	Nominal size	Dimensions		Ref. code	Order No.
		L ₁	SW key width		
0,5-10	ER-16	215	25	MN5221-01	10074776
1-13	ER-20	260	30	MN5221-02	10080923

Use:
For chucks for collets to DIN 69882-6 and Softsynchro tapping chuck.

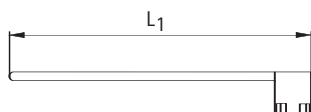
C-wrench



Clamping range	Nominal size	Dimensions		Ref. code	Order No.
		L ₁	r		
1-16	ER-25	210	65	MN5221-10	10080922
2-20	ER-32	250	75	MN5221-11	10074777
3-26	ER-40	290	90	MN5221-12	10074955

Use:
For chucks for collets to DIN 69882-6 and Softsynchro tapping chuck.

Castle wrenches DIN 6368



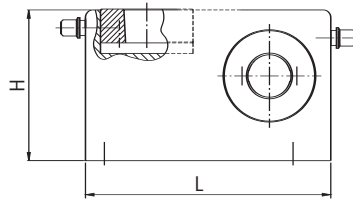
Arbor diameter d ₂	Size L ₁	Ref. code	Order No.
16	180	MN5221-21	10074778
22	200	MN5221-22	10074779
27	225	MN5221-23	10074780
32	250	MN5221-24	10074781
40	280	MN5221-25	10074782
50	315	MN5221-26	10074785
60	355	MN5221-27	10080921

Use:
For milling cutter arbors.

Dimensions in mm.

Tool assembly blocks for tools with HSK 32 – 100, Form A – F

Version 1



Nominal size HSK	L	Dimensions		Order No.
		Depth	H	
32	260	130	160	MN5224-05
40	260	130	160	MN5224-06
50	260	130	160	MN5224-07
63	260	130	160	MN5224-08

Version 1:

The tool holders are clamped on the collar vertically and horizontally. This means all taper forms with the same collar diameter can be clamped on one block.

The torque is transferred by the frictional resistance.

Supply includes:

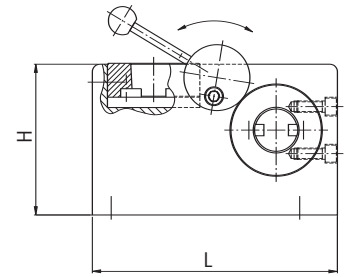
Basic body with fitted horizontal and vertical adaptor sleeve, incl. control key.

Note:

Version 1 can be used for all HSK forms in the nominal size.

Dimensions in mm.

Version 2



Nominal size HSK	L	Dimensions		Order No.
		Depth	H	
80	260	130	160	MN5224-09
100	260	130	160	MN5224-10

Version 2:

Vertically the tool holder is simply inserted and held by its own weight.

Horizontally the tool is held by means of the swivelling disc.

The torque is transferred by means of the drive element at the taper end.

Supply includes:

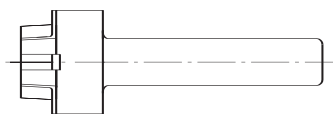
The basic body with horizontal and vertical adaptor sleeve fitted.

Note:

Version 2 can only be used for HSK Forms A and C for the relevant nominal size.

Taper cleaners

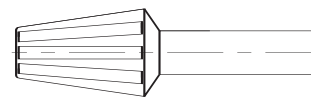
For HSK adaptors



Nominal size HSK	Order No.
32	MN5213-105-K
40	MN5213-106-K
50	MN5213-107-K
63	MN5213-108-K
80	MN5213-109-K
100	MN5213-110-K

Use:
For cleaning taper and contact face on machine spindles and toolholders.
Note:
Face and taper are cleaned simultaneously.

For ISO adaptors



Nominal size ISO	Order No.
30	10013439
40	10013427
45	10013428
50	10007567

Use:
For cleaning steep taper and contact face on machine spindles and toolholders.
Note:
Face and steep taper are cleaned simultaneously.

For HFS internal taper

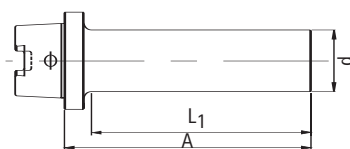


Nominal size HFS	Order No.
10	10029989
12	10029990
14	10030002
16	10030003
20	10030004
24	10030005

Use:
For cleaning the taper.

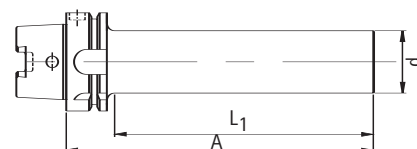
Dimensions in mm.

Test arbors



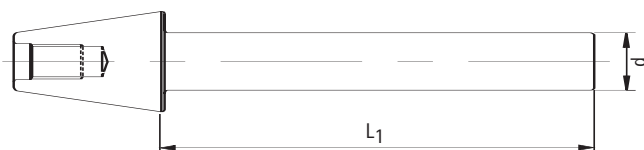
Test arbors HSK-C

Nominal size HSK-C	Dimensions			Weight kg	Order No.
	d	A	L ₁		
32	25	125	110	0,5	MN5205-05-K
40	25	125	110	0,6	MN5205-06-K
50	32	125	107,5	0,8	MN5205-07-K
63	40	160	137,5	1,6	MN5205-08-K
80	40	160	130	1,8	MN5205-09-K
100	40	160	130	2,0	MN5205-10-K



Test arbors HSK-A

Nominal size HSK-A	Dimensions			Weight kg	Order No.
	d	A	L ₁		
32	25	176	150	1,4	MN5200-05-K
40	25	180	150	1,7	MN5200-06-K
50	32	236	200	2,1	MN5200-07-K
63	40	346	300	2,8	MN5200-08-K
80	40	346	300	3,1	MN5200-09-K
100	40	349	300	3,5	MN5200-10-K



Test arbors ISO

Nominal size ISO	Dimensions		Weight kg	Order No.
	d	L ₁		
40	40	300	1,8	K5801-14
50	40	300	3,3	K5801-34

Use:

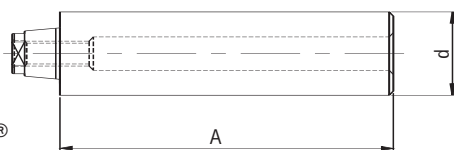
For acceptance testing on machine tools.

Supply includes:

In wooden stands for vertical storage.

Design:

Permissible concentricity deviation of hollow taper shank and taper to cylindrical part max. 0.003 mm.



Test arbors HFS®

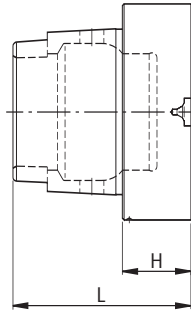
Nominal size HFS	Dimensions		Weight gr	Order No.
	d	A		
10	15	70	100	30036468
12	20	80	170	30036469
14	20,5	80	190	30036470
16	23,2	80	250	30036471
20	29,3	100	495	30036472
24	39	100	900	30036473

Design:

Permissible concentricity deviation of hollow taper shank and taper to cylindrical part max. 0.002 mm.

Dimensions in mm.

Balance gauges



Nominal size HSK	Dimensions		Order No.
	L	H	
32	31	15	MN5222-05-K
40	35	15	MN5222-06-K
50	43	18	MN5222-07-K
63	52	20	MN5222-08-K
80	65	25	MN5222-09-K
100	75	25	MN5222-10-K

Dimensions in mm.

Use:

For balancing HSK spindles and adaptors and for protecting fast rotating HSK spindles and adaptors without tools.

Design:

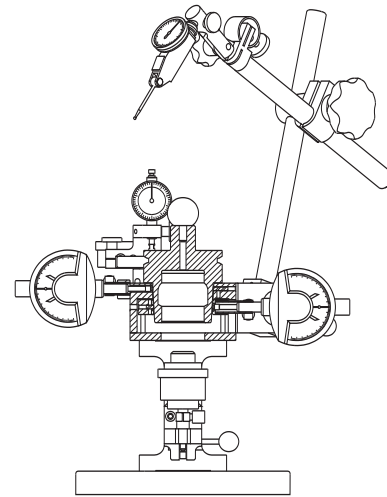
Permissible residual imbalance to DIN ISO 1940 Part 1 Quality G 2,5.

Material:

Stainless steel

Gauges for HSK shanks

Nominal size HSK	Ref. Code	Order No.
32	MN5281-05-K	10081028
40	MN5281-06-K	10081029
50	MN5281-07-K	10081030
63	MN5281-08-K	10081081
80	MN5281-09-K	10081082
100	MN5281-10-K	10081083



Dimensions in mm.

Use:

For testing the principal function dimensions in a process.

1. d_2 large taper \emptyset (direct measurement)
2. d_k small taper \emptyset (direct measurement)
3. L_5 clamping shoulder distance 30°
4. L_6 base of bore
concentricity: d_2, d_3, L_5 by rotating the workpiece in the measuring fixture.
5. d_{11}, f_3 gripper groove.

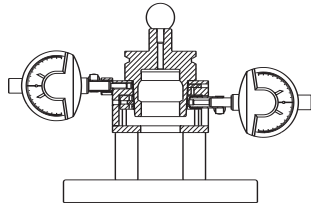
Supply includes:

Gauges with measuring head incl. 6 dial indicators.

Note:

The gauge is modular in design and as a result can be supplied on request in various versions and combinations.

Gauges for HSK shanks



Gauge for taper diameter d_2 and measuring point diameter d_k

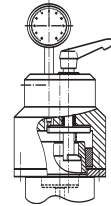
Nominal size HSK	Ref. code	Order No.
32	MN5280-05-K	10081088
40	MN5280-06-K	10081089
50	MN5280-07-K	10081090
63	MN5280-08-K	10081091
80	MN5280-09-K	10081092
100	MN5280-10-K	10081093

Use:

For direct comparative measurement between calibrated taper plug gauge and HSK external taper. Using the taper measuring rings set to the taper plug gauge, the deviation in the shank to the nominal taper diameter d_2 and measuring point diameter d_k can be read off on the dial indicators.

Supply includes:

Measuring device mounted on a board in wooden case with 2 precision dial indicators for d_2 and d_k ; includes master gauge in wooden case.



Gauge for 30° clamping angle

Nominal size HSK	Order No.
32	MN5212-05-K
40	MN5212-06-K
50	MN5212-07-K
63	MN5212-08-K
80	MN5212-09-K
100	MN5212-10-K

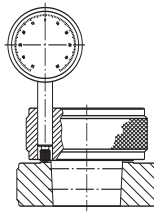
Use:

For direct comparative measurement between calibrated setting gauge and HSK external taper. Using the measuring gauge calibrated with the setting gauge, the deviation of the shank from the clamping point distance L_G can be read off on the dial indicator.

Supply includes:

Setting gauge and gauge with dial indicator as a set in a wooden case.

Gauges for HSK spindles



Mechanical gauges

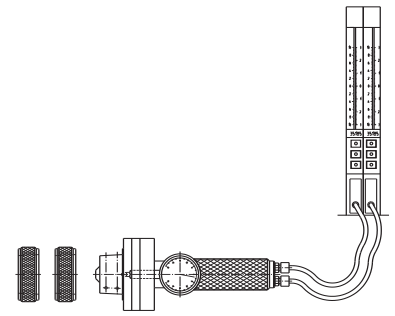
Nominal size HSK	Order No.
32	MN5211-05-K
40	MN5211-06-K
50	MN5211-07-K
63	MN5211-08-K
80	MN5211-09-K
100	MN5211-10-K

Use:

For direct comparative measurement between calibrated taper gauge ring and tool spindle or tool holders. Using the taper measuring rings set to the taper plug gauge, the deviation in the internal taper of the spindle can be read off on the dial indicators.

Supply includes:

Taper gauge and plug gauge with dial indicator as a set in a wooden case.



Pneumatic gauges

Nominal size HSK	Order No.
32	MN5214-05-K
40	MN5214-06-K
50	MN5214-07-K
63	MN5214-08-K
80	MN5214-09-K
100	MN5214-10-K

Display unit	MN5214-00
Pipe 1 m	MN5214-01
Pipe 2 m	MN5214-02

Use:

For direct measurement of the HSK internal taper on the tool spindles and tool holders. With the nozzle-type plug gauge calibrated with the setting rings, the deviation of the internal taper from the nominal taper diameter d_1 and measuring point diameter d_3 can be read off on the scale on the measuring column. To extend the measuring range, the nozzle plug gauge is fitted with a dial indicator (0.01 mm) which allows dimension checking to be carried out even while the internal taper is being rough machined.

Supply includes:

2 taper gauge rings and nozzle plug gauge with dial indicator as a set in a wooden case.

Display unit and pipe must be ordered separately.

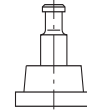
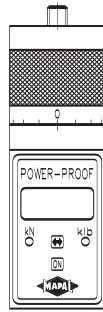
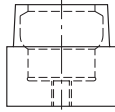
Design:

Non-contact measurement with measuring nozzle. High measurement accuracy and repeatability of measurement results of 0.001 mm.

Technical details for pneumatic, electronic display unit:

Measuring range:	30 μ m
Scale increment:	1 μ m
Operating pressure:	4 – 10 bar
Scale length:	200 mm

Clamping force measuring device



HSK adaptors

ISO adaptors

Nominal size HSK-A/-C	Order No.
32	MN5223-05-K
40	MN5223-06-K
50	MN5223-07-K
63	MN5223-08-K
80	MN5223-09-K
100	MN5223-10-K
Basic unit	MN5223-00

Nominal size ISO	Order No.
30	MN5223-51
40	MN5223-52
45	MN5223-53
50	MN5223-54

Use:

For measuring clamping forces on tool spindles with HSK and ISO connection.
By changing various adaptors the measuring device can be selected for the following spindle sizes:
HSK-A32/B40 to HSK-A125/B160
ISO 30 to ISO 50 (to DIN/ISO and ANSI).

Design:

Compact design, i.e. load measuring device completely incorporated into basic unit.
Not affected by mains power supply due to 9V block battery.
Display in Newtons and pounds, with maximum value storage.
Load measurement also possible in tool and spindle tolerance range.
Device switches off automatically when not in use.

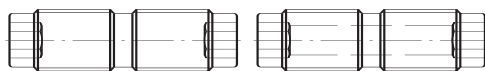
Note:

Other adaptors available on request.

Technical details:

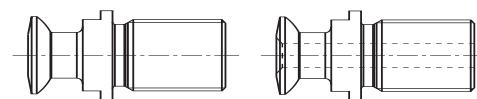
Measuring range: 10 – 75 kN
Measuring system: DMS recorder
Accuracy: <1% of maximum value
Weight: approx. 3 kg.

Accessories and spares for MAPAL HFS[®] system



Threaded spindle for axial clamping system

for HFS size	Threaded spindle MN 618	
	without through coolant Order No.	with through coolant Order No.
10	10024720	10025194
12, 14	10024721	10025195
16, 20	10024722	10025196
24	10024723	10025198

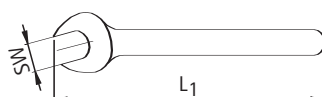


Pull studs for radial clamping system

for HFS size	without through coolant Order No.	with through coolant Order No.
	12, 14	10059113
16, 20	10059117	10059279

Recommendation:

In order to enable a fast change of the reamers with the radial clamping system, at least 1 additional pull stud should be ordered.



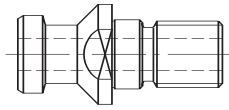
Open end wrench – extra flat design for radial clamping system

SW	Nominal size HFS for holding studs		Order No.
	12,14	16,20	
6	–	–	10066408
8	12,14	–	10065528
11	–	16	10065529
13	–	20	10065530

Use:

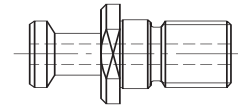
For clamping and releasing pull studs on replaceable head.

Pull studs for ISO adaptors



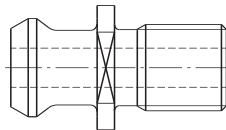
Pull studs to DIN 69872 Form A/B

Nominal size ISO	Form	Thread	Order No.
30	A	M12	10017955
30	B	M12	10061282
40	A	M16	10004416
40	B	M16	10007995
45	A	M20	10049470
45	B	M20	10049469
50	A	M24	10006581
50	B	M24	10021618



Pull studs to BT 403 30°/45°

Nominal size BT	Form	Thread	Order No.
30	30°	M12	10017954
30	45°	M12	10066211
40	30°	M16	10022405
40	45°	M16	10018129
45	30°	M20	10066212
45	45°	M20	10066213
50	30°	M24	10020619
50	45°	M24	10013983

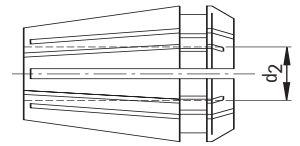


Pull studs to ASME B5.50 - 1994

Nominal size CAT	Thread	Order No.
30	1/2" without collar	10066205
40	5/8" without collar	10066206
45	3/4" without collar	10066209
50	1" without collar	10066210

ER collets

to ISO 15488-B



Clamping size	Nominal size	Clamping diameters d ₂	Order No.
0,5-10	ER-16	1-0,5	SG1608-01
0,5-10	ER-16	2-1	SG1608-02
0,5-10	ER-16	3-2	SG1608-03
0,5-10	ER-16	4-3	SG1608-04
0,5-10	ER-16	5-4	SG1608-05
0,5-10	ER-16	6-5	SG1608-06
0,5-10	ER-16	7-6	SG1608-07
0,5-10	ER-16	8-7	SG1608-08
0,5-10	ER-16	9-8	SG1608-09
0,5-10	ER-16	10-9	SG1608-10

1-13	ER-20	1-0,5	SG2008-01
1-13	ER-20	2-1	SG2008-02
1-13	ER-20	3-2	SG2008-03
1-13	ER-20	4-3	SG2008-04
1-13	ER-20	5-4	SG2008-05
1-13	ER-20	6-5	SG2008-06
1-13	ER-20	7-6	SG2008-07
1-13	ER-20	8-7	SG2008-08
1-13	ER-20	9-8	SG2008-09
1-13	ER-20	10-9	SG2008-10
1-13	ER-20	11-10	SG2008-11
1-13	ER-20	12-11	SG2008-12
1-13	ER-20	13-12	SG2008-13

1-16	ER-25	1-0,5	SG2508-01
1-16	ER-25	2-1	SG2508-02
1-16	ER-25	3-2	SG2508-03
1-16	ER-25	4-3	SG2508-04
1-16	ER-25	5-4	SG2508-05
1-16	ER-25	6-5	SG2508-06
1-16	ER-25	7-6	SG2508-07
1-16	ER-25	8-7	SG2508-08
1-16	ER-25	9-8	SG2508-09
1-16	ER-25	10-9	SG2508-10
1-16	ER-25	11-10	SG2508-11
1-16	ER-25	12-11	SG2508-12
1-16	ER-25	13-12	SG2508-13
1-16	ER-25	14-13	SG2508-14
1-16	ER-25	15-14	SG2508-15
1-16	ER-25	16-15	SG2508-16

Clamping size	Nominal size	Clamping diameters d ₂	Order No.
2-20	ER-32	3-2	SG3208-03
2-20	ER-32	4-3	SG3208-04
2-20	ER-32	5-4	SG3208-05
2-20	ER-32	6-5	SG3208-06
2-20	ER-32	7-6	SG3208-07
2-20	ER-32	8-7	SG3208-08
2-20	ER-32	9-8	SG3208-09
2-20	ER-32	10-9	SG3208-10
2-20	ER-32	11-10	SG3208-11
2-20	ER-32	12-11	SG3208-12
2-20	ER-32	13-12	SG3208-13
2-20	ER-32	14-13	SG3208-14
2-20	ER-32	15-14	SG3208-15
2-20	ER-32	16-15	SG3208-16
2-20	ER-32	17-16	SG3208-17
2-20	ER-32	18-17	SG3208-18
2-20	ER-32	19-18	SG3208-19
2-20	ER-32	20-19	SG3208-20

3-26	ER-40	4-3	SG4008-04
3-26	ER-40	5-4	SG4008-05
3-26	ER-40	6-5	SG4008-06
3-26	ER-40	7-6	SG4008-07
3-26	ER-40	8-7	SG4008-08
3-26	ER-40	9-8	SG4008-09
3-26	ER-40	10-9	SG4008-10
3-26	ER-40	11-10	SG4008-11
3-26	ER-40	12-11	SG4008-12
3-26	ER-40	13-12	SG4008-13
3-26	ER-40	14-13	SG4008-14
3-26	ER-40	15-14	SG4008-15
3-26	ER-40	16-15	SG4008-16
3-26	ER-40	17-16	SG4008-17
3-26	ER-40	18-17	SG4008-18
3-26	ER-40	19-18	SG4008-19
3-26	ER-40	20-19	SG4008-20
3-26	ER-40	21-20	SG4008-21
3-26	ER-40	22-21	SG4008-22
3-26	ER-40	23-22	SG4008-23
3-26	ER-40	24-23	SG4008-24
3-26	ER-40	25-24	SG4008-25
3-26	ER-40	26-25	SG4008-26

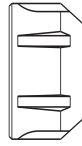
Note:

Never clamp shanks excessively!

E.g. never press a shank 12.2 mm in diameter into a collet 12-11 mm in diameter. Use the next largest collet (in this example 13-12 mm \varnothing).

Dimensions in mm.

Clamping nut for internal coolant supply



Clamping nut for internal coolant supply

Clamping range	Nominal size	Order No.
0,5-10	ERC-16	10007862
1-13	ERC-20	10008009
1-16	ERC-25	10014123
2-20	ERC-32	10007923
3-26	ERC-40	10008010

Use:

For use with coolant pressure up to 150 bar.

Design:

The Hi-QERC clamping nut is the version for use with internal coolant supply. When combined with DS/ER sealing discs this allows collets previously used to also be used for tools with internal coolant.

Ultra precision collets to ISO 15488-B

Clamping range	Nominal size	Clamping diameter d ₂	Ref. code	Order No.
0,5 - 10	ER-16	1 - 0,5	SG1608-01-UP	10030506
0,5 - 10	ER-16	1,5 - 1	SG1608-015-UP	10030683
0,5 - 10	ER-16	2 - 1	SG1608-02-UP	10030696
0,5 - 10	ER-16	2,5 - 1,5	SG1608-025-UP	10030697
0,5 - 10	ER-16	3 - 2	SG1608-03-UP	10030698
0,5 - 10	ER-16	3,5 - 2,5	SG1608-035-UP	10030699
0,5 - 10	ER-16	4 - 3	SG1608-04-UP	10030700
0,5 - 10	ER-16	4,5 - 3,5	SG1608-045-UP	10030701
0,5 - 10	ER-16	5 - 4	SG1608-05-UP	10030722
0,5 - 10	ER-16	5,5 - 4,5	SG1608-055-UP	10030723
0,5 - 10	ER-16	6 - 5	SG1608-06-UP	10030724
0,5 - 10	ER-16	6,5 - 5,5	SG1608-065-UP	10030725
0,5 - 10	ER-16	7 - 6	SG1608-07-UP	10030726
0,5 - 10	ER-16	7,5 - 6,5	SG1608-075-UP	10030727
0,5 - 10	ER-16	8 - 7	SG1608-08-UP	10030728
0,5 - 10	ER-16	8,5 - 7,5	SG1608-085-UP	10030729
0,5 - 10	ER-16	9 - 8	SG1608-09-UP	10030730
0,5 - 10	ER-16	9,5 - 8,5	SG1608-095-UP	10030731
0,5 - 10	ER-16	10 - 9	SG1608-10-UP	10030732

1 - 13	ER-20	1 - 0,5	SG2008-01-UP	10030733
1 - 13	ER-20	1,5 - 1	SG2008-015-UP	10030734
1 - 13	ER-20	2 - 1	SG2008-02-UP	10030735
1 - 13	ER-20	2,5 - 1,5	SG2008-025-UP	10030736
1 - 13	ER-20	3 - 2	SG2008-03-UP	10030737
1 - 13	ER-20	3,5 - 2,5	SG2008-035-UP	10030738
1 - 13	ER-20	4 - 3	SG2008-04-UP	10030739
1 - 13	ER-20	4,5 - 3,5	SG2008-045-UP	10030740
1 - 13	ER-20	5 - 4	SG2008-05-UP	10030741
1 - 13	ER-20	5,5 - 4,5	SG2008-055-UP	10030742
1 - 13	ER-20	6 - 5	SG2008-06-UP	10030743
1 - 13	ER-20	6,5 - 5,5	SG2008-065-UP	10030744
1 - 13	ER-20	7 - 6	SG2008-07-UP	10030745
1 - 13	ER-20	7,5 - 6,5	SG2008-075-UP	10030746
1 - 13	ER-20	8 - 7	SG2008-08-UP	10030747
1 - 13	ER-20	8,5 - 7,5	SG2008-085-UP	10030748
1 - 13	ER-20	9 - 8	SG2008-09-UP	10030749
1 - 13	ER-20	9,5 - 8,5	SG2008-095-UP	10030750
1 - 13	ER-20	10 - 9	SG2008-10-UP	10030751
1 - 13	ER-20	10,5 - 9,5	SG2008-105-UP	10030752
1 - 13	ER-20	11 - 10	SG2008-11-UP	10030753
1 - 13	ER-20	11,5 - 10,5	SG2008-115-UP	10030754
1 - 13	ER-20	12 - 11	SG2008-12-UP	10030755
1 - 13	ER-20	12,5 - 11,5	SG2008-125-UP	10030756
1 - 13	ER-20	13 - 12	SG2008-13-UP	10030757

Clamping range	Nominal size	Clamping diameter d ₂	Ref. code	Order No.
1 - 16	ER-25	1 - 0,5	SG2508-01-UP	10030758
1 - 16	ER-25	1,5 - 1	SG2508-015-UP	10030759
1 - 16	ER-25	2 - 1	SG2508-02-UP	10030760
1 - 16	ER-25	2,5 - 1,5	SG2508-025-UP	10030761
1 - 16	ER-25	3 - 2	SG2508-03-UP	10030762
1 - 16	ER-25	3,5 - 2,5	SG2508-035-UP	10030763
1 - 16	ER-25	4 - 3	SG2508-04-UP	10030764
1 - 16	ER-25	4,5 - 3,5	SG2508-045-UP	10030765
1 - 16	ER-25	5 - 4	SG2508-05-UP	10030766
1 - 16	ER-25	5,5 - 4,5	SG2508-055-UP	10030767
1 - 16	ER-25	6 - 5	SG2508-06-UP	10030768
1 - 16	ER-25	6,5 - 5,5	SG2508-065-UP	10030769
1 - 16	ER-25	7 - 6	SG2508-07-UP	10030770
1 - 16	ER-25	7,5 - 6,5	SG2508-075-UP	10030771
1 - 16	ER-25	8 - 7	SG2508-08-UP	10030772
1 - 16	ER-25	8,5 - 7,5	SG2508-085-UP	10030773
1 - 16	ER-25	9 - 8	SG2508-09-UP	10030774
1 - 16	ER-25	9,5 - 8,5	SG2508-095-UP	10030775
1 - 16	ER-25	10 - 9	SG2508-10-UP	10030776
1 - 16	ER-25	10,5 - 9,5	SG2508-105-UP	10030777
1 - 16	ER-25	11 - 10	SG2508-11-UP	10030778
1 - 16	ER-25	11,5 - 10,5	SG2508-115-UP	10030779
1 - 16	ER-25	12 - 11	SG2508-12-UP	10030780
1 - 16	ER-25	12,5 - 11,5	SG2508-125-UP	10030781
1 - 16	ER-25	13 - 12	SG2508-13-UP	10030782
1 - 16	ER-25	13,5 - 12,5	SG2508-135-UP	10030783
1 - 16	ER-25	14 - 13	SG2508-14-UP	10030784
1 - 16	ER-25	14,5 - 13,5	SG2508-145-UP	10030785
1 - 16	ER-25	15 - 14	SG2508-15-UP	10030786
1 - 16	ER-25	15,5 - 14,5	SG2508-155-UP	10030787
1 - 16	ER-25	16 - 15	SG2508-16-UP	10030788

2 - 20	ER-32	2 - 1	SG3208-02-UP	10030789
2 - 20	ER-32	2,5 - 1,5	SG3208-025-UP	10030790
2 - 20	ER-32	3 - 2	SG3208-03-UP	10030791
2 - 20	ER-32	3,5 - 2,5	SG3208-035-UP	10030792
2 - 20	ER-32	4 - 3	SG3208-04-UP	10030793
2 - 20	ER-32	4,5 - 3,5	SG3208-045-UP	10030794
2 - 20	ER-32	5 - 4	SG3208-05-UP	10030795
2 - 20	ER-32	5,5 - 4,5	SG3208-055-UP	10030796
2 - 20	ER-32	6 - 5	SG3208-06-UP	10030797
2 - 20	ER-32	6,5 - 5,5	SG3208-065-UP	10030798
2 - 20	ER-32	7 - 6	SG3208-07-UP	10030799
2 - 20	ER-32	7,5 - 6,5	SG3208-075-UP	10030800
2 - 20	ER-32	8 - 7	SG3208-08-UP	10030801

Dimensions in mm.

Ultra precision collets to ISO 15488-B

Clamping range	Nominal size	Clamping diameter d ₂	Ref. code	Order No.	Clamping range	Nominal size	Clamping diameter d ₂	Ref. code	Order No.
2 - 20	ER-32	8,5 - 7,5	SG3208-085-UP	10030802	3 - 26	ER-40	10 - 9	SG4008-10-UP	10030838
2 - 20	ER-32	9 - 8	SG3208-09-UP	10030803	3 - 26	ER-40	10,5 - 9,5	SG4008-105-UP	10030839
2 - 20	ER-32	9,5 - 8,5	SG3208-095-UP	10030804	3 - 26	ER-40	11 - 10	SG4008-11-UP	10030840
2 - 20	ER-32	10 - 9	SG3208-10-UP	10030805	3 - 26	ER-40	11,5 - 10,5	SG4008-115-UP	10030841
2 - 20	ER-32	10,5 - 9,5	SG3208-105-UP	10030806	3 - 26	ER-40	12 - 11	SG4008-12-UP	10030842
2 - 20	ER-32	11 - 10	SG3208-11-UP	10030807	3 - 26	ER-40	12,5 - 11,5	SG4008-125-UP	10030843
2 - 20	ER-32	11,5 - 10,5	SG3208-115-UP	10030808	3 - 26	ER-40	13 - 12	SG4008-13-UP	10030844
2 - 20	ER-32	12 - 11	SG3208-12-UP	10030809	3 - 26	ER-40	13,5 - 12,5	SG4008-135-UP	10030845
2 - 20	ER-32	12,5 - 11,5	SG3208-125-UP	10030810	3 - 26	ER-40	14 - 13	SG4008-14-UP	10030846
2 - 20	ER-32	13 - 12	SG3208-13-UP	10030811	3 - 26	ER-40	14,5 - 13,5	SG4008-145-UP	10030847
2 - 20	ER-32	13,5 - 12,5	SG3208-135-UP	10030812	3 - 26	ER-40	15 - 14	SG4008-15-UP	10030848
2 - 20	ER-32	14 - 13	SG3208-14-UP	10030813	3 - 26	ER-40	15,5 - 14,5	SG4008-155-UP	10030849
2 - 20	ER-32	14,5 - 13,5	SG3208-145-UP	10030814	3 - 26	ER-40	16 - 15	SG4008-16-UP	10030850
2 - 20	ER-32	15 - 14	SG3208-15-UP	10030815	3 - 26	ER-40	16,5 - 15,5	SG4008-165-UP	10030851
2 - 20	ER-32	15,5 - 14,5	SG3208-155-UP	10030816	3 - 26	ER-40	17 - 16	SG4008-17-UP	10030862
2 - 20	ER-32	16 - 15	SG3208-16-UP	10030817	3 - 26	ER-40	17,5 - 16,5	SG4008-175-UP	10030863
2 - 20	ER-32	16,5 - 15,5	SG3208-165-UP	10030818	3 - 26	ER-40	18 - 17	SG4008-18-UP	10030864
2 - 20	ER-32	17 - 16	SG3208-17-UP	10030819	3 - 26	ER-40	18,5 - 17,5	SG4008-185-UP	10030865
2 - 20	ER-32	17,5 - 16,5	SG3208-175-UP	10030820	3 - 26	ER-40	19 - 18	SG4008-19-UP	10030866
2 - 20	ER-32	18 - 17	SG3208-18-UP	10030821	3 - 26	ER-40	19,5 - 18,5	SG4008-195-UP	10030867
2 - 20	ER-32	18,5 - 17,5	SG3208-185-UP	10030822	3 - 26	ER-40	20 - 19	SG4008-20-UP	10030868
2 - 20	ER-32	19 - 18	SG3208-19-UP	10030823	3 - 26	ER-40	20,5 - 19,5	SG4008-205-UP	10030869
2 - 20	ER-32	19,5 - 18,5	SG3208-195-UP	10030824	3 - 26	ER-40	21 - 20	SG4008-21-UP	10030870
2 - 20	ER-32	20 - 19	SG3208-20-UP	10030825	3 - 26	ER-40	21,5 - 20,5	SG4008-215-UP	10030871
3 - 26	ER-40	4 - 3	SG4008-04-UP	10030826	3 - 26	ER-40	22 - 21	SG4008-22-UP	10030872
3 - 26	ER-40	4,5 - 3,5	SG4008-045-UP	10030827	3 - 26	ER-40	22,5 - 21,5	SG4008-225-UP	10030873
3 - 26	ER-40	5 - 4	SG4008-05-UP	10030828	3 - 26	ER-40	23 - 22	SG4008-23-UP	10030874
3 - 26	ER-40	5,5 - 4,5	SG4008-055-UP	10030829	3 - 26	ER-40	23,5 - 22,5	SG4008-235-UP	10030875
3 - 26	ER-40	6 - 5	SG4008-06-UP	10030830	3 - 26	ER-40	24 - 23	SG4008-24-UP	10030876
3 - 26	ER-40	6,5 - 5,5	SG4008-065-UP	10030831	3 - 26	ER-40	24,5 - 23,5	SG4008-245-UP	10030877
3 - 26	ER-40	7 - 6	SG4008-07-UP	10030832	3 - 26	ER-40	25 - 24	SG4008-25-UP	10030878
3 - 26	ER-40	7,5 - 6,5	SG4008-075-UP	10030833	3 - 26	ER-40	25,5 - 24,5	SG4008-255-UP	10030879
3 - 26	ER-40	8 - 7	SG4008-08-UP	10030834	3 - 26	ER-40	26 - 25	SG4008-26-UP	10030880
3 - 26	ER-40	8,5 - 7,5	SG4008-085-UP	10030835	3 - 26	ER-40	27 - 26	SG4008-27-UP	10030881
3 - 26	ER-40	9 - 8	SG4008-09-UP	10030836	3 - 26	ER-40	28 - 27	SG4008-28-UP	10030882
3 - 26	ER-40	9,5 - 8,5	SG4008-095-UP	10030837	3 - 26	ER-40	29 - 28	SG4008-29-UP	10030883
					3 - 26	ER-40	30 - 29	SG4008-30-UP	10030884

Dimensions in mm.

Use:

Primarily in high speed machining where very high accuracy in concentricity is required. The tool life is increased at the same time.

Design:

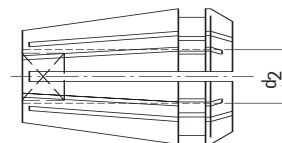
The ultra-precision collets combine the advantages of ISO-15488 A+B on a single collet. This has a clamping range like the standard collet to ISO 15488 Form B. In addition the high concentricity for this collet is as for ISO 15488 Form A.

Note:

Never clamp shanks excessively!

E.g. never press a shank 12.2 mm in diameter into a collet 12-12.2 mm in diameter. Use the next largest collet (in this example 12.5-11.5 mm ø).

Tapping collets to ISO 15488 with internal square



Clamping range	Nom. size	Clamping diameter d ₂	SW DIN mm	Ref. code	Order No.
0,5 - 10	ER-16	4,5	3,4	GB1608-045	10007899
0,5 - 10	ER-16	5,5	4,3	GB1608-055	10076832
0,5 - 10	ER-16	6,0	4,9	GB1608-060	10007047
0,5 - 10	ER-16	7,0	5,5	GB1608-070	10007049
0,5 - 10	ER-16	8,0	6,2	GB1608-080	10013102
0,5 - 10	ER-16	9,0	7,0	GB1608-090	10022149

1 - 13	ER-20	4,5	3,4	GB2008-045	10050677
1 - 13	ER-20	5,5	4,3	GB2008-055	10079513
1 - 13	ER-20	6,0	4,9	GB2008-060	10007329
1 - 13	ER-20	7,0	5,5	GB2008-070	10006519
1 - 13	ER-20	8,0	6,2	GB2008-080	10006520
1 - 13	ER-20	9,0	7,0	GB2008-090	10006521
1 - 13	ER-20	10,0	8,0	GB2008-100	10009228
1 - 13	ER-20	11,0	9,0	GB2008-110	10024811

1 - 16	ER-25	4,5	3,4	GB2508-045	10079512
1 - 16	ER-25	5,5	4,3	GB2508-055	10079511
1 - 16	ER-25	6,0	4,9	GB2508-060	10020035
1 - 16	ER-25	7,0	5,5	GB2508-070	10020033
1 - 16	ER-25	8,0	6,2	GB2508-080	10040822
1 - 16	ER-25	9,0	7,0	GB2508-090	10021684
1 - 16	ER-25	10,0	8,0	GB2508-100	10020034
1 - 16	ER-25	11,0	9,0	GB2508-110	10041407
1 - 16	ER-25	12,0	9,0	GB2508-120	10040836
1 - 16	ER-25	14,0	11,0	GB2508-140	10040838
1 - 16	ER-25	16,0	12,0	GB2508-160	10079470

Clamping range	Nom. size	Clamping diameter d ₂	SW DIN mm	Ref. code	Order No.
2 - 20	ER-32	4,5	3,4	GB3208-045	10006783
2 - 20	ER-32	5,5	4,3	GB3208-055	10076843
2 - 20	ER-32	6,0	4,9	GB3208-060	10006801
2 - 20	ER-32	7,0	5,5	GB3208-070	10006836
2 - 20	ER-32	8,0	6,2	GB3208-080	10006683
2 - 20	ER-32	9,0	7,0	GB3208-090	10006684
2 - 20	ER-32	10,0	8,0	GB3208-100	10006685
2 - 20	ER-32	11,0	9,0	GB3208-110	10008264
2 - 20	ER-32	12,0	9,0	GB3208-120	10009677
2 - 20	ER-32	14,0	11,0	GB3208-140	10017137
2 - 20	ER-32	16,0	12,0	GB3208-160	10045058
2 - 20	ER-32	18,0	14,5	GB3208-180	10020678
2 - 20	ER-32	20,0	16,0	GB3208-200	10040083

3 - 26	ER-40	6,0	4,9	GB4008-060	10038386
3 - 26	ER-40	7,0	5,5	GB4008-070	10012631
3 - 26	ER-40	8,0	6,2	GB4008-080	10007012
3 - 26	ER-40	9,0	7,0	GB4008-090	10007009
3 - 26	ER-40	10,0	8,0	GB4008-100	10007014
3 - 26	ER-40	11,0	9,0	GB4008-110	10025161
3 - 26	ER-40	12,0	9,0	GB4008-120	10007011
3 - 26	ER-40	14,0	11,0	GB4008-140	10016524
3 - 26	ER-40	16,0	12,0	GB4008-160	10076844
3 - 26	ER-40	18,0	14,5	GB4008-180	10008214
3 - 26	ER-40	20,0	16,0	GB4008-200	10047594
3 - 26	ER-40	22,0	18,0	GB4008-220	10076845

Dimensions in mm.

Design:

Suitable of tap drills to DIN, ISO and JIS standards.

Note:

Never clamp shanks excessively!

E.g. never press a shank 9.2 mm in diameter into a collet 9.0 mm in diameter.

Use the next largest collet (in this example 10.0 mm ø).

ER sealing discs for clamping nuts with internal coolant supply

Clamping size	Nominal size	Clamping diameters d ₂	Order No.
0,5 - 10	ER-16	3,0 - 2,5	DG1608-030
0,5 - 10	ER-16	3,5 - 3,0	DG1608-035
0,5 - 10	ER-16	4,0 - 3,5	DG1608-040
0,5 - 10	ER-16	4,5 - 4,0	DG1608-045
0,5 - 10	ER-16	5,0 - 4,5	DG1608-050
0,5 - 10	ER-16	5,5 - 5,0	DG1608-055
0,5 - 10	ER-16	6,0 - 5,5	DG1608-060
0,5 - 10	ER-16	6,5 - 6,0	DG1608-065
0,5 - 10	ER-16	7,0 - 6,5	DG1608-070
0,5 - 10	ER-16	7,5 - 7,0	DG1608-075
0,5 - 10	ER-16	8,0 - 7,5	DG1608-080
0,5 - 10	ER-16	8,5 - 8,0	DG1608-085
0,5 - 10	ER-16	9,0 - 8,5	DG1608-090
0,5 - 10	ER-16	9,5 - 9,0	DG1608-095
0,5 - 10	ER-16	10,0 - 9,5	DG1608-100

1-13	ER-20	3,0 - 2,5	DG2008-030
1-13	ER-20	3,5 - 3,0	DG2008-035
1-13	ER-20	4,0 - 3,5	DG2008-040
1-13	ER-20	4,5 - 4,0	DG2008-045
1-13	ER-20	5,0 - 4,5	DG2008-050
1-13	ER-20	5,5 - 5,0	DG2008-055
1-13	ER-20	6,0 - 5,5	DG2008-060
1-13	ER-20	6,5 - 6,0	DG2008-065
1-13	ER-20	7,0 - 6,5	DG2008-070
1-13	ER-20	7,5 - 7,0	DG2008-075
1-13	ER-20	8,0 - 7,5	DG2008-080
1-13	ER-20	8,5 - 8,0	DG2008-085
1-13	ER-20	9,0 - 8,5	DG2008-090
1-13	ER-20	9,5 - 9,0	DG2008-095
1-13	ER-20	10,0 - 9,5	DG2008-100
1-13	ER-20	10,5 - 10,0	DG2008-105
1-13	ER-20	11,0 - 10,5	DG2008-110
1-13	ER-20	11,5 - 11,0	DG2008-115
1-13	ER-20	12,0 - 11,5	DG2008-120
1-13	ER-20	12,5 - 12,0	DG2008-125
1-13	ER-20	13,0 - 12,5	DG2008-130

Clamping size	Nominal size	Clamping diameters d ₂	Order No.
1 - 16	ER-25	3,0 - 2,5	DG2508-030
1 - 16	ER-25	3,5 - 3,0	DG2508-035
1 - 16	ER-25	4,0 - 3,5	DG2508-040
1 - 16	ER-25	4,5 - 4,0	DG2508-045
1 - 16	ER-25	5,0 - 4,5	DG2508-050
1 - 16	ER-25	5,5 - 5,0	DG2508-055
1 - 16	ER-25	6,0 - 5,5	DG2508-060
1 - 16	ER-25	6,5 - 6,0	DG2508-065
1 - 16	ER-25	7,0 - 6,5	DG2508-070
1 - 16	ER-25	7,5 - 7,0	DG2508-075
1 - 16	ER-25	8,0 - 7,5	DG2508-080
1 - 16	ER-25	8,5 - 8,0	DG2508-085
1 - 16	ER-25	9,0 - 8,5	DG2508-090
1 - 16	ER-25	9,5 - 9,0	DG2508-095
1 - 16	ER-25	10,0 - 9,5	DG2508-100
1 - 16	ER-25	10,5 - 10,0	DG2508-105
1 - 16	ER-25	11,0 - 10,5	DG2508-110
1 - 16	ER-25	11,5 - 11,0	DG2508-115
1 - 16	ER-25	12,0 - 11,5	DG2508-120
1 - 16	ER-25	12,5 - 12,0	DG2508-125
1 - 16	ER-25	13,0 - 12,5	DG2508-130
1 - 16	ER-25	13,5 - 13,0	DG2508-135
1 - 16	ER-25	14,0 - 13,5	DG2508-140
1 - 16	ER-25	14,5 - 14,0	DG2508-145
1 - 16	ER-25	15,0 - 14,5	DG2508-150
1 - 16	ER-25	15,5 - 15,0	DG2508-155
1 - 16	ER-25	16,0 - 15,5	DG2508-160

2 - 20	ER-32	3,0 - 2,5	DG3208-030
2 - 20	ER-32	3,5 - 3,0	DG3208-035
2 - 20	ER-32	4,0 - 3,5	DG3208-040
2 - 20	ER-32	4,5 - 4,0	DG3208-045
2 - 20	ER-32	5,0 - 4,5	DG3208-050
2 - 20	ER-32	5,5 - 5,0	DG3208-055
2 - 20	ER-32	6,0 - 5,5	DG3208-060
2 - 20	ER-32	6,5 - 6,0	DG3208-065
2 - 20	ER-32	7,0 - 6,5	DG3208-070
2 - 20	ER-32	7,5 - 7,0	DG3208-075

ER sealing discs for clamping nuts with internal coolant supply

Clamping size	Nominal size	Clamping diameters d ₂	Order No.
2 - 20	ER-32	8,0 - 7,5	DG3208-080
2 - 20	ER-32	8,5 - 8,0	DG3208-085
2 - 20	ER-32	9,0 - 8,5	DG3208-090
2 - 20	ER-32	9,5 - 9,0	DG3208-095
2 - 20	ER-32	10,0 - 9,5	DG3208-100
2 - 20	ER-32	10,5 - 10,0	DG3208-105
2 - 20	ER-32	11,0 - 10,5	DG3208-110
2 - 20	ER-32	11,5 - 11,0	DG3208-115
2 - 20	ER-32	12,0 - 11,5	DG3208-120
2 - 20	ER-32	12,5 - 12,0	DG3208-125
2 - 20	ER-32	13,0 - 12,5	DG3208-130
2 - 20	ER-32	13,5 - 13,0	DG3208-135
2 - 20	ER-32	14,0 - 13,5	DG3208-140
2 - 20	ER-32	14,5 - 14,0	DG3208-145
2 - 20	ER-32	15,0 - 14,5	DG3208-150
2 - 20	ER-32	15,5 - 15,0	DG3208-155
2 - 20	ER-32	16,0 - 15,5	DG3208-160
2 - 20	ER-32	16,5 - 16,0	DG3208-165
2 - 20	ER-32	17,0 - 16,5	DG3208-170
2 - 20	ER-32	17,5 - 17,0	DG3208-175
2 - 20	ER-32	18,0 - 17,5	DG3208-180
2 - 20	ER-32	18,5 - 18,0	DG3208-185
2 - 20	ER-32	19,0 - 18,5	DG3208-190
2 - 20	ER-32	19,5 - 19,0	DG3208-195
2 - 20	ER-32	20,0 - 19,5	DG3208-200
3 - 26	ER-40	3,0 - 2,5	DG4008-030
3 - 26	ER-40	3,5 - 3,0	DG4008-035
3 - 26	ER-40	4,0 - 3,5	DG4008-040
3 - 26	ER-40	4,5 - 4,0	DG4008-045
3 - 26	ER-40	5,0 - 4,5	DG4008-050
3 - 26	ER-40	5,5 - 5,0	DG4008-055
3 - 26	ER-40	6,0 - 5,5	DG4008-060
3 - 26	ER-40	6,5 - 6,0	DG4008-065
3 - 26	ER-40	7,0 - 6,5	DG4008-070
3 - 26	ER-40	7,5 - 7,0	DG4008-075
3 - 26	ER-40	8,0 - 7,5	DG4008-080
3 - 26	ER-40	8,5 - 8,0	DG4008-085
3 - 26	ER-40	9,0 - 8,5	DG4008-090
3 - 26	ER-40	9,5 - 9,0	DG4008-095
3 - 26	ER-40	10,0 - 9,5	DG4008-100
3 - 26	ER-40	10,5 - 10,0	DG4008-105

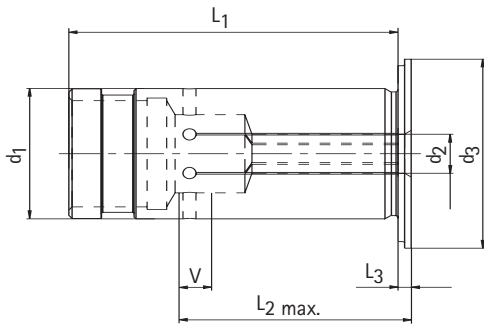
Clamping size	Nominal size	Clamping diameters d ₂	Order No.
3 - 26	ER-40	11,0 - 10,5	DG4008-110
3 - 26	ER-40	11,5 - 11,0	DG4008-115
3 - 26	ER-40	12,0 - 11,5	DG4008-120
3 - 26	ER-40	12,5 - 12,0	DG4008-125
3 - 26	ER-40	13,0 - 12,5	DG4008-130
3 - 26	ER-40	13,5 - 13,0	DG4008-135
3 - 26	ER-40	14,0 - 13,5	DG4008-140
3 - 26	ER-40	14,5 - 14,0	DG4008-145
3 - 26	ER-40	15,0 - 14,5	DG4008-150
3 - 26	ER-40	15,5 - 15,0	DG4008-155
3 - 26	ER-40	16,0 - 15,5	DG4008-160
3 - 26	ER-40	16,5 - 16,0	DG4008-165
3 - 26	ER-40	17,0 - 16,5	DG4008-170
3 - 26	ER-40	17,5 - 17,0	DG4008-175
3 - 26	ER-40	18,0 - 17,5	DG4008-180
3 - 26	ER-40	18,5 - 18,0	DG4008-185
3 - 26	ER-40	19,0 - 18,5	DG4008-190
3 - 26	ER-40	19,5 - 19,0	DG4008-195
3 - 26	ER-40	20,0 - 19,5	DG4008-200
3 - 26	ER-40	20,5 - 20,0	DG4008-205
3 - 26	ER-40	21,0 - 20,5	DG4008-210
3 - 26	ER-40	21,5 - 21,0	DG4008-215
3 - 26	ER-40	22,0 - 21,5	DG4008-220
3 - 26	ER-40	22,5 - 22,0	DG4008-225
3 - 26	ER-40	23,0 - 22,5	DG4008-230
3 - 26	ER-40	23,5 - 23,0	DG4008-235
3 - 26	ER-40	24,0 - 23,5	DG4008-240
3 - 26	ER-40	24,5 - 24,0	DG4008-245
3 - 26	ER-40	25,0 - 24,5	DG4008-250
3 - 26	ER-40	25,5 - 25,0	DG4008-255
3 - 26	ER-40	26,0 - 25,5	DG4008-260

Dimensions in mm.

Use:

Use for up to 150 bar coolant pressure.

Adaptor sleeves for hydraulic chucks



Clamping diameter d_2	Dimensions					Adjustment path V	Weight kg	Ref. code	Order No.
	d_1	d_3	L_1	L_2 max.	L_3				
3	12	19	45,0	26,5	2	10	0,10	MN5420-01	10019297
4	12	19	45,0	26,5	2	10	0,10	MN5420-02	10045799
6	12	19	45,0	34,5	2	10	0,30	MN5420-03	10013705
8	12	19	45,0	34,5	2	10	0,30	MN5420-04	10006522
3	20	29	50,5	28,5	2	10	0,10	MN5422-01	10021492
4	20	29	50,5	28,5	2	10	0,10	MN5422-02	10005041
6	20	29	50,5	37,5	2	10	0,10	MN5422-03	10010802
8	20	29	50,5	37,5	2	10	0,10	MN5422-04	10005037
10	20	29	50,5	42,5	2	10	0,10	MN5422-05	10019299
12	20	29	50,5	47,5	2	10	0,10	MN5422-06	10004899
14	20	29	50,5	47,5	2	10	0,10	MN5422-07	10005036
16	20	29	50,5	47,5	2	10	0,10	MN5422-08	10010521
6	32	39	60,5	35,5	3	10	0,30	MN5424-03	10019948
8	32	39	60,5	35,5	3	10	0,30	MN5424-04	10019949
10	32	39	60,5	40,5	3	10	0,30	MN5424-05	10019950
12	32	39	60,5	42,5	3	10	0,30	MN5424-06	10019951
14	32	39	60,5	42,5	3	10	0,30	MN5424-07	10005104
16	32	39	60,5	50,5	3	10	0,30	MN5424-08	10005035
18	32	39	60,5	50,5	3	10	0,30	MN5424-09	10012804
20	32	39	60,5	50,5	3	10	0,30	MN5424-10	10005106
25	32	39	60,5	58,5	3	10	0,30	MN5424-11	10019952

Dimensions in mm.

Use:

To reduce clamping diameter for cylindrical shanks Form HA, HB, HE to DIN 6535.

Design:

Clamping diameter d_2 designed for shank tolerance h6.

Without peripheral cooling system: collar closed, coolant seal up to max. of 80 bar.

Note:

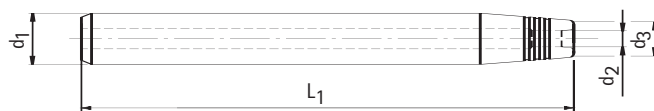
Coolant seal and max. torque only achieved at maximum clamping depth.

Sleeve extraction device MN5420-99 for adaptor sleeve:

Order No. 10060834.

Adaptor sleeve with peripheral cooling system available on request.

Tool extension for thermal expanding chucks



Clamping diameter d_2	Dimensions			Weight kg	Ref. code	Order No.
	d_1	d_3	L_1			
3	12	8	160	0,15	MN5410-00	10076848
4	12	8	160	0,10	MN5410-01	10076849
3	16	10	160	0,25	MN5411-00	10076850
4	16	10	160	0,25	MN5411-01	10076851
5	16	10	160	0,25	MN5411-02	10076852
6	16	10	160	0,25	MN5411-03	10058331
5	20	14	160	0,40	MN5412-02	10076853
6	20	14	160	0,35	MN5412-03	10041747
8	20	14	160	0,35	MN5412-04	10053866
8	25	19	160	0,55	MN5413-04	10060810
10	25	20	160	0,55	MN5413-05	10055457
12	25	20	160	0,55	MN5413-06	10057786
14	25	20	160	0,45	MN5413-07	10060811
16	25	22	160	0,45	MN5413-08	10051228
10	32	27	160	0,95	MN5414-05	10041744
12	32	27	160	0,95	MN5414-06	10073626
14	32	27	160	0,90	MN5414-07	10073627
16	32	27	160	0,90	MN5414-08	10073628
20	32	27	160	0,85	MN5414-10	10041746

Dimensions in mm.

Use:

For clamping cylindrical shanks Form HA, HB, HE to DIN 6535.

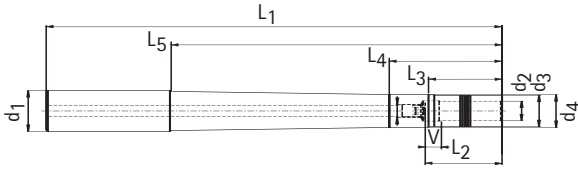
Note:

The extensions may only be reduced on the shank side.

The minimum clamping depth required is $2 - 3 \times D$.

We take no responsibility for modifications to toolholders and their consequences.

Tool extension with axial tool adjustment for TRIBOS polygon chucks



Clamping diameter d_2	Dimensions									Adjustment path V	Weight kg	Ref. code	Order No.
	d_1	d_3	d_4	L_1	L_2	L_3	L_4	L_5	G				
3	12	9	11	100	-	22,5	29,5	55	-	-	0,08	MN5400-01	10060807
4	12	9	11	100	-	22,5	29,5	55	-	-	0,08	MN5400-02	10060809
6	20	10	13	100	37	35	40	50	M5	10	0,19	MN5402-03	10022162
6	20	10	13	150	37	35	40	100	M5	10	0,27	MN5402-13	10022150
8	20	13	15	100	37	35	40	50	M6	10	0,20	MN5402-04	10018865
8	20	13	15	150	37	35	40	100	M6	10	0,28	MN5402-14	10022151
10	20	16	18	100	42	40	45	50	M8x1	10	0,20	MN5402-05	10023252
10	20	16	18	150	42	40	45	100	M8x1	10	0,29	MN5402-15	10028618
12	20	19	-	100	47	45	-	-	M8x1	10	0,20	MN5402-06	10022661
12	20	19	-	150	47	45	-	-	M8x1	10	0,32	MN5402-16	10020443
14	32	22	24	150	47	45	50	85	M10x1	10	0,60	MN5404-17	10073194
16	32	25	27	150	48	45	50	85	M10x1	10	0,65	MN5404-18	10073610
18	32	28	30	150	48	45	50	85	M10x1	10	0,65	MN5404-19	10073611
20	32	30	-	150	52	45	-	-	M10x1	10	0,70	MN5404-20	10073612

d_2	Transferable torque	
	Minimum torque	
3	1,5 Nm	
4	2,5 Nm	
6	5 Nm	
8	12 Nm	
10	20 Nm	
12	30 Nm	
14	50 Nm	
16	70 Nm	
18	100 Nm	
20	150 Nm	

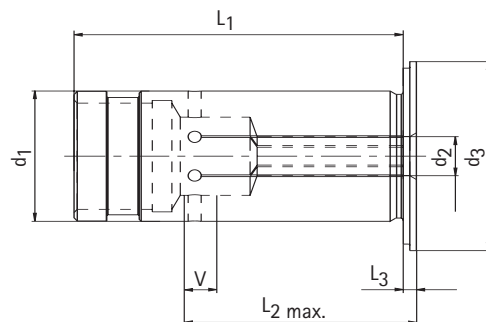
Torque details given for shank tolerance h6.

Dimensions in mm.

Use:

For fine and light machining. For clamping cylindrical shanks Form HA, HB, HE to DIN 6535.

Adaptor sleeves for TRIBOS polygon chucks



Clamping diameter d_2	Dimensions					Adjustment path V	Weight kg	Ref. code	Order No.
	d_1	d_3	L_1	L_2 max.	L_3				
3	12	19	45,0	26,5	2	10	0,10	MN5420-21	10060823
4	12	19	45,0	26,5	2	10	0,10	MN5420-22	10060824
6	12	19	45,0	34,5	2	10	0,10	MN5420-23	10060825
8	12	19	45,0	34,5	2	10	0,10	MN5420-24	10060827
6	20	29	50,5	37,5	2	10	0,10	MN5422-33	10060828
8	20	29	50,5	37,5	2	10	0,10	MN5422-34	10060829
10	20	29	50,5	42,5	2	10	0,10	MN5422-35	10060830
12	20	29	50,5	47,5	2	10	0,10	MN5422-36	10060831
14	20	29	50,5	47,5	2	10	0,10	MN5422-37	10060832
16	20	29	50,5	47,5	2	10	0,10	MN5422-38	10060833

Dimensions in mm.

Use:

To reduce clamping diameter for cylindrical shanks Form HA, HB, HE to DIN 6535.

Design:

Clamping diameter $d_2 = 20$ mm with rubber seal.

Coolant seal up to max. of 80 bar.

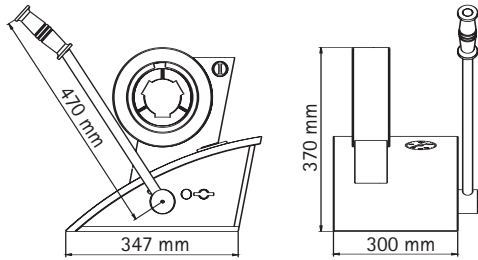
With peripheral cooling system: collar slotted, not sealed against coolant.

Note:

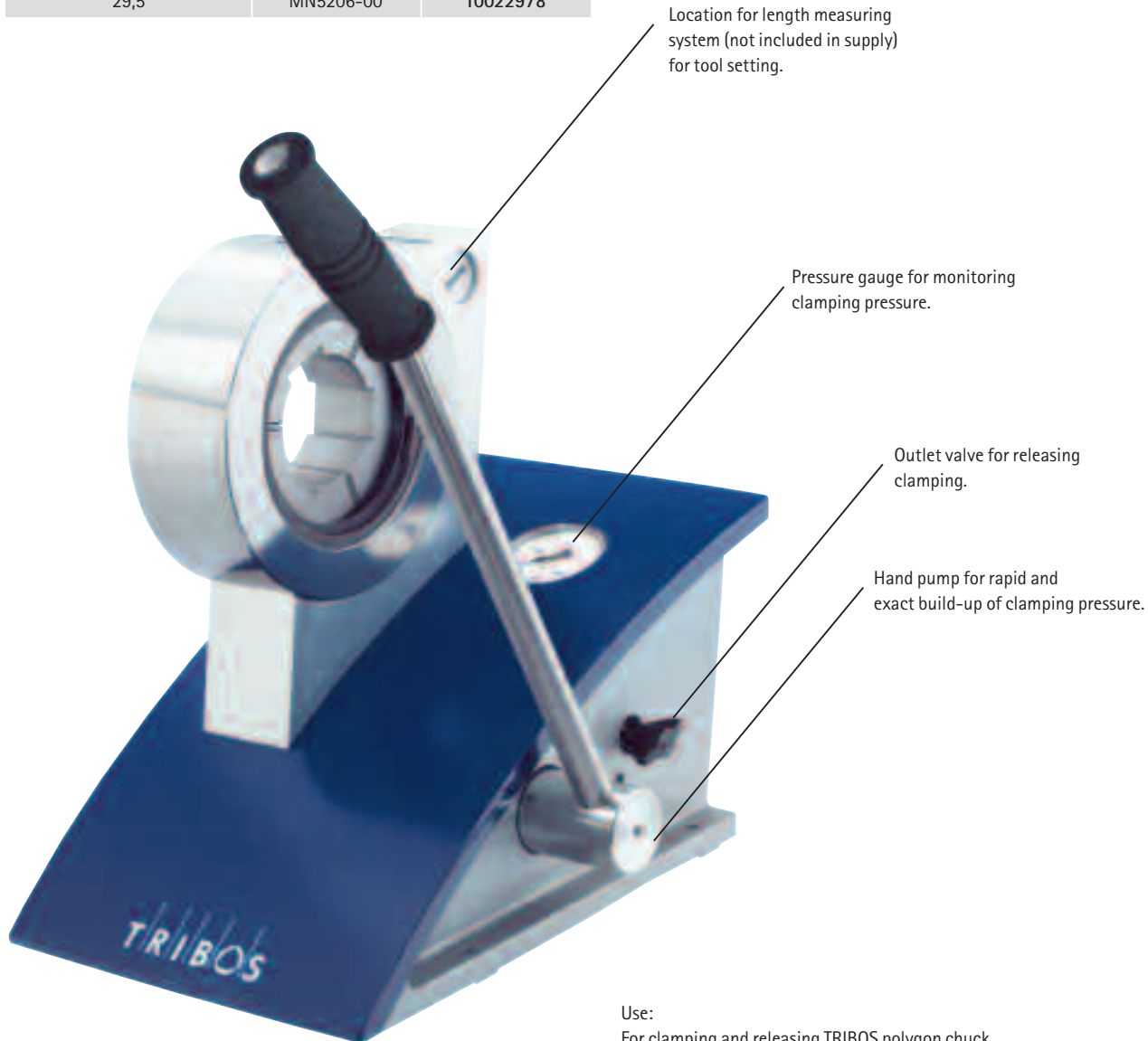
Sleeve draw-in device MN5420-99 for adaptor sleeve: Order No. 10060834.

TRIBLOS®

Clamping fixture for TRIBOS polygon chucks



Weight kg	Ref. code	Order No.
29,5	MN5206-00	10022978



Use:

For clamping and releasing TRIBOS polygon chuck.

Supply:

Clamping fixture; reducing inserts not included.

Design:

Hydraulic clamping fixture with hand pump for fast build-up of clamping pressure.

No external power source (electricity, air, etc.) required.

Note:

For reducing inserts see pages 176-177.

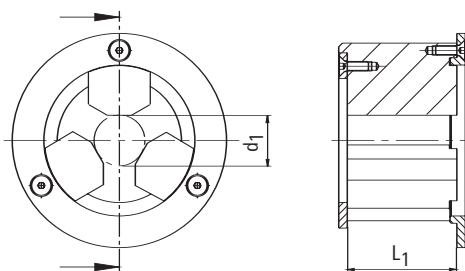
Storage magazine for reducing inserts available on request.

Length measurement system for tool pre-setting available on request.

Best clamping results with cylindrical shanks Form HA with shank tolerance h6.

Reducing sleeves for TRIBOS-S

for clamping fixture



Clamping diameter d_2	Dimensions		Ref. code	Order No.
	d_1	L_1		
3	9	22,5	MN5206-01	10060695
4	9	22,5	MN5206-02	10060696
6	10	35	MN5206-03	10022972
8	13	35	MN5206-04	10022973
10	16	40	MN5206-05	10022974
12	19	45	MN5206-06	10022975
14	22	45	MN5206-07	10022976
16	25	45	MN5206-08	10022977
18	28	45	MN5206-09	10022979
20	30	45	MN5206-10	10022980
25	36	45	MN5206-11	10060697
32	45	45	MN5206-12	10073623

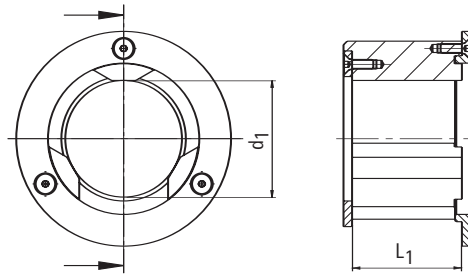
Dimensions in mm.

Use:

For clamping and releasing cylindrical shanks in TRIBOS-S polygon chucks.

Reducing sleeves for TRIBOS-R

for clamping fixture



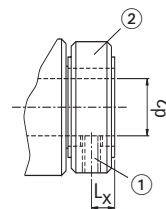
Clamping diameter d_2	Dimensions		Ref. code	Order No.
	d_1	L_1		
6	25	35	MN5206-23	10060688
8	28	35	MN5206-24	10060689
10	35	40	MN5206-25	10060687
12	42	45	MN5206-26	10060690
14	48	45	MN5206-27	10060691
16	48	45	MN5206-28	10060692
18	48	45	MN5206-29	10060693
20	48	45	MN5206-30	10060694
25	60	45	MN5206-31	10073624
32	67	45	MN5206-32	10073625

Dimensions in mm.

Use:

For clamping and releasing cylindrical shanks in TRIBOS-R polygon chucks.

Spares for floating holders



Clamping diameter d_2	L_x	① Threaded pin		② Holding ring	
		ISO 4028	Order No.	Ref. code	Order No.
10	5	M5x10-45H	10003907	3050066	10080864
10	6	M6x12-45H	10003917	3050035	10080865
16	6	M6x12-45H	10003917	3050035	10080865
16	7	M8x16-45H	10003935	3050029	10080996
16	9,5	M8x16-45H	10003935	3050012	10080862
20	7	M8x16-45H	10003935	3050029	10080996
20	9,5	M8x16-45H	10003935	3050012	10080862
25	7	M8x20-45H	10003937	3050030	10080995
25	9,5	M10x20-45H	10003956	3050005	10080863

Note:

The spares depend on the clamping diameter d_2 and the position of the threaded pin. Please see the table on the relevant page for the appropriate dimension (in this case L_x).

Balluft tag



Ref. code	Dimensions		Order No.
	d ₁	L ₁	
BIS C-122-04/L	10	4,5	10004178

Dimensions in mm.

Use:

For fitting on tool holders/ chucks with HSK-A adaptor to DIN 69893.

Design:

Housing material:	Compressed epoxy resin
Storage capacity:	511 Bytes
Suitable for write/read head:	BIS C-300 / 302 / 305/ 306 / 325
Max. write/read distance:	2.5 mm
Fitting:	on collar
Working temperature:	0 to +70°C
Storage temperature:	-20 to +85°C
Security to IEC 60529:	IP 67
Programming cycles:	500 000 (up to 70 °C)

Note:

The bar code carrier can be written on as often as necessary.

The bar code carrier does not require batteries for power supply.

The power and data required by the bar code carrier are linked in inductively from the write/ read head.

Data transfer security is safeguarded by means of a plausibility check.

On request the tool holders/chucks can be supplied with a stick-on bar code carrier.

An example of the order number for this is: MN5100-08-KC.





Technical information, setting and handling notes

In the following pages you will find technical notes and background information on the MAPAL clamping technology.

In addition to the HSK-A and HSK-C standards and the various ISO versions, the mounting dimensions for the flange module are also listed. Important technical notes are also provided on the individual clamping systems and clamping methods covered in the catalogue.

The main features of the KS Clamping cartridge include details of clamping force and transferable bending moment. In addition torque transmission, concentricity and repeatable accuracies plus spindle speed limits for the HSK connection are described.

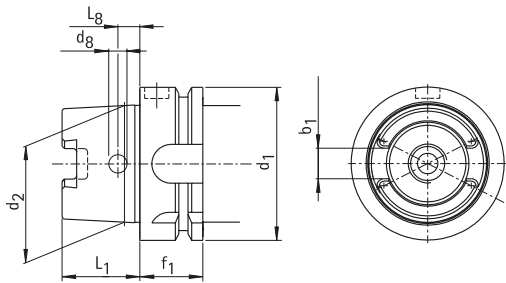
Subject to definition, calculation, effect and limits of balancing, we will also provide information to you the security system to prevent the hollow taper shanks being confused, which stops operating errors when changing tools and is supplied by MAPAL as an option.

Finally we provide you with helpful tips for use in practice with setting and handling notes for fitting and assembling the KS Clamping cartridge and for fitting and alignment of KS adaptor flanges and MAPAL module connections.

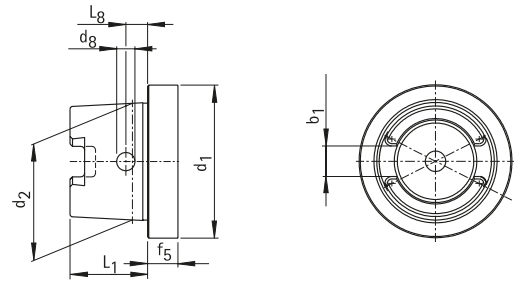
Standards and mounting dimensions

HSK standard

For hollow shanks DIN 69893-1 HSK-A and HSK-C



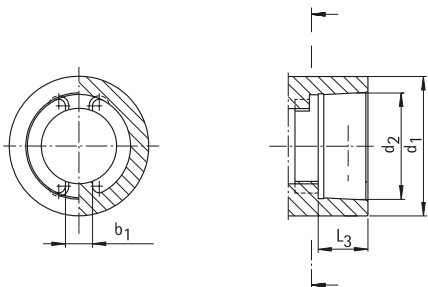
HSK-A for automatic and manual tool change



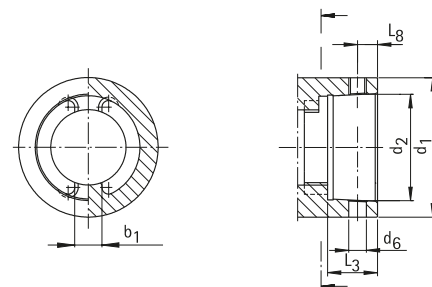
HSK-C for manual tool change

		HSK size					
Nominal size	d_1 h10	32	40	50	63	80	100
Taper diameter	d_2	24,007	30,007	38,009	48,01	60,012	75,013
Shank length	L_1 0/-0,2	16	20	25	32	40	50
Slot width	b_1 +/-0,04	7,05	8,05	10,54	12,54	16,04	20,02
Bore diameter	d_8	4	4,6	6	7,5	8,5	12
Bore spacing	L_8 +/-0,1	5	6	7,5	9	12	15
Flange width HSK-A	f_1 0/-0,1	20	20	26	26	26	29
Flange width HSK-C	f_5	10	10	12,5	12,5	16	16

For adaptors DIN 69093-1 HSK-A and HSK-C



HSK-A for automatic and manual tool change



HSK-C for manual tool change

		HSK size					
Nominal size	d_1 min.	32	40	50	63	80	100
Taper diameter	d_2	23,998	29,998	37,998	47,998	59,997	74,997
Depth	L_3 +0,2	11,4	14,4	17,9	22,4	28,4	35,4
Driver width	b_1 +/-0,05	6,8	7,8	10,3	12,3	15,8	19,78

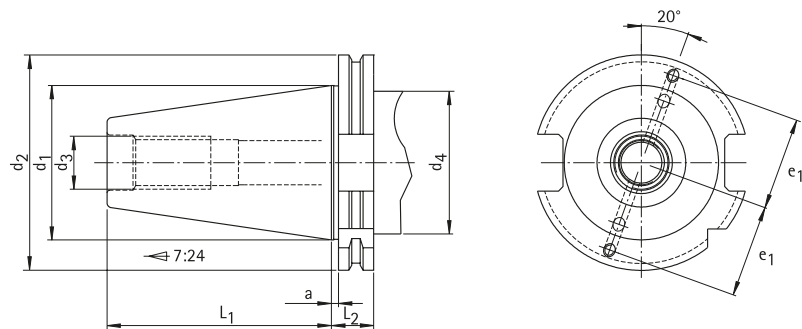
additional with HSK-C

Bore diameter	d_6	4	5	6	8	9	11
Bore spacing	L_8 +/-0,1	5	6	7,5	9	12	15

Standards and mounting dimensions

ISO standard

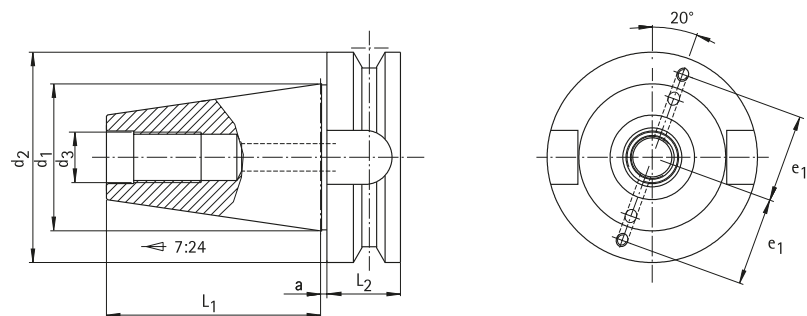
For steep taper shanks DIN 69871



ISO for automatic tool change Form A, Form AD, Form B and version with data carrier

	Steep taper size (ISO)			
	30	40	45	50
a +/-0,1	3,2	3,2	3,2	3,2
d ₁	31,75	44,45	57,15	69,85
d ₂ 0/-0,1	50	63,55	82,55	97,5
d ₃	M 12	M 16	M 20	M 24
d ₄ max.	45	50	63	80
e ₁ +/-0,1	21	27	35	42
L ₁ 0/-0,3	47,8	68,4	82,7	101,75
L ₂ 0/-0,1	19,1	19,1	19,1	19,1

For steep taper shanks to BT JIS 6339



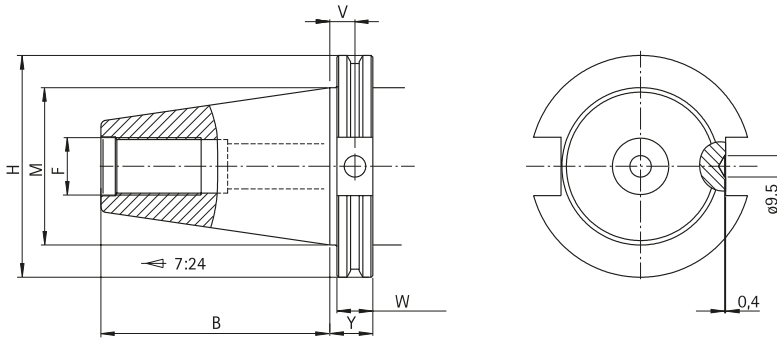
Steep taper for automatic tool change

	Steep taper size (BT)		
	30	40	50
a +/-0,4	2	2	3
d ₁	31,75	44,45	69,85
d ₂ h8	46	63	100
d ₃	M 12	M 16	M 24
e ₁ +/-0,1	21	27	42
L ₁ +/-0,2	48,4	65,4	101,8
L ₂ min.	20	25	35

Standards and mounting dimensions

ISO standard

For ISO shanks with V flange adaptor
to ASME B5.50- 1994 (MN633)



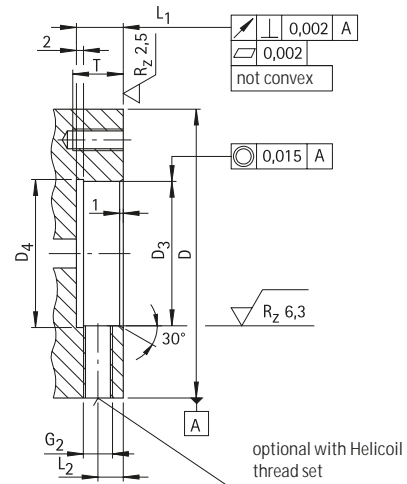
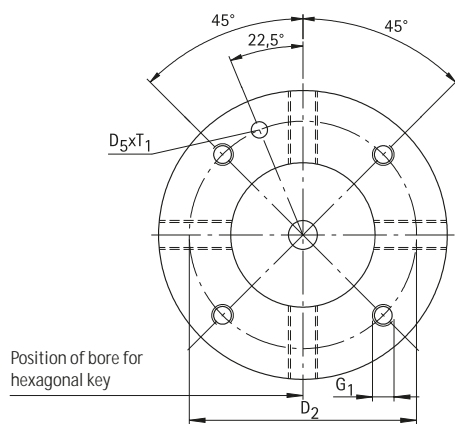
Steep taper for automatic tool change

	Steep taper size			
	30	40	45	50
B $\pm 0,1$	47,65	68,25	82,55	101,60
F UNC-2B	1/2"-13	5/8"-11	3/4"-10	1"-8
H $\pm 0,5$	46,02	63,50	82,55	98,43
M $\pm 0,13$	31,75	44,45	57,15	69,85
V $\pm 0,25$	11,2	11,2	11,2	11,2
W $\pm 0,05$	15,88	15,88	15,88	15,88
Y $\pm 0,05$	19,05	19,05	19,05	19,05

Standards and mounting dimensions

Mounting dimensions for KS flanges

Spindle connection contour for adaptor flange MN5520* and MN5523*
to MN5000-14



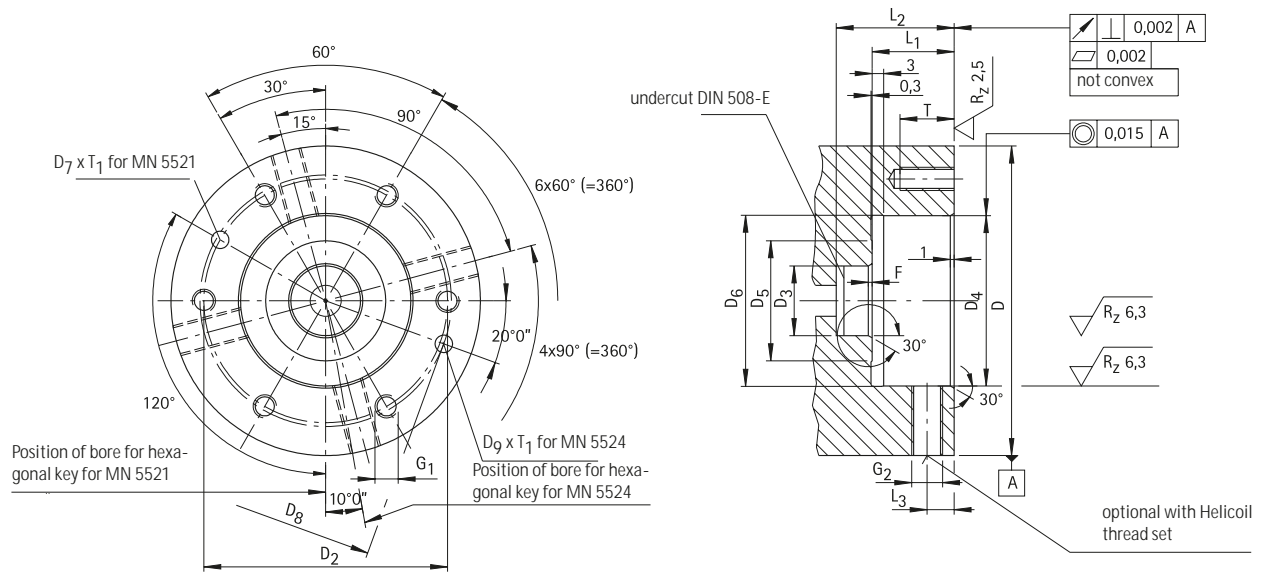
Nominal size	32	40	50	63	80	100	125	160
module								
diameter D	60	70	80	100	117	140	180	210
$D_2 \pm 0,1$	44	53	63	79	96	119	150	185
$D_3 F8$	30	35	40	50	60	80	100	120
D_4	31	36	41	51	61	81	101	121
D_5	4,5	5,0	5,0	5,0	6,0	6,0	6,0	6,0
L_1	12	12	12	14	14	14	24	37
L_2	7	7	7	8	8	8	8	8
G_1	M5	M6	M6	M8	M8	M10	M12	M12
G_2	M8x1	M8x1	M8x1	M10x1	M10x1	M10x1	M10x1	M10x1
T	11	14	14	15	15	18	25	25
$T_1 +0,5$	3	3,5	3,5	3,5	4,5	4,5	4,5	4,5

*Because of possible technical modifications we recommend up-to-date production documents be provided if required.

Standards and mounting dimensions

Mounting dimensions for KS flanges

Spindle connection contour for adaptor flange MN5521*
and MN5524* to MI5000-12



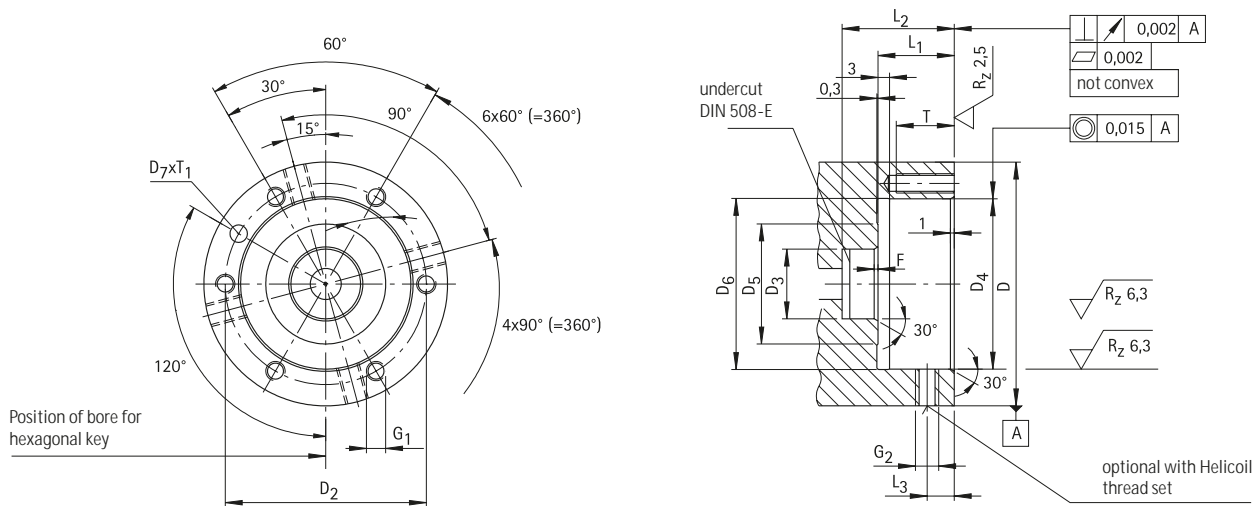
Nominal size	32	40	50	63	80	100	125	160
module								
diameter D	55	63	80	100	117	140	180	210
$D_2 \pm 0,1$	42	50	63	79	96	119	150	185
$D_3 H7$	13	15	18	20	23	29	35	35
$D_4 F8$	28	35	44	56	68	88	112	140
D_5	22	25	31	35	43	55	78	106
$D_6 +0,2$	28,2	35,2	44,2	56,2	68,2	88,2	112,2	140,2
D_7	4,5	5,0	5,0	5,0	6,0	6,0	6,0	6,0
$D_8 \pm 0,1$	45	52	66	84	101	124	164	194
D_9	4,5	5,0	5,0	5,0	6,0	6,0	6,0	6,0
E	0,4 x 0,2	0,4 x 0,2	0,6 x 0,3	0,6 x 0,3	0,6 x 0,3	0,6 x 0,3	0,6 x 0,3	0,6 x 0,3
$L_1 + 0,1$	15,2	18,2	21,2	25,2	33,2	43	55	76
$L_2 \text{ min.}$	24	27	30,5	35,5	43,5	57	72,5	97,5
L_3	7	7	7	8	8	8	8	8
F	1,0	1,0	1,0	1,5	1,5	1,5	1,5	1,5
G_1	M5	M5	M6	M8	M8	M10	M12	M12
G_2	M4	M5	M8x1	M10x1	M10x1	M10x1	M10x1	M10x1
T	11	14	14	15	15	20	22	22
$T_1 + 0,5$	3	3,5	3,5	3,5	4,5	4,5	4,5	4,5
α	11°	10°	10°	10°	10°	10°	0°	0°

*Because of possible technical modifications we recommend up-to-date production documents be provided if required.

Standards and mounting dimensions

Mounting dimensions for KS flanges

Spindle connection contour for adaptor flange for short spindles MN 5522*

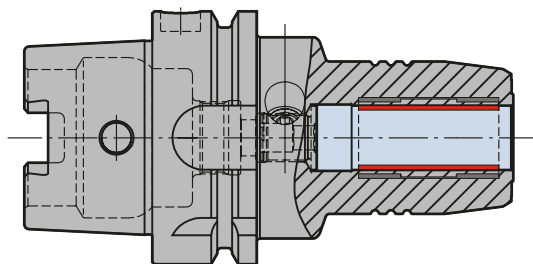


Nominal size module diameter D	32	40	50	63
	40	50	63	80
D ₂ +/-0,1	33	41	52	66
D ₃ H7	13	15	18	20
D ₄ F8	28	35	44	56
D ₅	22	25	31	35
D ₆ + 0,2	28,2	35,2	44,2	56,2
D ₇	4,0	4,5	5,0	5,0
E	0,4 x 0,2	0,4 x 0,2	0,6 x 0,3	0,6 x 0,3
L ₁ + 0,1	16,2	18,2	19,7	22,2
L ₂ min.	25	27	29	32,5
L ₃	5,5	6,0	7,0	8,0
F	1,0	1,0	1,0	1,5
G ₁	M3	M4	M5	M6
G ₂	M4	M5	M6	M8x1
T	10	13	15	16
T ₁ + 0,5	3,0	3,5	3,5	3,5

*Because of possible technical modifications we recommend up-to-date production documents be provided if required.

Clamping systems and clamping methods

The hydraulic method



When clamping with the hydraulic method constant pressure is built up by means of a tensioning screw and a pressure plunger within a closed chamber system. This pressure is transferred to the tool through the built-in expanding sleeve.

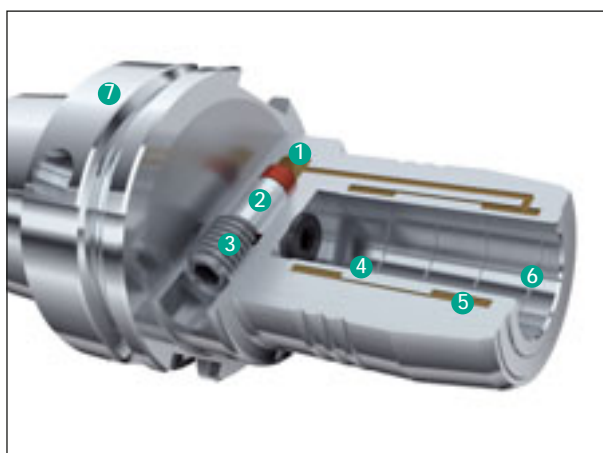
Advantages and use by the customer:

- Longer tool life because of maximum concentricity and repeatable accuracy (< 0.003 mm); this means the cutting edge is evenly applied.
- Improved surface quality on the workpiece; less microscopic fracturing on the tool cutting edge because of excellent vibration damping in the hydraulic system.
- High torque transfer because of diversion of oil, grease and lubricant residue into the groove. This keeps the clamping surface substantially dry.
- Flexible clamping range by using slotted adaptor sleeve with coolant seal (concentricity accuracy of sleeve < 0.002 mm).
- Exact radial or axial length adjustment.
- Suitable for minimal lubrication.

System advantages:

- Easy to use and extremely rapid handling: Using a hexagonal key the tool can be clamped concentrically in seconds. No peripheral equipment is needed for clamping and releasing. No additional investment and maintenance costs for external components.
- Closed clamping system: No maintenance work and additional costs caused by contamination.
- Extremely high clamping safety: No reduction in clamping forces at high spindle speeds.
- Fine balancing: All hydraulic chucks are finely balanced as standard for use on HSC machines.

1. Elements of expanding clamping systems

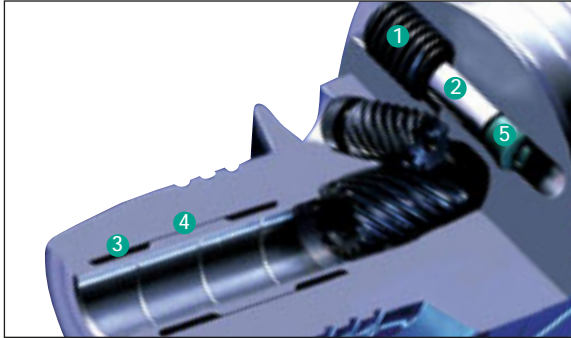


- 1 Sealing element:** see page loss in the clamping bore prevented by lip seal.
- 2 Pressure plunger:** presses the hydraulic medium into the chamber system.
- 3 Tensioning screw:** to activate the piston, can be clamped without using torque wrench.
- 4 Expanding sleeve:** clamps the tool shank concentricity by applying the pressure evenly.
- 5 Chamber system:** produced through the connection of the expanding sleeve and basic body. Has a damping effect on the tool because of the hydraulic medium and therefore reduces wear.
- 6 Groove:** Oil, grease and lubricant residue is diverted into the groove because of the high clamping pressure. The clamping surfaces remain substantially dry and this ensures torque transmission.
- 7 Basic body:** MAPAL expanding chucks can be supplied for all current machine connections (HSK-A, HSK-C, ISO, BT and flange module).

Clamping systems and clamping methods

The hydraulic method

2. Function principle



- 1 The tensiing screw is turned as far as the stop with a hexagonal key.
- 2 The pressure plunger presses the hydraulic medium into the expansion chamber and produces an increase in pressure.
- 3 expansion chamber and produces an increase in pressure.
- 4 The thin walled expansion sleeve pushes evenly against the tool shank. This clamping process first causes the tool shank to be centred and then produces a full, positive clamping effect.
- 5 The special sealing element ensures an absolute seal and a long tool life.

3. Torque transmission

Please refer to the table for individual torque transmission.

The torques shown apply for shank lengths to DIN 6535 and DIN 1835.

a Torque transmission with direct clamping, oiled shank, clamping diameter $d_2 = 6 - 32$ mm

d_2 [mm]	6	8	10	12	14	16	18	20	25	32
for shank h6 [Nm]	16	23	45	90	110	185	240	330	400	650

b Torque transmission measured with adaptor sleeve, oiled shank Clamping diameter expanding chuck $d_2 = 32$ mm

d_2 [mm]	6	8	10	12	14	16	18	20	25
for shank h6 Minimum/Maximum [Nm]	36 / 55	46 / 75	82 / 140	120 / 190	140 / 220	200 / 350	260 / 450	280 / 500	400 / 650

Clamping diameter expanding chuck $d_2 = 20$ mm

d_2 [mm]	3	4	5	6	7	8	9	10	11	12
for shank h6 Minimum/Maximum [Nm]	6 / 10	10 / 15	16 / 25	28 / 50	45 / 68	50 / 80	70 / 100	80 / 120	100 / 150	115 / 175

d_2 [mm]	13	14	15	16	17
for shank h6 Minimum/Maximum [Nm]	125 / 180	130 / 190	140 / 200	170 / 240	200 / 250

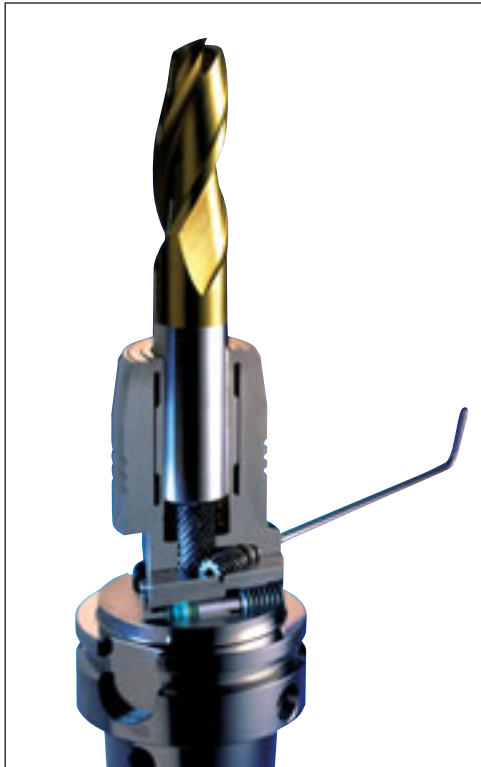
Clamping diameter expanding chuck $d_2 = 12$ mm

d_2 [mm]	3	4	5	6	8
for shank h6 Minimum/Maximum [Nm]	4 / 5	5 / 10	7 / 15	12 / 26	15 / 32

Clamping systems and clamping methods

The hydraulic method

4. Radial tool length adjustment



In the area of clamping devices with HSK adaptors, MAPAL also supplies hydraulic chucks with radial tool length adjustment. Using this setting method concentricity accuracy is also guaranteed of < 0.003 mm.

Advantages of radial length adjustment

- high precision length adjustment (μ) by means of adjustment gearing
- no change in position of tool caused by own weight or by axial pressure because of self-locking adjusting screw
- 10 mm adjustment path for all clamping diameters with front and rear stop for adjusting screw
- not affected by dirt
- robust mechanical elements
- coolant seal for up to 100 bar
- no radial change in set screw
- user friendly and reliable in production

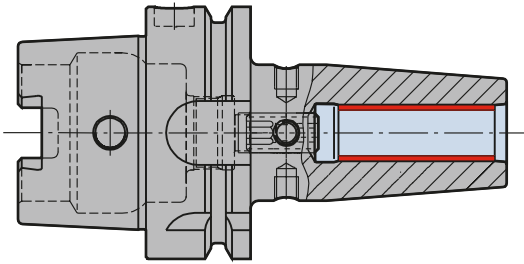
Radial length adjustment components:



- 1 Radial length adjustment activated
- 2 Ventilation
- 3 Clamping applied
- 4 Set screw

Clamping systems and clamping methods

The thermal expansion method

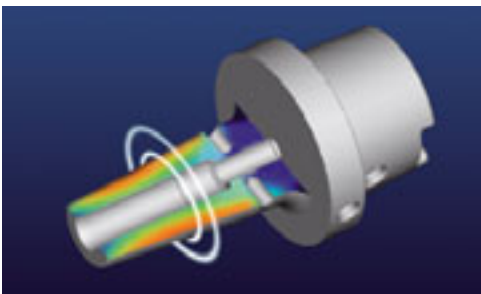


The thermal expansion method uses thermal influences to clamping the tool. An induction coil warms the thermal expanding chuck, the chuck expands and the cold tool shank can be inserted. The thermal expanding chuck is then cooled again, contracts and forms an extremely homogenous unit with the tool.

Advantages and use by customer:

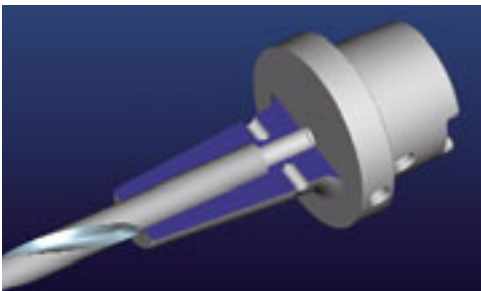
- High flexibility: numerous options for combining thermal expanding chucks and extensions.
- Wide range of applications: high torque transfer and radial rigidity.
- Long tool life: no changes in geometry or structure when heat is applied.
- No maintenance costs: closed system so no contamination.
- High dimensional stability in the workpiece: durable concentricity and repeatable accuracy of < 0.003 mm in the location bore.
- Long tool life and good surface quality: fine balanced as standard.

Function principle



1. Warming the chuck

The chuck is warmed precisely at the clamping point using the latest induction technology. The clamping diameter expands. An induction coil produces eddy currents which act directly on the chuck and heat precisely at the point where the tool shank is located.



2. Insert the tool shank

The cold tool shank is inserted into the warmed chuck.

3. Cooling

The thermally expanded chuck is cooled, the clamping diameter contracts to its original size and clamps the tool. An efficient unit with water-cooled cooling elements produces rapid cooling within 30 seconds. This means that the taper and the data chip are not warmed. Adaptors which can be incorporated in the cooling unit allow extensions and also non-standard thermal expanding chucks to be cooled.

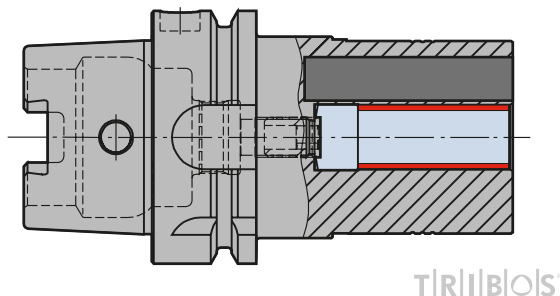
The result:

With the inductive warming system tool change can be carried out within seconds. The shrink-fit chuck, the tool extension where applicable, and tool shank form an homogeneous unit. Carbide and HSS tools can be perfectly clamped. The tool sits in the tool holder with perfect fit and held with maximum clamping force.



Clamping systems and clamping methods

The polygon clamping method



With the polygon clamping method the tool shank is shrunk into a polygon which has been “deformed” by using a hydraulic clamping device. The TRIBOS® polygon chucks are produced in a narrow design as TRIBOS-S and a more heavy-duty version as TRIBOS-R. The TRIBOS-S chucks are intended for fine and light machining and for areas of the workpiece which are difficult to reach. TRIBOS-R is for heavy duty, difficult machining operations requiring very high precision.

Advantages and use to the customer:

- Long tool life and production reliability: durable concentricity and repeatable accuracy of < 0.003 mm.
- Short machine stoppage times, fast and easy handling: tool change within 20 seconds.
- Flexible and cost-saving: use of adaptor sleeves (concentricity accuracy < 0.002 mm) allows clamping of several clamping diameters.
- Maximum spindle speeds possible: absolutely rotationally symmetrical construction with basic imbalance of < 4 gmm. Fine balanced as standard for use on HSC machines.
- Durable: no material stress caused by thermal expansion and cooling.
- Totally maintenance free: system has no movable parts and is therefore not mechanically sensitive.
- No material restrictions: clamps carbide and HSS, for shanks with or without clamping flat.
- Flexible location for clamping device: no external power source required.
- Precise axial length adjustment: no axial movements during the clamping process.
- Write/read chips for tool identification system can be used.

Clamping systems and clamping methods

The polygon clamping method

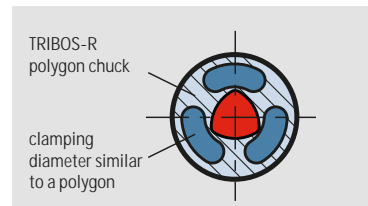
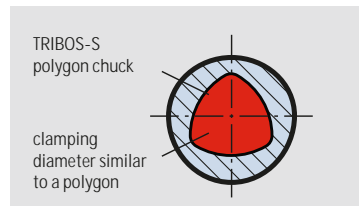
1. Function principle

TRIBOS-S

TRIBOS-R

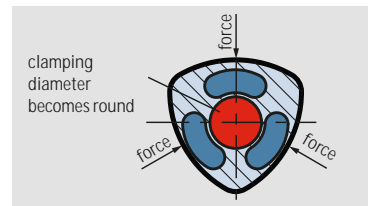
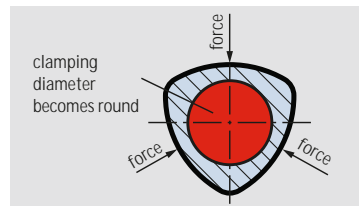
1. Special geometry

When released, the clamping diameter of the TRIBOS polygon chuck is similar to that of a polygon.



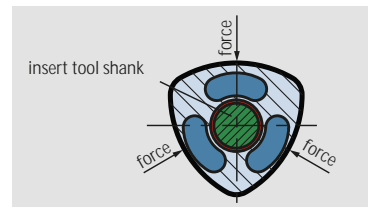
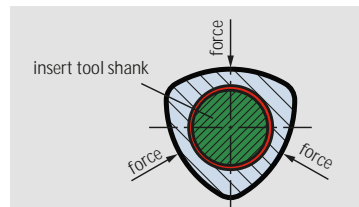
2. Apply pressure

Using the hydraulic clamping device, an exact amount of pressure to the polygon chuck is applied at three points using the clamping display on a pressure gauge. This turns the clamping diameter into a circle.



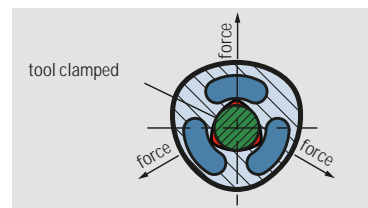
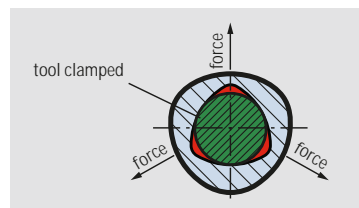
3. Insert tool shank

The tool shank of the cutting tool is now inserted into the clamping diameter.



4. Clamp tool

The clamping device is released and the force acting on the polygon chuck released completely. The clamping diameter returns to its original form and the tool shank is clamped. The clamping process is then complete.



2. TRIBOS-S



TRIBOS-S chucks are for fine and light machining. Because of its narrow design, TRIBOS-S is designed for machining workpiece areas which are difficult to reach and where conventional clamping systems cannot be used.

The slim design and low weight also gives the advantage that TRIBOS-S can also be used at high spindle speeds and with high feed rates.

Clamping systems and clamping methods

The polygon clamping method



3. TRIBOS-R

For heavy-duty machining to maximum precision the external diameter on TRIBOS-R is reinforced to increase rigidity. To dampen vibrations a special chamber system, filled with vibration-damping, copper alloy inserts, is incorporated which produces better surface finish and longer tool life.

The high rigidity of TRIBOS-R allows the high radial forces to be absorbed which occur in heavy duty cutting. A long tool life and quiet machining process are achieved because of the filling in the hollow chamber with Duroplast around the clamping diameter. TRIBOS-R collets can also be used for high settings and high cutting volumes because of its stability.



4. Use of adaptor sleeves

By using adaptor sleeves different clamping diameters can be clamped with just one tool holder, thus producing cost savings. The radial rigidity is increased and significantly higher clamping forces can be achieved. When connecting to TRIBOS extensions, numerous combination options are possible.



5. Tool extensions (concentricity < 0.003 mm)

The TRIBOS programme also includes tool extensions with which the polygon clamping method can be combined with an extremely wide variety of chucks. The tool extensions are of particular advantage in machining situations where chucks with projecting tool restrictions cannot be used.

Clamping systems and clamping methods

The polygon clamping method

6. TRIBOS clamping fixture

Design:

- Hydraulic clamping fixture
- Hand pump for build-up of clamping pressure
- No external power source required (electrical, air, etc.)



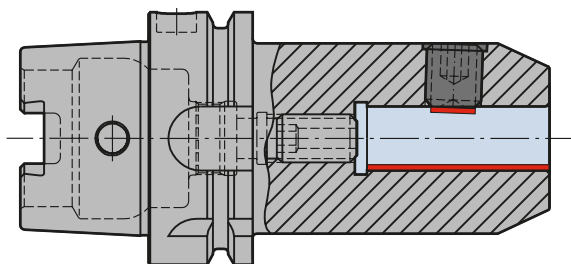
Procedure for clamping and releasing TRIBOS polygon chuck in the clamping fixture:

1. Read off clamping pressure required from the polygon chuck (see label).
2. Insert polygon chuck with the necessary reduction insert into the clamping fixture.
3. Close the outlet valve on the clamping fixture.
4. Using the hand lever produce the required clamping pressure, checking the display on the pressure gauge.
5. Insert or remove tool.

Clamping systems and clamping methods

The mechanical chuck method

The low cost version in the world of tool clamping is to use mechanical chucks. These chucks are characterised by their sturdy design and simplicity.

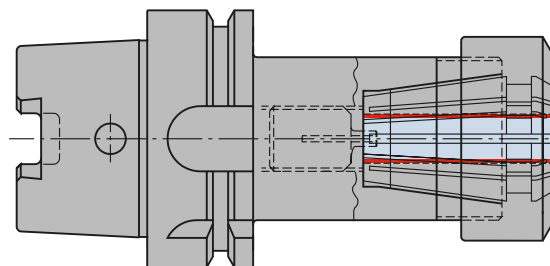


1. Cylindrical holders to DIN 69882-4/-5

MAPAL includes both clamping devices with lateral clamping surfaces and with angled clamping surfaces in their programme. However, because of the effect of clamping force on one side, shortcomings in concentricity have to be accepted.

For HSK-A adaptors chucks with alignment facilities are also available. This version allows for greater demand for concentricity. Using four alignment screws at the clamping bore, concentricity of up to 0.003 mm can be achieved. Chucks with alignment are particularly suitable for brazed fine boring and roughing tools.

In the steep taper area it is advisable to clamp MAPAL NC reamers with angled clamping surfaces using a precision adaptor. These special clamping devices are supplied for steep taper chucks to DIN, BT and ASME standards. These are restricted to 0.003 mm in order to reliably achieve the quality requirements set for MAPAL reaming tools in production.

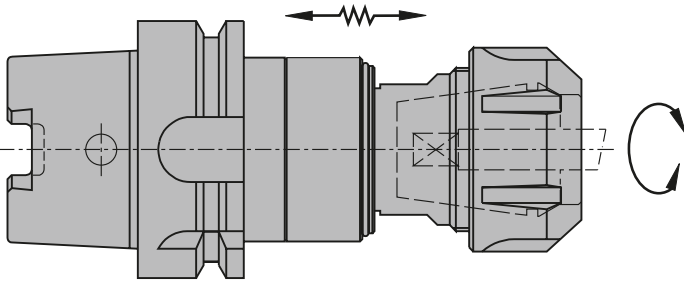


2. Collet holders to DIN 69882-6

The flexible version of the mechanical chuck is the solution which uses collets. By using appropriate collets, a holder can hold tools with cylindrical shanks within a whole clamping diameter range (e.g. clamping range 2 - 20 mm with a single clamping device). For this a collet covers an area of 1 mm in the diameter.

The variability of the collet holders has the disadvantage, however, that, in the context of concentricity, the collet holder has shortcomings when it comes to maximum possible spindle speed and maximum torque transmission.

In addition to conventional collet holders MAPAL also offers chucks with clamping nuts for internal coolant supply. When used with the ER sealing discs, these Hi-Q/ERC clamping nuts also allow previously used collets to be used for tools with internal coolant supply.



3. Softsynchro® tapping chucks

The synchronisation of the spindle's rotary movement and feed axis allows threads to be produced with tools without length adjustment. In practice, however, synchronisation errors cannot be entirely avoided. The reasons for this are the machine's dynamics and the interplay between spindle and linear drives. Tolerances on the tapping tool also play a role. When using rigid tools these synchronisation errors produce high axial forces and as a result shorter tool life and threads and teeth which are not clean and cannot be gauged.

Collet holders of the Softsynchro® type act as an attenuating element between synchronous spindle and tapping tool and allow the synchronous spindle to be used in the best possible way. This produces optimum tool life and surface qualities.

The MAPAL programme includes Softsynchro® tapping chucks with HSK-A adaptors and with cylindrical shank to DIN 1835 B + E.



Advantages and use by the customer:

- Adjustment of differences in pitch between synchronous spindle and tapping tool
- High concentricity
- Firm clamping by means of collets with square holder
- No special shanks required on tool
- High production reliability when producing threads synchronously.

Clamping systems and clamping methods

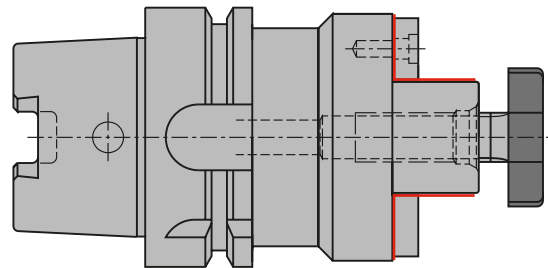
The mechanical chuck method

3. Softsynchro® tapping chucks



Design features of Softsynchro® tapping chucks:

- In two parts (chuck shank / tool holder):
easy to dismantle, easy maintenance
- Axial force adjustment and torque separate:
hardly any effect
- Pre-stressed damping element in plastic:
no effect on tool cutting edge from upward axial movement. Axial movement only when pre-stressed level has been exceeded.
- Lengthways movement guided by ball-bearings:
little friction caused by rolling, very good response.
- Suitable for up to 50 bar internal coolant:
no effect of axial force from coolant pressure
so no lengthways movement.

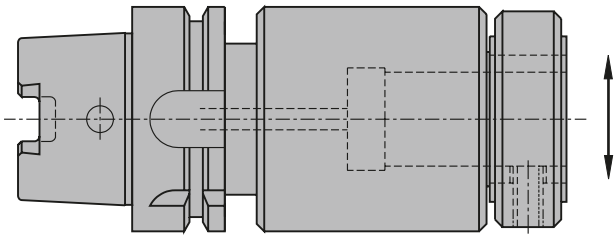


4. Milling cutter arbors to DIN 69882-3

A tried and tested clamping system for holding cutter heads, shell end face milling cutters and single angle shell end mills.

Clamping systems and clamping methods

MAPAL floating holders



Simple design, problem-free function

Reamers are used to improve the dimensional accuracy and surface quality of a bore. Because of their design they are supported in the bore by guides. This applies both for multiple bladed reamers and for tools which use the single blade principle.

The coordination of the rough bore with the tool axis is a prerequisite for both tool designs to perform without problems. In many cases this condition is not met. As a result, when machining with several clamping set-ups and frequently with a single tool change, for example, a cycle and positioning error will occur and cause an offset between tool and workpiece.

The MAPAL "Wellach System" floating holder programme has been designed for optimum use of high speed reamers and allows for this axis and angle displacement.

Advantages and use by the customer:

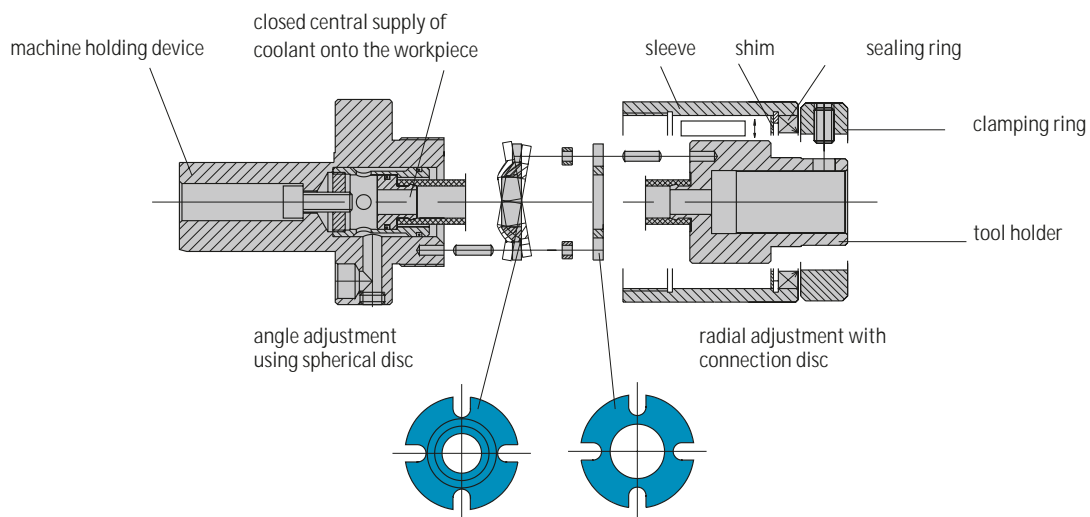
- Long tool life, even at high feed rates, because of trouble-free operation
- Consistent results for batch production
- Less scrap and reworking
- Less space for multi-spindle use because of slim design and small head diameter
- An advantage at high spindle speeds
- No parts subject to wear so no cost-intensive stock of spares required.

Clamping systems and clamping methods

MAPAL floating holders

1. Design elements

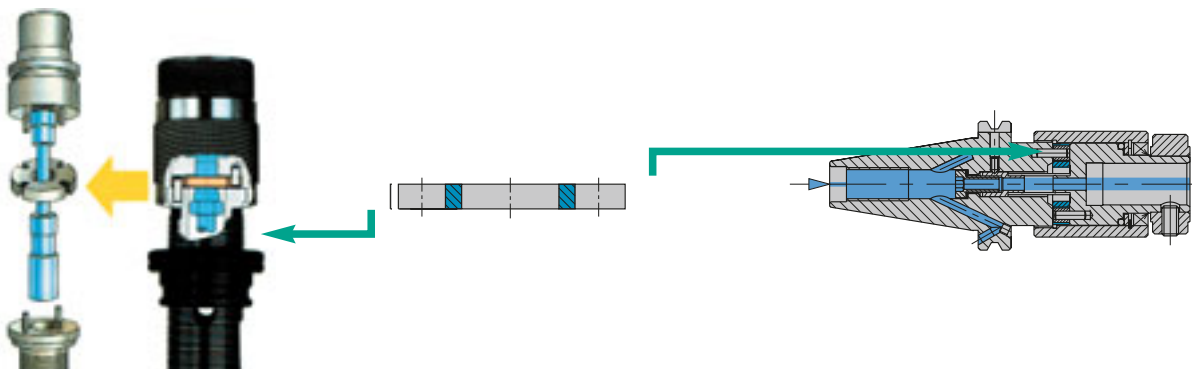
- Sliding surface connection: smooth sliding surfaces transfer the axial feed forces with low pressure on surface.
- Reliable function: even at the feed rates which are normal today and with the high forces these cause.
- Problem-free radial and angular movement of tool holder with long lasting high accuracy.
- Radial and angular adjustment ensured by play incorporated in the design.
- The design advantage of the surface connection is particularly great compared to conventional contact at a specific point.
- Closed, central coolant system (water, oil, air) supplied to the workpiece by means of a flexible, sealed unit which is connected with the holding device and the tool holder.



2. Offset adjustment methods

Two different types of floating holders vary in the methods used for offset adjustment:

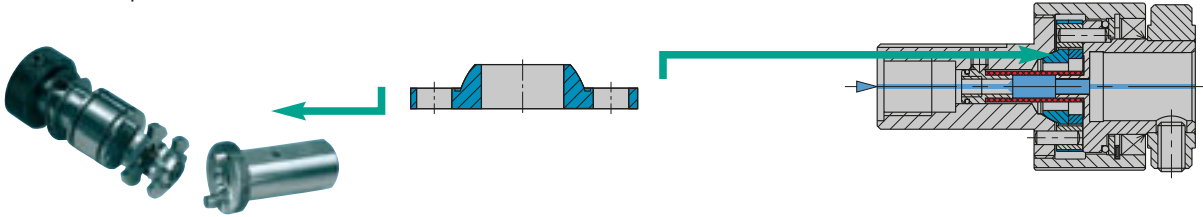
Type PR has a **sliding surface contact**, with which the axial feed forces are transferred with low surface pressure being applied.



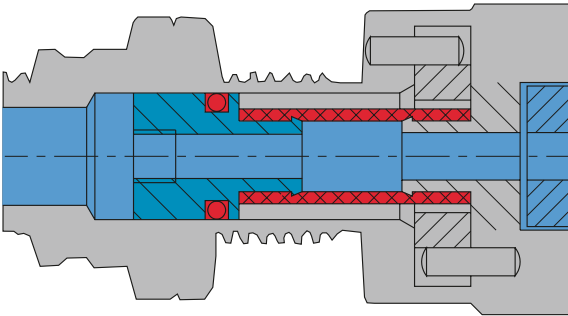
Clamping systems and clamping methods

MAPAL floating holders

Type PA has a second movement plane with which the angular offset is compensated for with a spherical disc and tapered "dish".

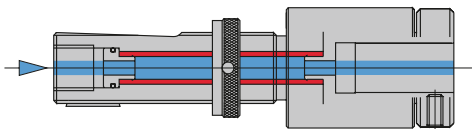


3. Coolant supply



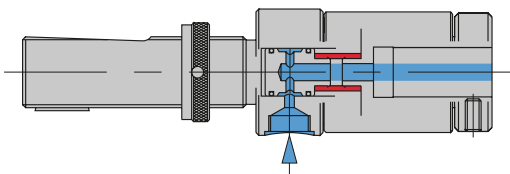
MAPAL floating holders are characterised by a closed central coolant supply (water, air, oil) onto the work-piece using a flexible, sealed unit which is connected with the machine holding device and the tool holder.

The following three connection versions are available



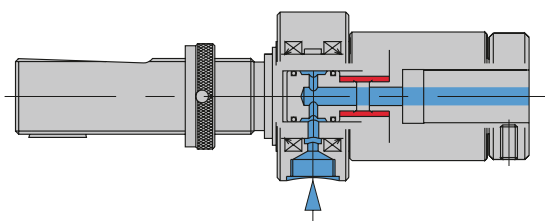
1. Supply at end of floating holder

Maximum possible coolant pressure 50 bar. Ref. code KZ.



2. Supply through lateral hole

Maximum possible coolant pressure 50 bar. Ref. code KZB.



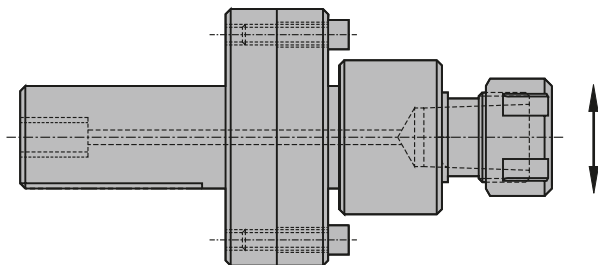
3. Supply through rotating ring

Maximum possible coolant pressure 30 bar. Ref. code KZD.

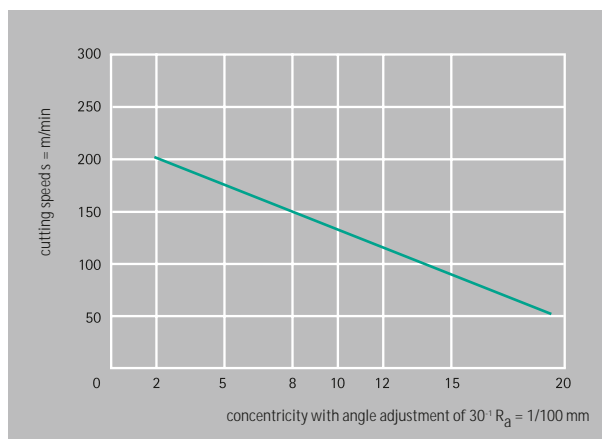
Clamping systems and clamping methods

MAPAL floating holders

Self-adjusting floating holders

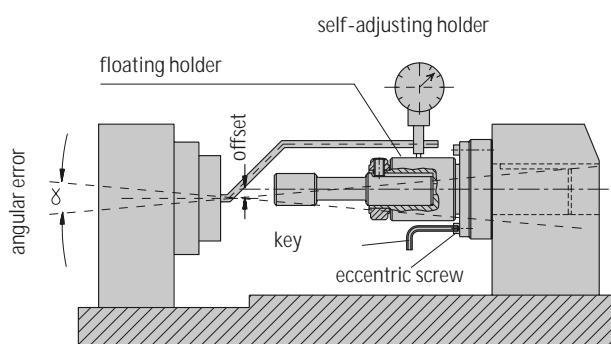


In order to achieve higher machining values and even better machining results, the floating holder can be combined with the MAPAL self-adjusting floating holder. The self-adjusting floating holder reduces the pendulum movement of the floating holder and the radial play is then minimised. The efficiency of the system can be seen from the higher spindle speeds and cutting speeds which extend right up to the HSC range.



Effect of radial play on cutting speed

1. Structural diagram of self-adjusting floating holder



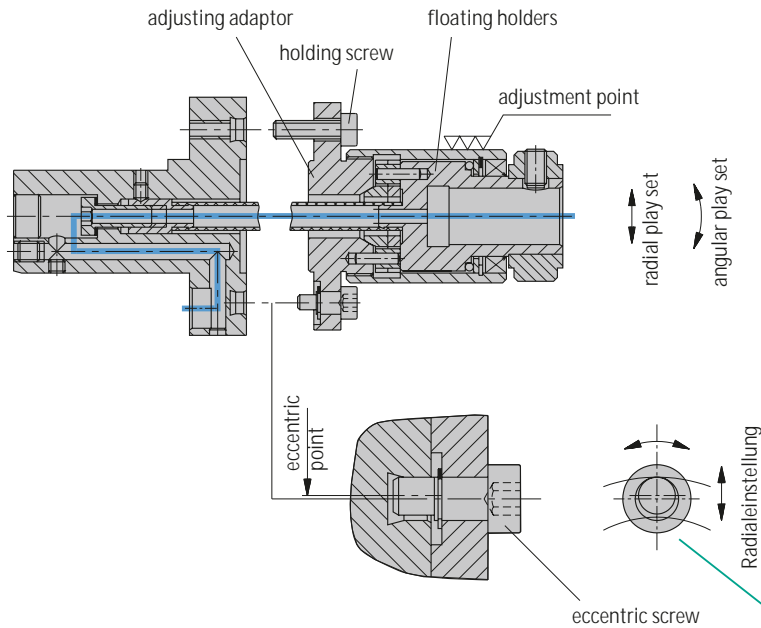
The combination of floating holder and self-adjusting holder also saves long machine stoppage times: instead of having to set up the whole machine, the spindle error can be set easily and directly on the self-adjusting floating holder using easily accessible eccentric screws. The new self-adjusting floating holder is especially suited for use on turning machines (adjusting slide guideways) and multi-spindle machines (adjusting tool holders). In general the MAPAL self-adjusting floating holders can be used wherever manual adjustment of an axial error is needed.

Clamping systems and clamping methods

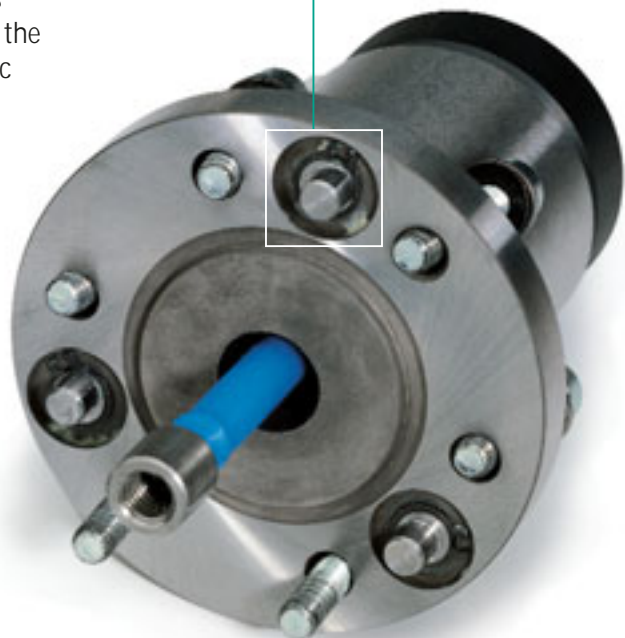
MAPAL floating holders

Self-adjusting floating holders

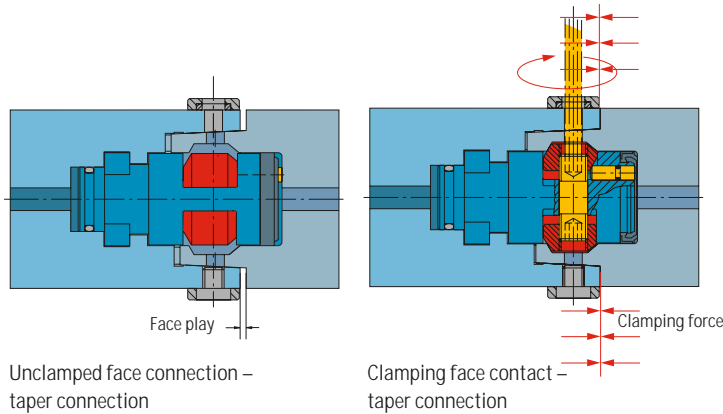
2. Function



The holders are supplied set to. If the radial play is not sufficient, loosen the holding screw and align the floating holder on the machine using the eccentric screws.

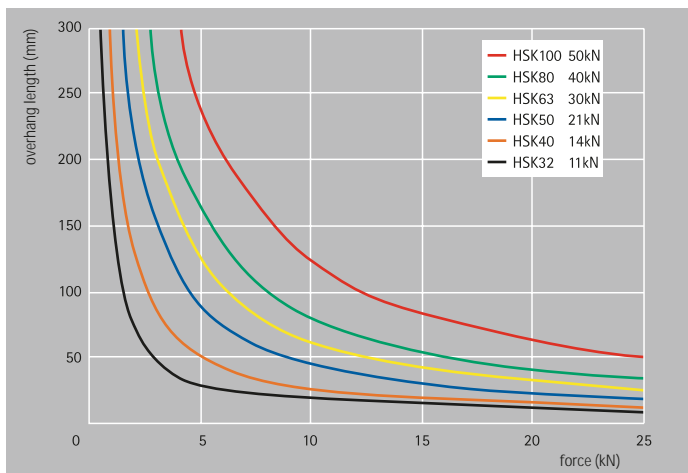
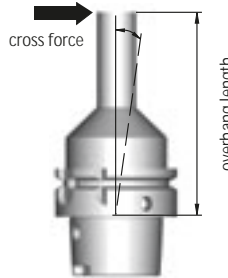
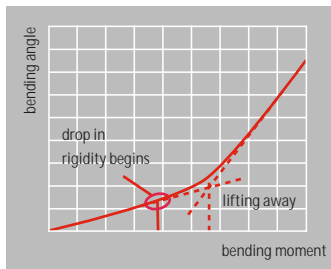


Main features of the KS Clamping cartridge



Clamping force and acceptable bending moments

The pre-stressed HSK connection draws its efficiency from a high clamping force effected on the face connection with force effected simultaneously on the taper shank. The tolerances for the HSK shank and holder lead to excessive forces. The excessive proportion of the clamping force is applied to the face connection and, together with the face connection diameter, this is responsible for absorbing high bending moments.



Because of the compact design of the clamping mechanism the MAPAL KS clamping system allows higher clamping forces than are recommended under the standard. This produces an extremely high load capacity from the bending moments and a high rigidity in the connection.

In practical use this means the absorption of higher cutting forces even with large overhangs plus better tool life and therefore maximum productivity. Depending on external stresses, the lower DIN clamping forces may also be sufficient.

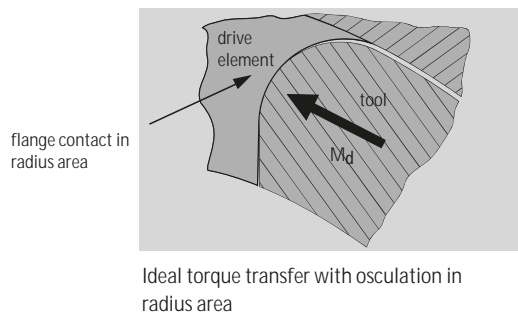
Permissible bending load for HSK connection when using KS cartridge

Nominal size HSK		32	40	50	63	80	100
Clamping diameter d_2	mm	24	30	38	48	60	75
Shank diameter (DIN 69893)	mm	4,5	6,8	11	18	29	45
Clamping force (MAPAL KS)	kN	11	14	21	30	40	50
Clamping moment	Nm	6	7	15	20	30	50
Lifting moment M_{lift}	Nm	150	260	460	625	1.005	1.400

Clamping force and lifting moment

The values shown in the diagram and the table are the result of extensive trials in research and in practice and provide an orientation for the user. Depending on the application in question, loads beyond this are also possible.

Main features of the HSK connection



Transferable torque

HSK connections transfer both positive and form locking torques. The high clamping force of the MAPAL KS clamping system leads to high friction forces on taper and face and as a result to correspondingly high friction moments. The form locking torque transfer is characterised by compact drive elements in the holders whose radii osculate exactly and thus allow maximum transferable values.

For tools in 16MnCr5 / 1.7131, the form locking torque transfer allows an extremely high maximum torque ($M_{d, max}$). When using higher quality materials, such as 1.6582 or 1.2343, these values rise dramatically.

Concentricity and repeatable accuracy

The accuracy of the HSK connection is the predominant feature of this standardised connection system. When used with the easy-to-operate KS clamping system, changeover and repeatable accuracies in the high precision range are possible which open up new perspectives for improving quality.

The repeatable accuracy of the HSK connection is $\leq 1 \mu\text{m}$ axially and $\leq 3 \mu\text{m}$ radially.

Spindle speed limits

The spindle speed limit for the HSK connection is defined by a number of factors. This means that the length of the supporting location taper, the excess between the taper shank and the taper holder, and also the clamping system used, have considerable effect.

For applications at high spindle speeds the spindle speed limit needs to be determined according to conditions. The values shown alongside can be taken as rough guidelines.

Nominal size HSK		32	40	50	63	80	100
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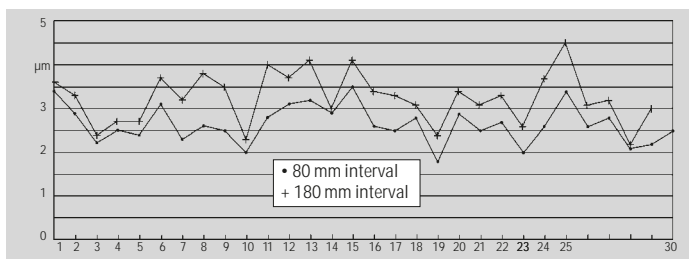
Clamping force	kN	11	15	21	30	38	50
Torque $M_{d,fric}$	Nm	35	57	115	250	450	900
Torque $M_{d,max}$	Nm	275	500	900	1.600	3.300	6.000

Torque transmission

Measurements	HSK 50 chuck			
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	1	2	3	4
1	0,002	0,004	0,003	0,004
2	0,005	0,003	0,004	0,004
3	0,003	0,002	0,002	0,003
4	0,001	0,003	0,003	0,002
5	0,002	0,005	0,002	0,003
6	0,001	0,003	0,002	0,002
7	0,004	0,001	0,003	0,001
8	0,004	0,002	0,005	0,005
9	0,003	0,004	0,004	0,004
10	0,005	0,005	0,005	0,004

Concentricity (shown in mm)



Repeatability measurement with KS chuck (HSK 63)

Nominal size HSK	Spindle speed limit [min^{-1}]
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32	50.000
40	42.000
50	30.000
63	24.000
80	20.000
100	16.000

Guideline values for spindle speed limits for HSK connections

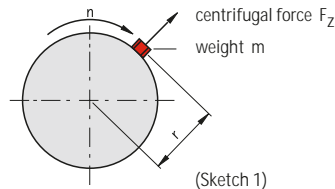
Definition, calculation, effect and limits of balancing

1. Imbalance and calculation of imbalance

Imbalance U is a measurement which defines what weight m is located on a specific radius r to the axis of rotation (see sketch 1). This has the "unmanageability" unit gmm and is calculated with formula A:

$$U = m \cdot r$$

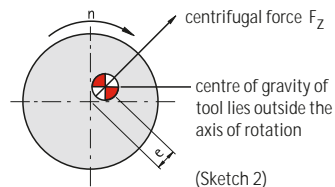
(Formula A)



With a rotating cutting tool, the imbalance is normally referred to this weight m_{WZ} and is calculated with an eccentric distortion e from its centre of gravity to the axis of rotation:

$$U = m_{WZ} \cdot e$$

(Formula B)



This imbalance is calculated on a balancing device and the weight to be balanced under Formula A automatically adjusted to the radius r on which the material compensation is carried out so that the tool will meet the customer requirement.

The permissible distance e_{zul} is produced from the balancing quality value G and the required spindle speed n using Formula C:

$$e_{zul} = G \cdot \frac{60}{2 \cdot \pi \cdot n}$$

(Formula C)

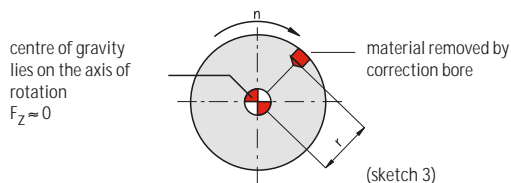
and is a good basis on which to estimate how difficult balancing will be and whether a request for balancing can be effectively carried out.

The permissible residual imbalance m_R from this is produced from

$$m_R = m_{WZ} \cdot \frac{e_{zul}}{r}$$

(Formula D)

As an example, using Formula C for a toolholder with a required balance of G 6.3 and a spindle speed n of 10.000 min^{-1} , the permissible distance $e_{zul} = 6 \mu\text{m}$. For a correction radius $r = 16 \text{ mm}$, with a tool weight of $m_{WZ} = 1 \text{ kg}$, using Formula D the permissible residual imbalance weight m_R is then 380 kg.



The imbalance with the rotating spindle produces a centrifugal force F_z which, if the imbalance is too great, can have a negative effect on the machining process and/or the life of the spindle bearing.

The centrifugal force F_z develops linearly with the imbalance and quadratically with spindle speed n using Formula E:

$$F_z = U \cdot \omega^2 = U \cdot (2 \cdot \pi \cdot n)^2$$

(Formula E)

To avoid these centrifugal forces, compensating bores and surfaces are normally produced on tool holders and tools, as a result of which the centre of gravity is shifted in the direction of the axis of rotation and the centrifugal force reduced accordingly (see sketch 3)

The balancing quality G is calculated from

$$G = e \cdot \omega = \frac{U}{m} \cdot \frac{2 \cdot \pi \cdot n}{60}$$

(Formula F)

2. Balancing limits

The purpose of balancing a tool holder (with tool) must be to ensure sufficient balance for the application in question. This always means a compromise between the technical feasibility and the technical and economic practicalities.

In general a requirement to balance is both unrealistic and also unfeasible if the permissible distance e_{zul} which this produces is less than the radial clamping accuracy for the tool holder used.

For the hollow taper shank (HSK), as the currently most accurate connection, this limit is $e_{min} \geq 2 \mu\text{m}$. With this value, using Formula B for a tool holder with a clamped tool (total weight 1,340 g), this produces a possible, and not influential, imbalance of 2.68 gmm and, using Formula F at a spindle speed of, for example, $30,000 \text{ min}^{-1}$, the best possible balance of G 6.3.

The same clamping accuracies/inaccuracies which occur with use on the machine tool spindle also apply of course to the balancing device, and as a result a lower residual imbalance and a better balancing quality cannot be reproduced.

The measuring accuracy of balancing devices as used in the tool industry must be taken into account when considering these limits. With a display sensitivity of 0.5 gmm for a high quality balancing device this means a further measuring uncertainty because of the shift in centre of gravity of $0.5 \mu\text{m}$ and with regard to the balancing quality of ΔG at $30,000 \text{ min}^{-1}$ (tool weight 1,340 g).

3. Balancing chucks for cylindrical shanks Form HB and HE

In these chucks standard tools such as drills and milling cutters are used which, because of their clamping surface(s) have an integral imbalance. If the tool holders for these tools are then balanced without taking this imbalance into account, the overall imbalance of the tool is transferred to the unit produced by the tool holder + tool when assembled.

For this reason, to balance the tool holder correctly either a shank must be clamped on or the imbalance in question 'contained' on the screw side. The material for the tool to be held (usually HSS or carbide) is therefore of great significance because of the density specific to this.

If the tool material is either not known or varies, these tool holders can be balanced as a 'fictitious' material whose theoretical density of 11.2 g/mm³ lies exactly between that of steel (7.8 mm³) and carbide (14.6 g/mm³). This means the possible deviation for the user from the free choice of tool material normally required is only half as great as if the balancing were to be either for steel or carbide.

With regard to the general balance limits which are generally to be applied for such tool holders, the clamping accuracy of the cylindrical shank in the location bore also needs to be taken into account.

Example

Tool 25 mm \varnothing / 370g

DIN tolerances: bore H5 produces \varnothing tolerance
0/+9 μm

shank h6 produces \varnothing tolerance
0/-13 μm

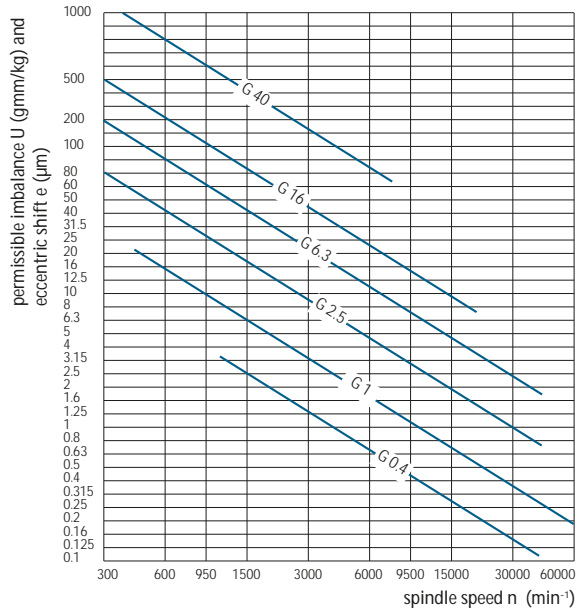
⇒ maximum radial offset 11 μm

For the whole tool being observed (tool holder + tool = 1.340 g), using Formula F for a spindle speed of 8,000 min⁻¹, a possible drop in the balance quality is produced of Δ G 2.5. The clamping accuracy for the HSK hollow taper shank produces a further uncertainty of Δ G 1.68.

The overall result in the case of these tool holders can only be that requirements below G 6.3 are hardly practicable.

In certain cases it may be necessary to balance tool holder and tool together. Clear limits can only be defined, however, by taking the type of tool, overhang length and machine/spindle design into consideration.

The diagram show below (to DIN/ISO 1940-1) shows, for balance values G on a balancing weight of 1 kg, the permissible standardised residual imbalance U and the permissible radial shift in the centre of gravity e in relation to the spindle speed n .



4. Formula symbols, units and formula

Symbols	Units	Formula	Description
e	μm	$e = \frac{U}{m_{WZ}}$	eccentric shift
e_{zul}	μm	$e_{zul} = G \cdot \frac{60}{2 \cdot \pi \cdot n}$	permissible distance
F_Z	N	$F_Z = U \cdot \omega^2$	centrifugal force
G	mm/s	$G = e \cdot \omega$	balancing quality
m	g		weight
m_R	g	$m_R = m_{WZ} \cdot \frac{e_{zul}}{r}$	permissible residual imbalance weight
m_{WZ}	g		tool weight
n	min ⁻¹		spindle speed
r	mm		radius
U	gmm	$U = m \cdot r = m_{WZ} \cdot e$	imbalance

5. Fine balancing

MAPAL chucks are balanced as standard with at least G6.3 at 3,000 min⁻¹. On request specific clamping devices can also be fine balanced (see relevant notes on table pages)

For this the order numbers have an "F" added.

Example:

Chuck for cylindrical shanks with lateral clamping surface, location shank HSK-A 63, clamping diameter 12 mm.

Order No. with standard balancing G 6.3 at 3,000 min:
MN5083-08-K

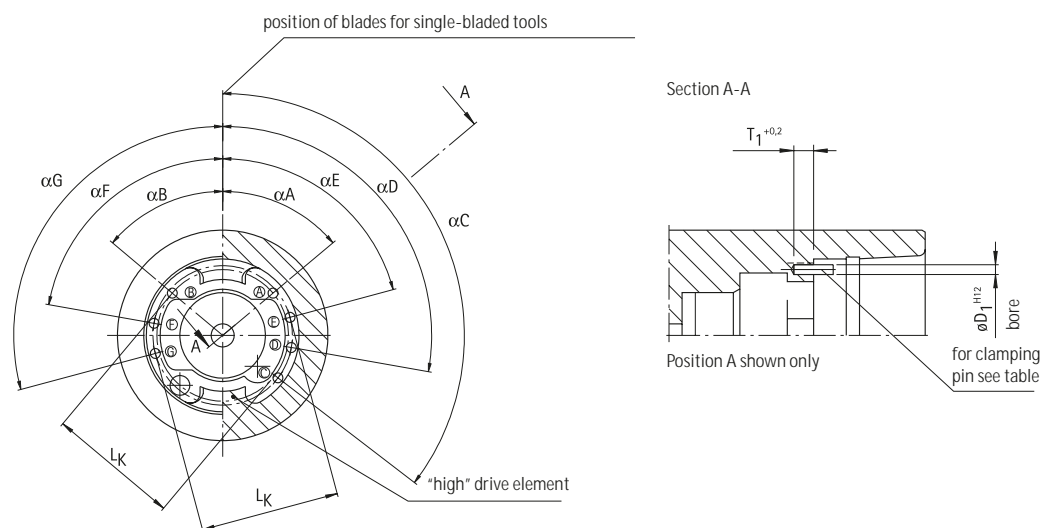
Order No. in fine balanced version:
MN5083-08-KF

Security system for identifying hollow taper shanks

On special machines multi-spindle boring heads are frequently used. A large number of spindles are often kept in a very tight space. To prevent operator error when changing tools, the DIN 69894 security system has been developed for hollow taper

shanks. With this a tool is clearly allocated to a specific spindle by means of additional pins in the tool spindles and slots at the end of the HSK shank.

Security system for tool spindles:

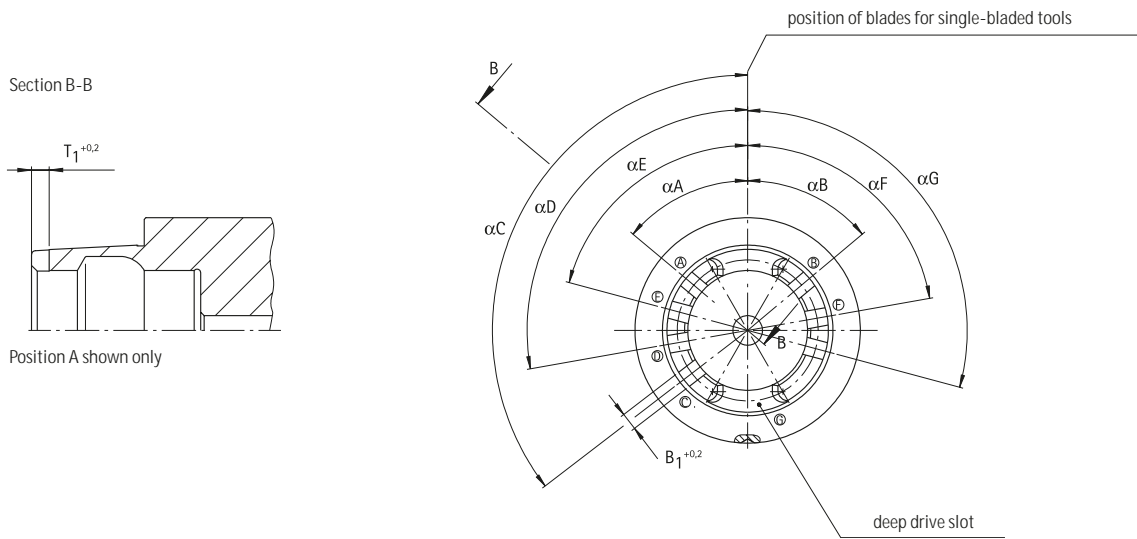


Position HSK	Ⓐ α A	Ⓑ α B	Ⓒ α C	Ⓓ α D	Ⓔ α E	Ⓕ α F	Ⓖ α G	D ₁	T ₁	L _K	Clamping pin
32	50°	50°	127,5°	100°	75°	80°	105°	1,5	3	As selected by the manufacturer	DIN 1481-1,5x6
40	52,5°	52,5°	127,5°	100°	75°	80°	105°	2	3		DIN 1481-2x6
50	55°	55°	125°	100°	75°	80°	105°	2,5	3		DIN 1481-2,5x6
63	60°	60°	120°	105°	75°	75°	105°	3,5	4		DIN 1481-3,5x8
80	60°	60°	120°	105°	75°	75°	105°	4,5	5		DIN 1481-4,5x10
100	45°	45°	135°	105°	75°	75°	105°	4,5	7		DIN 1481-4,5x12
125	45°	45°	135°	105°	75°	75°	105°	4,5	7		DIN 1481-4,5x12
160	45°	45°	135°	105°	75°	75°	105°	4,5	7	DIN 1481-4,5x12	

= Recommended

Security system for identifying hollow taper shanks

Security system for identifying hollow taper shanks:



Position HSK	Ⓐ α A	Ⓑ α B	Ⓒ α C	Ⓓ α D	Ⓔ α E	Ⓕ α F	Ⓖ α G	D ₁	T ₁
32	50°	50°	127,5°	100°	75°	80°	105°	2,5	2,5
40	52,5°	52,5°	127,5°	100°	75°	80°	105°	3	2,5
50	55°	55°	125°	100°	75°	80°	105°	3,5	2,5
63	60°	60°	120°	105°	75°	75°	105°	4,5	3,5
80	60°	60°	120°	105°	75°	75°	105°	5,5	4,5
100	45°	45°	135°	105°	75°	75°	105°	5,5	5
125	45°	45°	135°	105°	75°	75°	105°	5,5	5
160	45°	45°	135°	105°	75°	75°	105°	5,5	5

= Recommended

All MAPAL clamping devices and HSK adaptors can be supplied with this security system.

For this the letter "V" is added to the order number. In addition the position is clearly indicated by the appropriate letter.

Order examples:

Hydraulic chuck with security system on the adaptor side in position B for nominal size MN5165-08-KF:

MN5165-08-KFV-B

Collet chucks with security system on the adaptor side in position A and position C for nominal size MN5140-07-K:

MN5140-07-KV-AC

Setting and handling notes

KS Clamping cartridges

1. Direct mounting of KS Clamping cartridge on the spindle, chuck or adaptor

a) Using an assembly key



1. Insert clamping cartridge into the spindle or into the adaptor.



2. Place box spanner on the clamping cartridge.



3. Rotate in clockwise direction until the nose of the cartridge engages on the clamping pin.

b) Using KS wrench



1. Open jaws on wrench by pressing the round button and insert the clamping cartridge.



2. Insert the clamping cartridge into the spindle or adaptor and rotate the wrench clockwise until the nose of the cartridge engages on the clamping pin.



3. With the cartridge is engaged there must be play between the cartridge and pin.

Setting and handling notes KS Clamping cartridges

2. Fitting the KS Clamping cartridge



1. Clamping jaw seating on basic body, clamping angle on jaws and threaded spindle are lightly greased. Recommended grease: METAFLEX anti-friction metal paste.



2. Screw threaded spindle into the clamping jaw with the ejector angle by approx. one turn.



3. Insert clamping jaw with threaded spindle into the basic body from side of the bore for the ejector pin.



4. Also screw second jaw into the threaded spindle by approx. one turn.



5. By turning the threaded spindle with a key both jaws are moved inwards.



6. Check the threaded spindle's seating – this must be exactly central between the jaws.



7. Press on sealing ring with soft sealing lip forwards on the face side.



8. Pull on O-ring.



9. Insert pressure pin into bore.

Setting and handling notes

KS Clamping cartridges

3. Starting torques for clockwise/anti-clockwise screw on KS Clamping cartridge for clamping tool

HSK size	32	40	50	63	80	100
Max. starting torque [Nm]	6	7	15	20	30	50
Key width	3	3	4	5	6	8

4. Notes on using the KS clamping system

In using spindles or adaptors which are fitted with a clamping cartridge and are being used without a tool, a cap should be used in every case. This will protect the system and the user and prevent contamination.

When using tools with low radial stress, e.g. in drilling and reaming operations, it is acceptable to fall below the maximum starting torque by approx. 25 %.

5. Maintenance and care

With every tool change the taper should be cleaned using a taper cleaner.

The Clamping cartridge should be greased again after comparatively long use. The amount of time between applications depends on the frequency of the tool change, the type of operation and the coolant. However, re-greasing should be carried out at least once every six months.

Setting and handling notes KS adaptor flanges

1. Fitting and aligning the KS adaptor flange with radial alignment



1. Clean taper and faces of adaptor flange and adaptors.



2. Insert adaptor flange. Tighten holding screw to 50 % of the specified starting torque (see table on page 214).



3. Clean taper and face of test arbor or tool.



4. Insert test arbor or tool and secure with gripper screw.



5. Bring the dial indicator into position on the concentricity check point. With MAPAL tools alignment can also take place on the HSK collar. Locate the highest measurement point and bring dial indicator to zero.

Setting and handling notes KS adaptor flanges



6. Roughly align adaptor flange (approx. 0.01 mm). Release the adjusting screw each time this is activated.



7. Set concentricity with adjusting screw. Also release the adjusting screw each time this is activated. Repeat the process until the concentricity error is $< 3 \mu\text{m}$.

8. Tighten gripper screw over cross and apply starting torque (see table). After the full starting torque has been reached, check radial alignment again and adjust if necessary. Apply adjusting screw lightly.

Radial alignment can also be carried out with measuring probes. For this the probes are positioned on the adaptor flange taper.

Withdrawal torques

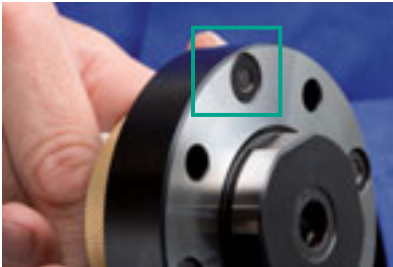
Nominal size	Module diameter	Gripper screw	Starting torque
HSK 32	60	DIN 912 – M5x16 – 12.9	8,7 Nm
HSK 40	70	DIN 912 – M6x20 – 12.9	15 Nm
HSK 50	80	DIN 912 – M6x20 – 12.9	15 Nm
HSK 63	100	DIN 912 – M8x25 – 12.9	36 Nm
HSK 80	117	DIN 912 – M8x25 – 12.9	36 Nm
HSK 100	140	DIN 912 – M10x30 – 12.9	72 Nm

As a basis for the maximum starting torques for cylindrical screws to DIN 912, the general DIN standard for rigidity class 10.9 applies.

MAPAL only uses cylindrical screws to DIN 912 with rigidity class 12.9.

Setting and handling notes KS adaptor flanges

2. Fitting and aligning KS adaptor flanges and MAPAL modular adaptors with radial and angular alignment



1. Clean faces of adaptor flange and adaptor (see page 213). In doing so check that the face of the alignment screw does not protrude beyond the face of the adaptor flange.



2. Insert adaptor flange. Position gripper screw.



3. Clean taper and face of test arbor or tool extremely carefully. Insert test arbor or tool.



4. Bring the dial indicator into position at the concentricity check point. With MAPAL tools alignment can also take place on the HSK collar. Locate the highest measurement point and bring dial indicator to zero.
For procedure see page 214.



5. For angular alignment the dial indicator is positioned at the uppermost checking point or approx. 100 mm from the connection. Carry out angular alignment using the alignment screws. Do **not** loosen the alignment screws after this has been done.

6. After the angular alignment has been set to $< 3 \mu\text{m}$, check the radial alignment at the concentricity checkpoint on the collar again and adjust if necessary. If the radial alignment needs to be adjusted, the angular alignment should be checked again afterwards.

Notes

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HFS 920R	35	MN1160	101	MN5025	58	MN5194	47	MN5829	50-51	PH 301	130
HFS 921	34	MN1161	101	MN5026	58	MN5195	47	MN5830	27	PH 302	130
HFS 921R	35	MN1162	101	MN5030	59	MN5196	47	MN5831	27	PH 305	131
HFS 940	60	MN1163	101	MN5031	59	MN5197	47	MN5832	27	PH 306	131
HFS 940R	61	MN1165	101	MN5032	59	MN5198	47	MN5833	27	PH 307	131
HFS 945	60	MN1167	101	MN5033	59	MN5199	47	MN5840	74	PH 310	128
HFS 945R	61	MN1169	101	MN5034	59	MN5300	66-67	MN5841	74	PH 311	128
HFS 959	77	MN1170	90	MN5040	55	MN5301	66-67	MN5842	74	PH 312	128
HFS 959R	78	MN1171	90	MN5041	55	MN5302	66-67	MN5843	74	PH 313	128
HFS 960	77	MN1172	90	MN5042	55	MN5303	66-67	MN5844	74	PH 314	128
HFS 960R	78	MN1173	90	MN5043	55	MN5304	66-67	MN5845	74	PH 315	128
HFS 964	77	MN1174	90	MN5044	55	MN5305	66-67	MN5846	74	PH 316	128
HFS 964R	78	MN1175	90	MN5045	55	MN5306	66-67	MN5847	74	PH 319	129
HFS 965	77	MN1176	90	MN5050	56	MN5307	66-67	MN5848	74	PH 320	129
HFS 965R	78	MN1177	90	MN5051	56	MN5308	66-67	MN5849	74	PH 321	129
MN1003	99	MN1178	90	MN5052	56	MN5309	66-67	MN5850	52	PH 322	129
MN1004	109	MN1179	90	MN5053	56	MN5335	68-69	MN5851	52	PH 323	129
MN1005	85	MN1180	91	MN5054	56	MN5336	68-69	MN5852	52	PH 324	129
MN1020	94	MN1181	91	MN5055	56	MN5340	70-71	MN5853	52	PH 325	129
MN1021	94	MN1182	91	MN5073	57	MN5341	70-71	MN5854	52	PH 326	129
MN1022	108	MN1183	91	MN5075	57	MN5360	72	MN5855	52	PH 327	129
MN1023	111	MN1185	91	MN5076	57	MN5361	72	MN5856	52	PH 328	129
MN1025	94	MN1300	102-103	MN5080	38-39	MN5362	72	MN5857	52	PH 330	127
MN1035	95	MN1301	102-103	MN5081	38-39	MN5363	72	MN5858	52	PH 331	127
MN1100	82-83	MN1302	102-103	MN5082	38-39	MN5364	72	MN5859	52	PH 332	127
MN1101	82-83	MN1303	102-103	MN5083	38-39	MN5365	72	MN5863	26	PH 333	127
MN1102	82-83	MN1304	102-103	MN5084	38-39	MN5366	72	MN5865	26	PH 334	127
MN1103	82-83	MN1305	102-103	MN5085	38-39	MN5367	72	MN5867	26	PH 335	127
MN1104	82-83	MN1306	102-103	MN5086	38-39	MN5368	72	MN5868	26	PH 336	127
MN1105	82-83	MN1307	102-103	MN5087	38-39	MN5369	72	MN5869	26	PH 337	127
MN1106	82-83	MN1308	102-103	MN5088	38-39	MN5390	73	MN5880	53-54	PH 350	133
MN1107	82-83	MN1309	102-103	MN5089	38-39	MN5391	73	MN5881	53-54	PH 351	133
MN1108	82-83	MN1310	104	MN5090	62	MN5392	73	MN5882	53-54	PH 352	133
MN1109	82-83	MN1311	104	MN5091	62	MN5393	73	MN5883	53-54	PH 360	134
MN1110	84	MN1312	104	MN5092	62	MN5394	73	MN5884	53-54	PH 361	134
MN1111	84	MN1313	104	MN5093	62	MN5395	73	MN5885	53-54	PH 362	134
MN1112	84	MN1314	104	MN5094	62	MN5396	73	MN5886	53-54	PH 411	126
MN1113	84	MN1315	104	MN5095	62	MN5397	73	MN5887	53-54	PH 412	126
MN1114	84	MN1316	104	MN5100	40-41	MN5398	73	MN5888	53-54	PH 413	126
MN1115	84	MN1317	104	MN5101	40-41	MN5399	73	MN5889	53-54	PH 414	126
MN1116	84	MN1318	104	MN5102	40-41	MN5510	92	PH 200	124	PH 415	126
MN1117	84	MN1319	104	MN5103	40-41	MN5511	93	PH 201	124	PH 421	126
MN1118	84	MN1320	105	MN5104	40-41	MN5512	107	PH 205	124	PH 422	126
MN1119	84	MN1321	105	MN5105	40-41	MN5514	110	PH 206	124	PH 423	126
MN1120	87-88	MN1322	105	MN5106	40-41	MN5520	28	PH 210	125	PH 424	126
MN1121	87-88	MN1323	105	MN5107	40-41	MN5521	30	PH 211	125	PH 425	126
MN1122	87-88	MN1324	105	MN5108	40-41	MN5522	32	PH 215	125		
MN1123	87-88	MN1325	105	MN5109	40-41	MN5523	29	PH 216	125		
MN1124	87-88	MN1326	105	MN5113	46	MN5524	31	PH 219	120		

A Review of MAPAL's Competence

Reaming and Fine Boring

From the wide range of single and twin-bladed reamers with guide pads, together with fine boring tools with guide pads and WP or HX blades, to the HPR high performance reamers combined with the MAPAL HFS® head fitting system for exact concentricity and accurate changeover – to give you a general view of our complete knowledge and experience in precision machining bores.

PCD Tools

For pre-machining and finish machining, MAPAL also offers an extensive programme of precision tools with fixed PCD (polycrystalline diamond) blades. This includes precision gun boring tools plus circular and end milling tools. The programme of face milling heads from the PowerMill and EcoMill series is characterised by simple, sturdy design and rapid, accurate blade setting.

ISO Tools

This aspect of MAPAL competence is made up of special tools with ISO elements for gun boring and milling. This includes precision ground blades in the widest variety of cutting materials and coatings. The use of MAPAL's tried and tested adjustment system ensures that the blades are accurately matched to the task. MAPAL offers particular knowledge and experience in tangential technology.

Generating Slide Tools

Generating slide tools offer a high potential for rationalisation and optimisation on special machines and machining centres. In addition to the conventional facing heads, MAPAL also supplies EAT and LAT performance-enhanced actuating systems for generating slide tools. MAPAL TOOLTRONIC® tools with their extraordinary range of functions are the latest development.

Drilling

Yet another area is the product programme for drilling. MAPAL offers the right tool concept for every task, whether for machining aluminium, steel or cast iron, hard machining or dry machining or for use in HSC areas. Specially developed coatings and PCD blades complete the broad-based drilling programme.

Clamping

MAPAL's modern clamping systems, in conjunction with MAPAL's tried and tested reaming and fine boring tools, guarantee maximum productivity and economy. Whether HSK, ISO or HFS®, these high-precision connections and interfaces provide the concentricity and changeover accuracy essential to modern production.

Customer Services

Project planning, maintenance, management and optimisation – the complete CTS® service package from MAPAL will accompany you from process design to permanent process optimisation and will ensure optimum and cost-saving use of your tools with the best possible

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