

KOYEMANN Floating Tools Power Reamer



The KOYEMANN Floating Principle

Reaming has been used for fine machining bores with excellent results from the very start of cutting technology. One of the main reasons lies in the wide range of uses for this method on all kinds of machines with both rotating or stationary tool.

In most applications reaming is the final operation and is intended to produce bores to a high level of dimensional accuracy and a good surface finish. With conventional reaming tools this task is not always easy to fulfill. Oval oversize, taper widening, ridges, chatter marks, sticking because of over-heating or jams and actual blade fracturing are everyday problems which repeatedly produce scraps.

When producing close-fit bores, the problem frequently occurs that the axis of the machining tool does not match the axis of the bore to be produced.

There are various reasons for this problem in aligning the axes, depending on the machining method:

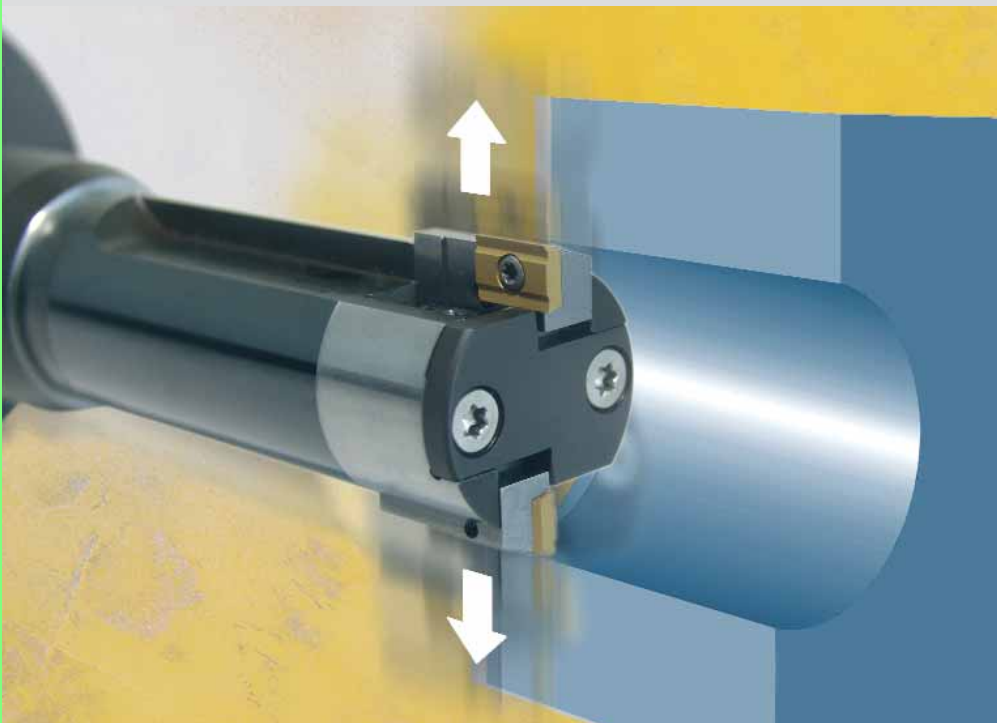
- Between producing the rough bore in the correct position and finish machining the close-fit bore, the machining position of the workpiece is changed either once or several times. The positional errors which this causes can only be minimised at considerable expense.
- The workpiece to be used may seem sufficiently rigid for the purpose but is not enough for the operation. The repeatable accuracy of the machine when tools are changed is no longer at optimum level because of the wear which has been produced.

In all these cases producing close-fit bores with rigid tools is difficult and time consuming. The best solution in these cases is a specially designed tool

which follows the correct alignment of the bore without any forces being applied to the walls of the bore due to axial alignment errors.

Tools with floating chucks, for whose use the total mass of the reamer and the moveable chuck section needs to be moved into the bore axis as quickly as possible, are consequently only suitable for rotating use with certain limitations. The self-centring, floating KOYEMANN reaming tools, however, meet these demands ideally for a close-fit bore which is accurate in position and form and has the highest surface quality. The reaming cartridge, which is set to the required fit to high precision, with two cutter bodies lying opposite one another, follows the bore axis of the workpiece.

The reaming blade geometry means that the cutting forces produced constantly centre the radially moving reaming cartridge in the bore axis. The resulting close-fit bores meet the highest quality requirements and provide particularly high production reliability.

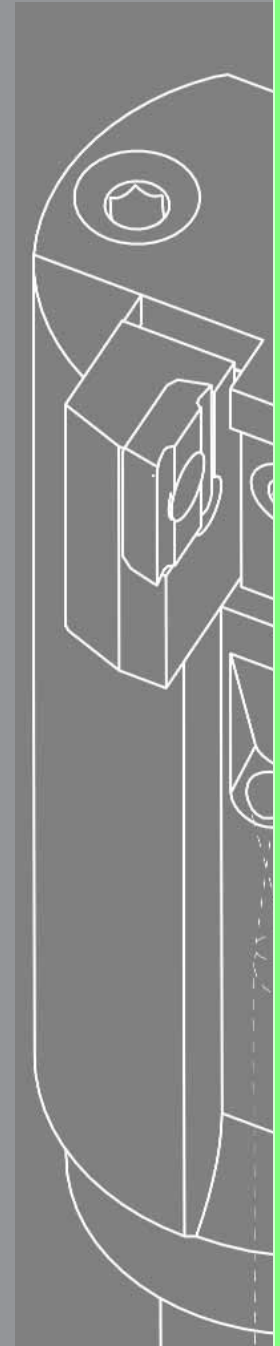


KOYEMANN Floating Principle

- Self-centering
- Wide adjustment range
- Adjustment of axial alignment errors
- Replaceable inserts
- Extremely easy adjustment
- Through holes and blind bores with the same tool
- For stationary and rotating applications



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The Power Reamer

The KOYEMANN Power Reamer is the result of a chain of developments over many years and represents a pioneering advance in the reaming tool sector.

The Power Reamers' special design features allow them to achieve cutting speeds for rotating tools which were not thought possible for floating reaming tools.

The principal features are:

- the allocation of the cutting edges in the central plane between the sliding planes for the reaming cartridge
- the optimised directing of cutting forces onto the reaming cartridge's supports
- the minimised weight of the radially moving reaming cartridge resulting from its lightweight construction
- the central coolant supply directly onto the cutting edges, with a permissible coolant pressure of up to 40 bar.

One particularly important aspect for a good working result is easy entry by the tool into the bore. With the Power Reamer this is achieved by means of the new patented blade design. Guiding surfaces are ground in front of the main cutting edges on the inserts. These are non-cutting chamfers which to a large extent centre the tool as soon as it enters the bore. The main cutting edges are then engaged and these take up the remaining difference in cutting pressure to produce the final centring.

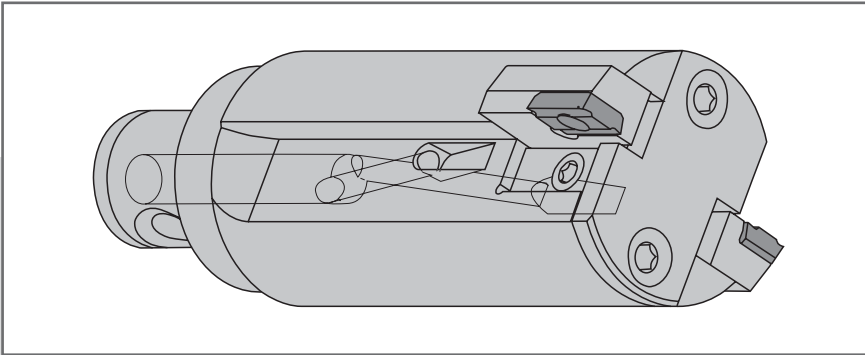
The design of the Power Reamer allows machining to be carried out with the same tool both for through holes (including shoulders) and blind bores. Unlike other floating tools this can be used for machining bores with axial symmetric interrupted cuts if the axial length of the interrupted cut does not exceed 6 mm. The Power Reamer machines bore depths of up to eight times the diameter.

The KOYEMANN Power Reamer is fitted with indexable inserts and, for sizes P 19 – K 25 to P 23 – K 25 with single bladed reaming inserts. These inserts can be supplied for all current work-piece materials and are easy to order using an insert reference code. Adjustment of the angular position of the cutting edge ready for operation is carried out by tightening the holding screw.

Compared to any adjustable or re-adjustable tools from competitors, the Power Reamer is particularly outstanding because it is set to the working diameter to high precision away from the machine and in the simplest possible way, using an extremely easy-to-use setting gauge. Adjustment of floating play is not required as this is automatically aligned during dimensional adjustment.



Features of the Power Reamer



- Maximum cutting speeds for stationary and rotating applications
- No support pads up to 8 x D
- Replaceable inserts
- Indexable inserts for all current materials
- Extremely easy, high precision dimensional adjustment away from the machine using setting gauge
- Minimum non-productive machine time due to simple changing procedure for reamers which have already been set
- Wide adjustment range
- Through holes and blind bores with the same tool
- No floating holder required
- Adjustment of axial alignment errors up to 0.05 mm
- Guiding surfaces for optimum bore entry
- Automatic adjustment of radial play
- Self-centring of radially moving reaming block
- Minimised imbalance for rotating application
- High productivity
- High production reliability

Efficiency of Power Reamer

The Power Reamer is equally suited for use as a **rotating tool** on machining centres and boring mills and as a **stationary tool** on any kind of turning machines. Its machining values are determined by the application conditions. Where there is an uncomplicated machine spindle, short overhang length for the tool, rigid workpiece and optimum workpiece clamping set-up, the following cutting speeds can be achieved:

Grey cast iron: 200 m/min
Steel: 300 m/min
Light metal: 500 m/min

Achievable quality:
Surface quality up to $R_z 2 \mu\text{m}$
Tolerance IT6
Roundness 3 μm

Feed rates lie between:
0.25 and 0.6 mm/rev.

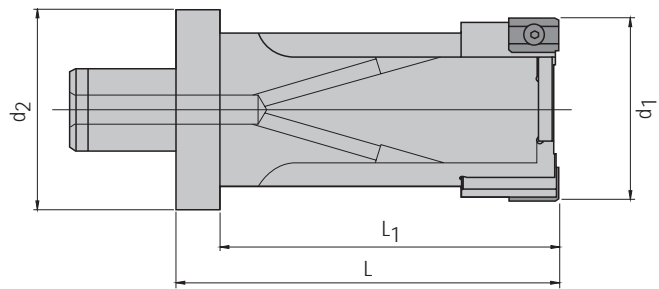
The recommended allowance is:
0.2 mm +/- 0.1 mm in the diameter

One particular strength of the Power Reamers lies in the facility to use them for machining to fit even under difficult conditions, e. g.

- on machines whose spindles no longer have the necessary accuracy for single-blade machining to fit because of wear
- on unstable workpieces which are liable to vibrate and which present particular problems for single-blade machining to fit.

However, the machining values may need to be reduced for applications under difficult conditions.

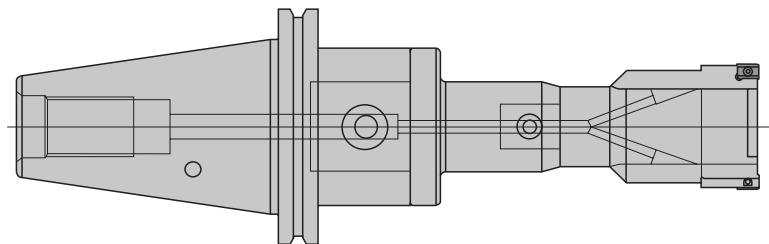
Dimensional table for Power Reamer



Machining diameter d_1 from – to mm	Reamer without indexable insert Reference code	Order No.	d_2 mm	L mm	L_1 mm	Weight kg	Indexable insert Reference code
19 – 21	P 19 – K 25	50025736	25	85	77	0,167	
21 – 23	P 21 – K 25	50025737	25	93	85	0,207	▶ PCGX080210–...*
23 – 25	P 23 – K 25	50025738	25	101	93	0,262	
25 – 28	P 25 – K 23	50025739	23	65		0,207	
28 – 32	P 28 – K 25	30175170	25	65		0,248	
32 – 36	P 32 – K 25	50025751	25	70		0,337	
36 – 42	P 36 – K 25	50025752	25	70		0,394	
42 – 48	P 42 – K 32	50025753	32	75		0,611	
48 – 56	P 48 – K 32	50025754	32	80		0,772	
56 – 64	P 56 – K 40	50025755	40	85		1,220	▶ PCGT080210–...
64 – 74	P 64 – K 50	50025756	50	90		1,718	
74 – 84	P 74 – K 63	50025757	63	95		2,697	
84 – 98	P 84 – K 63	50025758	63	105		3,223	
98 – 112	P 98 – K 63	50025759	63	110		4,099	
112 – 130	P 112 – K 63	50025760	63	125		5,373	
130 – 148	P 130 – K 63	50025761	63	125		6,573	

*insert with single cutting edge

Order example for Power Reamer



System elements	Reference code	Order No.
Reamer	P 48 – K 32	50025754
Indexable insert	PCGT080210–CGKRW–A	50025765
Reducing element	HRK 32–60–K 63	10077340
Basic holder	HK 63–56–50DIA	10077923

Indexable inserts for Power Reamer

Machining diameter	Reference code	Carbide uncoated AHS-K	Carbide coated CGKRW-A	Cermet uncoated CRS-C	Tensile strength (N/mm ²)	Material	
19 – 25 mm	PCGX080210	50025763	50025762	50025764	P R _m 340-500 R _m 500-800 R _m 750-1100	Structural, free cutting and case hardened steel	
	PCGX080210		50025762	50025764		R _m 500-800	Structural, free cutting and case hardened steel
	PCGX080210		50025762	50025764		R _m 750-1100	Nitride steel, heat treated steel
	PCGX080210			50025764		R _m 900-1300	High alloy steel
	PCGX080210		50025762	50025764	M R _m 750-1100	Stainless steel	
	PCGX080210	50025763	50025762		K R _m 300-800	Spheroidal graphite cast iron	
	PCGX080210	50025763	50025762		R _m 150-500	Grey cast iron	
	PCGX080210	50025763			N	Aluminium alloys	

1st choice

Machining diameter	Reference code	Carbide uncoated AHS-K	Carbide coated CGKRW-A	Cermet uncoated CRS-C	Tensile strength (N/mm ²)	Material	
25 – 148 mm	PCGT080210	50025767	50025765	50025766	P R _m 340-500 R _m 500-800 R _m 750-1100	Structural, free cutting and case hardened steel	
	PCGT080210		50025765	50025766		R _m 500-800	Structural, free cutting and case hardened steel
	PCGT080210		50025765	50025766		R _m 750-1100	Nitride steel, heat treated steel
	PCGT080210			50025766		R _m 900-1300	High alloy steel
	PCGT080210		50025765	50025766	M R _m 750-1100	Stainless steel	
	PCGT080210	50025767	50025765		K R _m 300-800	Spheroidal graphite cast iron	
	PCGT080210	50025767	50025765		R _m 150-500	Grey cast iron	
	PCGT080210	50025767			N	Aluminium alloys	

1st choice

Order example for indexable insert

Machining diameter Material	32 mm Aluminium alloy
Indexable insert	PCGT08210-AHS-K
Order No.	50025767

The modular KOYEMANN tool system

The modular tool system is particularly distinguished by high static and dynamic rigidity and the replaceable accuracy of the system components to within just a few microns. All modular system components are designed for internal coolant supply so that the coolant can be directed straight onto the cutting edge.

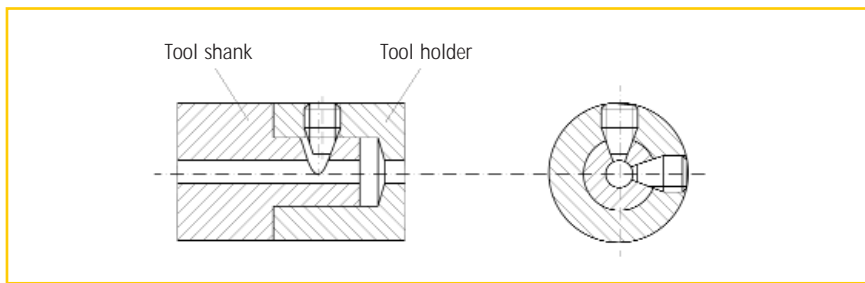
Because of the symmetrical construction of the system tools and the high dynamic rigidity of the modular con-

nection, the KOYEMANN system tools can also be used for high speed machining.

The connection point is formed by a shank with a flat annular surface and a cylindrical spigot and a tool holder with a cylindrical hole and a flat face. The spigot is provided with a tapered hole (or from connection size K 50 with two holes) in which conical threaded pins engage which are screwed into the holder. By tightening

the conical pins, tool holder and shank are clamped positively together. For connections with system diameter K 90, two additional key blocks are allocated to ensure good torque transmission.

One significant advantage when fitting the system parts is provided by the appropriate order reference codes for the modular system tools: the shanks and holders are each coded with the external diameters of the connections. The connection point on the workpiece side of the system tool is always shown on the left of the code, the connection on the machine side is always on the right. This is shown in context in the example below.

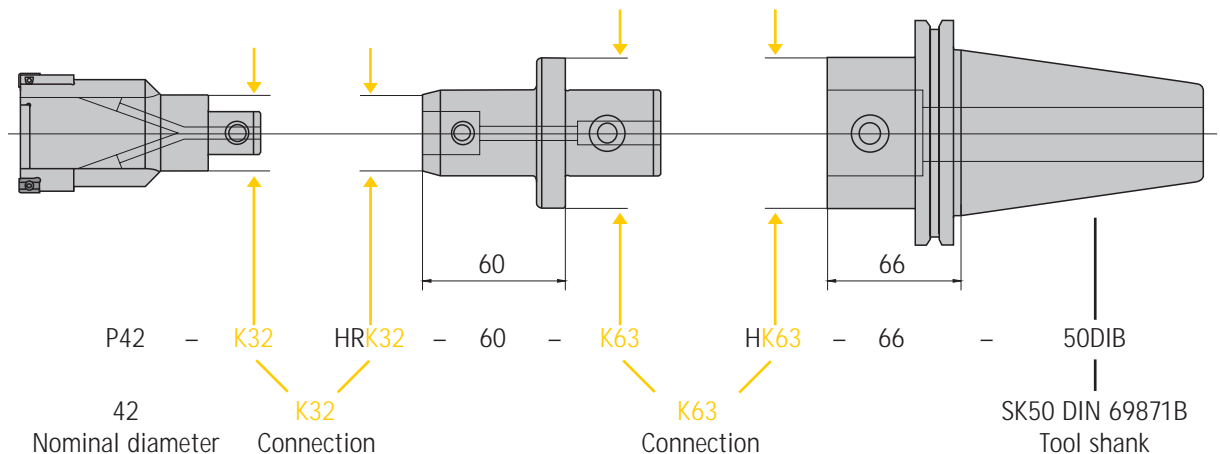


Example: A reaming tool type P consists of the following items:

- Indexable inserts: carbide or carbide coated and Cermet for optimum cutting of all current materials
- Reamer: for the relevant diameter range for holding indexable inserts
- Extensions: for adapting the tool to the relevant workpiece dimensions
- Reducing elements: where the connection for the tool is smaller than that for the basic holder
- Basic holder: as a connection between tool and the machine with more than 12 different tool shanks

The external diameter of the connection is part of the ordering code (shown in the example as K 32 and K 63), making it very easy to identify the combination options.

Reamer Reducing element Basic holder





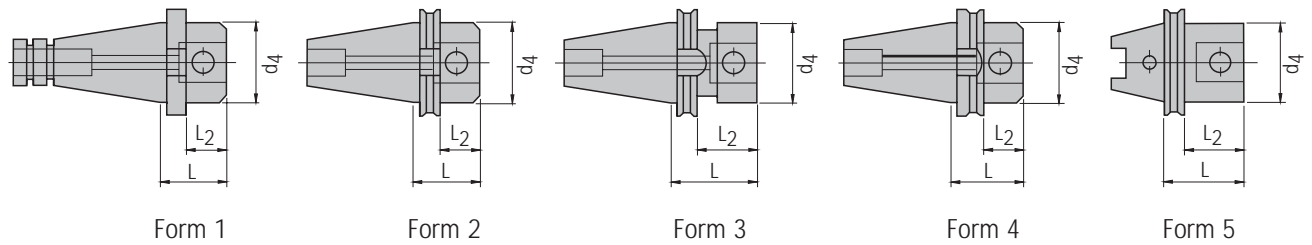
Modular System

Combination summary

Basic holder Reference code			Basic holder HK	Extensions HVK	Reducing elements HRK	Extensions HVK					
d ₄ mm	L mm	Taper									
HK 63	- 48	- 40									
HK 63	- 52	- 50					-K 23				
HK 63	- 52	- 50 VDA									
HK 63	- 52	- 50 MAK									
HK 63	- 56	- 50 DIA									
HK 63	- 64	- 40 BT					-K 25				
HK 63	- 65	- MK5									
HK 63	- 66	- 40 DIA									
HK 63	- 66	- 40 DIB									
HK 63	- 66	- 45 DIB									
HK 63	- 66	- 50 DIB									
HK 63	- 72	- 50 ANC									
HK 63	- 75	- 50 BT					-K 32				
HK 63	- 80	- 63 HSKA									
HK 63	- 80	- 100 HSKA									
HK 63	- 82	- 40 ANC									
HK 63	- 56	- C6									
HK 80	- 52	- 50									
HK 80	- 52	- 50 VDA	-K 50								
HK 80	- 56	- 50 DIA									
HK 80	- 66	- 50 DIB									
HK 80	- 72	- 50 ANC									
HK 80	- 75	- 50 BT									
HK 80	- 80	- 100 HSKA									
HK 80	- 56	- C6	-K 63								
HK 80	- 50	- C8	-K 80								
HK 90	- 60	- 50									
HK 90	- 65	- 60									-K 90
HK 90	- 75	- 50 BAT									
HK 90	- 75	- 50 DIA									
HK 90	- 75	- 50 DIB									
HK 90	- 100	- 100 HSKA									

Modular System

Basic holder with internal coolant supply

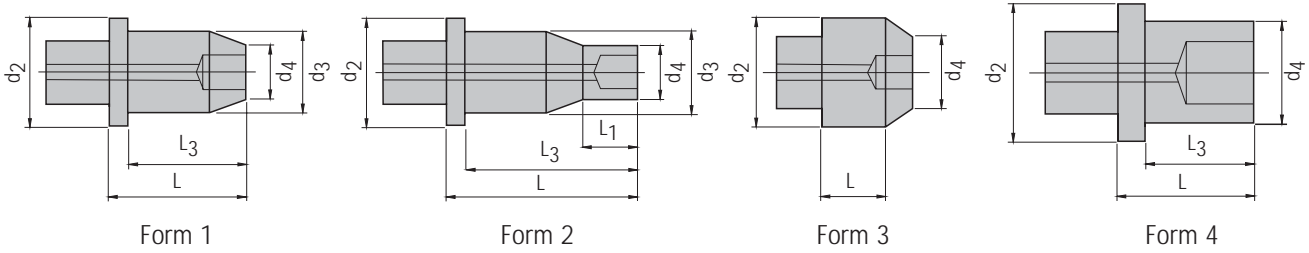


Basic holder Reference code			Form	Order No.	Execution	L ₂ mm	Coolant hole	Weight kg
d ₄ mm	L mm	Taper						
HK 25	- 30	- MK3		10077287	DIN 228 B*			0,4
HK 25	- 30	- MK4		10077288	DIN 228 B*			0,5
HK 32	- 35	- MK4		10077289	DIN 228 B*			0,7
HK 40	- 50	- MK4		10077290	DIN 228 B*			1,0
HK 40	- 50	- MK5		10077291	DIN 228 B*			1,4
HK 50	- 50	- MK4		10077292	DIN 228 B*			1,0
HK 50	- 50	- MK5		10077294	DIN 228 B*			1,8
HK 63	- 48	- 40	1	10077295	DIN 2080		X	1,3
HK 63	- 52	- 50	1	10077296	DIN 2080	35	X	3,2
HK 63	- 52	- 50 VDA	2	10077922	DIN 2080	35	X	3,1
HK 63	- 52	- 50 MAK	2	10077297	MAKINO	35	X	3,0
HK 63	- 56	- 50 DIA	2	10077923	DIN 69871 AD	35	X	3,1
HK 63	- 64	- 40 BT	3	10077924	MAS 403 BT		X	1,5
HK 63	- 65	- MK5		10077302	DIN 228 B*		X	2,2
HK 63	- 66	- 40 DIA	3	10077925	DIN 69871 AD		X	1,5
HK 63	- 66	- 40 DIB	3	10077926	DIN 69871 B*		X	1,5
HK 63	- 66	- 45 DIB	3	10077305	DIN 69871 B*	45	X	2,3
HK 63	- 66	- 50 DIB	4	10077927	DIN 69871 B*	45	X	3,8
HK 63	- 72	- 50 ANC	2	10077307	ANSI CAT M24	50	X	3,5
HK 63	- 75	- 50BT	4	10077308	MAS 403 BT	35	X	4,1
HK 63	- 80	- 63 HSKA	5	10077929	HSK-A**	60	X	1,6
HK 63	- 80	- 100 HSKA	5	10077928	HSK-A**	60	X	2,9
HK 63	- 82	- 40 ANC	3	10077311	ANSI CAT M16		X	1,7
HK 63	- 56	- C6		10077300	Coromant Capto		X	1,1
HK 80	- 52	- 50	1	10077313	DIN 2080	35	X	3,8
HK 80	- 52	- 50 VDA	2	10077314	VDI 2814 A	35	X	3,6
HK 80	- 56	- 50 DIA	4	10077315	DIN 69871AD	35	X	3,6
HK 80	- 80	- 100 HSKA	5	10077320	HSK-A**	60	X	2,5
HK 80	- 66	- 50 DIB	4	10077317	DIN 69871 B*	45	X	4,0
HK 80	- 72	- 50 ANC	3	10077318	ANSI CAT M24	50	X	4,0
HK 80	- 75	- 50 BT	4	10077319	MAS 403 BT	35	X	4,7
HK 80	- 56	- C6		10077316	Coromant Capto		X	1,3
HK 80	- 50	- C8		10077312	Coromant Capto		≈	1,9
HK 90	- 60	- 50	1	10077322	DIN 2080		X	4,0
HK 90	- 65	- 60	1	10077323	DIN 2080		X	11,6
HK 90	- 75	- 50 BT	2	10077324	MAS 403 BT		X	4,6
HK 90	- 75	- 50 DIA	3	10077325	DIN 69871 AD		X	4,4
HK 90	- 75	- 50 DIB	3	10077326	DIN 69871 B		X	4,2
HK 90	- 100	- 100 HSKA	5	10077321	HSK-A**		X	4,4

*Basic holders with taper to DIN 69871 B are supplied with threaded pins inserted in the collar and can be used as Form A/AD. To use as taper in Form B, the threaded pins must be removed. **The HSK basic holders are supplied without coolant hose.

Modular System

Reducing elements HRK with internal coolant supply

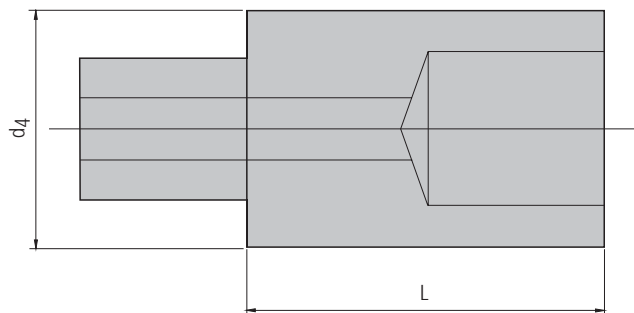


Reducing elements Reference code			Order No.	Form	d3 mm	L1 mm	L3 mm	Weight kg
d4 mm	L mm	d2 mm						
HRK 23	- 60	- K63	10077172	4			45	0,7
HRK 25	- 30	- K63	10077337	1	28		15	0,6
HRK 25	- 60	- K63	10077338	1	28		45	0,8
HRK 25	- 120	- K63	10077336	2	28	40	105	1,1
HRK 32	- 60	- K63	10077340	1	36		45	0,9
HRK 32	- 120	- K63	10077339	2	36	40	105	1,3
HRK 40	- 60	- K63	10077342	1	48		45	1,2
HRK 40	- 120	- K63	10077341	1	48		105	2,0
HRK 40	- 140	- K63	10077747	1	48		125	2,2
HRK 50	- 40	- K63	10077344	3				1,0
HRK 50	- 120	- K63	10077343	3				2,9
HRK 63	- 80	- K80	10078765	3				3,1

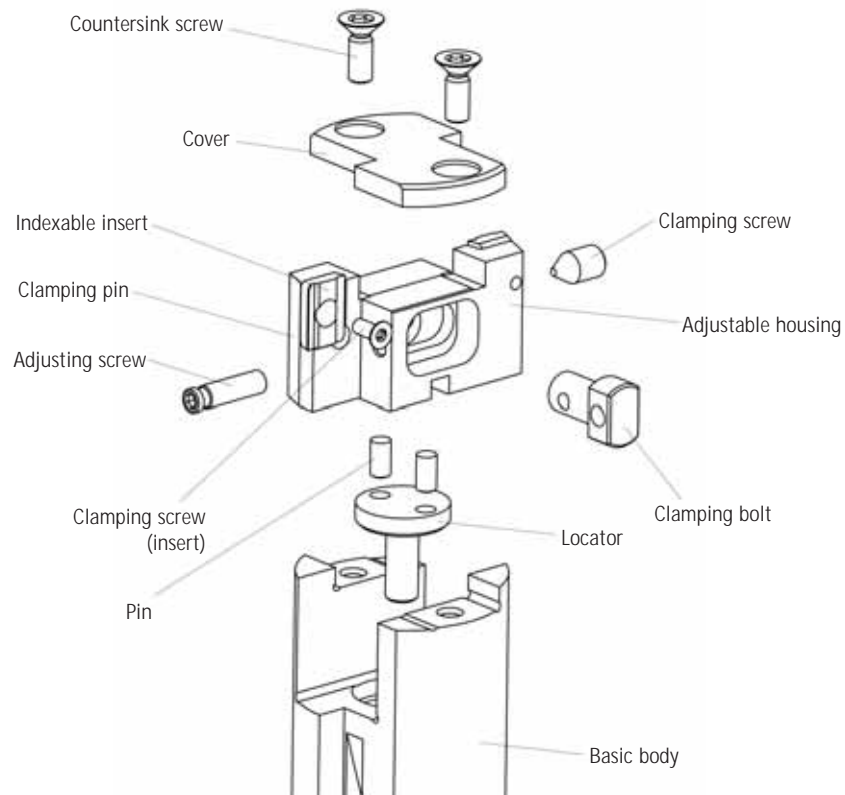
Modular System

Extensions HRK with internal coolant supply

Extensions Reference code		Order No.	Weight kg
d4 mm	L mm		
HRK 23	- 40	10077350	0,1
HRK 25	- 40	10077351	0,1
HRK 32	- 40	10077352	0,2
HRK 40	- 40	10077353	0,4
HRK 50	- 40	10077354	0,6
HRK 63	- 60	10077357	1,3
HRK 63	- 120	10077355	2,8
HRK 63	- 140	10077356	3,3
HRK 80	- 80	10077359	3,0
HRK 80	- 150	10077358	5,7



Spare parts for Power Reamer



Power Reamer Reference code	Countersink screw Order No.	Cover Order No.	Clamping screw Order No.	Clamping bolt Order No.	Adjusting screw Order No.	Clamping screw (insert) Order No.
P 19	10077505	10077510	10077496	10077525	10077478	10078785
P 21	10077505	10077511	10077496	10077525	10077478	10078785
P 23	10077505	10077512	10077496	10077525	10077478	10078785
P 25	10077506	10077513	10077497	10077526	10077479	10078785
P 28	10077506	10077514	10077497	10077526	10077480	10078785
P 32	10077506	10077515	10077497	10077526	10077480	10078785
P 36	10077506	10077516	10077498	10077526	10077481	10078785
P 42	10077506	10077517	10077498	10077526	10077481	10078785
P 48	10077507	10077518	10077499	10077527	10077482	10078785
P 56	10077507	10077519	10077500	10077527	10077482	10078785
P 64	10077507	10077520	10077500	10077527	10077483	10078785
P 74	10077507	10077521	10077501	10077527	10077483	10078785
P 84	10077509	10077522	10077502	10077528	10077484	10078785
P 98	10077509	10077523	10077503	10077528	10077484	10078785
P 112	10077509	10077523	10077503	10077528	10077485	10078785
P 130	10077509	10077524	10077504	10077528	10077485	10078785

Spare parts for Modular System

Basic holder				Clamping screw Order No.	Screwdriver Order No.	
d ₄ mm	Reference code		L mm			Taper
HK 25	-	30	-	MK3	10077486	10077346
HK 25	-	30	-	MK4	10077486	10077346
HK 25	-	Z40			10077486	10077346
HK 25	-	Z50			10077486	10077346
HK 32	-	35	-	MK4	10077487	10077346
HK 32	-	Z40			10077487	10077346
HK 32	-	Z50			10077487	10077346
HK 40	-	50	-	MK4	10077488	10077347
HK 40	-	50	-	MK5	10077488	10077347
HK 40	-	Z40			10077490	10077347
HK 40	-	Z50			10077490	10077347
HK 50	-	50	-	MK4	10077491	10077348
HK 50	-	50	-	MK5	10077491	10077348
HK 50	-	Z50			10077491	10077348
HK 63	-	65	-	MK5	10077492	10077349
HK 63	-	48	-	40	10077492	10077349
HK 63	-	52	-	50	10077492	10077349
HK 63	-	66	-	40DIA	10077492	10077349
HK 63	-	56	-	50DIA	10077492	10077349
HK 63	-	66	-	40DIB	10077492	10077349
HK 63	-	66	-	45DIB	10077492	10077349
HK 63	-	66	-	50DIB	10077492	10077349
HK 63	-	80	-	63HСКА	10077492	10077349
HK 63	-	80	-	100HСКА	10077492	10077349
HK 63	-	64	-	40BT	10077492	10077349
HK 63	-	75	-	50BT	10077492	10077349
HK 63	-	52	-	50VDA	10077492	10077349
HK 63	-	52	-	50MAK	10077492	10077349
HK 63	-	72	-	50ANC	10077492	10077349
HK 63	-	82	-	40ANC	10077492	10077349
HK 80	-	52	-	50	10077493	10077349
HK 80	-	56	-	50DIA	10077493	10077349
HK 80	-	66	-	50DIB	10077493	10077349
HK 80	-	80	-	100HСКА	10077493	10077349
HK 80	-	75	-	50BT	10077493	10077349
HK 80	-	52	-	50VDA	10077493	10077349
HK 80	-	72	-	50ANC	10077493	10077349

Extensions			Clamping screw Order No.	Screwdriver Order No.
d ₄ mm	Reference code			
HVK 23	-	40	10077494	10077346
HVK 25	-	40	10077486	10077346
HVK 32	-	40	10077487	10077346
HVK 40	-	40	10077490	10077347
HVK 50	-	40	10077491	10077348
HVK 63	-	60	10077492	10077349
HVK 63	-	120	10077492	10077349
HVK 63	-	140	10077492	10077349
HVK 80	-	80	10077493	10077349
HVK 80	-	150	10077493	10077349

Reducing elements				Clamping screw Order No.	Screwdriver Order No.	
d ₄ mm	Reference code		L mm			d ₂ mm
HRK 23	-	60	-	K63	10077494	10077346
HRK 25	-	30	-	K63	10077486	10077346
HRK 25	-	60	-	K63	10077486	10077346
HRK 25	-	120	-	K63	10077486	10077346
HRK 32	-	60	-	K63	10077487	10077346
HRK 32	-	120	-	K63	10077487	10077346
HRK 40	-	60	-	K63	10077490	10077347
HRK 40	-	120	-	K63	10077490	10077347
HRK 40	-	140	-	K63	10077490	10077347
HRK 50	-	40	-	K63	10077491	10077348
HRK 50	-	120	-	K63	10077491	10077348
HRK 63	-	80	-	K80	10077492	10077349

Screwdriver and key are always accessories.

Power Reamer machining values

	Material (Germany/DIN)	Tensile strength (N/mm ²)	Recommended cutting material	Cutting depth a _p (mm)	Feed per revolution f (mm/rev.)	Cutting speed v _C (m/min) for overhang length/diameter L/D ≤ 3* for reaming diameter			
						19 – 25 mm	25 – 48 mm	48 – 84 mm	84 – 148 mm
P	Structural, free cutting and case hardened steel C15, St37, 9SMn28, Gs40, St52-3, 17CrNiMo6	340 – 500	<u>AHS-K</u>	0,1	0,3 – 0,5	60 – 100	80 – 120	80 – 100	60 – 80
			CGKRW-A	0,1	0,25 – 0,5	100 – 120	160 – 200	120 – 160	80 – 120
			CRS-C	0,1	0,3 – 0,4	160	200	200	120
		500 – 800	<u>CGKRW-A</u>	0,1	0,25 – 0,5	60 – 100	80 – 200	80 – 160	50 – 120
		CRS-C	0,1	0,25 – 0,4	110 – 160	140 – 200	120 – 200	100 – 120	
	Nitride steel, heat treated steel C15, C60, 34CrNiMo6, 42CrMo4, 51CrV4	750 – 1100	<u>CGKRW-A</u>	0,1	0,25 – 0,5	80 – 100	80 – 120	80 – 100	50 – 80
		CRS-C	0,1	0,25 – 0,4	100 – 110	140 – 160	120 – 140	100 – 120	
	High alloy steel X155CrVMo121 G-X10CrNi18-8 G-X5CrNiNb189	900 – 1300	<u>CGKRW-A</u>	0,1	0,25 – 0,4	60	60 – 80	60 – 80	50 – 60
		CRS-C	0,1	0,25 – 0,4	60	60	60	60	
M	Stainless steels	750 – 1100	<u>CGKRW-A</u>	0,05 – 0,1	0,3 – 0,4	40	40	40	40
		CRS-C	0,05 – 0,1	0,25 – 0,4	60	60	60	60	
K	Grey cast iron Grey cast iron 15 – Grey cast iron 40	150 – 500	AHS-K	0,1 – 0,15	0,3 – 0,5	60	80	60	40
			<u>CGKRW-A</u>	0,1 – 0,15	0,3 – 0,6	80	100	80	60
	Spheroidal graphite cast iron SGI30 – SGI70	300 – 800	<u>CGKRW-A</u>	0,1	0,3 – 0,5	100	180	140	120
N	Aluminium alloys G-AlZn10Si8Mg GAISI10Mg AlCuMgPb		<u>AHS-K</u>	0,1 – 0,15	0,3 – 0,4	180 – 300	220 – 400	200 – 350	160 – 250

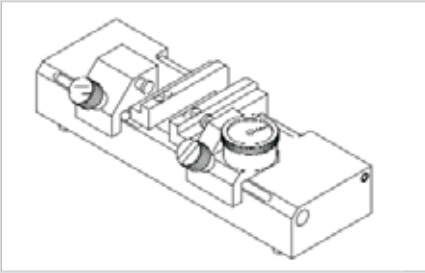
1st choice

*For overhang lengths L/D > 3 the following cutting speeds are recommended:

Cutting material	L/D ratio		
	< 5	< 8	< 10
AHS-K	0,8	0,5	0,4
CGKRW-A	0,8	0,4	0,3
CRS-C	0,8	0,4	0,3

v_C = value in table above (L/D ≤ 3) x correction factor

Power Reamer – Handling Instructions



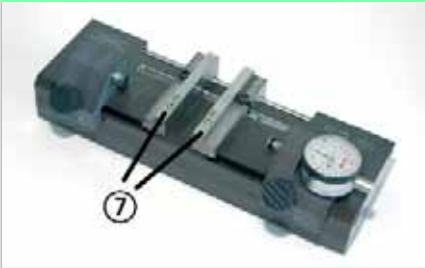
Setting gauge PL 19-150
(Order No. 10077932)

Setting the Power Reamer on the setting gauge is carried out by first bringing the gauge to the nominal dimension with the aid of a plug gauge.
The reamer is then placed on the cross slides of the gauge, which is provided with magnets, and rotated into position with the maximum value displayed on the dial indicator.

The clamping on the reaming cartridge is then released, the reaming cartridge diameter set to nominal dimension and the reaming cartridge clamped again. Once this simple setting procedure has been carried out, the Power Reamer is ready for use.

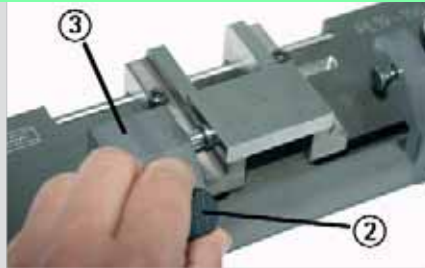
The cutting edge geometry and floating play do not need further adjustment!

Adjusting the setting gauge to nominal dimension using plug limit gauges or slip gauges



Position the cross slides (7) centrally on the setting gauge and secure with the clamping screws, so that the reaming cartridge can move freely in the placed reamer.

For P 19 – P 32 only 1 cross slide is used (tilt the second cross slide away).
For P 36 – P 130 use both cross slides.

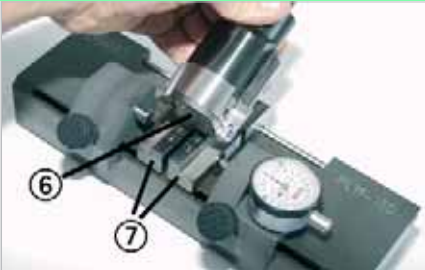


Position the slip gauge with the good side on the cross slides and align this exactly centrally. Push stop (3) against the slip gauge and tighten clamping screw (2).



Push the measuring block (4) against the slip gauge until the measuring surface (1) is held securely and the small pointer on the dial indicator (5) is at 0.2. Tighten the clamping screw (2) and set the graduated ring on the dial indicator with the large pointer at 0.

Setting the reamer to dimension



Position the reamer with cover (6) on the magnetic cross slides (7).
The reaming cartridges must move freely!



Push the tool between the measuring surfaces and calculate the largest dimension by rotating the reamer.



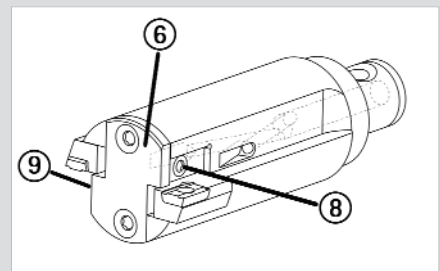
Release clamping screw "K" (8) and lightly tension.



Set the reamer with the adjusting screw (9) in the \boxplus -direction to the nominal dimension for the pre-adjusted slip gauge and then tighten clamping screw "K" (8).



The reamer is now ready to use.
No further adjustment is required.



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