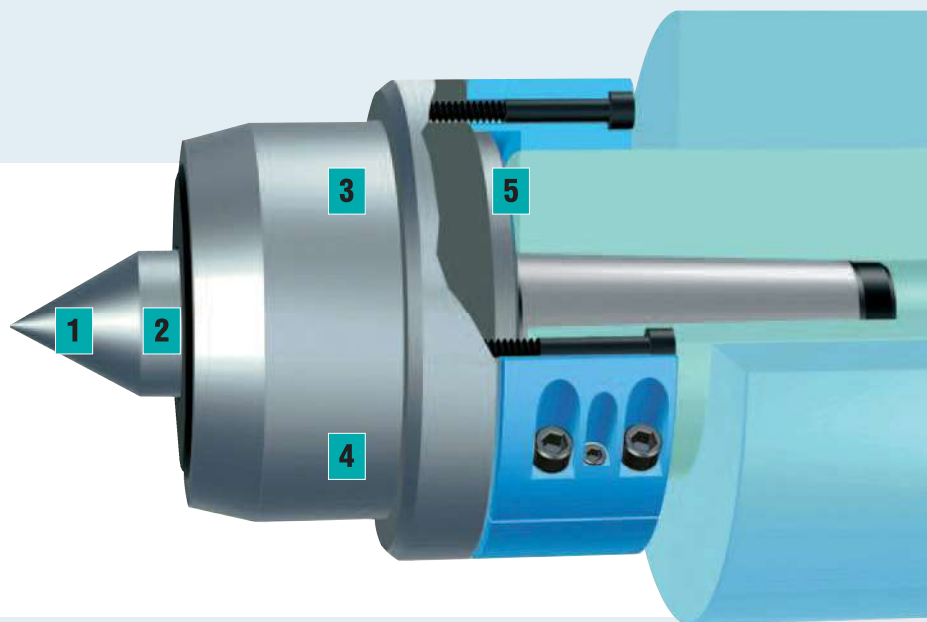
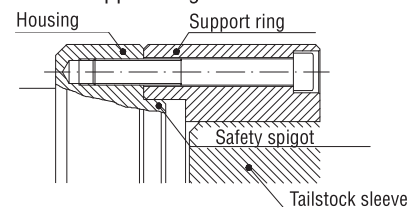


High Performance Centres for Turning and Grinding



- 1 High concentricity**
- 2 Shaft seal ring**
protects the bearings from dirt and coolant
- 3 Housing**
high quality material, forged, therefore uniform grain structure, tensile strength approx. 1.000 N/mm². Head and shank hardened
- 4 Large zero clearance precision roller bearings**
to absorb radial and axial forces. No bearings in the taper shank. Bearing seats in the housing and on the live spindle are precision ground to ultra fine tolerances. The bearings and their seats are selected for optimum fit. Maintenance-free, permanent lubrication
- 5 Safety spigot (patented)**
acts as an additional safeguard when connecting the centre housing to the support ring



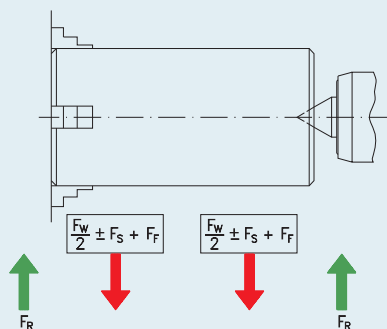
Heavy workpieces – safe clamping, precision machining

The live centre is an important element in a load system of a heavy-duty machine tool and plays a decisive role in the final machining result.

The BRUCKNER design is especially suited to the high requirements of heavy-duty machining.

The maximum admissible load depends on the mounting taper diameter and we therefore offer a choice of two different designs:

- ▶ Load carried only on the taper
- ▶ Load carried on the taper with additional tailstock-sleeve support



The formula is applicable when the workpiece weight F_W is equally divided between headstock and tailstock. If the component has an irregular shape, the weight has to be split up correspondingly. The radial cutting force F_S has to be either a positive or negative figure, depending on the direction of rotation. Any unbalance of the workpiece has to be allowed for with the centrifugal force F_F .

Load capacity of live centres for heavy-duty machining

The data for workpiece weight and load given in our tables and diagrams are based on the dynamic state of the live centre. Taper and centrepoint cross sections are designed for actual operating criteria and not for static conditions. The load figures are calculated for the average diameter of the 60° angle.

The radial load measured on the clamping diameter of workpiece and centrepoint is relevant. The load can be determined by the following approximation formula:

$$F_R = \frac{F_W}{2} \pm F_S + F_F$$

F_R – radial load
 F_W – workpiece weight
 F_S – Radial cutting forces
 F_F – centrifugal force

BRUCKNER high performance live centres for heavy duty machining are used on lathes and cylindrical grinding machines in the heavy industry. Manufacturers of turbines, large engines, rollers, machined parts for the oil industry etc. focus on BRUCKNER high performance live centres due to their reliability, safety and accuracy.



KISSsoft www.KISSsoft.AG
Berechnungsprogramme für den Maschinenbau

Load values

The load values given in our tables are calculated with the world wide acknowledged software KISSsoft. When used in keeping with currently valid standards DIN and ISO, this software guarantees a safe and reliable load calculation.



Types M, MG

Centrepoint 60°, 75°, 90°

Types AM, AMG

With draw-off thread

Centrepoint 60°, 75°, 90°

for machines with tailstock sleeves without through bore

Runout

Type M, AM max. 0.008 mm

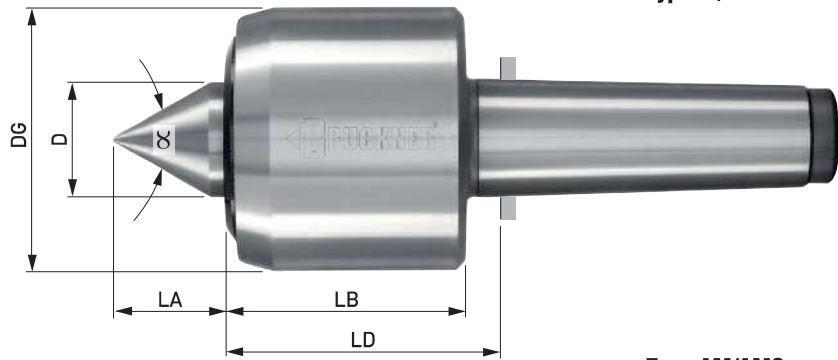
Type MG, AMG max. 0.004 mm

Types MG, 141006, 141006A max. 0.003 mm

Application

For turning and grinding of heavy components, e.g. turbines, rolls, crankshafts for large engines, heavy transmission components

For operations with heavy coolant flows we recommend the use of our supplementary seal (page 10)



Type M/MG



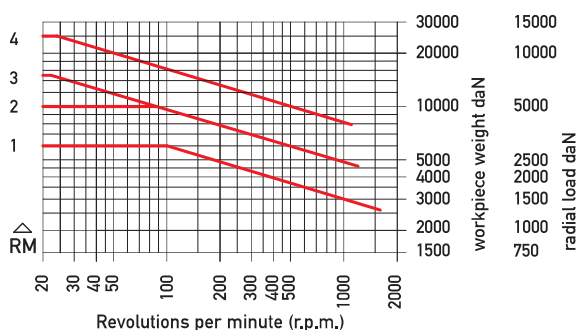
Type AM/AMG

Type M	ID.No.	140006	140081	180007	180080	180081	180100	180101	230120	230121	
Type MG	ID.No.	141006	141081	181007	181080	181081	181100	181101	231120	231121	
Type AM	ID.No.	140006A	140081A	180007A	180080A	180081A	180100A	180101A	on request		
Type AMG	ID.No.	141006A	141081A	181007A	181080A	181081A	181100A	181101A			
Taper size		MK 6	Taper 80 1:10	MK 7	Metr. 80 1:20	Taper 80 1:10	Metr. 100 1:20	Taper 100 1:10	Metr. 120 1:20	Taper 120 1:10	
D		62	62	80	80	80	80	80	100	100	
DG		140	140	180	180	180	180	180	230	230	
LA at $\angle \alpha$	standard	60°	60	60	77	77	77	77	77	88	88
	optional	75°	47	47	60	60	60	60	60	68	68
		90°	38	38	49	49	49	49	49	54	54
LB		124	124	146	146	146	146	146	183	183	
LD		135	142	164	164	164	164	164	201	201	
Workpiece weight max. daN*		6000	6000	10000	10000	10000	15000	15000	25000	25000	
r.p.m. max.*		1600	1600	1200	1200	1200	1200	1200	1100	1100	
radial/axial load graph		RM1/AM1	RM1/AM1	RM2/AM2	RM2/AM2	RM2/AM2	RM3/AM2	RM3/AM2	RM4/AM3	RM4/AM3	
Supplementary seal	ID.No.	V60	V60	V80	V80	V80	V80	V80	V100	V100	
Draw-off nut for Typ AM, AMG	ID.No.	M140A	M140A	M180A	M180A	M180A	M180A	M180A			
DM		175	175	210	210	210	210	210			
LM		36	36	40	40	40	40	40			

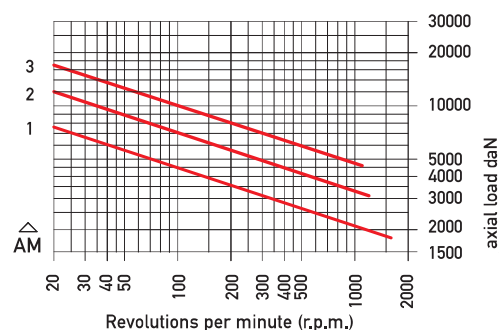
* observe the load graphs

Radial and axial loads for a bearing life of 2.000 operating hours (see calculation example page 13)

Radial – Types M, MG, AM, AMG



Axial – Types M, MG, AM, AMG



Types MR, MRG

with tailstock sleeve support ring
and patented safety spigot
Centrepoint 60°, 75°, 90°

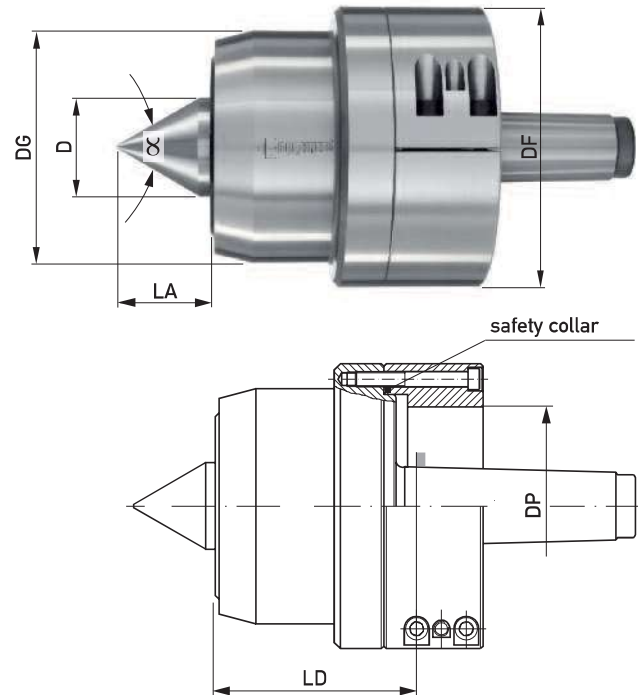
Runout

Type MR max. 0.008 mm
Type MRG max. 0.004 mm

Application

If, for very high workpiece weights the load bearing capacity on the mounting taper is insufficient, the centre is additionally supported on the tailstock sleeve with a support ring. A safety spigot (D.B.P.) safeguards the screw fastening of the centre housing to the support ring.

The support also diminishes vibration and enhances the centre life.



Type MR			ID.No.	190006MR	190007MR	190080MR	190081MR	230100MR	230101MR
Type MRG			ID.No.	191006MR	191007MR	191080MR	191081MR	231100MR	231101MR
Morse taper				MK 6	MK 7	Metr. 80 1:20	Taper 80 1:10	Metr. 100 1:20	Taper 100 1:10
D				80	80	80	80	100	100
DG				190	190	190	190	230	230
LA at α	standard	60°	77	77	77	77	88	88	
	optional	75°	60	60	60	60	68	68	
		90°	49	49	49	49	54	54	
LD				157	164	164	164	201	201
DF				230	230	230	230	230	230
DP				100-180	100-180	100-180	100-180	100-180	100-180
Workpiece weight max. daN*				10 000	15 000	15 000	15 000	20 000	20 000
r.p.m. max.*				1200	1200	1200	1200	1100	1100
radial/axial load graph				RP1/AP1	RP2/AP1	RP2/AP1	RP2/AP1	RP3/AP2	RP3/AP2
Supplementary seal		ID.No.	V80	V80	V80	V80	V80	V100	V100

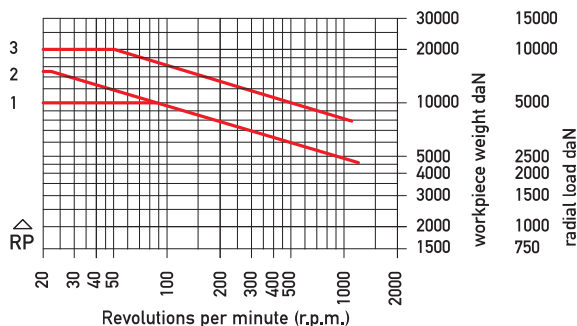
*observe the load graphs

When inquiring/ordering please indicate:

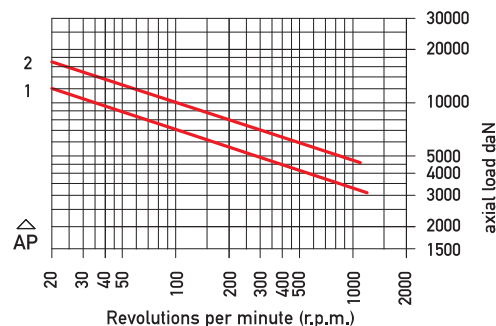
1. Point angle of the centre
2. For design with support ring the tailstock sleeve diameter within 0.01 mm

Radial and axial loads for a bearing life of 2.000 operating hours (see reading example page 13)

Radial – Types MR, MRG



Axial – Types MR, MRG



Type MZ

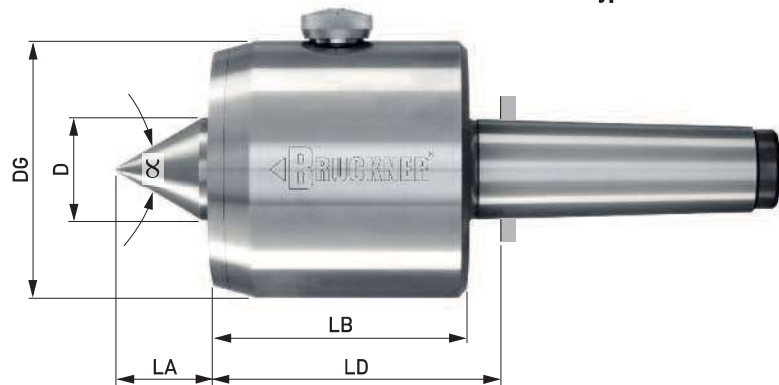
with expansion compensation
and pressure indication by graduated dial
Centrepoint 60°, 75°, 90°

Runout

max. 0.008 mm
max. 0.004 mm on request

Application

Where the axial pressure must not exceed or fall below a defined value to clamp the component safely or to avoid workpiece deformation.
When machining heavy workpieces prone to heat expansion.



Type MZ

Type MZ without draw-off thread

Type AMZ with draw-off thread

for machines with tailstock sleeve
without through bore (draw-off nut page 44)

Type MZR with tailstock sleeve support ring and patented safety spigot (page 42)

The tailstock sleeve support:

- makes the connection between tailstock sleeve and centre housing sturdier
- minimises the possibility of machining vibrations

We recommend our tailstock sleeve support design when

- machining heavy workpieces, unbalanced and/or interrupted cuts
- high quality workpiece surface finishes are required



Type AMZ

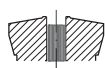


Type MZR

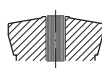
Adjusting the clamping pressure

The tailstock pressure required is adjusted on the graduated dial. When clamping the component, the central measuring pin is lifted in proportion to the travel of the centre spindle.

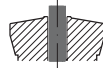
The required clamping force is reached when measuring pin and scaling ring surface are level.



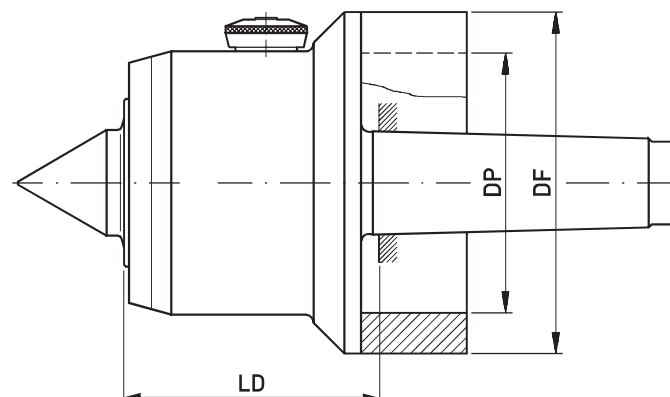
Pressure too low



Correct pressure



Pressure too high



Type MZ	ID.No.		MZ164006	MZ194M080	MZ194K080	MZ194M100	MZ194K100	MZ224M100	MZ224K100
Type AMZ	ID.NO.		MZ164006A	MZ194M080A	MZ194K080A	MZ194M100A	MZ194K100A	on request	on request
Taper size			MK 6	Metr. 80 1:20	Taper 80 1:10	Metr. 100 1:20	Taper 100 1:10	Taper 100 1:20	Taper 100 1:10
D			65	90	90	90	90	100	100
DG			160	190	190	190	190	220	220
LA bei α	standard	60°	62	86	86	86	86	95	95
	optional	75°	48.5	67.5	67.5	67.5	67.5	74	74
		90°	39	54	54	54	54	60	60
LB			157	169	169	169	169	187	187
LD			168	187	187	187	187	205	205
Workpiece weight max. daN*			6000	10000	10000	10000	10000	15000	15000
r.p.m. max.*			1600	850	850	850	850	750	750
Initial pressure daN*			800	1200	1200	1200	1200	1500	1500
Final pressure daN*			8000	12000	12000	12000	12000	16200	16200
Max. travel of spring system mm			2.3	2.8	2.8	2.8	2.8	2.9	2.9
radial/axial load graph			RX1/AX1	RX2/AX2	RX2/AX2	RX2/AX2	RX2/AX2	RX3/AX3	RX3/AX3
Draw-off nut for Type AMZ**	ID.No.		M140 A	M180 A	M180 A	M180 A	M180 A		

**dimensions of draw-off nut page 44

*observe the load graphs

Type MZR	ID.No.	MZR194006	MZR194M080	MZR194K080	MZR224M080	MZR224K080
Taper size		MK 6	Metr. 80 1:20	Taper 80 1:10	Metr. 80 1:20	Taper 80 1:10
D		90	90	90	100	100
DG		190	190	190	220	220
DF		230	230	230	230	230
DP		100-180	100-180	100-180	100-180	100-180
LD		180	187	187	205	205
Workpiece weight max. daN*		10 000	10 000	10 000	15 000	15 000
radial/axial load graph		RX2/AX2	RX2/AX2	RX2/AX2	RX3/AX3	RX3/AX3

**All other dimensions are see similar type MZ (e. g. MZR 194M080 = MZ 194M080)

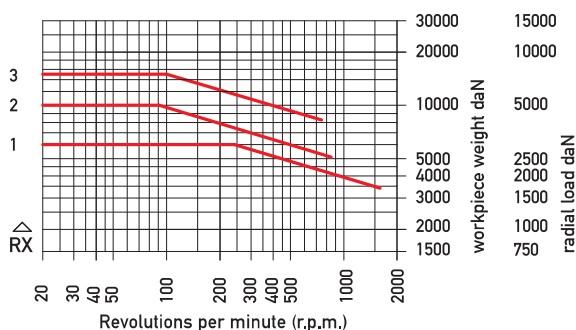
*observe the load graphs

When inquiring/ordering please indicate:

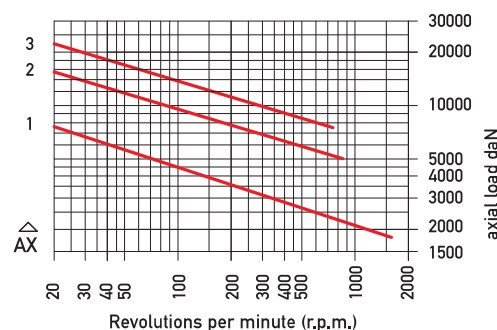
1. Point angle of the centre
2. For type MZR the tailstock sleeve diameter within 0.01 mm

Radial and axial loads for a bearing life of 2.000 operating hours (see reading example page 11)

Radial – Types MZ, AMZ, MZR



Axial – Types MZ, AMZ, MZR



for hard turning



for vertical turning machines



with internal taper 1:7.5
for interchangeable inserts



with spring and coloured pressure indication



High Performance Bullnose Live Centres Special Designs

for mounting chucks



pointed design



with carbide cap and flange mounting



with carbide triple contact pads





from small to large



HSK40



with sealing air connection



ABS50



large centrepoint



carbide spherical centre



live collet chuck



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