CLAMPING SLEEVES in Standard Execution



Description

When constructing machine tools and devices there is the requirement to move machine elements in a straight line and to position them in a loadable way.

For achieving this hydraulically operated clamping sleeves are preferable used.

METRON-Clamping Sleeves consist of a sleevelike cylinder designed as a kind of concertinalike structure or spring diaphragm serving foe clamping columnlike machine parts.

The clamping sleeves produced of bronze and at both the ends provided with o-ring seals and back-up-rings, the clamping sleeves being built in the reception positions of the processing machines, are fed from the outside with hydraulic oil as pressure medium for building up an oil pressure.

This pressure acts on specifically formed profile arrangements worked into the inner and outer walls of the diaphramlike sleeves, the pressure being transformed with radial efficiency into axial clamping power.

Clampings of this kind effectively prevent the displacement of the machine parts to be supported.

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When the oil pressure is completely removed the sleeves, spring back elastically to their starting position.
Contrary to the traditional devices **METRON** Clamping Sleeves consist of a massive undivided metal construction.

In a test procedure with a clamping sleeve with more than 4 mio. simulated power impulses no failure happened – thus an absolutely secure mode of working of the sleeve was proven in continuous operation.

Clamping sleeves in **Standard Execution** are serially manufactured in dimensions with an inner diameter from 10 to 150 mm, for the rest in dimensions according to the table of models.
Other sizes and spezial sleeves are available on request.

METRON - Clamping Technique

Hydraulic Type

with the products

- Clamping disks
- Clamping gibs
- Clamping pressure plates
- Clamping rings
- Clamping sleeves

Description

Of built-in elements for the construction of machine tools and devices and their possibilities of application you will find in the brochure “TK9”.

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Execution of a **Flange Clamping Sleeve** see Page K 09 – 01 e.

The model typesModellübersicht

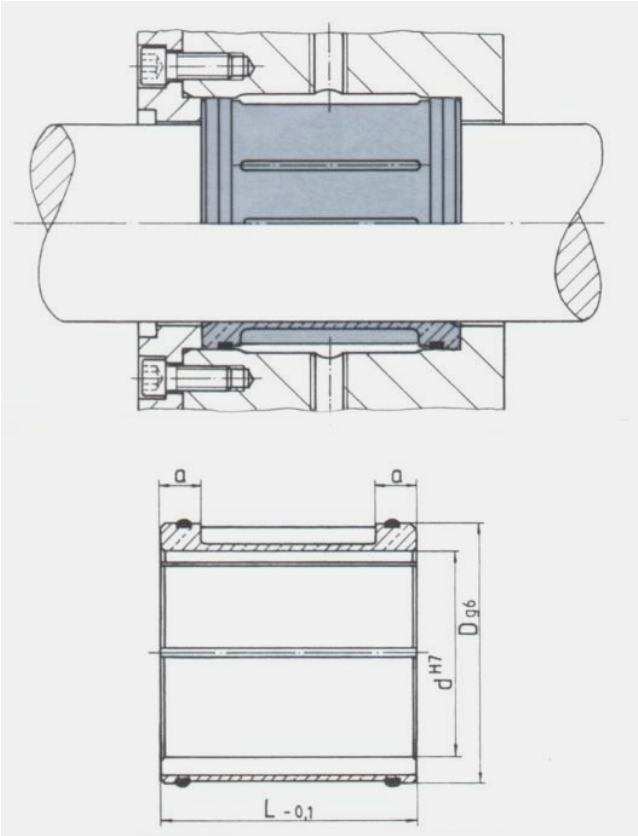
The different sizes of the clamping sleeves, reffered to length, inner and outer diameter, are adapted to the known (usual) constructive requirements of the customers in the design of tool machines and devices.

Deviating dimensions on demand.

Table of models – ordering data

Typ	dH7	Dg6	L	a
MKH 10 – 40	10	20	40	7,5
MKH 15 – 50	15	25	50	7,5
MKH 20 – 45	20	30	45	8
MKH 20 – 65	20	30	65	8
MKH 25 – 60	25	35	60	9
MKH 25 – 80	25	35	80	9
MKH 30 – 58	30	40	58	9,5
MKH 30 – 100	30	40	100	9,5
MKH 35 – 80	35	45	80	10
MKH 40 – 70	40	50	70	10,5
MKH 40 – 100	40	50	100	10,5
MKH 45 – 100	45	55	100	11
MKH 50 – 100	50	65	100	13,1
MKH 60 – 100	60	75	100	13,1
MKH 70 – 120	70	85	120	13,1
MKH 80 – 100	80	100	100	15,5
MKH 80 – 120	80	100	120	15,5
MKH 100 – 140	100	120*	140	15,5
MKH 120 – 115	120	140	115	15,5
MKH 150 – 140	150	170**	140	15,5

* alternative 125 ** alternative 175



Calculation of the clamping forces

Clamping diameter d (cm)
Length L (cm)
Pressure p (bar)
Fixing force F (daN)

$$F = d \cdot (L - 2a) \cdot \pi \cdot p \cdot \mu$$

The friction value µis between 0,07 – 0,12 and depends on the nature of the clamping surface, the lubricant and the operational pressure.

Table of holding forces

The following table shows the minimum displacement resistances of round parts clamped by the sleeves, that is to say dependant on clamping pressure.

MKH bar	10-40 daN	15-50 daN	20-45 daN	20-65 daN	25-60 daN	25-80 daN	30-58 daN	30-100 daN	35-80 daN	40-70 daN
50	44	90	97	160	169	247	184	382	319	289
100	88	179	195	320	338	495	368	763	638	578
150	132	269	292	481	507	742	551	1145	957	867
200	176	358	390	641	675	990	735	1527	1275	1156
250	220	448	487	801	844	1237	919	1909	1594	1445
300	264	537	584	961	1013	1484	1103	2290	1913	1734
350	308	627	682	1122	1182	1732	1286	2672	2232	2023
400	352	716	779	1282	1351	1979	1470	3054	2551	2312
MKH bar	**40-100 daN**	**45-100 daN**	**50-100 daN**	**60-100 daN**	**70-120 daN**	**80-100 daN**	**80-120 daN**	**100-140 daN**	**120-115 daN**	**150-140 daN**
50	448	523	573	669	1001	855	1106	1696	1565	2545
100	955	1046	1147	1338	2001	1709	2212	3393	3129	5089
150	1433	1569	1720	2007	3002	2564	3318	5089	4694	7634
200	1910	2092	2293	2677	4002	3418	4423	6786	6258	10179
250	2388	2615	2867	3346	5003	4273	5529	8482	7823	12723
300	2865	3138	3440	4015	6004	5127	6635	10179	9387	15268
350	3343	3662	4013	4684	7004	5982	7741	11875	10952	17813
400	3820	4185	4587	5353	8005	6836	8847	13572	12516	20358

For the calculation of the holding forces a constant friction value of $\mu = 0{,}1$ is taken as the base.

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