

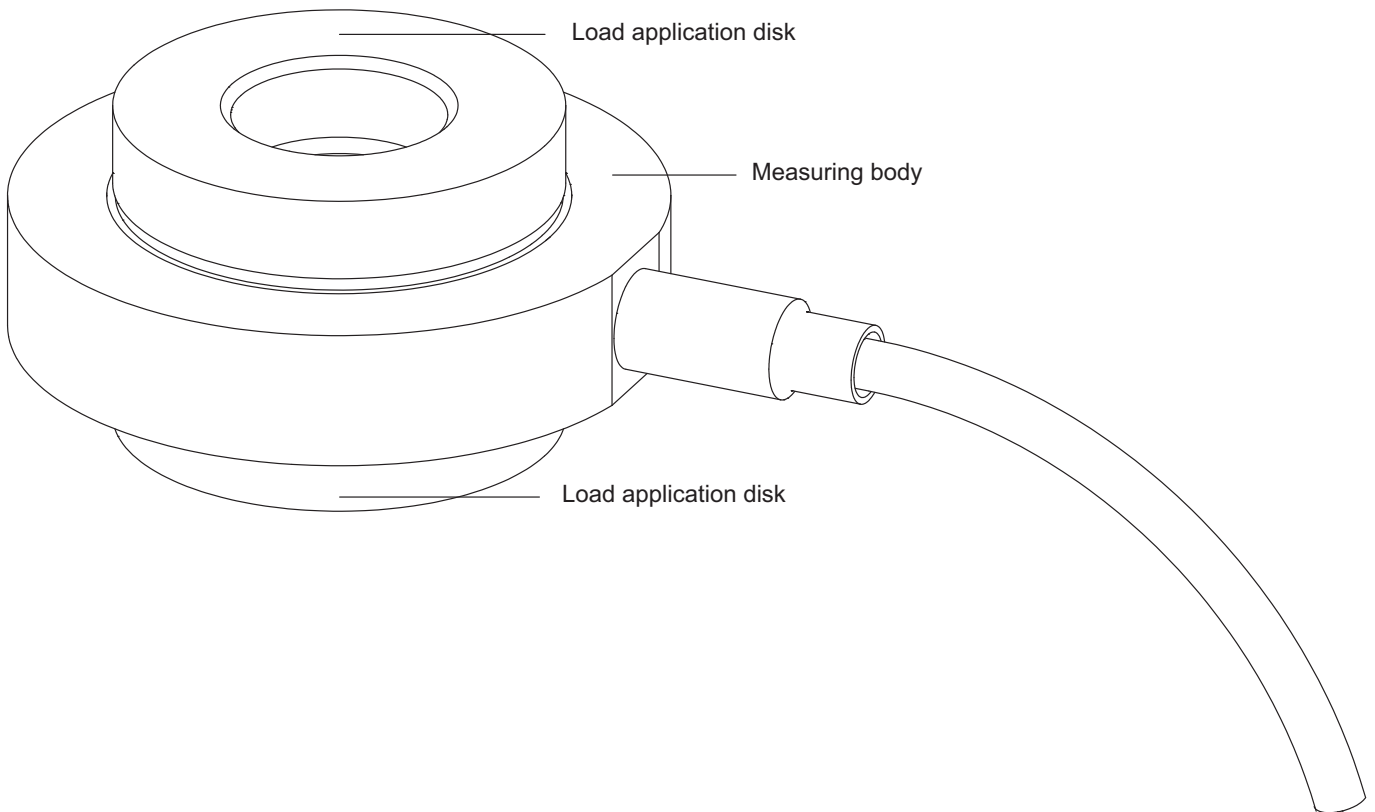


KMR+

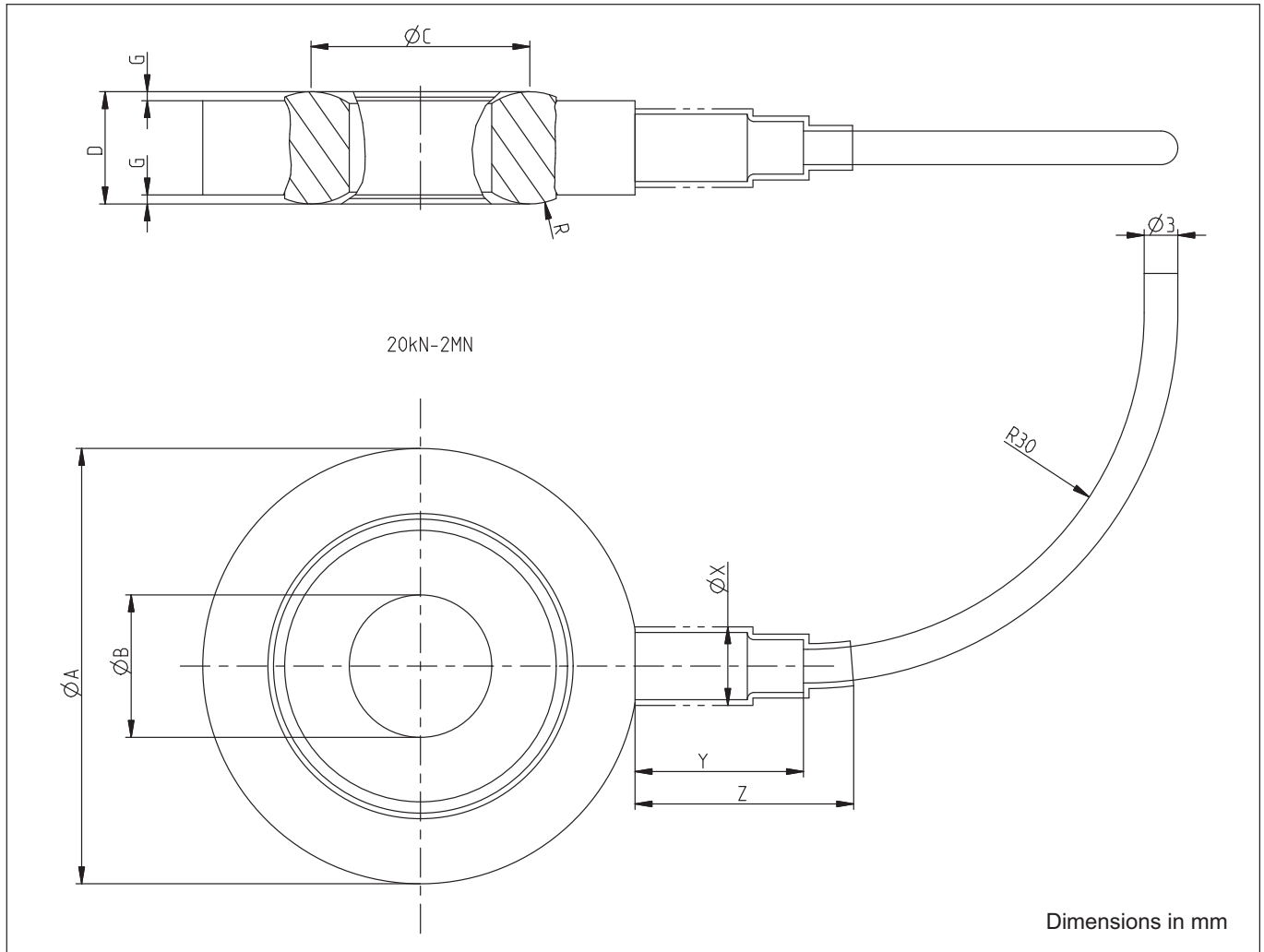
Force transducers

Special features

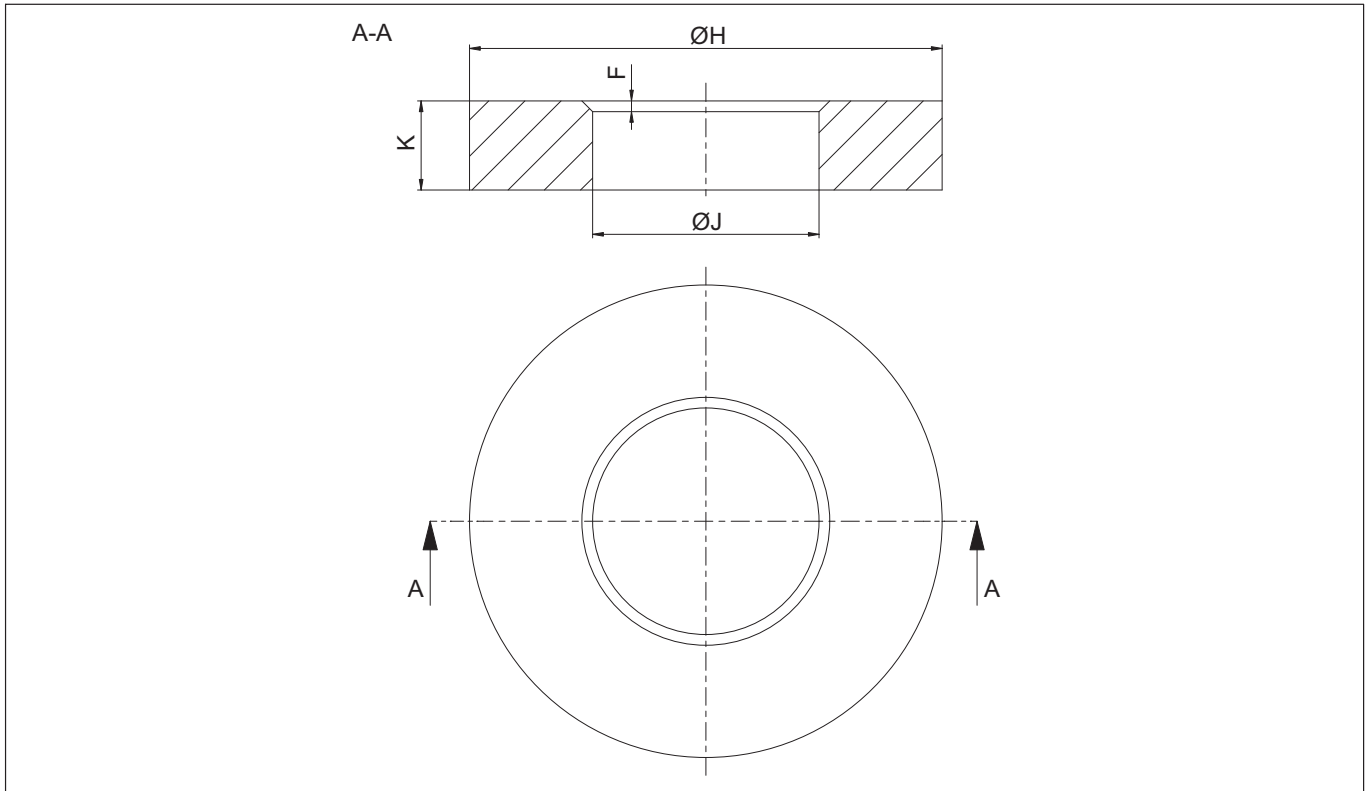
- Drift-free load washers
- Nominal (rated) forces 20 kN ... 2 MN
- Degree of protection IP68
- Good reproducibility
- Can be configured with a plug assembly and various cable lengths upon request
- Hardened and ground load application disks included in the scope of supply



Dimensions



Nominal (rated) force	ØA -0.2	ØB $+0.1$	C	D	G	R	ØX ± 0.5	Y	Z
20 kN	19.9	6.5	9.05	8.5	0.65	5	6.7	15	30
40 kN	23.6	8.0	10.84	8.5	0.65	8	6.7	15	30
60 kN	26.9	10.0	13.82	8.5	0.65	12	6.7	15	30
100 kN	38.8	12.7	19.50	10.0	0.80	6	6.7	15	30
200 kN	48.0	16.0	27.35	10.0	0.80	16	6.7	15	30
300 kN	56.3	21.0	35.20	10.5	1.05	18	6.7	15	30
400 kN	60.6	25.0	38.20	12.5	2.05	20	6.7	15	30
500 kN	66.6	28.0	42.80	14.5	0.80	22	6.7	15	30
600 kN	72.1	31.0	46.90	16.5	1.30	24	6.7	15	30
1 MN	87.1	37.0	57.85	24.5	1.30	40	6.7	15	30
2 MN	120.8	43.0	73.80	44.5	1.60	80	6.7	15	30



Nominal (rated) force	ØH $_{-0.1}$	ØJ $^{+0.1}$	K	Fx45°
20 kN	17.0	6.5	3.0	0.25
40 kN	21.0	8.0	3.0	0.40
60 kN	24.0	10.0	4.0	0.40
100 kN	26.5	12.7	5.0	0.60
200 kN	34.0	16.0	6.0	0.60
300 kN	42.0	21.0	6.0	1.50
400 kN	46.0	25.0	8.0	1.50
500 kN	55.0	28.0	10.9	1.10
600 kN	60.0	31.0	12.4	1.10
1 MN	75.0	37.0	18.4	1.10
2 MN	100.0	43.0	33.4	1.20

The load application disks are included in the scope of supply. They are available as replacement parts, delivered in a set (2-piece).

Suitable for load washer	Ordering number
1-KMR+/20KN	1-KMRW/20KN
1-KMR+/40KN	1-KMRW/40KN
1-KMR+/60KN	1-KMRW/60KN
1-KMR+/100KN	1-KMRW/100KN
1-KMR+/200KN	1-KMRW/200KN
1-KMR+/300KN	1-KMRW/300KN
1-KMR+/400KN	1-KMRW/400KN
1-KMR+/500KN	1-KMRW/500KN
1-KMR+/600KN	1-KMRW/600KN
1-KMR+/1MN	1-KMRW/1 MN
1-KMR+/2MN	1-KMRW/2MN

Specifications as per VDI/VDE 2638

Nominal (rated) force	F_{nom}	kN	20	40	60	100	200	300	400	500	600		
		MN											1
Accuracy													
Accuracy class			1.5										
Relative reproducibility and repeatability errors with unchanging mounting position	b_{rg}	%	1.0										
Rel. reversibility error	$v_{0.5}$	%	1.5										
Linearity deviation ¹⁾	d_{lin}	%	1.5										
Relative creep (30 min)	d_{crf}	%	0.5										
Temperature coefficient of sensitivity	TC_S	%/10 K	0.5										
Temperature coefficient of zero signal	TC_0	%/10 K	0.5										
Rated electrical output													
Rated output (nominal)	C_{nom}	mV/V	2										
Sensitivity error	d_C	%	15										
Relative zero signal error	$d_{s,0}$	mV/V	0.2										
Input resistance	R_e	Ω	310 ... 410				620 ... 800						
Output resistance	R_a	Ω	310 ... 370				620 ... 720						
Insulation resistance	R_{is}	Ω	> 10 ⁹										
Operating range of the excitation voltage	$B_{U,G}$	V	0.5 ... 12										
Reference excitation voltage	U_{ref}	V	5										
Connection	4-wire circuit												
Temperature													
Reference temperature	t_{ref}	°C	23										
Nominal (rated) temperature range	$B_{T,nom}$	°C	-30...70										
Operating temperature range	$B_{T,G}$	°C	-30...85										
Storage temperature range	$B_{T,S}$	°C	-30...85										
Characteristic mechanical quantities													
Maximum operating force	F_G	% of F_{nom}	125				150				160	180	
Force limit	F_L		125				150				160	180	
Breaking force	F_B		> 300				> 400						
Static lateral limit force ²⁾ (when loaded with nominal (rated) force)	F_Q	% of F_{nom}	12										
Permissible eccentricity (when loaded with nominal (rated) force)	e_g	mm	1.6	2.0	3.4	1.5	4.6	4.4	5.2	5.5	6.3	9.9	12.8
Permissible eccentricity (when loaded with 50% of the nominal (rated) force)	e_g	mm	3.4	4.3	5.3	7.3	10.3	12.4	14.3	16.1	17.6	21.7	27.7
Permissible torque (when loaded with nominal (rated) force)	M_G	Nm	33	75	169	194	975	1425	2250	3000	3750	8250	20250
Nominal (rated) displacement $\pm 15\%$	S_{nom}	μm	19.0	23.9	24.2	32.0	35.1	41.5	49.8	56.8	60.4	85.8	140.8
Stiffness	c	kN / μm	1.1	1.7	2.5	3.1	5.7	7.2	8.0	8.8	9.9	11.6	14.2
Fundamental frequency	f_G	kHz	48.1	51.7	54.9	42.6	44.1	41.3	38.1	33.2	30.5	21.6	12.6

Nominal (rated) force	F_{nom}	kN	20	40	60	100	200	300	400	500	600			
		MN											1	2
Permissible oscillation stress	F_{rb}	% of F_{nom}	85											
General information														
Weight (without cable)	g	12	16	21	43	74	108	140	202	270	633	2275		
Cable lengths	m	1.5 (Standard) / 3.0 / 5.0 / 6.0 / 7.0 / 12.0												
Degree of protection in accordance with DIN EN 60529³⁾	IP68													
Measuring body/casing material	Stainless steel													
Cable	4-wire, PUR insulation, shielded													

- 1) With an initial load of 30 % of the nominal (rated) force when installed
2) The maximum lateral force is limited by the coefficient of friction (0.12)
3) Testing condition: 1 meter water pressure, 100 hours

Versions and ordering numbers

Code	Measurement range	Ordering number	<p>All ordering numbers shown in gray are preferred types. They can be delivered rapidly.</p> <p>All preferred types are delivered with 1.5 m cable and open cable ends</p> <p>The ordering number of the preferred type is 1-KMR+/.</p> <p>The ordering number of the customized sensors is K-KMR+-</p>
20k0	20 kN	1-KMR+/20KN	
40k0	40 kN	1-KMR+/40KN	
60k0	60 kN	1-KMR+/60KN	
100k	100 kN	1-KMR+/100KN	
200k	200 kN	1-KMR+/200KN	
300k	300 kN	1-KMR+/300KN	
400k	400 kN	1-KMR+/400KN	
500k	500 kN	1-KMR+/500KN	
600k	600 kN	1-KMR+/600KN	
1M00	1 MN	1-KMR+/1MN	
2M00	2 MN	1-KMR+/2MN	

Cable length	Plug version
1.5 m 01m5	free ends Y
3 m 03m0	15-pin SUB-D connector F
5 m 05m0	Male connector MS3106PEMV N
6 m 06m0	15-pin SUB-HD connector Q
7 m 07m0	
12 m 12m0	

Ordering example

K-KMR+-	01M0-	07m0-	F
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Example: Load washer KMR+, nominal (rated) force 1 MN, cable length 7 m, with installed SUB-D device plug. See mounting instructions for details.

Subject to modifications.
All product descriptions are for general information
only. They are not to be understood as a guarantee
of quality or durability.

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