C6B

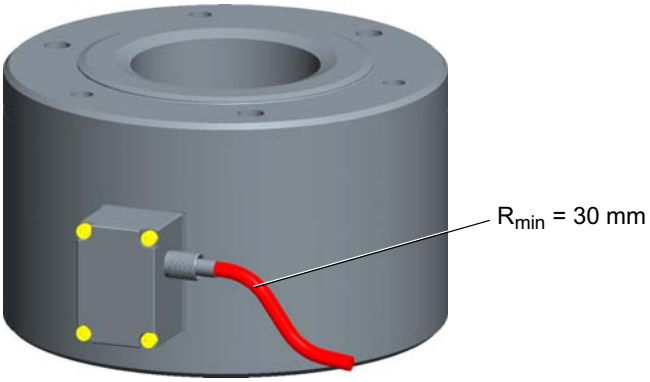
Force transducers

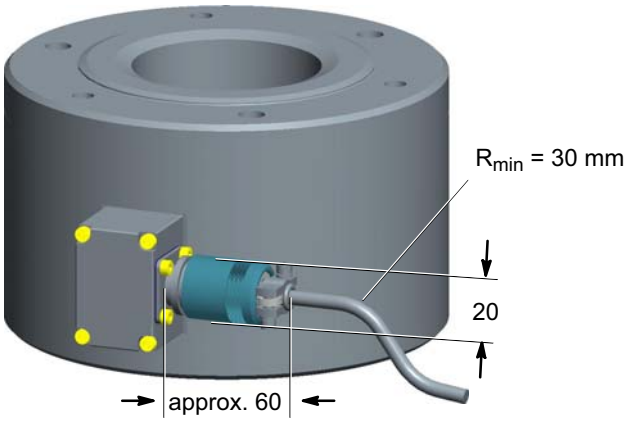
Special features

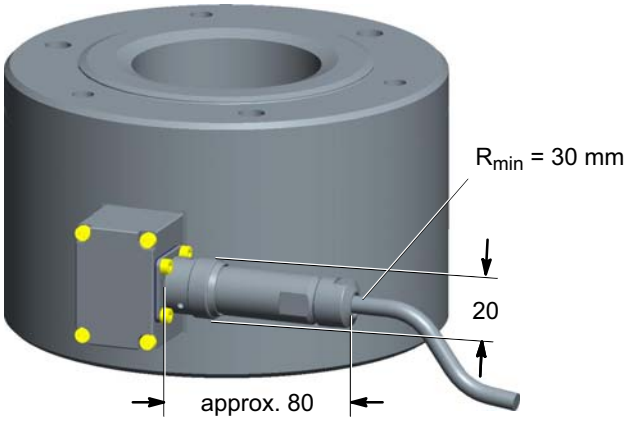
- **Rugged compressive force transducers**
- **Nominal (rated) force 200 kN ... 10 MN**
- **Hermetically welded, versions with IP68 available**
- **Extensive range of mounting aids, flexibly configurable**

Data sheet

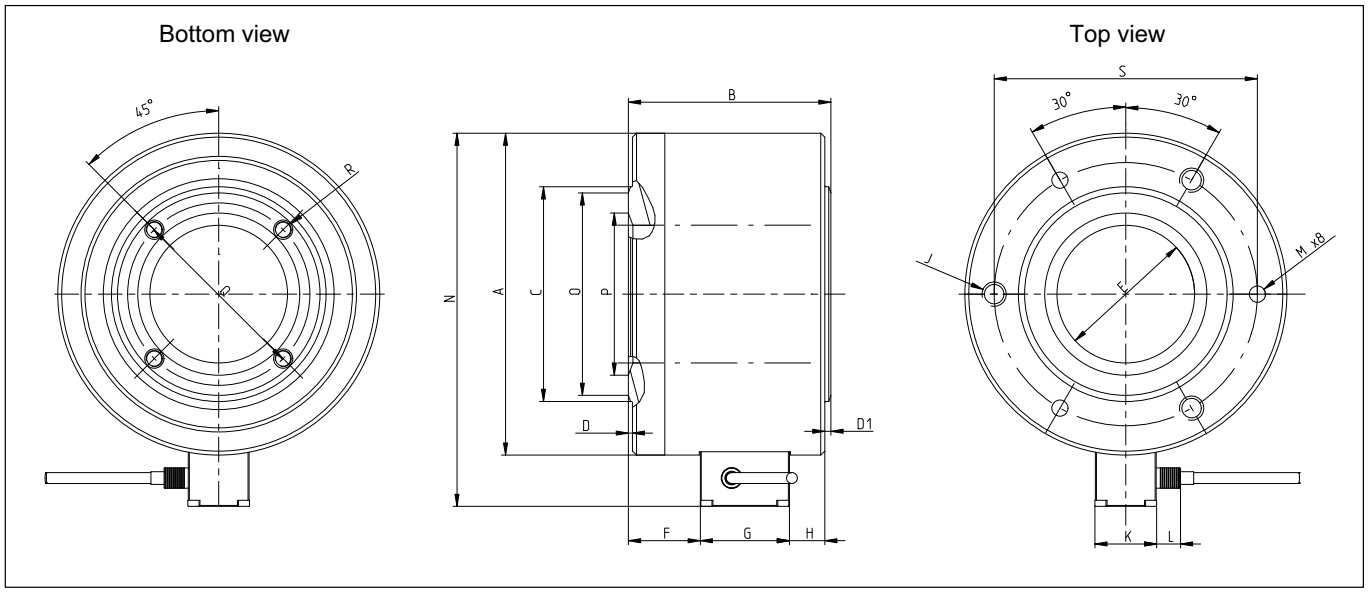
Connection options





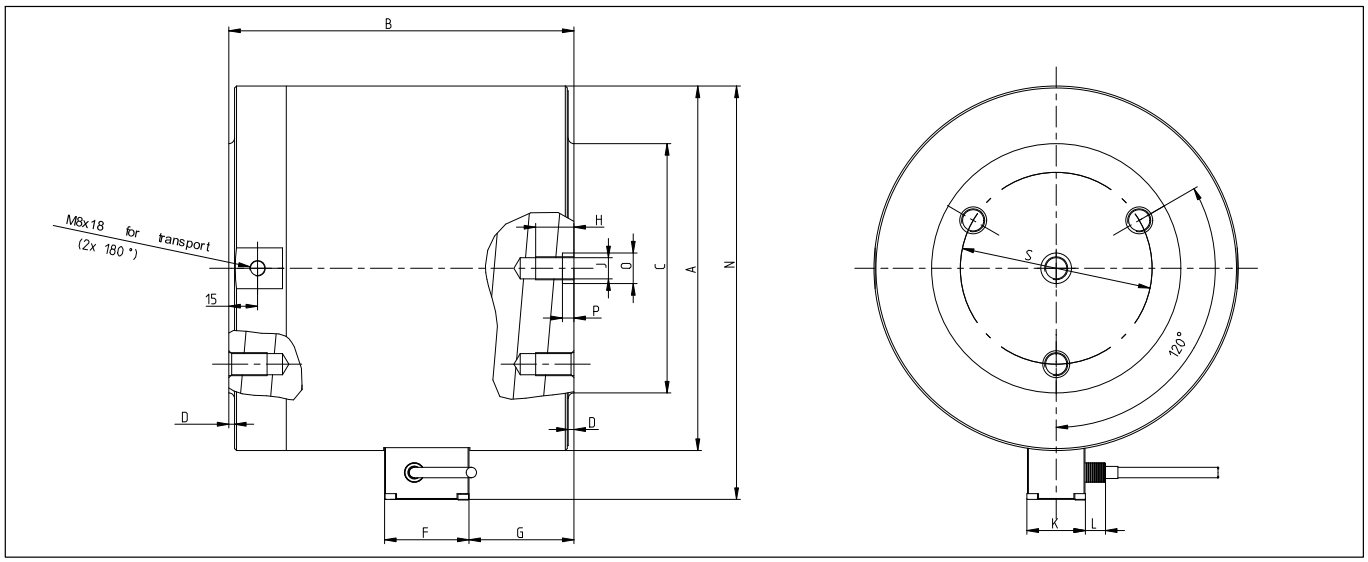


Dimensions (in mm)



Nominal (rated) force	A	B	C±0.1	D	D1	E±0.1	F	G	H	J	K	L[1)]	L[2)]	M H11	N[1)]	N[2)]	O	P	Q±0.1	R	S±0.1
200 kN	80	60	40.4	1	1	32	16.25	42	0.75	M8x 8	26	12	14	6	100	106	-	35	48	M6 x8	64
500 kN	80	60	52	1	1	32	16.25	42	0.75		26	12	14	6	100	106	-	-	42		64
1 MN	159	100	88	2	3	68	35.5	44	17.5	M12 x15	31	12	14	8	184	186	-	75	98	M8 x15	130
2 MN	159	100	106	2	3	68	35.5	44	17.5		31	12	14	8	184	186	100	80	90		130

1) Fixed cable option
2) Plug option

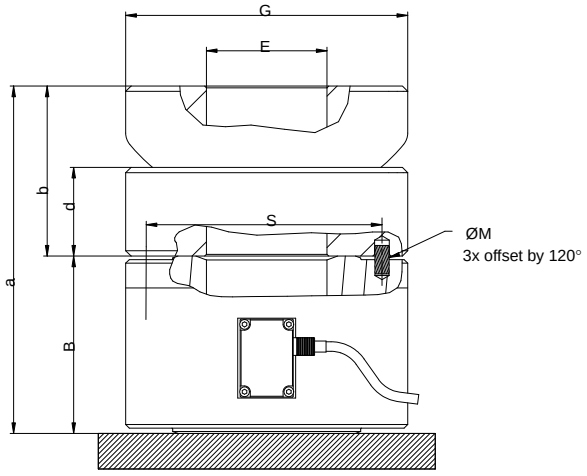


Nominal (rated) force	A	B	C	D	F	G	H	J	K	L[1)]	L[2)]	N[1)]	N[2)]	O F7	P	S
5 MN	190	180	130	3	44	55	20	M12	31	12	14	216	218	16	6	100±0.2
10 MN	267	240	180	3	44	96	30	M20	31	12	14	293	295	25	10	140

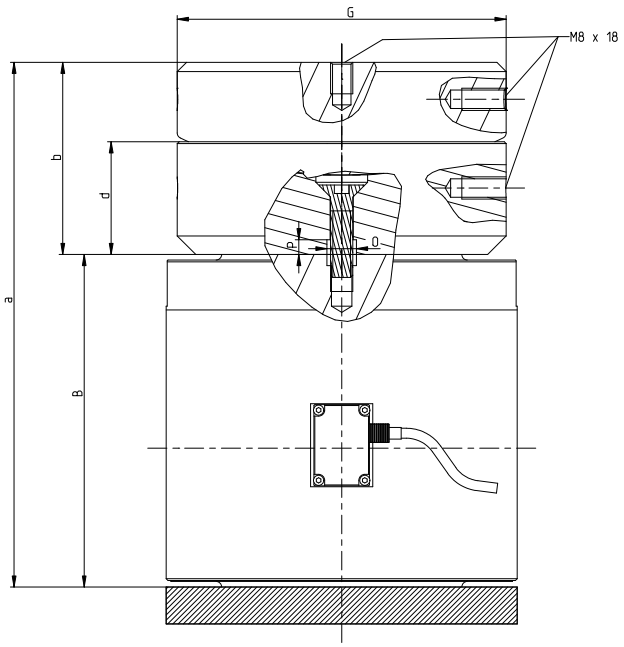
1) Fixed cable option
2) Plug option

Mounting aids

Spherical cap ZK



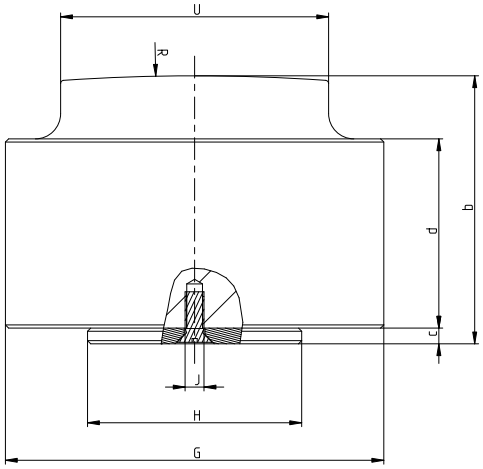
200 kN - 2 MN



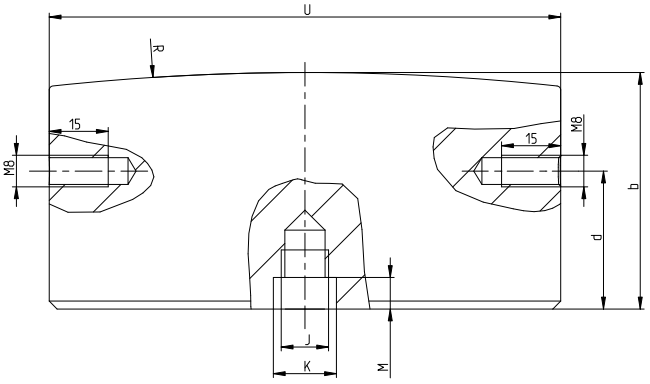
5 MN & 10 MN

Nominal (rated) force	ZK ordering number	Weight in kg	B	E±0.1	G	M H11	O F7	P	S	a	b	d
200 kN …500 kN	1-C6/50T/ZK	1.7	60	32	82	6	-	-	64±0.1	112	52	28
1 MN	1-C6/100T/ZK	3.8	100	68	121	8	-	-	130±0.1	174.5	75.3	40
2 MN	1-C6/200T/ZK	11.6	100	68	159	8	-	-	130±0.1	195	95.5	50
5 MN	1-C6/500T/ZK	20.6	180	-	178	-	16	8		284	104	61
10 MN	1-C6/10MN/ZK	50.2	240	-	240	-	25	12		385	145	88

Load button ZL



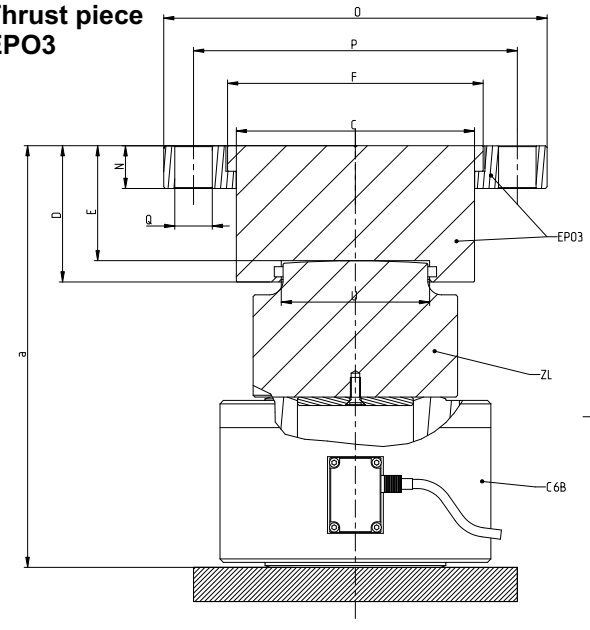
200 kN - 2 MN



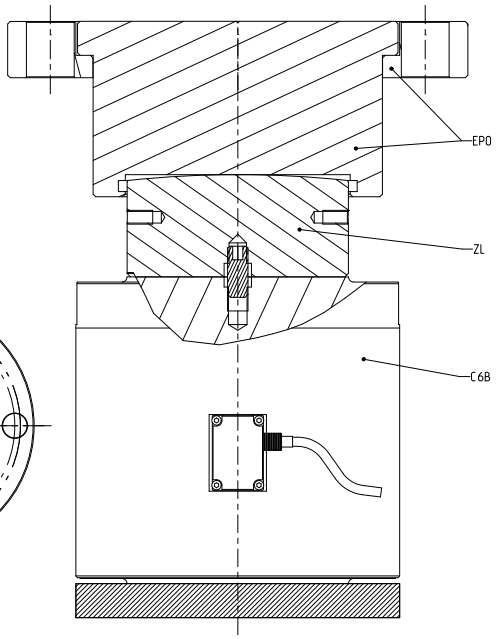
5 MN & 10 MN

Nominal (rated) force	ZL ordering number	Weight in kg	G	$H_{-0.1}$	J	R	$U_{-0.2}$	K F7	M	b	c	d
200 kN	1-C6/20T/ZL	0.8	60	31.9	M5	300	32	-	-	50	5	30
500 kN	1-C6/50T/ZL	0.8	60	31.9	M5	300	44	-	-	50	5	30
1 MN	1-C6/100T/ZL	6.4	120	67.9	M6	600	64	-	-	85	5	60
2 MN	1-C6/200T/ZL	6.8	120	67.9	M6	600	85	-	-	85	5	60
5 MN	1-C6/500T/ZL	6.5	-	-	M12	600	129.8	16	8	60	-	35
10 MN	1-C6/10MN/ZL	30.1	-	-	M20	1000	219.8	25	12	110	-	67

Thrust piece EPO3



200 kN - 2 MN



5 MN & 10 MN

Nominal (rated) force	EPO3 ordering number	Weight in kg	C	D	E	F	N	O	P	Q	S	$U_{-0.2}$	a
200 kN	1-EPO3R/20T	1.2	47.8	27.5	20	58	14	110	90	13	90	32	125
500 kN	1-EPO3/50T	3.4	81.8	50	39.5	89	10	147	120	18	130	44	144.5
1 MN	1-EPO3/100T	3.2	81.9	50	39.5	89	10	147	120	18	130	64	219.5
2 MN	1-EPO3/250T	13	139.8	80	67.5	150	25	225	190	22	200	85	247.5
5 MN	1-EPO3/500T	27	169.8	103	90	188	33	270	220	28	250	130	250
10 MN[1)]	1-EPO3/10MN	55	260	140	120	290	-	-	-	-	-	220	430

1) Version with nominal (rated) force 10 MN is supplied without clamping ring

Specifications

Nominal (rated) force	F_{nom}	kN	200	500				
		MN			1	2	5	10
Accuracy								
Accuracy class			0.5					
Relative reproducibility and repeatability errors with unchanging mounting position	b_{rg}	%						
When hardened compression plates are used			0.2	0.1	0.06			
If load button ZL is used, or with load button ZL and thrust piece EPO			0.1	0.06				
When used with spherical cap ZK			0.2	0.1	0.06			
Relative reversibility error (hysteresis) at $0.5F_{nom}$	$v_{0.5}$	%						
When hardened compression plates are used			0.5					
If load button ZL is used, or with load button ZL and thrust piece EPO			0.5	0.3				
When used with spherical cap ZK			0.5					
Non-linearity	d_{lin}	%						
When hardened compression plates are used			1					
If load button ZL is used, or with load button ZL and thrust piece EPO			0.4					
When used with spherical cap ZK			1					
Relative creep	d_{crF+E}	%	0.06					
Effect of eccentricity	d_E	%/mm	0.2	0.06				
Temperature coefficient of sensitivity	TC_S	%/10 K	0.1					
Temperature coefficient of zero signal	TC_0	%/10 K	0.05					
Rated electrical output								
Rated output (nominal)	C_{nom}	mV/V	2					
Relative zero signal error	$d_{s,0}$	%	1					
Deviation of the characteristic value with optional "adjusted rated output"	d_c	%						
When hardened compression plates are used			2.5					
If load button ZL is used, or with load button ZL and thrust piece EPO			0.5					
When used with spherical cap ZK			0.5					
Rated output range (without rated output adjustment)	C	mV/V	2 … 2.48 mV/V					
Input resistance	R_i	Ω	380 … 420					
Output resistance	R_o	Ω	280 … 360					
Output resistance with "adjusted rated output" option	R_o	Ω	365					
Tolerance of the output resistance with "adjusted rated output" option	dRa	Ω	1.5					
Insulation resistance	R_{is}	GΩ	>5					
Operating range of the excitation voltage	$B_{U,G}$	V	0.5 … 20					
Reference excitation voltage	U_{ref}	V	5					
Connection			6-wire					
Temperature								
Reference temperature	T_{ref}	°C	23					
Nominal (rated) temperature range	$B_{T,nom}$	°C	-10 … +70					
Operating temperature range	$B_{T,g}$	°C	-30 … +85					
Storage temperature range	$B_{T,S}$	°C	-50 … +85					

Nominal (rated) force	F_{nom}	kN	**200**	**500**				
		MN			**1**	**2**	**5**	**10**
Characteristic mechanical quantities								
Maximum operating force	F_G	% of F_{nom}	150					
Force limit	F_L		150					
Breaking force	F_B		>200					>180
Static lateral force limit	F_Q	% of F_{nom}						
When hardened compression plates are used			No specification possible					
If load button ZL is used, or with load button ZL and thrust piece EPO			20				10	
When used with spherical cap ZK			3					
Permissible eccentricity	e_G	mm	5	6	11	12	10	10
Nominal (rated) displacement	s_{nom}	mm	0.13	0.15	0.2	0.2	0.5	0.7
Fundamental frequency	f_G	kHz	11.6	14.4	6.1	6.9	5.3	4
Relative permissible oscillatory stress	f_{rb}	% of F_{nom}	70					
Stiffness	F/S	10^6 N/mm	1538	3333	5000	10000		14286
General information								
Degree of protection per EN 60529 with"fixed cable" (standard version)			IP68[1)]					
Degree of protection per EN 60529, with "bayonet connector" option, socket connected to sensor			IP67					
Degree of protection per EN 60529, with "threaded connector" option			IP64					
Spring element material			Stainless steel					
Measuring point protection			hermetically welded measuring body					
Cable (standard version)			Outside diameter 5.4 mm					
Cable length		m	6 or 15					
Mechanical shock resistance as per IEC 60068-2-6								
Number		n	1000					
Duration		ms	2					
Acceleration		m/s^2	650					
Vibrational stress per IEC 60068-2-27								
Frequency range		Hz	5 … 65					
Duration		min	30					
Acceleration		m/s^2	150					
Weight	m	kg	1.6	1.8	10.1	10.7	32	84
	m	lbs	3.5	4.0	22.3	23.6	70.5	185.2

1) Test condition: 1 m water column, 100 hours

Versions and ordering numbers

Code	Measurement range	Ordering number
200K	200 kN	1-C6B/200KN
500K	500 kN	1-C6B/500KN
1M00	1 MN	1-C6B/1 MN
2M00	2 MN	1-C6B/2MN
5M00	5 MN	1-C6B/5MN
10M0	10 MN	1-C6B/10MN

The ordering numbers shown in gray are preferred types. They can be delivered rapidly.

The ordering number for the preferred types is 1-C6B…, the ordering number for the customized versions is K-C6B-…

Rated output adjustment	Transducer identification	Mechanical design	Plug protection	Electrical connection	Plug version for the "permanently attached cable" option
Not adjusted **N**	Without TEDS chip **S**	Without load application **OO**	Without plug protection **U**	With permanently attached cable, 6 m **K**	Free ends **Y**
Adjusted **J**	With TEDS chip **T**	With spherical cap ZK **ZK**	With plug protection **P**	With permanently attached cable, 15 m **V**	D-sub-HD15, 15-pin **F**
		With the ZL load button and EPO thrust piece **EZ**		With bayonet connector **B**	D-sub-HD15, 15-pin **Q**
				With threaded connector **G**	Male connector ME3106PEMV **N**
					ODU male connector, 14-pin **P**
					M12 male connector, 8-pin **M**

Rated output adjustment	The exact rated output is specified on the type plate. The sensor can be adjusted to an exact rated output of 2 mV/V. Then the relative tolerance of the rated output is dependent on the selected loading fittings. (see specifications, section "Rated electrical outputs"). You can connect the C6B in parallel if you order the sensor with adjusted rated output.
Transducer identification	Integration of TEDS chip (integrated electronic data sheet) as per IEEE 1451.4. If the relevant amplifier electronics are provided, the measurement chain will parameterize itself automatically.
Mechanical design	Standard delivery does not include load application parts. The C6B is optionally available with the appropriate load application parts and calibrated or adjusted.
Plug protection	A square profile is installed around the plug for mechanical protection. Dimensions WxHxD: 30 x 30 x 20 mm
Electrical connection	Permanently attached cable, 6 m is standard; options: Permanently attached cable, 15 m; bayonet connection (PT02E10-P-compatible); threaded connector (PT02E10-P-compatible)
Connector assembly	Mounted and verified plugs for direct use on HBM amplifiers. (Only in combination with permanently attached cable)

Cables/plugs	Ordering number
Configurable cable, available in different lengths and on request with plug mounted for connecting directly to the amplifier	K-CAB-F
Connection cable KAB157-3; IP67 (with bayonet connector); 3 m long, TPE outer sheath; 6 x 0.25 mm^2; free ends, shielded, outside diameter 6.5 mm	1-KAB157-3
Connection cable KAB158-3; IP54 (with threaded connector); 3 m long, TPE outer sheath; 6 x 0.25 mm^2; free ends, shielded, outside diameter 6.5 mm	1-KAB158-3
Loose cable socket (bayonet connection)	3-3312.0382
Loose cable socket (screw connection)	3-3312.0354
Ground cable, 400 mm	1-EEK4
Ground cable, 600 mm	1-EEK6
Ground cable, 800 mm	1-EEK8

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