

TOP Transfer

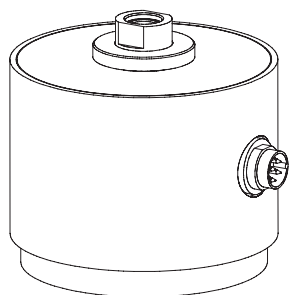
Force transfer standard



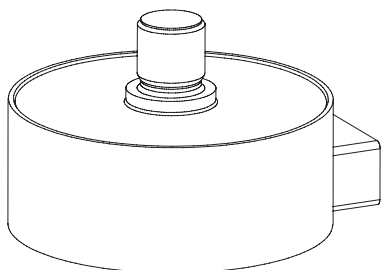
Special characteristics

- Ultimate precision force transducer for international comparative measurements
- Tensile/compressive force transducer
- Nominal forces 100 N...500 kN
- Excellent rel. reproducibility and repeatability errors
- Good long-term stability

TOP-Z30



TOP-Z4A



Nominal force Order number

100 N	TOP-Z30/100 N
200 N	TOP-Z30/200 N
500 N	TOP-Z30/500 N
1 kN	TOP-Z30/1000 N
2 kN	TOP-Z30/2 kN
5 kN	TOP-Z30/5 kN
10 kN	TOP-Z30/10 kN

20 kN	TOP-Z4A/20 kN
50 kN	TOP-Z4A/50 kN
100 kN	TOP-Z4A/100 kN
200 kN	TOP-Z4A/200 kN
500 kN	TOP-Z4A/500 kN

Compressive force specifications

Type			TOP-Z30				TOP-Z4A				
Data according to VDI standards 2638											
Nominal force	F_{nom}	kN	0.1 - 1 ⁴⁾		2 - 10	20 - 50		100 - 500			
Nominal sensitivity	C_{nom}	mV/V	2				2				
rel. sensitivity deviation	d_c	%	0.1				0.1				
rel. tensile/compressive force sensitivity diff.	d_{zd}	%	0.1				0.2				
Zero signal tolerance	$d_{s,0}$	mV/V	0.1				0.01				
rel. zero point compensation (zero signal return) ¹⁾	f_o	%	0.004				0.004				
Rel. range (0.2F_{nom} to F_{nom}) at:¹⁾											
unchanged mounting position	b_i	%	0.002				0.003				
different mounting positions	b										
Compressive force		%	0.005				0.008				
Tensile force		%	0.01				0.016				
Rel. range of inversion (0.2F_{nom} to F_{nom})¹⁾	u	%	0.03				0.03 ³⁾				
Cubic interpolation error (0.2F_{nom} to F_{nom})¹⁾	f_c	%	0.002				0.002				
Effect of temperature/10K by reference to nominal sensitivity											
on sensitivity	TK_C	%	0.015		0.01	0.01		0.01			
on zero signal	TK_0	%	0.015		0.01	0.01		0.015			
Effect of transverse forces (transverse forces 10% F_{nom})²⁾	d_Q	%	0.1				0.03				
Effect of eccentricity per mm	d_E	%	0.005				0.01		0.005		
Rel. creep over 20 min	d_{crF+E}	%	0.01				0.01				
Input resistance	R_e	Ω	>345		>690	>345					
Output resistance	R_a	Ω	300-500		600-800	356 ± 0.3					
Isolation resistance	R_{is}	Ω	>5·10 ⁹				>5·10 ⁹				
Reference excitation voltage	U_{ref}	V	5				5				
Operating range of the excitation voltage	$B_{U,G}$	V	0.5 ... 12				0.5 ... 12				
Nominal temperature range	$B_{t,nom}$	°C	+17...+27								
Operating temperature range	$B_{t,G}$	°C	0...+40								
Storage temperature range	$B_{t,S}$	°C	-10...+70								
Reference temperature	t_{ref}	°C	+22								
Max. operational force	(F_G)	%	120		150	150					
Limit force	(F_L)	%	150				150				
Breaking force	(F_B)	%	250				250				
Static lateral limit force	(F_Q)	%	60				30				
Rel. permissible vibrational stress	F_{rb}	%	70				70		50		
Plug connection			Radial and axial encl. connector (male) Binder Co. Series 723				-				
Cable length, six-wire connection		m	-				6				
Degree of protection to DIN EN 60529			IP50				IP 67				

Type			TOP-Z30							TOP-Z4A				
Nominal force	F_{nom}	kN	0.1	0.2	0.5	1	2	5	10	20	50	100	200	500
Limit torque	M_G	Nm	3	5			80			120	350	950	2000	4000
Nominal displacement	S_{nom}	mm	<0.4				approx. 0.2			0.2	0.25	0.28	0.45	
Fundam. resonance frequ.	f_G	kHz	0.3	0.5	0.9	1.1	1.1	1.25	4.1	4.5	3.4	3.6	2.5	
Weight		kg	approx. 0.9				approx. 2.3			1.8	2.4	5.5	11.2	42

1) Specifications to ISO376

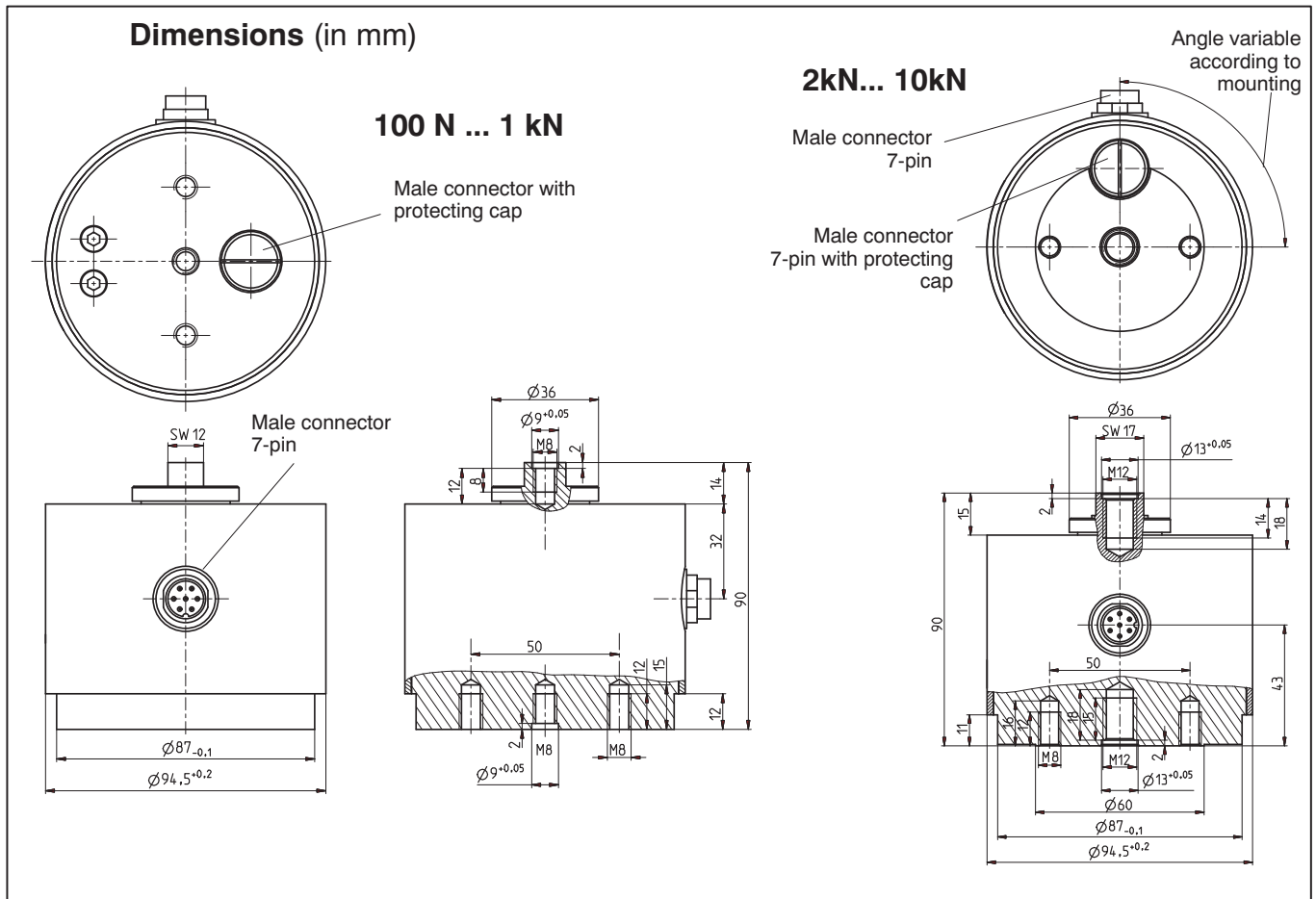
4) incl. overload protection

2) applies in the case of the TOP-Z4A half pin height

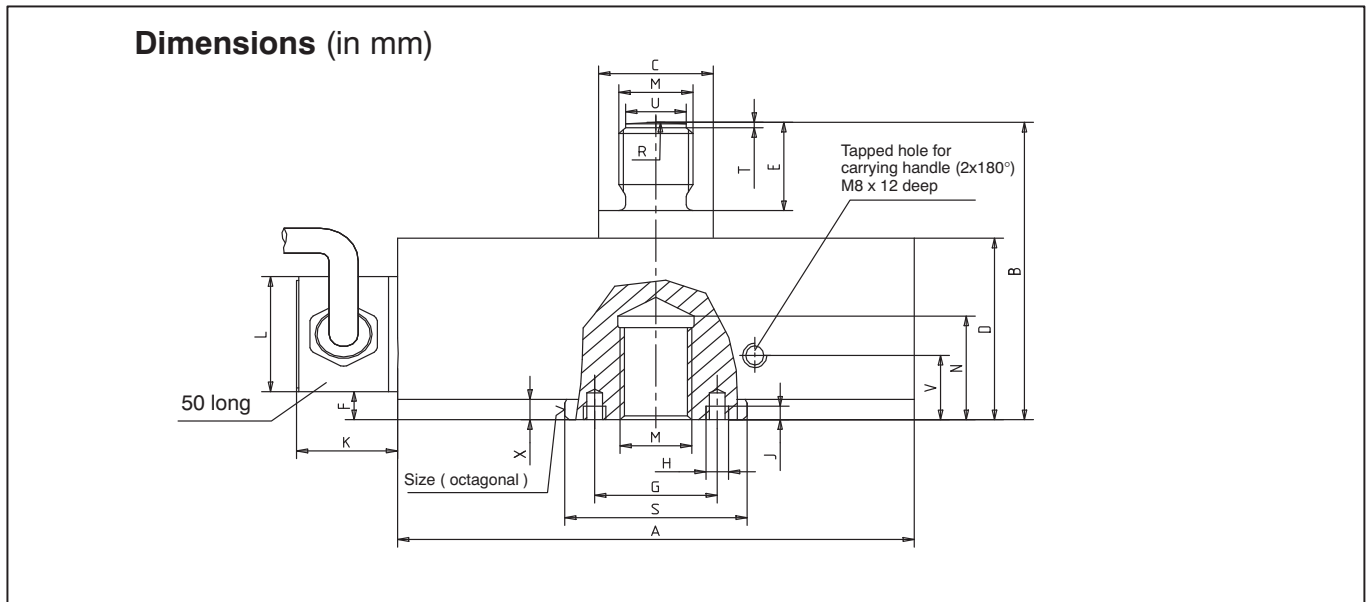
3) in the case of tensile force TOP-Z4A/500 kN: 0.07%

TOP Transfer force transducers are available only in connection with a DKD calibration acc. to ISO 376 (not supplied).
Order no.: K-CAL-FD...

TOP-Z30



TOP-Z4A

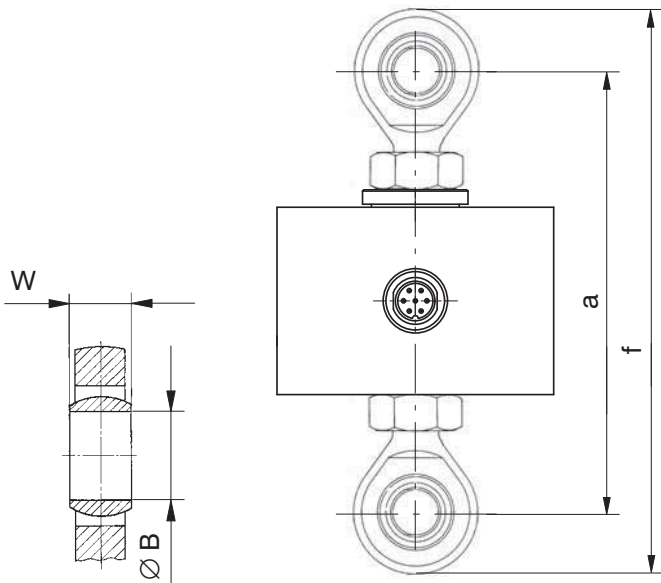


Type/ Order no.	∅ A	B	∅ C ₁₇	D	E	F	G	H	J	K	L	M	N	R	∅ S ₁₇	T	∅ U	V	X	a./f.
TOP-Z4A/20kN	115	77	25	47	23	7.3						M16	27	60	40	1.4	13		5.3	38
TOP-Z4A/50kN	120	83	26	55	23	10.2	-	-	-	22	30	M20x1.5	28	60	48	1.4	17		8.2	45
TOP-Z4A/100kN	146	107	40	69	33	12.2						M30x2	37	160	62	1.4	27		10.2	59
TOP-Z4A/200kN	180	137	50	89	43	13.1	68	M6	6			M39x2	45	160	76	1.8	36		11.1	73
TOP-Z4A/500kN	275	250	100	145	95	21	118	M8	8	32	43	M72x4	87	400	140	3	65	35	20	134

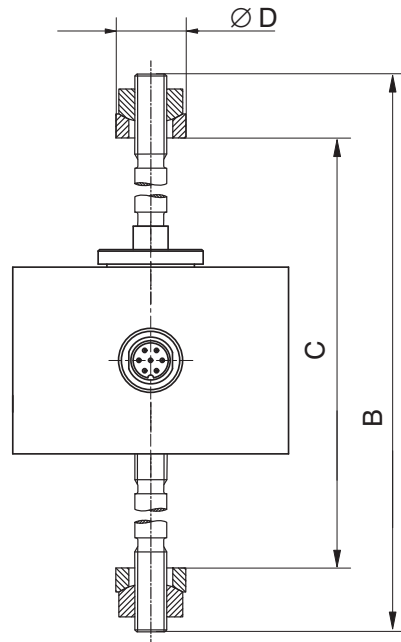
Accessories for TOP-Z30

Force introduction parts for tensile loading

Knuckle eyes ZGW/ZGUW



Tensile force introduction ZKM acc. to ISO 376

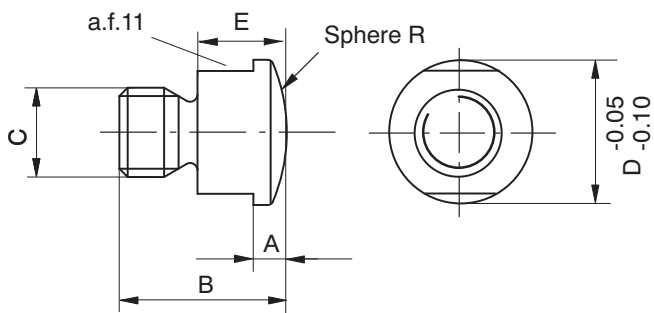


Type	Upper/lower knuckle eyes Order number	a	f	W	ØB
TOP-Z30/100N - 1000N	1-U1R/200kg/ZGW	147.5	170	12	8 ^{H7}
TOP-Z30/2kN - 10kN	1-U2A/1t/ZGUW	169	201	16	12 ^{H7}

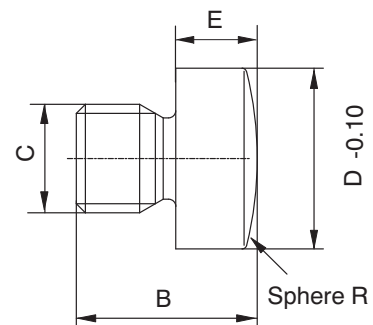
Type	ZKM Order number	B	C		ØD
			min	max	
TOP-Z30/2kN-10kN	1-Z30/10kN/ZKM	229	250	312	35 ^{-0.120} -0.280

Load button for compressive loading

Nominal load 50 N - 1 kN



Nominal load 2 kN - 10 kN

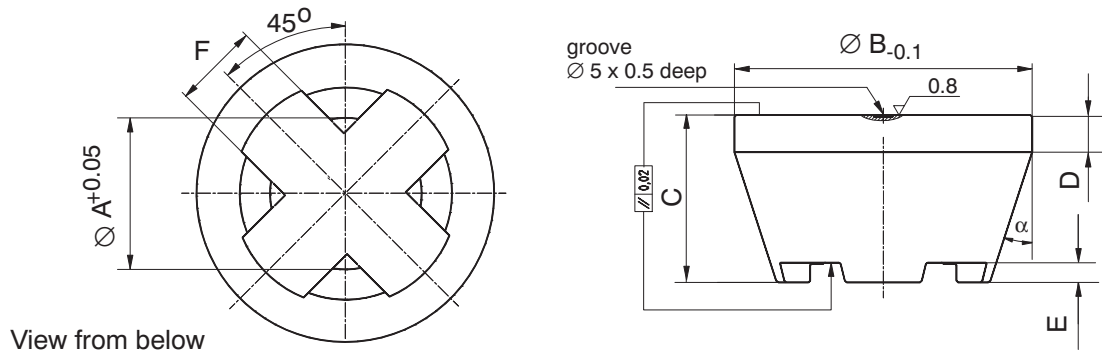


Type	Load button	A	B	C	D	E	R
Z30/50N - 1000 N	1-U1R/200kg/ZL	3	15	M8	13	8	16
Z30/2kN - 10 kN	3-9202.0140	11	20	M12	20	9	40

Accessories for TOP-Z30

Thrust piece EDO4/EDO3

(must always be used in combination with the load button, when under compressive loading)



Type	Thrust piece	Weight (kg)	Ø A	Ø B	C	D	E	F	α
TOP-Z30/100 N - 1000 N	EDO3/1 kN	approx. 0.2	13.2	37	22	6	3	8	18°
TOP-Z30/2 kN - 10 kN	EDO4/50 kN	0.34	20.2	48	29	8	5	12	18°



Carrying case for 4 TOP-Z30 force transducers and accessories,
Order no.: 1-Z30/BOX

Size: 440 x 320 x 147mm

Accessories (not supplied):

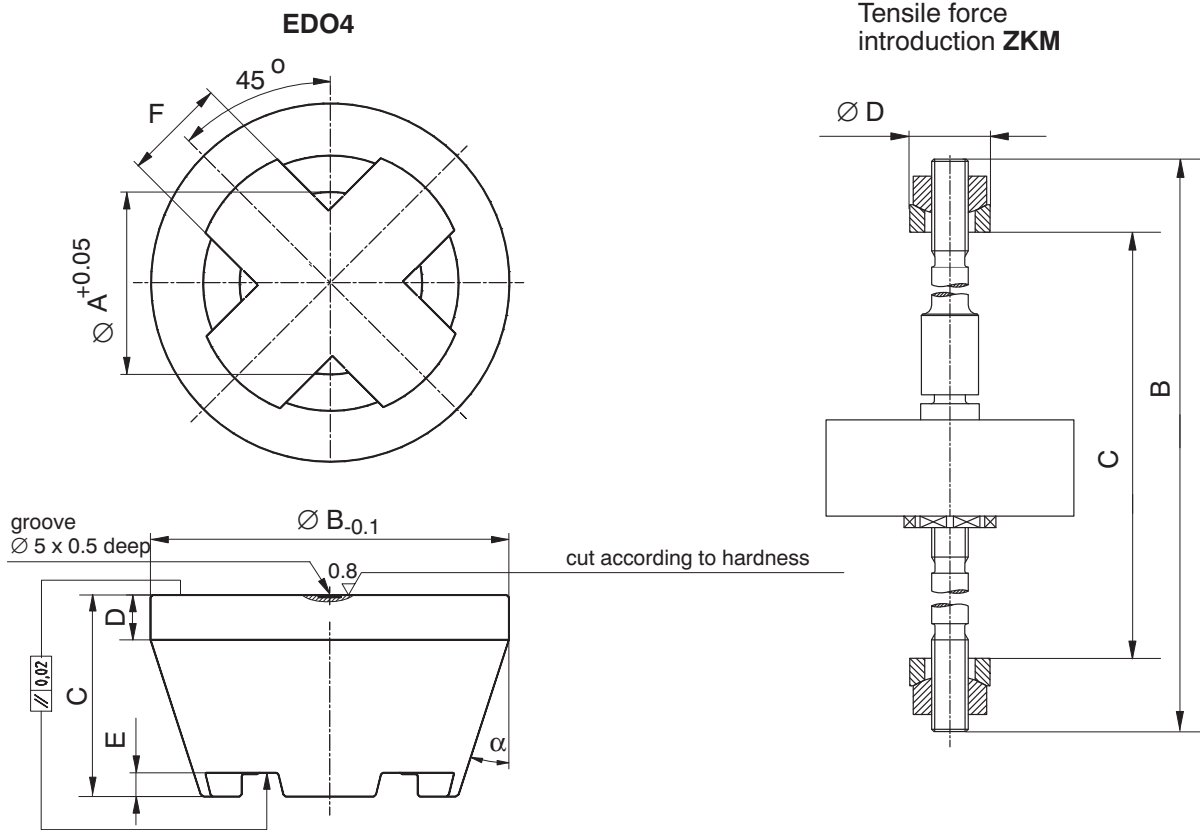
Connection cable TOP-Z30

Binder female cable connector and pigtails (6m)

Order number: 1-KAB139A-6

Accessories for TOP-Z4A

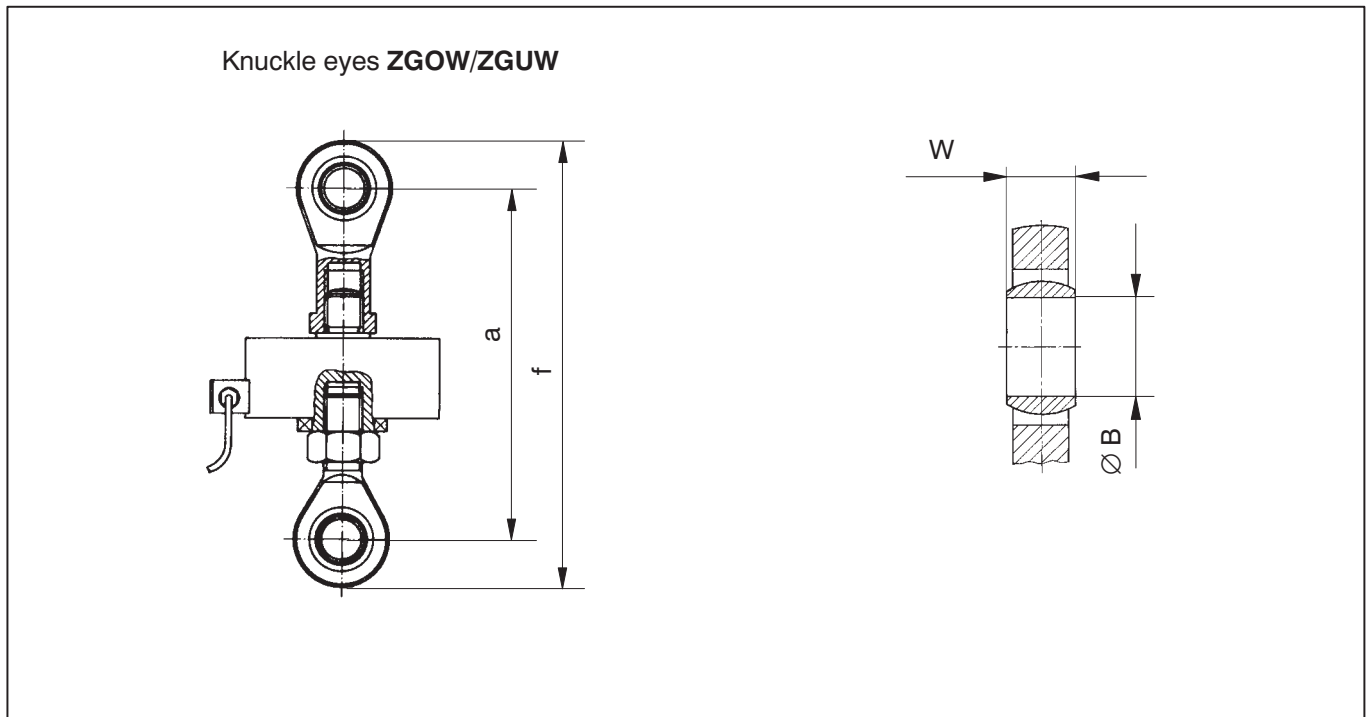
Force introduction parts to ISO 376



Type	Thrust piece Order no.	Weight (kg)	$\varnothing A$	$\varnothing B$	C	D	E	F	α
TOP-Z4A/20kN	1-EDO4/20kN	0.34	16.2	48	29	8	5	12	18°
TOP-Z4A/50kN	1-EDO4/50kN		20.2		29		5		
TOP-Z4A/100kN	1-EDO4/100kN	1.58	30.2	80	45	10	5	23	
TOP-Z4A/200kN	1-EDO4/200kN		39.2						
TOP-Z4A/500kN	1-EDO4/500kN	4.35	72.4	112	68	15	12	30	15°

Type	ZK Order no.	Weight (kg)	B	min	C	max	$\varnothing D$
TOP-Z4A/20kN	1-Z4/20kN/ZKM	0.82	325	228		276	35 -0.120 -0.280
TOP-Z4A/50kN	1-Z4/50kN/ZKM	1.45	350	248		299	45 -0.130 -0.290
TOP-Z4A/100kN	1-Z4/100kN/ZKM	2.32	395	277		334	50 -0.130 -0.290
TOP-Z4A/200kN	1-Z4/200kN/ZKM	4.19	447	317		382	64 -0.140 -0.330
TOP-Z4A/500kN	1-Z4/500kN/ZKM	20.1	623	432		522	90 -0.170 -0.390

Accessories for TOP-Z4A

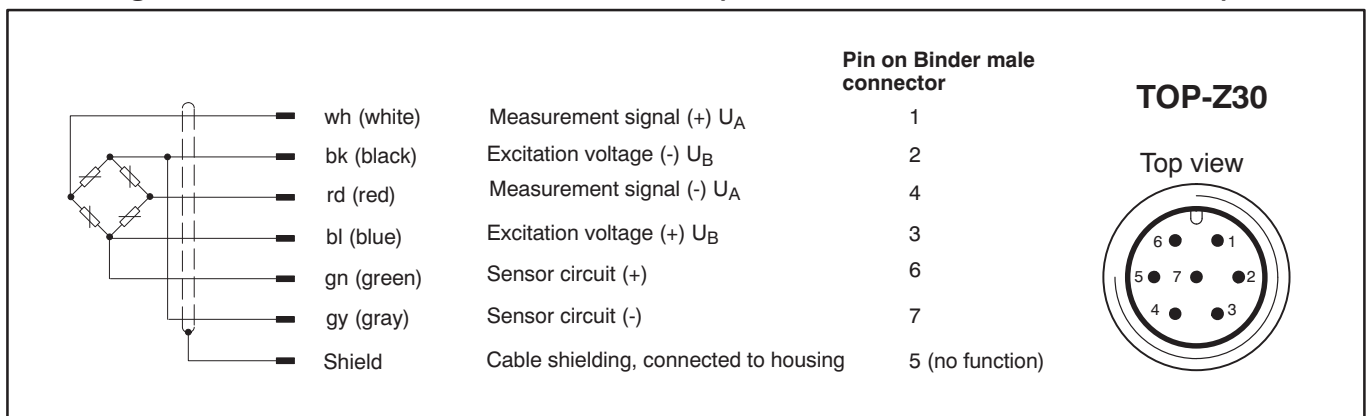


Type	Upper knuckle eye Lower knuckle eye Order no.	Weight (kg)	a		f		W	Ø B	M _A (Nm)
			min approx.	max approx.	min approx.	max approx.			
TOP-Z4A/20 kN	1-Z4/20kN/ZGOW 1-Z4/20kN/ZGUW	0.2	158	170	198	210	21	16 ^{H7}	120
TOP-Z4A/50 kN	1-U2A/2t/ZGOW 1-U2A/2t/ZGUW	0.8 0.4	190	199	245	254	25	20 ^{H7}	350
TOP-Z4A/100 kN	1-Z4/100kN/ZGOW 1-Z4/100kN/ZGUW	1.1	261	269	331	339	37	30 ^{H7}	950
TOP-Z4A/200 kN	1-U2A/10t/ZGOW 1-U2A/10t/ZGUW	3.2 1.1	352	357	475	480	35	50 ^{+0.001} ^{-0.014}	2000 ¹⁾
TOP-Z4A/500 kN	1-Z4/500kN/ZGOW 1-Z4/500kN/ZGUW	17.3 12.0	570	590	764	784	44	60 ^{+0.003} ^{-0.018}	4000 ²⁾

1) secured with 2 screws to prevent rotation; underside with inner thread

2) for pivot side only (outer thread)

Pin assignment for the TOP-Z4A and TOP-Z30 (for connection cable KAB139A-6)



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