DATA SHEET

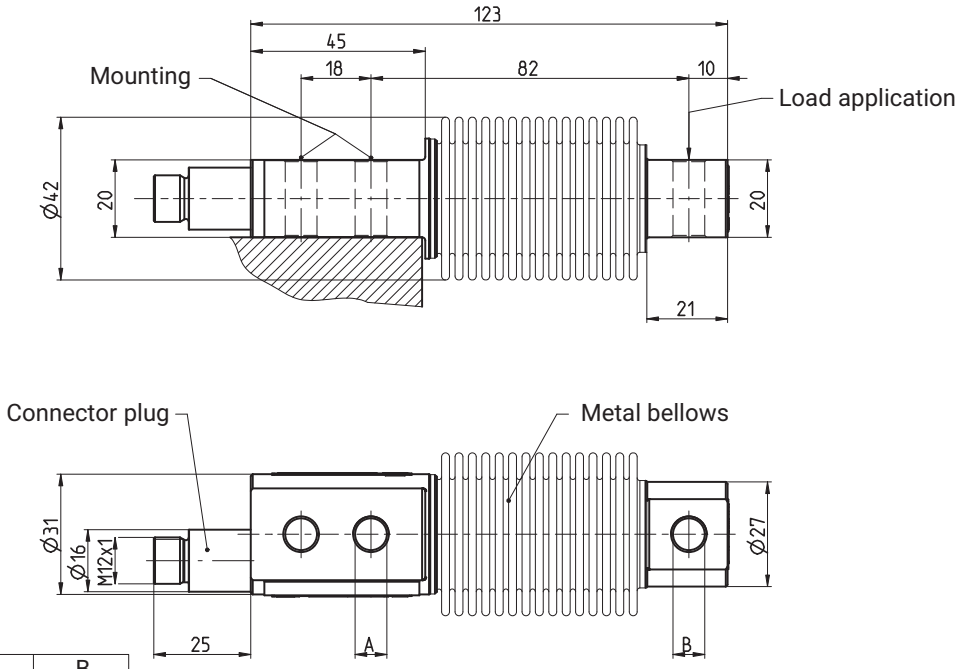
Z6-P
Load cell

SPECIAL FEATURES

- Welded-on metal bellows
- Maximum capacities: 20 kg … 500 kg
- Load cells and mounting aids made of rust-resistant materials
- Legal for trade up to 3000 parts, test report to OIML R60
- Approval as per NTEP III M5000
- Six-wire configuration
- Optimized for parallel connection
- Including integrated M12x1 male connector

DIMENSIONS

Z6-P; maximum capacity 20 kg … 500 kg



Maximum capacity	A	B
20 … 200 kg	8.2	8.2
500 kg	10.5	11.1

Dimensions in mm

SPECIFICATIONS

Type			Z6-P
Accuracy class to OIML R60			**C3**
Number of load cell verification intervals	n_{LC}		**3000**
Maximum capacity	E_{max}	kg	20; 30; 50; 100; 200; 500
Minimum load cell verification interval	v_{min}	% of E_{max}	0.009 0.0083 (30 kg)
Y value	Y		11111 12000 (30 kg)
Accuracy class to NTEP IIIM[1]			
Number of load cell verification intervals	n_{LC}		5000
Maximum capacity	E_{max}	kg	20; 30; 50; 100; 200; 500
Minimum load cell verification interval	v_{min}	% of E_{max}	E_{max}/11111 E_{max}/12000 (30 kg)
General specifications			
Nominal (rated) output	C_n	mV/V	2
Sensitivity tolerance with load appl. in spec. direction		%	± 0.05
Temperature coefficient of sensitivity[2]	TC_S	% of C_n/10 K	±0.0080
Temperature coefficient of zero signal	TC_0		±0.0125 ±0.0116 (30 kg)
Relative reversibility error[2]	d_{hy}	% of C_n	±0.0170
Non-linearity[2]	d_{lin}		±0.0180
Creep upon loading over 30 min.	d_{DR}		±0.0166
Input resistance	R_{LC}	Ω	350...480
Output resistance	R_0		355 ±0.12
Reference voltage	U_{ref}	V	5
Nominal (rated) range of the supply voltage	B_u		0.5...12
Insulation resistance	R_{is}	GΩ	> 5
Nominal (rated) range of the ambient temperature	B_T	°C	-10...+40
Operating temperature range	B_{tu}		-30...+70
Storage temperature range	B_{tl}		-50...+85
Limit load	E_L	% of E_{max}	150
Breaking load	E_d		≥ 300

1) Load cells of OIML accuracy class C3 also conform to accuracy class NTEP (USA) III M5000. They therefore have a second NTEP label.
2) The values for non-linearity, relative reversibility error and temperature response of the output range are recommended values. The sum of these values is within the accumulated error limit specified by OIML R60.

Maximum capacity		kg	20	30	50	100	200	500
Permissible oscillation stress		% of E_{max}	100	100	100	100	100	70
Nominal (rated) displacement, approx.	s_{nom}	mm	0.29	0.28	0.27	0.31	0.39	0.6
Weight, approx.	G	kg	0.5	0.5	0.5	0.5	0.5	0.5
Degree of protection (IP) to EN60529 (IEC529)			IP 68 (tougher test conditions: 2 m water column; 100 h)					
Material Measuring body Bellows			Stainless steel[3] Stainless steel[3] hermetically welded					

3) As per EN 10088-1

Z6-P LOAD CELLS, OPTIONAL VERSIONS

Order no.
K-Z6-P

Code	Option 1: Design
F	Z6-P

Code	Option 2: Accuracy class
C3	C3 (OIML)[1)]

Code	Option 3: Maximum capacity
20	20 kg
30	30 kg
50	50 kg
100	100 kg
200	200 kg
500	500 kg

Code	Option 4: Explosion-proof version
N	No explosion protection

Code	Option 5: Cable length
N	Male connector (M12x1)

Code	Option 6: Other
N	Without

K-Z6-P - F - [ ][ ] - [ ][ ][ ] - N - N - N

1) The load cells are also fitted with a NTEP III M5000 label.

MOUNTING AIDS, NOT INCLUDED IN THE SCOPE OF SUPPLY

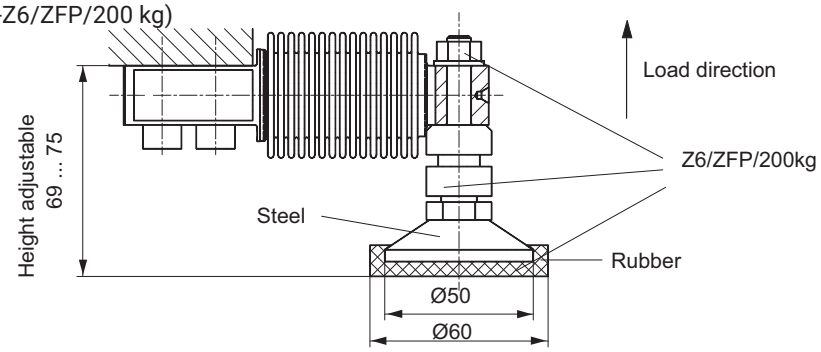
To minimize error effects from load application, HBK offers different tried and tested load application elements for this type of load cell based on the mounting conditions:

Ordering number	Mounting aid
1-Z6/ZFP/200kg	Oscillating loading foot
1-Z6/xxx kg/ZGWR	Knuckle eye (maintenance free)
1-Z6/200kg/ZRR	Fold-back arm
1-Z6/ZKP/200 kg	Oscillating loading foot
1-Z6/xxx kg/ZK	Cone, conical pan
1-Z6/PCX/500 kg/SET	Oscillating loading foot (set)
1-Z6/ZPU/xxx kg	Mounting base/mounting kit
1-Z6/xxx kg/ZPL	pendulum bearing
1-Z6/xxx kg/ZEL	Rubber-metal bearing

Notice: All mounting aids are made of rust-resistant material. The rubber parts of the ZEL are made of chloroprene rubber.

Oscillating loading foot ZFP

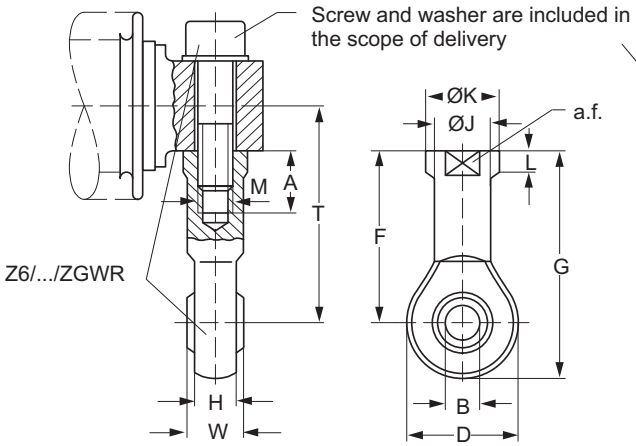
for maximum capacities up to 200 kg (1-Z6/ZFP/200 kg)



Dimensions in mm

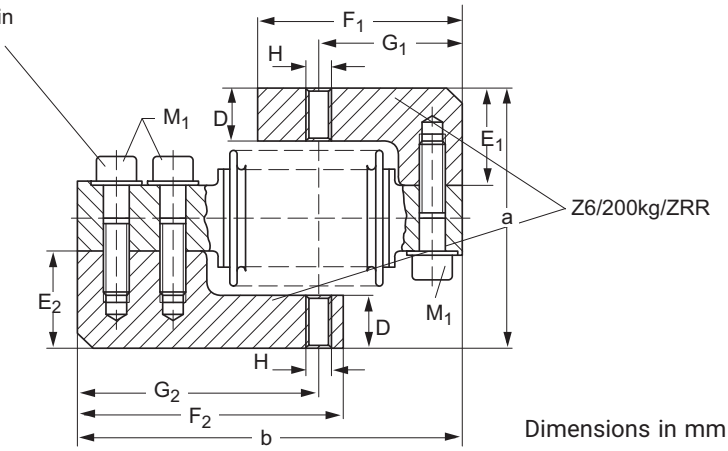
Knuckle eye ZGWR (maintenance free)

for maximum capacities up to 200 kg (1-Z6/200 kg/ZGWR) and 500 kg (1-Z6/1 t/ZGWR)



Force feedback ZRR

for maximum capacities up to 200 kg (1-Z6/200 kg/ZRR)



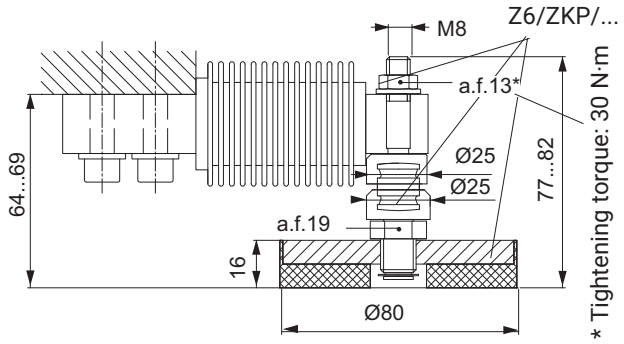
Dimensions in mm

Max. capacity	ZGWR	A	B	D	F	G	H	∅ J	∅ K	L	M	a.f.	W	T
5 ... 200 kg	Z6/200kg/ZGWR	16	8^{H7}	24	36	48	9	12.5	16	5	M8	14	12	46
500 kg	Z6/1t/ZGWR	20	10^{H7}	28	43	57	10.5	15	19	6.5	M10	17	14	53

Max. capacity	ZRR	D	E_1	E_2	F_1	F_2	G_1	G_2	H	M_1	a	b	Depth
5 ... 200 kg	Z6/200kg/ZRR	16	30	30	65	85	46	77	M8	M8x30	80 ±1.1	123	15

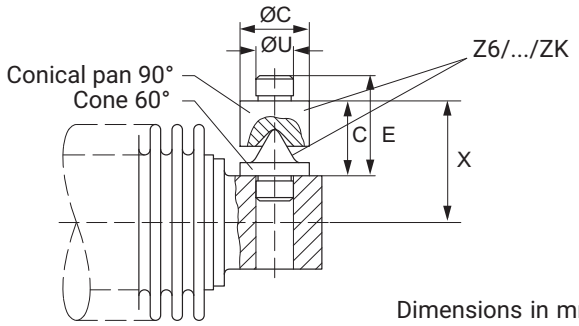
Oscillating loading foot ZKP

for maximum capacities up to 200 kg (1-Z6/ZKP/200 kg)



Cone, conical pan ZK

for maximum capacities up to 200 kg (1-Z6/200 kg/ZK) and 500 kg (1-Z6/1 t/ZK)

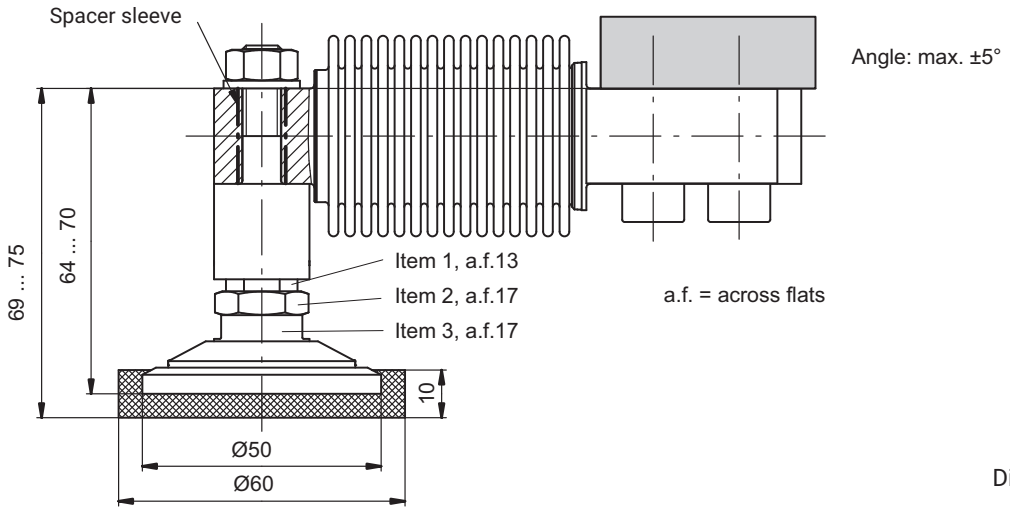


Dimensions in mm

Max. capacity	Cone, conical pan ZK	∅ C	D	E	∅ U	X
5 ... 200 kg	Z6/200kg/ZK	15	16	21	$8.1_{-0.05}$	26
500 kg	Z6/1t/ZK	18	24	32	$11_{-0.05}$	34

Oscillating loading foot PCX

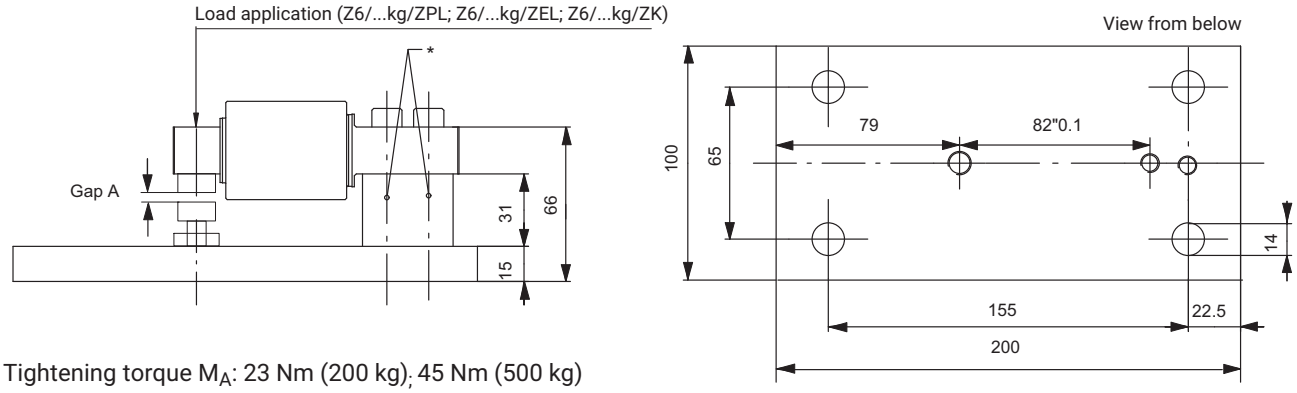
for maximum capacities up to 500 kg (1-Z6/PCX/500 kg/SET) 1 set comprises 4 oscillating loading feet



Dimensions in mm

Mounting base/mounting kit ZPU

for maximum capacities up to 200 kg (1-Z6/ZPU/200 kg) and 500 kg (1-Z6/ZPU/500 kg)



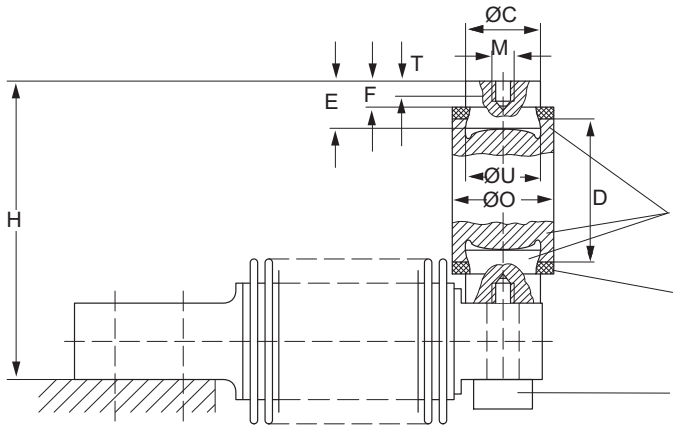
* Tightening torque M_A: 23 Nm (200 kg); 45 Nm (500 kg)
Gap A: In a load cell at maximum capacity, there should be a gap width of 0.05 mm

Dimensions in mm

Pendulum bearing ZPL

for maximum capacities up to 200 kg (1-Z6/200 kg/ZPL) and 500 kg (1-Z6/500 kg/ZPL)

Dimensions in mm

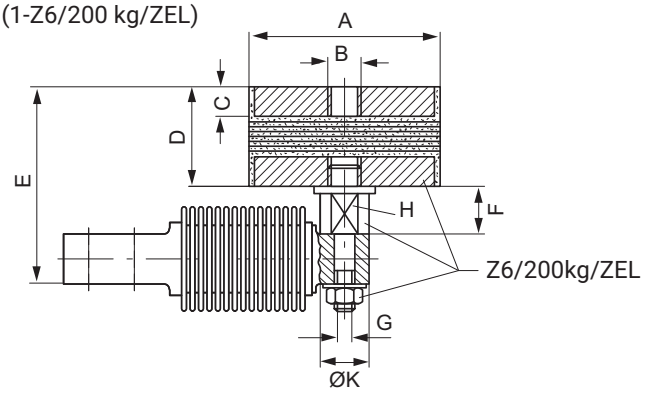


Maximum capacity	Pendulum bearing ZPL	∅ C	D	H	M	∅O	T	E	F	∅U	F_R[1] (% of the load)	s_{max}[2] (mm)
Up to 200 kg	Z6/200kg/ZPL	$20_{-0.2}$	45	$89^{+0.6}_{-0.8}$	M8	30	6.5	17	9	20^{D10}	2.8	3.5
500 kg	Z6/500kg/ZPL	$20_{-0.2}$	45	$89^{+0.6}_{-0.8}$	M8	30	6.5	17	9	20^{D10}	2.8	3.5

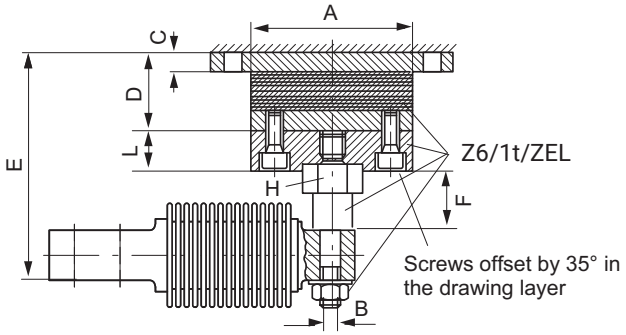
1) F_R: Restoring force in N, with 1 mm lateral displacement
2) s_{max}: Maximum permissible lateral displacement at maximum capacity

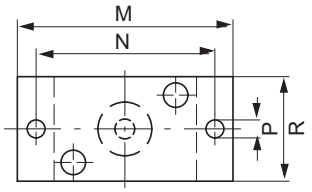
Rubber-metal bearing ZEL

for maximum capacities up to 200 kg (1-Z6/200 kg/ZEL)



for maximum capacity of 500 kg (1-Z6/1 t/ZEL)



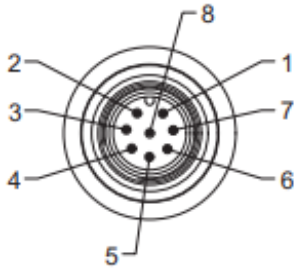


Dimensions in mm

Maximum capacity	ZEL	A	B	C	D	E	F	G	H	K	L	M	N	P	R	F_R[1]	s_{max}[2]
5 ... 200 kg	Z6/200kg/ZEL	75	M12	12	40	79 ±1.3	18.5	M8	a.f.17	19	-	-	-	-	-	163	3
500 kg	Z6/1t/ZEL	80	M10	10	39	$105^{+2.1}_{-2.2}$	26	-	SW27	-	20	120	100	9	60	400	4.5

1) F_R: Restoring force in N, with 1 mm lateral displacement
2) s_{max}: in mm, maximum permissible lateral displacement at maximum capacity

CONNECTOR PIN ASSIGNMENT



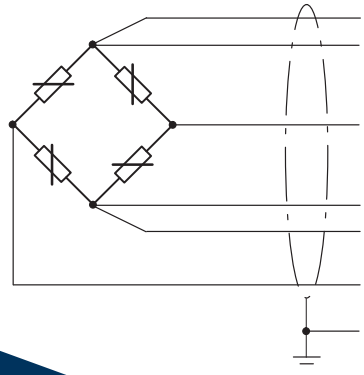
Plug-in contact 1 = measurement signal (+)
Plug-in contact 2 = not in use
Plug-in contact 3 = sense lead (+)
Plug-in contact 4 = not in use
Plug-in contact 5 = sense lead (-)
Plug-in contact 6 = excitation voltage (-)
Plug-in contact 7 = excitation voltage (+)
Plug-in contact 8 = measurement signal (-)

Pin assignment 1-KAB168		Pin assignment 1-KAB175		Plug-in contact
Wire color	Connection	Wire color	Connection	
White	Measurement signal (+)	White	Measurement signal (+)	1
Red	Measurement signal (-)	Red	Measurement signal (-)	8
Blue	Excitation voltage (+)	Blue	Excitation voltage (+)	7
Pink	Excitation voltage (-)	Black	Excitation voltage (-)	6
Green	Sense lead (+)	Green	Sense lead (+)	3
Gray	Sense lead (-)	Gray	Sense lead (-)	5
Yellow	Not in use			-
Brown	Not in use			-

Connection cable for connection coupling

Connection cable with M12 F socket, 8-pin, TPU IP67, PUR cable sheath, 5 m long	1-KAB168-5
Connection cable with M12 F socket, 8-pin, TPU IP67, PUR cable sheath, 20 m long	1-KAB168-20
Connection cable with M12 F socket, 8-pin, stainless steel IP68/IP69, hygiene design, 3 m long	1-KAB175-3-1
Connection cable with M12 F socket, 8-pin, stainless steel IP68/IP69, hygiene design, 6 m long	1-KAB175-6-1
Connection cable with M12 F socket, 8-pin, stainless steel IP68/IP69, hygiene design, 12 m long	1-KAB175-12-1

CABLE ASSIGNMENT OF LOAD CELL (CORRESPONDS TO STANDARD 6-WIRE CIRCUIT)



(gray)	Sense lead (-)	plug-in contact 5
(black)	Excitation voltage (-)	plug-in contact 6
(white)	Measurement signal (+)	plug-in contact 1
(blue)	Excitation voltage (+)	plug-in contact 7
(green)	Sense lead (+)	plug-in contact 3
(red)	Measurement signal (-)	plug-in contact 8
(stranded connection wire)		cable shield connected to housing ground

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