

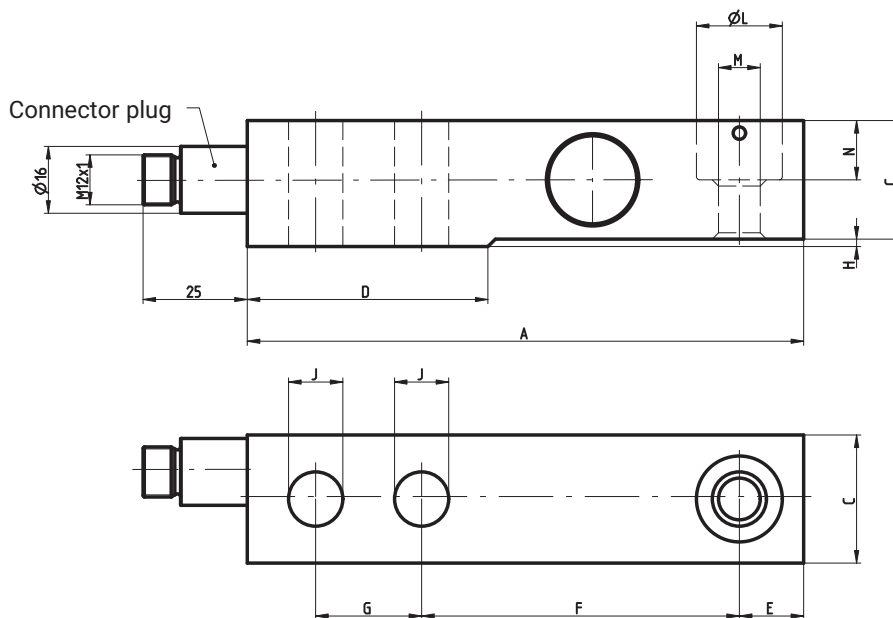
HLCB2-P Load cell with device plug

SPECIAL FEATURES

- Hermetically encapsulated (IP68, IP69K)
- Maximum capacities: 220kg ... 4.4 t
- Stainless materials
- Low height of construction
- Six-wire configuration
- Optimized for parallel connection with M12x1 device plug
- Legal for trade as per OIML R60 to 3000 divisions
- Different M12x1 couplings (3 to 20 m) available



DIMENSIONS IN MM



Maximum capacity	A	B	C	D	E	F	G	H	J	K	ØL	M	N
220 kg; 550 kg; 1.1 t	133.4	30.2	30.7	57.7	15.4	76.2	25.4	1.7	13	3 m	20.6	M12	14.2
1.76 t	133.4	30.2	30.7	57.7	15.4	76.2	25.4	1.7	13	3 m	20.6	M12	14.2
2.2 t	171.5	36.5	36.8	76.2	19.1	95.3	38.1	2.5	20.5	6 m	30.2	M20	17.0
4.4 t	171.5	42.9	42.9	76.2	19.1	95.3	38.1	2.5	20.5	6 m	30.2	M20	20.1

SPECIFICATIONS

Type		HLC-P	
Accuracy class per OIML R60 ¹⁾		C3	
Number of load cell verification intervals	n_{LC}	3000	
Maximum capacity	E_{max}	220 kg; 550 kg; 1.1 t; 1.76 t; 2.2 t; 4.4 t	
Minimum load cell verification interval	v_{min}	% of E_{max}	0.0100 (220 kg; 1.76 t; 2.2 t; 4.4 t) 0.0090 (550 kg; 1.1 t)
Ratio of minimum verification interval	Y	10,000 (220 kg; 1.76 t; 2.2 t; 4.4 t) 11,111 (550 kg; 1.1 t)	
Nominal (rated) output	C_n	mV/V	1.94
Rated output tolerance		%	±0.1
Temperature coefficient of zero signal ²⁾	TC_0	% of C_n / 10 K	±0.0140 (220 kg; 1.76 t; 2.2 t; 4.4 t) ±0.0126 (550 kg; 1.1 t)
Temperature coefficient of sensitivity ²⁾	TC_S		±0.0140
Relative reversibility error ²⁾	d_{hy}	% of C_n	±0.0166
Non-linearity ²⁾	d_{lin}		±0.0170
Creep upon loading over 30 min.	d_{cr}		±0.0166
Minimum dead load output return	MDLOR		±0.0166
Input resistance	R_{LC}	Ω	350 ... 480
Output resistance	R_0		349 ± 0.12
Reference excitation voltage	U_{ref}	V	5
Nominal (rated) range of the excitation voltage	B_U		0.5 ... 15
Insulation resistance	R_{is}		G Ω
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 (for 1.76 t: 171% of E_{max})
Lateral loading limit	E_{lq}		100
Breaking load	E_d		300
Relative permissible oscillatory stress (oscillation width as per DIN 50100)	F_{srel}		70 (for 1.76 t: 600 kg to 2 t)
Rated displacement at E_{max} , approx.	s_{nom}	mm	0.5 (1.76 t = 1.4 mm)
Weight, approx.	G	kg	0.9 (220 kg ... 1.76 t); 1.6 (2.2 t); 2.2 (4.4 t)
Degree of protection as per EN 60529 (IEC 60529)		IP 68 / IP 69K	
Material			
Measuring body		Stainless steel ³⁾	
Measuring point protection		Stainless steel ³⁾ Hermetically welded	

¹⁾ OIML R60 with PLC = 0.7

²⁾ The values for non-linearity (d_{lin}), relative reversibility error (d_{hy}) and temperature coefficient of sensitivity (TC_S) are recommended values. The sum of these values is within the accumulated error limit specified by OIML R60.

³⁾ As per EN 10088-1

ORDERING OPTIONS

HLC-P load cells, optional versions

Ordering number		
K-HLC-P HLC M12 device plug		
1	Code	Option 1: Design
	B2	Standard (= degree of protection IP69K)
2	Code	Option 2: Accuracy class
	C3	C3 (OIML)
3	Code	Option 3: Maximum capacity
	220	220 kg
	550	550 kg
	1100	1.1 t
	1760	1.76 t
	2200	2.2 t
4	Code	Option 4: Explosion protection
	N	No explosion protection
5	Code	Option 5: Plug
	N	Plug
6	Code	Option 6: Other
	N	None

K-HLC-P - B2 - C3 - - N - N - N

1 2 3 4 5 6

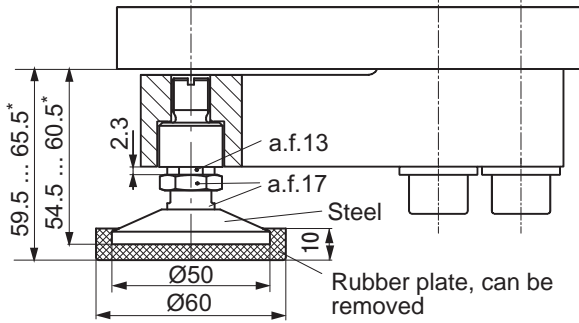
ACCESSORIES

To minimize error effects from load application, HBM offers different tried and tested load application elements for this type of load cell, according to the mounting conditions:

- **HLCB/ZFP/...T** Oscillating loading foot
- **HLCB/PCX/1.76T** Oscillating loading foot (height adjustable)
- **HLCB/...T/ZEL** Elastomer bearing
- **HLCB/ZDP/...T** Elastomer bearing **Easy Top**
- **HLC/ZPU/...T** Mounting base / mounting kit

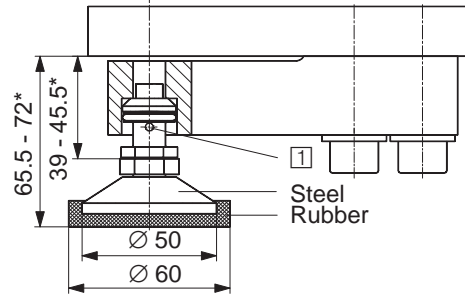
ACCESSORIES FOR HLC B ... (TO BE ORDERED SEPARATELY; DIMENSIONS IN MM)

HLCB/PCX/1.76 t - Oscillating loading foot (stainless steel) for HLC B / 110 kg ... 1.76 t, suitable up to accuracy class C6:



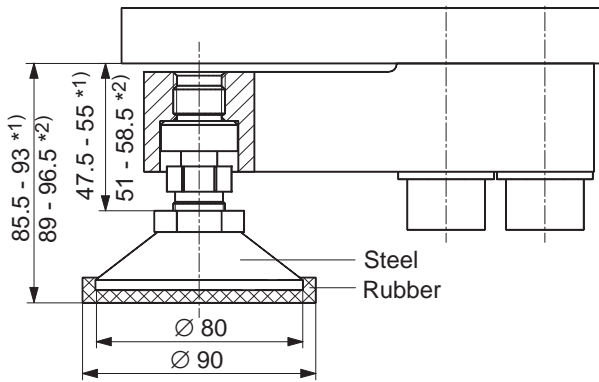
* Height adjustment

HLCB/ZFP/1.76 T - Oscillating loading foot (stainless steel) for HLC B / 110 kg ... 1.76 t:



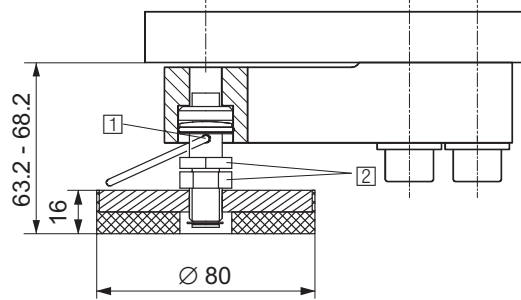
1 Loading foot secured in load cell with supplied bracket

HLCB/ZFP/4.4 T - Oscillating loading foot (stainless steel) for HLC B / 2.2 t + 4.4 t:



* Height adjustment, (1) = Maximum capacity 2.2 t / (2) = Maximum capacity 4.4 t

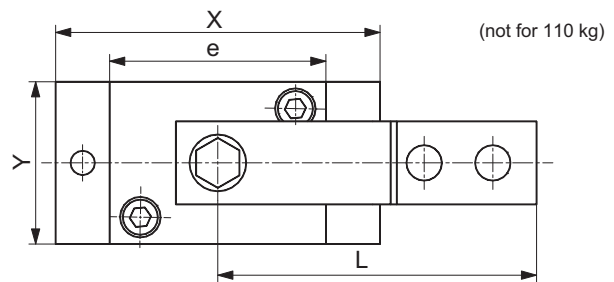
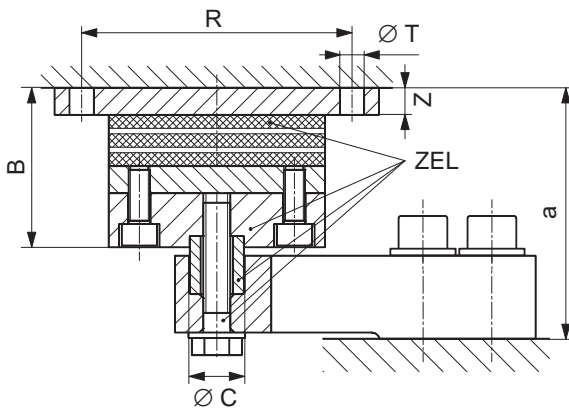
HLCB/ZAK/1.76T - Oscillating loading foot, height adjustable (stainless steel) for HLC B ≤ 1.76 t



1 Loading foot secured in load cell with supplied bracket

2 19 across flats

HLCB/...T/ZEL - Rubber-metal bearing (galvanized; HLCB/1.76T/ZELR made from rust-resistant material) for HLC B



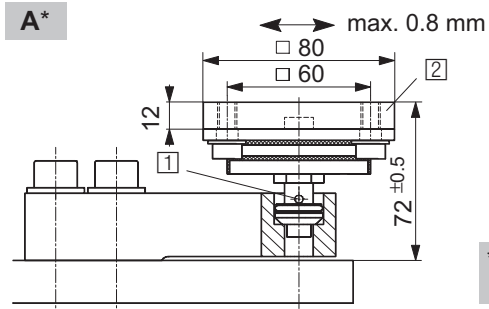
Maximum permissible lateral displacement (under maximum capacity):

HLCB/1.76T/ZEL: 4,5 mm
 HLCB/4.4T/ZEL: 8 mm
 HLCB/10T/ZEL: 9.5 mm

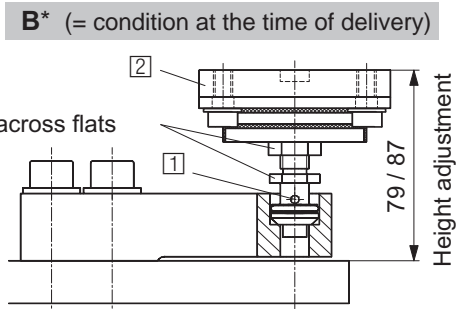
Type	Max. capacity	B	ØC-0.1	L	R	ØT	X	Y	Z	a	e
HLCB/1.76T/ZEL HLCB/1.76T/ZELR	220 kg ... 1.76 t	58.8	20	118	100	9	120	60	10	92	80
HLCB/2.2T/ZEL	2.2 t	71.2	30	152.4	125	11	150	100	10	113	100
HLCB/4.4T/ZEL	4.4 t	71.2	30	152.4	125	11	150	100	10	116	100

ACCESSORIES FOR HLC B ... (TO BE ORDERED SEPARATELY; DIMENSIONS IN MM)

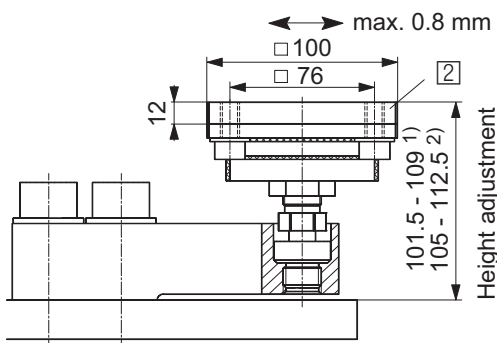
HLCB/ZDP/1.76 T Easy top - Rubber-metal bearing for HLC B / 220 kg ... 1.76 t
 (Load application: stainless steel, welding plate: galvanized)



* Installation optional



HLCB/ZDP/4.4 T Easy top - Rubber-metal bearing for HLC B / 2.2 t + 4.4 t
 (Load application: stainless steel, welding plate: galvanized)



1) **Easy top** secured in load cell with supplied bracket

2) Welding plate (schematic top view)

ZPU/1.76T: 4x M8
 ZPU/2.2T + 4.4T: 4x M10



1) = maximum capacity 2.2 t

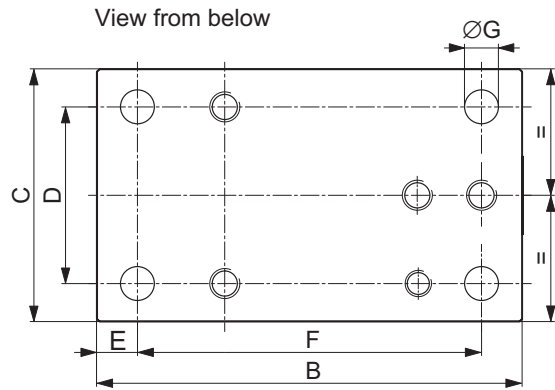
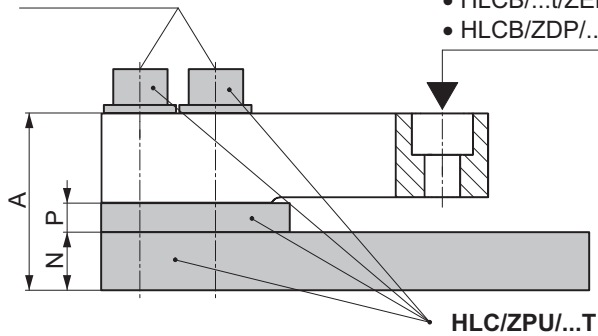
2) = maximum capacity 4.4 t

HLC/ZPU/...T - Mounting base / mounting kit (galvanized) for HLC B

Tightening torque M_A : see table

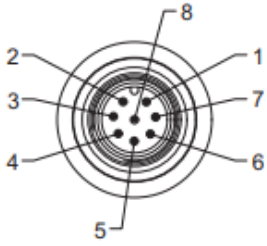
Load application via:

- HLCB/...t/ZEL
- HLCB/ZDP/...t



Type	Maximum capacity	Breaking load	A	B	C	D	E	F	G	N	P	M_A
HLC/ZPU/1.76 T	110 kg ... 1.76 t	3.52 t	60.5	168	100	70	16	136	13.5	20	10	130 Nm
HLC/ZPU/2.2 T	2.2 t	4.4 t	81.5	212	120	84	18	175	14	25	20	400 Nm
HLC/ZPU/4.4 T	4.4 t	8.8 t	88	212	120	84	18	175	14	25	20	400 Nm

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 for 1-KAB168

Wire color	Connection
White	Measurement signal (+)
Red	Measurement signal (-)
Blue	Excitation voltage (+)
Pink	Excitation voltage (-)
Green	Sense lead (+)
Gray	Sense lead (-)
Yellow	Not in use
Brown	Not in use

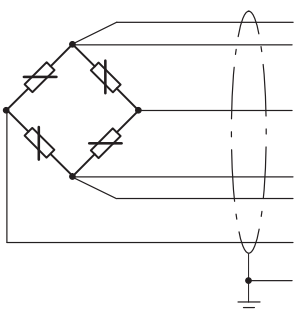
Pin assignment for 1-KAB175

Wire color	Connection
White	Measurement signal (+)
Red	Measurement signal (-)
Blue	Excitation voltage (+)
Black	Excitation voltage (-)
Green	Sense lead (+)
Gray	Sense lead (-)

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) Sensing element (-)
- (black) Bridge excitation voltage (-)
- (white) Signal (+)
- (blue) Bridge excitation voltage (+)
- (green) Sensing element (+)
- (red) Signal (-)
- (stranded connection wire) Cable shield connected to housing ground

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