



# HLC A1 ... HLC B1 ... HLC F1 ...

## Load cells

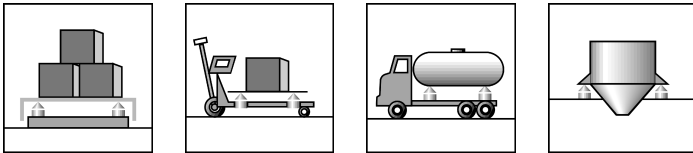
### Special features

- Hermetically sealed (IP68)
- Max. capacities: 220 kg ... 10 t
- Stainless steel
- Low overall height
- Meets EMC/ESD requirements according to EN 45 501
- Complies with OIML R60 regulations up to 3000d for scales acc. to EN 45 501
- Explosion-proof versions according to ATEX 95 optional

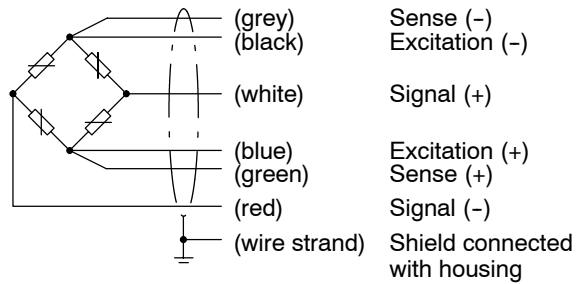
HLC B1 ...



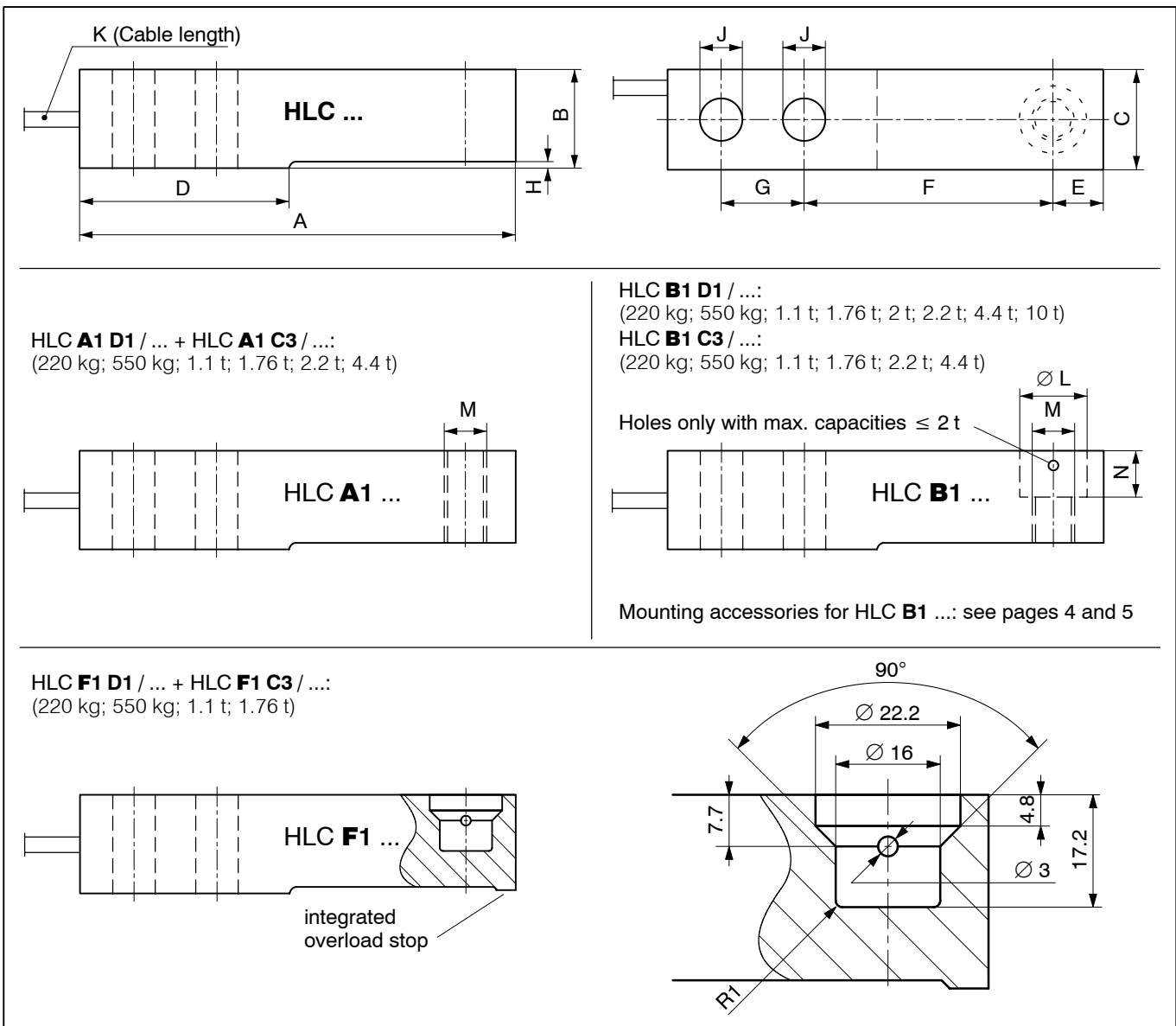
HLC F1 ...



Wiring code (6-wire circuit)



**Dimensions** (in mm; 1 mm = 0.03937 inches)



**HLC A1 D1 / ... + HLC A1 C3 / ...:**  
(220 kg; 550 kg; 1.1 t; 1.76 t; 2.2 t; 4.4 t)

**HLC B1 D1 / ...:**  
(220 kg; 550 kg; 1.1 t; 1.76 t; 2 t; 2.2 t; 4.4 t; 10 t)  
**HLC B1 C3 / ...:**  
(220 kg; 550 kg; 1.1 t; 1.76 t; 2.2 t; 4.4 t)

Holes only with max. capacities ≤ 2 t

Mounting accessories for HLC B1 ...: see pages 4 and 5

**HLC F1 D1 / ... + HLC F1 C3 / ...:**  
(220 kg; 550 kg; 1.1 t; 1.76 t)

integrated overload stop




Max. capacity	A	B	C	D	E	F	G	H	J	K	Ø L	M	N
<b>220 kg; 550 kg; 1.1 t; 1.76 t; 2 t<sup>1)</sup></b>	133.4	30.2	30.7	57.7	15.4	76.2	25.4	1.7	13	3 m	20.6	M12	14.2
<b>2.2 t<sup>2)</sup></b>	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
<b>4.4 t<sup>2)</sup></b>	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
<b>10 t<sup>1)</sup></b>	245.1	72.9	60	119.9	30.2	134.9	50 ±0.05	11.2	27	6 m	51 +0.2	Ø 32	20

1) Maximum capacities 2 t and 10 t: HLC B1 D1 ... only  
2) Maximum capacities 2.2 t and 4.4 t: HLC A1 ... + HLC B1 ... only

**Mounting accessories** (to be ordered separately)

In order to minimize error interferences due to load introduction, HBM offers various proven load introductions for the load cell types HLC B1 ... und HLC F1 ..., depending on the mounting situation (see pages 4 and 5)

## Technical Data

<b>Type HLC A1 ...</b> Maximum capacity ( $E_{max}$ )  (Load introduction = thread through)		<b>HLC A1 D1 / ...</b> 220 kg; 550 kg; 1.1 t; 1.76 t; 2.2 t; 4.4 t	<b>HLC A1 C3 / ...</b> 220 kg; 550 kg; 1.1 t; 1.76 t; 2.2 t; 4.4 t
<b>Type HLC B1 ...</b> Maximum capacity ( $E_{max}$ )  (Load introduction = counterbore + thread) <sup>3)</sup>		<b>HLC B1 D1 / ...</b> 220 kg; 550 kg; 1.1 t; 1.76 t; 2 t 2.2 t; 4.4 t; 10 t	<b>HLC B1 C3 / ...</b> 220 kg; 550 kg; 1.1 t; 1.76 t; 2.2 t; 4.4 t
<b>Type HLC F1 ...</b> Maximum capacity ( $E_{max}$ )  (Load introduction = blind hole + integrated overload stop)		<b>HLC F1 D1 / ...</b> 220 kg; 550 kg; 1.1 t; 1.76 t	<b>HLC F1 C3 / ...</b> 220 kg; 550 kg; 1.1 t; 1.76 t
<b>Accuracy class according to OIML R60</b> <b>Maximum number of load cell intervals (<math>n_{LC}</math>)</b>		<b>D1</b> 1000	<b>C3</b> 3000
<b>Minimum LC verification interval (<math>v_{min}</math>)</b>	% of $E_{max}$	0.0285	0.0100 (220 kg; 1.76 t; 2.2 t; 4.4 t) 0.0090 (550 kg + 1.1 t)
<b>Sensitivity (<math>C_N</math>)</b>	mV/V	1.94 (2 t + 10 t = 2.00 mV/V)	1.94
<b>Sensitivity tolerance</b>	%	± 0.5	± 0.1
<b>Temperature effect on zero balance (<math>TK_0</math>)</b>	% of $C_N$ / 10 K	± 0.0400	± 0.0140 (220 kg; 1.76 t; 2.2 t; 4.4 t) ± 0.0127 (550 kg + 1.1 t)
<b>Temperature effect on sensitivity (<math>TK_C</math>) <sup>4)</sup></b>		± 0.0500	± 0.0140
<b>Hysteresis error (<math>d_{hy}</math>) <sup>4)</sup></b>		± 0.0500	± 0.0170
<b>Non-linearity (<math>d_{lin}</math>) <sup>4)</sup></b>	% of $C_N$	± 0.0500	± 0.0170
<b>Creep (<math>d_{cr}</math>) over 30 min.</b>		± 0.0500	± 0.0166
<b>Input resistance (<math>R_{LC}</math>)</b>	Ω	> 350	
<b>Output resistance (<math>R_0</math>)</b>		350 ± 2	
<b>Reference excitation voltage (<math>U_{ref}</math>)</b>	V	5	
<b>Nominal range of excitation voltage (<math>B_U</math>)</b>		0.5 ... 15 ( Ex-Versions max. 12 V !!! )	
<b>Insulation resistance (<math>R_{is}</math>)</b>	GΩ	> 5	
<b>Nominal temperature range (<math>B_T</math>)</b>		-10 ... +40 [+14 ... +104]	
<b>Service temperature range (<math>B_{tu}</math>)</b>	°C [°F]	-30 ... +70 [-22 ... +158]	
<b>Storage temperature range (<math>B_{tl}</math>)</b>		-50 ... +85 [-58 ... +185]	
<b>Safe load limit (<math>E_L</math>)</b>		150	
<b>Lateral load limit (<math>E_{lq}</math>)</b>		100	
<b>Breaking load (<math>E_d</math>)</b>		300	
<b>Permissible dynamic load (<math>F_{srel}</math>) (vibration amplitude according to DIN 50100)</b>		70	
<b>Deflection at <math>E_{max}</math> (<math>s_{nom}</math>), approx.</b>	mm	0.5 (1.76 t = 1.4 mm)	
<b>Weight (G), approx.</b>	kg	0.9 (220 kg ... 2 t); 1.6 (2.2 t); 2.2 (4.4 t); 6.2 (10 t)	
<b>Protection class to EN 60 529 (IEC 529)</b>		IP68	
<b>Material: Measuring element Cable fitting Cable-sheath</b>		Stainless steel Stainless steel / Gasket: Viton® PVC	

<sup>3)</sup> Maximum capacity 10 t: Load introduction = counterbore + hole

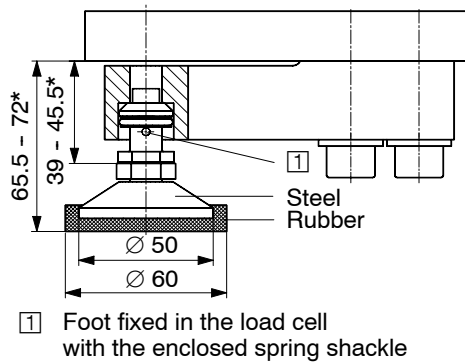
<sup>4)</sup> The data for Non-linearity ( $d_{lin}$ ), Hysteresis error ( $d_{hy}$ ) and Temperature effect on sensitivity ( $TK_C$ ) are typical values. The sum of these data meets the requirements according to OIML R60.

## Mounting accessories (to be ordered separately)

In order to minimize error interferences due to load introduction, HBM offers various proven load introductions for the load cell types HLC **B1** ... und HLC **F1** ..., depending on the mounting situation (see pages 4 and 5)

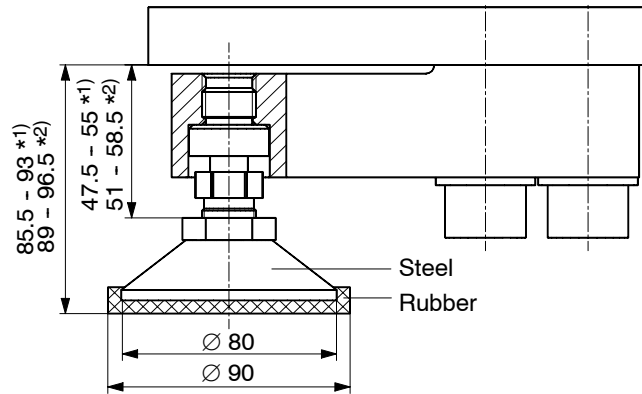
**Mounting accessories for HLC B ...** (to be ordered separately; Dimensions in mm; 1 mm = 0.03937 inches)

**HLCB/ZFP/1.76 T** - Load introduction swivel foot  
(Stainless steel) for HLC B / 220 kg ... 2 t:



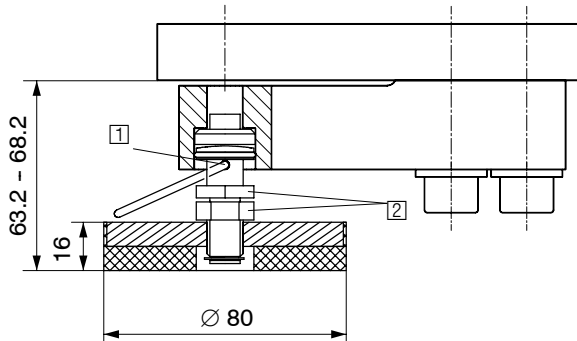
1 Foot fixed in the load cell with the enclosed spring shackle

**HLCB/ZFP/4.4 T** - Load introduction swivel foot  
(Stainless steel) for HLC B / 2.2 t + 4.4 t:



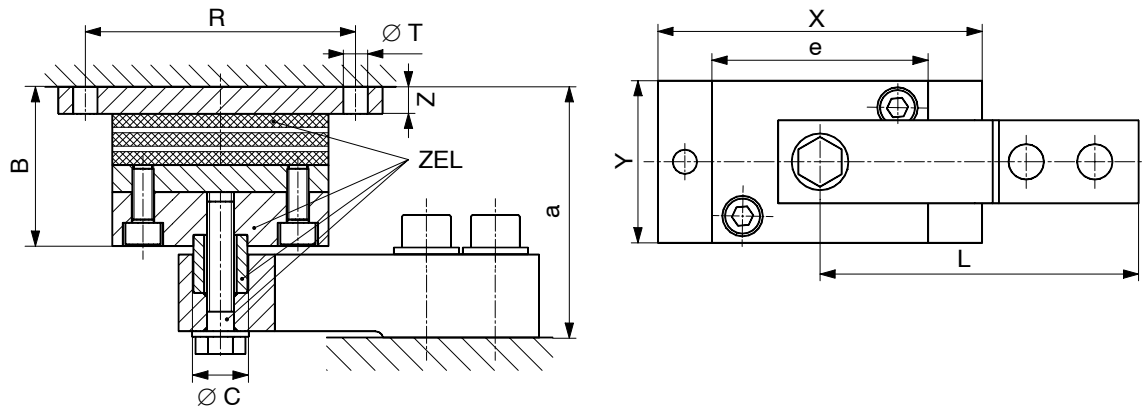
\* = Height adjustment (1) = Maximum capacity 2.2 t / (2) = Maximum capacity 4.4 t

**HLCB/ZAK/1.76T** - Load introduction swivel foot (stainless steel) for HLC B ≤ 2 t



1 Foot fixed in the load cell with the enclosed spring shackle  
2 Width across flats 19

**HLCB/...T/ZEL** - Rubber-metal bearing (galvanized material) for HLC B



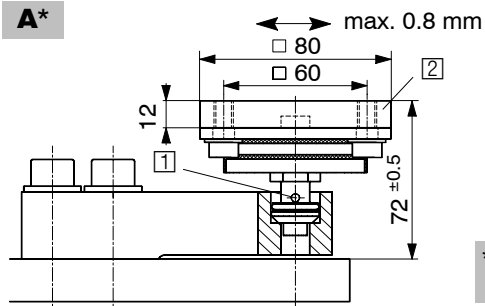
Maximum permissible lateral shift (when loaded with max. capacity):

HLCB/1.76T/ZEL: 4.5 mm  
HLCB/4.4T/ZEL: 8 mm  
HLCB/10T/ZEL: 9.5 mm

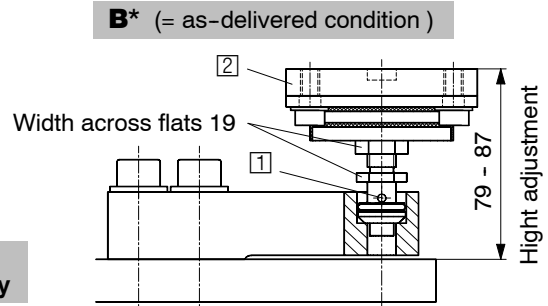
Type	Max. capacity	B	∅ C <sub>0.1</sub>	L	R	∅ T	X	Y	Z	a	e
HLCB/1.76T/ZEL	220 kg ... 2 t	58.8	20	118	100	9	120	60	10	92	80
HLCB/4.4T/ZEL	2.2 t	71.2	30	152.4	125	11	150	100	10	113	100
HLCB/4.4T/ZEL	4.4 t	71.2	30	152.4	125	11	150	100	10	116	100
HLCB/10T/ZEL	10 t	85	50.8	214.9	175	13	200	100	12	167	150

**Mounting accessories for HLC B ... + HLC F ...** (to be ordered separately; Dimensions in mm; 1 mm = 0.03937 inches)

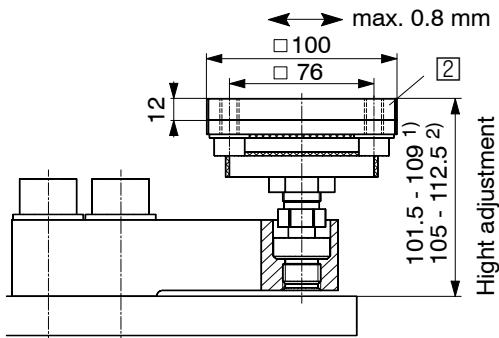
**HLCB/ZDP/1.76 T Easy top** - Rubber-metal bearing for HLC B / 220 kg ... 2 t  
 (Load introduction: stainless steel, Welding plate: galvanized material)



\* Mounting **alternatively**



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



1) **Easy top** fixed in the load cell with the enclosed spring shackle

2) Welding plate (schematically top view)  
 ZPU/1.76T: 4x M8  
 ZPU/2.2T + 4.4T: 4x M10



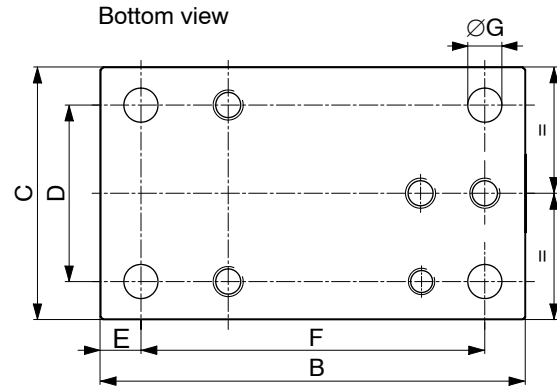
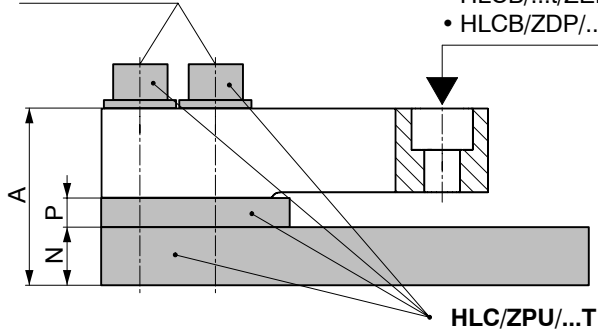
1) = Maximum capacity 2.2 t  
 2) = Maximum capacity 4.4 t

**HLC/ZPU/...T** - Base plate / Mounting kit (galvanized material) for HLC B

Wrench torque for screws  $M_A$ : see table

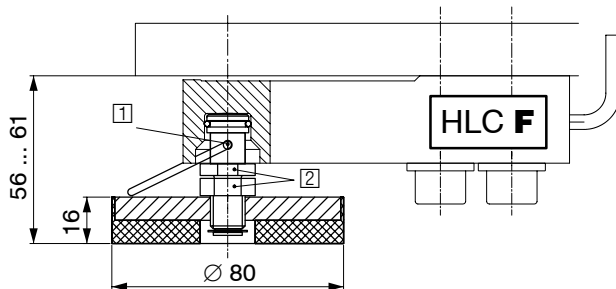
Load introduction via:

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



Type	Max. capacity	Breaking load	A	B	C	D	E	F	G	N	P	$M_A$
HLC/ZPU/1.76 T	220 kg ... 2 t	3.52 t	60.5	168	100	70	16	136	13.5	20	10	130 N·m
HLC/ZPU/2.2 T	2.2 t	4.4 t	81.5	212	120	84	18	175	14	25	20	400 N·m
HLC/ZPU/4.4 T	4.4 t	8.8 t	88	212	120	84	18	175	14	25	20	400 N·m

**HLCF/ZKP/1.76T** - Load introduction swivel foot (stainless steel) for HLC F  $\leq 1.76$  t



- 1) Foot fixed in the load cell with the enclosed spring shackle
- 2) Width across flats 19

