

DATA SHEET



HLC A1 ..., HLC B1 ... Load cells

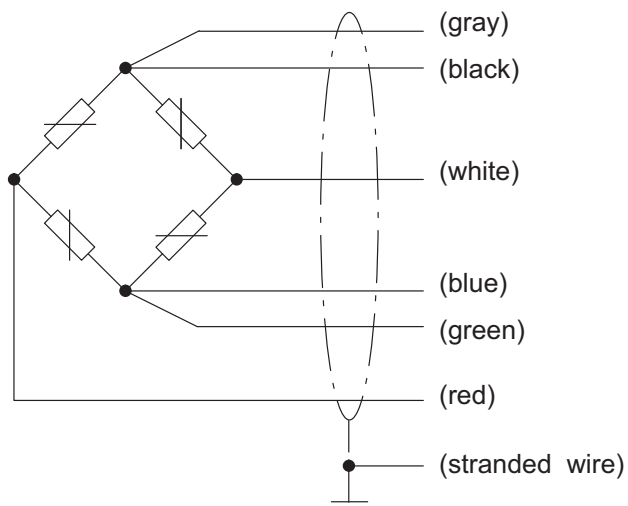
SPECIAL FEATURES

- Maximum capacities: 110 kg ... 10 t
- Hermetically encapsulated (IP68)
- Rust-resistant materials
- Low height of construction
- Legal for trade per OIML R60 to 6000 divisions
- Legal for trade per NTEP (USA) III M5000
- Explosion protection versions as per ATEX and IECEx, FM (US/CA)

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CABLE ASSIGNMENT (SIX-WIRE CONFIGURATION)



Sensing element (-)

Excitation (-)

Signal (+)

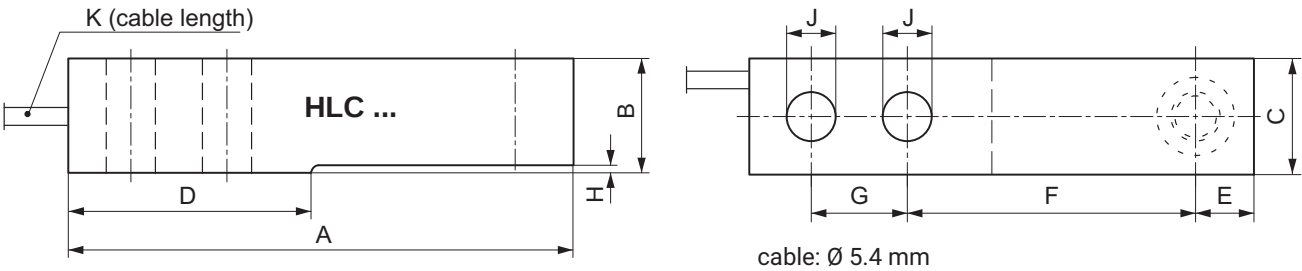
Excitation (+)

Sensing element (+)

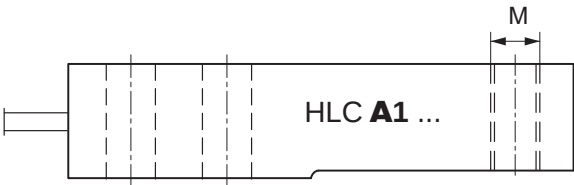
Signal (-)

Cable shield connected to enclosure ground

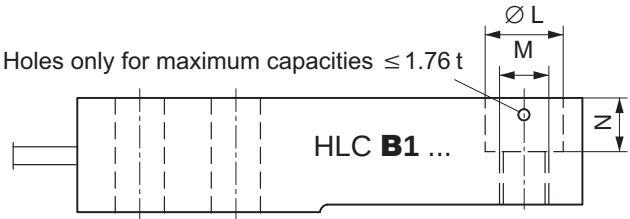
DIMENSIONS (IN MM; 1 MM = 0.03937 INCHES)



HLC **A1**...
(220 kg; 550 kg; 1.1 t; 1.76 t; 2.2 t; 4.4 t)



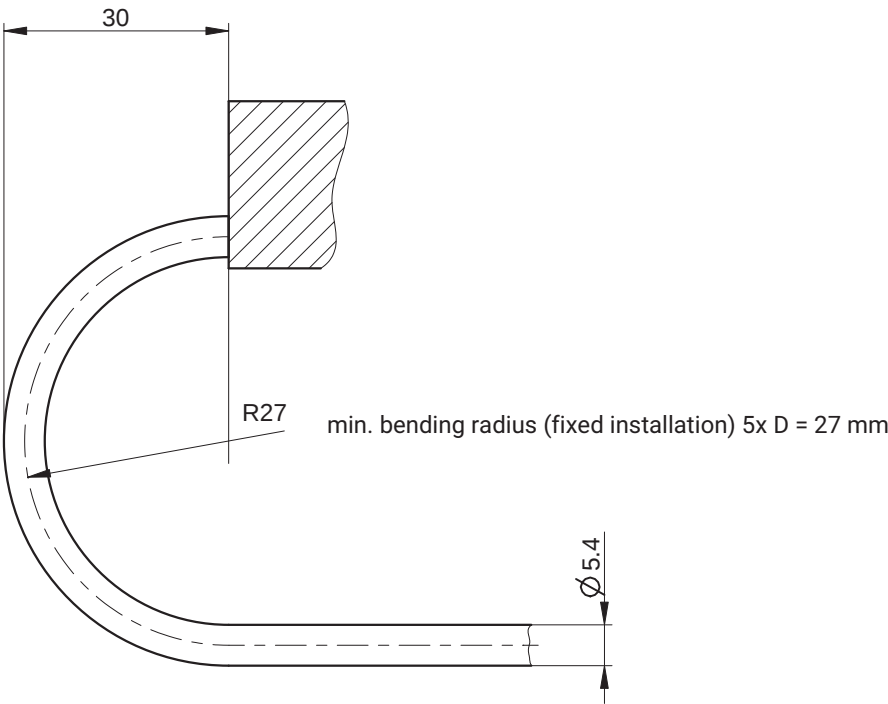
HLC **B1**...
(110 kg; 220 kg; 550 kg; 1.1 t; 1.76 t; 2.2 t; 4.4 t; 10 t)



Maximum capacity	A	B	C	D	E	F	G	H	J	K	ØL	M	N
110 kg; 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	51.7	15.4	76.2	25.4	1.7	13	3 m	20.6	M12	14.2
2.2 t ¹⁾	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 ¹⁾	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
10 t ²⁾	245.1	72.9	60	119.9	30.2	134.9	50±0.05	11.2	27	6 m	51±0.2	Ø32	20

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

CONNECTION DIMENSIONS OF THE CABLE (FOR STATIONARY USE)



SPECIFICATIONS

Type HLC A1 ... Maximum capacity (E _{max}) 			HLC A1 D1 / ... + HLC A1 C3 / ... 220 kg; 550 kg; 1.1 t; 1.76 t; 2.2 t; 4.4 t				
(Load application = tapped through hole)							
Type HLC B1 ... Maximum capacity (E _{max}) 			HLC B1 D1 / ... 110 kg; 220 kg; 550 kg; 1.1 t; 1.76 t; 2.2 t; 4.4 t; 10 t HLC B1 C3 / ... 110 kg; 220 kg; 550 kg; 1.1 t; 1.76 t; 2.2 t; 4.4 t HLC B1 C4 / ... + HLC B1 C6 / ... 220 kg; 550 kg; 1.1 t				
(Load application = sinking + tapped hole) ¹⁾							
Accuracy class per OIML R60		n _{LC}	n _{LC})	D1 1000	C3 3000	C4 ²⁾ 4000	C6 ²⁾ 6000
Number of load cell verification intervals							
Minimum load cell verification interval		v _{min}	% of E _{max}	0.0285	0.0100 (220 kg; 1.76 t; 2.2 t; 4.4 t) 0.0090 (110 kg, 550 kg; 1.1 t)		
Y value		Y		3500	10000 (220kg; 1,76 t; 2,2 t; 4,4 t) 11111 (110 kg; 550 kg; 1,1 t)		
Accuracy class per NTEP IIIM (only for type HLC B1 ...)							
Number of load cell verification intervals		n _{LC}			5000		
Maximum capacity		E _{max}	kg		110; 220; 550; 1100; 1760; 2200		
Minimum load cell verification interval		v _{min}	% of E _{max}		E _{max} / 9700 E _{max} / 12125 (550kg)		
General specifications							
Nominal (rated) sensitivity		C _N	mV/V	1.94 (10 t = 2.00 mV/V)			
Sensitivity tolerance			%	±0.5	±0.1		
Temperature coefficient of zero signal		TC ₀	% of C _n /10 K	±0.0400	±0.0140 (220 kg; 1.76 t; 2.2 t; 4.4 t) ±0.0126 (110 kg; 550 kg; 1.1 t)		
Temperature coefficient of sensitivity ³⁾		TC _s		±0.0420	±0.0140	±0.0105	±0.0070
Relative reversibility error ³⁾		d _{hy}	% of C _n	±0.0500	±0.0166	±0.0125	±0.0083
Non linearity ³⁾		d _{lin}		±0.0500	±0.0170	±0.0166	
Creep upon loading over 30 min.		d _{cr}		±0.0500	±0.0166	±0.0166	±0.0122
Minimum dead load output return		MDLOR		±0.0500	±0.0166	±0.0125	±0.0083
Input resistance		R _{LC}	Ω	350 ... 480			
Output resistance		R ₀		350 ±2	350 ±0.12		
Reference voltage ⁴⁾		U _{ref}	V	5			
Nominal (rated) supply voltage range ⁴⁾		B _U		0.5 ... 15 (Ex versions max. 12 V !!!)		5 ... 10	
Insulation resistance		R _{is}	GΩ	>5			
Nominal (rated) ambient temperature range ⁴⁾		B _T	°C	-10 ... +40	-10 ... +40		
Operating temperature range ⁴⁾		B _{tu}		-30 ... +70			
Storage temperature range		B _{tl}		-50 ... +85			
Limit load		E _L	% of E _{max}	150			
Limit lateral loading		E _{lq}		100			
Breaking load		E _d		300			
Relative perm. vibrational stress (oscillation width per DIN 50100)		F _{srel}		70			
Nominal (rated) displacement at E_{max}, approx.		s _{nom}	mm	0.5 (1.76 t = 1.4 mm)			

Accuracy class per OIML R60 Number of load cell verification intervals	n _{LC}	n _{LC})	D1 1000	C3 3000	C4 ²⁾ 4000	C6 ²⁾ 6000
Weight, approx.	G	kg	0.9 (110 kg ... 1.76 t); 1.6 (2.2 t); 2.2 (4.4 t); 6.2 (10 t)			
Degree of protection per EN 60 529 (IEC 529)			IP68			
Material Measuring body Cable entry Cable sheath			stainless steel ⁵⁾ stainless steel ⁵⁾ / seal: Viton® PVC			

¹⁾ Maximum capacity 10 t: Load application = sinking + tapped hole

²⁾ Accuracy classes **C4** and **C6** only for **HLC B1** ... / **220 kg; 550 kg; 1.1 t**

³⁾ 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 cumulated error limit laid down by OIML R60.

⁴⁾ For use in potentially explosive atmospheres: see Ex safety instructions

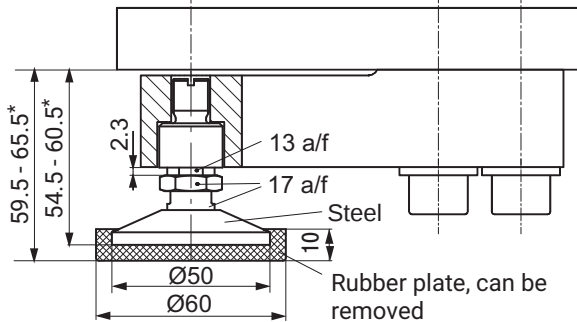
⁵⁾ As per EN 10088-1

MOUNTING ACCESSORIES TO BE ORDERED SEPARATELY

Dimensions (in mm; 1 mm = 0.03937 inches)

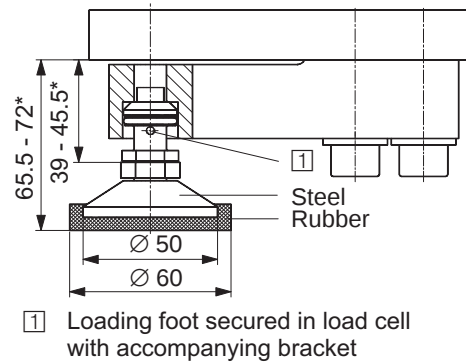
According to the mounting conditions, HBM presents different, tested load applications for load cell type HLC **B1** ..., to minimize the effects of load application errors.

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

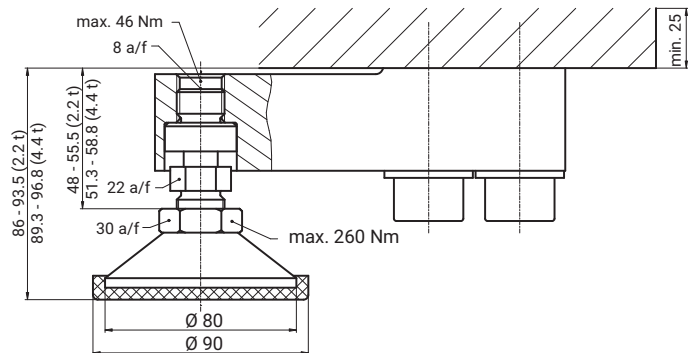


* Height adjustment

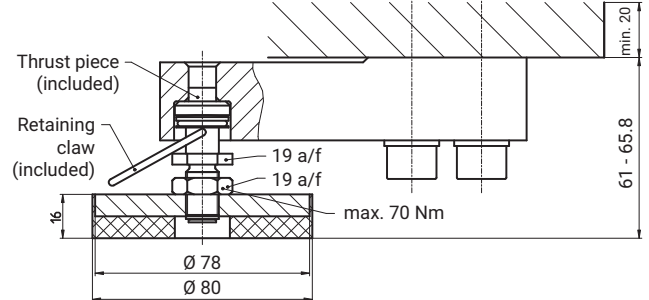
HLCB/ZFP/1.76 T - Oscillating loading foot (stainless steel) for HLC **B** / 110 kg ... 1.76 t:



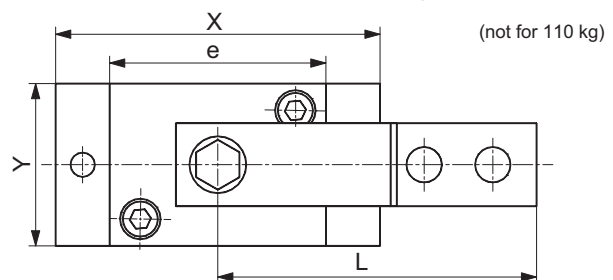
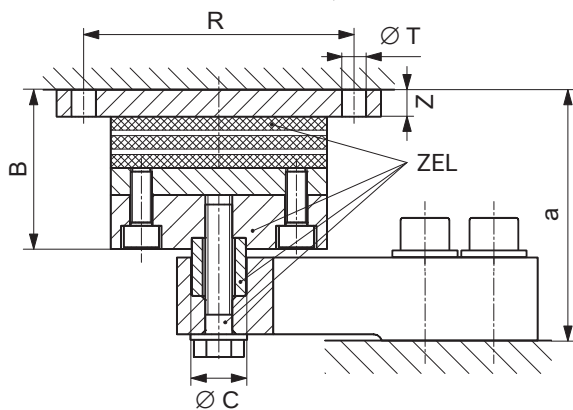
HLCB/ZFP/4.4 T - Oscillating loading foot (stainless steel) for HLC **B** / 2.2 t + 4.4 t:



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



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



Maximum permissible lateral displacement (when loaded at maximum capacity):

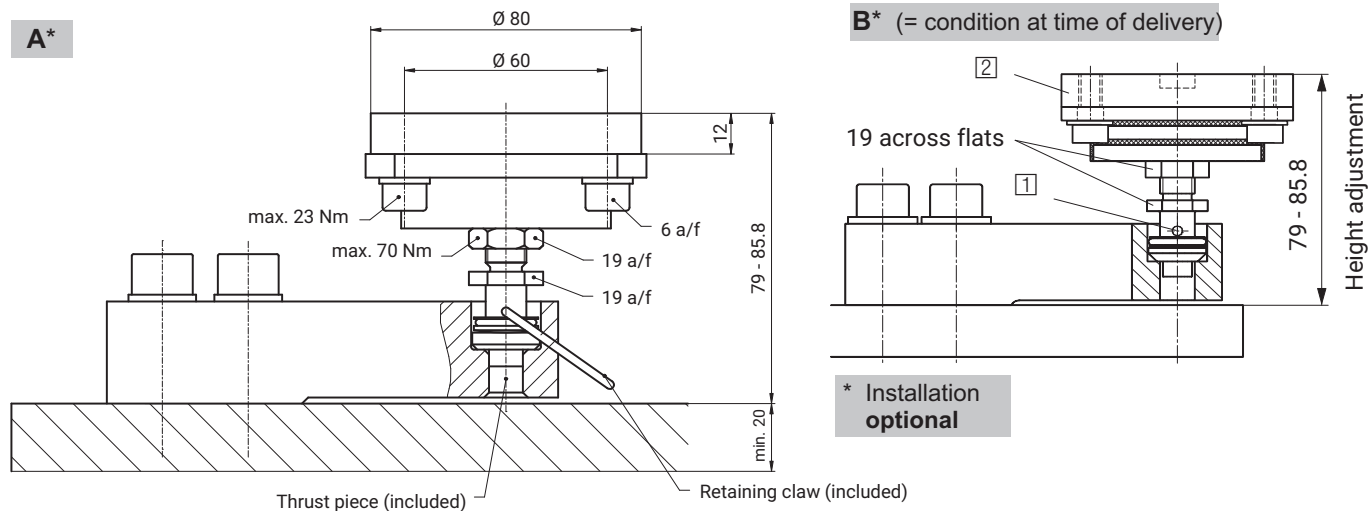
HLCB/1.76T/ZEL: 4.5 mm

HLCB/4.4T/ZEL: 8 mm

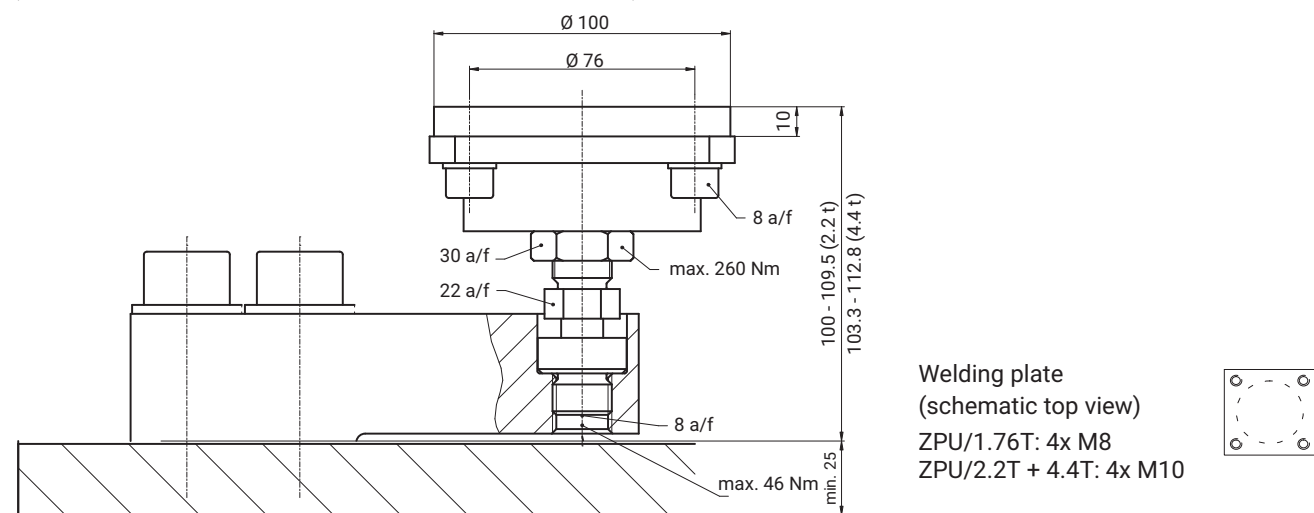
HLCB/10T/ZEL: 9.5 mm

Type	Maximum 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/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

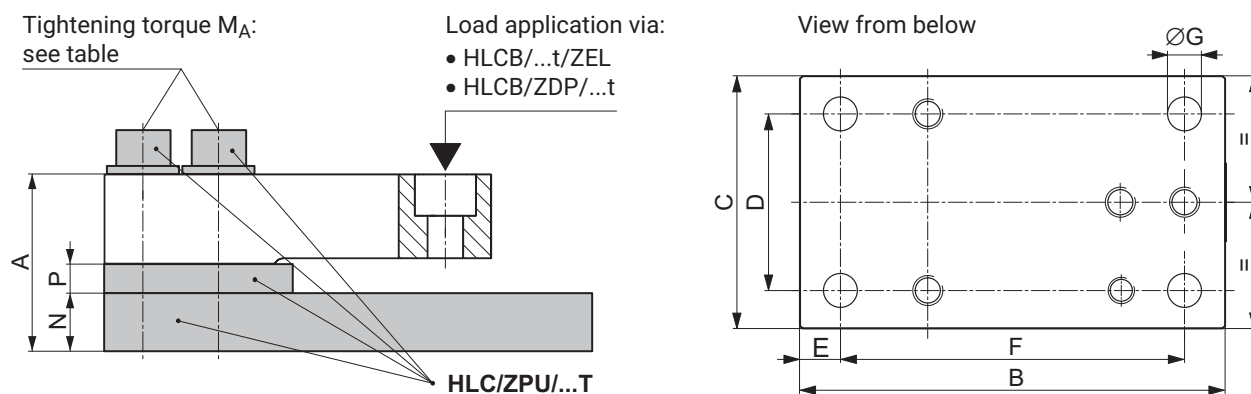
HLCB/ZDP/1.76 T Easy top - Rubber-metal bearing for HLC B / 220 kg ... 1.76 t
(Load application: stainless steel, welding plate: galvanized)



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)



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



Type	Max. 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

PRODUCT NUMBERS

Maximum capacity	Accuracy class	HLCB1 without explosion protection, PVC cable sheath	
		3 m (9.84 ft) cable length	6 m (19.69 ft) cable length
110 kg	D1	1-HLCB1D1/110KG-1	
	C3	1-HLCB1C3/110KG-1	
220 kg	D1	1-HLCB1D1/220KG-1	
	C3	1-HLCB1C3/220KG-1	1-HLCB1C3/220KGA
	C4	1-HLCB1C4/220KG	
	C6	1-HLCB1C6/220KG	
550 kg	D1	1-HLCB1D1/550KG-1	
	C3	1-HLCB1C3/550KG-1	1-HLCB1C3/550KGA
	C4	1-HLCB1C4/550KG	
	C6	1-HLCB1C6/550KG	
1.1 t	D1	1-HLCB1D1/1.1T-1	
	C3	1-HLCB1C3/1.1T-1	1-HLCB1C3/1.1TA
	C4	1-HLCB1C4/1.1T	
	C6	1-HLCB1C6/1.1T	
1.76 t	D1	1-HLCB1D1/1.76T-1	
	C3	1-HLCB1C3/1.76T-1	1-HLCB1C3/1.76TA
2.2 t	D1		1-HLCB1D1/2.2T
	C3		1-HLCB1C3/2.2T
4.4 t	D1		1-HLCB1D1/4.4T
	C3		1-HLCB1C3/4.4T
10 t	D1		1-HLCB1D1/10T

Maximum capacity	Accuracy class	HLCA1 without explosion protection, PVC cable sheath	
		3 m (9.84 ft) cable length	6 m (19.69 ft) cable length
220 kg	D1	1-HLCA1D1/220KG-1	
	C3	1-HLCA1C3/220KG-1	
550 kg	D1	1-HLCA1D1/550KG-1	
	C3	1-HLCA1C3/550KG-1	
1.1 t	D1	1-HLCA1D1/1.1T-1	
	C3	1-HLCA1C3/1.1T-1	
1.76 t	D1	1-HLCA1D1/1.76T-1	
	C3	1-HLCA1C3/1.76T-1	
2.2 t	D1		1-HLCA1D1/2.2T
	C3		1-HLCA1C3/2.2T
4.4 t	D1		1-HLCA1D1/4.4T
	C3		1-HLCA1C3/4.4T

K-HLC		
1	Code	Option 1: Design
	A	HLCA [not with option 3 = 110 / 10]
	B	HLCB
2	Code	Option 2: Accuracy class
	D1	D1 (OIML)
	C3	C3 (OIML) [not with option 3 = 10]
	C4	C4 (OIML) [only with option 1 = B + option 3 = 220 / 550 / 1100 + option 5 = S3]
	C6	C6 (OIML) [only with option 1 = B + option 3 = 220 / 550 / 1100 + option 5 = S3]
3	Code	Option 3: Maximum capacity
	110	110 kg [only with option 1 = B]
	220	220 kg
	550	550 kg
	1100	1.1 t
	1760	1.76 t
	2200	2.2 t
	4400	4.4 t
	10	10 t [only with option 1 = B]
4	N	No explosion protection
	AI1/21	ATEX+IECEX+FM Zone 1/21 [not with option 3 = 10]
	AI2/21	ATEX+IECEX Zone 2/21 [not with option 3 = 10]
	AI2/21_F	ATEX+IECEX Zone 2/21 + FM [not with option 3 = 110/2200/4400/10]
5	Code	Option 5: Cable length
	S3	3 m (standard) [only with option 3 = 110/220/550/1100/1760]
	S6	6 m (standard) [only with option 3 = 2200/4400/10]
	6	6 m [only with option 2 = D1/C3+option 3= 110/220/550/1100/1760]
	12	12 m [only with option 2 = D1/C3]
6	Code	Option 6: Other
	N	Without
	AU	With Australian Type label NMIA NO S498 [not with option 3 = 110]

K-HLC -

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1 2 3 4 5 6

Explosion protection versions per ATEX, IECEx and FM (US/CA)

- AI1/21 ^{1), 2)} ATEX+IECEx+FM zone 1/21, intrinsically safe;
- ATEX/IECEx: II 2G Ex ia IIC T6/T4 Gb + II 2D Ex ia IIIC T125°C Db;
- FM(US/CA): Class I zone 1 AEx/Ex ia IIC T4 Gb + zone 21 AEx/Ex ia IIIC T125°C Db;
- FM(US): Class I, II, III Division 1, Groups A, B, C, D, E, F, G T4
- AI2/21 ¹⁾ ATEX+IECEx zone 2/21, not intrinsically safe;
- ATEX/IECEx: II 3G Ex ec IIC T6/T4 Gc + II 2D Ex tb IIIC T125°C Db
- AI2/21_F ^{1), 3)} ATEX+IECEx zone 2/21 + FM, not intrinsically safe;
- ATEX/IECEx: II 3G Ex ec IIC T6/T4 Gc + II 2D Ex tb IIIC T125°C Db
- FM(US): Class I, II, III Division 2, Groups A, B, C, D, F, G T4

¹⁾ BVS 13 ATEX E 108 X + IECEx BVS 13.0109 X

²⁾ FM 18 US 0176 X + FM 18 CA 0144 X

³⁾ FM 17 US 0159