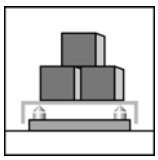
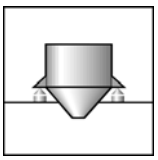
Data sheet

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

Load Cells

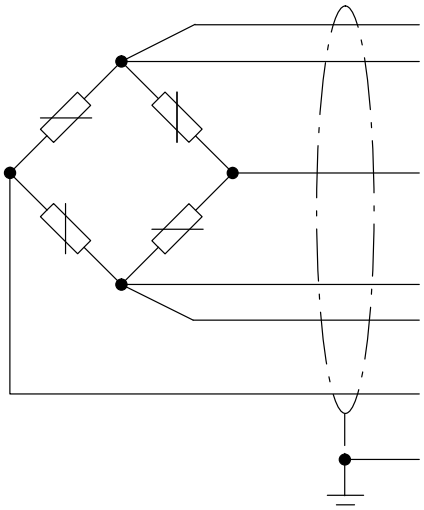




Special Features

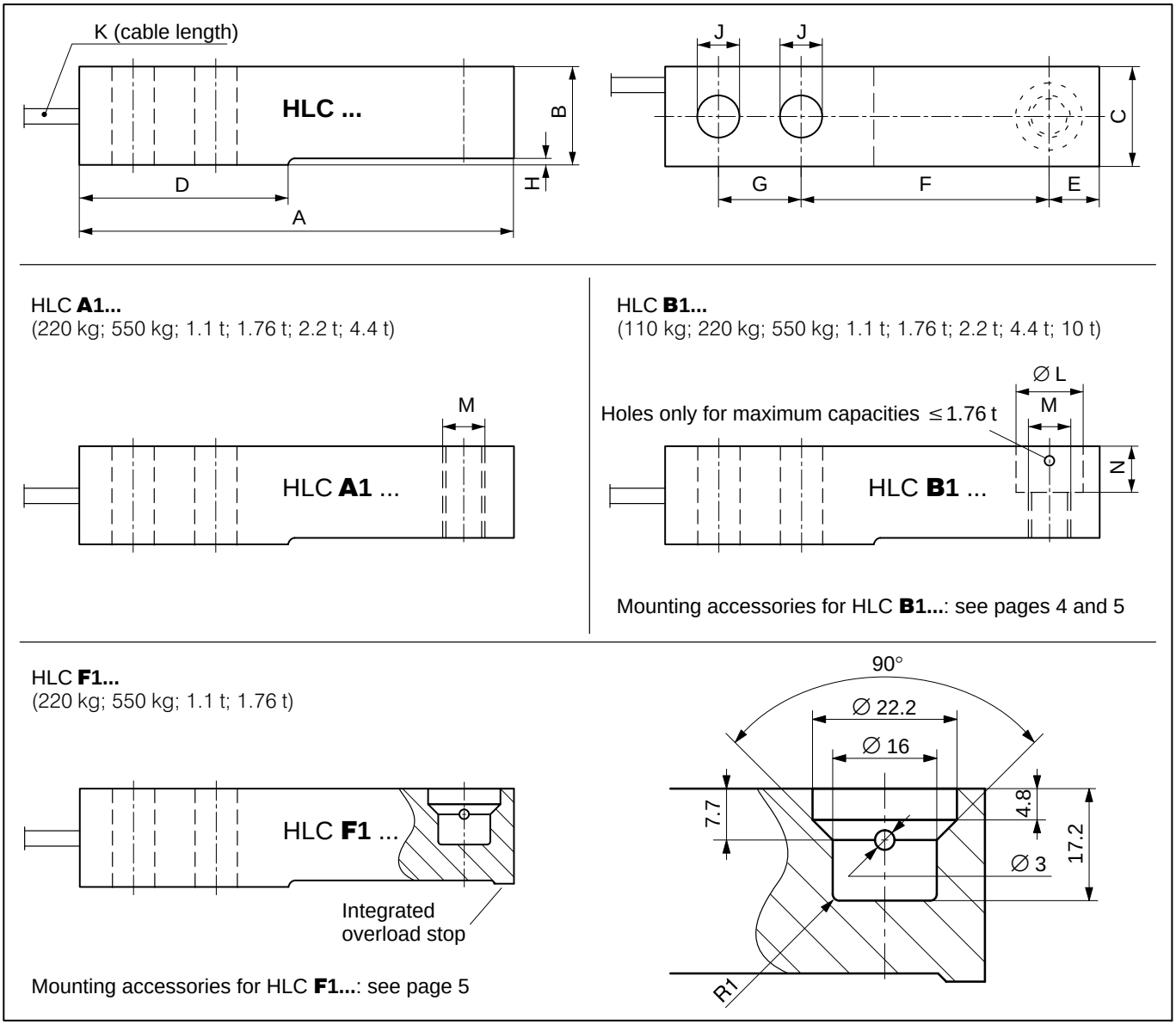
- **Hermetically encapsulated (IP68)**
- **Maximum capacities: 110 kg ... 10 t**
- **Rust-resistant materials**
- **Low height of construction**
- **Meets EMC requirements as per EN 45 501**
- **Legal for trade per OIML R60 to 6000 divisions**
- **Explosion-proof versions per ATEX 95 (optional)**

Cable assignment (six-wire configuration)



(gray)	Sensing element (−)
(black)	Excitation (−)
(white)	Signal (+)
(blue)	Excitation (+)
(green)	Sensing element (+)
(red)	Signal (−)
(stranded wire)	Cable shield connected to enclosure ground

Dimensions (in mm; 1 mm = 0.03937 inches)



Maximum capacity	A	B	C	D	E	F	G	H	J	K	∅ L	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	∅ 32	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** ...

Mounting accessories (to be ordered separately)

According to the mounting conditions, HBM presents different, tested load applications for load cell types HLC **B1** ... and HLC **F1** ... (see pages 4 and 5), to minimize the effects of load application errors.

Specifications

Type HLC A1 ... Maximum capacity (E_{max})  (Load application = tapped through hole)		**HLC A1 D1 / ... + HLC A1 C3 / ...** 220 kg; 550 kg; 1.1 t; 1.76 t; 2.2 t; 4.4 t			
Type HLC B1 ... Maximum capacity (E_{max})  (load application = sinking + tapped hole) [3]		**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			
Type HLC F1 ... Maximum capacity (E_{max})  (Load application = blind hole + integrated overload stop)		**HLC F1 D1 / ... + HLC F1 C3 / ...** 220 kg; 550 kg; 1.1 t; 1.76 t			
Accuracy class per OIML R60		**D1**	**C3**	**C4** [5]	**C6** [5]
Number of load cell verification intervals (n_{LC})		1000	3000	4000	6000
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)		
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 (TC_S) [4]		±0.0420	±0.0140	±0.0105	±0.0070
Relative reversibility error (d_{hy}) [4]	% of C_n	±0.0500	±0.0166	±0.0125	±0.0083
Non linearity (d_{lin}) [4]		±0.0500	±0.0170	±0.0166	
Creep upon loading (d_{cr}) over 30 min.		±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 (U_{ref})	V	5			
Nominal (rated) supply voltage range (B_U)		0.5 ... 15 (Ex versions max. 12 V !!!)		5 ... 10	
Insulation resistance (R_{is})	GΩ	> 5			
Nominal (rated) ambient temperature range (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			
Limit lateral loading (E_{lq})		100			
Breaking load (E_d)		300			
Relative perm. vibrational stress (F_{srel}) (oscillation width per DIN 50100)		70			
Nominal (rated) displacement at E_{max} (s_{nom}), approx.	mm	0.5 (1.76 t = 1.4 mm)			
Weight (G), approx.	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 [6] stainless steel [6] / seal: Viton® PVC			

[3] Maximum capacity 10 t: Load application = sinking + tapped hole

[4] 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.

[5] Accuracy classes **C4** and **C6** only for **HLC B1** ... / **220 kg**; **550 kg**; **1.1 t**

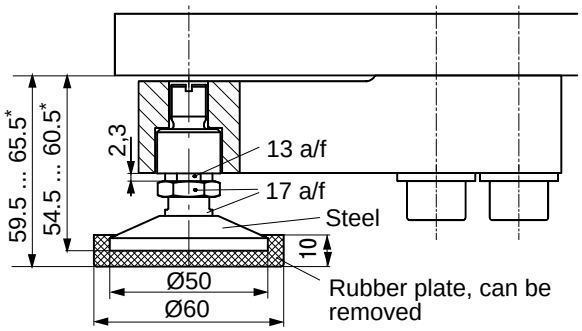
[6] As per EN 10088-1

Mounting accessories (to be ordered separately)

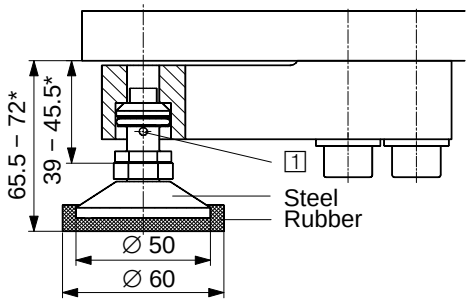
According to the mounting conditions, HBM presents different, tested load applications for load cell types HLC **B1** ... and HLC **F1** ... (see pages 4 and 5), to minimize the effects of load application errors.

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

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



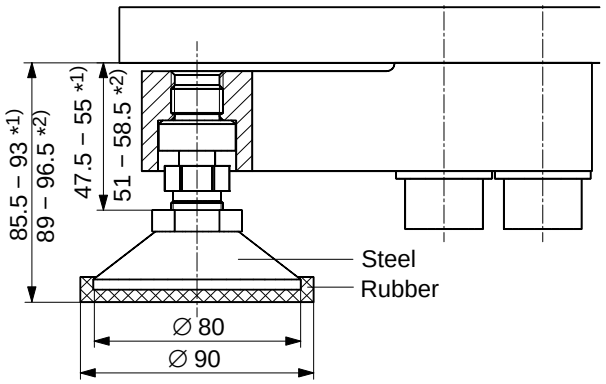
HLCB/ZFP/1.76 T − Oscillating loading foot (stainless steel) for HLC **B** / 110 kg ... 1.76 t:



1 Loading foot secured in load cell with accompanying bracket

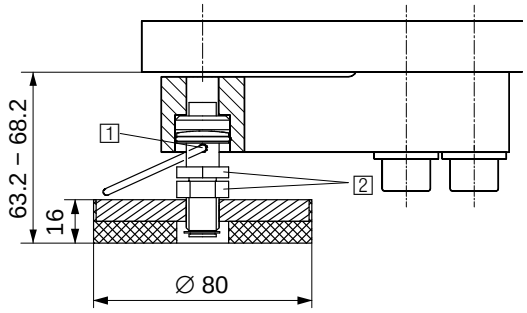
* Height adjustment

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)

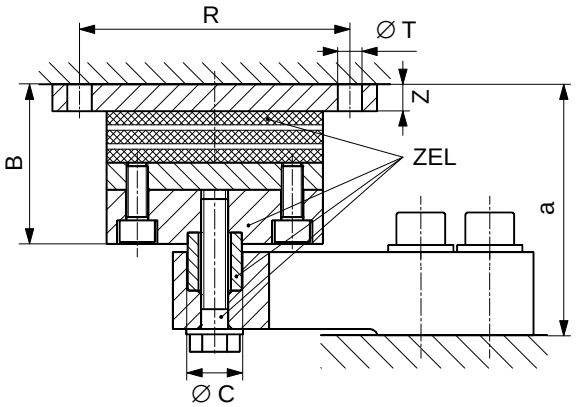
HLCB/ZAK/1.76T − Oscillating loading foot, height-adjustable (stainless steel) for HLC **B** ≤ 1.76 t

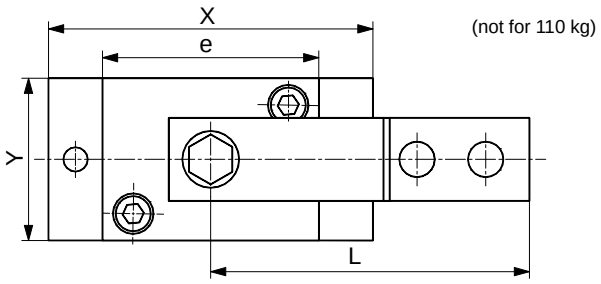


1 Loading foot secured in load cell with accompanying bracket

2 19 across flats

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





(not for 110 kg)

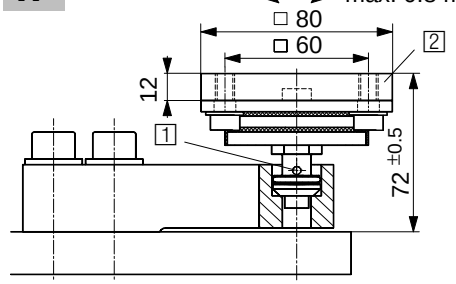
Maximum permissible lateral displacement (when loaded at maximum capacity): HLCB/1.76T/ZEL: 4.5 mm
HLCB/4.4T/ZEL: 8 mm
HLCB/10T/ZEL: 9.5 mm

Type	Maximum capacity	B	∅ $C_{-0.1}$	L	R	∅ T	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

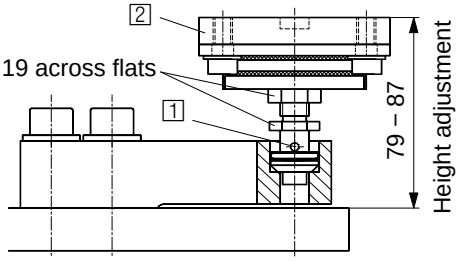
Accessories for HLC B ... + HLC F ... (to be ordered separately; Dimensions (in mm; 1 mm = 0.03937 inches))

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

A* max. 0.8 mm

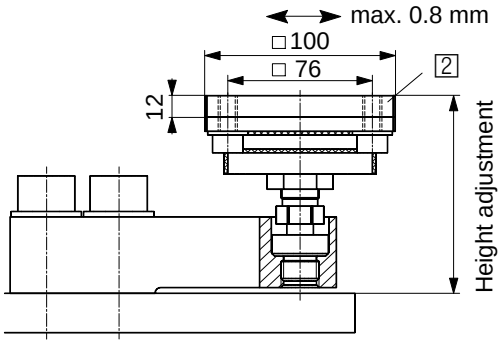


B* (= condition at the time of delivery)



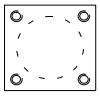
* Mounting **optional**

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 accompanying bracket

2 Welding plate (schematic top view)



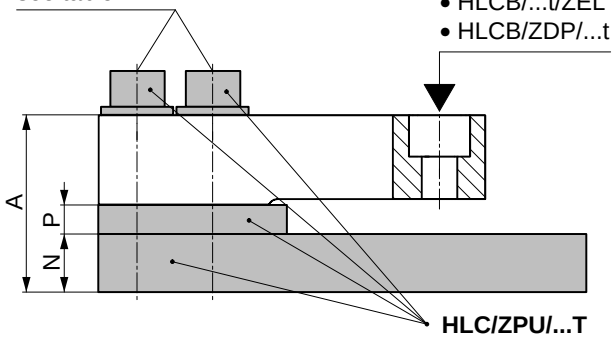
ZPU/1.76T: 4x M8
ZPU/2.2T + 4.4T: 4x M10

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

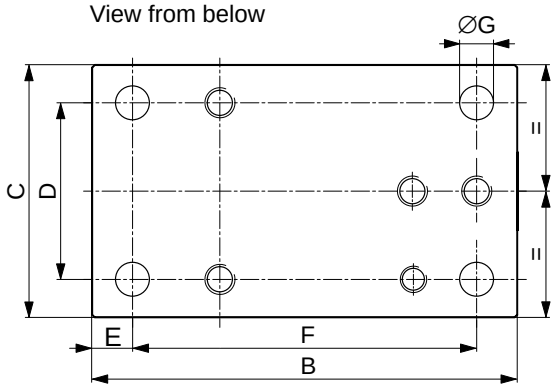
HLC/ZPU/...T − Mounting base / mounting kit (galvanized) for HLC **B**

Tightening torque M_A: see table

Load application via:
- HLCB/...t/ZEL
- HLCB/ZDP/...t

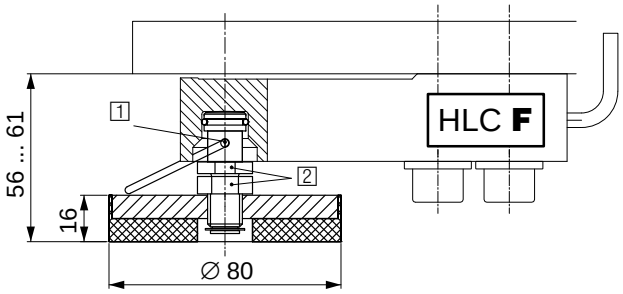


View from below



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 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 − Oscillating loading foot, height adjustable; (stainless steel) for HLC **F** ≤ 1.76 t



1 Loading foot secured in load cell with accompanying bracket

2 19 across flats

HLC load cells, optional versions [!!!]

Order no.

K-HLC

Code	Option 1: Design
A	HLCA [not with Option 3 = 10]
B	HLCB
F	HLCF [not with Option 3 = 220 / 550 / 1100 / 1760]

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 = 20 / 550 / 1100 + Option 5 = S3]
C6	C6 (OIML) [only with Option 1 = B + Option 3 = 20 / 550 / 1100 + Option 5 = S3]

Code	Option 3: Maximum capacity
110	110 kg [only with Option 1 = B]
220	220 kg
550	550 kg
1100	1.1 t

Code	Option 3: Maximum capacity
1760	1.76 t
2200	2.2 t [only with Option 1 = A / B]
4400	4.4 t [only with Option 1 = A / B]
10	10 t [only with Option 1 = B]

Code	Option 4: Explosion protection (per ATEX 95)
N	No ATEX
1	ATEX Zone 1 + 21 and FM
2	ATEX Zone 2 + 22 (non-conductive dust)

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]
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]

Code	Option 6: Other
N	none

K-HLC – □ – □□ – □□□□ – □ – □□ – **N**

Options for HLC...:

- **Explosion protection versions per ATEX:** II 2G Ex ia IIC T4 and T6 (Zone 1) *)
  II 2D Ex tD A21 IP68 T 80°C (Zone 21) *)

  *) with EC−type examination certificate

  II 3G Ex nA II T6 (Zone 2)
  II 3D Ex tD A22 IP68 T 80°C (Zone 22 for non-conductive dust)

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