



# RTN...

Load cells

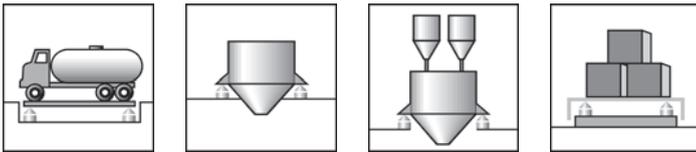
称重传感器



## Special features 特点

- Low construction
- Max. capacities: 1 t ... 470 t
- Legal for trade according to OIML and NTEP
- Stainless steel
- Protection class IP 68
- High output signal of 2.85 mV/V
- Input resistance  $\geq 4350 \Omega$
- Explosion proof versions according to ATEX (Option)

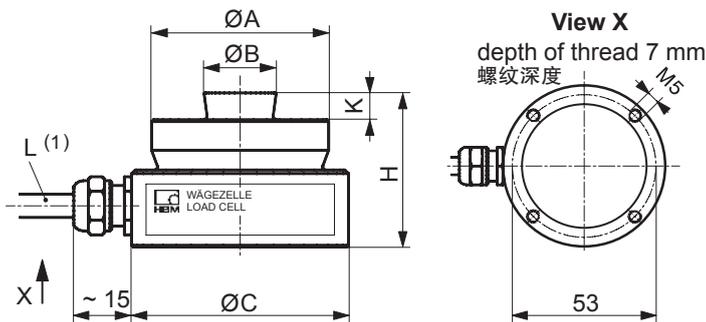
- 高度低
- 最大量程: 1t ... 470t
- 符合 OIML 和 NTEP 贸易秤认证
- 不锈钢
- 保护等级 IP68
- 输出信号高达 2.85 mV/V
- 输入电阻 4350  $\Omega$
- 防爆信号符合 ATEX 认证 (可选)



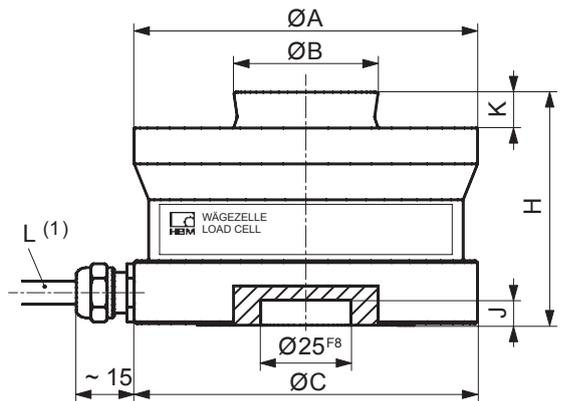
Dimensions (in mm; 1 mm = 0.03937 inches)

RTN... /  $\leq 4,7$  t

尺寸(单位:mm)



RTN... / 10 t ... 470 t



RTN...	1 t	2.2 t	4.7 t	10 t	15 t	22 t	33 t	47 t	68 t	100 t	150 t	220 t	330 t	470 t
ØA	49	49	49	74	75	75	95	130	130	150	150	225	225	270
ØB	20	20	20	30	30	30	40	60	60	70	70	100	100	120
ØC	60	60	60	75	75	75	95	130	130	150	150	225	225	270
H	43	43	43	50	50	50	65	75	85	90	100	130	145	170
J	-	-	-	7	7	7	7	7	7	7	7	10	10	10
K	7.5	7.5	7.5	6.5	6.5	6.5	10	14	14	16	16	24	24	28
L	5 m	5 m	5 m	5 m	5 m	12 m	15 m	12 m	12 m	12 m	5 m	5 m	5 m	5 m

(1) L = Cable length

## Specifications 规格

Type 型号		RTN 0,05	RTN C3
Nominal (rated) load ( $E_{max}$ ) 额定量程		1 t ... 470 t	
Accuracy class 精度等级		0.05	C3 (OIML R60) III M (NTEP)
Maximum number of load cell intervals ( $n_{LC}$ ) 最大检定分度数		-	3000 (OIML R60) 7500 (NTEP III M; 2,2 ... 100 t)
Minimum LC verification interval ( $v_{min}$ ) 最小检定分度值	% of $E_{max}$	-	0,005 (OIML R60) 0,0048 (NTEP III M)
Sensitivity ( $C_n$ ) 灵敏度	mV/V	2.85 ± 0.1 %	
Temperature effect on sensitivity ( $TK_C$ ) 温度对灵敏度影响	% of $C_n$	± 0.05	± 0.008 <sup>1)</sup>
Temperature effect on zero balance ( $TK_0$ ) 温度对零点影响	/ 10 K	± 0.03	± 0.007
Hysteresis error ( $d_{hy}$ ) 滞后误差	% of $C_n$	± 0.05	± 0.02 <sup>1)</sup>
Non-linearity ( $d_{lin}$ ) 线性误差		± 0.05	± 0.02 <sup>1)</sup>
Creep ( $d_{cr}$ ) over 30 min. 蠕变恢复		± 0.03	± 0.017
Dead load output return (DR), 30 min. 最小静载荷输出恢复	% v. $C_n$	± 0,03	± 0,0167 (OIML R60) ± 0,0111 (NTEP III M)
Input resistance ( $R_{LC}$ ) 输入电阻	Ω	4450 ± 100	
Output resistance ( $R_0$ ) 输出电阻		4010 ± 2	4010 ± 0.5
Reference excitation voltage ( $U_{ref}$ ) 参考激励电压	V	5	
Nominal range of excitation voltage ( $B_U$ ) 额定激励电压		5 ... 30 (max. 60)	
Carrier frequency of the excitation voltage 激励电压载波频率	Hz	< 600	
Insulation resistance ( $R_{is}$ ) 绝缘电阻	GΩ	> 20	
Nominal temperature range ( $B_T$ ) 额定温度	°C [°F]	-10 ... +40 [+14 ... +104]	
Service temperature range ( $B_{tu}$ ) 工作温度		-30 ... +80 [-22 ... +176] (Option: up to +110 °C / +230 °F)	
• Load cell RTN		-30 ... +80 [-22 ... +176]	
• Accessory: VEN VPN		-30 ... +110 [-22 ... +230]	
Storage temperature range ( $B_{tl}$ ) 存储温度		-50 ... +85 [-58 ... +185]	

Nominal (rated) load ( $E_{max}$ ) 额定负载	t	1	2.2	4.7	10	15	22	33	47	68	100	150	220	330	470
Weight (G), approx. 重量	kg	0.6	0.6	0.7	1.2	1.3	1.3	2.1	4.3	4.8	7.0	8.6	22	29	50
Safe load limit ( $E_L$ ) 安全负载	t	1.7	3.8	8	17	25	38	56	80	115	170	250	380	500	700
Breaking load ( $E_d$ ) 破坏负载		4	9	19	40	60	88	130	190	270	400	600	770	1100	1500
Permissible static side load ( $L_q$ ) 允许侧向静态负载		0.5 ( $E_{max} - 0.8 L_z$ ), but no higher than $L_{q max} = 0.3 E_{max}$ $E_{max}$ = Nominal (rated) load; $L_z$ = load in measuring direction													
Permissible dynamic load ( $F_{srel}$ ) 允许动态负载 (vibration amplitude accor. to DIN 50100)	% of $E_{max}$	70													
Deflection at $E_{max}$ ( $s_{nom}$ ), approx. 最大载荷下变形量	mm	0.13	0.12	0.12	0.17	0.18	0.21	0.25	0.33	0.35	0.45	0.57	0.67	0.85	1.00
Protection class to EN60529 (IEC529) 保护等级		IP 68 (test conditions 100 h at 1 m water column)													
Material: Measuring element 测量体 材料 Cable fitting 电缆密封管 Cable-sheath 电缆屏蔽		Stainless steel Brass, nickel plated / Sealing: CR/NBR Thermoplastic elastomer, RAL 7000 (grey), □6.5 mm													

<sup>1)</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. 非线性误差, 滞后误差和温度对灵敏度影响的数据是平均值, 这些值的总和达到OIML R60

Wiring code RTN... 接线	Diagram	Color	Function
		(black) 黑	Excitation (+) 激励 (+)
		(red)	Signal (+) 信号 (+)
		(blue) 蓝	Excitation (-) 激励 (-)
		(white) 白	Signal (-) 信号 (-)
		(green-yellow) 绿-黄	Shield 屏蔽

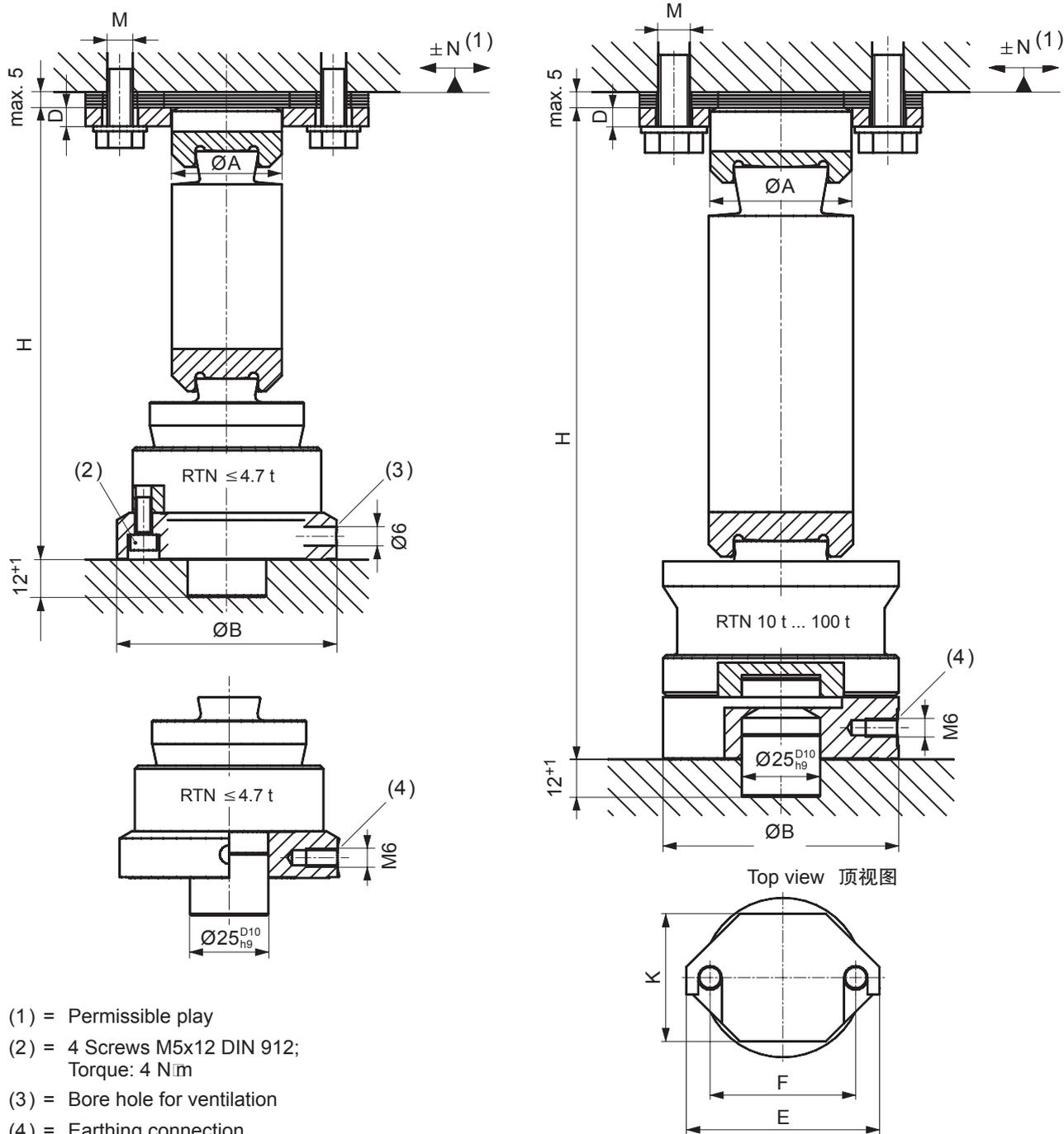
## Available Options: 选项

- Explosion-proof versions according to ATEX:** Ex II 2G EEx ia IIC T4 resp. T6 (Zone 1) \*)  
Ex II 2D Ex tD A21 IP68 T 80 °C (Zone 21) \*)  
\*) with EC-Type Examination Certificate  
Ex II 3G EEx nA II T6 (Zone 2)  
Ex II 3D IP68 T 80 °C (Zone 22 for non-conductive dust)
- Service temperature up to +110 °C** (not possible in connection with ATEX and / or Elastomer mounts VEN)  
工作温度最大达+110°C

**Accessory: Pendulum mounts VPN** (Dimensions in mm; 1 mm = 0.03937 inches)

**RTN/...T/VPN** (Pendulum mounts for Load cells RTN... / 1 t ... 100 t)

Material: Stainless steel 材料: 不锈钢



- (1) = Permissible play
- (2) = 4 Screws M5x12 DIN 912;  
Torque: 4 N·m
- (3) = Bore hole for ventilation
- (4) = Earthing connection

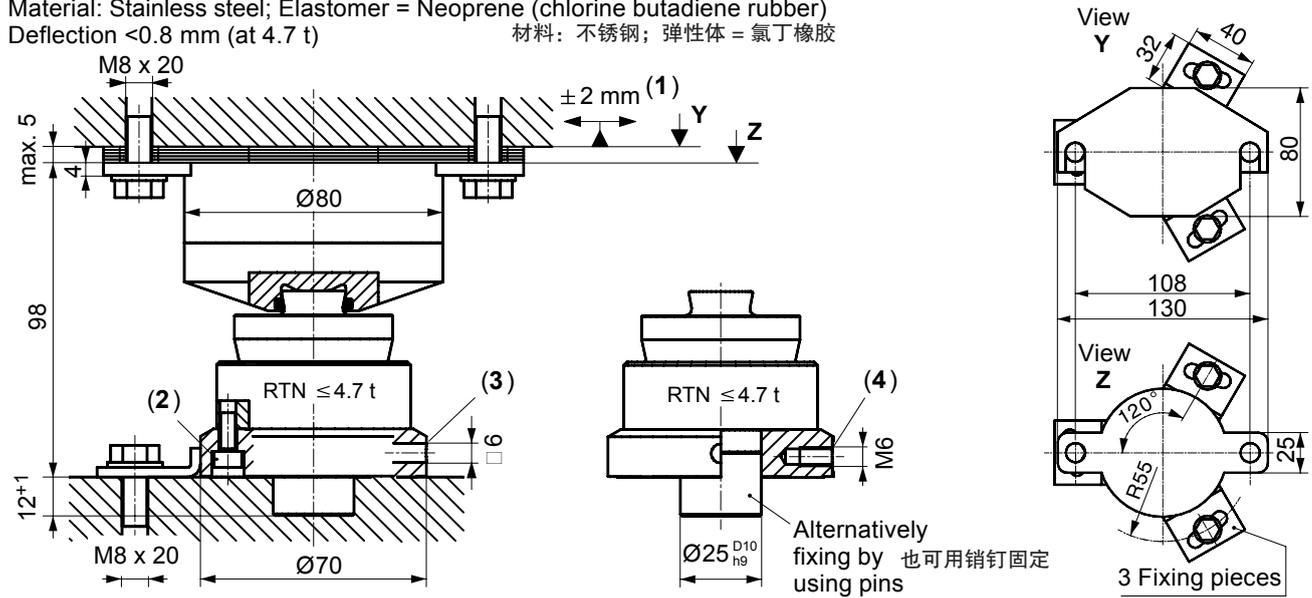
Type ( $E_{max}$ Load cell)	ØA	ØB	D	E	F	H	K	M	N
RTN/2.2T/VPN (1 t + 2.2 t)	35	70	6	90	68	128	60	M8 x 20	3.5
RTN/4.7T/VPN (4.7 t)	35	70	6	90	68	145	60	M8 x 20	3.5
RTN/10T/VPN (10 t)	45	75	6	90	68	165	60	M10 x 25	3.5
RTN/15T/VPN (15 t)	45	75	6	90	68	175	60	M10 x 25	4
RTN/22T/VPN (22 t)	45	75	6	90	68	229	60	M10 x 25	7
RTN/33T/VPN (33 t)	58	95	6	120	90	272	80	M12 x 25	7
RTN/47T/VPN (47 t)	85	130	10	170	130	295	110	M16 x 30	6
RTN/68T/VPN (68 t)	85	130	10	170	130	337	110	M16 x 30	7
RTN/100T/VPN (100 t)	100	150	10	180	140	371	130	M16 x 30	8

附件：弹性安装 VEN (尺寸 单位:mm)

**Accessory: Elastomer mounts VEN (Dimensions in mm; 1 mm = 0.03937 inches)**

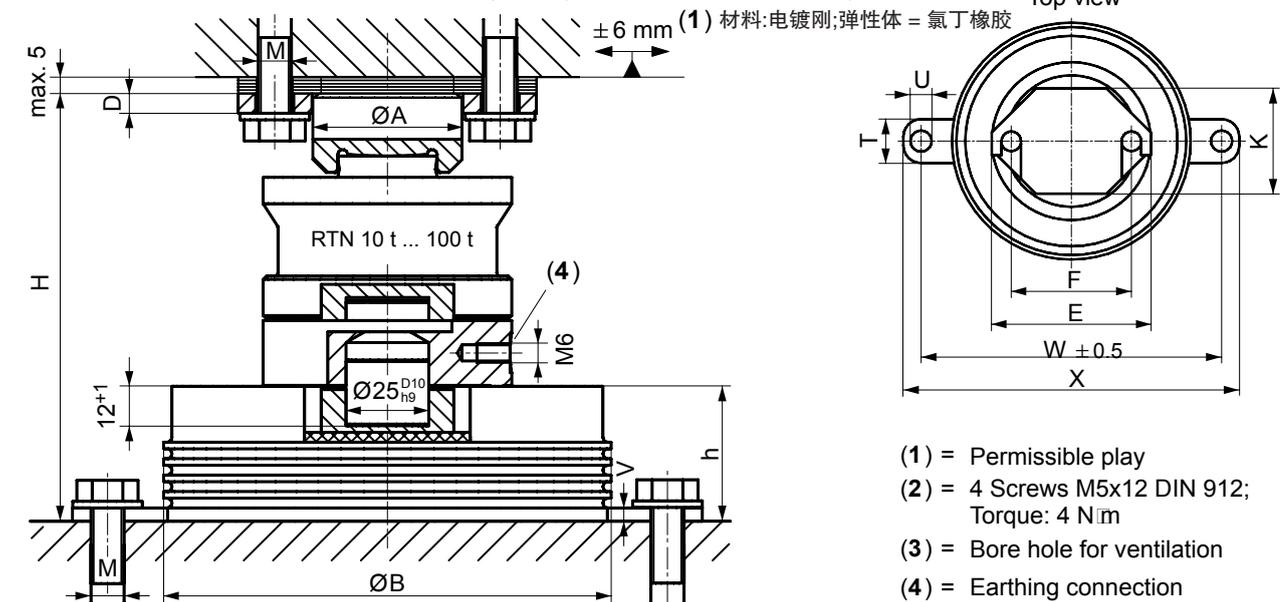
**RTN/2.2T/VEN + RTN/4.7T/VEN (Elastomer mounts for Load cells RTN... / ≤4.7 t)**

Material: Stainless steel; Elastomer = Neoprene (chlorine butadiene rubber)  
Deflection <0.8 mm (at 4.7 t) 材料: 不锈钢; 弹性体 = 氯丁橡胶



**RTN/...T/VEN (Elastomer mounts for Load cells RTN... / 10 t ... 100 t)\***

Material: Galvanized steel; Elastomer = Neoprene (chlorine butadiene rubber)



Type (E <sub>max</sub> Load cell)	Deflection	ØA	ØB	D	E	F	H	h	K	M	T	ØU	V	W ± 0.5	X
RTN/22T/VENR (10 t ... 22 t) Stainless steel	0.5 (at 22 t)	45	135	6	90	68	130	41	60	M10x25	25	12	4	170	190
RTN/22T/VEN (10 t ... 22 t)	0.5 (at 22 t)	45	135	6	90	68	130	41	60	M10x25	25	12	4	170	190
RTN/33T/VEN (33 t)	0.8	58	175	6	120	90	168	56	80	M12x25	30	17	6	250	280
RTN/47T/VEN (47 t)	0.5	85	250	10	170	130	198	63	110	M16x30	40	21	8	310	350
RTN/68T/VEN (68 t)	0.7	85	250	10	170	130	220	63	110	M16x30	40	21	8	310	350
RTN/100T/VEN (100 t)	0.6	100	300	10	180	140	239	68	130	M16x30	40	21	8	360	400

\* Elastomer mounts VEN for higher capacities on request

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