

Load Cells



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Load Cells



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Overview



Siemens offers load cells in the SIWAREX WL200 series. All load cells are equipped with strain gauges. They are used for static and dynamic weight measurements.

The wide range of different designs available enables SIWAREX load cells to be used in a variety of applications: from single point load cells to bending and shear beams, up to S-type, compression and ring-torsion load cells.

The different load cell series cover rated load ranges from 0.3 kg (0.66 lb) to 500 t (492.10 tn. l.).

The variety of modules available and their characteristics, including:

- predominantly stainless steel for high anti-corrosion protection

- predominantly hermetically sealed housing enabling use even in hostile or corrosive environments

- compact frame sizes for easy installation

make SIWAREX load cells suitable for virtually all applications in industrial weighing, e.g. hopper scales and bin weighing equipment, platform scales, vehicle scales, hybrid weighing machines etc.

Almost all series have been approved for use with Class III weighing machines requiring official calibration in accordance with EN 45501 and conform to OIML R60.

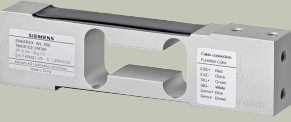
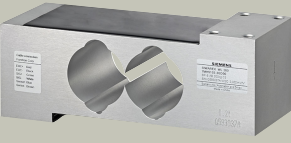
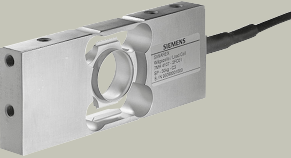
Of course, load cells can also be supplied for other rated loads, higher accuracy, and/or Ex approval, depending on requirements.

Load Cells

Introduction

Application

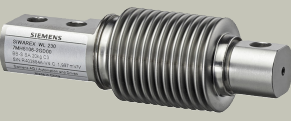
Single point load cells

Type	Rated load	Accuracy class	Applications	Material
SIWAREX WL260 SP-S AA 	3 ... 100 kg (6.61 ... 220.46 lb)	- C3¹⁾ - Legal-for-trade	- Small platform scales with one load cell - Small belt scales - Class III weighing machines	Aluminum
SIWAREX WL260 SP-S AB 	50 ... 500 kg (110.23 ... 1 102.31 lb)	C3²⁾	- Small to medium-size platform scales with one load cell - Belt scales	Aluminum
SIWAREX WL260 SP-S AE 	0.3 ... 3 kg (0.66 ... 6.61 lb)	$F_{comb} = \pm 0.015 \% C_n$	- Miniature loads and high-resolution scales - Small belt scales	Aluminum
SIWAREX WL260 SP-S SA 	5 ... 200 kg (11.02 ... 440.92 lb)	- C3 - Legal-for-trade	- Small to medium-size platform scales with one load cell - Small belt scales - Class III weighing machines - Available with or without explosion protection	Stainless steel EN 1.4542
SIWAREX WL260 SP-S SB 	6 ... 60 kg (13.23 ... 132.28 lb)	- C3 - Legal-for-trade	- Small platform scales - Small belt scales - Class III weighing machines	Stainless steel EN 1.4542
SIWAREX WL260 SP-S SC 	10 ... 500 kg (22.05 ... 1 102.31 lb)	- C3 - C3 MR - C4 MR (high-precision) - Legal-for-trade	- Platform scales - Belt scales - Class III weighing machines - Suitable for food and beverages industry, or pharmaceuticals.	Stainless steel EN 1.4542

¹⁾ Available in C4 with Y = 20 000 upon request.

²⁾ SIWAREX WL260 SP-S AB is not approved for legal-for-trade operation.

Bending beam load cells

Type	Rated load	Accuracy class	Applications	Material
SIWAREX WL230 BB-S SA 	10 ... 500 kg (22.05 ... 1 102.31 lb)	- C3 - Legal-for-trade	- Small hopper and platform scales - Class III medium accuracy weighing machines - Available with or without explosion protection	Stainless steel EN 1.4542

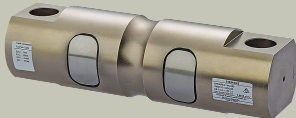
Application (continued)

Shear beam load cells

Type	Rated load	Accuracy class	Applications	Material
SIWAREX WL230 SB-S SA 	500 kg ... 5 t (1 102.31 lb ... 4.92 tn. l.)	• C3 • Legal-for-trade	• Hopper, overhead rail and platform scales • Available with or without explosion protection	Stainless steel EN 1.4542
SIWAREX WL230 SB-S CA 	100 kg ... 10 t (220.46 lb ... 9.84 tn. l.) ³⁾	• C3 • C4 • C5 • Legal-for-trade	• Platform scales • Hopper scales	Nickel-plated steel

³⁾ The 100 kg and 250 kg load classes are bending beams.

Double shear beam load cells

Type	Rated load	Accuracy class	Applications	Material
SIWAREX WL290 DB-S CA 	2.3 ... 113 t (2.26 ... 111.22 tn. l.)	• C3 • Legal-for-trade	• Large platform and hopper scales • Scales in vehicles	Nickel-plated steel

S-type load cells

Type	Rated load	Accuracy class	Applications	Material
SIWAREX WL250 ST-S SA 	50 kg ... 10 t (110.23 lb ... 9.84 tn. l.)	• C3 • Legal-for-trade	• Voltage and pressure applications • Suspended scales • Hopper scales • Hybrid weighing machines • Available with or without explosion protection	Stainless steel EN 1.4542

Compression load cells

Type	Rated load	Accuracy class	Applications	Material
SIWAREX WL270 CP-S SA 	500 kg, 50 t (1 102.3 lb, 49.21 tn. l.)	• C3 • Legal-for-trade	• Vehicle scales • Overhead rail scales • Hopper scales • Available with or without explosion protection	Stainless steel EN 1.4542

Load Cells

Introduction

Application (continued)

Type	Rated load	Accuracy class	Applications	Material
SIWAREX WL270 CP-S SB 	100 t (98.42 tn. l.)	• C3 • Legal-for-trade	• Hopper scales • Bin weighing equipment • Vehicle scales • Available with or without explosion protection	Stainless steel EN 1.4542
SIWAREX WL270 K-S CA 	2.8 ... 500 t (2.76 ... 492.10 tn. l.)	• 0.1% of rated load	• Hopper scales • Bin weighing equipment • For high temperature range (optional) • With double bridge (optional)	Painted steel

Ring torsion load cells

Type	Rated load	Accuracy class	Applications	Material
SIWAREX WL280 RN-S SA 	60 kg ... 60 t (132.28 lb ... 59.05 tn. l.)	• C3 • Legal-for-trade	• Hopper, belt, platform and roller table scales • Available with or without explosion protection • Low mounting height • Integrated overload protection (up to 13 t rated load)	Stainless steel EN 1.4542

Design

Load cells are sensors that convert a mechanical variable (i.e. weight) into an electrical signal, usually a voltage.

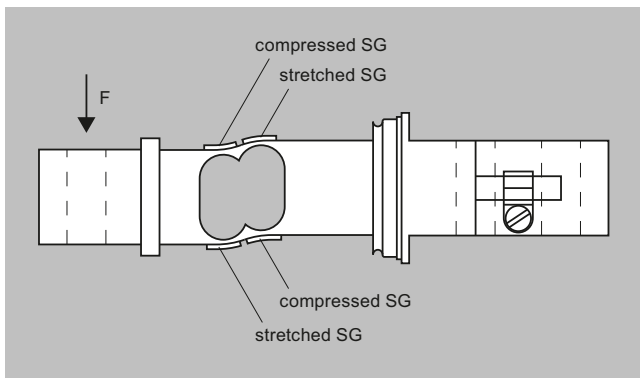
They work according to different measuring principles. Siemens SIWAREX WL200 load cells utilize so-called strain gauges. These are specially formed electrical conductors which are insulated by means of a suitable material. The strain gauges are attached to the basic element, a specially formed spring body, by friction locking.

Under the influence of a weight force F , the spring body is deformed (see schematic presentation) and as a result the strain gauge deforms elastically. Due to the change in the external shape of the strain gauge, the ohmic resistance of its conductor also changes. The top left and bottom right strain gauges are compressed, their resistance films are shortened and the ohmic resistance is reduced accordingly. The top right and bottom left strain gauges are stretched, their resistance films are extended and the ohmic resistance is increased.

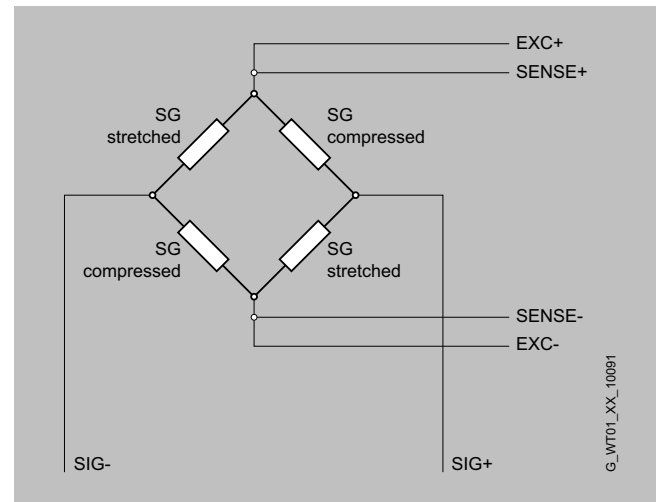
For each load cell, at least four strain gauges are connected together to form a complete Wheatstone bridge. The stretched or compressed strain gauges are connected so that the positive or negative resistance changes are added together to form a total imbalance in the bridge.

On one bridge diagonal, the power voltage is applied (with 6-conductor technique, also the sensor voltage, SENSE) and on the other diagonal, the measured voltage is tapped.

With a constant power voltage (EXC), the measured voltage (SIG) changes proportionally to the introduced load.



Principle of a bending beam load cell, loaded

Design (continued)

Principle of a Wheatstone bridge

Load Cells

Introduction to mounting components

Overview



The use of SIWAREX WL200 installation accessories avoids incorrect loading such as eccentric load introduction, torsion torques etc. on the load cells. enables full exploitation of the measuring accuracy of the load cells.

The standardized SIWAREX WL200 installation components are always coordinated precisely to the requirements of the respective load cell design. This ensures that the force to be measured is directed to the load cells in the best possible way.

At the same time the mounting elements simplify the installation of the load cells and increase safety during installation work. The wide variety of mounting components permits implementation of all key applications used with industrial weighing technology. In addition to the mounting components listed below, a wide range of special accessories is available for special requirements.

Overview



The load cell is suitable for small platform scales with one load cell and a max. platform size 400×400 mm (15.75×15.75 inch) as well as for use in weighing machines of Class III with a max. scale verification intervals $n_{\max} = 3\,000d$.

Benefits

- Economical
- Minimum scale interval ($V_{\min.}$) of $E_{\max}/12\,000$
- Legal for trade

Application

The SIWAREX WL260 SP-S AA is particularly designed for use in small platform scales with loads ranging from 3 to 100 kg (6.61 to 220.46 lb). The maximum platform size is 400×400 mm (15.75×15.75 inches). The load cell can be used in legal for trade applications and offers the accuracy class C3 according to OIML R60. The hermetically sealed load cell provides the industrial protection class IP65.

Design

The load cell is hermetically sealed.

Selection and ordering data

Load cell, type WL 260 SP-S AA Legal-for-trade according to OIML R60 up to 3 000d, connecting cable 3 m (9.84 ft)		Article No. 7MH5102-				
		●	●	D	0	0
Click on the Article No. for the online configuration in the PIA Life Cycle Portal.						
Rated load						
• 3 kg (6.61 lb)		1	K			
• 5 kg (11.02 lb)		1	P			
• 10 kg (22.05 lb)		2	A			
• 20 kg (44.09 lb)		2	G			
• 50 kg (110.23 lb)		2	P			
• 100 kg (220.46 lb)		3	A			

Load Cells

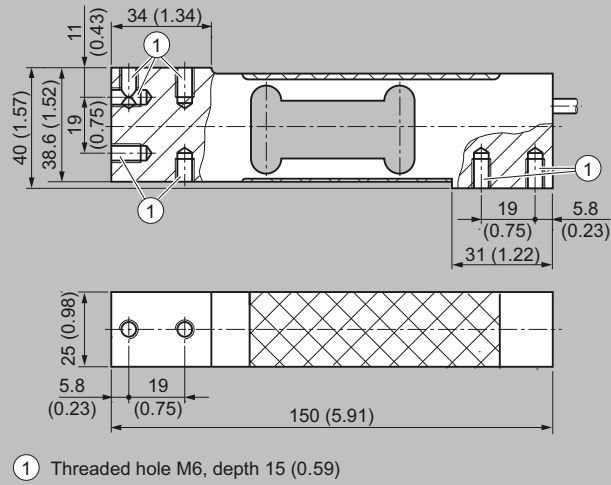
Single point load cells

SIWAREX WL260 SP-S AA Load cell

Technical specifications

SIWAREX WL260 SP-S AA	
Possible applications	- Platform scales - Small belt scales
Type of construction	Single point load cell
Loads	
Rated load $E_{\max}$	3 kg (6.61 lb) 5 kg (11.02 lb) 10 kg (22.05 lb) 20 kg (44.09 lb) 50 kg (110.23 lb) 100 kg (220.46 lb)
Minimum initial loading $E_{\min}$	0% $E_{\max}$
Maximum working load L_u	150% $E_{\max}$
Breaking load L_d	300% $E_{\max}$
Safe side load L_{lq}	100% $E_{\max}$
Measurement characteristic values	
Rated displacement h_n at $E_{\max}$	< 0.6 mm (0.024 inch)
Rated characteristic value C_n	2.0 ± 0.2 mV/V
Tolerance D_0 of zero signal	$< \pm 2\%$ C_n
Maximum scale interval n_{LC}	3 000
Minimum scale interval $V_{\min}$	$E_{\max}/12\,000$
Combined error F_{comb}	$\pm 0.02\%$ C_n
Repeatability F_v	$\pm 0.017\%$ C_n
Creep error F_{cr}	
30 min	$\pm 0.02\%$ C_n
Temperature coefficient	
Zero signal T_{K0}	0.02% $C_n/10$ K
Characteristic value T_{Kc}	0.0175% $C_n/10$ K
Electrical characteristic values	
Recommended reference voltage U_{ref}	5 ... 12 V DC
Input resistance R_e	$409\,\Omega \pm 6\,\Omega$
Output resistance R_a	$350\,\Omega \pm 3\,\Omega$
Insulation resistance R_{is}	5 000 M Ω at 50 V DC
Connection and environmental conditions	
Rated temperature range B_{in}	-10 ... +40 °C (+14 ... +104 °F)
Operating temperature range B_{lu}	-35 ... +65 °C (-31 ... +149 °F)
Storage temperature range B_{ls}	-35 ... +65 °C (-31 ... +149 °F)
Sensor material (DIN)	Aluminum
Maximum tightening torque of the fixing screws	15 ... 20 Nm
Degree of protection to EN 60529; IEC 60529	IP65
Cable connection	
<u>Function</u>	<u>Color</u>
EXC + (supply +)	Red
EXC – (supply -)	Black
SIG + (measured signal +)	Green
SIG – (measured signal -)	White
Sense + (sensor cable +)	Blue
Sense - (sensor cable -)	Brown
Shield (not connected to the load cell body)	Transparent
Certificates and approvals	
Accuracy class according to OIML R60	C3

Dimensional drawings



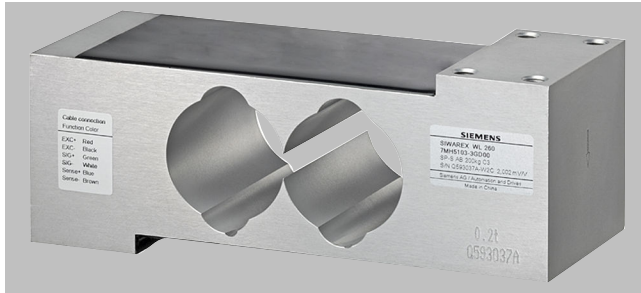
SIWAREX WL 260 SP-S AA load cell, dimensions in mm (inch)

Load Cells

Single point load cells

SIWAREX WL260 SP-S AB Load cell

Overview



The load cell is suitable for small to medium platform scales with one load cell and platform size up to 600 × 600 mm (23.62 × 23.62 inch) as well as for use in weighing machines of Class III with a max. division $n_{\max} = 3\,000d$.

Benefits

- Offers a broad range of rated loads from 50 to 500 kg (110.23 to 1 102.31 lb)
- Minimum scale interval ($V_{\min.}$) of $E_{\max.}/10\,000$

Application

With a minimum scale interval ($V_{\min.}$) of $E_{\max.}/10\,000$, rated loads ranging from 50 to 500 kg (110.23 to 1 102.31 lb), and a maximum platform size of 600 × 600 mm (23.62 × 23.62 inches), the WL260 SP-S AB is a multi-talented load cell. It is suitable for a wide variety of mid-sized platform scales. The load cell comes with the accuracy class C3 according to OIML R60.

Design

The load cell is hermetically sealed.

Selection and ordering data

Load cell, type WL260 SP-S AB Connecting cable 3 m (9.84 ft)		Article No. 7MH5103-				
		●	●	D	0	0
Click on the Article No. for the online configuration in the PIA Life Cycle Portal.						
Rated load						
• 50 kg (110.23 lb)		2	P			
• 75 kg (165.35 lb)		2	S			
• 100 kg (220.46 lb)		3	A			
• 150 kg (330.69 lb)		3	E			
• 200 kg (440.92 lb)		3	G			
• 300 kg (661.37 lb)		3	K			
• 500 kg (1102.31 lb)		3	P			

Technical specifications

SIWAREX WL260 SP-S AB	
Possible applications	- Platform scales - Belt scales
Type of construction	Single point load cell
Loads	
Rated load E_{max}	50 kg (110.23 lb) 75 kg (165.35 lb) 100 kg (220.46 lb) 150 kg (330.69 lb) 200 kg (440.92 lb) 300 kg (661.37 lb) 500 kg (1 102.31 lb)
Minimum initial loading E_{min}	0 kg
Maximum working load L_u	150% E_{max}
Breaking load L_d	300% E_{max}
Safe side load L_{sq}	100% E_{max}
Measurement characteristic values	
Rated displacement h_n at E_{max}	< 1.22 mm (0.048 inch)
Rated characteristic value C_n	2.0 ± 0.2 mV/V
Tolerance D_0 of zero signal	< ± 2 % C_n
Maximum scale interval n_{LC}	3 000
Minimum scale interval V_{min}	$E_{max}/10\,000$
Combined error F_{comb}	± 0.02% C_n
Repeatability F_v	± 0.017 % C_n
Creep error F_{cr}	
• 30 min	± 0.02% C_n
Temperature coefficient	
• Zero signal T_{K0}	0.017% $C_n/10\,K$
• Characteristic value T_{Kc}	0.014% $C_n/10\,K$
Electrical characteristic values	
Recommended input voltage	5 ... 12 V DC
Input resistance R_e	409 Ω ± 6 Ω
Output resistance R_a	350 Ω ± 3 Ω
Insulation resistance R_{is}	5 000 MΩ at 50 V DC
Connection and ambient conditions	
Sensor material (DIN)	Aluminum
Maximum tightening torque of the fixing screws	35 ... 40 Nm
Rated temperature range B_{in}	-10 ... +40 °C (+14 ... +104 °F)
Operating temperature range B_{tu}	-35 ... +65 °C (-31 ... +149 °F)
Storage temperature range B_{ts}	-35 ... +65 °C (-31 ... +149 °F)
Degree of protection according to EN 60529, IEC 60529	IP65
Cable connection	
Function	Color
• EXC + (supply +)	Red
• EXC – (supply -)	Black
• SIG + (measured signal +)	Green
• SIG – (measured signal -)	White
• Sense + (sensor cable +)	Blue
• Sense - (sensor cable -)	Brown
• Shield (not connected to the load cell body)	Transparent
Certificates and approvals	
Accuracy class according to OIML R60	C3 ¹⁾

Technical specifications (continued)

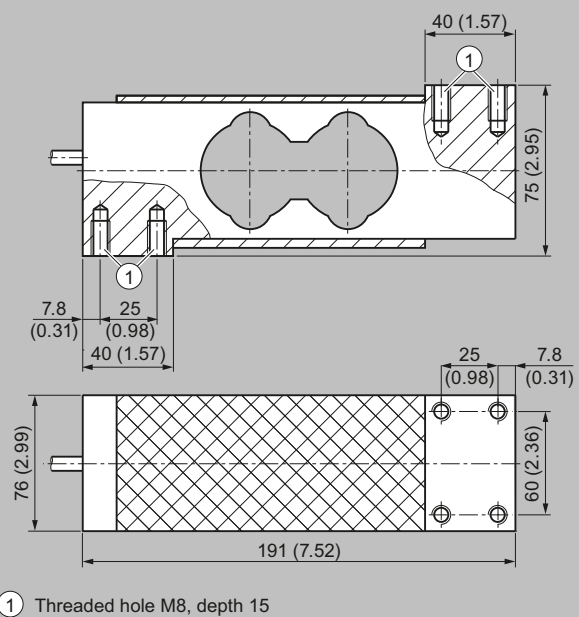
¹⁾ SIWAREX WL260 SP-S AB is not approved for legal-for-trade operation.

Load Cells

Single point load cells

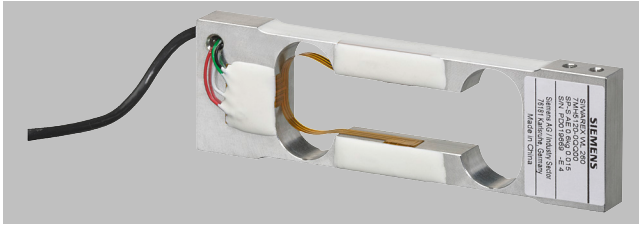
SIWAREX WL260 SP-S AB Load cell

Dimensional drawings



SIWAREX WL 260 SP-S AB load cell, dimensions in mm (inch)

Overview



The SIWAREX WL260 SP-S AE single point load cell is suitable for the smallest load ranges from 0.3 kg to 3 kg and platform sizes up to 200 mm x 200 mm (7.87 × 7.87 inch). The load cell can be used in high resolution scales. The error amounts to a maximum of 0.010 % in relation to the rated characteristic value.

Benefits

- Suitable for the smallest load classes

Application

SIWAREX WL260 SP-S AE is a miniature single-point load cell made of aluminum. It is suitable for the smallest load classes from 0.3 kg (0.7 lb) up to 3 kg (6.7 lb) and platform sizes up to 200 mm x 200 mm (7.9 × 7.9 inches). With an accuracy class of 0,010 %, the load cell can be used with high-resolution scales. Also, the degree of protection, IP65, allows the load cell to be cleaned with jet water.

Design

The measurement element is a spring body made of aluminum. Due to IP65 degree of protection, the load cell is suitable for cleaning with water jets.

Selection and ordering data

Load cell of the type WL260 SP-S AE Connecting cable 0.4 m (14.4 inch), accuracy class 0.010 %		Article No. 7MH5120-				
Click on the Article No. for the online configuration in the PIA Life Cycle Portal.		●	●	Q	0	0
Rated load						
• 0.3 kg (0.66 lb)		0	K			
• 0.6 kg (1.32 lb)		0	Q			
• 1 kg (2.20 lb)		1	A			
• 1.2 kg (2.64 lb)		1	B			
• 1.5 kg (3.31 lb)		1	E			
• 3 kg (6.61 lb)		1	K			

Load Cells

Single point load cells

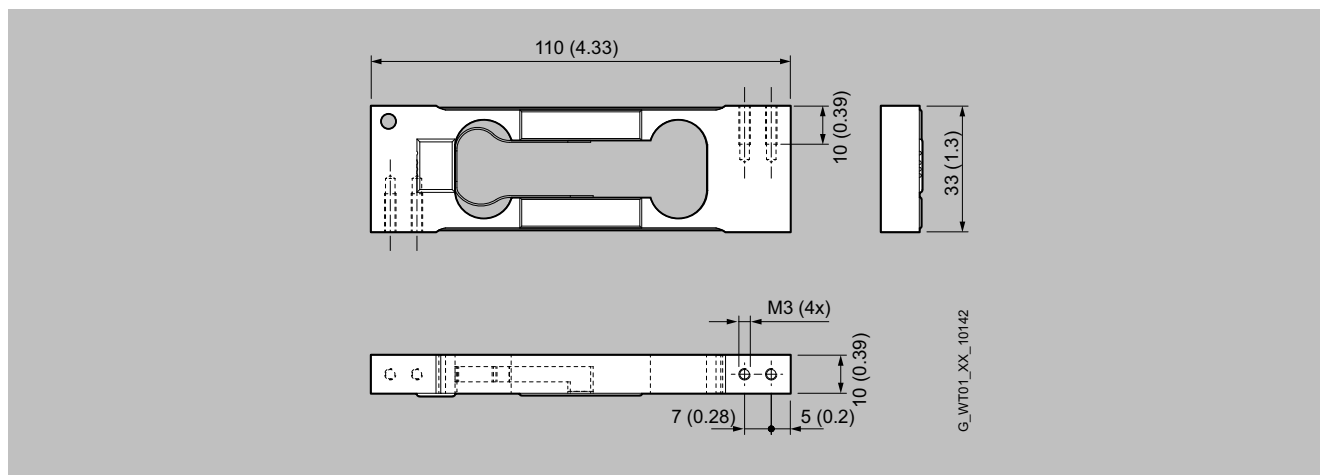
SIWAREX WL260 SP-S AE Load cell

Technical specifications

SIWAREX WL260 SP-S AE	
Possible applications	• Small platform scales • Small belt scales
Type of construction	Platform load cell
Loads	
Rated load $E_{\max}$	• 0.3 kg (0.66 lb) • 0.6 kg (1.32 lb) • 1 kg (2.20 lb) • 1.2 kg (2.64 lb) • 1.5 kg (3.31 lb) • 3 kg (6.61 lb)
Maximum working load L_u	120% $E_{\max}$
Breaking load L_d	150% $E_{\max}$
Safe side load L_{iq}	250% $E_{\max}$
Measurement characteristic values	
Rated displacement h_n at $E_{\max}$	0.180 ... 0.182 mm (0.007 inch)
Rated characteristic value C_n	0.9 ± 0.1 mV/V
Minimum scale interval $V_{\min}^{1)}$	$E_{\max}/60\,000$
Combined error F_{comb}	± 0.010 % C_n
Repeatability F_v	± 0.015 % C_n
Creep error F_{cr}	
• 2 min	± 0.005 % C_n
Temperature coefficient	
• Zero signal T_{K0}	0.017 % $C_n/10$ K
• Characteristic value T_{Kc}	0.015 % $C_n/10$ K
Electrical characteristic values	
Recommended reference voltage U_{ref}	5 ... 10 V DC
Input resistance R_e	$406 \Omega \pm 6 \Omega$
Output resistance R_a	$350 \Omega \pm 3 \Omega$
Insulation resistance R_{is}	5 000 M Ω at 50 V DC
Connection and environmental conditions	
Rated temperature range B_{in}	-10 ... +40 °C (+14 ... +104 °F)
Operating temperature range B_{tu}	-35 ... +65 °C (-31 ... +149 °F)
Storage temperature range B_{ts}	-40 ... +70 °C (-40 ... +158 °F)
Sensor material (DIN)	Aluminum
Maximum tightening torque of the fixing screws	1.3 Nm
Degree of protection acc. to EN 60529	IP65
Cable connection	
<u>Function</u>	<u>Color</u>
• EXC + (supply +)	Red
• EXC – (supply -)	Black
• SIG + (measured signal +)	Green
• SIG – (measured signal -)	White
• Shield (not connected to the load cell body)	Transparent

1) SIWAREX WL260 SP-S AE is not approved for legal-for-trade operation.

Dimensional drawings



SIWAREX WL260 SP-S AE load cell, dimensions in mm (inch)

Load Cells

Single point load cells

SIWAREX WL260 SP-S SA Load cell

Overview



The load cell is suitable for small to medium platform scales with one load cell and platform size up to 400 × 400 mm (15.75 × 15.75 inch) as well as for use in weighing machines of Class III with a max. division $n_{\max} = 3\,000d$.

It is made of stainless steel and therefore also suitable for use in harsh environments.

Benefits

- Stainless steel, hermetically sealed, IP67
- Particularly suitable for harsh environments
- Platform size up to 400 × 400 mm (15.75 × 15.75 inches)

Application

The platform load cell SIWAREX WL260 SP-S SA is made of stainless steel and hermetically sealed. With a grade of protection of IP68, it is especially suitable for use in harsh environments. The load cell can be used with platform scales ranging from 5 to 200 kg (11.02 to 440.92 lb), with a maximum platform size of 400 × 400 mm (15.75 × 15.75 inches). An option for use in legal for trade applications is available upon request.

Design

The load cell is hermetically sealed.

Selection and ordering data

Load cell, type WL260 SP-S SA Legal-for-trade according to OIML R60 up to 3 000d, 1 m connecting cable (3.28 ft)		Article No. 7MH5104- ● ● D 0 ●			
Click on the Article No. for the online configuration in the PIA Life Cycle Portal.					
Rated load					
• 5 kg (11.02 lb)		1	P		
• 10 kg (22.05 lb)		2	A		
• 20 kg (44.09 lb)		2	G		
• 50 kg (110.23 lb)		2	P		
• 100 kg (220.46 lb)		3	A		
• 200 kg (440.92 lb)		3	G		
Explosion protection					
Without					0
Explosion protection					1

Load Cells

Single point load cells

SIWAREX WL260 SP-S SA Load cell

Technical specifications

SIWAREX WL260 SP-S SA	
Possible applications	- Platform scales - Small belt scales
Type of construction	Single point load cell
Loads	
Rated load E_{max}	5 kg (11.02 lb) 10 kg (22.05 lb) 20 kg (44.09 lb) 50 kg (110.23 lb) 100 kg (220.46 lb) 200 kg (440.92 lb)
Minimum initial loading E_{min}	0% E_{max}
Maximum working load L_u	150% E_{max}
Breaking load L_d	300% E_{max}
Safe side load L_{iq}	100% E_{max}
Measurement characteristic values	
Resolution	7,500 divisions
Rated displacement h_n at E_{max}	0.27 ± 0.05 mm (0.01 ± 0.002 inch)
Rated characteristic value C_n	2.0 ± 0.2 mV/V
Tolerance D_0 of zero signal	$< \pm 1\%$ C_n
Maximum scale interval n_{LC}	3 000
Minimum scale interval V_{min}	$E_{max}/7\,500$
Combined error F_{comb}	$\pm 0.02\%$ C_n
Repeatability F_v	$\pm 0.017\%$ C_n
Creep error F_{cr}	
• 30 min	$\pm 0.02\%$ C_n
Temperature coefficient	
• Zero signal T_{K0}	0.017% $C_n/10$ K
• Characteristic value T_{Kc}	0.014% $C_n/10$ K
Electrical characteristic values	
Recommended input voltage	5 ... 12 V DC
Input resistance R_e	$383 \Omega \pm 6 \Omega$
Output resistance R_a	$351 \Omega \pm 3 \Omega$
Insulation resistance R_{is}	5 000 M Ω at 50 V DC
Connection and ambient conditions	
Sensor material (DIN)	Stainless steel EN 1.4542
Maximum tightening torque of the fixing screws	
• $E_{max} = 3 \dots 100$ kg (6.61 ... 220.46 lb)	14 Nm
• $E_{max} = 200$ kg (440.92 lb)	16 Nm
Rated temperature range B_{tn}	-10 ... +40 °C (+14 ... +104 °F)
Operating temperature range B_{tu}	-35 ... +65 °C (-31 ... +149 °F)
Storage temperature range B_{ts}	-40 ... +70 °C (-40 ... +158 °F)
Degree of protection according to EN 60529, IEC 60529	IP67
Cable connection	
Function	Color
• EXC + (supply +)	Green
• EXC – (supply -)	Black
• SIG + (measured signal +)	White
• SIG – (measured signal -)	Red
• Sense + (sensor cable +)	Blue
• Sense - (sensor cable -)	Yellow
• Shield (not connected to the load cell body)	Transparent

Technical specifications (continued)

SIWAREX WL260 SP-S SA	
Certificates and approvals	
Accuracy class according to OIML R60	C3 ¹⁾
Explosion protection	- EU/UK: - ATEX/UKEX II 1 G Ex ia IIC T4 - ATEX/UKEX II 1 D Ex ia IIIC T200 135°C - Da - ATEX/UKEX II 3 G Ex ic IIC T4 Gc - ATEX/UKEX II 3 D Ex tc IIIC T73°C Dc - ATEX/UKEX II 3 G Ex ec T4 IIC Gc - USA: - IS CL I, II, III, DIV 1, GP A, B, C, D, E, F, G; T4 - IS CL I, ZN 0, AEx ia IIC T4 Ga - Zone 20, AEx ia IIIC T135°C Da - CL I, II, III, DIV 2, GP A, B, C, D, E, F, G; T4 - CL 1, ZN 2, GP IIC T4 - IS CL I, ZN 2, AEx ic IIC T4 Gc - Canada: - IS CL I, II, III, DIV 1, GP A, B, C, D, E, F, G; T4 - IS CL I, ZN 0, Ex ia IIC T4 Ga - Ex ia IIIC T135°C Da - CL I, II, III, DIV 2, GP A, B, C, D, E, F, G; T4 - CL 1, ZN 2, GP IIC T4 - Ex ic IIC T4 Gc - China: - NEPSI Ex ia IIC T6 Ga; Ex iaD 20 T80

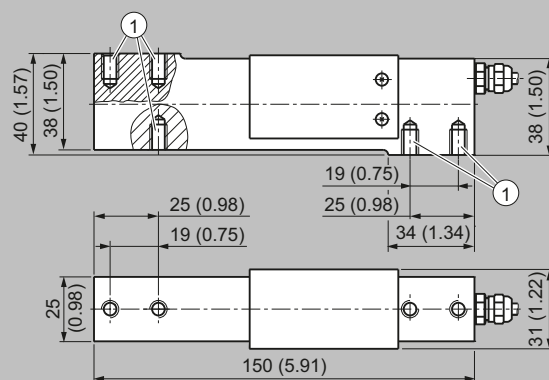
¹⁾ SIWAREX WL260 SP-S SA 5 kg (11.02 lb) is not approved for legal-for-trade operation.

Load Cells

Single point load cells

SIWAREX WL260 SP-S SA Load cell

Dimensional drawings



① Threaded hole M6, thread depth 15, hole depth 18

SIWAREX WL 260 SP-S SA load cell, dimensions in mm (inch)

Overview



The SIWAREX WL260 SP-S SB platform load cell is excellently suited for use in platform scales with dimensions up to and including 350 × 350 mm (13.78 × 13.78 inch). It is approved for use in Class III weighing machines with maximum divisions of $n_{\max}$ to 3 000d.

Benefits

- Stainless steel, hermetically sealed, high degree of protection IP68
- Use in commercial scales with class III
- Accuracy class C3 according to OIML R60

Application

The single-point load cell, SIWAREX WL260 SP-S SB, is made of stainless steel, hermetically sealed, and offers a degree of protection of IP68. The load cell has a load range from 6 to 60 kg (13.23 to 132.28 lb) and a maximum platform size of 350 × 350 mm (13.78 to 13.78 inches). Additionally, it is approved for use with commercial scales with class III and a maximum scale interval number of 3 000

Design

The load cell is made of stainless steel and is hermetically sealed. The load cell meets the IP68 degree of protection.

Selection and ordering data

Load cell, type WL260 SP-S SB Legal-for-trade according to OIML R60 up to 3 000d, connecting cable 6 m (19.69 ft)	Article No. 7MH5117- ● ● D 0 ●				
Click on the Article No. for the online configuration in the PIA Life Cycle Portal.					
Rated load					
• 6 kg (13.23 lb)	1	Q			
• 12 kg (26.45 lb)	2	B			
• 30 kg (66.14 lb)	2	K			
• 60 kg (132.28 lb)	2	Q			
Explosion protection					
Without					0
Explosion protection					1

Load Cells

Single point load cells

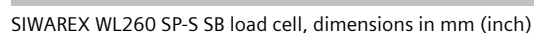
SIWAREX WL260 SP-S SB Load cell

Technical specifications

SIWAREX WL260 SP-S SB	
Possible applications	- Platform scales - Small belt scales
Type of construction	Single point load cell
Loads	
Rated load $E_{\max}$	6 kg (13.23 lb) 12 kg (26.46 lb) 30 kg (66.14 lb) 60 kg (132.28 lb)
Minimum initial loading $E_{\min}$	0% $E_{\max}$
Maximum working load L_u	150% $E_{\max}$
Breaking load L_d	300% $E_{\max}$
Safe side load L_{iq}	100% $E_{\max}$
Measurement characteristic values	
Rated displacement h_n at $E_{\max}$	
• $E_{\max} = 6 \text{ kg (13.23 lb)}$	$0.24 \pm 0.02 \text{ mm (0.009} \pm 0.0008 \text{ in)}$
• $E_{\max} = 12 \text{ kg (26.46 lb)}$	$0.19 \pm 0.01 \text{ mm (0.008} \pm 0.0004 \text{ in)}$
• $E_{\max} = 30 \text{ kg (66.14 lb)}$	$0.15 \pm 0.01 \text{ mm (0.006} \pm 0.0004 \text{ in)}$
• $E_{\max} = 60 \text{ kg (132.28 lb)}$	$0.22 \pm 0.03 \text{ mm (0.009} \pm 0.0011 \text{ in)}$
Rated characteristic value C_n	$2.0 \pm 0.2 \text{ mV/V}$
Tolerance D_0 of zero signal	$< \pm 2.0\% C_n$
Maximum scale interval n_{LC}	3 000
Minimum scale interval $V_{\min}$	
• At $E_{\max} = 6 \dots 60 \text{ kg (13.23} \dots 132.28 \text{ lb)}$	$E_{\max}/15 \text{ 000}$
Combined error F_{comb}	$\leq \pm 0.02\% C_n$
Repeatability F_v	$\leq \pm 0.02\% C_n$
Creep error F_{cr}	
• 30 min	$\leq \pm 0.025\% C_n$
Temperature coefficient	
• Zero signal T_{K0}	$0.009\% C_n/10 \text{ K}$
• Characteristic value T_{Kc}	$0.009\% C_n/10 \text{ K}$
Electrical characteristic values	
Recommended reference voltage U_{ref}	5 ... 12 V DC
Input resistance R_e	$400 \Omega \pm 20 \Omega$
Output resistance R_a	$350 \Omega \pm 3.5 \Omega$
Insulation resistance R_{is}	5 000 M Ω at 50 V DC
Connection and environmental conditions	
Sensor material (DIN)	Stainless steel EN 1.4542
Maximum tightening torque of the fixing screws	10 Nm
Cable connection	
Function	Color
• EXC + (supply +)	Green
• EXC – (supply -)	Black
• SIG + (measured signal +)	White
• SIG – (measured signal -)	Red
• Sense + (sensor cable +)	Yellow
• Sense - (sensor cable -)	Blue
• Shield (not connected to the load cell body)	Transparent
Rated temperature range B_{tn}	-10 ... +40 °C (+14 ... +104 °F)
Operating temperature range B_{tu}	-35 ... +65 °C (-31 ... +149 °F)
Storage temperature range B_{ts}	-35 ... +65 °C (-31 ... +149 °F)

Technical specifications (continued)

SIWAREX WL260 SP-S SB	
Degree of protection according to EN 60529; IEC 60529	IP68
Certificates and approvals	
Accuracy class according to OIML R60	C3
Explosion protection	- EU/UK: - ATEX/UKEX II 1 G Ex ia IIC T4 - ATEX/UKEX II 1 D Ex ia IIIC T200 135°C - Da - ATEX/UKEX II 3 G Ex ic IIC T4 Gc - ATEX/UKEX II 3 D Ex tc IIIC T73°C Dc - ATEX/UKEX II 3 G Ex ec T4 IIC Gc - USA: - IS CL I, II, III, DIV 1, GP A, B, C, D, E, F, G; T4 - IS CL I, ZN 0, AEx ia IIC T4 Ga - Zone 20, AEx ia IIIC T135°C Da - CL I, II, III, DIV 2, GP A, B, C, D, E, F, G; T4 - CL 1, ZN 2, GP IIC T4 - IS CL I, ZN 2, AEx ic IIC T4 Gc - Canada: - IS CL I, II, III, DIV 1, GP A, B, C, D, E, F, G; T4 - IS CL I, ZN 0, Ex ia IIC T4 Ga - Ex ia IIIC T135°C Da - CL I, II, III, DIV 2, GP A, B, C, D, E, F, G; T4 - CL 1, ZN 2, GP IIC T4 - Ex ic IIC T4 Gc - China: - NEPSI Ex iaIIC T6 Ga; Ex iaD 20 T80



Load Cells

Single point load cells

SIWAREX WL260 SP-S SC Load cell

Overview



The SIWAREX WL260 SP-S SC load cells are designed for use in legal-for-trade platform scales. It is approved for use in Class III weighing machines with maximum divisions of $n_{\max}$ to 4 000d. A C4 MR variant with a $Y = 40\,000$ is available for high-precision applications.

The use of stainless steel and the high IP68/IP69K degree of protection make the SIWAREX WL260 SP-S SC highly suitable for use in the food, beverages and tobacco industries or pharmaceutical industry.

Benefits

- Low deflection from 0.03 to 0.19 mm
- Stainless steel, hermetically sealed, high degree of protection IP68/69K
- High-precision measuring with option for C4 MR and $Y = 40\,000$

Application

The single-point load cell SIWAREX WL260 SP-S SC is made of stainless steel and hermetically sealed. The load cell has a load range from 10 to 500 kg (22.05 to 1 102.31 lb) and a maximum platform size of 800 × 800 mm (31.50 × 31.50 inches). Additionally, it is approved for use with commercial scales with class III and a maximum scale interval number of 4 000. Optionally, a C4 MR with a maximum load cell verification interval of $Y = 40\,000$ is available and an optimal solution for high-precision applications.

Design

The load cell is made of stainless steel and is hermetically sealed.

The platform size can be up to 400 × 400 mm (15.75 × 15.75 inches) for load cells rated for 10 ... 50 kg (22.05 ... 110.23 lb). The platform size can be up to 800 × 800 mm (31.50 × 31.50 inches) for load cells rated for 100 ... 500 kg (220.46 ... 1102.31 lb).

Selection and ordering data

Selection and ordering data				Article No.	
Load cell, type WL260 SP-S SC				7MH5118-	
Legal-for-trade according to OIML R60 up to 3 000d, connecting cable 3 m (9.84 ft)				●	●
Click on the Article No. for the online configuration in the PIA Life Cycle Portal.				●	●
Rated load					
In accuracy class C3					
• 10 kg (22.05 lb)				2	A D 0
• 20 kg (44.09 lb)				2	G D 0
• 50 kg (110.23 lb)				2	P D 0
• 100 kg (220.46 lb)				3	A D 0
• 200 kg (440.92 lb)				3	G D 0
• 300 kg (661.91 lb)				3	K D 0
• 400 kg (881.85 lb)				3	M D 0
• 500 kg (1102.31 lb)				3	P D 0
Options					
In accuracy class C3 MR					D 5
Legal-for-trade according to OIML R60 up to 3 000d and $V_{\min} = E_{\max}/20\,000$					
In accuracy class C4 MR					E 5
Legal-for-trade according to OIML R60 up to 4 000d and $V_{\min} = E_{\max}/40\,000$; only for $E_{\max} = 10, 20, 50$ kg (22.05, 44.09, 110.23 lb)					
Explosion protection					
Without					0
Explosion protection					1

Load Cells

Single point load cells

SIWAREX WL260 SP-S SC Load cell

Technical specifications

SIWAREX WL260 SP-S SC	
Possible applications	- Platform scales - Small belt scales
Type of construction	Single point load cell
Loads	
Rated load E_{max}	10 kg (22.05 lb) 20 kg (44.09 lb) 50 kg (110.23 lb) 100 kg (220.46 lb) 200 kg (440.92 lb) 300 kg (661.39 lb) 400 kg (881.85 lb) 500 kg (1102.31 lb)
Minimum initial loading E_{min}	0% E_{max}
Maximum working load L_u	150% E_{max}
Breaking load L_d	300% E_{max}
Safe side load L_{iq}	100% E_{max}
Measurement characteristic values	
Rated displacement s_{nom} for	
• 10 kg (22.05 lb)	0.03 mm (0.001 inch)
• 20 kg (44.09 lb)	0.08 mm (0.003 inch)
• 50 kg (110.23 lb)	0.15 mm (0.006 inch)
• 100 kg (220.46 lb)	0.12 mm (0.005 inch)
• 200 kg (440.92 lb)	0.15 mm (0.006 inch)
• 300 kg (661.39 lb)	0.18 mm (0.007 inch)
• 400 kg (881.85 lb)	0.17 mm (0.007 inch)
• 500 kg (1102.31 lb)	0.19 mm (0.008 inch)
Rated characteristic value C_n	2.0 ± 0.2 mV/V
Tolerance D_0 of zero signal	$\leq \pm 2.0\%$ C_n
Maximum scale interval n_{LC}	
• At $E_{max} = 10 \dots 500$ kg (22.05 ... 1102.31 lb) and accuracy classes C3, C3 MR	3 000
• At $E_{max} = 10 \dots 50$ kg (22.05 ... 110.23 lb) and accuracy class C4 MR	4 000
Minimum scale interval V_{min}	
• At $E_{max} = 10 \dots 500$ kg (22.05 ... 1102.31 lb)	C3: $E_{max}/10\ 000$ C3 MR: $E_{max}/20\ 000$
• At $E_{max} = 10 \dots 50$ kg (22.05 ... 110.23 lb)	C4 MR: $E_{max}/40\ 000$
Combined error F_{comb}	$\leq \pm 0.02\%$ C_n
Repeatability F_v	$\leq \pm 0.02\%$ C_n
Creep error F_{cr}	
• 30 min	$\leq \pm 0.025\%$ C_n
Temperature coefficient	
• Zero signal T_{K0}	0.014% $C_n/10$ K
• Characteristic value T_{Kc}	0.01% $C_n/10$ K
Electrical characteristic values	
Recommended reference voltage U_{ref}	5 ... 12 V DC
Input resistance R_e with	
• 10 ... 50 kg (22.05 ... 110.23 lb)	$380 \Omega \pm 15 \Omega$
• 100 ... 500 kg (220.46 ... 1102.31 lb)	$350 \Omega \pm 3.5 \Omega$
Output resistance R_a	$350 \Omega \pm 3.5 \Omega$
Insulation resistance R_{is}	5 000 M Ω at 50 V DC

Technical specifications (continued)

SIWAREX WL260 SP-S SC	
Connection and environmental conditions	
Material of the load cell (DIN)	Stainless steel EN 1.4542
Maximum tightening torque of the fixing screws with	
• 10 ... 50 kg (22.05 ... 110.23 lb)	10 Nm
• 100 ... 500 kg (220.46 ... 1102.31 lb)	20 Nm
Rated temperature range B_{tn}	-10 ... +40 °C (+14 ... +104 °F)
Operating temperature range B_{tu}	-35 ... +65 °C (-31 ... +149 °F)
Storage temperature range B_{ts}	-35 ... +65 °C (-31 ... +149 °F)
Degree of protection according to EN 60529; IEC 60529	IP68, IP69K
Cable connection	
<u>Function</u>	<u>Color</u>
• EXC + (supply +)	Red
• EXC - (supply -)	Black
• SIG + (measured signal +)	Green
• SIG - (measured signal -)	White
• Sense + (sensor cable +)	Blue ¹⁾
• Sense - (sensor cable -)	Yellow ¹⁾
• Shield (not connected to the load cell body)	Transparent
Certificates and approvals	
Available accuracy classes acc. to OIML R60 at rated load	
• 10 ... 500 kg (22.05 ... 110.23 lb)	C3, C3 MR
• 10 ... 50 kg (220.46 ... 1102.31 lb)	C4 MR
Explosion protection	- EU/UK: - ATEX/UKEX II 1 G Ex ia IIC T4 - ATEX/UKEX II 1 D Ex ia IIIC T200 135°C - Da - ATEX/UKEX II 3 G Ex ic IIC T4 Gc - ATEX/UKEX II 3 D Ex tc IIIC T73°C Dc - ATEX/UKEX II 3 G Ex ec T4 IIC Gc - USA: - IS CL I, II, III, DIV 1, GP A, B, C, D, E, F, G; T4 - IS CL I, ZN 0, AEx ia IIC T4 Ga - Zone 20, AEx ia IIIC T135°C Da - CL I, II, III, DIV 2, GP A, B, C, D, E, F, G; T4 - CL 1, ZN 2, GP IIC T4 - IS CL I, ZN 2, AEx ic IIC T4 Gc - Canada: - IS CL I, II, III, DIV 1, GP A, B, C, D, E, F, G; T4 - IS CL I, ZN 0, Ex ia IIC T4 Ga - Ex ia IIIC T135°C Da - CL I, II, III, DIV 2, GP A, B, C, D, E, F, G; T4 - CL 1, ZN 2, GP IIC T4 - Ex ic IIC T4 Gc - China: - NEPSI Ex iaIIC T6 Ga; Ex iaD 20 T80

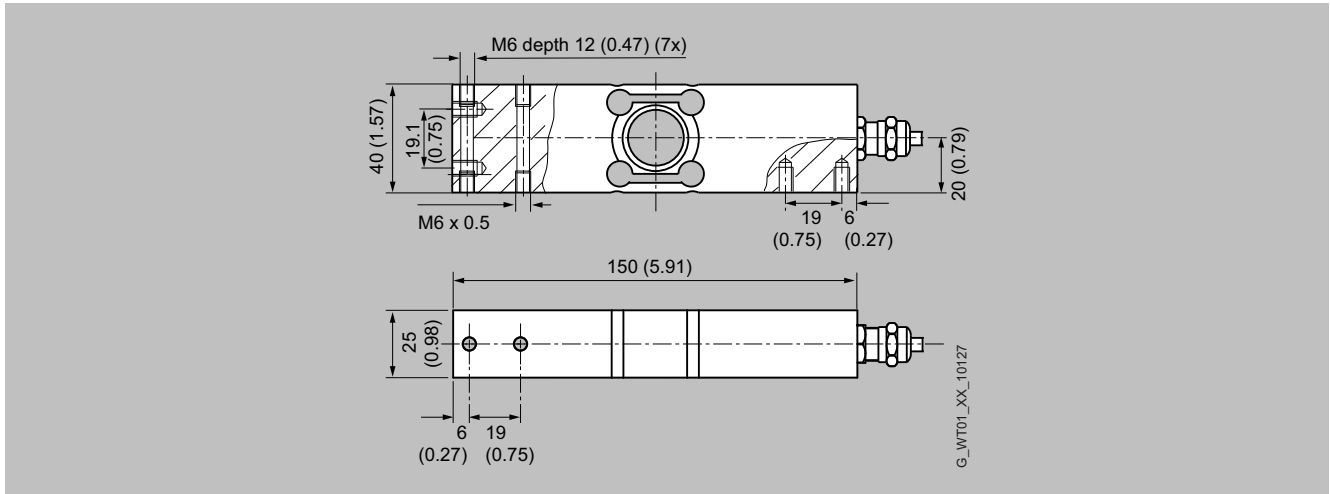
¹⁾ Only with 10, 20 and 50 kg (22.05, 44.09 lb and 110.23 lb) variants.

Load Cells

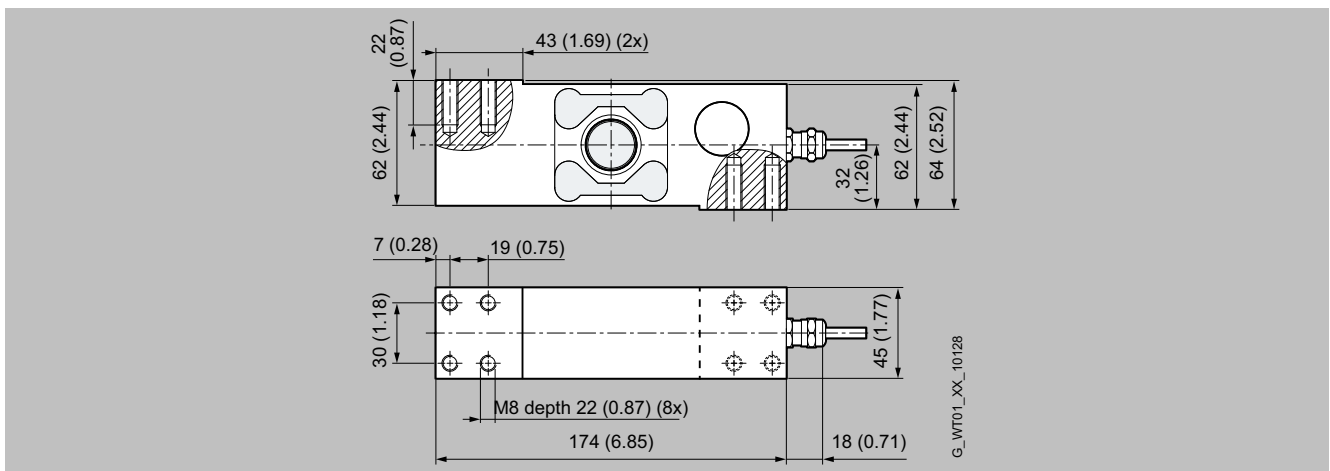
Single point load cells

SIWAREX WL260 SP-S SC Load cell

Dimensional drawings

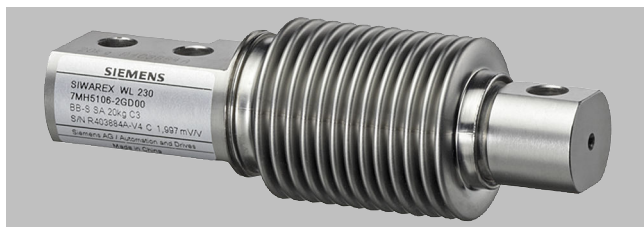


SIWAREX WL260 SP-S SC load cell, 10 ... 50 kg (22.05 ... 110.23 lb), dimensions in mm (inch)



SIWAREX WL260 SP-S SC load cell 100 ... 500 kg (220.46 ... 1102.31 lb), dimensions in mm (inch)

Overview



The bending beam load cell is particularly suitable for use in small hopper and platform scales.

Benefits

- Legal for trade
- Quick and easy installation with SIWAREX mounting units
- Options for use in hazardous areas are in preparation

Application

The SIWAREX WL230 BB-S SA is a bending beam load cell with a minimum scale interval ($V_{min.}$) of $E_{max.}/15\,000$. For this reason, the load cell may be used with high-resolution scales. Also, with the accuracy class C3 according to OIML R60, it is possible to use this load cell in legal for trade applications. This load cell offers rated loads ranging from 10 to 500 kg (22.05 to 1 102.3 lb), with a degree of protection of IP68. If used with its corresponding mounting unit, you can also benefit from overload protection, elastomer bearings as well as other features.

Design

The measuring element is a double bending beam made of stainless steel to which 4 strain gauges are applied.

The strain gauges are arranged so that two are stretched and two are compressed.

Under the influence of the load acting in the measuring direction, the spring bodies and therefore the friction-locked strain gauges are elastically deformed. This generates a measuring signal voltage that is proportional to the load.

Selection and ordering data

Load cell, type WL230 BB-S SA Legal-for-trade according to OIML R60 up to 3 000d, connecting cable 3 m (9.84 ft)		Article No. 7MH5106- ● ● D 0 ●				
Click on the Article No. for the online configuration in the PIA Life Cycle Portal.						
Rated load						
• 10 kg (22.05 lb)		2	A			
• 20 kg (44.09 lb)		2	G			
• 50 kg (110.23 lb)		2	P			
• 100 kg (220.46 lb)		3	A			
• 200 kg (440.92 lb)		3	G			
• 350 kg (771.62 lb)		3	L			
• 500 kg (1102.31 lb)		3	P			
Explosion protection						
Without						0
Explosion protection						1

Load Cells

Bending beam load cells

SIWAREX WL230 BB-S SA Load cell

Technical specifications

SIWAREX WL230 BB-S SA	
Possible applications	- Hopper scales - Belt scales - Platform scales
Type of construction	Bending beam load cell
Loads	
Rated load $E_{\max}$	10 kg (22.05 lb) 20 kg (44.09 lb) 50 kg (110.23 lb) 100 kg (220.46 lb) 200 kg (440.92 lb) 350 kg (771.62 lb) 500 kg (1 102.3 lb)
Minimum initial loading $E_{\min}$	0% $E_{\max}$
Maximum working load L_u	150% $E_{\max}$
Breaking load L_d	300% $E_{\max}$
Safe side load L_{iq}	100% $E_{\max}$
Measurement characteristic values	
Rated displacement h_n at $E_{\max}$	0.3 mm
Rated characteristic value C_n	$2.0 \pm 0.02\%$ mV/V
Tolerance D_0 of zero signal	$< \pm 1.0\%$ C_n
Maximum scale interval n_{LC}	3 000 ¹⁾
Minimum scale interval $V_{\min}$	$E_{\max}/15\,000$
Minimum application range $R_{\min(LC)}$	20%
Combined error F_{comb}	$\leq 0.02\%$ C_n
Repeatability F_v	$\leq 0.017\%$ C_n
Creep error F_{cr}	
• 30 min	$\leq \pm 0.02\%$ C_n
Temperature coefficient	
• Zero signal T_{K0}	$\leq \pm 0.017\%$ $C_n/5\text{ K}$
• Characteristic value T_{Kc}	$\leq \pm 0.014\%$ $C_n/5\text{ K}$
Electrical characteristic values	
Recommended reference voltage U_{ref}	5 ... 10 V DC
Input resistance R_e	$460\ \Omega \pm 50\ \Omega$
Output resistance R_a	$350\ \Omega \pm 3.5\ \Omega$
Insulation resistance R_{is}	5 000 M Ω at 50 V DC
Current calibration	Standard
Connection and environmental conditions	
Sensor material (DIN)	Stainless steel EN 1.4542
Max. tightening torque of the fixing screws	
• $E_{\max} = 10, 200\text{ kg}$ (22.05 ... 440.92 lb)	23 Nm ²⁾
• $E_{\max} = 350, 500\text{ kg}$ (771.62, 1 102.31 lb)	70 Nm ²⁾
Function	Color
• EXC + (supply +)	Green
• EXC - (supply -)	Black
• SIG + (measured signal +)	White
• SIG - (measured signal -)	Red
• Shield (not connected to the load cell body)	Transparent
Rated temperature range B_{tn}	-10 ... +40 °C (+14 ... +104 °F)
Operating temperature range B_{tu}	-35 ... +65 °C (-31 ... +149 °F)
Storage temperature range B_{ts}	-35 ... +65 °C (-31 ... +149 °F)
Degree of protection according to EN 60529; IEC 60529	IP68

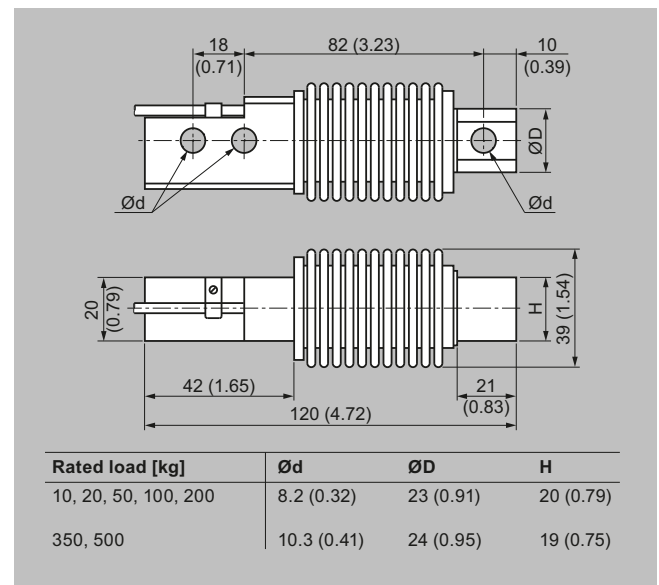
Technical specifications (continued)

SIWAREX WL230 BB-S SA	
Certificates and approvals	
Accuracy class according to OIML R60	C3
Explosion protection	- EU/UK: - ATEX/UKEX II 1 G Ex ia IIC T4 - ATEX/UKEX II 1 D Ex ia IIIC T200 135°C D-a - ATEX/UKEX II 3 G Ex ic IIC T4 Gc - ATEX/UKEX II 3 D Ex tc IIIC T73°C Dc - ATEX/UKEX II 3 G Ex ec T4 IIC Gc - USA: - IS CL I, II, III, DIV 1, GP A, B, C, D, E, F, G; T4 - IS CL I, ZN 0, AEx ia IIC T4 Ga - Zone 20, AEx ia IIIC T135°C Da - CL I, II, III, DIV 2, GP A, B, C, D, E, F, G; T4 - CL I, ZN 2, GP IIC T4 - IS CL I, ZN 2, AEx ic IIC T4 Gc - Canada: - IS CL I, II, III, DIV 1, GP A, B, C, D, E, F, G; T4 - IS CL I, ZN 0, Ex ia IIC T4 Ga - Ex ia IIIC T135°C Da - CL I, II, III, DIV 2, GP A, B, C, D, E, F, G; T4 - CL 1, ZN 2, GP IIC T4 - Ex ic IIC T4 Gc - China: - NEPSI Ex ia IIC T6 Ga; Ex ia D 20 T80

¹⁾ Higher accuracy class available on request.

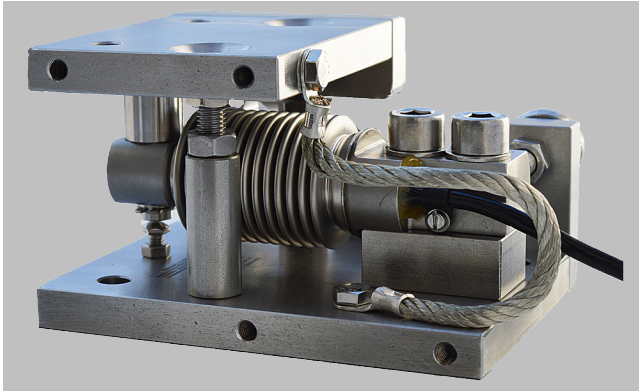
²⁾ The tightening torque is to be selected according to the strength class of the screws.

Dimensional drawings



SIWAREX WL230 BB-S SA load cell, dimensions in mm (inch)

Overview



The self-centering installation unit for SIWAREX WL230 BB-S SA load cells is particularly suitable for implementation in small-scale container, platform and roller table scales.

Design

The mounting unit comprises a base plate and a top plate, a pendulum bolt, two countersunk screws and overload protection.

A highly flexible grounding cable between the top and base plate conducts any fault currents past the load cell. On both sides of the base and top plate there are threaded holes for the later flange-fitting of guide elements.

The top plate is aligned and fixed above the base plate with the two countersunk screws. This results in a stable unit. The height of the top plate can be adjusted so that it is two millimeters above the installation height with load cell.

In this state, the mounting unit serves as an installation aid and can be used as a dummy for light installation jobs.

The load cell is inserted with the pendulum bolt into the mounting unit. The load cell can be inserted in the scale before mounting the mounting unit. It is also possible to insert the load cell in the mounting unit after mounting. After the mounting unit has been mounted in the scale, the load bearing implement is ideally aligned. The load cells are not yet loaded.

Finally, the load bearing implement is lowered by loosening the two hexagon nuts under the top plate. The weight now rests on the load cells.

In this state the load cell and the pressure pieces together form a self-centering unit. The mounting unit permits sideways displacement of the top plate, and hence of the load bearing implement, by up to 2 mm (0.079 in). The countersunk head screws prevent the load bearing implement from being lifted off or tipping.

The overload protection is set so that the load cell cannot be loaded beyond the limit load.

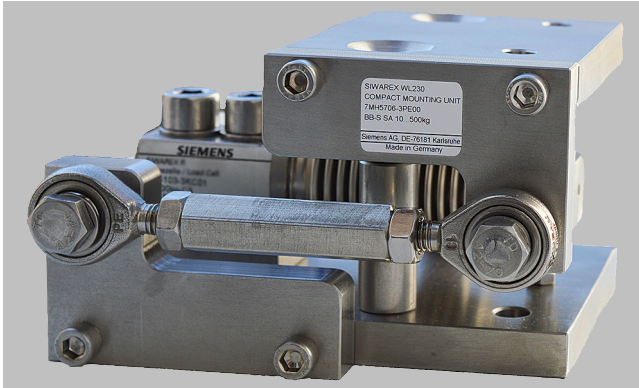
Using the mounting unit as an installation aid results in optimum alignment of the load cells. This is essential to enable the load cells to perform at their best in terms of accuracy. For maintenance or troubleshooting purposes, the load cell can be relieved again by tightening the hexagon nuts. After loosening the clamping washers, it can then easily be replaced. Guide elements are used if the lateral movement of a load bearing implement is to be prevented. Lateral movements can be initiated by agitator start-up in a container, by braking or accelerating forces in a roller conveyor, or through forces exerted by the wind on outdoor silos. A guide element consists of two flanges and one clamping screw. The clamping screw is adjusted to the correct length. The guide element is attached to the operational mounting unit. A guide element can be mounted on the front or rear of the mounting unit. If necessary, two guide elements can be used in parallel in order to double the transferrable lateral force. In the case of scales with four load cells, only three mounting units may be equipped with guide elements. Shims are used to compensate for angular errors and delays in the lug plates. If more than three load cells are used, the shims are also used to adjust the height of the lugs.

Load Cells

Bending beam load cells

SIWAREX WL230 BB-S SA Mounting unit

Design (continued)



Guide element for SIWAREX WL230 BB-S SA mounting units

Technical specifications

Mounting unit for load cells of the SIWAREX WL230 BB-S SA series		
Rated load	10 ... 200 kg (22.01 ... 440.92 lb)	350, 500 kg (771.62, 1 102.31 lb)
Permissible lateral deflection:	± 2 mm (0.08 inch)	± 2 mm (0.08 inch)
Lifting path of top plate	2 ... 2.5 mm (0.08 ... 0.10 inch)	2 ... 2.5 mm (0.18 ... 0.10 inch)
Max. lateral force	1.7 kN	2.5 kN
Max. lifting force	2.5 kN	2.5 kN

Stainless steel guide element

Size	Values with rated load
	10 ... 500 kg (22.01 ... 1 102.31 lb)
Permissible lateral force ¹⁾	2.5 kN

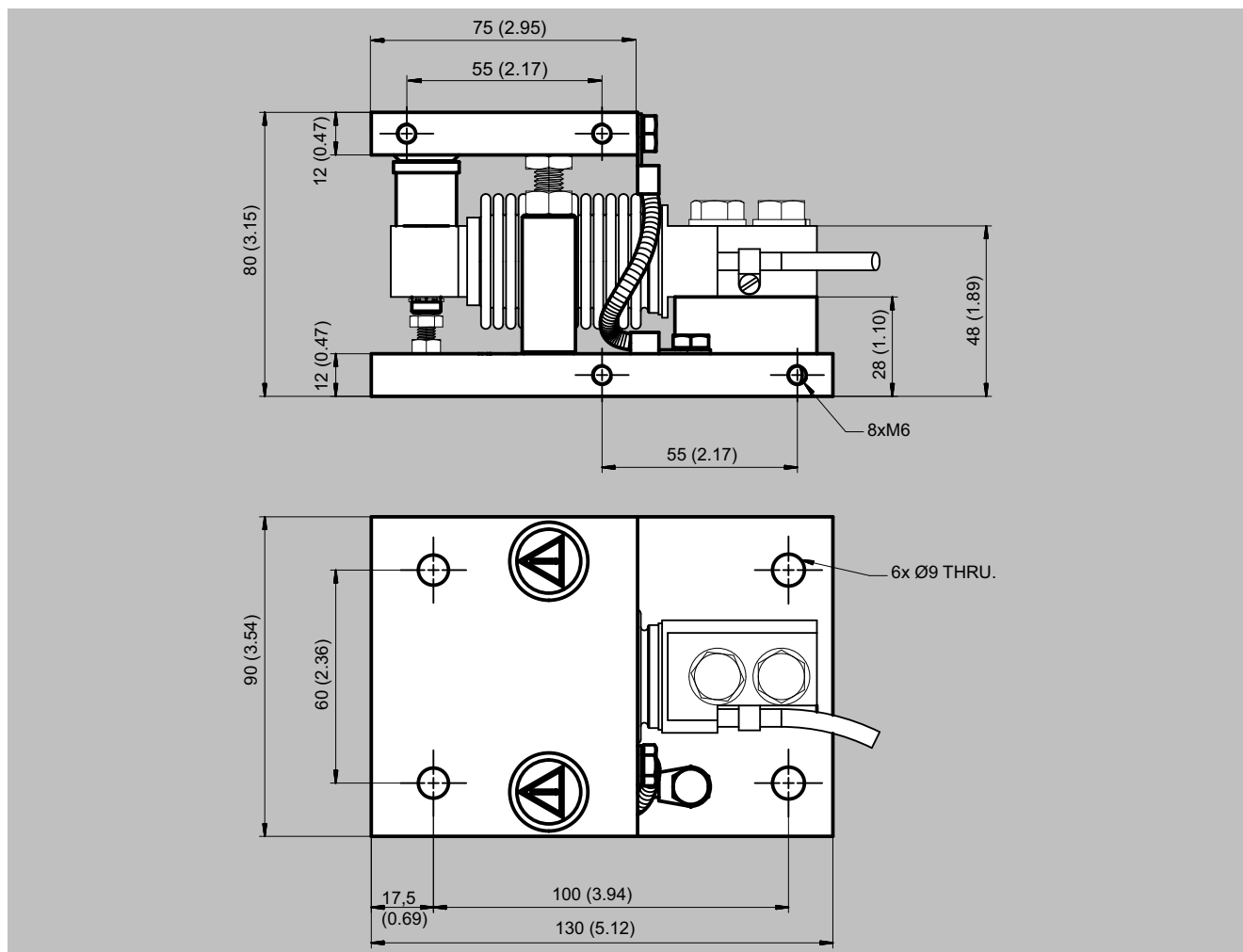
¹⁾ The values apply to one guide element.

Selection and ordering data

	Article No.
Compact mounting units For load cells of the SIWAREX WL230 BB-S SA series Material: Stainless steel EN 1.4301 and EN 1.4112 For load cells with a rated load of 10 ... 200 kg (22.05 ... 440.92 lb)¹⁾ 350, 500 kg (771.61, 1 102.3 lb)¹⁾	7MH5706-3GA00 7MH5706-3PA00
Guide elements (optional) For load cells of the SIWAREX WL230 BB-S SA series Material: Stainless steel EN 1.4301 For load cells with a rated load of ¹⁾ 10 ... 500 kg (22.05 ... 1 102.3 lb); permissible lateral force: 2.5 kN	7MH5706-3PE00
Shims (accessories) For compact mounting units of the SIWAREX WL230 BB-S SA series Material: Stainless steel EN 1.4301 For load cells with a rated load of ¹⁾ 10 ... 200 kg (22.05 ... 440.92 lb); Content: 16 units, each 0.5 mm thick	7MH5713-3JG00

¹⁾ The load cell is not included in the scope of delivery.

Dimensional drawings



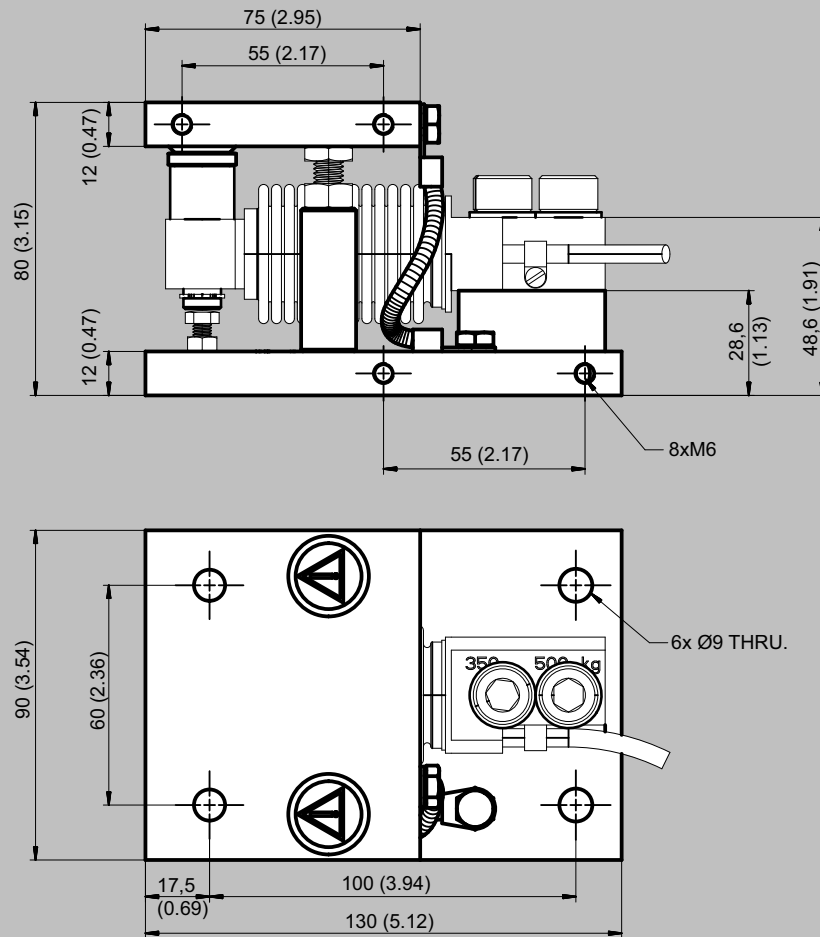
Mounting unit for SIWAREX WL230 BB-S SA load cells, 10 ... 200 kg (22.05 ... 440.92 lb), dimensions in mm (inch)

Load Cells

Bending beam load cells

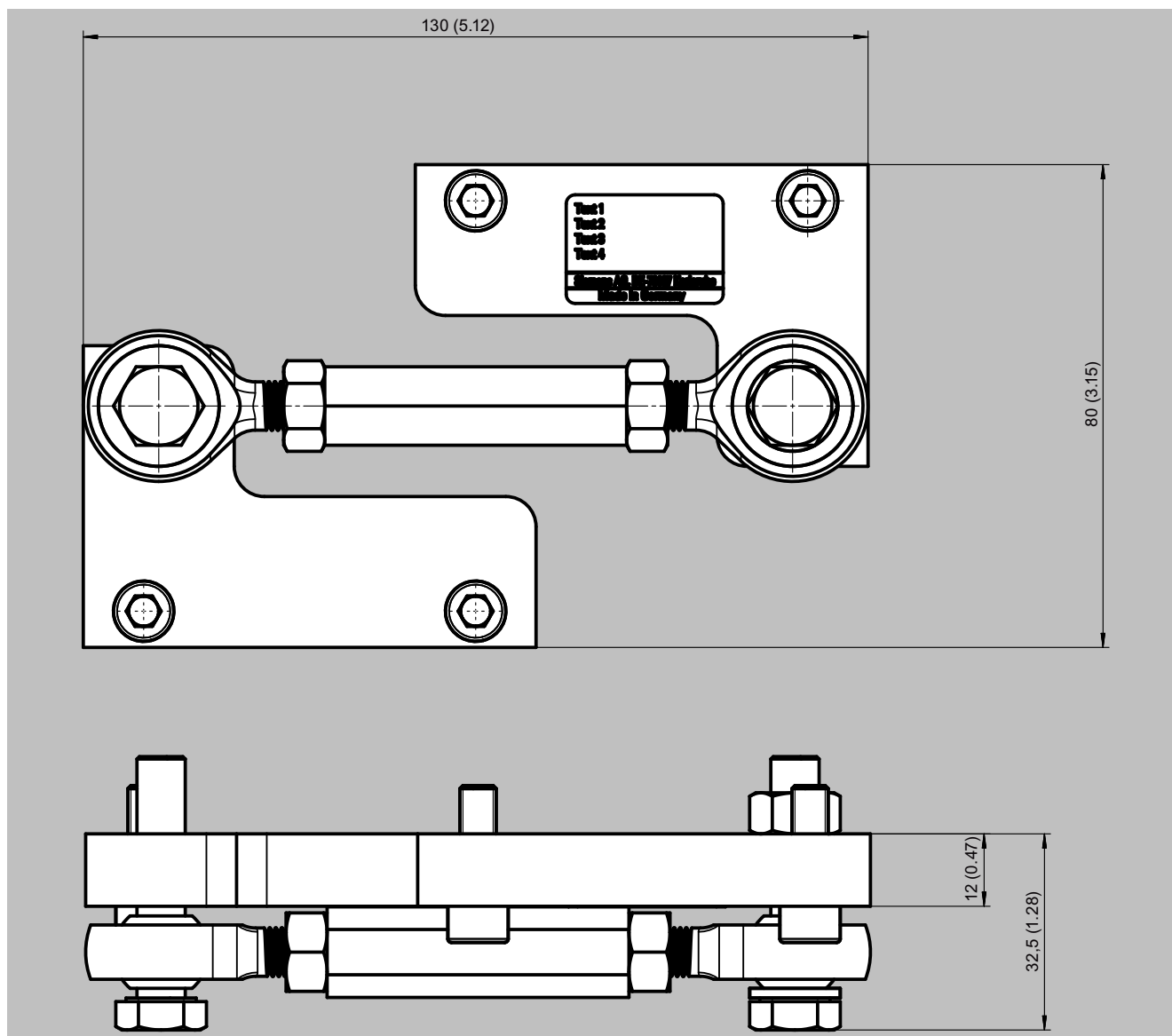
SIWAREX WL230 BB-S SA Mounting unit

Dimensional drawings (continued)



Mounting unit for SIWAREX WL230 BB-S SA load cells, 350 and 500 kg (771.62 and 1 102.31 lb), dimensions in mm (inch)

Dimensional drawings (continued)



Guide element for SIWAREX WL230 BB-S load cells, 10 ... 500 kg (22.01 ... 1 102.31 lb), dimensions in mm (inch)

Load Cells

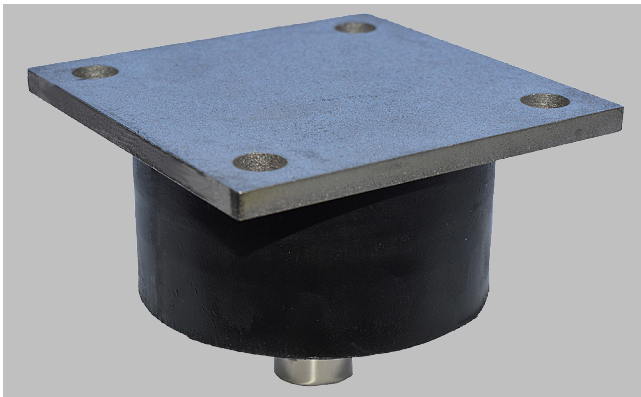
Bending beam load cells

SIWAREX WL230 BB-S SA Elastomer bearing

Overview



Elastomer bearing for load cells of the SIWAREX WL230 BB-S SA, 10 ... 200 kg (22.05 ... 440.93 lb) series



Elastomer bearing for load cells of the SIWAREX WL230 BB-S SA, 350 und 500 kg (771.62 and 1 102.31 lb) series

The self-centering elastomer bearing for load cells of the SIWAREX WL230 BB-S SA series is the ideal load introduction element for scales without guide elements. It serves to damp vibrations and shocks.

Design

Elastomer bearings are rubber-metal composites made of neoprene and stainless steel. They ensure large spring excursions (i.e. a high degree of damping) despite small dimensions.

If the load bearing implement is displaced by more than 4 mm (0.16 inch) in the horizontal direction, measures for restricting side-ways play (e.g. in the form of guide elements) must be provided in the construction of the load bearing implement.

In combination with the base plate and integral overload protection, it is ensured that the load cell is not damaged by static overloading with vertical forces of up to 5 kN.

The load cell and the base plate are not included in the scope of delivery of the elastomer bearing.

Selection and ordering data

	Article No.
Elastomer bearings	
For load cells of the SIWAREX WL230 BB-S SA series	
Material: Neoprene, stainless steel EN 1.4301	
For load cells with a rated load of ¹⁾²⁾	
• 10 ... 200 kg (22.05 ... 440.92 lb)	7MH4133-3DE11
• 350, 500 kg (771.61, 1 102.31 lb)	7MH5706-0PC00

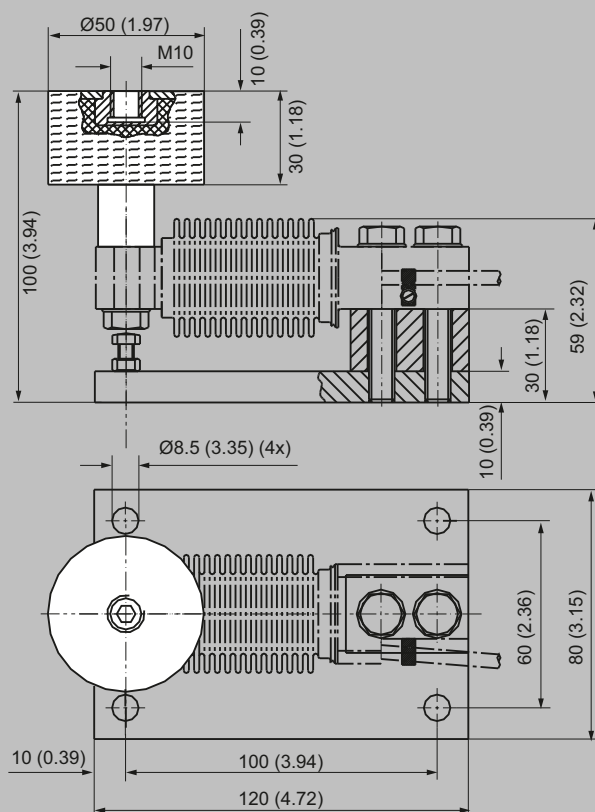
¹⁾ The load cell is not included in the scope of delivery.

²⁾ It is highly recommendable to use a grounding cable (7MH3701-1AA1) in order to protect the load cell.

Technical specifications

Elastomer bearings for load cells of the SIWAREX WL230 BB-S SA series							
Rated load	10 kg (22.05 lb)	20 kg (44.09 lb)	50 kg (110.23 lb)	100 kg (220.46 lb)	200 kg (440.93 lb)	350 kg (771.62 lb)	500 kg (1 102.31 lb)
Max. permissible lateral deflection	± 4 mm (0.16 inch)	± 4 mm (0.16 inch)	± 4 mm (0.16 inch)	± 4 mm (0.16 inch)	± 4 mm (0.16 inch)	± 4 mm (0.16 inch)	± 4 mm (0.16 inch)
Vertical rigidity	0.89 kN/mm	0.89 kN/mm	0.89 kN/mm	0.89 kN/mm	0.89 kN/mm	3.8 kN/mm	3.8 kN/mm
Horizontal rigidity	0.16 kN/mm	0.16 kN/mm	0.16 kN/mm	0.16 kN/mm	0.16 kN/mm	0.1 kN/mm	0.1 kN/mm
Spring compression at rated load	0.10 mm	0.20 mm	0.50 mm	1.10 mm	2.10 mm	0.68 mm	1.28 mm

Dimensional drawings



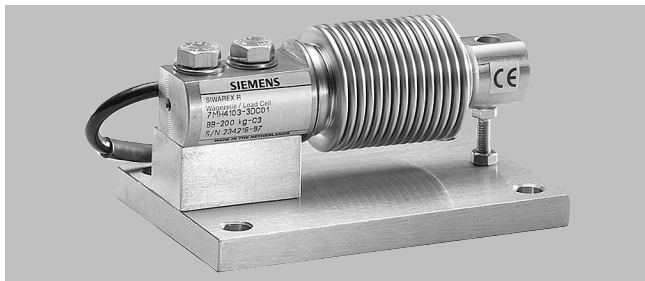
Elastomer bearings for SIWAREX WL230 BB S SA load cells, 10 ... 200 kg (22.05 lb ... 440.92 lb), dimensions in mm (inch)

Load Cells

Bending beam load cells

SIWAREX WL230 BB-S SA Base plate

Overview



The base plate with integral overload protection for load cells of the SIWAREX WL230 BB-S SA series ensures easy, correct installation of the load cell.

Design

The integrated overload protection ensures that the load cell is not damaged by static overloading with vertical forces of up to 5 kN.

The load cells can be installed on the base plate and aligned even before final installation of the scales. This ensures that the permissible spring excursion of the load cell is precisely set, up to contact with the overload protection.

The load cell is not included in the scope of delivery of the base plate with overload protection.

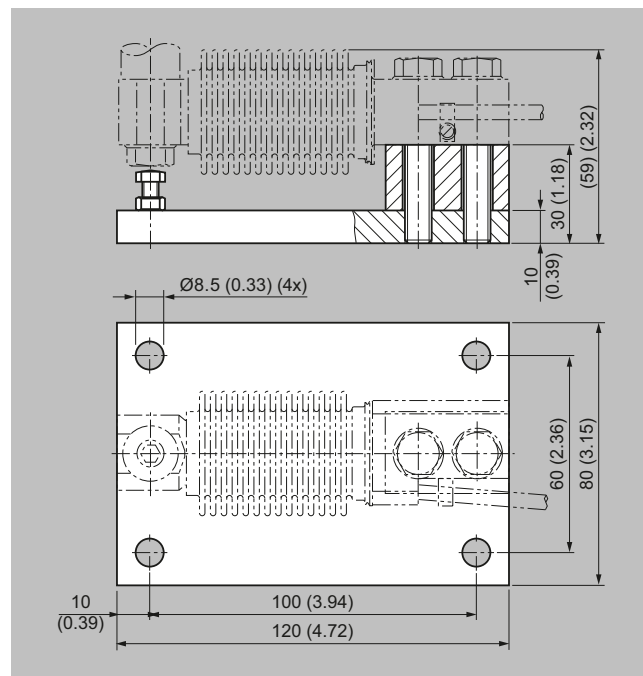
Selection and ordering data

	Article No.
Base plate with overload protection	
For load cells of the SIWAREX WL230 BB-S SA series	
Material: Stainless steel EN 1.4301	
For load cells with a rated load of ¹⁾²⁾	
• 10 ... 200 kg (22.05 ... 440.92 lb)	7MH4133-3DG11
• 350, 500 kg (771.62, 1 102.31 lb)	7MH4133-3KG11

¹⁾ The load cell is not included in the scope of delivery.

²⁾ It is highly recommendable to use a grounding cable (7MH3701-1AA1) in order to protect the load cell.

Dimensional drawings



Elastomer bearing and base plate with overload protection for SIWAREX WL230 BB-S SA load cells, 10 ... 200 kg (22.05 ... 440.92 lb), dimensions in mm (inch)

Overview



The shear beam load cell is particularly suitable for use in hopper, overhead rail and platform scales.

Design

The measuring element is a shear tension spring made of stainless steel to which the strain gauges are applied. The strain gauges are arranged at 45° to the longitudinal axis on the side of the spring body and are therefore subject to shear forces. Under the influence of the load acting in the measuring direction, the spring bodies and therefore the friction-locked strain gauges are elastically deformed. This generates a measuring signal voltage that is proportional to the load.

Selection and ordering data

Load cell, type WL230 SB-S SA				Article No.			
Legal-for-trade according to OIML R60 up to 3 000d, connecting cable 3 m (9.84 ft) at 500 kg (1 102.31 lb) up to 1 t (0.98 tn. l.), connecting cable 6 m (19.68 ft) at 2 t (1.97 tn. l.) up to 5 t (4.92 tn. l.).				7MH5107- ● ● D 0 ●			
Click on the Article No. for the online configuration in the PIA Life Cycle Portal.							
Rated load							
• 500 kg (1 102.31 lb)				3	P		
• 1 t (0.98 tn. l.)				4	A		
• 2 t (1.97 tn. l.)				4	G		
• 5 t (4.92 tn. l.)				4	P		
Explosion protection							
Without							0
Explosion protection							1

Load Cells

Shear beam load cells

SIWAREX WL230 SB-S SA Load cell

Technical specifications

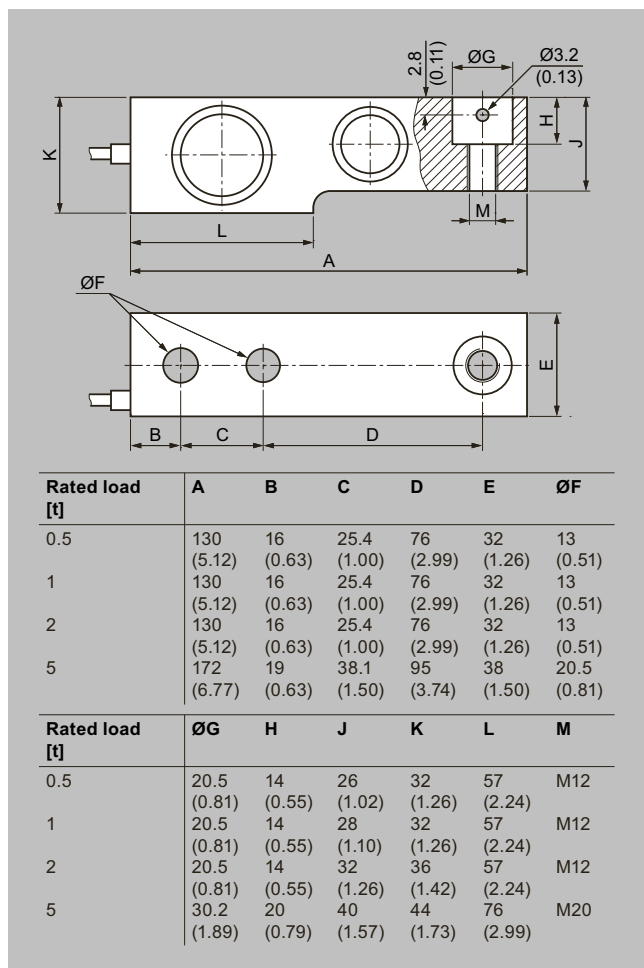
SIWAREX WL230 SB-S SA	
Possible applications	• Hopper scales • Belt scales • Overhead rail scales • Platform scales
Type of construction	Shear beam load cell
Loads	
Rated load/maximum load E_{max}	• 500 kg (1 102.31 lb) • 1 t (0.98 tn. l.) • 2 t (1.97 tn. l.) • 5 t (4.92 tn. l.)
Minimum initial loading E_{min}	0 kg
Max. working load L_u	150% E_{max}
Breaking load L_d	300% E_{max}
Safe side load L_{iq}	100% E_{max}
Measurement characteristic values	
Rated displacement h_n at	
• $E_{max} = 500$ kg (1 102.31 lb)	0.13 mm
• $E_{max} = 1$ t (0.98 tn. l.)	0.21 mm
• $E_{max} = 2$ t (1.97 tn. l.)	0.29 mm
• $E_{max} = 5$ t (4.92 tn. l.)	0.38 mm
Rated characteristic value C_n	2.0 ± 0.002 mV/V
Tolerance D_0 of zero signal	$\pm 1.0\%$ C_n
Max. scale interval n_{LC}	3 000
Min. scale interval V_{min} at	
• $E_{max} = 500$ kg (1 102.31 lb)	$E_{max}/10\,000$
• $E_{max} = 1 \dots 5$ t (0.98 ... 4.92 tn. l.)	$E_{max}/15\,000$
Minimum application range $R_{min(LC)}$ at	
• $E_{max} = 500$ kg (1 102.31 lb)	30%
• $E_{max} = 1 \dots 5$ t (0.98 ... 4.92 tn. l.)	20%
Combined error F_{comb}	$\pm 0.02\%$ C_n
Repeatability F_v	$\pm 0.02\%$ C_n
Creep error F_{cr}	
• 30 min	$\leq \pm 0.02\%$ C_n
Temperature coefficient	
• Zero signal t_{K0}	0.023% $C_n/5$ K
• Characteristic value t_{Kc}	0.017% $C_n/5$ K
Electrical characteristic values	
Recommended reference voltage U_{ref}	5 ... 12 V DC
Input resistance R_e	$1\,000 \pm 10\ \Omega$
Output resistance R_a	$1\,004 \pm 5\ \Omega$
Insulation resistance R_{is}	5 000 M Ω at 50 V DC
Connection and environmental conditions	
Rated temperature range B_{tn}	-10 ... +40 °C (+14 ... +104 °F)
Operating temperature range B_{tu}	-35 ... +65 °C (-31 ... +149 °F)
Storage temperature range B_{ts}	-35 ... +65 °C (-31 ... +149 °F)
Sensor material (DIN)	Stainless steel EN 1.4542
Degree of protection according to EN 60529; IEC 60529	IP68
Recommended tightening torque of the fixing screws	
• $E_{max} = 500$ kg ... 2 t (1 102.31 lb ... 1.97 tn. l.)	150 Nm ¹⁾
• $E_{max} = 5$ t (4.92 tn. l.)	550 Nm ¹⁾

Technical specifications (continued)

SIWAREX WL230 SB-S SA	
Cable connection	
Function	Color
• EXC + (supply +)	Green
• EXC - (supply -)	Black
• SIG + (measured signal +)	White
• SIG - (measured signal -)	Red
• Shield (not connected to the load cell body)	Transparent
Certificates and approvals	
Accuracy class according to OIML R60	C3
Explosion protection	• EU/UK: - ATEX/UKEX II 1 G Ex ia IIC T4 - ATEX/UKEX II 1 D Ex ia IIIC T200 135°C D-a - ATEX/UKEX II 3 G Ex ic IIC T4 Gc - ATEX/UKEX II 3 D Ex tc IIIC T73°C Dc - ATEX/UKEX II 3 G Ex ec T4 IIC Gc • USA: - IS CL I, II, III, DIV 1, GP A, B, C, D, E, F, G; T4 - IS CL I, ZN 0, AEx ia IIC T4 Ga - Zone 20, AEx ia IIIC T135°C Da - CL I, II, III, DIV 2, GP A, B, C, D, E, F, G; T4 - CL 1, ZN 2, GP IIC T4 - IS CL I, ZN 2, AEx ic IIC T4 Gc • Canada: - IS CL I, II, III, DIV 1, GP A, B, C, D, E, F, G; T4 - IS CL I, ZN 0, Ex ia IIC T4 Ga - Ex ia IIIC T135°C Da - CL I, II, III, DIV 2, GP A, B, C, D, E, F, G; T4 - CL 1, ZN 2, GP IIC T4 - Ex ic IIC T4 Gc • China: - NEPSI Ex ia IIC T6 Ga; Ex iaD 20 T80

¹⁾ The tightening torque is to be selected according to the strength class of the screws.

Dimensional drawings



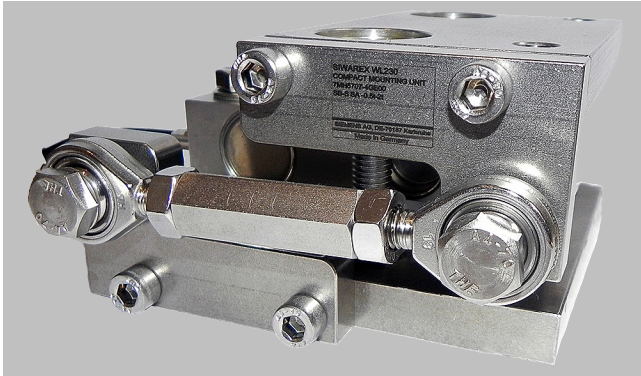
SIWAREX WL230 SB-S SA load cell, dimensions in mm (inch)

Load Cells

Shear beam load cells

SIWAREX WL230 SB-S SA Mounting unit with guide element

Overview



The self-centering mounting unit for SIWAREX WL230 SB-S SA load cells is particularly suitable for implementation in container, platform and roller conveyor scales.

Design

The mounting unit comprises a base plate and a top plate, a pendulum bolt and two countersunk screws.

A highly flexible grounding cable between the top and base plate conducts any fault currents past the load cell. On both sides of the base and top plate there are threaded holes for the later flange-fitting of guide elements.

The top plate is aligned and fixed above the base plate with the two countersunk screws. This results in a stable unit. The height of the top plate is adjusted so that it is three millimeters above the installation height with load cell.

In this state, the mounting unit serves as an installation aid and can be used as a dummy for light installation jobs.

The load cell is inserted with the pendulum bolt into the mounting unit. The load cell can be inserted in the scale before mounting the mounting unit. It is also possible to insert the load cell in the mounting unit after mounting. After the mounting unit has been mounted in the scale, the load bearing implement is ideally aligned. The load cells are not yet loaded.

Finally, the load bearing implement is lowered by loosening the two hexagon nuts under the top plate. The weight now rests on the load cells.

In this state the load cell and the pressure pieces together form a self-centering unit. The mounting unit permits sideways displacement of the top plate, and hence of the load bearing implement, by up to three millimeters.

The countersunk head screws prevent the load bearing implement from being lifted off or tipping.

Using the mounting unit as an installation aid results in optimum alignment of the load cells. This is essential to enable the load cells to perform at their best in terms of accuracy. For maintenance or troubleshooting purposes, the load cell can be relieved again by tightening the hexagon nuts. After loosening the fixing screws, it can be replaced easily.

Guide element

Guide elements are used if the lateral movement of a load bearing implement is to be prevented.

Lateral motions may be associated with the following factors: Start-up of an agitator in a container, braking or acceleration forces of a roller conveyor, or wind forces in the case of outdoor silos.

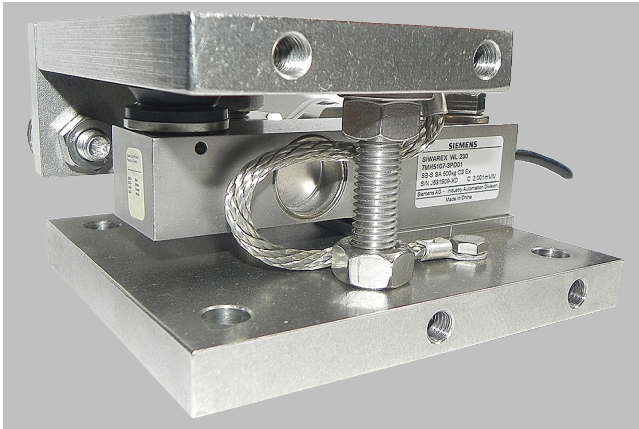
A guide element consists of two flanges and one clamping screw. The clamping screw is adjusted to the correct length. The guide element is attached to the operational mounting unit. A guide element can be mounted on the front or rear of the mounting unit. If necessary, two guide elements can be used in parallel in order to double the transferrable lateral force.

In the case of scales with four load cells, only three mounting units may be equipped with guide elements.

Shim

Shims are used to compensate for angular errors and delays in the lug plates. If more than three load cells are used, the shims are also used to adjust the height of the lugs.

Design (continued)



Mounting unit with guide element, rear view

Selection and ordering data

Mounting unit For load cells of the SIWAREX WL230 SB-S SA series Material: Stainless steel EN 1.4301 and EN 1.4112	Article No. 7MH5707- 4 ● A 0 1
Click on the Article No. for the online configuration in the PIA Life Cycle Portal.	
For load cells with a rated load of ¹⁾	
• 500 kg, 1 t (1 102.31 lb, 0.98 tn. l.)	A
• 2 t (1.97 tn. l.)	G
• 5 t (4.92 tn. l.)	P

Selection and ordering data	Article No.
Guide elements (optional) For mounting units of the SIWAREX WL230 SB-S SA series Material: Stainless steel EN 1.4301 For load cells with a rated load of ¹⁾	
• 500 kg ... 2 t (1 102.31 lb ... 1.97 tn. l.); permissible lateral force: 3 kN	7MH570-7-4GE00
• 5 t (4.92 tn. l.); permissible lateral force: 5 kN	7MH570-7-4PE00

Selection and ordering data	Article No.
Shims (accessories) For mounting units of the SIWAREX WL230 SB-S SA series Material: Stainless steel EN 1.4301 For load cells with a rated load of ¹⁾	
• 500 kg ... 2 t (1 102.31 lb ... 1.97 tn. l.); Content: 16 units, each 0.5 mm thick	7MH571-3-3JG00
• 5 t (4.92 tn. l.); Content: 4 units, each 0.5 mm thick, 16 units each 1 mm thick	7MH571-3-4PG00

¹⁾ The load cell is not included in the scope of delivery.

Load Cells

Shear beam load cells

SIWAREX WL230 SB-S SA Mounting unit with guide element

Technical specifications

Mounting unit for load cells of the SIWAREX WL230 SB-S SA series

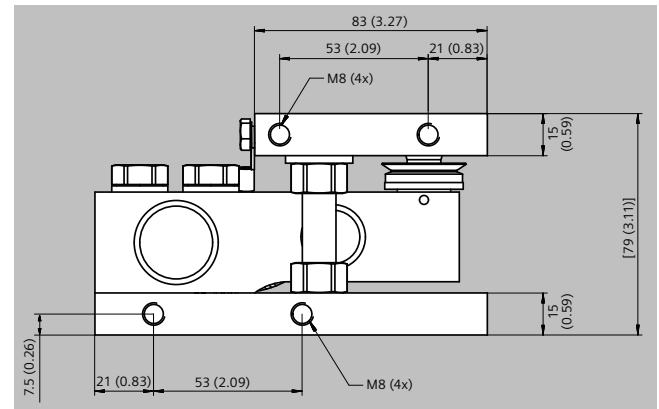
Rated load	0.5 ... 2 t (0.49 ... 1.97 tn. l.)	5 t (4.92 tn. l.)
Maximum lateral deflection with load cell	± 3 mm (0.12 inch)	± 3 mm (0.12 inch)
Lifting path of top plate	3 mm (0.12 inch)	3 mm (0.12 inch)
Restoring force per millimeter of lateral deflection of the top plate in % of the applied load with load cell	13 %/mm	10 %/mm
Permissible supporting load with fixed top plate	25 kN	35 kN
Permissible lifting force on the top plate	25 kN	50 kN
Permissible lateral force on the top plate with fixed top plate	3 kN	5 kN

Guide element

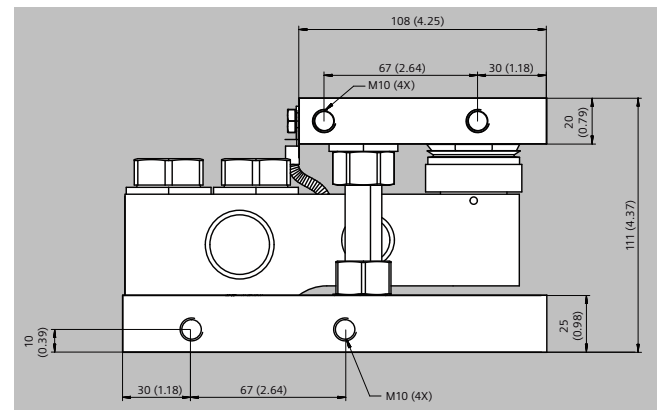
Rated load	0.5 ... 2 t (0.49 ... 1.97 tn. l.)	5 t (4.92 tn. l.)
Permissible lateral force ¹⁾	3 kN	5 kN

¹⁾ The values apply to one guide element.

Dimensional drawings

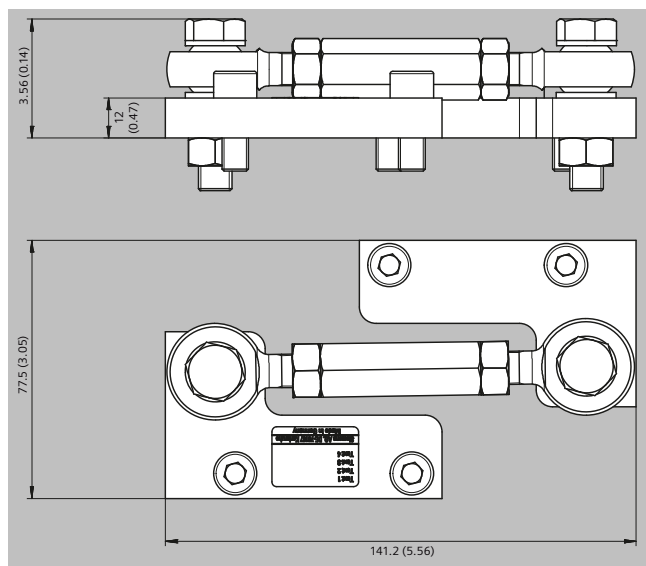


Compact mounting unit for SIWAREX WL230 SB-S SA load cells, mounting state with built-in load cells 0.5 to 2 t (0.49 ... 1.97 tn. l.), dimensions in mm (inch)

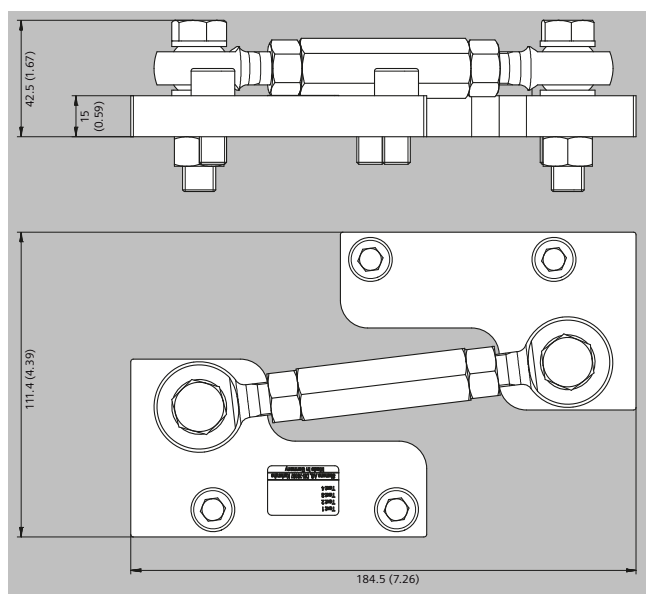


Compact mounting unit for SIWAREX WL230 SB-S SA load cells, mounting state with built-in load cell 5 t (4.92 tn. l.), dimensions in mm (inch)

Dimensional drawings (continued)



Compact mounting unit for SIWAREX WL230 SB-S SA load cells, guide elements 0.5 to 2 t (0.49 ... 1.97 tn. l.), dimensions in mm (inch)



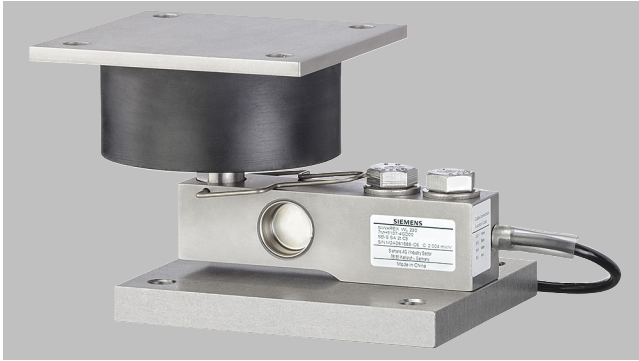
Compact mounting unit for SIWAREX WL230 SB-S SA load cells, guide element 5 t (4.92 tn. l.), dimensions in mm (inch)

Load Cells

Shear beam load cells

SIWAREX WL230 SB-S SA Base plate with elastomer bearing

Overview



The base plate and the elastomer bearing form a self-centering bearing unit together with the load cells of the SIWAREX WL230 SB-S SA series. It suppresses oscillations and shocks to a certain extent.

Design

Elastomer bearings are rubber-metal composites made of neoprene and stainless steel. Their special design means that lateral movement of the load bearing implement does not result in high transverse force on the load cell.

If the load bearing implement is displaced by more than 4 mm (0.16 inch) in the horizontal direction, measures for restricting sideways play (e.g. stops) must be provided in the construction of the load bearing implement.

The base plate of stainless steel is used for suitable fixing of the load cell on the base.

The load cell is not included in the scope of delivery of the base plate or elastomer bearing.

Selection and ordering data

		Article No.			
Base plate		7MH5707-			
For load cells of the SIWAREX WL230 SB-S SA series		4 ● ● 0 0			
Material: Stainless steel EN 1.4301					
Click on the Article No. for the online configuration in the PIA Life Cycle Portal.					
For load cells with a rated load of ¹⁾²⁾					
• 500 kg, 1 t (1 102.31 lb, 0.98 tn l.)		A	B		
• 2 t (1.97 tn l.)		G	B		
• 5 t (4.92 tn. l.)		P	B		
Elastomer bearings					
For load cells of the SIWAREX WL230 SB-S SA series					
Material: Neoprene, stainless steel EN 1.4301					
For load cells with a rated load of ¹⁾²⁾					
• 500 kg, 1 t (1 102.31 lb, 0.98 tn l.)		A	C		
• 2 t (1.97 tn l.)		G	C		
• 5 t (4.92 tn. l.)		P	C		

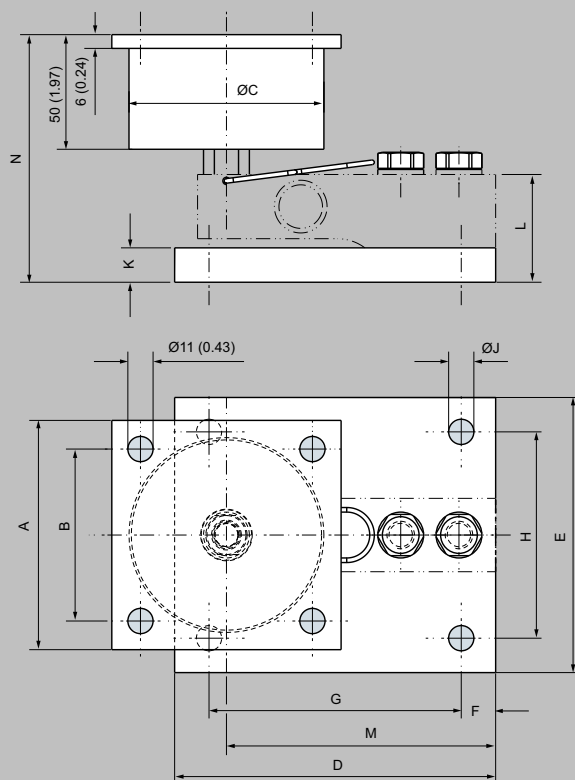
¹⁾ The load cell is not included in the scope of delivery.

²⁾ It is highly recommendable to use a grounding cable (7MH3701-1AA1) in order to protect the load cell.

Technical specifications

Base plate with elastomer bearing for SIWAREX WL230 SB-S SA load cells				
Rated load	500 kg (1 102.31 lb)	1 t (0.98 tn. l.)	2 t (1.97 tn. l.)	5 t (4.92 tn. l.)
Maximum permissible lateral deflection	± 4 mm (0.16 inch)	± 4 mm (0.16 inch)	± 4 mm (0.16 inch)	± 4 mm (0.16 inch)
Vertical rigidity	5.9 kN/mm	5.9 kN/mm	29.98 kN/mm	29.98 kN/mm
Horizontal rigidity	0.16 kN/mm	0.16 kN/mm	0.54 kN/mm	0.54 kN/mm
Compression at rated load	0.68 mm (0.037 inch)	1.28 mm (0.050 inch)	0.62 mm (0.024 inch)	1.46 mm (0.057 inch)

Dimensional drawings



Rated load [t]	A	B	øC	D	E	F	G
0,5, 1	100 (3.94)	75 (2.95)	85 (3.35)	140 (5.51)	120 (4.72)	15 (0.59)	110 (4.33)
2	120 (4.72)	90 (3.54)	100 (3.94)	140 (5.51)	120 (4.72)	15 (0.59)	110 (4.33)
5	120 (4.72)	90 (3.54)	100 (3.94)	185 (7.28)	150 (5.91)	20 (0.79)	145 (5.71)

Rated load [t]	H	øJ	K	L	M	N
0,5, 1	90 (3.54)	11 (0.43)	15 (0.59)	47 (1.85)	117.4 (4.62)	108 (4.25)
2	90 (3.54)	11 (0.43)	15 (0.59)	51 (2.01)	117.4 (4.62)	112 (4.41)
5	110 (4.33)	13.5 (0.53)	25 (0.98)	69 (2.72)	153.1 (6.03)	134 (5.28)

G_WT01_XC_10133

Base plate with elastomer bearing for SIWAREX WL230 SB-S SA load cells, dimensions in mm (inch)

Load Cells

Shear beam load cells

SIWAREX WL230 SB-S SA Load foot

Overview



Load foot for SIWAREX WL230 SB-S SA load cells

This self-aligning load foot for SIWAREX WL230 SB-S SA load cells can be used for the quick and easy construction of platform and hopper scales.

The load foot transmits the force directly into the load cell.

The load foot is designed for rated load cell ranges from 500 kg to 5 t (0.49 ... 4.92 tn. l.).

Design

Height compensation is possible using the screw thread.

Together with the pressure piece which is screwed into the load cell, this facilitates an oscillation function which prevents stresses in the load cells. Stresses can arise during installation or when the length of the load bearing implement changes due to thermal expansion.

The rubber cap prevents the load foot from slipping.

Selection and ordering data

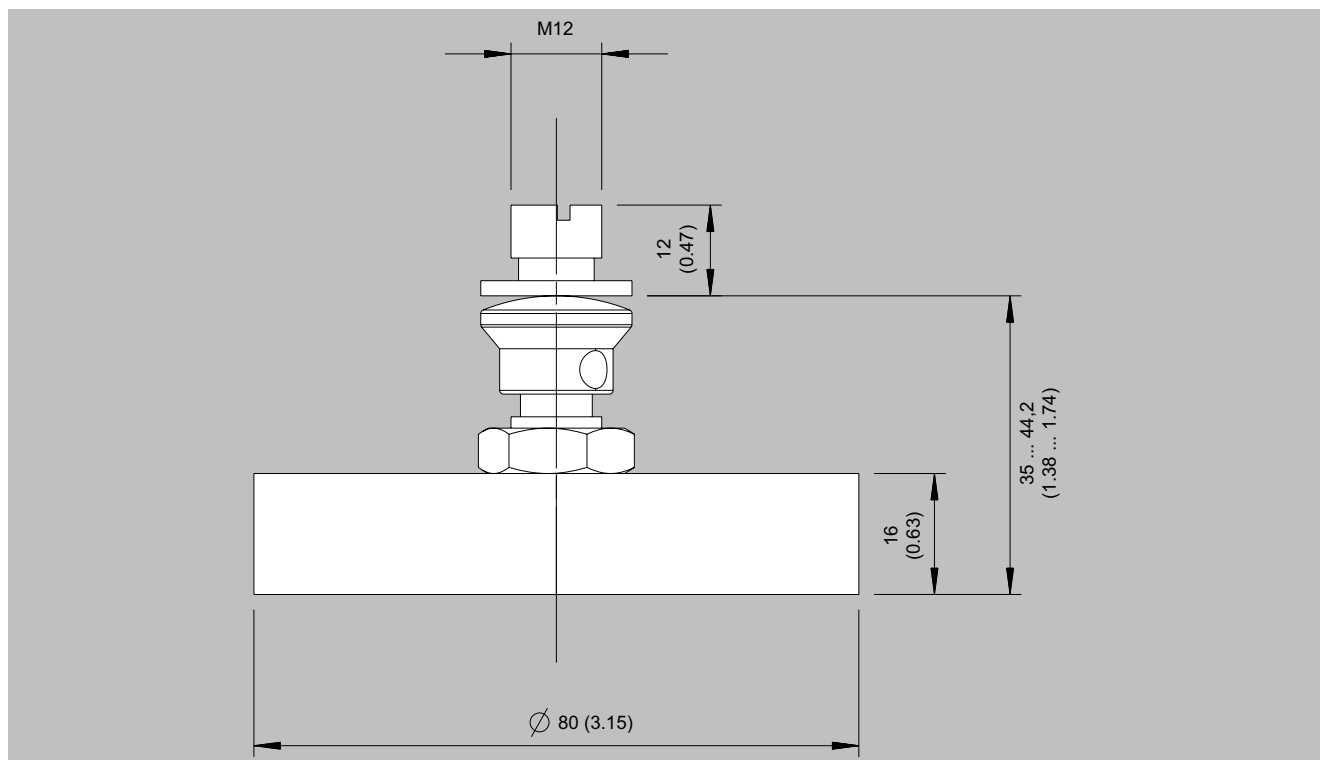
Load foot	Article No.
For load cells of the SIWAREX WL230 SB-S SA series	7MH5707-
Material: Stainless steel EN 1.4542, NBR: Nitrile rubber	4 ● H 0 0
Click on the Article No. for the online configuration in the PIA Life Cycle Portal.	
For load cells with a rated load of ¹⁾	
• 0.5 ... 2 t (0.49 ... 1.97 tn. l.)	G
• 5 t (4.92 tn. l.)	P

¹⁾ The load cell is not included in the scope of delivery.

Technical specifications

Load foot for SIWAREX WL230 SB-S SA load cells		
Rated load	500 kg ... 2 t (1 102.31 lb ... 1.97 tn l.)	5 t (4.92 tn. l.)
Maximum permissible lateral deflection	± 1 mm (0.04 inch)	± 1 mm (0.04 inch)
Maximum vertical load	30 kN	70 kN
Torques		
• Tightening torques of pressure piece for load cell	100 ... 110 Nm	100 ... 110 Nm
• Tightening torques of fixing screws for load cell	M12: 100 Nm	M20: 450 Nm
• Tightening torques of locknut for load foot	10 ... 15 Nm	10 ... 15 Nm

Dimensional drawings



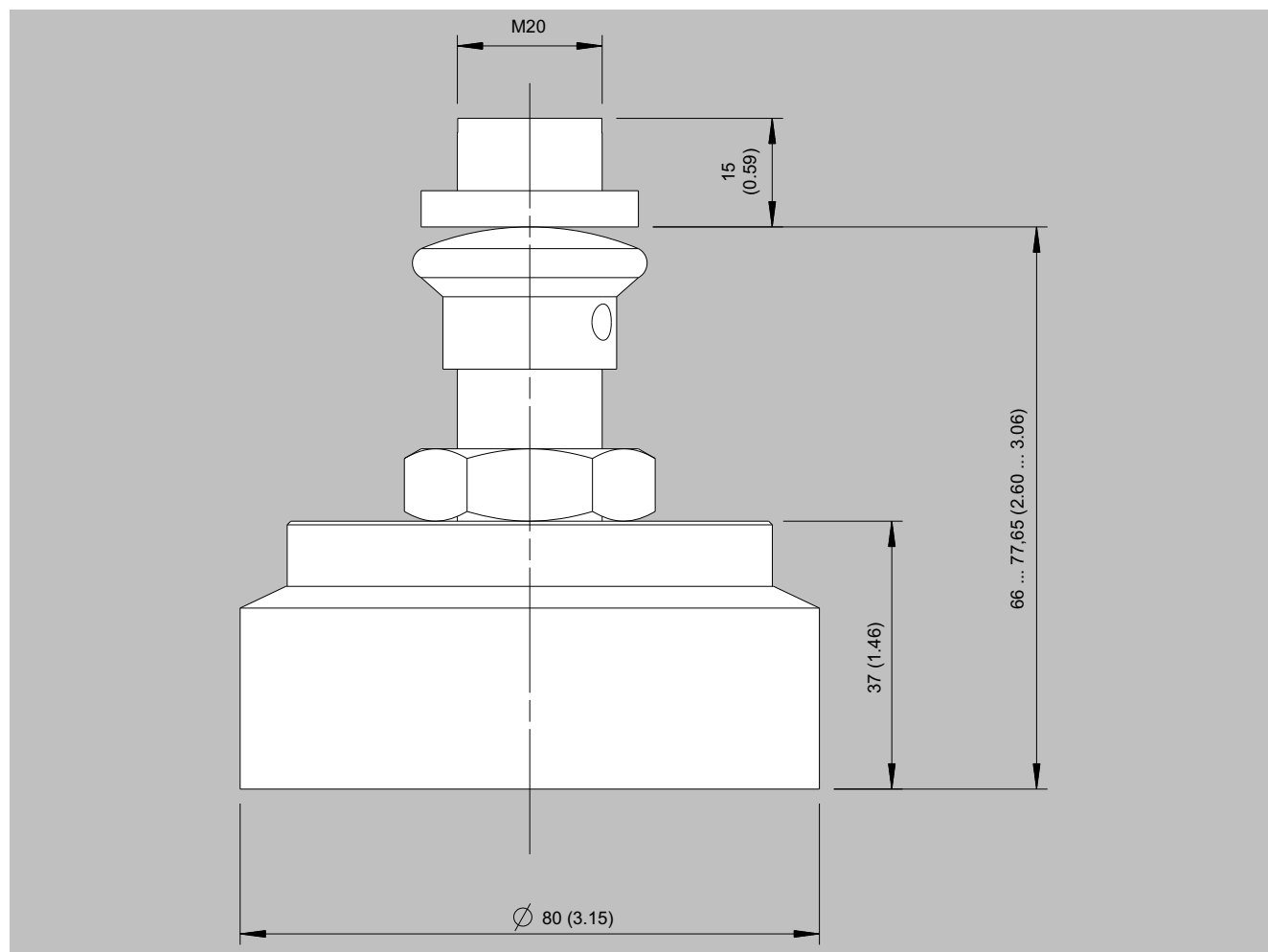
SIWAREX WL230 SB-S SA load foot, 0.5 ... 2 t (0.49 ... 1.97 tn. l.), dimensions in mm (inch)

Load Cells

Shear beam load cells

SIWAREX WL230 SB-S SA Load foot

Dimensional drawings (continued)



SIWAREX WL230 SB-S SA load foot, 5 t (4.92 tn. l.), dimensions in mm (inch)

Load Cells

Shear beam load cells

SIWAREX WL230 SB-S CA Load cell

Overview



The SIWAREX WL230 SB-S CA shear beam load cell is made of special nickel-plated steel. The 100 kg (220.46 lb) and 250 kg (551.16 lb) load classes are implemented as bending beams.

The WL230 SB-S CA load cells are especially suited for platform scales and hopper scales where it is easy to introduce the load into the load cell by means of an adjustable foot. The load cell is available in rated loads from 100 kg to 10 t (220.46 lb ... 0.98 tn l.). This means that scales with multiple weighing ranges can be equipped with a single cell type.

The load cells are legal-for-trade according to OIML R60. They are available in accuracy classes C3, C4 and C5.

Design

The measuring element is a spring body made of special steel. Due to the galvanic coating of nickel and the IP67 degree of protection it is suitable for use in harsh environments.

Selection and ordering data

Load cell, type SIWAREX WL230 SB-S CA		Article No.	
Material: Steel, nickel-plated		7MH5121-	
Length of the connecting cable: 4 m at rated load up to 2 t, 6 m from rated load 3 t		● ● ● 0 0	
Click the Article No. for online configuration in the PIA Life Cycle Portal.			
Rated load			
• 100 kg (220.46 lb)	3	A	
• 250 kg (551.16 lb)	3	H	
• 500 kg (1 102.31 lb)	3	P	
• 1 t (0.98 tn. l.)	4	A	
• 2 t (1.97 tn. l.)	4	G	
• 3 t (2.95 tn. l.)	4	K	
• 5 t (4.92 tn. l.)	4	P	
• 10 t (9.84 tn. l.)	5	A	
Accuracy class according to OIML R60			
• C3		D	
• C4		E	
• C5		F	

Load Cells

Shear beam load cells

SIWAREX WL230 SB-S CA Load cell

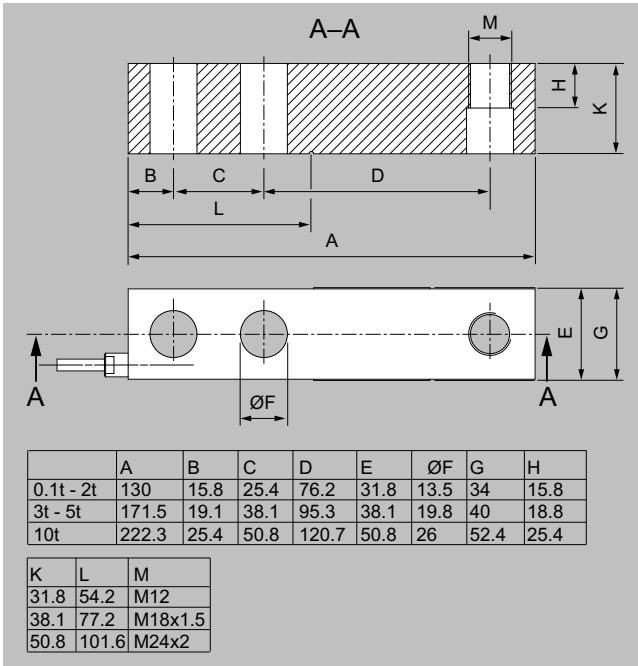
Technical specifications

SIWAREX WL230 SB-S CA	
Possible applications	- Platform scales - Hopper scales
Type of construction	- Bending beam up to rated load 250 kg (551.16 lb) - Shear beam from rated load 500 kg (1 102.31 lb)
Loads	
Rated load $E_{\max}$	100 kg (220.46 lb) 250 kg (551.16 lb) 500 kg (1 102.31 lb) 1 t (0.98 tn. l.) 2 t (1.97 tn. l.) 3 t (2.95 tn. l.) 5 t (4.92 tn. l.) 10 t (9.84 tn. l.)
Minimum initial loading $E_{\min}$	0 kg
Max. working load L_u	150% $E_{\max}$
Breaking load L_d	300% $E_{\max}$
Safe side load L_{lq}	100% $E_{\max}$
Measurement characteristic values	
Rated displacement h_n at $E_{\max}$	
• $E_{\max} = 100$ kg (220.46 lb)	0.17 mm
• $E_{\max} = 250$ kg (551.16 lb)	0.15 mm
• $E_{\max} = 500$ kg (1 102.31 lb)	0.32 mm
• $E_{\max} = 1$ t (0.98 tn. l.)	0.63 mm
• $E_{\max} = 2$ t (1.97 tn. l.)	1.2 mm
• $E_{\max} = 3$ t (2.95 tn. l.)	0.9 mm
• $E_{\max} = 5$ t (4.92 tn. l.)	0.6 mm
• $E_{\max} = 10$ t (9.84 tn. l.)	0.8 mm
Rated characteristic value C_n	3.0 ± 0.003 mV/V
Tolerance D_0 of zero signal	$\leq \pm 1.0\%$ C_n
Max. scale interval n_{LC}	
• For accuracy class OIML C3	3 000
• For accuracy class OIML C4	4 000
• For accuracy class OIML C5	5 000
Min. scale interval $V_{\min}$	
• At $E_{\max}$ 100 kg ... 10 t (220.46 lb ... 9.84 tn. l.) and accuracy class OIML C3	$E_{\max}/10\ 000$
• At $E_{\max}$ 100 kg ... 10 t (220.46 lb ... 9.84 tn. l.) and accuracy class OIML C4	$E_{\max}/15\ 000$
• At $E_{\max}$ 100 kg ... 2 t (220.46 lb ... 1.97 tn. l.) and accuracy class OIML C5	$E_{\max}/20\ 000$
• At $E_{\max}$ 3 t ... 10 t (2.95 ... 9.84 tn. l.) and accuracy class OIML C5	$E_{\max}/18\ 000$
Combined error F_{comb}	
• For accuracy class OIML C3	$\leq \pm 0.023\%$ C_n
• For accuracy class OIML C4	$\leq \pm 0.018\%$ C_n
• For accuracy class OIML C5	$\leq \pm 0.014\%$ C_n
Creep error F_{cr}	
• 30 min	$\leq \pm 0.015\%$ C_n

Technical specifications (continued)

SIWAREX WL230 SB-S CA	
Electrical characteristic values	
Recommended supply voltage	5 ... 12 V DC
Maximum supply voltage	18 V DC
Input resistance R_e	$350 \pm 3.5\ \Omega$
Output resistance R_a	$350 \pm 3.5\ \Omega$
Insulation resistance R_{is}	$\geq 5\ 000\ M\Omega$ at 50 V DC
Connection and ambient conditions	
Rated temperature range B_{tn}	-10 ... +40 °C (+14 ... +104 °F)
Operating temperature range B_{tu}	-35 ... +65 °C (-31 ... +149 °F)
Storage temperature range B_{ts}	-40 ... +80 °C (-40 ... +176 °F)
Sensor material (DIN)	Steel, nickel-plated
Degree of protection acc. to EN 60529	IP67
Recommended tightening torque of the fixing screws	
• For M12	75 Nm
• For M18	500 Nm
• For M24	750 Nm
Length of the connecting cable (four-core)	
• For rated loads up to 2 t	Length 4 m (13.1 ft)
• For rated loads more than 2 t	Length 6 m (19.7 ft)
Diameter of the connecting cable	5 mm
Degree of protection acc. to EN 60529	IP67
Cable connection	
<u>Function</u>	<u>Color</u>
• EXC + (supply +)	Red
• EXC - (supply -)	Black
• SIG + (measured signal +)	Green
• SIG - (measured signal -)	White
• Shield (not connected to the load cell body)	Transparent
ATEX	-
Certificates and approvals	
Accuracy class according to OIML R60	C3, C4, C5

Dimensional drawings



SIWAREX WL230 SB-S CA load cell, dimensions in mm (inch)

Load Cells

Shear beam load cells

SIWAREX WL230 SB-S CA Load foot

Overview



Load foot for SIWAREX WL230 SB-S CA

The self-centering load foot for SIWAREX WL230 SB-S CA load cells can be used for the quick and easy assembly of platform and hopper scales. Together with the load cell it forms a self-centering bearing unit. The load foot transmits the force directly into the load cell. The load foot is suitable for rated load cell ranges from 100 kg up to 10 t (220.46 lb up to 9.84 tn. l.).

Design



SIWAREX WL230 SB-S CA with load foot

You can adjust the height of the load cell with the threaded shaft on the load foot. The foot element has a ball joint with an oscillation function which is often used in weighing technology. Stresses can arise during installation or when the length of the load bearing implement changes due to thermal expansion.

The rubber cap prevents the load foot from slipping.

Selection and ordering data

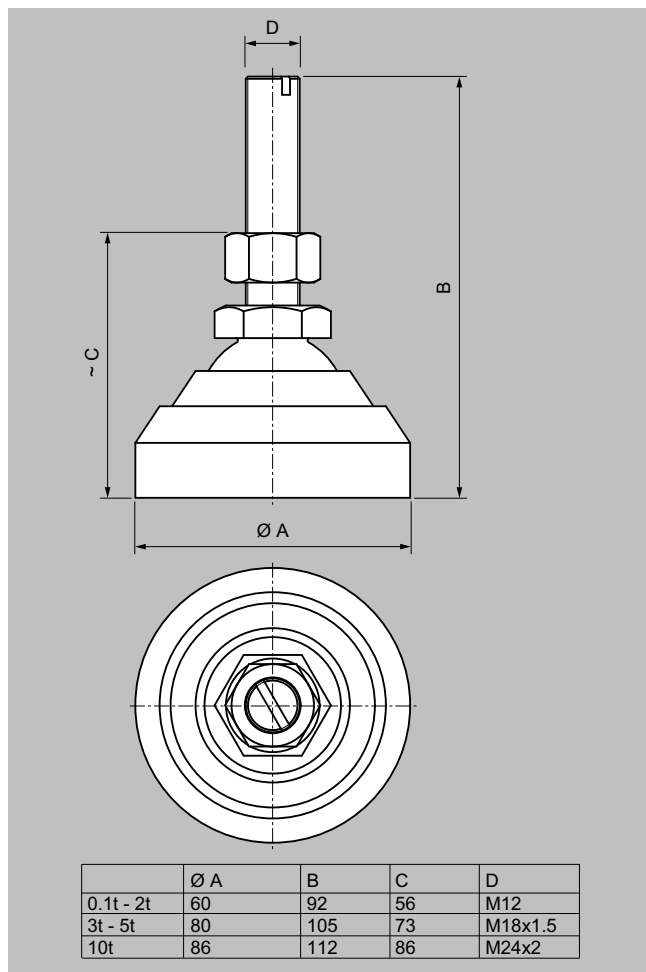
	Article No.
Load foot	
For SIWAREX WL230 SB-S CA load cells	
Material: Steel, nickel-plated, NBR (nitrile butadiene rubber)	
For load cells with a rated load of ¹⁾	
• 100 kg ... 2 t (220.46 lb ... 1.97 tn. l.)	7MH5721-4GH10
• 3 ... 5 t (2.95 ... 4.92 tn. l.)	7MH5721-4PH10
• 10 t (9.842 tn. l.)	7MH5721-5AH10

¹⁾ The load cell is not included in the scope of delivery.

Technical specifications

Load foot for SIWAREX WL230 SB-S CA load cells			
Rated load	100 kg ... 2 t (220.46 lb ... 1.97 tn. l.)	3 ... 5 t (2.95 ... 4.92 tn. l.)	10 t (9.842 tn. l.)
Maximum lateral deflection	± 1 mm (0.04 inch)	± 1 mm (0.04 inch)	± 1 mm (0.04 inch)
Maximum vertical load	30 kN	70 kN	130 kN

Dimensional drawings



SIWAREX WL230 SB-S CA load foot

Load Cells

Double shear beam load cells

SIWAREX WL290 DB-S CA Load cell

Overview



The SIWAREX WL290 DB-S CA double shear beam load cell is made of nickel-plated specialty steel.

WL290 DB-S CA load cells are especially suited for large platform and hopper scales. A special mounting unit makes them particularly suitable for assembling scales in vehicles. The double shear beam load cell is installed without oscillation or elastomer force-transmitting mechanisms since transverse forces do not result in the otherwise usual oscillating or deflection effects in the load cell.

The load cells are legal-for-trade according to OIML R60. They are available in accuracy class C3.

Design

The measuring element is a spring body made of special steel. Due to the galvanic coating of nickel and the IP67 degree of protection it is suitable for use in harsh environments.

Selection and ordering data

SIWAREX WL290 DB-S CA load cell Material: Steel, nickel-plated Length of the connecting cable: 9 m Accuracy class C3 according to OIML R60		Article No. 7MH5122- ● ● D 0 ●			
Click on the Article No. for the online configuration in the PIA Life Cycle Portal.					
Rated load					
• 2.3 t (2.26 tn. l.)		4	G		
• 4.5 t (4.43 tn. l.)		4	N		
• 9.1 t (8.96 tn. l.)		4	U		
• 13.6 t (13.39 tn. l.)		5	D		
• 18 t (17.81 tn. l.)		5	F		
• 23 t (22.24 tn. l.)		5	G		
• 27 t (26.77 tn. l.)		5	J		
• 34 t (33.46 tn. l.)		5	L		
• 45 t (44.29 tn. l.)		5	N		
• 68 t (66.93 tn. l.)		5	R		
• 91 t (89.56 tn. l.)		5	U		
• 113 t (111.22 tn. l.)		6	A		
Explosion protection					
Without					0
Explosion protection					1

Technical specifications

SIWAREX WL290 DB-S CA	
Possible applications	- Platform scales - Hopper scales - Scales in vehicles
Type of construction	Double cutter
Loads	
Rated load/maximum capacity $E_{\max}$	2.3 t (2.26 tn. l.) 4.5 t (4.43 tn. l.) 9.1 t (8.96 tn. l.) 13.6 t (13.39 tn. l.) 18 t (17.81 tn. l.) 23 t (22.24 tn. l.) 27 t (26.77 tn. l.) 34 t (33.46 tn. l.) 45 t (44.29 tn. l.) 68 t (66.93 tn. l.) 91 t (89.56 tn. l.) 113 t (111.22 tn. l.)
Min. dead load $E_{\min}$	0 kg
Max. working load L_u	150% $E_{\max}$
Breaking load L_d	300% $E_{\max}$
Measurement characteristic values	
Rated displacement h_n at $E_{\max}$	
• $E_{\max} = 2.3$ t (2.26 tn. l.)	0.5 mm
• $E_{\max} = 4.5$ t (4.43 tn. l.)	0.6 mm
• $E_{\max} = 9.1$ t (8.96 tn. l.)	1.1 mm
• $E_{\max} = 13.6 \dots 23$ t (13.39 ... 22.24 tn. l.)	0.5 mm
• $E_{\max} = 27$ t (26.77 tn. l.)	0.6 mm
• $E_{\max} = 34 \dots 68$ t (33.46 ... 66.93 tn. l.)	0.5 mm
• $E_{\max} = 91, 113$ t (89.56, 111.22 tn. l.)	0.9 mm
Rated characteristic value C_n	3.0 ± 0.008 mV/V
Tolerance D_0 of zero signal	$\leq \pm 1.0\%$ C_n
Max. scale interval n_{LC}	3 000
Min. scale interval $V_{\min}$	$E_{\max}/10\,000$
Combined error F_{comb}	$\leq \pm 0.023\%$ C_n
Creep error 30 min F_{cr}	$\leq \pm 0.015\%$ C_n
Electrical characteristic values	
Recommended supply voltage	5 ... 12 V DC
Maximum supply voltage	18 V DC
Input resistance R_i	$700 \pm 7 \Omega$
Output resistance R_a	$700 \pm 7 \Omega$
Insulation resistance R_{is}	$\geq 5\,000$ M Ω at 50 V DC
Connection and environmental conditions	
Rated temperature range B_{in}	-10 ... +40 °C (+14 ... +104 °F)
Operating temperature range B_{lu}	-35 ... +60 °C (-31 ... +140 °F)
Storage temperature range B_{is}	-40 ... +80 °C (-40 ... +176 °F)
Sensor material (DIN)	Steel, nickel-plated
Degree of protection according to EN 60529; IEC 60529	IP67
Cable connection	
Length of the connecting cable (four-core)	9 m
Diameter of the connecting cable	
• 2.3 ... 9.1 t (2.26 ... 8.96 tn. l.)	5 mm
• 13.6 ... 113 t (13.39 ... 111.22 tn. l.)	8 mm
Function	Color

Technical specifications (continued)

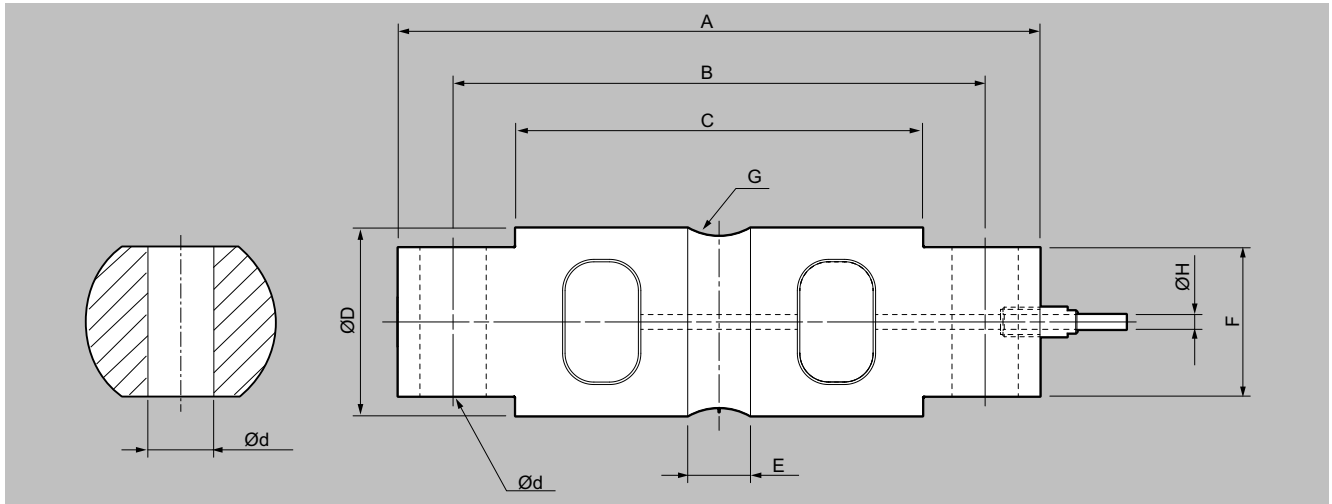
SIWAREX WL290 DB-S CA	
• EXC +	Red
• EXC -	Black
• SIG +	Green
• SIG -	White
• Shield (not connected to the load cell body)	Transparent
Certificates and approvals	
Accuracy class according to OIML R60	C3
Explosion protection	- EU/UK: - ATEX/UKEX II 1 G Ex ia IIC T4 - ATEX/UKEX II 1 D Ex ia IIIC T200 135°C - Da - ATEX/UKEX II 3 G Ex ic IIC T4 Gc - ATEX/UKEX II 3 D Ex tc IIIC T73°C Dc - ATEX/UKEX II 3 G Ex ec T4 IIC Gc - USA: - IS CL I, II, III, DIV 1, GP A, B, C, D, E, F, G; T4 - IS CL I, ZN 0, AEx ia IIC T4 Ga - Zone 20, AEx ia IIIC T135°C Da - CL I, II, III, DIV 2, GP A, B, C, D, E, F, G; T4 - CL 1, ZN 2, GP IIC T4 - IS CL I, ZN 2, AEx ic IIC T4 Gc - Canada: - IS CL I, II, III, DIV 1, GP A, B, C, D, E, F, G; T4 - IS CL I, ZN 0, Ex ia IIC T4 Ga - Ex ia IIIC T135°C Da - CL I, II, III, DIV 2, GP A, B, C, D, E, F, G; T4 - CL 1, ZN 2, GP IIC T4 - Ex ic IIC T4 Gc

Load Cells

Double shear beam load cells

SIWAREX WL290 DB-S CA Load cell

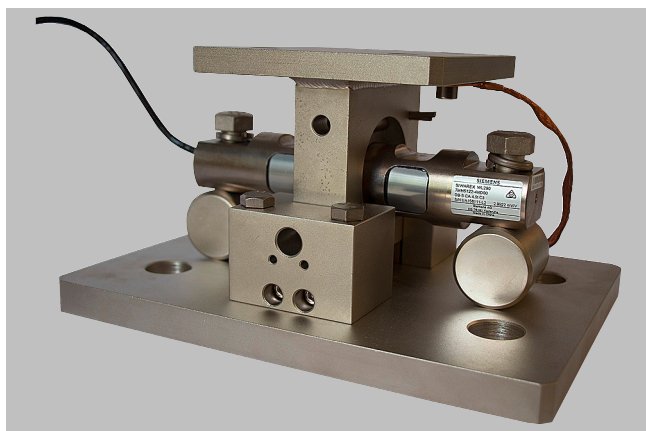
Dimensional drawings



SIWAREX WL290 DB-S CA load cell, dimensions in mm (inch)

Rated load t (tn. l.)	A	B	C	Ød	ØD	E	F	G	ØH
2.3 ... 4.5 (2.26 ... 4.43)	206.2 (8.12)	174.6 (6.87)	133.1 (5.24)	16.7 (0.66)	43.2 (1.70)	15.7 (0.62)	28.4 (1.12)	12.7 (0.50)	5 (0.20)
9.1 (8.96)	206.2 (8.12)	174.6 (6.87)	133.1 (5.24)	16.7 (0.66)	49.5 (1.95)	21.3 (0.84)	28.4 (1.12)	12.7 (0.50)	5 (0.20)
13.6 ... 34 (13.39 ... 33.46)	260.4 (10.25)	215.9 (8.50)	165.1 (6.50)	26.9 (1.06)	76.2 (3.00)	25.4 (1.00)	60.2 (2.37)	25.4 (1.00)	8 (0.31)
45 (44.29)	285.8 (11.25)	241.3 (9.50)	190.2 (7.49)	26.9 (1.06)	88.9 (3.50)	31.0 (1.22)	63.5 (2.50)	38.1 (1.50)	8 (0.31)
68 (66.93)	285.8 (11.25)	241.3 (9.50)	190.2 (7.49)	26.9 (1.06)	99.1 (3.90)	31.0 (1.22)	71.1 (2.80)	38.1 (1.50)	8 (0.31)
91 ... 113 (89.56 ... 111.22)	408.9 (16.10)	330.3 (13.00)	254 (10.00)	39.6 (1.56)	136.6 (5.38)	31.7 (1.25)	116.8 (4.60)	50.8 (2.00)	8 (0.31)

Overview



Silo mounting unit for SIWAREX WL290 DB-S CA load cells

This self-centering mounting unit for SIWAREX WL290 DB-S CA load cells is particularly suitable for implementation in hopper, platform, vehicle and roller conveyor scales. It was specially developed for installation in silos.

The mounting unit transmits the force directly into the load cell and is designed for load cell rated loads from 2.3 t to 113 t.

Design

It comprises a base plate onto which the load cell is attached with the help of a support and two screws, and a top plate which ensures the force is directed into the load cell. A highly flexible grounding cable between the top and base plate conducts any fault currents past the load cell. Specially designed blocks fix the top plate over the base plate. In this state, the mounting unit serves as an installation aid and can be used as a dummy for light installation jobs. The load cell can be inserted in the scale before mounting the mounting unit. It is also possible to insert the load cell in the mounting unit after mounting.

After the mounting unit has been mounted in the scale, the load bearing implement is ideally aligned. The load cells are not yet loaded.

The weight only rests on the load cells once the dummy blocks have been removed. The dummy blocks can be mounted onto the base plate to limit the pendulum movements. This also means they are safely stored for later use in servicing jobs.

Together with the load cell, the mounting unit ensures lift-off protection.

Another benefit is that the mounting unit and load cell adapt to the circumstances during thermal expansion.

Selection and ordering data

Silo mounting unit For load cells of the SIWAREX WL290 DB-S CA series Material: Steel, nickel-plated		Article No. 7MH5722- ● ● A 1 0			
Click on the Article No. for the online configuration in the PIA Life Cycle Portal.					
For load cells with a rated load of ¹⁾					
• 2.3 ... 9.1 t (2.26 ... 8.96 tn. l.)		4	U		
• 13.6 ... 34 t (13.39 ... 33.46 tn. l.)		5	L		
• 45 t (44.29 tn. l.)		5	N		
• 68 t (66.93 tn. l.)		5	R		
• 91 ... 113 t (88.58 ... 111.22 tn. l.)		6	A		

¹⁾ The load cell is not included in the scope of delivery.

Technical specifications

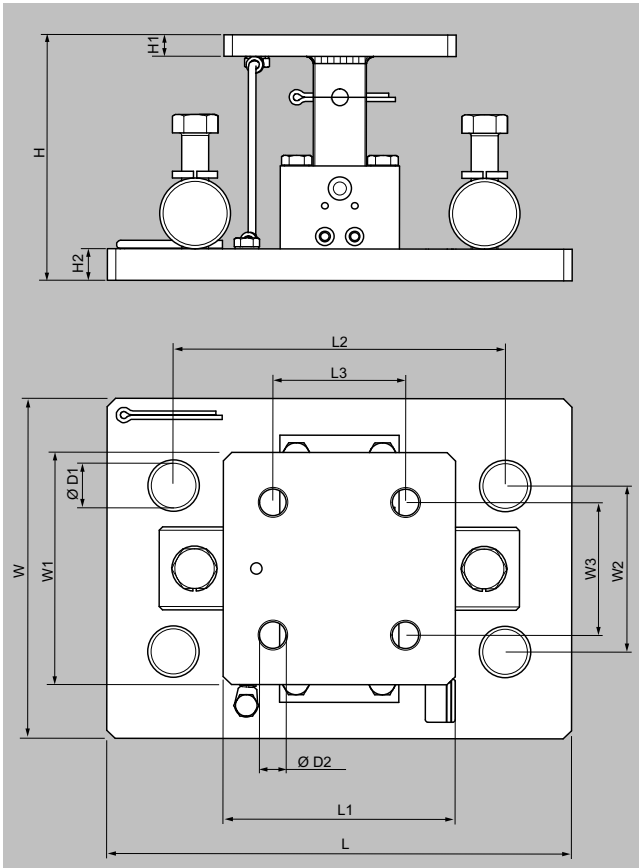
Silo mounting unit for load cells of the SIWAREX WL290 DB-S CA series						
Rated load	2.3 ... 4.5 t (2.26 ... 4.43 tn. l.)	9.1 t (8.96 tn. l.)	13.6 ... 34 t (13.39 ... 33.46 tn. l.)	45 t (44.29 tn. l.)	68 t (66.93 tn. l.)	91 ... 113 t (88.58 ... 111.22 tn. l.)
Maximum lateral deflection	+/- 5 mm (0.2 inch)	+/- 5 mm (0.2 inch)	+/- 5 mm (0.2 inch)	+/- 5 mm (0.2 inch)	+/- 5 mm (0.2 inch)	+/- 5 mm (0.2 inch)
Lifting path of top part	1.43 mm (0.056 inch)	1.26 mm (0.050 inch)	1.07 mm (0.042 inch)	1.69 mm (0.06 inch)	1.69 mm (0.067 inch)	0.97 mm (0.038 inch)
Permissible lateral force with load cell	18 kN	18 kN	68 kN	90 kN	136 kN	226 kN
Permissible lateral force as dummy	10 kN	10 kN	21 kN	41 kN	41 kN	68 kN
Permissible lifting force	15 kN	15 kN	50 kN	75 kN	75 kN	310 kN
Tightening torque of mounting bolts for load cells	20 Nm	20 Nm	25 Nm	25 Nm	25 Nm	30 Nm
Material	Steel, nickel-plated					

Load Cells

Double shear beam load cells

SIWAREX WL290 DB-S CA Silo-mounting unit

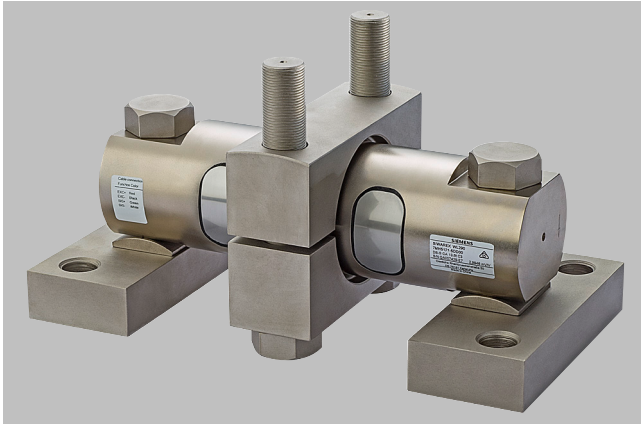
Dimensional drawings



Silo mounting unit for SIWAREX WL290 DB-S CA load cell (dimensions in mm)

Rated load t (tn. l.)	H	H1	H2	L	L1	L2	L3	W	W1	W2	W3	ØD1	ØD2
2.3 ... 9.1 (2.26 ... 8.96)	148	13	19	280	140	200	80	205	140	100	80	27	16
13.6 ... 34 (13.39 ... 33.46)	219	19	25	380	205	290	130	255	205	150	130	31	19
45 (44.29)	257	32	32	460	255	355	190	305	255	230	190	36	21
68 (66.93)	269	32	32	460	255	355	190	305	255	230	190	36	21
90 ... 113 (88.58 ... 111.22)	412	51	51	660	305	510	230	455	305	280	230	48	28

Overview



SIWAREX WL290 DB-S CA load cell with mounting unit

The mounting unit for the SIWAREX WL290 DB-S CA load cells makes setting up platform and hopper scales easy and safe. Since the load cell is securely bolted onto the bearing plates, it is particularly suitable for use in scales in vehicles. The mounting unit transmits the force directly into the load cell and absorbs any lateral and lifting forces which occur. The mounting unit covers load cell rated loads from 13.6 to 34 t (13.39 to 33.46 tn. l.).

Design

The load cell is bolted onto the bearing plates. By using a two-part bearing collar, the load bearing implement is also firmly connected to the load cell and without play. The bearing collar transfers the weight force centered into the load cell.

Since all connections are tight, possible acceleration forces, caused for example by a container on a vehicle, are directed to the chassis from the load cell and mounting unit. Additional latching mechanisms are not required. Due to the zero play mounting of the load cell no wear can occur, making any maintenance measures superfluous.

Selection and ordering data

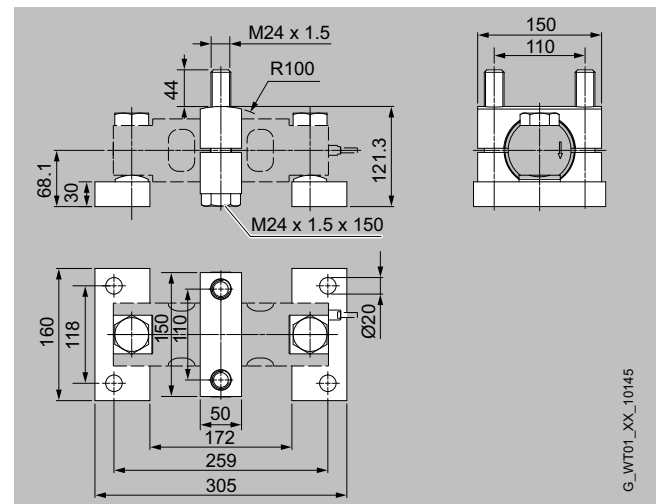
	Article No.
Mounting unit	
For load cells of the SIWAREX WL290 DB-S CA series	
Material: Steel, nickel-plated	
For load cells with a rated load of ¹⁾	
• 13.6 ... 34 t (13.39 ... 33.46 tn. l.)	7MH5722-5LA11

¹⁾ The load cell is not included in the scope of delivery.

Technical specifications

Mounting unit for load cells of the SIWAREX WL290 DB-S CA series	
Rated load	13.6 ... 34 t (13.39 ... 33.46 tn. l.)
Maximum lateral deflection	0 mm
Lifting path of top part	0 mm
Permissible lateral force	20 kN
Permissible lifting force	35 kN
Tightening torque of mounting bolts for load cells	650 Nm
Tightening torque of mounting bolts for clamp collars	650 Nm
Material	Steel, nickel-plated

Dimensional drawings



Mounting unit for SIWAREX WL290 DB-S CA load cell, dimensions in mm

Load Cells

S-Type load cells

SIWAREX WL250 ST-S SA Load cell

Overview



The load cell is ideal for use in tank weighing, hybrid weighing machines or suspended container weighing. It is made of stainless steel and therefore also suitable for use in harsh environments.

The SIWAREX WL250 ST-S SA is suitable for both s-type tension and compression loads. The preferred direction of measurement is tension, with factory calibration for the load cells. For compression applications, adherence to the characteristic values and error limits cannot be guaranteed.

Benefits

- Legal for trade according to accuracy class C3 according to OIML R60
- Quick and easy installation with SIWAREX mounting units
- Options for use in hazardous area are in preparation

Application

SIWAREX WL250 ST-S SA is made of stainless steel and hermetically sealed. It contains threaded holes so it can be easily joined to the environment. The SIWAREX WL250 ST-S SA is available with rated loads ranging from 50 kg to 10 t (110.23 to 22 046.20 lb) and offers the accuracy class C3 according to OIML R60.

Design

The measuring element is hermetically encapsulated and has a calibrated output current.

Selection and ordering data

Load cell, type WL250 ST-S SA Legal-for-trade according to OIML R60 up to 3 000d, connecting cable 6 m (19.69 ft)		Article No. 7MH5105-			
		●	●	D	0 ●
Click on the Article No. for the online configuration in the PIA Life Cycle Portal.					
Rated load					
• 50 kg (110.23 lb)		2	P		
• 100 kg (220.46 lb)		3	A		
• 250 kg (551.16 lb)		3	H		
• 500 kg (1 102.31 lb)		3	P		
• 1 t (0.98 tn. l.)		4	A		
• 2.5 t (2.46 tn. l.)		4	H		
• 5 t (4.92 tn. l.)		4	P		
• 10 t (9.84 tn. l.)		5	A		
Explosion protection					
• Without					0
• Explosion protection					1

Load Cells

S-Type load cells

SIWAREX WL250 ST-S SA Load cell

Technical specifications

SIWAREX WL 250 ST-S SA	
Possible applications	- Voltage and pressure applications - Suspended scales - Hopper scales - Hybrid weighing machines
Type of construction	S-type load cell
Rated load $E_{\max}$	50 kg (110.23 lb) 100 kg (220.46 lb) 250 kg (551.16 lb) 500 kg (1 102.31 lb) 1 t (0.98 tn. l.) 2.5 t (2.46 tn. l.) 5 t (4.92 tn. l.) 10 t (9.84 tn. l.)
Accuracy class according to OIML R60	C3
Max. scale interval n_{LC}	3 000
Min. scale interval $V_{\min}$	
• $E_{\max} = 50, 100$ kg (110.23 lb, 220.46 lb)	$E_{\max}/7\ 000$
• $E_{\max} = 0.25, 0.5, 1, 2.5$ t	$E_{\max}/10\ 000$
• $E_{\max} = 5, 10$ t	$E_{\max}/12\ 000$
Combined error F_{comb}	$\pm 0.02\% C_n$
Repeatability F_v	$\pm 0.02\% C_n$
Creep error F_{cr}	
• 30 min	$\pm 0.02\% C_n$
Temperature coefficient	
• Zero signal t_{k0}	$0.017\% C_n/5\ K$
• Characteristic value t_{kc}	$0.014\% C_n/5\ K$
Min. dead load $E_{\min}$	0 kg
Max. working load L_u	$150\% E_{\max}$
Breaking load L_d	$300\% E_{\max}$
Safe side load L_{iq}	$100\% E_{\max}$
Rated displacement h_n	
• $E_{\max} = 50, 100$ kg (110.23 lb, 220.46 lb)	0.18 mm
• $E_{\max} = 250, 500$ kg (551.16 lb, 1 102.31 lb)	0.24 mm
• $E_{\max} = 1$ t	0.37 mm
• $E_{\max} = 2.5, 5$ t	0.8 mm
• $E_{\max} = 10$ t	0.57 mm
Rated characteristic value C_n	$3.0 \pm 0.008\ mV/V$
Tolerance D_0 of zero signal	$\pm 1.0\% C_n$
Input resistance R_e	$430\ \Omega \pm 4\ \Omega$
Output resistance R_a	$350\ \Omega \pm 3.5\ \Omega$
Insulation resistance R_{is}	$5\ 000\ M\Omega$ at 50 V DC
Rated temperature range B_{tn}	-10 ... +40 °C (+14 ... +104 °F)
Operating temperature range B_{tu}	-35 ... +65 °C (-31 ... +149 °F)
Storage temperature range B_{ts}	-35 ... +65 °C (-31 ... +149 °F)
Sensor material (DIN)	Stainless steel EN 1.4542
Maximum tightening torque of the fixing screws	
• $E_{\max} = 50, 100$ kg (110.23 lb, 220.46 lb)	25 Nm
• $E_{\max} = 250, 500$ kg, 1 t (551.16 lb, 1 102.31 lb, 0.98 tn. l.)	75 Nm
• $E_{\max} = 2.5, 5$ t	450 Nm

Technical specifications (continued)

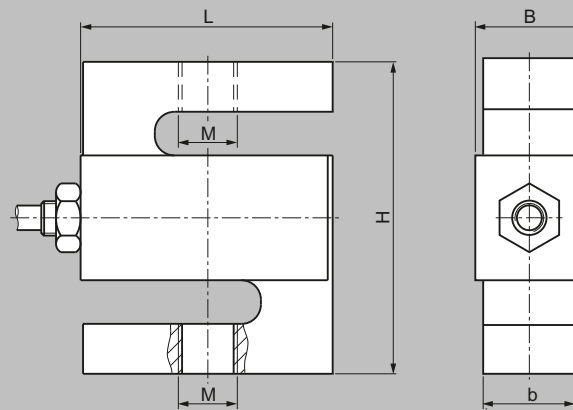
SIWAREX WL 250 ST-S SA	
• $E_{\max} = 10$ t	1 450 Nm
Degree of protection to EN 60529; IEC 60529	IP67
Cable connection	
Function	Color
• EXC + (supply +)	Red
• EXC – (supply -)	Black
• SIG + (measured signal +)	Green
• SIG – (measured signal -)	White
• Shield (not connected to the load cell body)	Transparent
Certificates and approvals	
Explosion protection	- EU/UK: - ATEX/UKEX II 1 G Ex ia IIC T4 - ATEX/UKEX II 1 D Ex ia IIIC T200 135°C - Da - ATEX/UKEX II 3 G Ex ic IIC T4 Gc - ATEX/UKEX II 3 D Ex tc IIIC T73°C Dc - ATEX/UKEX II 3 G Ex ec T4 IIC Gc - USA: - IS CL I, II, III, DIV 1, GP A, B, C, D, E, F, G; T4 - IS CL I, ZN 0, AEx ia IIC T4 Ga - Zone 20, AEx ia IIIC T135°C Da - CL I, II, III, DIV 2, GP A, B, C, D, E, F, G; T4 - CL 1, ZN 2, GP IIC T4 - IS CL I, ZN 2, AEx ic IIC T4 Gc - Canada: - IS CL I, II, III, DIV 1, GP A, B, C, D, E, F, G; T4 - IS CL I, ZN 0, Ex ia IIC T4 Ga - Ex ia IIIC T135°C Da - CL I, II, III, DIV 2, GP A, B, C, D, E, F, G; T4 - CL 1, ZN 2, GP IIC T4 - Ex ic IIC T4 Gc

Load Cells

S-Type load cells

SIWAREX WL250 ST-S SA Load cell

Dimensional drawings

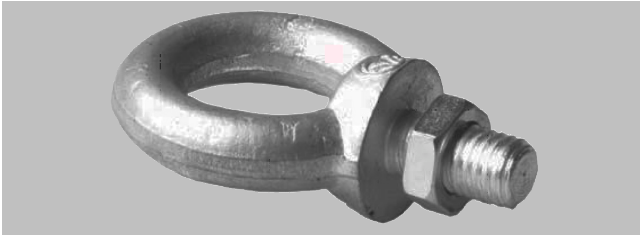


Rated load [kg]	L	H	b	B	M
50 ... 100	50.8 (2.00)	60.96 (2.40)	11.68 (0.46)	15.06 (0.59)	M8
250 ... 500	50.8 (2.00)	60.96 (2.40)	18.03 (0.71)	21.41 (0.84)	M12

Rated load [t]	L	H	b	B	M
1	50.8 (2.00)	60.96 (2.40)	24.38 (0.96)	27.76 (1.09)	M12
2.5	76.2 (3.00)	99.06 (3.90)	24.38 (0.96)	27.76 (1.09)	M20 x 1.5
5.0	74.68 (2.94)	99.06 (3.90)	30.74 (1.21)	34.12 (1.34)	M20 x 1.5
10	112.78 (4.44)	177.8 (7.00)	42.93 (1.69)	46.31 (1.82)	M30 x 2

SIWAREX WL 250 ST-S SA load cell, dimensions in mm (inch)

Overview



The lifting eye bolt for SIWAREX WL250 ST-S SA load cells makes it easier to install the cell.

The lifting eye bolt is suitable for rated load cell ranges from 50 kg up to 5 t (110.23 lb up to 4.92 tn. l.).

Design

The lifting eye bolt is screwed into the load cell.

Selection and ordering data

WL250 ST-S SA lifting eye bolts Material: Steel		Article No. 7MH5705-			
		●	●	J	1 0
Click on the Article No. for the online configuration in the PIA Life Cycle Portal.					
Rated load					
• 50 kg (110.23 lb)		2	P		
• 100 kg (220.46 lb)		3	A		
• 250 kg (551.16 lb)		3	H		
• 500 kg (1 102.31 lb)		3	P		
• 1 t (0.98 tn. l.)		4	A		
• 2.5 t (2.46 tn. l.)		4	H		
• 5 t (4.92 tn. l.)		4	P		

Technical specifications

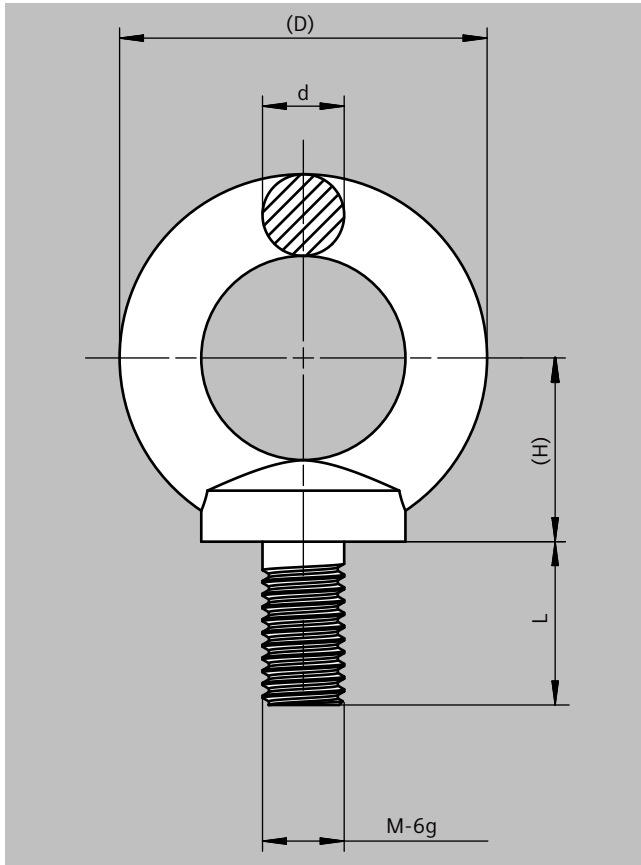
SIWAREX WL250 ST-S SA lifting eye bolt							
Material	Steel						
Rated load	50 kg (110.23 lb)	100 kg (220.46 lb)	250 kg (551.16 lb)	500 kg (1 102.31 lb)	1 t (0.98 tn. l.)	2.5 t (2.46 tn. l.)	5 t (4.92 tn. l.)
Lifting capacity (static)	0.16 t (0.16 tn. l.)	0.25 t (0.24 tn. l.)	0.4 t (0.39 tn. l.)	1 t (0.98 tn. l.)	1.6 t (1.57 tn. l.)	4 t (3.94 tn. l.)	6.3 t (6.2 tn. l.)

Load Cells

S-Type load cells

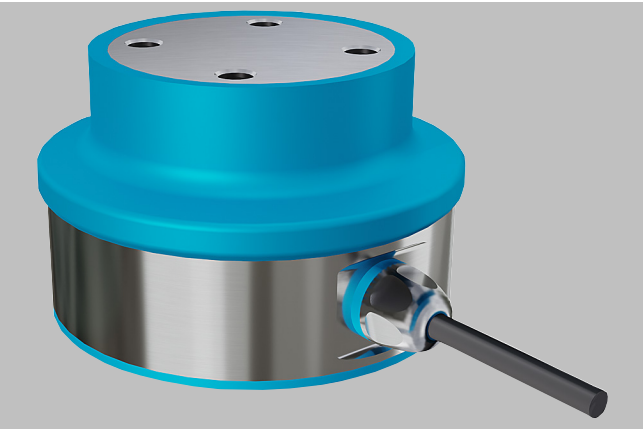
SIWAREX WL250 ST-S SA Lifting eye bolt

Dimensional drawings



Rated load	Dimensions in mm (in)		H	Ø	M × P × L
	D	d			
50 kg (110.23 lb)	36 (1.42)	9.1 (0.36)	18 (0.71)	17.8 (0.70)	M8 × 1.25 × 16
100 kg (220.46 lb)	44 (1.73)	11.1 (4.37)	22 (0.87)	21.8 (0.86)	M10 × 1.5 × 16
250 kg (551.16 lb)	52 (2.05)	13.1 (0.52)	26 (1.02)	25.8 (1.02)	M12 × 1.75 × 16
500 kg (1 102.31 lb)	62 (2.44)	15.2 (0.60)	31 (1.22)	31.6 (1.24)	M12 × 1.75 × 22
1 t (0.98 tn. l.)	72 (2.83)	17.4 (0.69)	36 (1.42)	37.2 (1.46)	M12 × 1.75 × 22
2.5 t (2.46 tn. l.)	104 (4.09)	25.7 (1.01)	53 (2.09)	52.6 (2.07)	M20 × 1.5 × 32
5 t (4.92 tn. l.)	123 (4.84)	30 (1.18)	63 (2.48)	63 (2.48)	M20 × 1.5 × 35

Overview



SIWAREX WL270 CP-H SD is a hygienic compression load cell designed for hygiene-sensitive industries such as food and beverage, pharmaceuticals, and cosmetics. It is also suitable for applications that require hygiene-sensitive packaging.

Benefits

- Hygienic stainless steel (EN 1.4542) load cell with IP68.
- EHEDG-certified version, type EL class I AUX.
- Aseptic design for easy cleaning.
- Suitable for applications with high hygienic requirements.

Application

The SIWAREX WL270 CP-H SD hygienic compression load cell is EHEDG certified. Its housing design enables 360° hygienic cleaning, preventing adhesions and the formation of disease-causing germs. The chemically stable housing material meets safety requirements by allowing the device to be cleaned with industrial disinfectants and cleaning agents without harm.

Design

SIWAREX WL270 CP-H SD features a measuring element that is a spring body made of stainless steel (EN 1.4542). The IP68 protection class makes this load cell suitable for cleaning with water jets.

Selection and ordering data

Load cell, type WL270 CP-H SD Hygienic compression load cell with EHEDG certified design. Includes 3 m connecting cable (9.84 ft).	Article No. 7MH5134-				
	●	●	B	0	0
Click on the Article No. for the online configuration in the PIA Life Cycle Portal.					
Rated load					
• 5 t (4.92 tn. l.)	4	P			
• 10 t (9.84 tn. l.)	5	A			
• 20 t (19.68 tn. l.)	5	G			

Load Cells

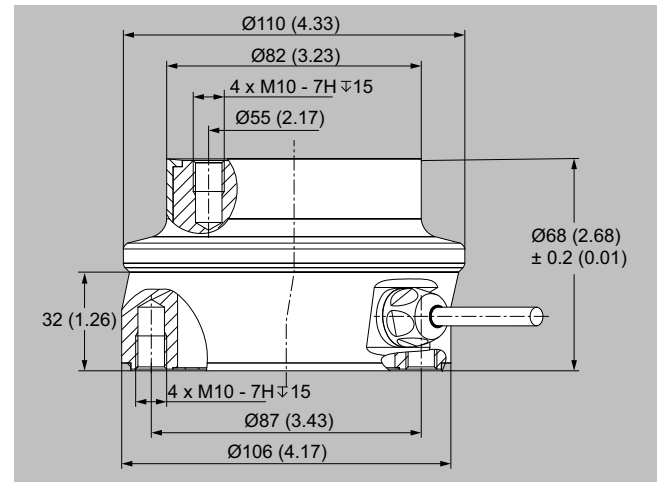
Compression load cells

SIWAREX WL270 CP-H SD Load cell

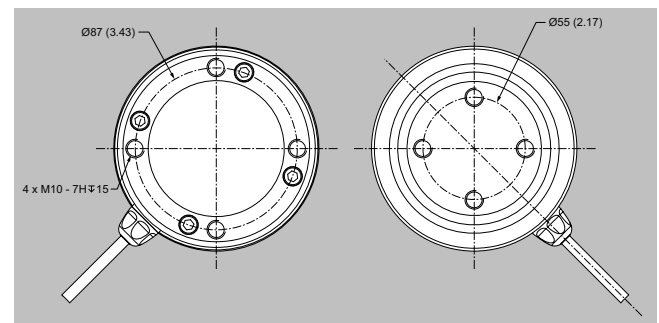
Technical specifications

SIWAREX WL270 CP-H SD	
Possible applications	Hygienic applications such as food and beverage, pharmaceuticals, cosmetics, and hygienic packaging.
Type of construction	Hygienic compression load cell
Loads	
Rated load/maximum load E_{max}	5 t (4.42 tn. l.) 10 t (9.84 tn. l.) 20 t (19.68 tn. l.)
Accuracy class according to OIML R60	C1
Max. scale interval n_{LC}	1 000
Min. scale interval V_{min}	$E_{max}/10\,000$
Combined error F_{comb}	$\pm 0.05\% C_n$
Creep error F_{cr}	$\pm 0.05\% C_n$
• 30 min	
Temperature coefficient	
• Zero signal T_{K0}	0.014 % $C_n/10\,K$
• Characteristic value T_{Kc}	0.05 % $C_n/10\,K$
Min. dead load E_{min}	0 kg
Max. working load L_u	150 % E_{max}
Breaking load L_d	200 % E_{max}
Rated characteristic value C_n	2.0 ± 0.01 mV/V
Tolerance D_0 of zero signal	$\leq \pm 1\% C_n$
Electrical characteristic values	
Recommended supply voltage (range)	5 ... 12 V DC
Input resistance R_e	700 $\pm 7\,\Omega$
Output resistance R_a	700 $\pm 5\,\Omega$
Insulation resistance R_{is}	5 000 M Ω at 50 V DC
Connection and environmental conditions	
Rated temperature range B_{tn}	-10 ... +40 °C (+14 ... +104 °F)
Operating temperature range B_{tu}	-35 ... +70 °C (-31 ... 158 °F)
Storage temperature range B_{ts}	-40 ... +70 °C (-40 ... 158 °F)
Sensor material	- Stainless steel EN 1.4542 (load cell) - Silicon rubber RH200-50 (sealing ring, coating cup) - Silicon H9300 (filler) - Polyurethane Estane R190-5 (cable jacket)
Degree of protection according to EN 60529; IEC 60529	IP68
Cable connection	
Function	Color
• EXC + (supply +)	Pink
• EXC – (supply -)	Grey
• SIG + (measured signal +)	Brown
• SIG – (measured signal -)	White
• Shield (not connected to the load cell body)	Transparent
Certificates and approvals	EHEDG certified design, type EL Class I AUX

Dimensional drawings



SIWAREX WL270 CP-H SD, dimensions in mm (inch)



SIWAREX WL270 CP-H SD, dimensions in mm (inch)

Overview



The compression load cell is particularly suitable for implementation in hopper scales, bin weighing equipment and vehicle scales.

Design

The measuring element is a solid cylinder made of stainless steel to which 4 strain gauges are applied.

The load which acts centrally in the measuring direction causes the spring bodies and therefore the friction-locked strain gauges to be elastically deformed. This generates a measuring signal voltage that is proportional to the load.

Selection and ordering data

Load cell, type WL270 CP-S SA Legal-for-trade according to OIML R60 up to 3 000d, 15 m connecting cable (49.21 ft)		Article No. 7MH5108-				
Click on the Article No. for the online configuration in the PIA Life Cycle Portal.		●	●	D	0	●
Rated load						
• 0.5 t (0.49 tn. l.) ¹⁾		3	P			
• 1 t (0.98 tn. l.) ¹⁾		4	A			
• 2 t (1.97 tn. l.) ¹⁾		4	G			
• 5 t (4.92 tn. l.) ¹⁾		4	P			
• 10 t (9.84 tn. l.)		5	A			
• 20 t (19.68 tn. l.)		5	G			
• 30 t (29.63 tn. l.)		5	K			
• 50 t (49.21 tn. l.)		5	P			
Explosion protection						
• Without						0
• Explosion protection						1

¹⁾ SIWAREX WL270 CP-S SA 0.5 ... 5 t (0.49 ... 4.42 tn. l.) are not approved for legal-for-trade operation.

Load Cells

Compression load cells

SIWAREX WL270 CP-S SA Load cell

Technical specifications

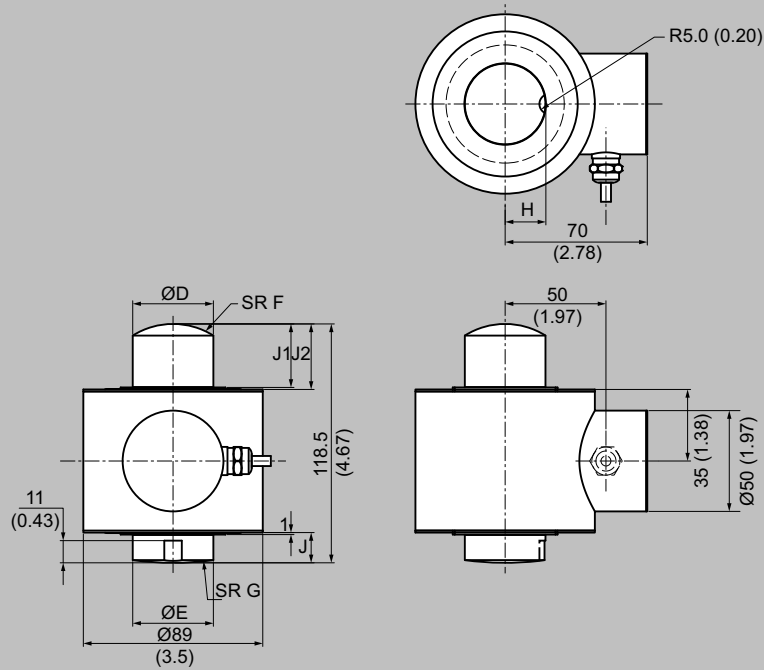
SIWAREX WL270 CP-S SA	
Possible applications	Vehicle scales, overhead rail scales, hopper scales
Type of construction	Compression load cell
Rated load/maximum load E_{max}	• 0.5 t (0.49 tn. l.) • 1 t (0.98 tn. l.) • 2 t (1.97 tn. l.) • 5 t (4.42 tn. l.) • 10 t (9.84 tn. l.) • 20 t (19.68 tn. l.) • 30 t (29.53 tn. l.) • 50 t (49.21 tn. l.)
Accuracy class according to OIML R60	C3 ¹⁾
Max. scale interval n_{LC}	3 000
Min. scale interval V_{min}	$E_{max}/10\,000$
Minimum application range $R_{min(lc)}$	30%
Combined error F_{comb}	$\pm 0.02\% C_n$
Repeatability F_v	Not applicable
Creep error F_{cr}	
• 30 min	$\pm 0.023\% C_n$
Temperature coefficient	
• Zero signal T_{K0}	$0.023\% C_n/5\,K$
• Characteristic value T_{KC}	$0.017\% C_n/5\,K$
Min. dead load E_{min}	0 kg
Max. working load L_u	$150\% E_{max}$
Breaking load L_d	$300\% E_{max}$
Safe side load L_{iq}	$75\% E_{max}$
Rated displacement h_n at E_{max}	0.5 mm
Recommended supply voltage (range)	5 ... 12 V DC
Rated characteristic value C_n	$2.0 \pm 0.02\,mV/V$
Tolerance D_0 of zero signal	$\leq \pm 1.0\% C_n$
Input resistance R_e	$700\,\Omega \pm 7\,\Omega$
Output resistance R_a	$700\,\Omega \pm 7\,\Omega$
Insulation resistance R_{is}	$5\,000\,M\Omega$ at 50 V DC
Rated temperature range B_{tn}	-10 ... +40 °C (+14 ... +104 °F)
Operating temperature range B_{tu}	-35 ... +65 °C (-31 ... +149 °F)
Storage temperature range B_{ts}	-35 ... +65 °C (-31 ... +149 °F)
Sensor material (DIN)	Stainless steel EN 1.4542
Degree of protection according to EN 60529; IEC 60529	IP68
Cable connection	
<u>Function</u>	<u>Color</u>
• EXC + (supply +)	Red
• EXC – (supply -)	Black
• SIG + (measured signal +)	Green
• SIG – (measured signal -)	White
• Shield (not connected to the load cell body)	Transparent

Technical specifications (continued)

SIWAREX WL270 CP-S SA	
Certificates and approvals	
Explosion protection	• EU/UK: - ATEX/UKEX II 1 G Ex ia IIC T4 - ATEX/UKEX II 1 D Ex ia IIIC T200 135°C - Da - ATEX/UKEX II 3 G Ex ic IIC T4 Gc - ATEX/UKEX II 3 D Ex tc IIIC T73°C Dc - ATEX/UKEX II 3 G Ex ec T4 IIC Gc • USA: - IS CL I, II, III, DIV 1, GP A, B, C, D, E, F, G; T4 - IS CL I, ZN 0, AEx ia IIC T4 Ga - Zone 20, AEx ia IIIC T135°C Da - CL I, II, III, DIV 2, GP A, B, C, D, E, F, G; T4 - CL 1, ZN 2, GP IIC T4 - IS CL I, ZN 2, AEx ic IIC T4 Gc • Canada: - IS CL I, II, III, DIV 1, GP A, B, C, D, E, F, G; T4 - IS CL I, ZN 0, Ex ia IIC T4 Ga - Ex ia IIIC T135°C Da - CL I, II, III, DIV 2, GP A, B, C, D, E, F, G; T4 - CL 1, ZN 2, GP IIC T4 - Ex ic IIC T4 Gc • China: - NEPSI Ex ia IIC T6 Ga; Ex iaD 20 T80

¹⁾ SIWAREX WL270 CP-S SA 0.5 ... 5 t (0.49 ... 4.42 tn. l.) are not approved for legal-for-trade operation.

Dimensional drawings



Rated load [t]	ØD	ØE	F	G	H	J	J1	J2
0,5, 1, 2, 5	40 (1.57)	40 (1.57)	25 (0.98)	150 (5.91)	22 (0.86)	14 (0.55)	31.5 (1.24)	36.5 (1.44)
10, 20, 30	40 (1.57)	40 (1.57)	37.5 (1.48)	150 (5.91)	22 (0.86)	14 (0.55)	31.5 (1.24)	32.5 (1.28)
50	50 (1.97)	50 (1.97)	200 (7.87)	200 (7.87)	27 (1.06)	21 (0.83)	24.5 (0.96)	25.5 (1.00)

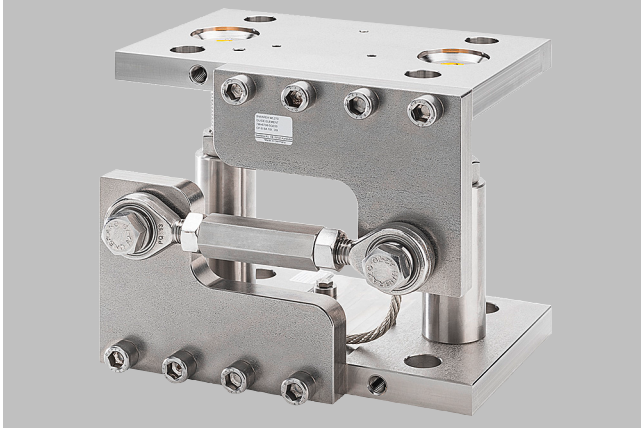
SIWAREX WL270 CP-S SA load cell, dimensions in mm (inch)

Load Cells

Compression load cells

SIWAREX WL270 CP-S SA Mounting unit with guide element

Overview



The self-centering installation unit for SIWAREX WL270 CP-S SA load cells is particularly suitable for implementation in container, platform, vehicle and roller table scales. The guide elements prevent containers, for example, from moving sideways due to an external lateral force. The guide elements can be mounted on one or both sides of the compact installation unit.

Design

The mounting unit comprises a base plate and a top plate, two pressure pieces and two countersunk screws. A highly flexible grounding cable between the top and base plate conducts any fault currents past the load cell. On both sides of the base and top plate there are threaded holes for the later flange-fitting of guide elements.

The top plate is aligned and fixed above the base plate with the two countersunk screws. This results in a stable unit. The height of the top plate is adjusted so that it is three millimeters above the installation height with load cell.

In this state, the mounting unit serves as an installation aid and can be used as a dummy for light installation jobs.

The load cell can be inserted into the mounting unit together with the two pressure pieces. Load cell and pressure piece are secured with clamping washers.

The load cell can be inserted in the scale before mounting the mounting unit. It is also possible to insert the load cell in the mounting unit after mounting.

After the mounting unit has been mounted in the scale, the load bearing implement is ideally aligned. The load cells are not yet loaded.

Finally, the load bearing implement is lowered by loosening the two hexagon nuts under the top plate. The weight now rests on the load cells.

In this state the load cell and the pressure pieces together form a self-centering unit. The mounting unit permits sideways displacement of the top plate, and hence of the load bearing implement, by up to three millimeters in all directions. The countersunk head screws prevent the load bearing implement from being lifted off or tipping.

Using the mounting unit as an installation aid results in optimum alignment of the load cells. This is essential to enable the load cells to perform at their best in terms of accuracy.

For maintenance or troubleshooting purposes, the load cell can be relieved again by tightening the hexagon nuts. After loosening the clamping washers, it can then easily be replaced.

Guide elements are used if the lateral movement of a load bearing implement is to be prevented. Lateral movements can be initiated by agitator start-up in a container, by braking or accelerating forces in a roller conveyor, or through forces exerted by the wind on outdoor silos.

A guide element consists of two flanges and one clamping screw. The clamping screw is adjusted to the correct length. The guide element is attached to the operational mounting unit. A guide element can be mounted on the front or rear of the mounting unit. If necessary, two guide elements can be used in parallel in order to double the transferrable lateral force.

In the case of scales with four load cells, only three mounting units may be equipped with guide elements.

Shims are used to compensate for angular errors and delays in the lug plates. If more than three load cells are used, the shims are also used to adjust the height of the lugs.

SIWAREX WL270 CP-S SA Mounting unit with guide element

Selection and ordering data

Mounting unit For load cells of the SIWAREX WL270 CP-S SA series Material: Stainless steel EN 1.4301 and EN 1.4112	Article No. 7MH5708- 5 ● A 0 1
Click on the Article No. for the online configuration in the PIA Life Cycle Portal.	
For load cells with a rated load of ¹⁾	
• 0.5, 1, 2, 5, 10, 20, 30 t (0.49, 0.98, 1.97, 5.92, 9.84, 19.68, 29.53 tn. l.)	K
• 50 t (49.21 tn. l.)	P

Selection and ordering data	Article No.
Guide elements (optional) For mounting units of the SIWAREX WL270 CP-S SA series Material: Stainless steel EN 1.4301 For load cells with a rated load of ¹⁾	
• 0.5 ... 1 t (0.49 ... 0.98 tn. l.); Permissible lateral force: 2.5 kN	7MH570-8-4AE00
• 2 ... 5 t (1.97 ... 5.92 tn. l.); Permissible lateral force: 5 kN	7MH570-8-4PE00
• 10 ... 13 t (9.84 ... 19.68 tn. l.); Permissible lateral force: 10 kN	7MH570-8-5GE00

Selection and ordering data	Article No.
• 30 t (29.53 tn. l.) Permissible lateral force: 15 kN	7MH570-8-5KE00
• 50 t (49.21 tn. l.) Permissible lateral force: 25 kN	7MH570-8-5PE00
Shims (accessories) For mounting units of the SIWAREX WL270 CP-S SA series Material: Stainless steel EN 1.4301 For load cells with a rated load of ¹⁾	
• 0.5 ... 50 t (0.49 ... 49.21 tn. l.); Content: 4 units, each 0.5 mm; 20 units, each 1 mm	7MH570-8-5PG00

¹⁾ The load cell and guide elements are not included in the scope of delivery.

Technical specifications

Mounting unit for load cells of the SIWAREX WL270 CP-S SA series		
Rated load	0.5, 1, 2, 5, 10, 20, 30 t (0.49, 0.98, 1.97, 4.92, 9.84, 19.68, 29.53 tn. l.)	50 t (49.21 tn. l.)
Maximum lateral deflection with load cell	± 3 mm (0.12 inch)	± 3 mm (0.12 inch)
Lifting path of top plate	3 mm (0.12 inch)	3 mm (0.12 inch)

Mounting unit for load cells of the SIWAREX WL270 CP-S SA series		
Restoring force per millimeter of lateral deflection of the top plate in % of the applied load with load cell	0.5%/mm	2%/mm
Permissible supporting load with fixed top plate	70 kN	70 kN
Permissible lifting force on the top plate	70 kN	70 kN
Permissible lateral force on the top plate with fixed top plate	30 kN	30 kN

Stainless steel guide element					
Size	Values with rated load				
	0.5, 1 t (0.49, 0.98 tn. l.)	2, 5 t (1.97, 4.92 tn. l.)	10, 20 t (9.84, 19.68 tn. l.)	30 t (29.53 tn. l.)	50 t (49.21 tn. l.)
Permissible lateral force ¹⁾	2.5 kN	5 kN	10 kN	15 kN	25 kN

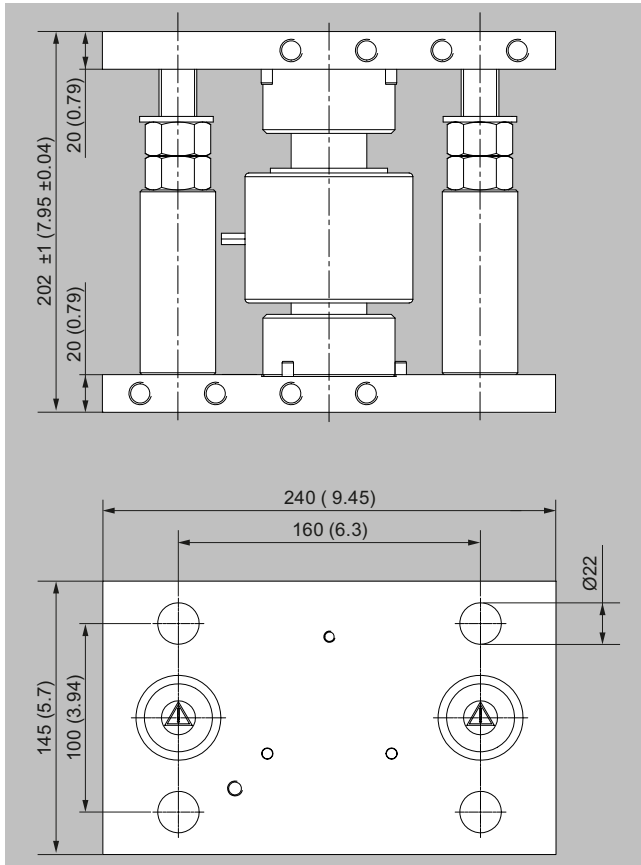
¹⁾ The values apply to one guide element.

Load Cells

Compression load cells

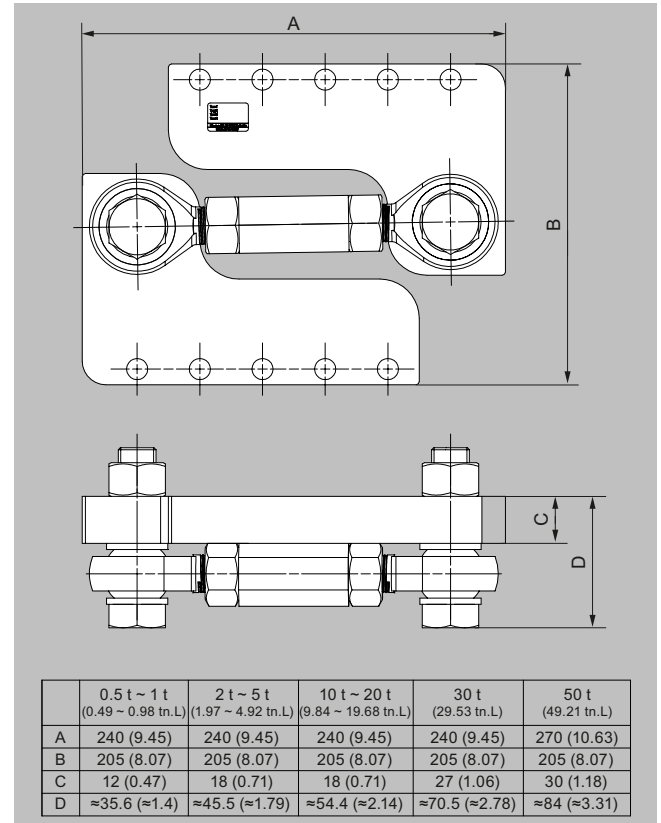
SIWAREX WL270 CP-S SA Mounting unit with guide element

Dimensional drawings



Mounting unit for SIWAREX WL270 CP-S SA load cells, dimensions in mm (inch)

Dimensional drawings (continued)



Guide element for SIWAREX WL270 CP-S SA load cells, dimensions in mm (inch)

SIWAREX WL270 CP-S SA Pressure piece set with adapter plates

Overview



In combination with a pressure piece set and adapter plate, the SIWAREX WL270 CP-S SA load cell produces a self-aligning bearing. This unit is particularly suitable for installation in hopper scales, bin weighing equipment and vehicle scales.

Design

The pressure piece set consists of an upper and lower pressure piece. Together with the load cell the pressure piece set forms a self-centering unit with integrated torsion guard. Two adapter plates serve to hold the pressure pieces and complete the unit to form a self-aligning bearing. The adapter plates can be screwed directly to the load bearing implement using the existing holes.

The self-centering, self-aligning bearing thus formed allows the load bearing element to follow horizontal displacements (e.g. due to temperature fluctuations) In this case the construction of the self-aligning bearing creates a restoring force which is dependent on the size of the displacement and the applied load.

If the load bearing implement is displaced by more than 3 mm in the horizontal direction, measures for restricting sideways play (e.g. in the form of endstops or guide elements) must be provided in the construction of the load bearing implement. Lifting of the load support must be prevented by suitable measures provided in the construction of the load bearing implement.

The load cell must be ordered separately.

The delivery unit of the adapter plate consists of one unit.

Selection and ordering data

Pressure piece sets¹⁾ For the individual installation of load cells of the SIWAREX WL270 CP-S SA series Material: Stainless steel EN 1.4112		Article No. 7MH5708-	
Click on the Article No. for the online configuration in the PIA Life Cycle Portal.		5	● D 0 0
For load cells with a rated load of ²⁾³⁾			
• 0.5, 1, 2, 5, 10, 20, 30 t (0.49, 0.98, 1.97, 5.92, 9.84, 19.68, 29.53 tn. l.)		K	
• 50 t (49.21 tn. l.)		P	

Adapter plate For adapting the SIWAREX WL270 CP-S SA The package item consists of one plate. Material: Stainless steel EN 1.4301		Article No. 7MH5708-	
For load cells with a rated load of ²⁾³⁾		5	● B 0 0
• 0.5 ... 50 t (0.49 ... 49.21 tn. l.)		P	

¹⁾ The principles of general mechanical engineering and safety must be observed.

²⁾ It is highly recommendable to use a grounding cable (7MH3701-1AA1) in order to protect the load cell.

³⁾ The load cell is not included in the scope of delivery.

Technical specifications

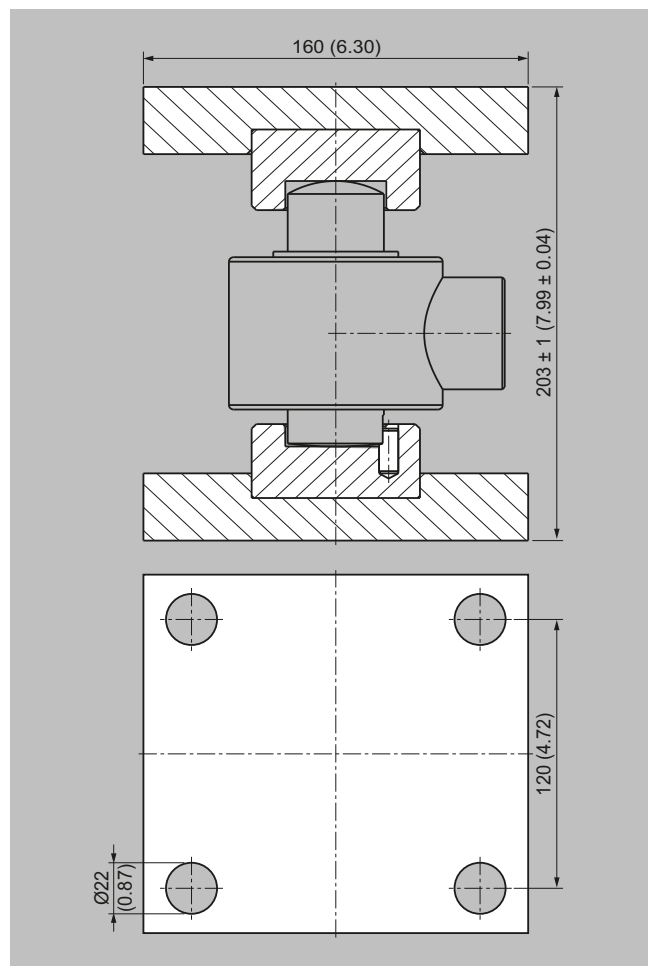
Pressure piece set for the individual installation of load cells of the SIWAREX WL270 CP-S SA series		
Rated load	0.5, 1, 2, 5, 10, 20, 30 t (0.49, 0.98, 1.97, 5.92, 9.84, 19.68, 29.53 tn. l.)	50 t (49.21 tn. l.)
Maximum lateral deflection with load cell	± 3 mm (0.12 inch)	± 3 mm (0.12 inch)
Restoring force per millimeter of lateral deflection of the top plate in % of the applied load with load cell	0.5%/mm	2%/mm

Load Cells

Compression load cells

SIWAREX WL270 CP-S SA Pressure piece set with adapter plates

Dimensional drawings



Pressure piece set and adapter plates for SIWAREX WL270 CP-S SA load cells (installation state), dimensions in mm (inch)

Overview



The compression load cell is particularly suitable for implementation in hopper scales, bin weighing equipment and vehicle scales.

Design

The measuring element is a solid cylinder made of stainless steel to which 4 strain gauges are applied.
The load which acts centrally in the measuring direction causes the spring bodies and therefore the friction-locked strain gauges to be elastically deformed. This generates a measuring signal voltage that is proportional to the load.

Selection and ordering data

Load cell, type WL270 CP-S SB	Article No.				
Legal-for-trade according to OIML R60 up to 3 000d, 20 m connecting cable	7MH5110-● ● D 0 ●				
Click on the Article No. for the online configuration in the PIA Life Cycle Portal.					
Rated load					
• 100 t (98.42 tn. l.)	6	A			
Explosion protection					
• Without					0
• Explosion protection					1

Load Cells

Compression load cells

SIWAREX WL270 CP-S SB Load cell

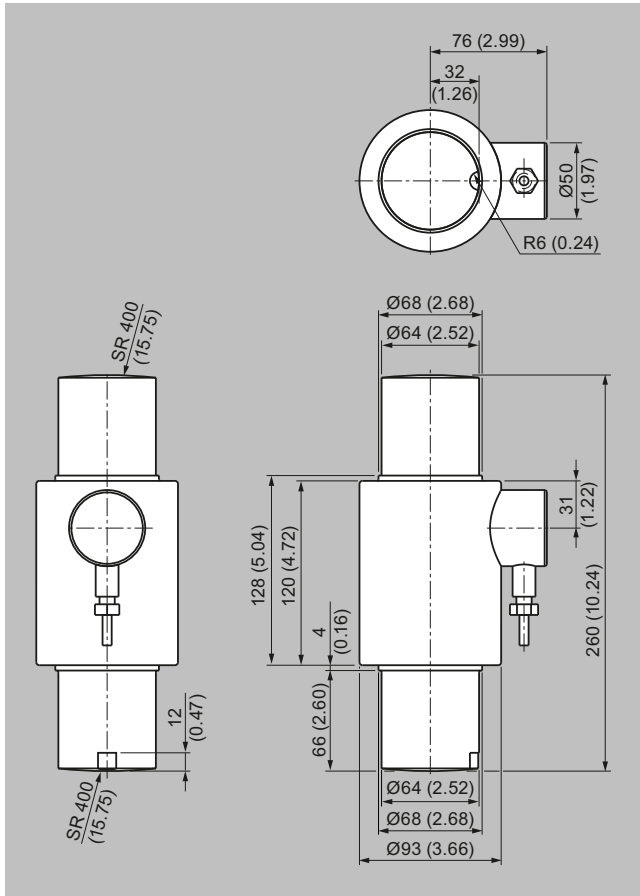
Technical specifications

SIWAREX WL270 CP-S SB	
Possible applications	Hopper scales
Type of construction	Compression load cell
Rated load/maximum load $E_{\max}$	100 t
Accuracy class according to OIML R60	C3
Max. scale interval n_{LC}	3 000
Min. scale interval $V_{\min}$	
• $E_{\max} = 100$ t	$E_{\max}/9\,000$
Minimum application range $R_{\min(LC)}$	33%
Combined error F_{comb}	$\pm 0.02\% C_n$
Repeatability F_v	$\pm 0.02\% C_n$
Creep error F_{cr}	
• 30 min	$\pm 0.023\% C_n$
Temperature coefficient	
• Zero signal T_{K0}	0.023% $C_n/5$ K
• Characteristic value T_{Kc}	0.017% $C_n/5$ K
Min. dead load $E_{\min}$	0 kg
Max. working load L_u	150% $E_{\max}$
Breaking load L_d	300% $E_{\max}$
Safe side load L_{iq}	10% $E_{\max}$
Rated displacement h_n at $E_{\max}$	0.36 mm
Recommended supply voltage (range)	5 ... 12 V DC
Rated characteristic value C_n	2.0 ± 0.02 mV/V
Tolerance D_0 of zero signal	$\leq \pm 1.0\% C_n$
Input resistance R_e	$700 \Omega \pm 7 \Omega$
Output resistance R_a	$700 \Omega \pm 7 \Omega$
Insulation resistance R_{is}	5 000 M Ω at 50 V DC
Rated temperature range B_{tn}	-10 ... +40 °C (+14 ... +104 °F)
Operating temperature range B_{tu}	-35 ... +65 °C (-31 ... +149 °F)
Storage temperature range B_{ts}	-35 ... +65 °C (-31 ... +149 °F)
Sensor material (DIN)	Stainless steel EN 1.4542
Degree of protection according to EN 60529; IEC 60529	IP68
Cable connection	
<u>Function</u>	<u>Color</u>
• EXC + (supply +)	Green
• EXC – (supply -)	Black
• SIG + (measured signal +)	White
• SIG – (measured signal -)	Red
• Sense + (sensor cable +)	Yellow
• Sense – (sensor cable -)	Blue
• Shield (not connected to the load cell body)	Transparent

Technical specifications (continued)

SIWAREX WL270 CP-S SB	
Certificates and approvals	
Explosion protection	• EU/UK: - ATEX/UKEX II 1 G Ex ia IIC T4 - ATEX/UKEX II 1 D Ex ia IIIC T200 135°C - Da - ATEX/UKEX II 3 G Ex ic IIC T4 Gc - ATEX/UKEX II 3 D Ex tc IIIC T73°C Dc - ATEX/UKEX II 3 G Ex ec T4 IIC Gc • USA: - IS CL I, II, III, DIV 1, GP A, B, C, D, E, F, G; T4 - IS CL I, ZN 0, AEx ia IIC T4 Ga - Zone 20, AEx ia IIIC T135°C Da - CL I, II, III, DIV 2, GP A, B, C, D, E, F, G; T4 - CL 1, ZN 2, GP IIC T4 - IS CL I, ZN 2, AEx ic IIC T4 Gc • Canada: - IS CL I, II, III, DIV 1, GP A, B, C, D, E, F, G; T4 - IS CL I, ZN 0, Ex ia IIC T4 Ga - Ex ia IIIC T135°C Da - CL I, II, III, DIV 2, GP A, B, C, D, E, F, G; T4 - CL 1, ZN 2, GP IIC T4 - Ex ic IIC T4 Gc • China: - NEPSI Ex ia IIC T6 Ga; Ex iaD 20 T80

Dimensional drawings



SIWAREX WL 270 CP-S SB load cell, dimensions in mm (inch)

Load Cells

Compression load cells

SIWAREX WL270 CP-S SB Mounting unit

Overview



The self-centering installation unit for SIWAREX WL270 CP-S SB load cells is particularly suitable for implementation in container scales.

Design

The mounting unit comprises a base plate and a top plate, two pressure pieces, two clamping pieces and two centering sleeves. There are threaded holes in the base plate and top plate for the subsequent flange-fitting of guide elements.

The top plate is aligned and fixed above the base plate with the two centering sleeves. This results in a stable unit. The height of the top plate is adjusted so that it is five millimeters above the installation height with load cell.

Two pressure pieces are used to mount the load cell. They are fastened flush with the head plate and base plate using the clamping pieces.

In this state, the mounting unit serves as an installation aid and can be used as a dummy for light installation jobs.

Prior to installation, the load cell is inserted into the mounting unit. Then the complete unit is installed in the scales. As a result, the load bearing implement and the mounting units are aligned. The load cells are not yet loaded.

Finally, the load bearing implement is lowered by loosening the two hexagon nuts under the centering sleeves. The weight now rests on the load cells.

In this state the load cell and the pressure pieces together form a self-centering unit. The mounting unit permits sideways displacement of the top plate, and hence of the load bearing implement, by up to eight millimeters in all directions. Two countersunk screws prevent the load bearing implement from being lifted off or toppling off.

Using the mounting unit as an installation aid results in optimum alignment of the load cells. This is essential to enable the load cells to perform at their best in terms of accuracy.

For maintenance or troubleshooting purposes, the load cell can be relieved again by tightening the hexagon nuts. Replacement of the load cell is then easy after the clamping pieces are released.

Selection and ordering data

	Article No.
Mounting unit For load cells of the SIWAREX WL270 CP-S SB series Material: Stainless steel EN 1.4301 and EN 1.4112 For load cells with a rated load of ¹⁾²⁾ • 100 t (98.42 tn. l.)	7MH5710-6AA00

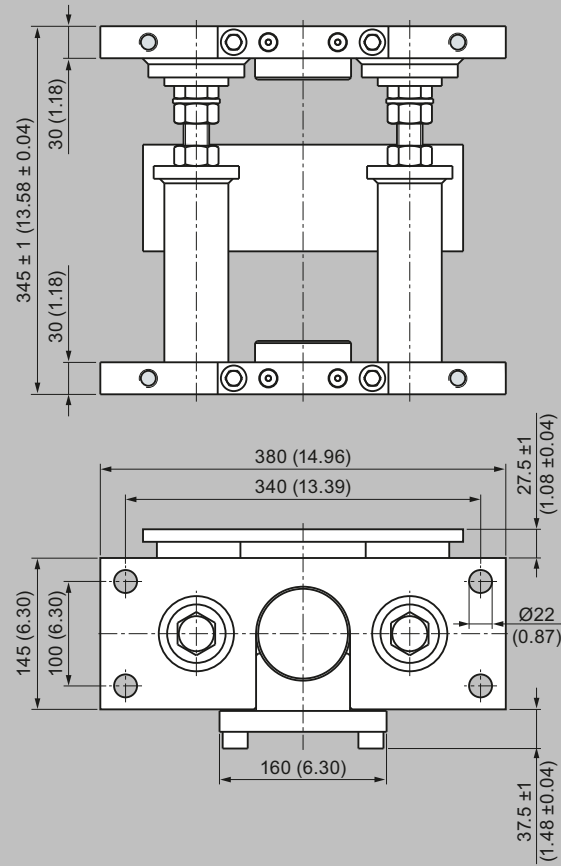
¹⁾ The load cell is not included in the scope of delivery.

²⁾ It is highly recommendable to use a grounding cable (7MH3701-1AA1) in order to protect the load cell.

Technical specifications

Mounting unit for load cells of the SIWAREX WL270 CP-S SB series	
Rated load	100 t (98.42 tn. l.)
Maximum lateral deflection with load cell	± 8 mm (0.12 inch)
Lifting path of top plate	3 ... 5 mm (0.12 ... 0.20 inch)
Restoring force per millimeter of lateral deflection of the top plate in % of the applied load with load cell	0.5%/mm
Permissible supporting load with fixed top plate	140 kN
Permissible lifting force on the top plate	140 kN
Permissible lateral force on the top plate with fixed top plate	50 kN

Dimensional drawings



Installation unit for SIWAREX WL270 CP-S SB load cells (installation state), dimensions in mm (inch)

Load Cells

Compression load cells

SIWAREX WL270 CP-S SB Pressure piece set

Overview



In combination with a pressure piece set, the SIWAREX WL270 CP-S SB load cell produces a self-centering self-aligning bearing. This unit is particularly suitable for installation in hopper scales, bin weighing equipment and vehicle scales.

Design

The pressure piece set consists of an upper and lower pressure piece. Together with the load cell the pressure piece set forms a self-centering unit with integrated torsion guard.

The self-centering, self-aligning bearing thus formed allows the load bearing element to follow horizontal displacements (e.g. due to temperature fluctuations) In this case the construction of the self-aligning bearing creates a restoring force which is dependent on the size of the displacement and the applied load.

If the load bearing implement is displaced by more than 8 mm (0.32 inch) in the horizontal direction, measures for restricting side-ways play (e.g. in the form of endstops or guide elements) must be provided in the construction of the load bearing implement. Lifting of the load support must be prevented by suitable measures provided in the construction of the load bearing implement.

The load cell must be ordered separately.

Selection and ordering data

Article No.	
Pressure piece sets¹⁾ For the individual installation of load cells from the SIWAREX WL270 CP-S SB series Material: Stainless steel EN 1.4112 For load cells with a rated load of ¹⁾²⁾	
• 100 t (98.42 tn. l.)	7MH5710-6AD00

¹⁾ The principles of general mechanical engineering and safety must be observed.

²⁾ It is highly recommendable to use a grounding cable (7MH3701-1AA1) in order to protect the load cell.

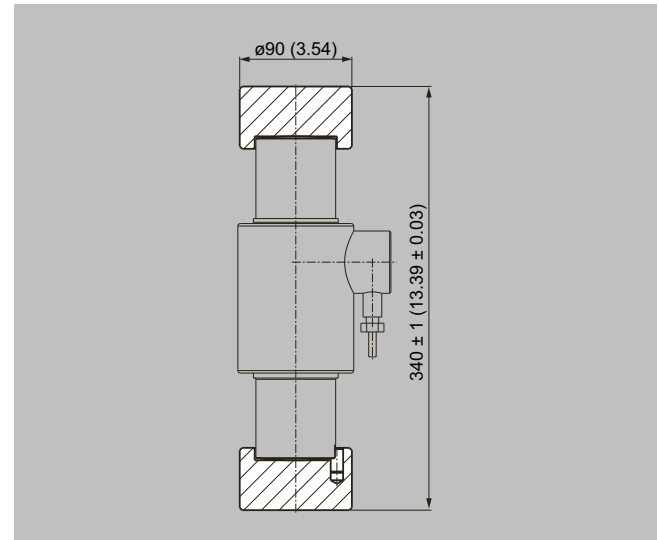
³⁾ The load cell is not included in the scope of delivery.

Technical specifications

Pressure piece set for the individual installation of load cells of the type SIWAREX WL270 CP-S SB

Rated load	100 t (98.42 tn. l.)
Maximum lateral deflection with load cell	± 8 mm (0.12 inch)
Restoring force per millimeter of lateral deflection of the top plate in % of the applied load with load cell	0.5%/mm

Dimensional drawings



Pressure piece for SIWAREX WL270 CP-S SB load cells, dimensions in mm (inch)

Overview



This compression load cell is particularly suitable for use in hopper scales and bin weighing equipment.

Design

The measuring element is a cylinder made of steel to which 4 strain gauges are applied.

The load which acts centrally in the measuring direction elastically deforms the spring body and thus the force-fitted strain gauges. This generates a measuring signal voltage that is proportional to the load. The load cell's rated displacement path depends on the rated load and is between 0.23 and 3.11 mm (0.01 and 0.12 in).

An enclosure made from painted steel protects the strain gauge from environmental influences. The load cell is fitted with a heat-resistant cable as standard.

Heavy load versions

Heavy load versions with a rated load of 350 and 500 t (344.47 and 492.10 tn. l.) are available for extreme requirements.

Option: Two measuring circuits for your plant safety

In especially sensitive applications such as cranes, enhanced safety is required. This is also true of measurement plants. Using double bridges in load cells achieves the equivalent of a redundant configuration. Both measuring bridges supply consistent measured values. If one bridge fails, the other takes over.

This option can be ordered for all load classes from 13 t (12.79 tn. l.).

Selection and ordering data

SIWAREX WL270 K-S CA load cell Accuracy class 0.1% Heat-resistant connecting cable ¹⁾		Article No. 7MH5114- ● ● L ● ●	
Click on the Article No. for the online configuration in the PIA Life Cycle Portal.			
Rated load	Cable length		
• 2.8 t (2.76 tn. l.)	6 m (19.68 ft)	4 J	
• 6 t (5.91 tn. l.)	6 m (19.68 ft)	4 Q	
• 13 t (12.79 tn. l.)	15 m (49.21 ft)	5 D	
• 28 t (27.56 tn. l.)	15 m (49.21 ft)	5 J	
• 60 t (59.05 tn. l.)	15 m (49.21 ft)	5 Q	
• 130 t (127.95 tn. l.)	20 m (65.62 ft)	6 D	
• 280 t (275.58 tn. l.)	20 m (65.62 ft)	6 J	
• 350 t (244.47 tn. l.)	25 m (82.02 ft)	6 L	
• 500 t (492.10 tn. l.)	25 m (82.02 ft)	6 P	
Explosion protection			
• Without			0 0
• Explosion protection for zones 2, 22			0 1
Options			
Double bridge ²⁾ Load cell, redundant design, without explosion protection			6 0
High temperature ²⁾ Temperature range -30 °C ... +250 °C (-22 °F ... +482 °F), accuracy varies over temperature range, cables and components designed for temperature range, without explosion protection.			7 0
Double bridge and high temperature ²⁾ Redundant design load cell, temperature range -30 °C ... +250 °C (-22 °F ... +482 °F), accuracy varies over temperature range, cables and components designed for temperature range, without explosion protection.			8 0

¹⁾ Heat-resistant cable: -60 ... +180 °C (-76 ... +356 °F) The cable for high temperatures versions is heat resistant to 250 °C (238 °F).

²⁾ Can be ordered from 13 t (12.79 tn. l.).

Load Cells

Compression load cells

SIWAREX WL270 K-S CA Load cell

Technical specifications

SIWAREX WL270 K-S CA	
Possible applications	- Hopper scales - Bin weighing equipment
Type of construction	Compression load cell
Loads	
Rated load $E_{\max}$	2.8 t (2.76 tn. l.) 6 t (5.91 tn. l.) 13 t (12.79 tn. l.) 28 t (27.56 tn. l.) 60 t (59.05 tn. l.) 130 t (127.95 tn. l.) 280 t (275.58 tn. l.) 350 t (344.47 tn. l.) 500 t (492.10 tn. l.)
Minimum initial loading $E_{\min}$	0% $E_{\max}$
Maximum working load L_u	120% $E_{\max}$
Breaking load L_d	300% $E_{\max}$
Safe side load L_{iq}	10% $E_{\max}$
Measurement characteristic values	
Rated displacement h_n at $E_{\max}$	
• 2.8 t (2.76 tn. l.)	0.23 mm (0.009 inch)
• 6 t (5.91 tn. l.)	0.38 mm (0.015 inch)
• 13 t (12.79 tn. l.)	0.54 mm (0.02 inch)
• 28 t (27.56 tn. l.)	0.82 mm (0.03 inch)
• 60 t (59.05 tn. l.)	1.19 mm (0.05 inch)
• 130 t (127.95 tn. l.)	1.81 mm (0.07 inch)
• 280 t (275.58 tn. l.)	2.66 mm (0.10 inch)
• 350 t (344.47 tn. l.)	2.73 mm (0.11 inch)
• 500 t (492.10 tn. l.)	3.11 mm (0.12 inch)
Rated characteristic value C_n	1.5 mV/V
Tolerance D_0 of zero signal	$\leq \pm 1.5\% C_n$
Tolerance D_c of characteristic value	$\pm 0.5\%$
Combined error F_{comb}	$\leq \pm 0.1\%$
Repeatability F_v	$\leq \pm 0.1\%$
Creep error F_{CR}	
30 min	$\leq \pm 0.06\%$
Temperature coefficient	
• Zero signal T_{K0}	$\leq \pm 0.25\% C_n/5 \text{ K}$
• Characteristic value T_{Kc}	$\leq \pm 0.25\% C_n/5 \text{ K}$

SIWAREX WL270 K-S CA	
Electrical characteristic values	
Recommended reference voltage U_{ref}	6 ... 12 V DC
Supply voltage U_{sr} (reference value)	6 V
Input resistance R_i	
• 2.8, 6, 13, 28, 60, 130, 280 t (2.76, 5.91, 12.79, 27.56, 59.05, 127.95, 275.58 tn. l.)	275 $\Omega \pm 50 \Omega$
• 350, 500 t (344.47, 492.10 tn. l.)	840 $\Omega \pm 30 \Omega$
Output resistance R_o	
• 2.8, 6, 13, 28, 60, 130, 280 t (2.76, 5.91, 12.79, 27.56, 59.05, 127.95, 275.58 tn. l.)	245 $\Omega \pm 0.2 \Omega$
• 350, 500 t (344.47, 492.10 tn. l.)	703 $\Omega \pm 5 \Omega$
Insulation resistance R_{is}	$\geq 5 \text{ 000 M}\Omega$
Connection and environmental conditions	
Sensor material (DIN)	Steel, painted
Function	Color
• EXC + (supply +)	Red
• EXC - (supply -)	White
• SIG + (measured signal +)	Black
• SIG - (measured signal -)	Blue
• Shield (not connected to the load cell body)	Transparent
Rated temperature range B_{tn}	-10 ... +40 °C (+14 ... +104 °F)
Operating temperature range B_{tu}	-20 ... +70 °C (-4 ... +158 °F)
Storage temperature range B_{ts}	-30 ... +70 °C (-22 ... +158 °F)
Degree of protection according to EN 60529; IEC 60529	IP66
Accuracy class	0.1%

High temperature versions

Some technical data of the high temperature versions change according to the temperature range. For this reason, values are given for three different temperature ranges.

SIWAREX WL270 K-S CA, high temperature versions	-30 ... +150 °C (-22 ... +238 °F)	150 ... 180 °C (238 ... 356 °F)	180 ... 250 °C (356 ... 482 °F)
Rated characteristic value C_n			
• 2.8 ... 13; 130 ... 500 t (2.76 ... 12.79; 127.95 ... 492.10 tn. l.)	1.5 $\pm$ 0.02 mV/V	1.5 $\pm$ 0.1 mV/V	1.5 $\pm$ 0.1 mV/V
• 28 t (27.56 tn. l.)	1.9 $\pm$ 0.02 mV/V	1.9 $\pm$ 0.2 mV/V	1.9 $\pm$ 0.2 mV/V
• 60 t (59.05 tn. l.)	1.8 $\pm$ 0.02 mV/V	1.8 $\pm$ 0.2 mV/V	1.8 $\pm$ 0.2 mV/V
Tolerance D_0 of zero signal	$\leq \pm 1.0\% C_n$	$\leq \pm 1.5\% C_n$	$\leq \pm 3\% C_n$
Measurement characteristic values			
Combined error F_{comb}	$\leq \pm 0.3\%$	$\leq \pm 0.5\%$	$\leq \pm 5\%$
Repeatability F_v	$\leq \pm 0.3\%$	$\leq \pm 0.5\%$	$\leq \pm 5\%$

Technical specifications (continued)

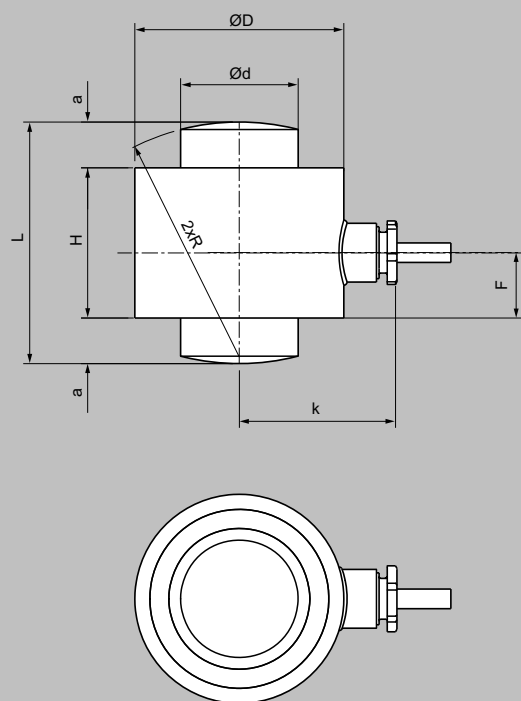
SIWAREX WL270 K-S CA, high temperature versions	-30 ... +150 °C (-22 ... +238 °F)	150 ... 180 °C (238 ... 356 °F)	180 ... 250 °C (356 ... 482 °F)
Creep error F_{CR} 30 min	$\leq \pm 0.3\%$	$\leq \pm 0.4\%$	$\leq \pm 4\%$
Temperature coefficient			
• Zero signal T_{KO}	$\leq \pm 0.25\% C_n/5\text{ K}$	$\leq \pm 0.25\% C_n/5\text{ K}$	$\leq \pm 0.5\% C_n/5\text{ K}$
• Characteristic value T_{Kc}	$\leq \pm 0.25\% C_n/5\text{ K}$	$\leq \pm 0.5\% C_n/5\text{ K}$	$\leq \pm 0.5\% C_n/5\text{ K}$
Electrical characteristic values			
Input resistance R_i			
• 2.8, 6, 13, 28, 60, 130, 280 t (2.76, 5.91, 12.79, 27.56, 59.05, 127.95, 275.58 tn. l.)	275 $\Omega \pm 7\ \Omega$	275 $\Omega \pm 15\ \Omega$	275 $\Omega \pm 15\ \Omega$
• 350, 500 t (344.47, 492.10 tn. l.)	840 $\Omega \pm 30\ \Omega$	840 $\Omega \pm 30\ \Omega$	840 $\Omega \pm 30\ \Omega$
Output resistance R_o			
• 2.8, 6, 13, 28, 60, 130, 280 t (2.76, 5.91, 12.79, 27.56, 59.05, 127.95, 275.58 tn. l.)	245 $\Omega \pm 0.5\ \Omega$	245 $\Omega \pm 1\ \Omega$	245 $\Omega \pm 1\ \Omega$
• 350, 500 t (344.47, 492.10 tn. l.)	703 $\Omega \pm 5\ \Omega$	703 $\Omega \pm 5\ \Omega$	703 $\Omega \pm 5\ \Omega$
Insulation resistance R_{is}	$\geq 5\ 000\ \text{M}\Omega$		
Connection and environmental conditions			
Rated temperature range B_{tn}	-30 ... +180 °C (-22 ... +356 °F)		
Operating temperature range B_{tu}	-30 ... +250 °C (-22 ... +482 °F)		
Storage temperature range B_{ts}	-30 ... +250 °C (-22 ... +482 °F)		

Load Cells

Compression load cells

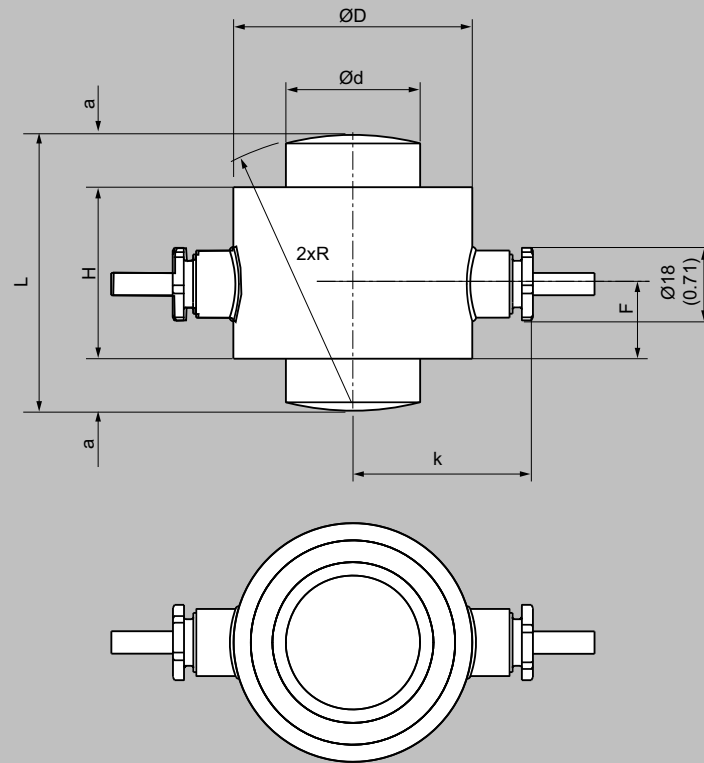
SIWAREX WL270 K-S CA Load cell

Dimensional drawings



Rated load [t (tn. L.)]	a	ød	øD	F	H	k	L	R
2,8, 6 (2.76, 5.91)	8 (0.31)	16,7 (0.65)	45 (1.77)	20 (0.59)	40 (1.57)	40,5 (1.59)	56 (2.2)	50 (1.96)
13 (12.79)	12 (0.47)	24,5 (0.96)	55 (2.16)	20 (0.59)	44 (1.73)	45,5 (1.79)	68 (2.67)	66 (2.6)
28 (27.56)	14 (0.55)	36 (1.41)	64 (2.51)	20 (0.59)	46 (1.81)	50 (1.89)	74 (2.91)	72 (2.83)
60 (59.05)	20 (0.78)	52,7 (2.07)	90 (3.54)	20 (0.59)	50 (1.96)	63 (2.48)	90 (3.54)	100 (3.93)
130 (127.95)	26 (1.02)	77,5 (3.05)	121 (4.76)	20 (0.59)	64 (2.51)	78,5 (3.09)	116 (4.56)	125 (4.92)
280 (275.58)	45 (1.77)	114 (4.48)	165 (6.5)	20 (0.59)	90 (3.14)	100,5 (3.96)	170 (6.7)	183 (7.2)
350 (344.47)	40 (1.58)	132 (5.20)	192 (7.95)	50.5 (1.97)	139 (6.30)	124 (5.00)	240 (9.45)	325 (12.80)
500 (492.10)	47 (1.85)	155 (6.10)	236 (9.29)	99.5 (1.97)	164 (7.13)	146 (5.67)	275 (10.83)	450 (17.72)

SIWAREX WL270 K-S CA load cell, dimensions in mm (inch)

Dimensional drawings (continued)


Rated load [t (tn.L.)]	a	Ød	ØD	F	H	k	L	R
13 (12.79)	12 (0.47)	24,5 (0.96)	55 (2.16)	20 (0.79)	44 (1.73)	45,5 (1.79)	68 (2.67)	66 (2.6)
28 (27.56)	14 (0.55)	36 (1.41)	64 (2.51)	20 (0.79)	46 (1.81)	50 (1.88)	74 (2.91)	72 (2.83)
60 (59.05)	20 (0.78)	52,7 (2.07)	90 (3.54)	20 (0.79)	50 (1.96)	63 (2.48)	90 (3.54)	100 (3.93)
130 (127.95)	26 (1.02)	77,5 (3.05)	121 (4.76)	20 (0.79)	64 (2.51)	78,5 (3.09)	116 (4.56)	125 (4.92)
280 (275.58)	45 (1.77)	114 (4.48)	165 (6.5)	20 (0.79)	90 (3.14)	100.5 (3.96)	170 (6.7)	183 (7.2)
350 (344.47)	40 (1.58)	132 (5.20)	192 (7.95)	50.5 (1.97)	139 (6.30)	124 (5.00)	240 (9.45)	325 (12.80)
500 (492.10)	47 (1.85)	155 (6.10)	236 (9.29)	99.5 (1.97)	164 (7.13)	146 (5.67)	275 (10.83)	450 (17.72)

SIWAREX WL270 K-S CA load cell, with double bridge, dimensions in mm (inch)

Load Cells

Compression load cells

SIWAREX WL270 K-S CA Self-centering bearing unit

Overview



The self-centering self-aligning bearing for SIWAREX WL270 K-S CA load cells is particularly suitable for use with hopper scales and bin weighing equipment.

Design

The self-aligning bearing comprises two pressure plates.

Together with the load cell, the pressure plates form a self-centering unit. This allows the top plate, and thus the load bearing implement, to accommodate horizontal displacements (e.g. due to temperature fluctuations). The design of the self-aligning bearing creates a restoring force which is dependent on the size of the displacement and the applied load.

If the load bearing implement is displaced by more than value s (see dimensional drawing table) in the horizontal direction, measures for restricting sideways play (e.g. stops) must be provided in the construction of the load bearing implement. Lifting of the load bearing implement must be prevented by suitable measures provided in the construction of the load bearing implement.

The load cell is not included in the scope of delivery of the self-aligning bearing.

Heavy load versions

Suitable mounting units are also available for heavy load cells with 350 and 500 t (344.47 and 492.10 tn. l.) rated loads. These are also designed as self-centering, self-aligning bearings.

Selection and ordering data

	Article No.
Pressure plate¹⁾²⁾ For SIWAREX WL270 K-S CA load cells For constructing a self-aligning bearing, each load cell requires two pressure plates, one at the top and one at the bottom. The Article No. includes one pressure plate. Material: Steel, painted	
For load cells with a rated load of	
• 2.8 ... 6 t (2.76 ... 5.91 tn. l.)	7MH3115-3AA1
• 13 t (12.79 tn. l.)	7MH3115-1BA1
• 28 t (27.56 tn. l.)	7MH3115-2BA1
• 60 t (59.05 tn. l.)	7MH3115-3BA1
• 130 t (127.95 tn. l.)	7MH3115-1CA1
• 280 t (275.58 tn. l.)	7MH3115-2CA1
• 350 t (344.47 tn. l.)	7MH5714-6LD10
• 500 t (492.10 tn. l.)	7MH5714-6PD10

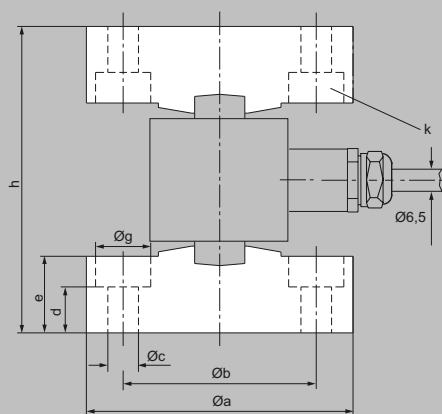
¹⁾ The load cell is not included in the scope of delivery.

²⁾ It is highly recommendable to use a grounding cable (7MH3701-1AA1) in order to protect the load cell.

Technical specifications

Pressure plate for load cell type SIWAREX WL270 K-S CA							
Rated load t (tn. l.)	2.8 (2.76)	6 (5.91)	13 (12.80)	28 (27.56)	60 (59.10)	130 (127.95)	280 (275.88)
Permissible lateral deflection in mm (inch):	2 (0.08)	2 (0.08)	2.5 (0.10)	2.5 (0.10)	3 (0.12)	4 (0.16)	6 (0.24)
Rated displacement h_n at E_{max} mm (inch)	0.23 (0.009)	0.35 (0.014)	0.53 (0.021)	0.80 (0.032)	1.22 (0.048)	1.85 (0.073)	2.67 (0.11)

Dimensional drawings



Rated load [t]	Øa	Øb	Øc	d	e
2,8, 6	87 (3.43)	63 (2.48)	11 (0.43)	14 (0.55)	25 (0.98)
13	97 (3.82)	73 (2.87)	11 (0.43)	21 (0.83)	32 (1.26)
28	108 (4.25)	84 (3.31)	11 (0.43)	-	28 (1.10)
60	137 (5.39)	112 (4.41)	11 (0.43)	-	42 (1.65)
130	176 (6.93)	148 (5.83)	11 (0.43)	-	52 (2.05)
280	226 (8.90)	190 (7.48)	14 (0.55)	-	65 (2.56)
350	240 (9.45)	200 (7.87)	26 (1.02)	-	30 (1.18)
500	280 (11.02)	240 (9.45)	26 (1.02)	-	45 (1.77)

Rated load [t]	Øg	h	k	S (allowed sideways displacement)
2,8, 6	18 (0.71)	100 ± 0,5/-1	2 x 180°	2 (0.08)
13	18 (0.71)	120 ± 0,5/-1	2 x 180°	2.5 (0.98)
28	-	136 ± 0,5/-1	2 x 180°	2.5 (0.98)
60	-	174 ± 0,5/-1	4 x 90°	3 (0.12)
130	-	220 ± 0,5/-1	4 x 90°	4 (0.16)
280	-	300 ± 0,6/-1,2	2 x 180°	6 (0.24)
350	-	390 (15.35)	2 x 180°	6 (0.24)
500	-	490 (19.29)	2 x 180°	6 (0.24)

Self-aligning bearing for SIWAREX WL270 K-S CA load cells, dimensions in mm (")

Load Cells

Ring torsion load cells

SIWAREX WL280 RN-S SA Load cell

Overview



The ring torsion load cell is particularly suitable for use in hopper, belt, platform and roller conveyor scales.

Design

The measurement element is a ring torsion spring made of stainless steel. Two strain gauge spirals are applied to the upper and lower faces of the ring respectively. The spring element is deformed by the load acting centrally in the measurement direction. This compresses the strain gauge of the upper face of the ring and extends the strain gauge on the lower face of the ring. This causes a change in the electrical resistance of the force-locked strain gauge, which is detected by means of a bridge circuit.

All load cells with a rated load of up to 13 t (12.79 tn. l.) are equipped with integrated overload protection.

Selection and ordering data

SIWAREX WL280 RN-S SA load cell		Article No.			
Stainless steel EN 1.4542, low mounting height, IP66/68		7MH5113-			
Available with accuracy classes C3 and C6 according to OIML R60.		● ● ● 0 ●			
Click on the Article No. for the online configuration in the PIA Life Cycle Portal.					
Rated load	Cable length				
• 60 kg (132.28 lb)	3 m (9.84 ft)	2	Q		
• 130 kg (286.60 lb)	3 m (9.84 ft)	3	D		
• 280 kg (617.29 lb)	3 m (9.84 ft)	3	J		
• 500 kg (1 102.31 lb)	3 m (9.84 ft)	3	P		
• 1 t (0.98 tn. l.)	3 m (9.84 ft)	4	A		
• 2 t (1.97 tn. l.)	6 m (19.68 ft)	4	G		
• 3.5 t (3.44 tn. l.)	6 m (19.68 ft)	4	L		
• 5 t (4.92 tn. l.)	6 m (19.68 ft)	4	P		
• 10 t (9.84 tn. l.)	15 m (49.21 ft)	5	A		
• 13 t (12.79 tn. l.)	15 m (49.21 ft)	5	D		
• 28 t (27.56 tn. l.)	15 m (49.21 ft)	5	J		
• 60 t (59.05 tn. l.)	15 m (49.21 ft)	5	Q		
Accuracy class according to OIML R60					
C3				D	
C6 ¹⁾				G	
Explosion protection					
• Without					0
• Explosion protection					1

¹⁾ Available only for the following capacities: 500 kg (1 102.31 lb), 1 t (0.98 tn. l.), and 2 t (1.97 tn. l.).

Technical specifications

SIWAREX WL280 RN-S SA			
Possible applications	Hopper, belt, platform and roller conveyor scales		
Type of construction	Ring torsion load cell		
Rated load/maximum capacity E_{max} .	• 60 kg (132.28 lb) • 130 kg (286.60 lb) • 280 kg (617.29 lb)	• 0.5 t (0.49 tn. l.) • 1 t (0.98 tn. l.) • 2 t (1.97 tn. l.) • 3.5 t (3.45 tn. l.) • 5 t (4.92 tn. l.) • 10 t (9.84 tn. l.)	• 13 t (12.80 tn. l.) • 28 t (27.56 tn. l.) • 60 t (59.05 tn. l.)
Accuracy class according to OIML R60	C3 and C6		
Max. scale interval n_{LC}	3 000, 6 000 for C6		
Min. scale interval V_{min}	$E_{max}/16\ 000$	$E_{max}/17\ 500, 18\ 000$ for C6 (only for 500 kg, 1 t, and 2 t)	
Minimum application range $R_{min(LC)}$	19%	17%	17%
Combined error F_{comb}	$\leq \pm 0.023\%$ C_n , 0.12 for C6		
Repeatability F_v	$\leq \pm 0.01\%$ C_n		
Return of zero signal	$\leq \pm 0.0167\%$ $C_n^{1)}$		
Creep error F_{cr}			
• 30 min	$\leq \pm 0.0245\%$ C_n , 0.12 for C6 ¹⁾		
• 20 ... 30 min	$\leq \pm 0.0053\%$ $C_n^{1)}$		
Temperature coefficient			
• Zero signal T_{K0}	$\leq \pm 0.004\%$ $C_n/5K$, 0.0077 % $C_n/10K$ for C6		
• Characteristic value T_{Kc}	$\leq \pm 0.004\%$ $C_n/5K$, 0.0058 % $C_n/10K$ for C6		
Min. dead load E_{min}	$\geq \pm 0\%$ E_{max}		
Max. working load L_u	200 % E_{max}	150% E_{max}	
Breaking load L_d	500% E_{max}	300% E_{max}	300% E_{max}
Safe side load L_{lq}	75% E_{max}	100% E_{max}	75% E_{max}
Rated displacement h_n at E_{max}	0.07 mm	0.1 ± 0.02 mm	0.11 ... 0.2 mm
Overload protection	Integrated	Integrated	Integrated at 13 t
Supply voltage U_{sr} (reference value)	15 V	10 V	15 V
Supply voltage (range)	5 ... 30 V+		
Rated characteristic value C_n	1 mV/V	2 mV/V	2 mV/V
Tolerance D_c of characteristic value	Up to 500 kg (1 102.31 lb): 0.01 mV/V From 500 kg (1 102.31 lb): 0.1 mV/V		
Tolerance D_0 of zero signal	$\leq \pm 1.0\%$ C_n		
Input resistance R_e	60 kg (132.28 lb): 1 260 Ω ± 100 Ω 130 kg (286.60 lb): 1 260 Ω ± 100 Ω 280 kg (617.29 lb): 1260 Ω ± 250 Ω	1 100 Ω ± 100 Ω	13 t: 1 200 Ω ± 100 Ω 28 t: 1 075 Ω ± 100 Ω 60 t: 1 350 Ω ± 200 Ω
Output resistance R_a	1 020 Ω ± 0.5 Ω	1 025 Ω ± 25 Ω	13 t: 1 000 Ω ± 0.5 Ω 28 t: 930 Ω ± 0.5 Ω 60 t: 1 175 Ω ± 0.5 Ω
Insulation resistance R_{is}	$\geq 5\ 000\ M\Omega$		
Rated temperature range B_{tn}	-10 ... +40 °C (14 ... 104 °F)		
Operating temperature range B_{tu}	-35 ... +70 °C (-31 ... 158 °F)		
Storage temperature range B_{ts}	-50 ... +90 °C (-58 ... 194 °F)		
Sensor material (DIN)	Stainless steel EN 1.4542		
Degree of protection according to EN 60529; IEC 60529	IP66/68		
Recommended tightening torque of the fixing screws	8 Nm	14 Nm (0.5 ... 5 t) 10 Nm (10 t)	-
Current calibration ²⁾	Standard		
Cable connection			
Function	Color		
• EXC +	Pink		

Load Cells
Ring torsion load cells

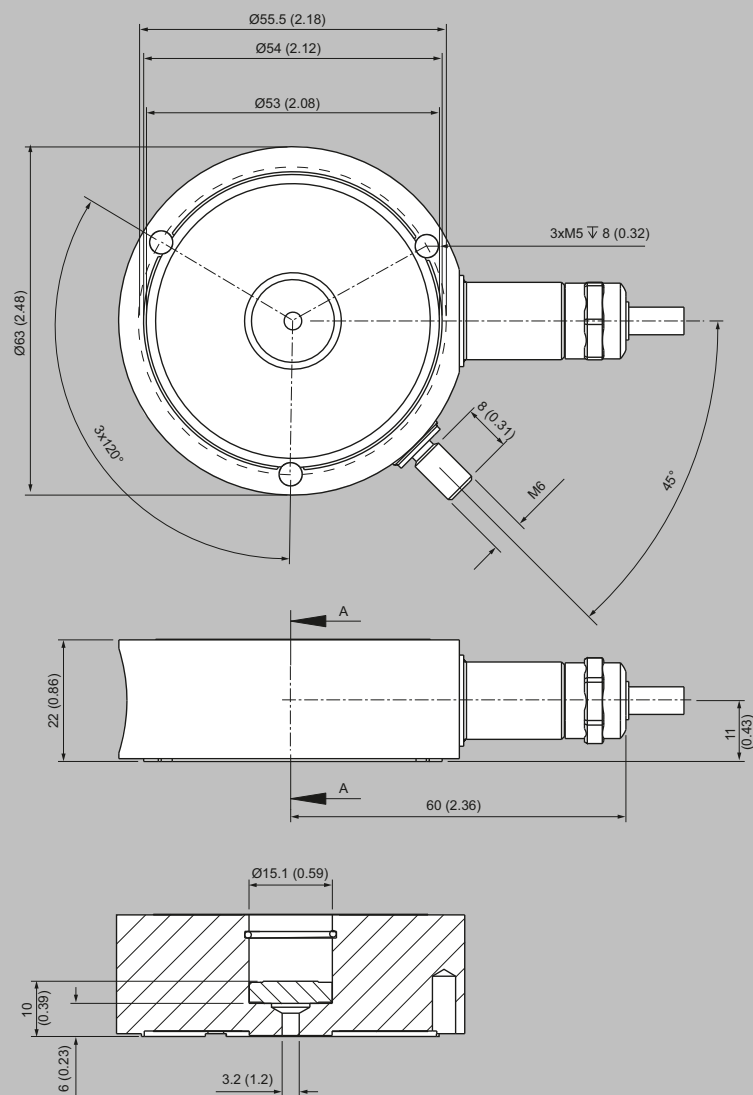
SIWAREX WL280 RN-S SA Load cell

Technical specifications (continued)

SIWAREX WL280 RN-S SA	
• EXC -	Gray
• SIG +	Brown
• SIG -	White
• Shield (not connected to the load cell body)	Transparent
Certificates and approvals	
Explosion protection	• ATEX/IECEX II 1 G Ex ia IIC T4 Ga • ATEX/IECEX II 1 D Ex ia IIIC T73°C Da • ATEX/IECEX II 3 G Ex ic IIC T4 Gc • ATEX/IECEX II 3 G Ex nA IIC T4 Gc • ATEX/IECEX II 3 D Ex tc IIIC T63°C Dc

1) For rated temperature -10 ... +40 °C (14 ... 104 °F).
2) Current calibration: rated characteristic value and output resistance are adjusted so that the output current is calibrated within 0.05% of a reference value. This makes it easier to connect several load cells in parallel.

Dimensional drawings



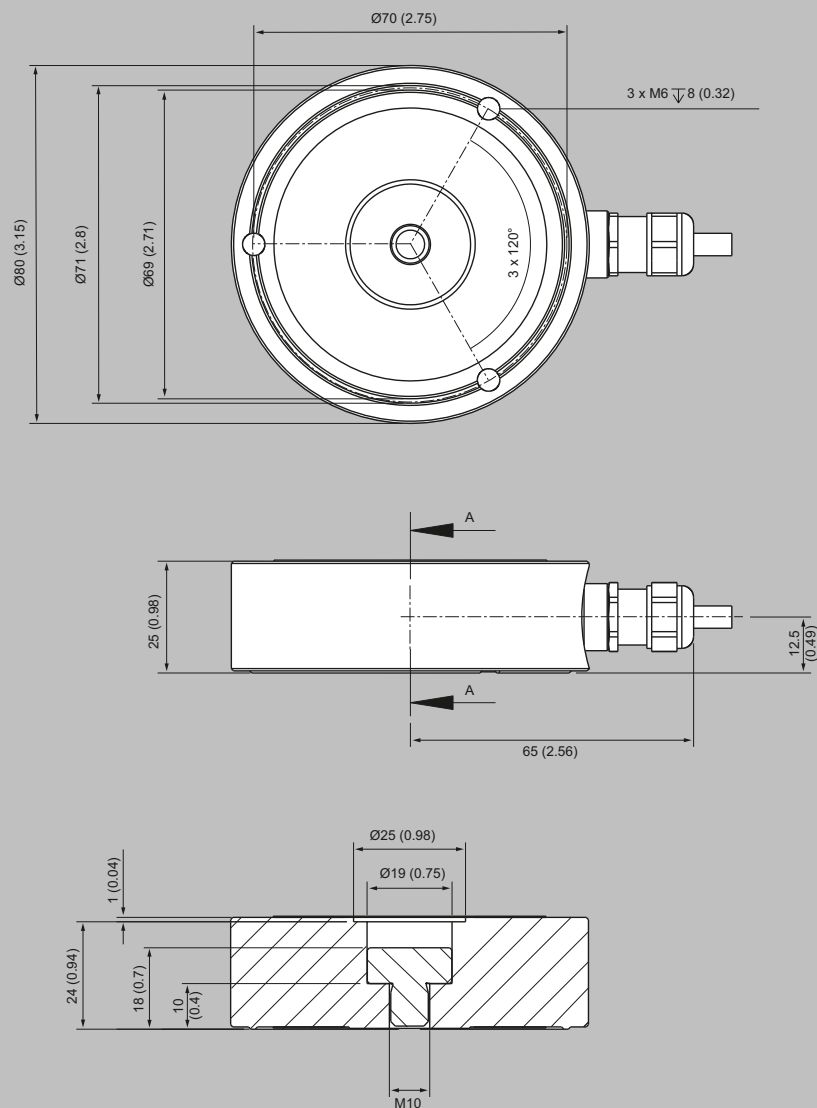
SIWAREX WL280 RN-S SA load cell 60 ... 280 kg (132.28 ... 617.29 lb), dimensions in mm (inch)

Load Cells

Ring torsion load cells

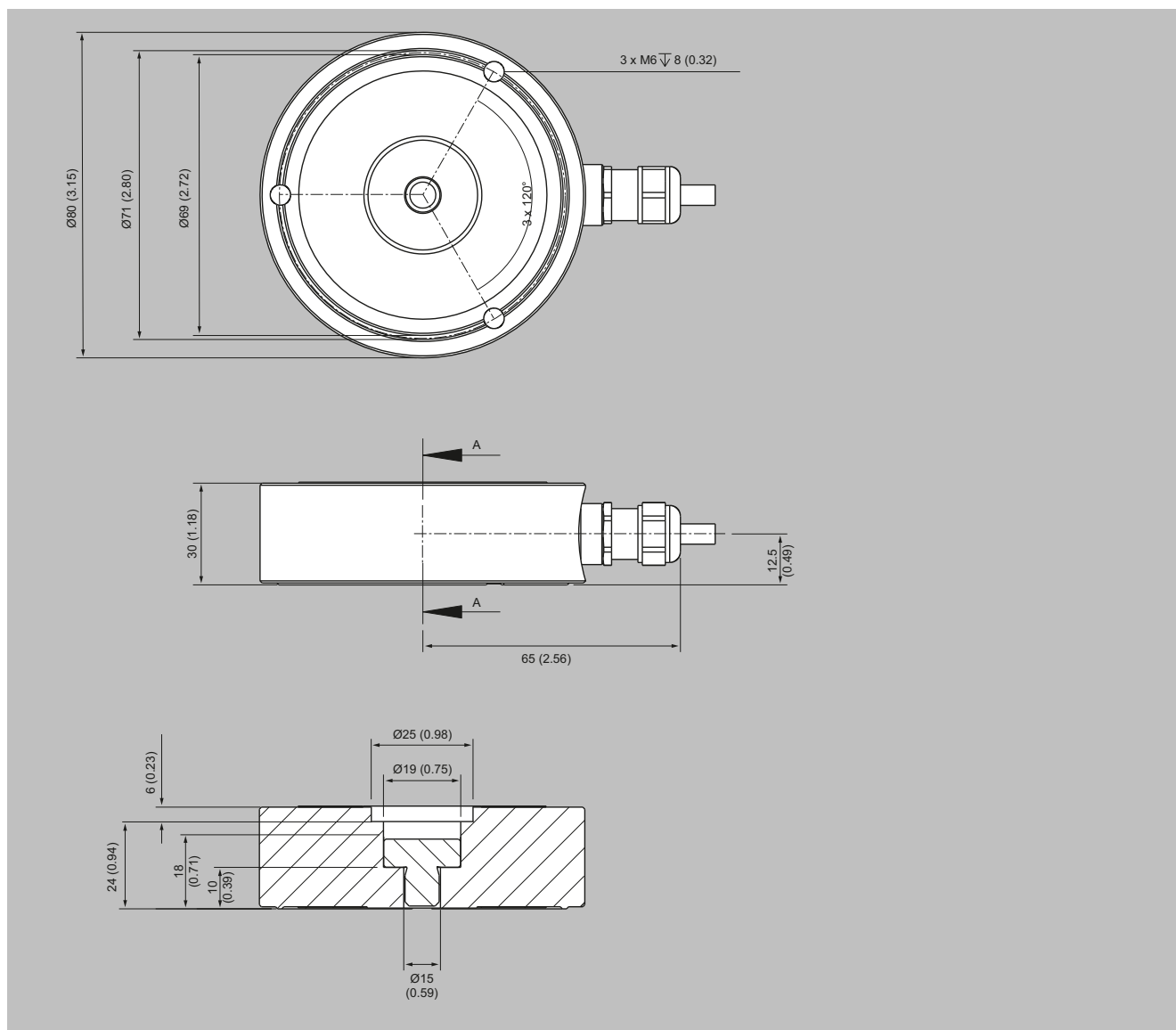
SIWAREX WL280 RN-S SA Load cell

Dimensional drawings (continued)



SIWAREX WL280 RN-S SA load cell, 0.5 and 1 t (0.49 and 0.98 tn. l.), dimensions in mm (inch)

Dimensional drawings (continued)



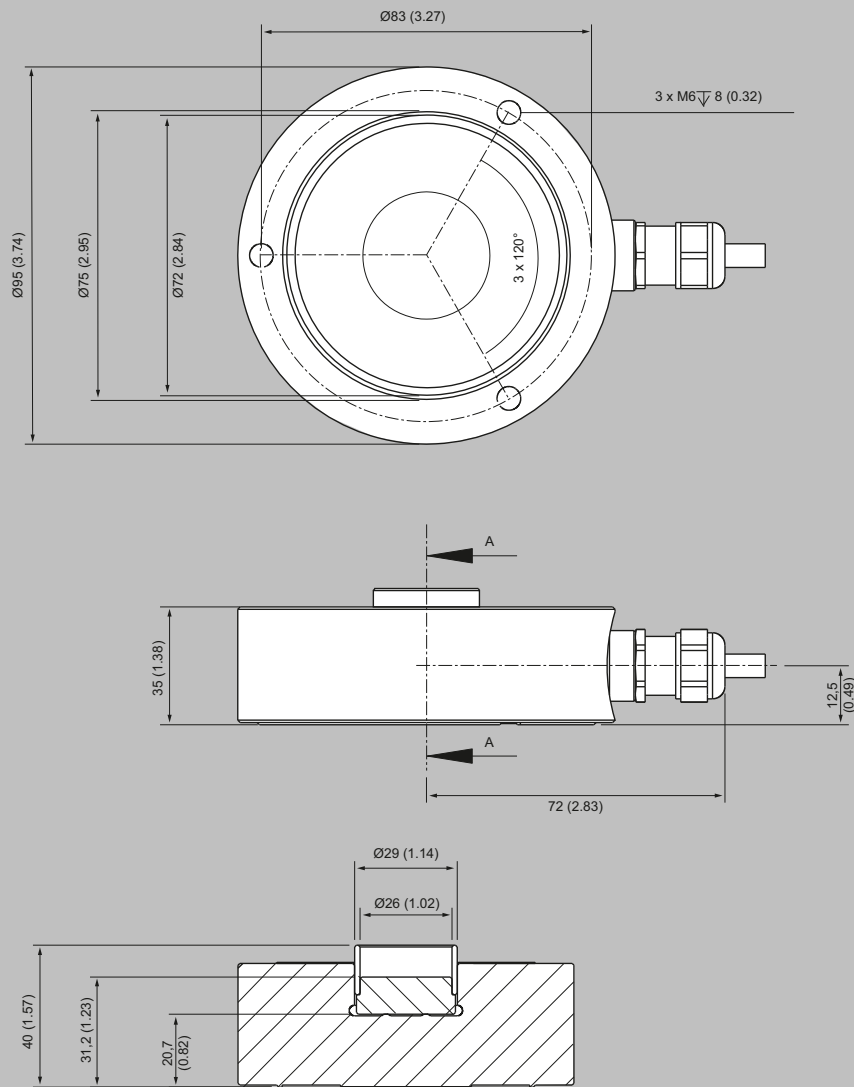
SIWAREX WL280 RN-S SA load cell, 2 ... 5 t (1.97 ... 4.92 tn. l.), dimensions in mm (inch)

Load Cells

Ring torsion load cells

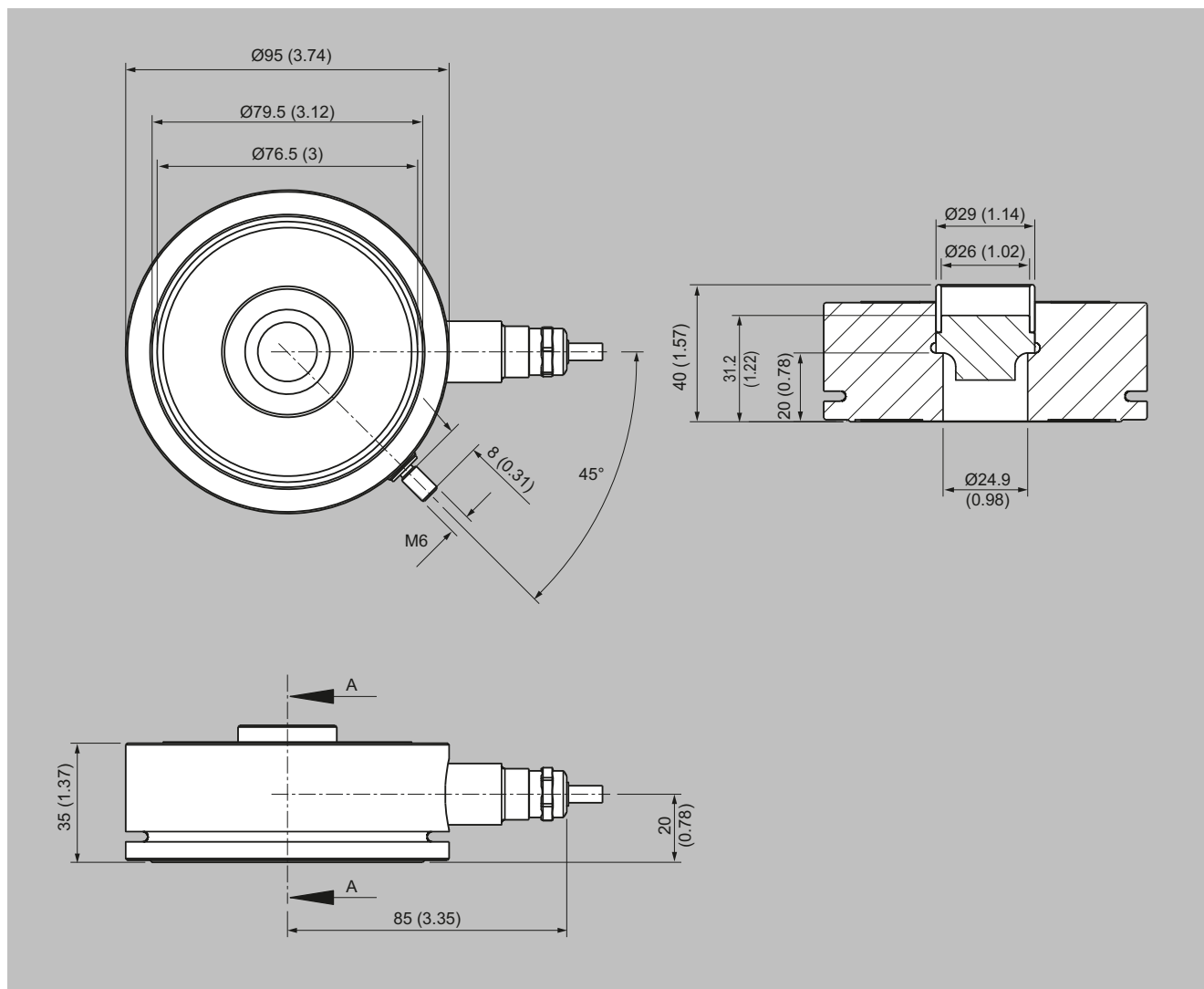
SIWAREX WL280 RN-S SA Load cell

Dimensional drawings (continued)



SIWAREX WL280 RN-S SA load cell 10 t (9.84 tn. l.), dimensions in mm (inch)

Dimensional drawings (continued)



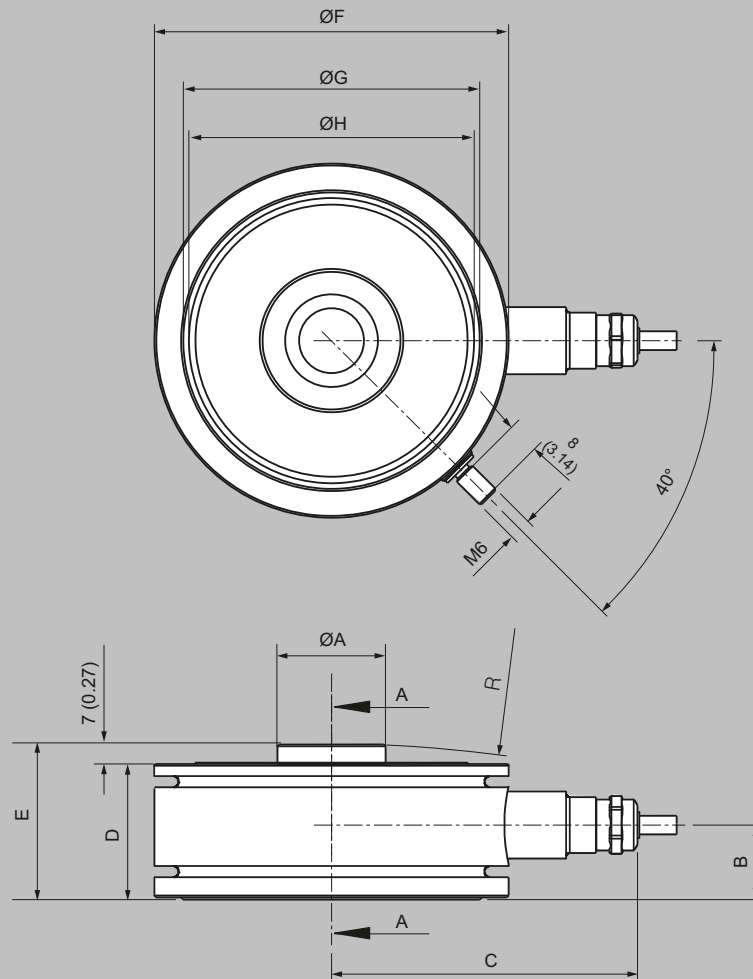
SIWAREX WL280 RN-S SA load cell 13 t (12.79 tn. l.), dimensions in mm (inch)

Load Cells

Ring torsion load cells

SIWAREX WL280 RN-S SA Load cell

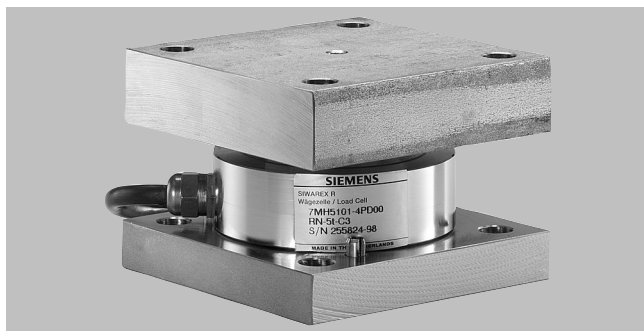
Dimensional drawings (continued)



Rated load [t]	$\varnothing A$	B	C	D	E	$\varnothing F$	$\varnothing G$	$\varnothing H$	R
28	35.9 (1.41)	25 (0.98)	94 (3.7)	46 (1.8)	53 (2.08)	120 (4.72)	102 (4)	98 (3.85)	R400
60	47.9 (1.88)	34 (1.33)	105 (4.13)	62 (2.44)	69 (2.71)	140 (5.5)	124 (4.88)	120 (4.72)	R600

SIWAREX WL280 RN-S SA load cell, 28 and 60 t (27.56 and 59.05 tn. l.), dimensions in mm (inch)

Overview



The self-centering self-aligning bearing for SIWAREX WL280 RN-S SA load cells is particularly suitable for container and platform scales due to its low mounting height.

Design

The self-aligning bearing comprises a pendulum bolt, a top plate (self-aligning bearing, top part) and a base plate (self-aligning bearing, base part).

The self-aligning pendulum bolt enables the top plate, and thus the load bearing implement, to follow horizontal displacements (e.g. due to temperature fluctuations). The design of the pendulum bolt creates a restoring force, which is dependent on the size of the displacement and the applied load.

Measures for restricting sideways play must be provided in the load bearing implement (e.g. in the form of guide elements) if the load bearing implement is displaced in the horizontal direction by:

- > 4 mm (0.16 inch) to 5 t (4.92 tn. l.) Rated load
- > 7 mm (0.28 inch) to 13 t (12.80 tn. l.) Rated load
- > 10 mm (0.39 inch) to 60 t (59.05 tn. l.) Rated load

Lifting of the load support must be prevented by suitable measures provided in the construction of the load bearing implement.

The load cell is not included in the scope of delivery of the self-aligning bearing.

Selection and ordering data

	Article No.
Self-aligning bearing top part¹⁾²⁾ For SIWAREX WL280 RN-S SA load cells comprising: Top plate with seal holder and sealing ring, top plate pressure plate, pendulum bolt, cell pressure piece (not for 28 t and 60 t) Material: Stainless steel EN 1.4301 and EN 1.4112 For load cells with a rated load of	
• 60 ... 280 kg (132.28 ... 617.29 lb)	7MH4115-3DB11
• 500 kg, 1 t (1 102.31 lb, 0.98 tn. l.)	7MH4132-4AK11
• 2 ... 5 t (1.97 ... 4.92 tn. l.)	7MH4132-4KK11
• 10, 13 t (9.84, 12.80 tn. l.)	7MH4115-5BB11
• 28 t (27.56 tn. l.)	7MH4115-5DB11
• 60 t (59.05 tn. l.)	7MH4115-5GB11
Self-aligning bearing base part¹⁾ For SIWAREX WL280 RN-S SA load cells comprising: Base plate, 3 tension pins Material: Stainless steel EN 1.4301 For load cells with a rated load of	
• 60 ... 280 kg (132.28 ... 617.29 lb)	7MH4115-3DC11
• 500 kg ... 5 t (1 102.31 lb ... 4.92 tn. l.)	7MH4132-4AG11
• 10, 13 t (9.84, 12.80 tn. l.)	7MH4115-5BC11
• 28 t (27.56 tn. l.)	7MH4115-5DC11
• 60 t (59.05 tn. l.)	7MH4115-5GC11
Accessories	
Pressure plate set For SIWAREX WL280 RN-S SA load cells. Comprising pressure plate and pendulum support. The pressure plate set enables custom design installation requirements to be implemented. Material: Stainless steel EN 1.4112 For load cells with a rated load of ¹⁾	
• 60 ... 280 kg (132.28 ... 617.29 lb)	7MH5713-3JD00
• 500 kg, 1 t (1 102.31 lb, 0.98 tn. l.)	7MH5713-4AD00
Shims (accessories) For mounting units of the SIWAREX WL280 RN-S SA series Material: Stainless steel EN 1.4301 For load cells with a rated load of ¹⁾	
• 60 ... 280 kg (132.28 ... 617.29 lb); Content: 16 units, each 0.5 mm thick	7MH5713-3JG00
• 500 kg ... 1 t (1 102.31 lb ... 0.98 tn. l.); Content: 24 units, each 0.5 mm thick	7MH5713-4AG00
• 2 ... 5 t (1.97 ... 4.92 tn. l.); Content: 4 units each 0.5 mm thick, 16 units each 1 mm thick	7MH5713-4PG00
• 10, 13 t (9.84, 12.80 tn. l.) Content: 4 units each 0.5 mm thick, 20 units each 1 mm thick	7MH5713-5DG00

¹⁾ The load cell is not included in the scope of delivery.

²⁾ The self-aligning bearing base part is not included in the scope of delivery.

Load Cells

Ring torsion load cells

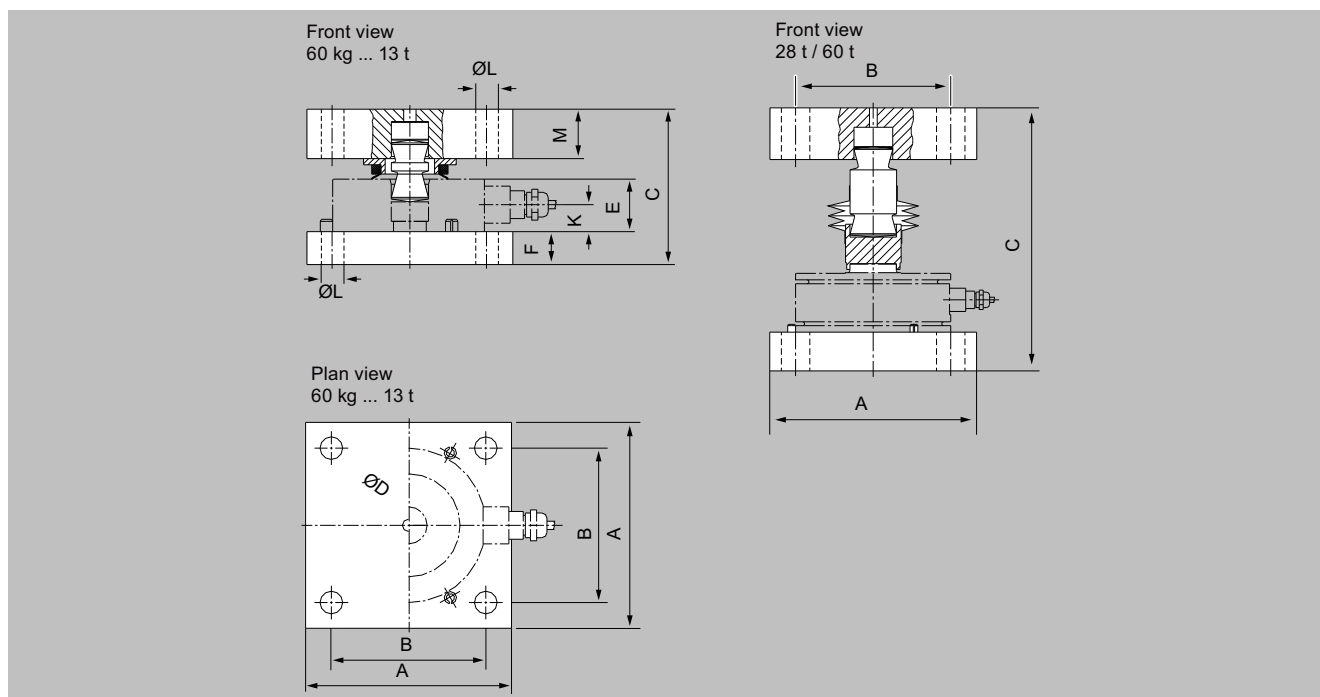
SIWAREX WL280 RN-S SA Self-aligning bearing

Technical specifications

Self-aligning bearing for SIWAREX WL280 RN-S SA load cells

Rated load t (tn. l.)	0.06 ... 5 (0.06 ... 4.92)	10 ... 13 (9.84 ... 12.80)	28 ... 60 (27.56 ... 59.02)
Permissible lateral deflection in mm (inch):	± 4 (0.16)	± 7 (0.28)	± 10 (0.39)

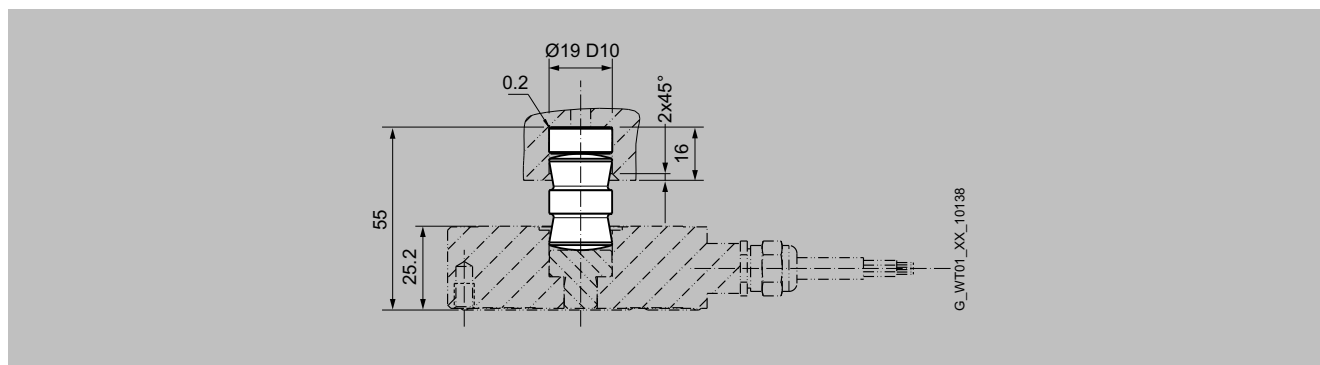
Dimensional drawings



Self-aligning bearing for SIWAREX WL280 RN-S SA load cells, for 0.06 ... 60 t (0.06 ... 59.05 tn. l.), dimensions in mm (inch)

Rated load	A	B	C	ØD	E	F	K	ØL	M	s*
60 ... 280 kg	80 (3.15)	60 (2.36)	52 (2.05)	63 (2.48)	22 (0.87)	8 (0.31)	11 (0.43)	9 (0.35)	12 (0.47)	4 (0.16)
0.5, 1 t	100 (3.94)	75 (2.95)	79 (3.11)	80 (3.15)	25 (0.98)	15 (0.59)	10 (0.39)	11 (0.43)	25 (0.98)	4 (0.16)
2, 3.5, 5 t	100 (3.94)	75 (2.95)	79 (3.11)	80 (3.15)	30 (1.18)	15 (0.59)	8.5 (0.33)	11 (0.43)	25 (0.98)	4 (0.16)
10, 13 t	120 (4.72)	90 (3.54)	121.2 (4.77)	95 (3.74)	35 (1.97)	20 (0.79)	20 (0.79)	14 (0.55)	40 (1.57)	7 (0.28)
28 t	160 (6.30)	120 (4.72)	203 (7.99)	40 (1.57)	46 (1.81)	30 (1.18)	25 (0.98)	22 (0.87)	40 (1.57)	10 (0.39)
60 t	200 (7.87)	140 (5.51)	254 (10.0)	50 (1.97)	62 (2.44)	36 (1.42)	34 (1.34)	28 (1.10)	50 (1.97)	10 (0.39)

* Permissible lateral deflection



Pressure piece set SIWAREX WL280 RN-S SA, for 0.5 and 1 t (0.49 and 0.98 tn. l.), dimensions in mm (inch)

2/99

Load Cells

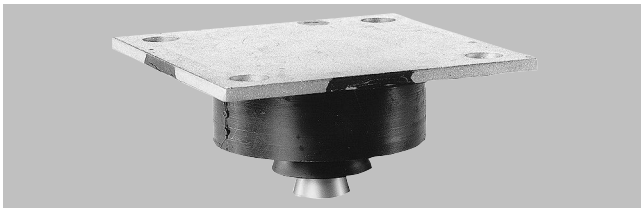
Ring torsion load cells

SIWAREX WL280 RN-S SA Elastomer bearing

Overview



Elastomer bearings for SIWAREX WL280 RN-S SA load cells, 60 ... 280 kg (132.28 ... 617.29 lb)



Elastomer bearing for SIWAREX WL280 RN-S SA load cells, 0.5 ... 13 t (0.49 ... 12.80 lb)

Used in combination with the self-aligning bearing base part, the self-centering elastomer bearing for SIWAREX WL280 RN-S SA load cells is the ideal load introduction element for scales without guide elements. It is used in container, platform and roller table scales and dampens vibrations and shocks.

Design

Elastomer bearings are rubber-metal composites made of neoprene and stainless steel. They ensure large spring excursions (i.e. a high degree of damping) despite small dimensions.

If the load bearing implement is displaced by more than 4 mm (0.16 inch) in the horizontal direction ¹⁾, measures for restricting sideways play (e.g. in the form of guide elements) must be provided in the construction of the load bearing implement.

Lifting of the load support must be prevented by suitable measures provided in the construction of the load bearing implement.

The load cell and the self-aligning bearing base part are not included in the scope of delivery of the elastomer bearing.

¹⁾ 6 mm (0.24 inch) with a rated load of 10 t (9.84 tn. l.) or 13 t (12.80 tn. l.).

Selection and ordering data

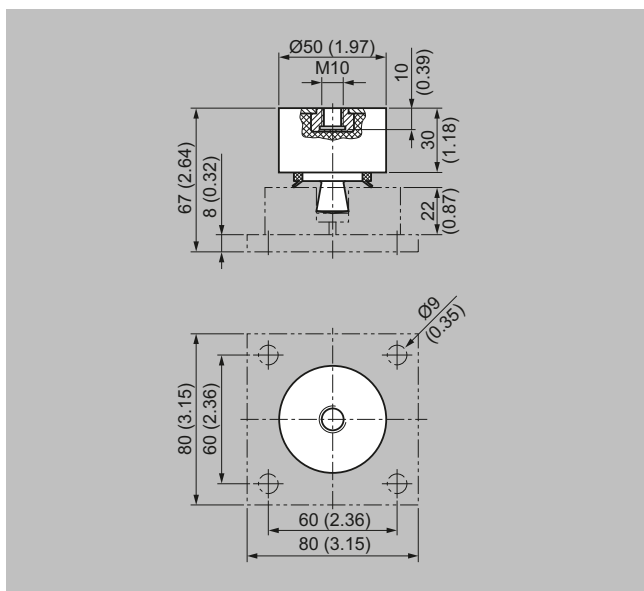
	Article No.
Elastomer bearings¹⁾	
For SIWAREX WL280 RN-S SA load cells	
Comprising: Elastomer package with fixing plate, force transfer, seal	
Material: Neoprene, stainless steel EN 1.4301	
For load cells with a rated load of	
• 60 ... 280 kg (132.28 ... 617.29 lb)	7MH4130-3EE11
• 500 kg, 1 t (1 102.31 lb, 0.98 tn. l.)	7MH4130-4AE11
• 2 ... 5 t (1.97 ... 4.92 tn. l.)	7MH4130-4KE11
• 10, 13 t (9.84, 12.80 tn. l.)	7MH4130-5CE11

¹⁾ The load cell and the self-aligning bearing base part are not included in the scope of delivery.

Technical specifications

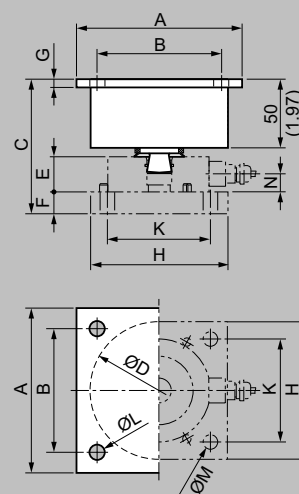
Elastomer bearings for load cells of the type SIWAREX WL280 RN-S SA										
Rated load	60 kg (132.28 lb)	130 kg (286.60 lb)	280 kg (617.29 lb)	500 kg (1 102.31 lb)	1 t (0.98 tn. l.)	2 t (1.97 tn. l.)	3.5 t (3.44 tn. l.)	5 t (4.92 tn. l.)	10 t (9.84 tn. l.)	13 t (12.79 tn. l.)
Max. permissible lateral deflection	± 4 (0.16)	± 4 (0.16)	± 4 (0.16)	± 4 (0.16)	± 4 (0.16)	± 4 (0.16)	± 4 (0.16)	± 4 (0.16)	± 6 (0.24)	± 6 (0.24)
Vertical rigidity	0.89 kN/mm	0.89 kN/mm	0.89 kN/mm	5.9 kN/mm	5.9 kN/mm	27.3 kN/mm	27.3 kN/mm	27.3 kN/mm	58.07 kN/mm	58.07 kN/mm
Horizontal rigidity	0.16 kN/mm	0.16 kN/mm	0.16 kN/mm	0.16 kN/mm	0.16 kN/mm	0.57 kN/mm	0.57 kN/mm	0.57 kN/mm	0.62 kN/mm	0.62 kN/mm
Spring compression at rated load	0.65 mm	1.40 mm	2.85 mm	0.68 mm	1.28 mm	0.62 mm	1.04 mm	1.46 mm	1.72 mm	2.24 mm

Dimensional drawings



Elastomer bearing for SIWAREX WL280 RN-S SA load cells, 60 ... 280 kg (132.28 ... 617.30 lb), dimensions in mm (inch)

Dimensional drawings (continued)



Rated load [t]	A	B	C	ØD	E	F
0,5, 1	100 (3.94)	75 (2.95)	97 (3.82)	85 (3.35)	25 (0.98)	15 (0.59)
2, 3,5, 5	120 (4.72)	90 (3.54)	102 (4.02)	100 (3.94)	30 (1.18)	15 (0.59)
10, 13	120 (4.72)	90 (3.54)	120 (4.72)	100 (3.94)	35 (1.38)	20 (0.79)

Rated load [t]	G	H	K	ØL	ØM	N	s
0,5, 1	6 (0.24)	100 (3.94)	75 (2.95)	11 (0.43)	11 (0.43)	9.5 (0.37)	4 (0.16)
2, 3,5, 5	6 (0.24)	100 (3.94)	75 (2.95)	11 (0.43)	11 (0.43)	8.5 (0.34)	4 (0.16)
10, 13	6 (0.24)	120 (4.72)	90 (3.54)	11 (0.43)	14 (0.55)	20 (0.79)	6 (0.24)

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Elastomer bearing for SIWAREX WL280 RN-S SA load cells, 0.5 ... 13 t (0.49 ... 12.80 tn. l.), dimensions in mm (inch)

Load Cells

Ring torsion load cells

SIWAREX WL280 RN-S SA Mounting unit with guide element

Overview



SIWAREX WL280 RN-S SA mounting unit with guide element, front



SIWAREX WL280 RN-S SA mounting unit with guide element, rear

The mounting unit, together with the load cells of the SIWAREX WL280 RN-S SA series, forms a self-centering unit. The guide elements prevent containers, for example, from moving sideways due to an external lateral force. The guide elements can be mounted on one or both sides of the mounting unit.

Design

The mounting unit comprises a base plate and a top plate, a pressure piece with a flat gasket and a pendulum support. A highly flexible grounding cable between the top and base plate conducts any fault currents past the load cell. The top plate is connected to the base plate by means of two countersunk head screws. On both sides of the base and top plate there are threaded holes for the later flange-fitting of guide elements.

The top plate is fixed above the base plate by means of two countersunk head screws. This results in a single unit that is easily handled. The top plate must be precisely aligned above the base plate. The height of the top plate is set so that it is 2 mm (for 60 ... 280 kg versions) or 3 mm (for 0.5 ... 13 t versions) above the installation height with load cell.

In this state, the mounting unit serves as an installation aid and can be used as a dummy for light installation jobs.

The load cell, together with the pendulum support and the pressure piece, can be inserted into the mounting unit. Load cell and pressure piece are secured with clamping washers.

The load cell can be inserted in the scale before mounting the mounting unit. It is also possible to insert the load cell in the mounting unit after mounting.

The fixing holes of the mounting unit are 6 mm wider in diameter than the necessary fixing screws. This means that a greater tolerance error is permissible in the connection measurements. The mounting unit is clamped tightly using the washers supplied.

After the mounting units have been installed in the scale, the load bearing implement is ideally aligned. The load cells are not yet loaded. Finally, the load bearing implement is lowered by loosening the hexagon nuts under the top plate. The weight now rests on the load cells.

In this state, the load cell and the mounting unit together form a self-centering bearing unit. The mounting unit allows the top plate (and thus the load bearing implement) to be displaced up to 2 mm (for the 60 ... 280 kg (132.28 ... 617.29 lb) versions) or 3 mm (for the 0.5 ... 13 t (1 102.31 lb, 0.98 tn. l.) versions) to the side in all directions. The countersunk head screws prevent the load bearing implement from being lifted off or tipping. The countersunk head screws secure the load bearing implement against sharp lateral movement on the occurrence of sporadic lateral forces.

Using the mounting unit as an installation aid results in optimum alignment of the load cells. This is essential to enable the load cells to perform at their best in terms of accuracy. For maintenance or troubleshooting purposes, the load cell can be relieved again by tightening the hexagon nuts. After loosening the clamping washers, it can then easily be replaced.

Guide elements are used if the lateral movement of a load bearing implement is to be prevented. Lateral movements can be initiated by agitator start-up in a container, by braking or accelerating forces in a roller conveyor, or through forces exerted by the wind on outdoor silos.

A guide element consists of two flanges and one clamping screw. The clamping screw is adjusted to the correct length. The guide element is attached to the operational mounting unit. A guide element can be mounted on the front or rear of the mounting unit. If necessary, two guide elements can be used in parallel in order to double the transferrable lateral force.

In the case of scales with four load cells, only three mounting units may be equipped with guide elements.

Shims are used to compensate for angular errors and delays in the lug plates. If more than three load cells are used, the shims are also used to adjust the height of the lugs.

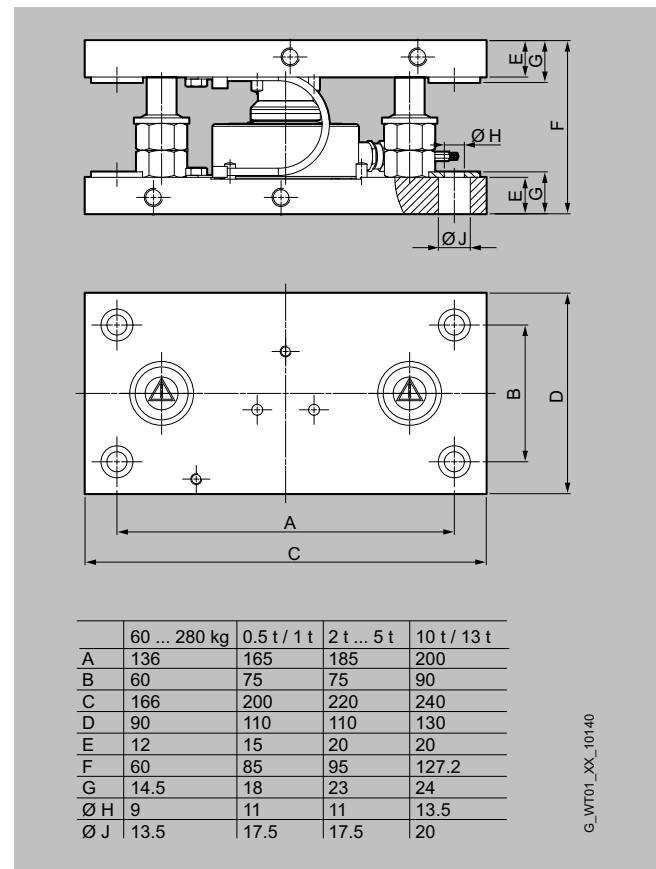
SIWAREX WL280 RN-S SA Mounting unit with guide element

Selection and ordering data

	Article No.
Mounting unit For SIWAREX WL280 RN-S SA load cells Material: Stainless steel EN 1.4301 and EN 1.4112 For load cells with a rated load of ¹⁾ 60 ... 280 kg (132.28 ... 617.29 lb) 7MH5713-3JA00 500 kg, 1 t (1 102.31 lb, 0.98 tn. l.) 7MH5713-4AA00 2 ... 5 t (1.97 ... 4.92 tn. l.) 7MH5713-4PA00 10, 13 t (9.84, 12.80 tn. l.) 7MH5713-5DA00	
Guide elements (optional) For mounting units of the SIWAREX WL280 RN-S SA series Material: Stainless steel EN 1.4301 For load cells with a rated load of ¹⁾ 60 ... 280 kg (132.28 ... 617.29 lb); Permissible lateral force: 1.5 kN 7MH5713-3JE00 500 kg, 1 t (1 102.31 lb, 0.98 tn. l.); Permissible lateral force: 2.5 kN 7MH5713-4AE00 2 ... 5 t (1.97 ... 4.92 tn. l.); Permissible lateral force: 5 kN 7MH5713-4PE00 10, 13 t (9.84, 12.80 tn. l.); Permissible lateral force: 10 kN 7MH5713-5DE00	
Shims (accessories) For mounting units of the SIWAREX WL280 RN-S SA series Material: Stainless steel EN 1.4301 For load cells with a rated load of ¹⁾ 60 ... 280 kg (132.28 ... 617.29 lb); Content: 16 units, each 0.5 mm thick 7MH5713-3JG00 500 kg ... 1 t (1 102.31 lb ... 0.98 tn. l.); Content: 24 units, each 0.5 mm thick 7MH5713-4AG00 2 ... 5 t (1.97 ... 4.92 tn. l.); Content: 4 units each 0.5 mm thick, 16 units each 1 mm thick 7MH5713-4PG00 10, 13 t (9.84, 12.80 tn. l.); Content: 4 units each 0.5 mm thick, 20 units each 1 mm thick 7MH5713-5DG00	

¹⁾ The load cell and guide elements are not included in the scope of delivery.

Dimensional drawings



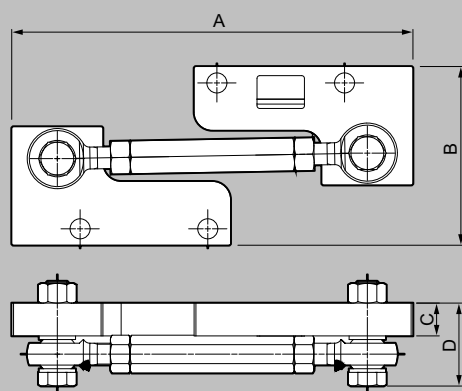
SIWAREX WL280 RN-S SA mounting unit, dimensions in mm

Load Cells

Ring torsion load cells

SIWAREX WL280 RN-S SA Mounting unit with guide element

Dimensional drawings (continued)



	60 ... 280 kg	0,5 t / 1 t	2 t ... 5 t	10 t / 13 t
A	166	200	220	240
B	60	85	95	127.2
C	10	12	18	18
D	~30.5	~35	~45.5	~54.4

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SIWAREX WL280 RN-S SA guide element, dimensions in mm

Overview



SIWAREX DB digital junction box in stainless steel and aluminum

SIWAREX DB is a digital junction box for enhanced diagnostics and monitoring options in conjunction with SIWAREX WP weighing electronics.

Thanks to individual channel monitoring, error states such as wire break and overload can be identified in a targeted manner. Connecting SIWAREX DB to a SIWAREX WP electronic weighing system ensures seamless integration in the SIMATIC world.

Benefits

SIWAREX DB offers the following key advantages:

- Additional diagnostics options due to evaluation of individual load cells
- Integration in SIMATIC by connection to SIWAREX WP electronic weighing system
- Seamless communication between control and field levels supports retention of order number and location designation
- Easy replacement of analog junction boxes:
- Suitable for use in harsh environments thanks to IP66
- Simplified service: multimeter no longer required
- Rapid initial diagnostics with LEDs

Advantages of single channel evaluation:

- Wire break signal: load cell no longer correctly connected
- Impedance monitoring: change in load cell resistance
- Monitoring of overload/underload
- Current load factor of each load cell: determination of the center of gravity is possible

Application

SIWAREX DB is the optimum solution wherever strain-gauge sensors such as load cells, force sensors and torque measuring shafts are used for measuring in the SIMATIC environment and optimum diagnostics options are needed.

SIWAREX DB is suitable for all weighing applications, particularly level measurement, platform weighing and proportioning.

SIWAREX DB can be connected to the following SIWAREX WP electronic weighing systems:

- SIWAREX WP231 (7MH4960-2AA01)
- SIWAREX WP321 (7MH4138-6AA00-0BA0)

Design



Internal view of SIWAREX DB

The SIWAREX DB digital junction box has a die-cast aluminum or stainless steel enclosure. The enclosure is dust-protected and splash-proof according to the IP66 degree of protection.

Cables are fed in through metric cable glands. Plug-in terminals reduce wiring effort during commissioning. Connection to SIWAREX WP electronic weighing systems is via the RS 485 interface.

Function

In order to avoid incorrect measurements, such as for filling levels, weighing modules must work precisely. A prerequisite is complete transparency about the device states. With SIWAREX DB it is possible to connect scales with up to four load cells, offering maximum versatility for system planning.

A special feature is the individual channel monitoring. Wire break, impedances as well as the current utilization of each and every load cell can be identified in a targeted manner and rectified if required.

For direct connection to a SIMATIC S7 CPU, the SIWAREX WP231 is available for the SIMATIC S7-1200 system. SIWAREX WP321 should be selected for the SIMATIC ET 200SP distributed I/O system. Seamless communication between SIWAREX und SIMATIC ensure reduced overhead during commissioning.

The SIWAREX DB can also replace the structurally identical analog SIWAREX JB junction box in existing installations. This enables older systems to be retained and given a digital retrofit with a minimum of effort.

SIWAREX DB supplies diagnostic data which can be completely integrated in the SIMATIC world. Error messages are displayed centrally on the SIMATIC Controller and the HMI. The seamless connection between the control unit and the SIWAREX modules enables instant diagnostics, thereby simplifying and accelerating servicing and minimizing downtimes.

Load Cells

Load cell accessories

SIWAREX DB digital junction box

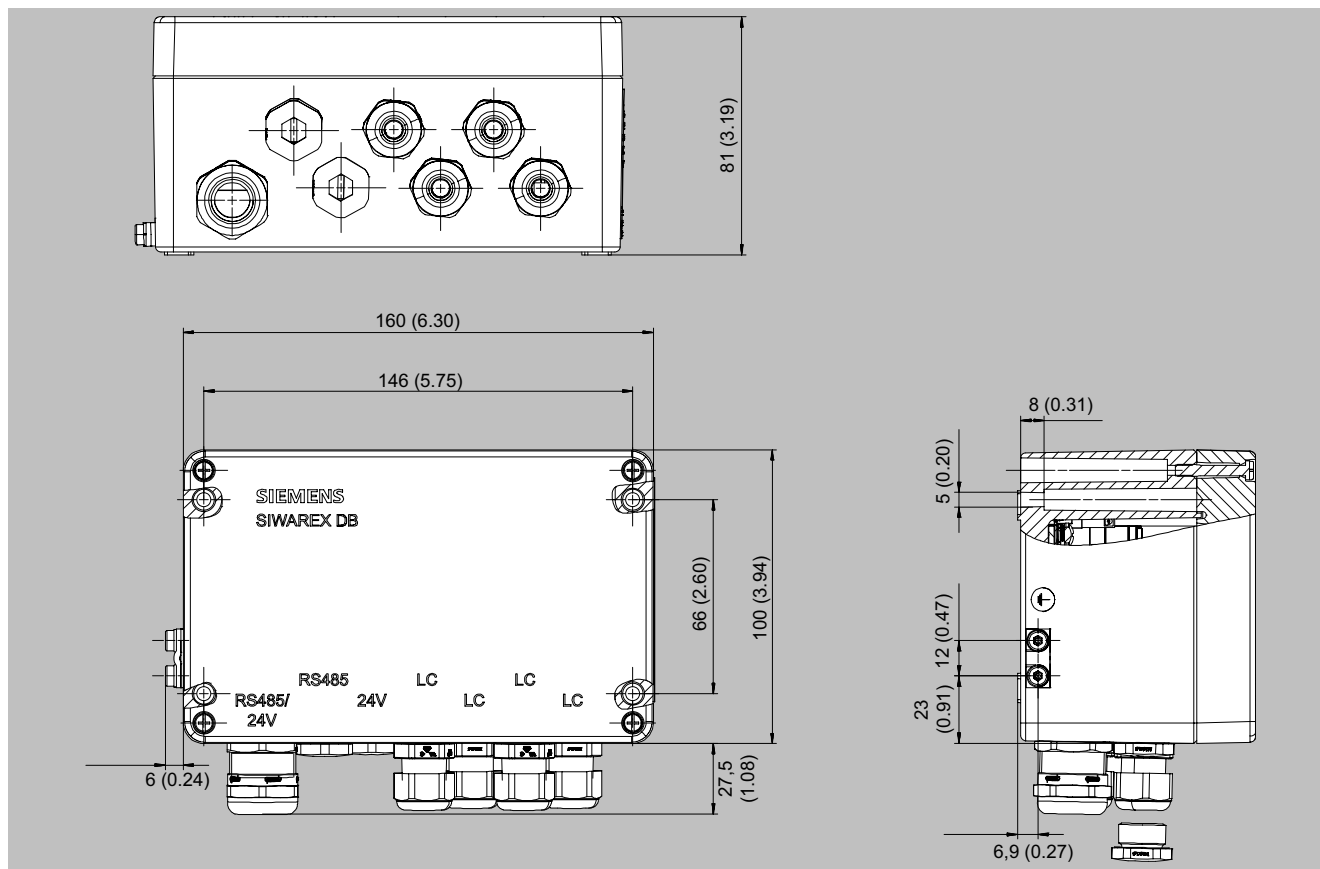
Selection and ordering data

	Article No.
SIWAREX DB digital junction box For enhanced diagnostic and monitoring options in conjunction with SIWAREX WP electronics. Enclosure made of: - Aluminum - Stainless steel incl. ATEX and IECEx approval II 3 G Ex ec IIC T4 Gc and II 3 D Ex tc IIIC T120 °C Dc	7MH5001-0AD20 7MH5001-0AD01
Spare part	
SIWAREX DB printed-circuit board and plug SIWAREX DB printed-circuit board incl. plug for connecting load cells to SIWAREX WP electronic weighing systems as a spare part.	A5E50551831
Accessories EMC cable gland for SIWAREX DB and JB aluminum Content: 4 × EMC cable glands M16 2 × blanking plugs M16	7MH5002-0AA30
Extension set for SIWAREX JB and DB aluminum and stainless steel Content: 1 × EMC cable gland M20 1 × adapter, M16 to M20	7MH5002-0AB30
Cable Li2Y 1 × 2 × 0.75 ST + 2 × (2 × 0.34 ST) – CY For connecting SIWAREX electronic weighing systems to junction box (JB), extension box (EB) and Ex interface or between two EBs. Suitable for both aluminum and stainless steel variants. For permanent installation. Occasional bending is possible. External diameter: approx. 10.8 mm (0.43 inch) Permissible ambient temperature: -40 ... +80 °C (-40 ... +176 °F). Sold by the meter.	7MH4702-8AG

Technical specifications

SIWAREX DB digital junction box	
Integration in SIMATIC S7-1200 and S7-1500 automation systems	SIWAREX WP electronic weighing system - SIWAREX WP231 (7MH4960-2AA01) - SIWAREX WP321 (7MH4138-6AA00-0BA0)
Communication interfaces	RS 485 (connection to SIWAREX WP electronic weighing system)
Measuring accuracy	See SIWAREX WP electronic weighing system
Measuring frequency	100 / 120 Hz
Load cells	Full-bridge strain gauges in 4-wire or 6-wire system
Load cell powering	
Supply voltage	4.85 V DC
Permissible load resistance	R_{Lmin} R_{Lmax}
	> 330 Ω < 4 100 Ω
Load cell characteristic	1 ... 4 mV/V
IP degree of protection to EN 60529	IP66
Permissible ambient temperature	-20 ... 80 °C
Cable glands	
• For load cells	4 × M16
• For signal cables / power supplies	1 × M20
Auxiliary power supply	
Nominal voltage	24 V DC
Max. power consumption	100 mA at 24 V DC

Dimensional drawings



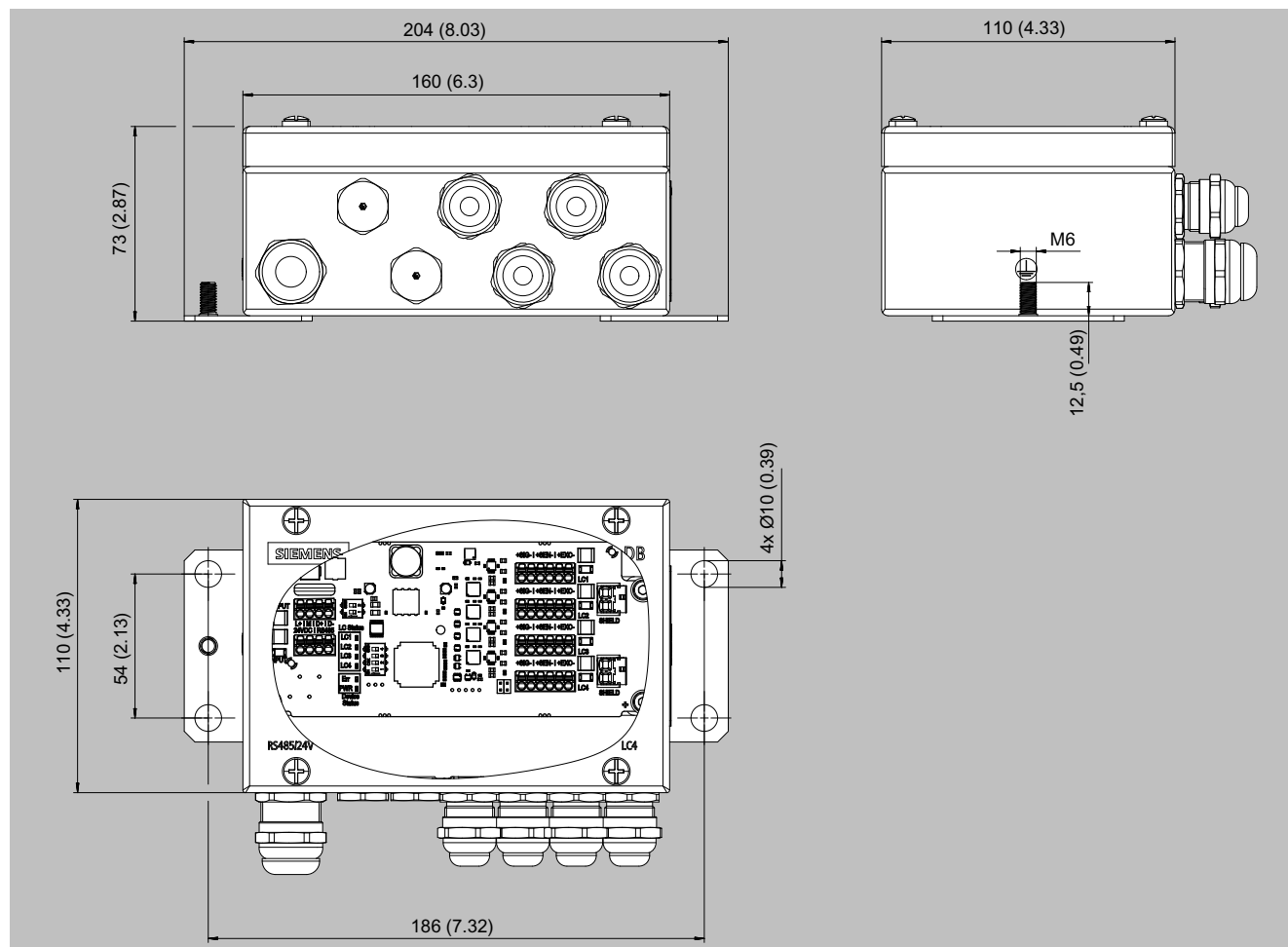
SIWAREX DB digital junction box (7MH5001-0AD20), aluminum, dimensions in mm (in)

Load Cells

Load cell accessories

SIWAREX DB digital junction box

Dimensional drawings (continued)



SIWAREX DB digital junction box (7MH5001-OAD01), stainless steel, dimensions in mm (in)

Overview



SIWAREX JB junction box, in aluminum



SIWAREX JB junction box, in stainless steel

The JB junction box in aluminum or in stainless steel is required for parallel connection of load cells. A maximum of 4 load cells can be connected in parallel in one junction box.

Only for junction boxes in aluminum:

If more than 4 load cells are to be connected, a second junction box must be connected in parallel via a cross connection. An expansion set is required for this purpose. The cross-connection can be used to connect up to three load cells in the first junction box. Up to four load cells can be connected in the second junction box.

Design

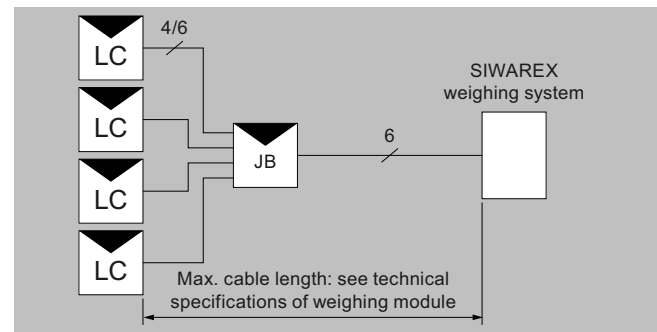
The junction box of die-cast aluminum consists of a lower section and cover. The enclosure is dust-protected and splashproof according to IP66 degree of protection. The cables are fed in through metric cable glands. In the enclosure, screw terminals are fixed onto a connection board.

The internal resistance, characteristic value and rated load of all parallel-switched load cells must be identical. The value of these variables is not limited by the junction box. Load cells can be connected in 4-wire or 6-wire systems.

For 6-wire systems, 2 jumpers must also be separated.

Connection examples

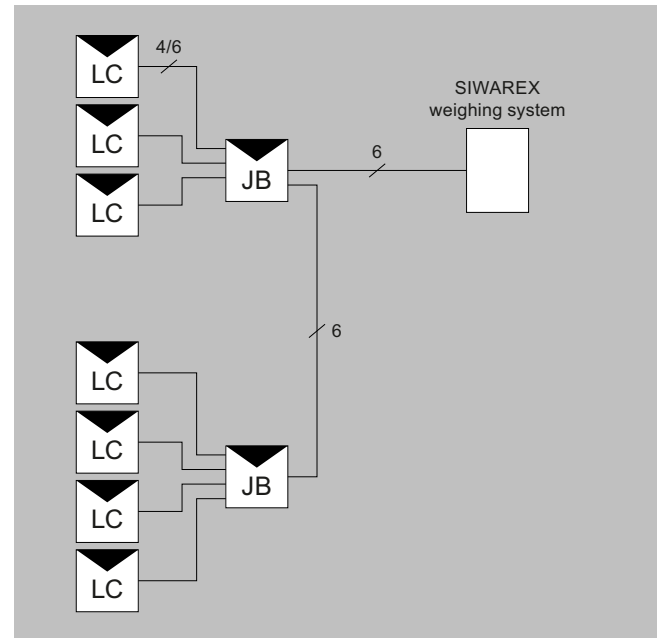
4 load cells



LC: Load cell

JB: Junction box in aluminum or stainless steel

7 load cells



LC: Load cell

JB: Only for junction boxes in aluminum

Load Cells

Load cell accessories

SIWAREX JB analog junction box

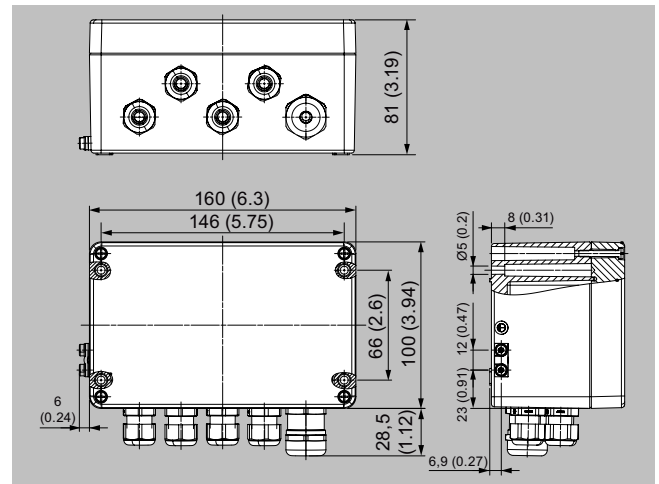
Selection and ordering data

	Article No.
SIWAREX JB junction box, aluminum housing For connecting up to 4 load cells in parallel, and for connecting several junction boxes	7MH5001-0AA20
SIWAREX JB junction box, stainless steel housing For connecting up to 4 load cells in parallel Material: Stainless steel EN 1.4301	7MH5001-0AA00
SIWAREX JB junction box, stainless steel housing (ATEX) For connecting up to 4 load cells in parallel Material: Stainless steel EN 1.4301 (For zone allocation, see manual or type examination certificate)	7MH5001-0AA01
Accessories (optional)	
Cable Li2Y 1 x 2 x 0.75 ST + 2 x (2 x 0.34 ST) – CY For connecting SIWAREX electronic weighing systems to junction box (JB), extension box (EB) and Ex interface or between two extension boxes. For permanent installation. Occasional bending is possible. External diameter: approx. 10.8 mm (0.43 inch) Permissible ambient temperature -40 ... +80 °C (-40 ... +176 °F) Sold by the meter.	
• Sheath color: orange	7MH4702-8AG
• For hazardous atmospheres. Sheath color: blue.	7MH4702-8AF
EMC cable gland for SIWAREX DB and JB aluminum Content: 4 x EMC cable glands M16 2 x blanking plugs M16	7MH5002-0AA30
Extension set for SIWAREX JB and DB aluminum and stainless steel Content: • 1 x EMC cable gland M20 • 1 x adapter, M16 to M20	7MH5002-0AB30

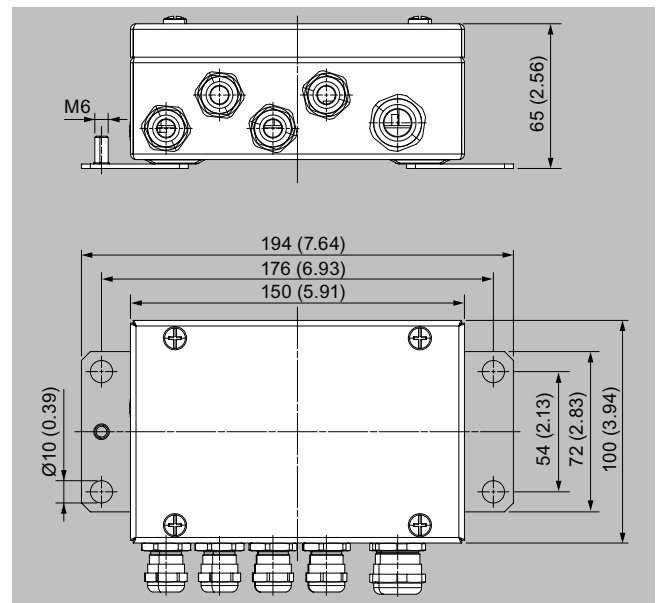
Technical specifications

SIWAREX JB junction box, aluminum and stainless steel enclosure	
Cable glands	
• Of load cells	4 x M16
• Of signal cable	1 x M20
Permissible ambient temperature	
• During operation	-40 ... +80 °C (-58 ... +176 °F)
• During operation for legal-for-trade weighing machines	-10 ... +40 °C (+14 ... +104 °F)
• During transportation and storage	-40 ... +100 °C (-58 ... +212 °F)
Degree of protection	IP66 to EN 60529
Vibration resistance of terminals according to DIN VDE 0611 11/77	10 Hz and 150 Hz, amplitude 0.35 mm

Dimensional drawings



SIWAREX JB junction box in aluminum (7MH5001-0AA20), dimensions in mm (inches)



SIWAREX JB junction box in stainless steel (7MH5001-0AA00), dimensions in mm (inches)

Overview



The EB extension box is used to lengthen load cell connecting cables.

Load cells can be connected in 4-wire or 6-wire systems. The cable connection to the weighing module or to the JB junction box must always be implemented in 6-wire systems. The 7MH4 702-8AG or ...-8AF SIWAREX connection cable is recommended for this purpose. If load cell cables are extended to a JB junction box, the M16 x 1.5 cable glands on the box must be replaced. The following is required for each load cell:

- 1 EMC cable gland M20 x 1.5
- 1 extension M16 x 1.5 male thread to M20 x 1.5 female thread.

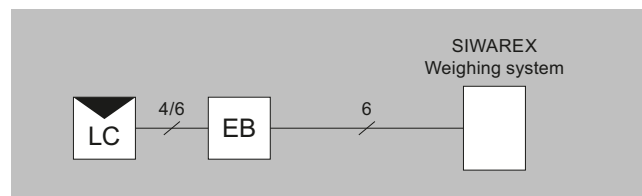
Design

The EB extension box consists of a housing made of die-cast aluminum. It is protected against dust and spray water according to IP66. The cables are fed in through metric EMC cable glands and laid in spring-loaded terminals. A vibration-resistant and maintenance-free connection is achieved through the use of spring-loaded terminals.

For connecting load cells in a 4-wire system, two bridge elements are inserted for feedback of the sense signal.

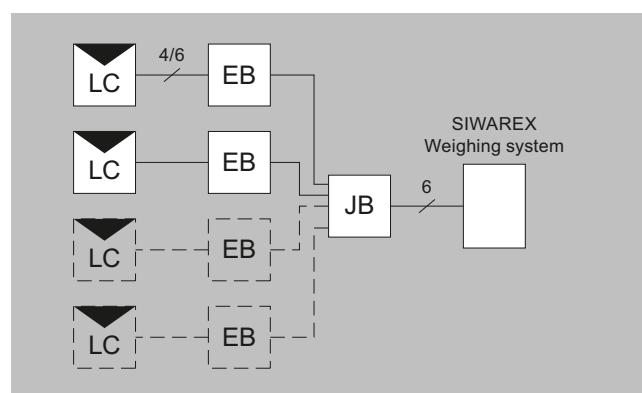
Connection examples

Connecting one load cell



LC: Load cell
EB: Extension box

Connecting multiple load cells



LC: Load cell
EB: Extension box
JB: Junction box

Selection and ordering data

	Article No.
Accessories	
SIWAREX EB extension box, aluminum enclosure For extending the connecting cable of load cells	7MH4710-2AA
Cable (optional)	
Cable Li2Y 1 x 2 x 0.75 ST + 2 x (2 x 0.34 ST) – CY For connecting SIWAREX electronic weighing systems to junction box (JB), extension box (EB) and Ex interface or between two extension boxes. For permanent installation. Occasional bending is possible. External diameter: approx. 10.8 mm (0.43 inch) Permissible ambient temperature -40 ... +80 °C (-40 ... +176 °F) Sold by the meter.	
• Sheath color: orange	7MH4702-8AG
• For hazardous atmospheres. Sheath color: blue.	7MH4702-8AF

Load Cells

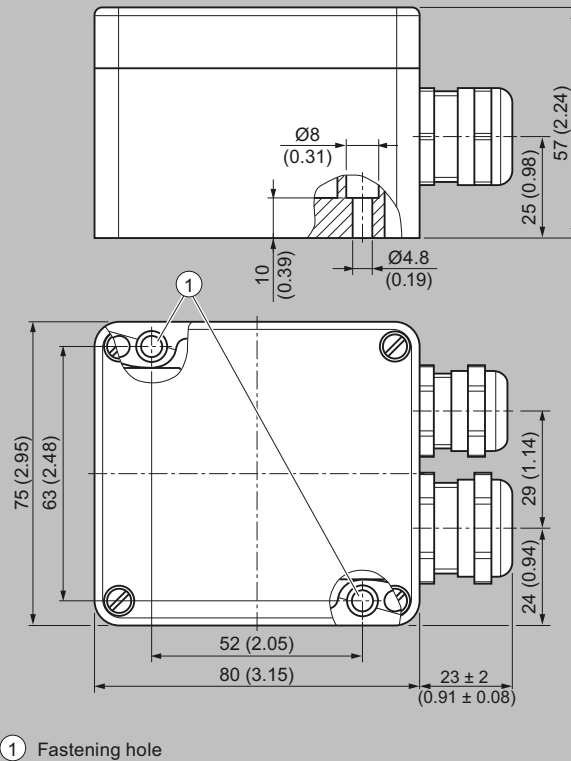
Load cell accessories

SIWAREX EB extension box

Technical specifications

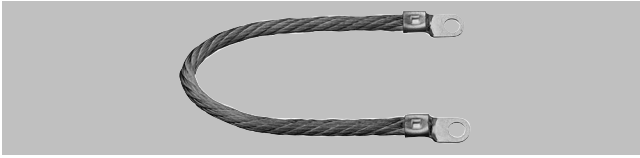
Cable glands	
• Of load cell cable	M16 × 1.5
• Of signal cable	M20 × 1.5
Permissible ambient temperature	
• During operation	-30 ... +85 °C (-22 ... 185 °F)
• During operation for legal-for-trade weighing machines	-10 ... +40 °C (14 ... 104 °F)
• During transportation and storage	-40 ... +90 °C (-40 ... 194 °F)
Degree of protection acc. to EN 60529	IP66
Vibration resistance of terminals to DIN VDE 0611 11/77	12 Hz and 50 Hz, amplitude 1 mm
Insulation resistance of the terminals	$\geq 10^{12} \Omega$
Dimensions (W × H × D) in mm	80 × 75 × 57

Dimensional drawings



SIWAREX EB extension box (7MH4 710-2AA), dimensions in mm (inch)

Overview



The ultra-flexible grounding cable is for discharging parasitic currents.

Design

The grounding cable is 400 mm long and is an electrical shunt. It protects the load cell from undesired voltages such as those that occur during welding or lightning strikes.

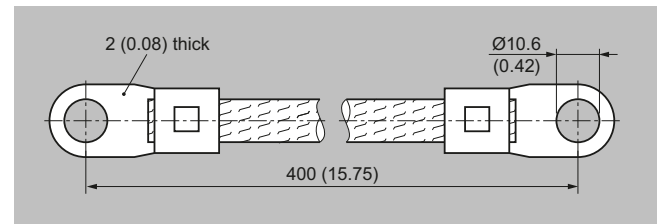
We recommend using one grounding cable per load cell.

The load cell and/or other mounting components are not included in the scope of delivery of the grounding cable.

Selection and ordering data

	Article No.
Grounding cable made of copper For discharging parasitic currents 400 mm long	7MH3701-1AA1

Dimensional drawings



Grounding cable , dimensions in mm (inch)

Load Cells

Configuration examples

Introduction

Overview

Number of load cells

The three-point bearing is statically determined and offers a stable setup for any application.

If there are more than three bearing points, the load is likely to be unevenly positioned and, in extreme cases, that two diagonally positioned load cells would have to accommodate the entire load. Three-point bearing should therefore be used wherever possible.

To exclude the possibility of an uneven base, in the case of a bearing with more than three load cells, the prevailing weight distribution on the relevant load cells should be checked and a height adjustment performed if necessary. This can be achieved by using a suitable support to raise the load cells which are carrying less weight.

Force bypass

Force bypasses are produced if a partial load is transferred past the load cells into the base.

There are various reasons for a force bypass (e.g. third-party supports, frictional forces, stresses, etc.).

Force bypasses must be avoided at all costs as they lead to measuring errors.

Rated load of load cells

The rated load is selected under maximum load, taking into account centers of gravity and load distribution on the individual load cells. The rated load is generally selected according to the most heavily loaded load cell. A check also needs to be performed to see if any dynamic forces are superimposed on the static load of the load cell. In this case, the rated load of the load cell must be calculated from the sum of the static load and the peak dynamic force.

Example (please also refer to configuration example 1)	
Even load distribution, without dynamic influences	
Number of load cells	4
Container empty weight	1.2 t (1.18 tn. l.)
Maximum capacity	1.8 t (1.77 tn. l.)
Total load	3 t (2.95 tn. l.)

The 4 load cells are each loaded with 0.75 t (0.74 tn. l.) in order to ensure even load distribution. During configuration and selection of load cells, approx. 20% should be added to the calculated rated load for safety reasons. This produces a required load cell rated load of $0.75 \text{ t} \times 1.2 = 0.9 \text{ t}$ ($0.74 \text{ tn. l.} \times 1.2 = 0.89 \text{ tn. l.}$).

It therefore follows that it is necessary to select the next highest rated load level, with 1 t (0.98 tn. l.).

More information

Example 1: Container weighing

The total center of gravity **S** of the suspended container lies above the level of the load cells.

It is supported on 4 lugs (container manufacturer specification), has an empty weight (dead load) of 1.2 t (1.18 tn. l.), and a maximum capacity of 1.8 t (1.77 tn. l.). The load is evenly distributed across all 4 load cells.

Note

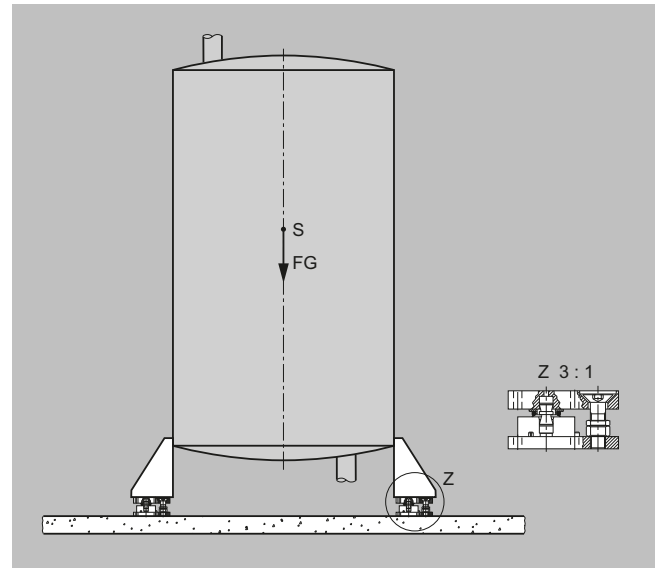
The three-point bearing of the container is statically determined and represents a stable state (see comment in the introduction).

Selection of load cells and mounting components

The determination of the rated load, as described in the introduction, results in a rated load of 1 t (0.98 tn. l.).

For the example above, 4 SIWAREX WL280 RN-S SA load cells were used with a rated load of 1 t (0.98 tn. l.) since the construction height of the high-quality WL280 RN-S SA precision load cells is extremely low.

Self-centering compact mounting units are used as mounting components because, in addition to their oscillation function and oscillation limitation, they are also fitted with anti-lift protection. The anti-lift protection can absorb a maximum vertical force of 4.2 kN. In the event of greater lifting forces (e.g. due to wind load), the container must be safeguarded with additional catastrophe protection.



Container on SIWAREX WL280 RN-S SA load cells and compact mounting units

Configurator for container weighing (basic configuration)

Item	Description	Article No.	Selection criterion	Number in example
1	SIWAREX WL280 RN-S SA, rated load 1 t (0.98 tn. l.), C3	7MH5113-4AD00	High-quality ring-torsion load cells with low structure height, ideal for container weighing.	4
2	Compact mounting unit for SIWAREX WL280 RN-S SA load cell, rated load 0.5 / 1 t (0.49 / 0.98 tn. l.) Material: Stainless steel	7MH5713-4AA00	Ensures anti-lift functionality in addition to the oscillation function with oscillation limitation. Incl. grounding cable for dissipation of unwanted electrical current.	4

Load Cells

Configuration examples

Configuration example 2

More information

Example 2: Container weighing

The combined center of gravity **S** of the suspended container lies below the level of the load cells.

It is mounted on 3 lugs, has an empty weight (dead load) of 1.2 t and a maximum capacity of 1.8 t. The container has a diameter of 1 m (3.3 ft). Weighing of the individual components produces a chemical reaction that raises the temperature of the container with contents from approx. 18 °C (64.4 °F) to approx. 55 °C (131 °F).

Selection of load cells and mounting components

We recommend using 3 SIWAREX WL280 RN-S SA load cells with a rated load of 2 t (1.97 tn. l.) (for determination of the rated load: please refer to introduction). Due to its low constructional height, the WL280 RN-S SA load cell was selected.

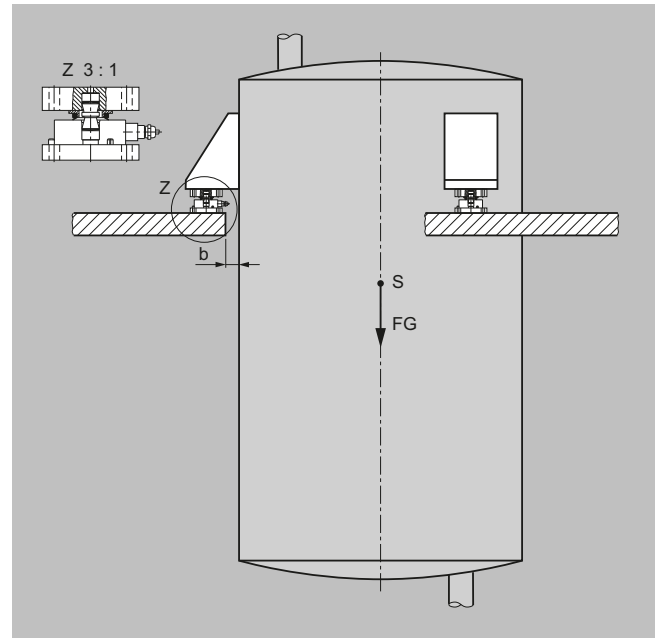
Self-centering self-aligning bearings are used as mounting components as the container is suspended and cannot lift up from the self-aligning bearing.

The 37 K temperature rise will cause the diameter of the container to increase by 0.4 mm (0.02 inch).

The self-aligning bearing permits a maximum oscillation path of ± 4 mm (0.16 inch) and is therefore able to accommodate the temperature expansion of the container.

An oscillation limitation is not necessary because there is a small gap of $b = 3$ mm (0.12 inch) between the container and the platform. In this case, the platform acts as an oscillation limitation.

For wider gaps in other applications, either compact mounting units have to be used (instead of the self-aligning bearings) or external pendulum limiters must be provided as an alternative.



Container weighing with SIWAREX WL280 RN-S SA load cells and self-aligning bearing

Configurator for container weighing (basic configuration)

Item	Description	Article No.	Selection criterion	Number in example
1	SIWAREX WL280 RN-S SA, rated load 2 t (1.97 tn. l.), C3	7MH5113-4GD00	High-quality ring-torsion load cells with low structure height, ideal for container weighing.	3
2	Self-aligning bearing base part for SIWAREX WL280 RN-S SA load cell, rated load 2 t (1.97 tn. l.) Material: Stainless steel	7MH4132-4AG11	Allows the load cells to follow temperature expansions without conducting disruptive reaction forces into the load cells.	3
3	Self-aligning bearing top part for SIWAREX WL280 RN-S SA load cell, rated load 2 t (1.97 tn. l.) Material: Stainless steel	7MH4132-4KK11		3
4	Grounding cable	7MH3701-1AA1	For diverting unwanted currents.	3

More information

Example 3: Mixer weighing

The combined center of gravity **S** of the suspended container lies below the level of the load cells.

It is supported on 3 lugs, has an empty weight (dead load) of 2.8 t (2.76 tn. l.) and a maximum capacity of 4.5 t (4.43 tn. l.). To improve mixing of the individual components, an agitator is mounted on the container, which also operates during the weighing process.

To improve mixing of the individual components, an agitator is mounted on the container which also operates during the weighing process.

Selection of load cells and mounting components

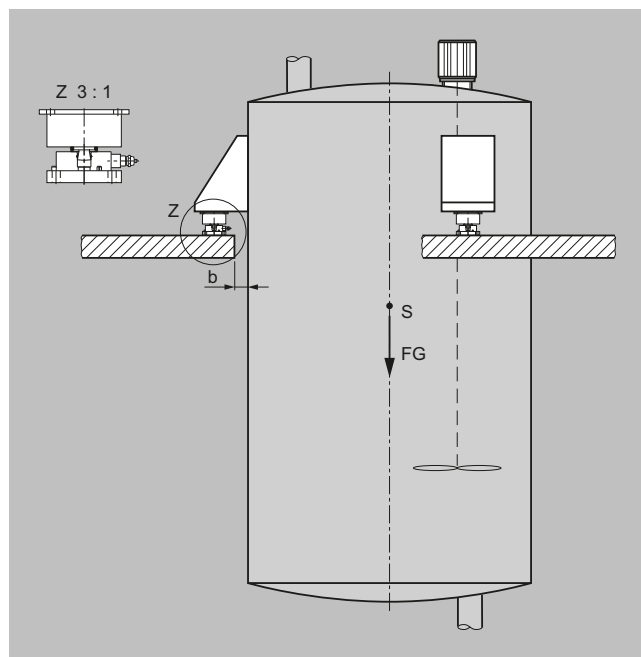
We recommend using 3 SIWAREX WL280 RN-S SA load cells with a rated load of 3.5 t (3.45 tn. l.) because the high-quality WL280 RN-S SA precision load cell has an extremely low constructional height (for determination of rated load, please refer to introduction).

Self-centering elastomer bearings are used as the mounting components to minimize the vibrations caused by the mixer.

The elastomer bearing permits a maximum oscillation path of ± 4 mm (0.16 inch).

An oscillation limitation is not necessary because there is a small gap of $b = 3$ mm (0.12 inch) between the container and the platform.

For wider gaps in other applications, endstops or external pendulum limiters must be provided.



Container with agitator on SIWAREX WL280 RN-S SA load cell and elastomer bearing

Mixed weighing processes configurator (basic configuration)

Item	Description	Article No.	Selection criterion	Number in example
1	SIWAREX WL280 RN-S SA, rated load 3.5 t, C3, without EEx	7MH5113-4LD00	High-quality ring-torsion load cells with low structure height, ideal for container weighing.	3
2	Self-aligning bearing base part for SIWAREX WL280 RN-S SA load cell, rated load 2 t (1.97 tn. l.) Material: Stainless steel	7MH4132-4AG11		3
3	Elastomer bearing for SIWAREX WL280 RN-S SA load cell, rated load 2 t (1.97 tn. l.) Material: neoprene and stainless steel	7MH4130-4KE11	Enables the damping of vibrations, thereby minimizing the influences on the load cells.	3
4	Grounding cable	7MH3701-1AA1	For diverting unwanted currents.	3