© Siemens AG 2014



3/2 Introduction

3/8 SIWAREX WL260 SP-S AA
3/8 Load cell

3/9 SIWAREX WL260 SP-S AB
3/9 Load cell

3/10 SIWAREX WL260 SP-S SA
3/10 Load cell

3/11 SIWAREX WL260 SP-S SB
3/11 Load cell

3/12 SIWAREX WL260 SP-S SC
3/12 Load cell

3/14 SIWAREX WL250 ST-S SA
3/14 Load cell

3/16 SIWAREX WL230 BB-S SA
3/16 Load cell
3/18 Base plate with overload protection
3/19 Elastomer bearing
3/20 Compact mounting unit

3/21 SIWAREX WL230 SB-S SA
3/21 Load cell
3/23 Compact mounting unit
3/24 Base plate and Elastomer bearing

3/26 SIWAREX WL270 CP-S SA
3/26 Load cell
3/28 Pressure piece set and adapter plates
3/29 Compact mounting unit

3/31 SIWAREX WL270 CP-S SB
3/31 Load cell
3/33 Pressure piece set
3/34 Compact mounting unit

3/35 SIWAREX WL270 K-S CA
3/35 Load cell
3/39 Self-aligning bearing

3/41 SIWAREX WL280 RN-S SA
3/41 Load cell
3/50 Self-aligning bearing
3/52 Elastomer bearing
3/54 Compact mounting unit
3/56 Guide element for compact mounting unit

3/57 SIWAREX R
3/57 Introduction
3/58 Platform and bending beam load cells
3/60 Shear beam load cells
3/62 Bending ring load cells
3/64 Compression load cells

3/66 Accessories
3/66 SIWAREX JB junction box with aluminium housing
3/68 SIWAREX JB junction box with stainless steel housing
3/69 SIWAREX EB extension box
3/71 Grounding cable

3/72 Configuration examples
3/72 Introduction
3/73 Configuration example 1
3/74 Configuration example 2
3/75 Configuration example 3

© Siemens AG 2014

Overview



Siemens offers two load cell series: SIWAREX R and SIWAREX WL200. Both series are equipped with strain gauges. They are used for static and dynamic weight measurements.

The different load cell series cover rated loads from 3 kg to 280 t.

The variety of modules available and their characteristics, including

- use of stainless steel to provide a high degree of corrosion protection (not with SIWAREX R series K, SIWAREX WL260 SP-S AA and SP-S AB)
- hermetically sealed housing for use even in harsh and aggressive environments (not with SIWAREX R series K)
- compact modules for easy installation

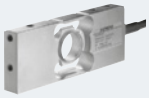
make SIWAREX load cells suitable for virtually all applications in industrial weighing, e.g. container and hopper scales, platform scales, vehicle scales, hybrid scales etc.

All series have been approved for use with Class III legal-for-trade commercial scales in accordance with EN 45501 and conform to OIML R60[1].

Load cells can also be supplied for other rated loads, higher accuracy, and/or with EEx (i) approval.

[1] This does not apply for SIWAREX R series K and SIWAREX WL270 CP-S SC. Approvals for the types SIWAREX WL230 BB-S SA 10 kg, SIWAREX WL230 SB-S SA 5t, SIWAREX WL260 SP-S AB and SIWAREX WL260 SP-S SA will be available soon.

© Siemens AG 2014

Type	**Platform**				
Possible applications	Small platform scales, small conveyor scales				
Example picture					
Series	WL260 SP-S AA			R, SP	WL260 SP-S AB
Rated load E_{max}	3, 5, 10 kg (6.61, 11.02, 22.05 lb)	20, 50 kg (44.09, 110.23 lb)	100 kg (220.46 lb)	6.12 kg (13.22, 26.45 lb)	50 ... 500 kg (110.23 ... 1 102.31 lb)
Accuracy class	C3[9)]			C3	C3[3)]
Max. load cell verification interval (n_{LC})	3 000			3 000	3 000
Min. load cell verification interval (V_{min})	E_{max}/15 000	E_{max}/7 500	E_{max}/12 000	E_{max}/12 000	E_{max}/10 000
Supply voltage (U_{sr})	5 ... 12 V			5 ... 15 V	5 ... 12 V
Rated characteristic value	2 mV/V			2 mV/V	2 mV/V
Degree of protection	IP65			IP66/IP68	IP65
Material	Aluminum		Aluminum	Stainless steel	Aluminum
Ex protection according to ATEX (optional)	-			[4)]	-

Type	**Platform**		
Possible applications	Platform scales, small conveyor scales		
Example picture			
Series	WL260 SP-S SA	WL260 SP-S SB	WL260 SP-S SC
Rated load E_{max}	5 ... 200 kg (11.02 ... 440.92 lb)	6 ... 60 kg (13.23 ... 132.28 lb)	10 ... 500 kg (22.05 ... 1 102.31 lb)
Accuracy class	C3[3)]	C3	C3, C3 MR, C4 MR
Max. load cell verification interval (n_{LC})	3 000	3 000	3 000
Min. load cell verification interval (V_{min})	E_{max}/9 000	E_{max}/15 000	E_{max}/10 000 at C3 E_{max}/20 000 at C3 MR E_{max}/40 000 at C4 MR
Supply voltage (U_{sr})	5 ... 12 V	5 ... 12 V	5 ... 12 V
Rated characteristic value	2 mV/V	2 mV/V	2 mV/V
Degree of protection	IP67	IP68	IP68, IP69K
Material	Stainless steel	Stainless steel	Stainless steel
Ex protection according to ATEX (optional)	II1 G EX IA IIC T4 II1 D EX IAD 20 T73GRAD C II 3G EX NL IIC T4	-	-

© Siemens AG 2014

Type	Bending beam			Shear beam		
Possible applications	Container, conveyor and platform scales			Container, conveyor, overhead rail and platform scales		
Example picture						
Series	WL230 BB-S SA		R, BB	WL230 SB-S SA		R, SB
Rated load E_{max}	10[1] ... 100 kg (22.05 ... 220.46 lb)	200 kg (440.92 lb) 500 kg (1 102.31 lb)	10 ... 350 kg (22.05 ... 771.62 lb)	500 kg (1 102.31 lb)	1 t (0.98 tn. L), 2 t (1.97 tn. L), 5 t (4.92 tn. L)[2]	0.5 ... 5 t (0.49 ... 4.92 tn. L)
Accuracy class	C3[7]		C3	C3		C3
Max. load cell verification interval (n_{LC})	3 000		3 000	3 000		3 000
Min. load cell verification interval (V_{min})	E_{max}/15 000	E_{max}/6 000	E_{max}/15 000	E_{max}/10 000	E_{max}/15 000	E_{max}/10 000
Supply voltage (U_{sr})	5 ... 10 V		5 ... 15 V	5 ... 12 V		5 ... 18 V
Rated characteristic value	2 mV/V		2 mV/V	2 mV/V		2 mV/V
Degree of protection	IP68		IP68	IP68	IP66/IP68	IP66/IP68
Material	Stainless steel		Stainless steel	Stainless steel		Stainless steel
Ex protection according to ATEX (optional)	[6]		[4]	[6]		[4]

Type	Bending ring			S-Type		
Possible applications	Container, conveyor and platform scales			Tension and pressure applications, suspended scales, tanks, container weighers, hybrid scales		
Example picture						
Series	R, RN			WL250 ST-S SA		
Rated load E_{max}	60 ... 280 kg (132.28 ... 617. 29 lb)	0.5 ... 10 t (0.49 ... 9.84 tn. L)	13 ... 60 t (12.79 ... 59.05 tn. L)	50 ... 100 kg (110.23 ... 220.46 lb)	0.25 ... 2.46 t (0.24 ... 59.05 tn. L)	5 ... 10 t (4.92 ... 9.84 tn. L)
Accuracy class	C3			C3		
Max. load cell verification interval (n_{LC})	3 000			3 000		
Min. load cell verification interval (V_{min})	E_{max}/17 500	E_{max}/10 000	E_{max}/17 500	E_{max}/7 000	E_{max}/10 000	E_{max}/12 000
Supply voltage (U_{sr})	5 ... 30 V			5 ... 12 V		
Rated characteristic value	1 mV/V	2 mV/V		3 mV/V		
Degree of protection	IP66/IP68			IP67		
Material	Stainless steel			Stainless steel		
Ex protection according to ATEX (optional)	[4]			[6]		

© Siemens AG 2014

Type	**Compression cell**				
Possible applications	Container, hopper and vehicle scales				
Example picture					
Series	WL270 CP-S SA	WL270 CP-S SB	WL270 K-S CA	R, CC	
Rated load E_{max}	2, 5, 10, 20, 30, 50 t (1.97, 4.42, 9.84, 19.68, 29.53, 49.21 tn. L)	100 t (98.42 tn. L)	2.8 … 500 t (2.76 … 492.10 tn. L.)	10 ... 60 t (9.84 ... 59.05 tn. L)	100 t (98.42 tn. L)
Accuracy class	C3[8)]		0.1 %	C3	C1
Max. load cell verification interval (n_{LC})	3 000	3 000	(not calibratable)	3 000	1 000
Min. load cell verification interval (V_{min})	E_{max}/10 000	E_{max}/12 000	(not calibratable)	E_{max}/12 500	E_{max}/10 000
Supply voltage (U_{sr})	5 ... 12 V	5 ... 12 V	6 ... 12 V	5 ... 25 V	
Rated characteristic value	2 mV/V	2 mV/V	1.5 mV/V	2 mV/V	2 mV/V
Degree of protection	IP68	IP68	IP65	IP66/IP68	
Material	Stainless steel	Stainless steel	Painted steel	Stainless steel	Stainless steel
Ex protection acc. to ATEX (optional)	[6)]		-	[5)]	

Type	**Compression cell (continued)**	**Ring-torsion load cell**		
Possible applications	Container, hopper and vehicle scales	Container, conveyor, platform and roller table scales		
Example picture				
Series	R, K	WL280 RN-S SA		
Rated load E_{max}	2.8 ... 280 t (2.75 ... 275.58 tn. L)	60 … 280 kg (132.28 … 1617.29 lb)	0.5 … 10 t (0.49 … 9.84 tn. L.)	13 … 60 t (12.80 … 59.05 tn. L)
Accuracy class	0.1 %	C3		
Max. load cell verification interval (n_{LC})	-	3 000		
Min. load cell verification interval (V_{min})	-	E_{max}/16 000	E_{max}/17 500	E_{max}/25 000
Supply voltage (U_{sr})	6 ... 12 V	5 ... 30 V		
Rated characteristic value	1.5 mV/V	1 mV/V	2 mV/V	2 mV/V
Degree of protection	IP65	IP66/IP68		
Material	Steel, painted	Stainless steel		
Ex protection acc. to ATEX (optional)	-	[4)]		

[1)] OIML type approval for type SIWAREX WL230 BB-S SA 10 kg (22.04 lb) available soon.
[2)] OIML type approval for type SIWAREX WL230 SB-S SA 5 t (4.92 tn. L) now available as well.
[3)] OIML type approval for type SIWAREX WL260 SP-S AB and SIWAREX WL260 SP-S SA available soon.
[4)] II 2 G EEx ib IIC T6/T4 II 3 G, EEx nA/nL IIC T6/T4, II 1D/2D/3D T 70 °C.
[5)] II 2 G EEx ib IIC T6/T4 II 3 G, EEx nA/nL IIC T6/T4, II 1D/2D/3D T 70 II 2 G EEx ib IIC T6/T4, II 3 G EEx nA /nL IIC T6/T4, II 1D / 2D / 3D T 70 °C.
[6)] II 1G Ex ia IIC T4 Ta= -20 °C ... +40 °C; II 3G Ex nL IIC T4 Ta= -20 °C ... +40 °C; II 1D Ex iaD 20 IP6x T 73 °C.
[7)] Accuracy class C4 with Y=15 000 is available on request.
[8)] 2 t and 5 t versions are not calibratable.
[9)] Accuracy class C4 with Y=20 000 is available on request.

© Siemens AG 2014

Design

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

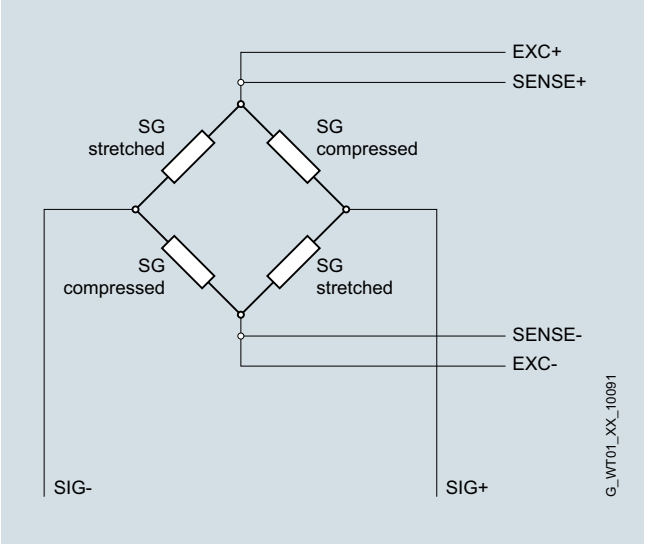
They work with different measuring principles. Siemens load cells in the SIWAREX WL200 and SIWAREX R series use so-called strain gauges. These are specially formed electrical conductors which are insulated by means of a suitable material. The strain gauges are attached to the basic element, a specially 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.

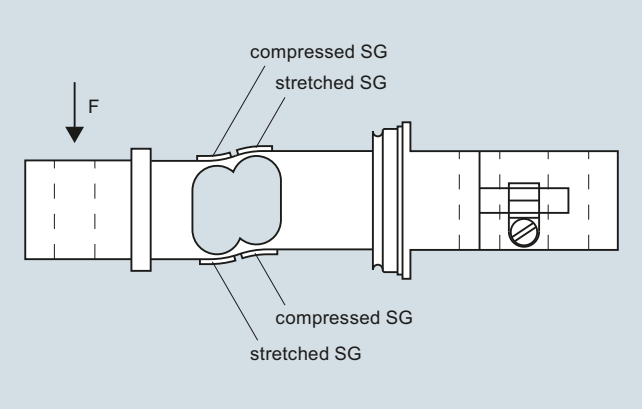
For each load cell, at least 4 strain gauges are connected together to form a complete Wheatstone bridge. The stretched or compressed strain gauges are connected so that the positive or negative resistance changes are added together to form a total imbalance in the bridge.

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 Wheatstone bridge



Principle of a bending load cell, unloaded and loaded

© Siemens AG 2014

SIEMENS

Questionnaire SIWAREX

Customer information

Contact: _____ E-mail: _____

Company: _____ Prepared by: _____

Address: _____ Date: _____

City: _____ Country: _____ Notes on application: _____

Zip/Postal Code: _____ Phone: ( ) _____ Fax: ( ) _____

Electronics

Application type

- ☐ Non Automatic Weighing Instrument
- ☐ Platform Scale
- ☐ Vessel/Silo/level measurement
- ☐ Truck scale
- ☐ Force measurement
  - Type of material: _____
- ☐ Truck/Wagon scale static
- ☐ Automatic filling/Big Bag scale
- ☐ Dosing scale
- ☐ Belt scale
- ☐ Checkweigher
- ☐ Solid flow meter
- ☐ Weighfeeder
- ☐ Loss in weight dosing scale

Requested features

- ☐ Basic weighing functions
- ☐ Recording of weighing sequence
- ☐ With Ex approval — Zone type/number: _____
- ☐ Error control and logging
- ☐ Preventive diagnostics
- ☐ Fast weight value processing
- ☐ Legal-for-trade

CPU integration

- ☐ SIMATIC S7-1200 directly
- ☐ SIMATIC S7-300 directly
- ☐ SIMATIC S7-300/400 with bus — Type: _____
- ☐ SIMATIC S7-1500
- ☐ SIMATIC PCS7 — Version: _____
- ☐ WINCC flex — Version: _____ Name: _____
- ☐ Other

SIWAREX Mechanic

Load cells

Total maximum weight: _____ Dead load : _____ Required precision: _____

Load cells quantity: _____ Number of support points: _____

- ☐ Vibration (Motor, Mixer, etc.)
- ☐ Guide elements required?
- ☐ Lift up protection
- ☐ Diagnostics
- ☐ High overload protection
- ☐ High measuring rate
- ☐ Ex Protection
- ☐ Stainless steel required ?

Special application requirements

- ☐ Pictures available
- ☐ Drawing available
- ☐ Retrofit of an old installation

This questionnaire is only a guideline. For special configurations refer to your Siemens contact person.

© Siemens AG

www.siemens.com/weighingtechnology

© Siemens AG 2014

Load Cells
SIWAREX WL260 SP-S AA

Load cell

Overview



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

3

Design

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

Technical specifications

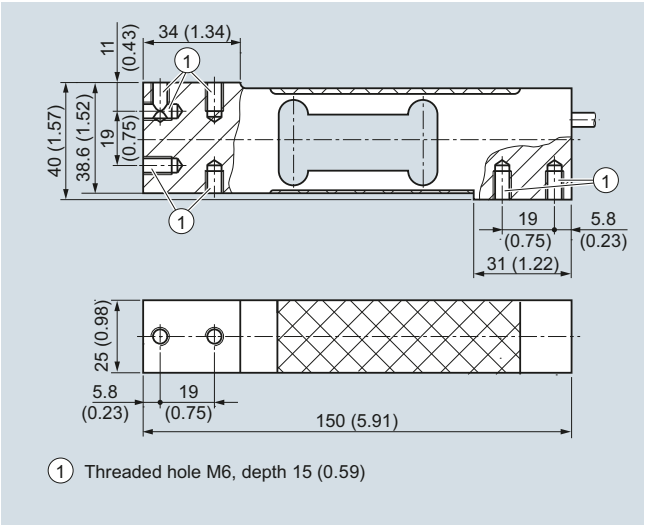
SIWAREX WL260 SP-S AA	
Possible applications	
	• Platform scales
	• Small conveyor scales
Type	Platform load cell
Loads	
Rated load $E_{max.}$	• 3 kg (6.61 lb)
	• 5 kg (11.02 lb)
	• 10 kg (22.05 lb)
	• 20 kg (44.09 lb)
	• 50 kg (110.23 lb)
	• 100 kg (220.46 lb)
Min. initial loading E_{min}	0 % E_{max}
Max. working load L_u	150 % E_{max}
Break load L_d	300 % E_{max}
Max. lateral load L_{lq}	100 % E_{max}
Measurement characteristic values	
Rated measuring path h_n at E_{max}	< 0.6 mm
Rated characteristic value C_n	2.0 ± 0.2 mV/V
Tolerance D0 of zero signal	< ± 2 % C_n
Max. scale interval n_{lc}	3 000
Min. scale interval V_{min}	
• E_{max} = 3, 5, 10 kg (6.61, 11.02, 22.05 lb)	E_{max}/12 000
• E_{max} = 20, 50 kg (44.0, 110.23 lb)	E_{max}/12 000
• E_{max} = 100 kg (220.46 lb)	E_{max}/12 000
Combined error F_{comb}	± 0.02 % C_n
Deviation F_v	± 0.017 % C_n
Creepage error F_{cr}	
30 min	± 0.02 % C_n
Electrical characteristic values	
Recommended reference voltage U_{ref}	DC 5 … 12 V
Input resistance R_e	409 Ω ± 6 Ω
Output resistance R_a	350 Ω ± 3 Ω

SIWAREX WL260 SP-S AA	
Insulation resistance R_{is}	5 000 MΩ at 50 V DC
Temperature coefficient	
• Zero signal T_{Ko}	0.017 % C_n/5 K
• Characteristic value T_{Kc}	0.014 % C_n/5 K
Connection and ambient conditions	
Sensor material (DIN)	Aluminum
Max. tightening torque of fixing screws	15 ... 20 Nm
Function	Color
• EXC + (supply +)	Red
• EXC – (supply -)	Black
• SIG + (measured signal +)	Green
• SIG – (measured signal -)	White
• Sense + (sensor line +)	Blue
• Sense - (sensor line -)	brown
• Shield	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 to DIN EN 60529; IEC 60529	IP65
Certificates and approvals	
Accuracy class according to OIML R60	C3

Selection and ordering data

	Article No.
Load cell type WL260 SP-S AA	**7MH5102-**
Legal-for-trade according to OIML R60 to 3 000d, connection cable 3 m (9.84 ft)	■ ■ **D 0 0**
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**

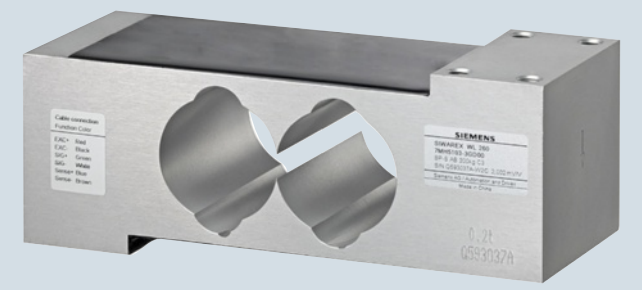
Dimensional drawings



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

© Siemens AG 2014

Overview



The load cell is suitable for small to medium platform scales with one load cell (max. platform size 600 x 600 mm (23.62 x 23.62 inch)) as well as for use in medium accuracy weighing machines of Class III with a max. verification interval n_{max} = 3 000 d.

Design

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

Technical specifications

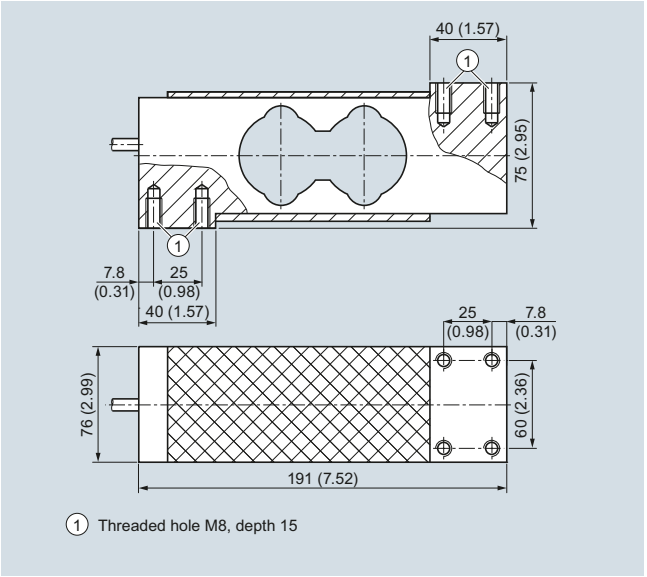
SIWAREX WL260 SP-S AB	
Possible applications	• Platform scales • Conveyor scales
Type	Platform load cell
Loads	
Rated load $E_{max.}$	• 50 kg (110.23 lb)
	• 75 kg (165.35 lb)
	• 100 kg (220.46 lb)
	• 150 kg (330.69 lb)
	• 200 kg (440.92 lb)
	• 300 kg (661.37 lb)
	• 500 kg (1 102.31 lb)
Min. initial loading E_{min}	0 % E_{max}
Max. working load L_u	150 % E_{max}
Break load L_d	300 % E_{max}
Max. lateral load AL_{lq}	100 % E_{max}
Measurement characteristic values	
Rated measuring path h_n at E_{max}	< 1.22 mm (0.05 inch)
Rated characteristic value C_n	2.0 ± 0.2 mV/V
Tolerance D0 of zero signal	< ± 2 % C_n
Max. scale interval n_{lc}	3 000
Min. scale interval V_{min}	E_{max}/10 000
Combined error F_{comb}	± 0.02 % C_n
Deviation F_v	± 0.017 % C_n
Creepage error F_{cr}	
30 min	± 0.02 % C_n
Temperature coefficient	
• Zero signal T_{Ko}	0.017 % C_n/5 K
• Characteristic value T_{Kc}	0.014 % C_n/5 K
Electrical characteristic values	
Recommended reference voltage U_{ref}	DC 5 … 12 V
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
Max. tightening torque of fixing screws	35 ... 40 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 to DIN EN 60529; IEC 60529	IP65
Connection cable	
Function	Color
• EXC + (supply +)	Red
• EXC – (supply -)	Black
• SIG + (measured signal +)	Green
• SIG – (measured signal -)	White
• Sense + (sensor line +)	Blue
• Sense - (sensor line -)	brown
• Shield	Transparent
Certificates and approvals	
Accuracy class according to OIML R60	C3[1]

[1] OIML type approval for SIWAREX WL260 SP-S AB available soon.

Selection and ordering data

	Article No.
Load cell type WL260 SP-S AB	**7MH5103-**
Connecting cable 3 m (9.84 ft)	■ ■ **D 0 0**
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 (1 102.31 lb)	**3 P**

Dimensional drawings



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

© Siemens AG 2014

Overview



The load cell is suitable for small to medium platform scales with one load cell (max. platform size 400 x 400 mm) as well as for use in medium accuracy weighing machines of Class III with a max. scale interval number n_{max} = 3 000d.

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

Design

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

Technical specifications

SIWAREX WL260 SP-S SA	
Possible applications	• Platform scales • Small conveyor scales
Type	Platform 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)
Min. initial loading E_{min}	0 % E_{max}
Max. working load L_u	150 % E_{max}
Break load L_d	300 % E_{max}
Max. lateral load L_{lq}	100 % E_{max}
Measurement characteristic values	
Rated measuring path 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 D0 of zero signal	< ± 1.0 % C_n
Max. scale interval n_{lc}	3 000
Min. scale interval V_{min}	E_{max}/9 000
Combined error F_{comb}	± 0.02 % C_n
Deviation F_v	± 0.017 % C_n
Creepage error F_{cr} 30 min	± 0.02 % C_n
Temperature coefficient	
• Zero signal T_{Ko}	0.017 % C_n/5 K
• Characteristic value T_{Kc}	0.014 % C_n/5 K
Electrical characteristic values	
Recommended reference voltage U_{ref}	DC 5 … 12 V
Input resistance R_e	383 Ω ± 6 Ω
Output resistance R_a	351 Ω ± 3 Ω
Insulation resistance R_{is}	5 000 MΩ at 50 V DC

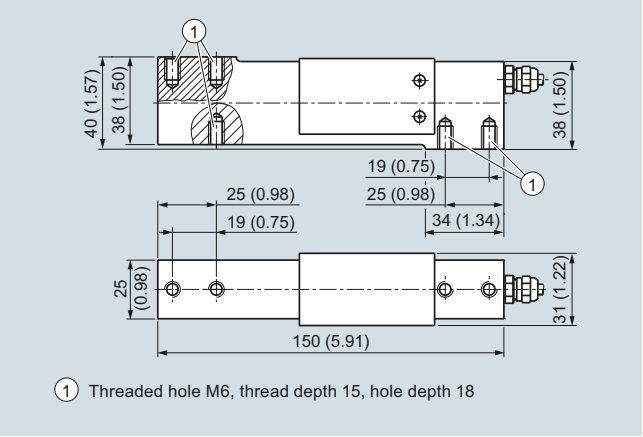
[1] OIML type approval for SIWAREX WL 260 SP-S SA available soon.

SIWAREX WL260 SP-S SA	
Connections/ambient conditions	
Sensor material (DIN)	Stainless steel
Max. torque fixing screws	
• E_{max} = 3, 5, 10, 20, 50, 100 kg (6.61, 11.02, 22.05, 44.09, 110.23, 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 to DIN EN 60529; IEC 60529	IP67
Function	Color
• EXC + (supply +)	Green
• EXC – (supply -)	Black
• SIG + (measured signal +)	White
• SIG – (measured signal -)	Red
• Sense + (sensor line +)	Blue
• Sense - (sensor line -)	Yellow
• Shield	Transparent
Certificates and approvals	
Accuracy class according to OIML R60	C3[1]

Selection and ordering data

	Article No.
Load cell type WL260 SP-S SA	**7MH5104-**
Legal-for-trade according to OIML R60 to 3 000d, connection cable 3 m (9.84 ft)	**D 0**
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 for zones 0, 1, 2, 20, 21, 22	**1**

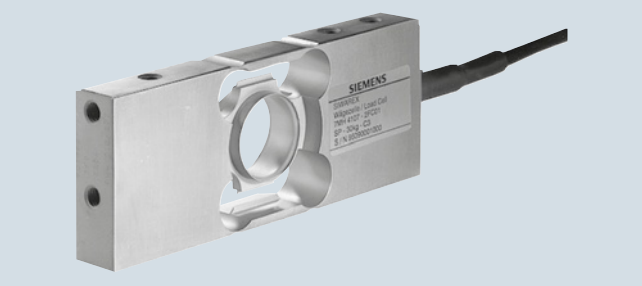
Dimensional drawings



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

© Siemens AG 2014

Overview



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

Design

The measuring element is made of stainless steel, hermetically sealed and has a calibrated output current. The load cell meets the IP68 degree of protection.

Technical specifications

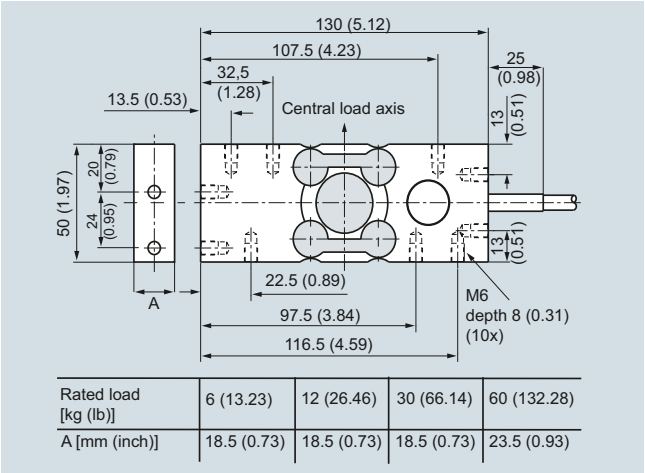
SIWAREX WL260 SP-S SB	
Possible applications	• Platform scales • Small conveyor scales
Type	Platform load cell
Loads	
Rated load E_{max}	• 6 kg (13.23 lb) • 12 kg (26.46 lb) • 30 kg (66.14 lb) • 60 kg (132.28 lb)
Min. initial loading E_{min}	0 % E_{max}
Max. working load L_u	150 % E_{max}
Break load L_d	300 % E_{max}
Max. lateral load L_{lq}	100 % E_{max}
Measurement characteristic values	
Rated measuring path h_n at	
• E_{max} = 6 kg (13.23 lb)	0.24 ± 0.02 mm (0.009 ± 0.0008 inch)
• E_{max} = 12 kg (26.46 lb)	0.19 ± 0.01 mm (0.008 ± 0.0004 inch)
• E_{max} = 30 kg (66.14 lb)	0.15 ± 0.01 mm (0.006 ± 0.0004 inch)
• E_{max} = 60 kg (123.28 lb)	0.22 ± 0.03 mm (0.009 ± 0.0011 inch)
Rated characteristic value C_n	2.0 ± 0.2 mV/V
Tolerance D0 of zero signal	< ± 2.0 % C_n
Max. scale interval n_{lc}	3 000
Min. scale interval V_{min} at	
• E_{max} = 6, 12, 30, 60 kg (13.23, 26.46, 66.14, 132.28 lb)	E_{max}/15 000
Combined error F_{comb}	≤ ± 0.02 % C_n
Deviation F_v	≤ ± 0.02 % C_n
Creepage error F_{cr}	
30 min	≤ ± 0.025 % C_n
Temperature coefficient	
• Zero signal T_{Ko}	0.009 % C_n/10 °C
• Characteristic value T_{Kc}	0.009 % C_n/10 °C

SIWAREX WL260 SP-S SB	
Electrical characteristic values	
Recommended reference voltage U_{ref}	DC 5 … 12 V
Input resistance R_e	400 Ω ± 20 Ω
Output resistance R_a	350 Ω ± 3.5 Ω
Insulation resistance R_{is}	5 000 MΩ at 50 V DC
Connections and ambient conditions	
Sensor material (DIN)	Stainless steel
Max. tightening torque of fixing screws	10 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 to DIN EN 60529; IEC 60529	IP68
Connection cable	
Function	Color
• EXC + (supply +)	Green
• EXC – (supply -)	Black
• SIG + (measured signal +)	White
• SIG – (measured signal -)	Red
• Sense + (sensor line +)	Yellow
• Sense - (sensor line -)	Blue
• Shield (not connected to housing)	Transparent
Certificates and approvals	
Accuracy class according to OIML R60	C3

Selection and ordering data

	Article No.
Load cell type WL260 SP-S SB	**7MH5117-**
Legal-for-trade according to OIML R60 to 3 000d, connection cable 6 m (19.69 ft)	■ ■ **D 0 0**
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**

Dimensional drawings



Rated load [kg (lb)]	6 (13.23)	12 (26.46)	30 (66.14)	60 (132.28)
A [mm (inch)]	18.5 (0.73)	18.5 (0.73)	18.5 (0.73)	23.5 (0.93)

SIWAREX WL260 SP-S SB, dimensions in mm (inch)

© Siemens AG 2014

Overview



The platform load cell SIWAREX WL260 SP-S SC is excellently suited for use in platform scales with dimensions up to and including 800 x 800 mm (31.50 x 31.50 inches). It is approved for use in Class III commercial scales with maximum divisions of n_{max} to 4 000d. An C4 MR variant with a Y = 40 000 is available for high-precision applications.

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

Design

The measuring element is made of stainless steel, hermetically sealed and has a calibrated output current.

Technical specifications

SIWAREX WL260 SP-S SC	
Possible applications	• Platform scales • Small conveyor scales
Type	Platform 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 (1 102.31 lb)
Min. initial loading E_{min}	0 % E_{max}
Max. working load L_u	150 % E_{max}
Break load L_d	300 % E_{max}
Max. lateral load L_{lq}	100 % E_{max}
Measurement characteristic values	
Rated measuring path s_{nom} at	
• 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 (1 102.31 lb)	0.19 mm (0.008 inch)
Rated characteristic value C_n	2.0 ± 0.2 mV/V
Tolerance D0 of zero signal	< ± 2.0 % C_n
Max. scale interval n_{lc}	3 000[2]

[1] Only with 10, 20 and 50 kg variants.
[2] Valid for accuracy class C3.

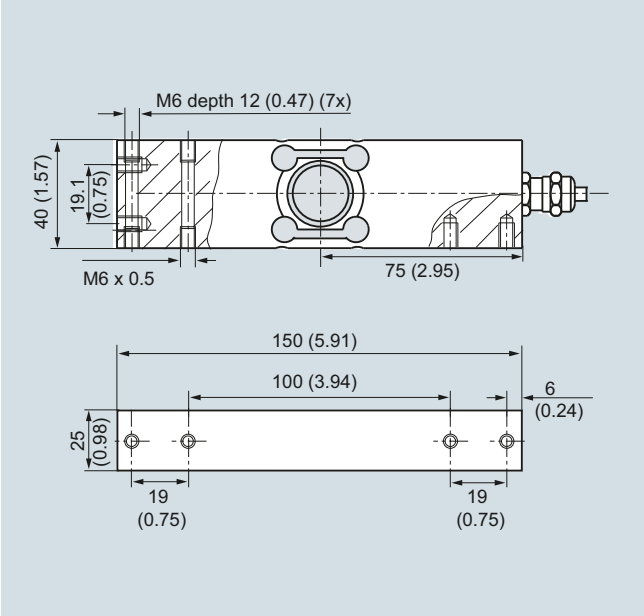
SIWAREX WL260 SP-S SC	
Min. scale interval V_{min} at	
• E_{max} = 10, 20, 50, 100, 200, 300, 400, 500 kg (22.05, 44.09, 110.23, 220.46, 440.92, 661.39, 881.85, 1 102.31 lb)	C3: E_{max}/10 000 C3 MR: E_{max}/20 000
• E_{max} = 10, 20, 50 kg (22.05, 44.09, 110.23 lb)	C4 MR: E_{max}/40 000
Combined error F_{comb}	≤ ± 0.02 % C_n
Deviation F_v	≤ ± 0.02 % C_n
Creepage error F_{cr}	
30 min	≤ ± 0.025 % C_n
Temperature coefficient	
• Zero signal T_{Ko}	0.014 % C_n/10 °C
• Characteristic value T_{Kc}	0.01 % C_n/10 °C
Electrical characteristic values	
Recommended reference voltage U_{ref}	DC 5 … 12 V
Input resistance R_e at	
• 10, 20, 50 kg (22.05, 44.09, 110.23 lb)	380 Ω ± 15 Ω
• 100, 200, 300, 400, 500 kg (220.46, 440.92, 661.39, 881.85, 1 102.31 lb)	350 Ω ± 3.5 Ω
Output resistance R_a	350 Ω ± 3.5 Ω
Insulation resistance R_{is}	5 000 MΩ at 50 V DC
Connections and ambient conditions	
Sensor material (DIN)	Stainless steel
Max. tightening torque of fixing screws at	
• 10, 20, 50 kg (22.05, 44.09, 110.23 lb)	10 Nm
• 100, 200, 300, 400, 500 kg (220.46, 440.92, 661.39, 881.85, 1 102.31 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 to DIN EN 60529; IEC 60529	IP68, IP69K
Connection cable	
Function	Color
• EXC + (supply +)	Red
• EXC – (supply -)	Black
• SIG + (measured signal +)	Green
• SIG – (measured signal -)	White
• Sense + (sensor line +)	Blue[1]
• Sense - (sensor line -)	Yellow[1]
• Shield (not connected to housing)	Transparent
Certificates and approvals	
Accuracy class according to OIML R60	C3

© Siemens AG 2014

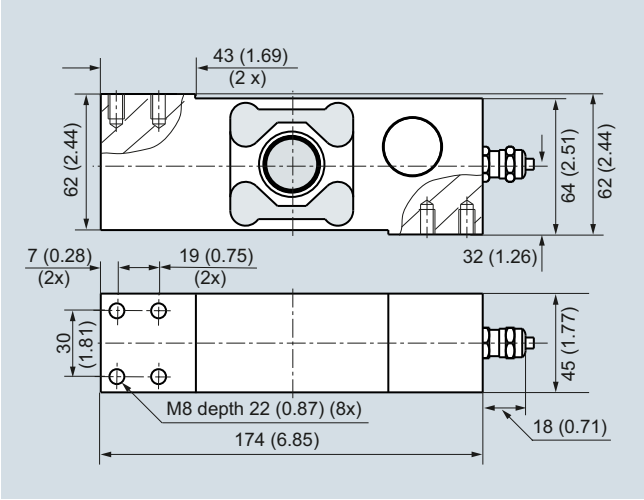
Selection and ordering data

	Article No.
Load cell type WL260 SP-S SC	**7MH5118 -**
Legal-for-trade according to OIML R60 to 3 000d, connection cable 3 m (9.84 ft)	■ ■ ■ ■ **0**
Rated load	
• 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 (1 102.31 lb)	**3 P D 0**
Options	
C3 MR	**D 5**
Legal-for-trade according to OIML R60 to 3 000d and $V_{min} = E_{max}/20\,000$	
C4 MR	**E 5**
Legal-for-trade according to OIML R60 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)	

Dimensional drawings



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



SIWAREX WL260 SP-S SC (100 … 500 kg (220.46 … 1 102.31 lb), dimensions in mm (inch)

© Siemens AG 2014

Overview



The load cell is ideal for use in tank weighing, hybrid scales 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 load cell is usable for pulling forces and pressure forces. The preferred measuring direction is pulling, i.e the load cell is calibrated ex factory for that direction. When employing the load cell to measure pressure the rated values and error limits stated in the technical specifications cannot be guaranteed.

Design

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

Technical specifications

SIWAREX WL250 ST-S SA	
Possible applications	• Tension and pressure applications • Suspended scales • Container scales • Hybrid scales
Type	S-Type
Loads	
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)
Min. initial loading E_{min}	0 % E_{max}
Max. working load L_u	150 % E_{max}
Break load L_d	300 % E_{max}
Max. lateral load L_{lq}	100 % E_{max}

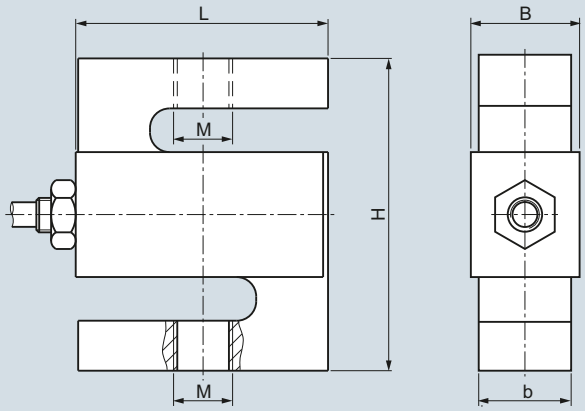
SIWAREX WL250 ST-S SA	
Measurement characteristic values	
Rated measuring path h_n at E_{max}	
• E_{max} = 50, 100 kg (110.23, 220.46 lb)	0.18 mm (0.01 inch)
• E_{max} = 250, 500 kg (551.16, 1 102.31 lb)	0.24 mm (0.01 inch)
• E_{max} = 1 t (0.98 tn. L.)	0.37 mm (0.01 inch)
• E_{max} = 2.5, 5 t (2.46, 4.92 tn. L.)	0.8 mm (0.03 inch)
• E_{max} = 10 t (9.84 tn. L.)	0.57 mm (0.02 inch)
Rated characteristic value C_n	3.0 ± 0.008 mV/V
Tolerance D0 of zero signal	< ± 1.0 % C_n
Max. scale interval n_{lc}	3 000
Min. scale interval V_{min}	
• E_{max} = 50, 100 kg (110.23, 220.46 lb)	E_{max}/7 000
• E_{max} = 0.25, 0.5, 1.2.5 t (0.25, 0.49, 0.98, 2.46 tn. L.)	E_{max}/10 000
• E_{max} = 5, 10 t (4.92, 9.84 tn. L.)	E_{max}/12 000
Combined error F_{comb}	± 0.02 % C_n
Deviation F_v	± 0.02 % C_n
Creepage error F_{cr}	
• 30 min	± 0.02 % C_n
Temperature coefficient	
• Zero signal T_{Ko}	0.017 % C_n/5 K
• Characteristic value T_{Kc}	0.014 % C_n/5 K
Electrical characteristic values	
Recommended reference voltage U_{ref}	DC 5 … 12 V
Input resistance R_e	430 Ω ± 4 Ω
Output resistance R_a	350 Ω ± 3.5 Ω
Insulation resistance R_{is}	5 000 MΩ at 50 V DC
Connection and ambient conditions	
Sensor material (DIN)	Stainless steel
Max. tightening torque of fixing screws	
• E_{max} = 3, 5, 10, 20, 50, 100 kg (6.61, 11.02, 22.05, 44.09, 110.23, 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}	-35 … +65 °C (-31 ... +149 °F)
Degree of protection to DIN EN 60529; IEC 60529	IP67
Connection cable	
Function	Color
• EXC + (supply +)	Red
• EXC – (supply -)	Black
• SIG + (measured signal +)	Green
• SIG – (measured signal -)	White
• Shield	Transparent
Certificates and approvals	
Accuracy class according to OIML R60	C3

© Siemens AG 2014

Selection and ordering data

	Article No.
Load cell type WL250 ST-S SA	**7MH5105-**
Legal-for-trade according to OIML R60 to 3 000d, connection cable 6 m (19.69 ft)	■ ■ **D 0** ■
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 for zones 0, 1, 2, 20, 21, 22	**1**

Dimensional drawings



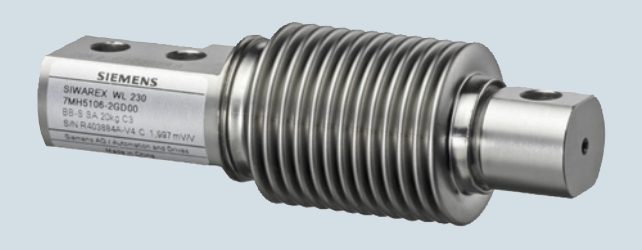
Rated load [kg]	L	H	b	B	M
50 … 100	50.8 (2.00)	60.96 (2.40)	11.68 (0.46)	15.06 (0.59)	M8
250 … 500	50.8 (2.00)	60.96 (2.40)	18.03 (0.71)	21.41 (0.84)	M12

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

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

© Siemens AG 2014

Overview



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

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.

Technical specifications

SIWAREX WL230 BB-S SA	
Possible applications	
	• Container scales
	• Conveyor scales
	• Platform scales
Type	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)
Min. initial loading E_{min}	0 % E_{max}
Max. working load L_u	150 % E_{max}
Break load L_d	300 % E_{max}
Safe lateral load L_{lq}	100 % E_{max}
Measurement characteristic values	
Rated measuring path h_n at E_{max}	0.3 mm (0.01 inch)
Rated characteristic value C_n	2.0 ± 0.02 % mV/V
Tolerance D_O of zero signal	< ± 1.0 % C_n
Max. scale interval n_{LC}	3 000[1)]
Min. scale interval V_{min}	E_{max}/15 000
Minimum application range $R_{min(LC)}$	20 %
Combined error F_{comb}	≤ 0.02 % C_n
Deviation F_v	≤ 0.017 % C_n

SIWAREX WL230 BB-S SA	
Creepage error F_{cr}	
• 30 min	≤ ± 0.02 % C_n
Temperature coefficient	
• Zero signal T_{Ko}	≤ ± 0.017 % C_n/5 K
• Characteristic value T_{Kc}	≤ ± 0.014 % C_n/5 K
Electrical characteristic values	
Recommended reference voltage U_{ref}	DC 5 ... 10 V
Input resistance R_e	460 Ω ± 50 Ω
Output resistance R_a	350 Ω ± 3.5 Ω
Insulation resistance R_{is}	5 000 MΩ at 50 V DC
SC current calibration	Standard
Connections and ambient conditions	
Sensor material (DIN)	Stainless steel
Max. tightening torque of fixing screws	
• E_{max} = 10, 20, 50.100, 200 kg (22.05, 44.09, 110.23, 220.46, 440.92 lb)	23 Nm[2)]
• E_{max} = 350, 500 kg (771.62, 1 102.31 lb)	70 Nm[2)]
Connection cable	
Function	Color
• EXC + (supply +)	Green
• EXC - (supply -)	Black
• SIG + (measured signal +)	White
• SIG - (measured signal -)	Red
• Shield	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 to DIN EN 60529; IEC 60529	IP68
Certificates and approvals	
Accuracy class according to OIML R60	C3

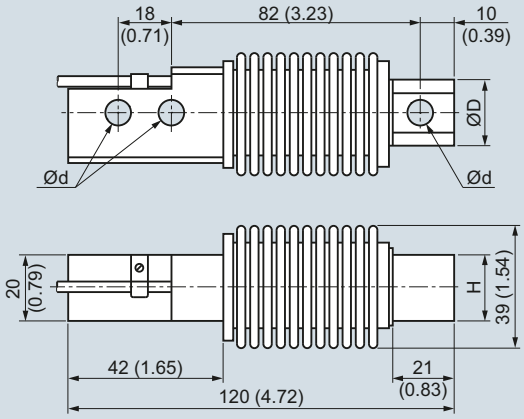
1) Higher accuracy class available on request.
2) The tightening torque is to be selected according to the strength class.

© Siemens AG 2014

Selection and ordering data

	Article No.				
Load cell type WL230 BB-S SA	**7MH5106-**				
Legal-for-trade according to OIML R60 to 3 000d, connection cable 3 m (9.84 ft)	■	■	**D**	**0**	■
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 (1 102.31 lb)	**3**	**P**			
Explosion protection					
Without					**0**
Explosion protection for zones 0, 1, 2, 20, 21, 22					**1**

Dimensional drawings



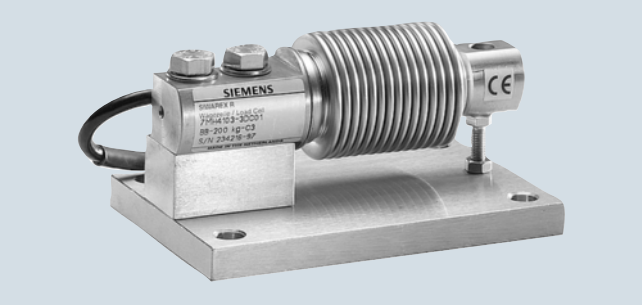
Rated load [kg]	Ød	ØD	H
10, 20, 50, 100, 200	8.2 (0.32)	23 (0.91)	20 (0.79)
350, 500	10.3 (0.41)	24 (0.95)	19 (0.75)

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

© Siemens AG 2014

Base plate with overload protection

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.

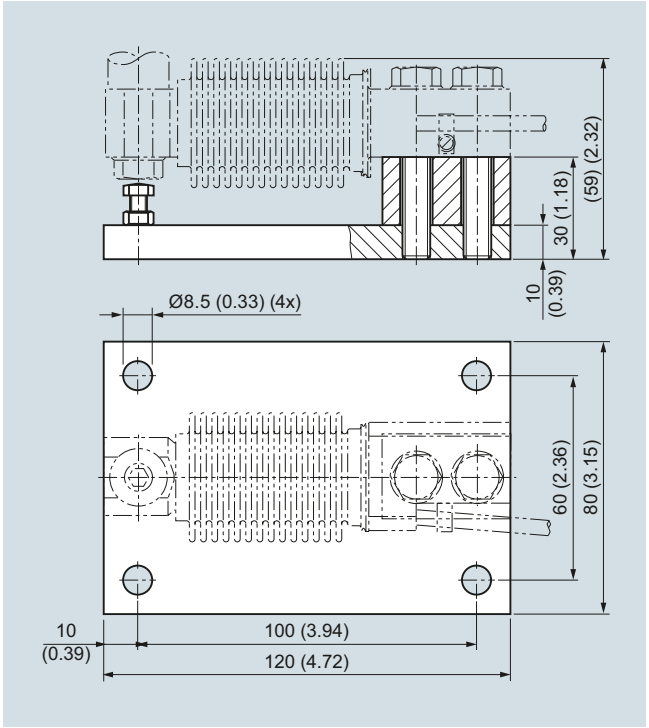
The load cells can be installed on the base plate and aligned even before final installation of the scales. This ensures that the permissible spring excursion of the load cell is precisely set, up to contact with the overload protection.

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 series SIWAREX WL230 BB-S SA	
Material: Stainless steel	
For load cells with a rated load of[1)2)]	
• 10 ... 200 kg (22.05 ... 440.92 lb)	**7MH4133-3DG11**
• 350 kg (771.62 lb), 500 kg (1 102.31 lb)	**7MH4133-3KG11**

Dimensional drawings



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

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.

© Siemens AG 2014

Overview



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

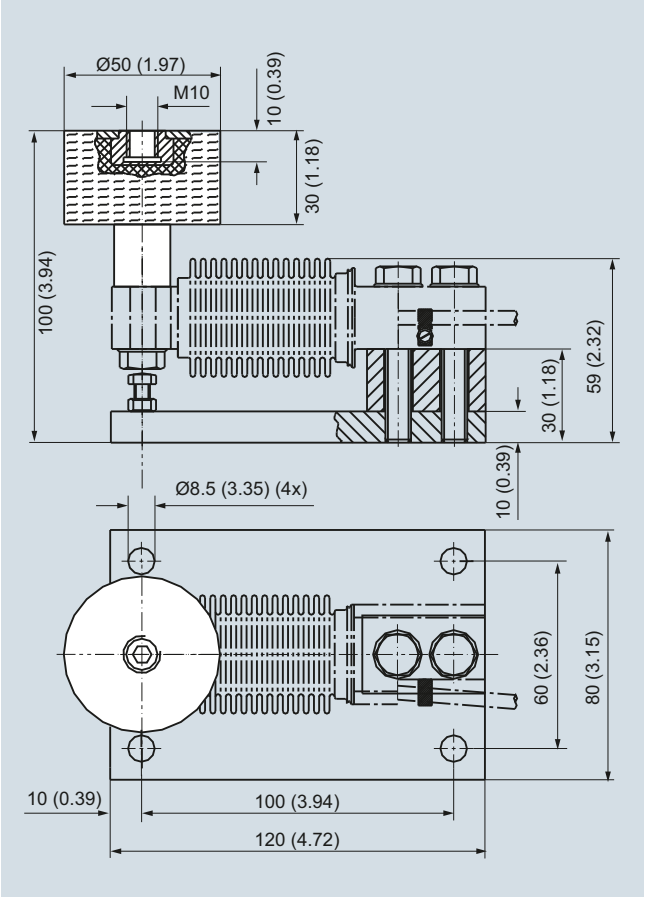
In combination with the base plate and integral overload protection, it is ensured that the load cell is not damaged by static overloading with vertical forces of up to 5 kN.

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 bearing	
For load cells of series SIWAREX WL230 BB-S SA	
Material: Stainless steel	
For load cells with a rated load of[1)2)]	
• 10 ... 50 kg (22.05 ... 110.23 lb)	**7MH4133-2KE11**
• 100 ... 200 kg (220.46 ... 440.92 lb)	**7MH4133-3DE11**
• 500 kg (1 102.31 lb)	On request

Dimensional drawings



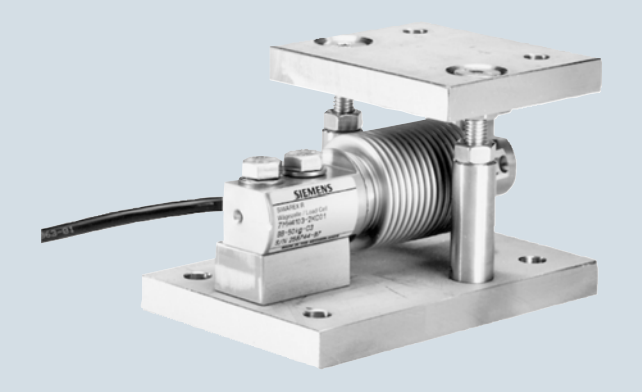
Elastomer bearings for load cells SIWAREX WL230 BB S SA, 10 kg … 200 kg (22.05 … 440.92 lb), dimensions in mm (inch)

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.

© Siemens AG 2014

Compact mounting unit

Overview



The self-aligning compact mounting 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 compact mounting unit comprises a base plate and a top plate, a self-aligning bolt, two countersunk screws and overload protection.

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 compact 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 with the self-aligning bolt into the compact mounting unit. Then the complete unit is installed in the scales. As the 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 undoing two hex 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 compact mounting unit permits sideways displacement of the top plate, and hence of the load bearing implement, by up to 1.5 mm (0.06 in.).

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

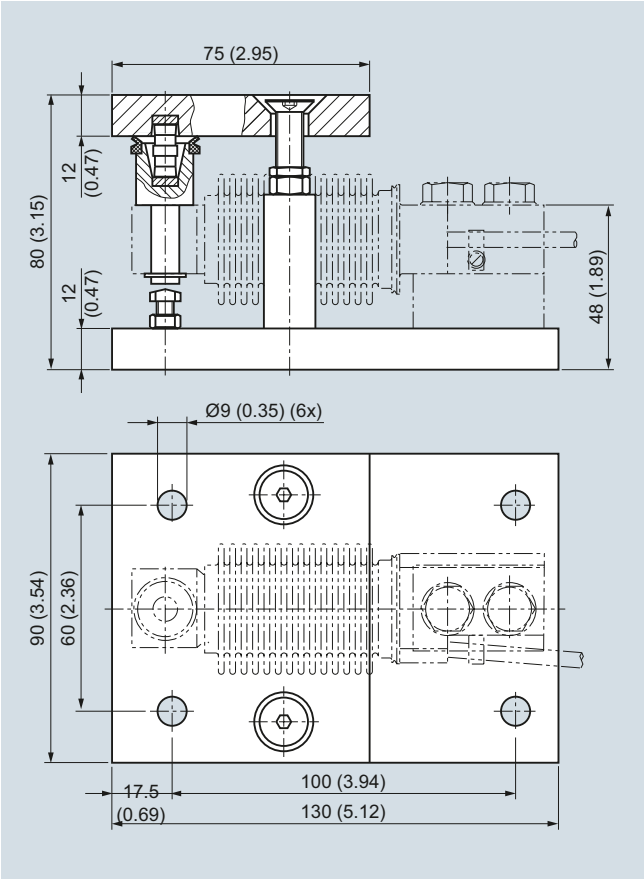
Technical specifications

Compact mounting unit for load cells SIWAREX WL230 BB-S SA		
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)	± 2.5 mm (0.10 inch)
Lifting path of the top plate	2 ... 2.5 mm (0.08 ... 0.10 inch)	3 ... 3.5 mm (0.12 ... 0.14 inch)
Max. lateral force	1.7 kN	2.5 kN
Max. lifting force	2.5 kN	2.5 kN

Selection and ordering data

	Article No.
Compact mounting unit For load cells of series SIWAREX WL230 BB-S SA Material: Stainless steel For load cells with a rated load of[1)2)] 10 ... 200 kg (22.05 ... 440.92 lb)	**7MH4133-3DC11**

Dimensional drawings



Compact mounting unit for load cells SIWAREX WL230 BB-S SA, dimensions in mm (inch)

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.

© Siemens AG 2014

Overview



The shear beam load cell is particularly suitable for implementation in container, overhead rail conveyor and platform scales.

Design

The measuring element is a shear tension spring made of stainless steel to which 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.

Technical specifications

SIWAREX WL230 SB-S SA	
Possible applications	• Container scales • Conveyor scales • Overhead rail scales • Platform scales
Type	Shear beam load cell
Loads	
Rated load E_{max}	• 0.5 t (0.49 tn. L.) • 1 t (0.98 tn. L.) • 2 t (1.97 tn. L.) • 5 t (4.92 tn. L.)
Min. initial loading E_{min}	0 % E_{max}
Max. working load L_u	150 % E_{max}
Break load L_d	300 % E_{max}
Max. lateral load L_{lq}	100 % E_{max}
Measurement characteristic values	
Rated measuring path h_n at E_{max}	
• E_{max} = 0.5 t (0.49 tn. L.)	0.13 mm (0.005 inch)
• E_{max} = 1 t (0.98 tn. L.)	0.21 mm (0.008 inch)
• E_{max} = 2 t (1.97 tn. L.)	0.29 mm (0.011 inch)
• E_{max} = 5 t (4.92 tn. L.)	0.38 mm (0.014 inch)
Rated characteristic value C_n	2.0 ± 0.02 % mV/V
Tolerance D_O of zero signal	≤ ± 1.0 % C_n
Max. scale interval n_{LC}	3 000
Min. scale interval V_{min}	
• E_{max} = 0.5 t (0.49 tn. L.)	E_{max}/10 000
• E_{max} = 1, 2, 5 t (0.98, 1.97, 4.92 tn. L.)[1)]	E_{max}/15 000

SIWAREX WL230 SB-S SA	
Minimum application range $R_{min(LC)}$	
• E_{max} = 0.5 t (0.49 tn. L.)	30 %
• E_{max} = 1, 2, 5 t (0.98, 1.97, 4.92 tn. L.)	20 %
Combined error F_{comb}	± 0.02 % C_n
Deviation F_v	± 0.02 % C_n
Creepage error F_{cr}	
• 30 min	≤ ± 0.02 % C_n
Temperature coefficient	
• Zero signal T_{Ko}	≤ ± 0.023 % C_n/5 K
• Characteristic value T_{Kc}	≤ ± 0.017 % C_n/5 K
Electrical characteristic values	
Recommended reference voltage U_{ref}	DC 5 ... 12 V
Input resistance R_e	1 000 Ω ± 10 Ω
Output resistance R_a	1 004 Ω ± 5 Ω
Insulation resistance R_{is}	5 000 MΩ at 50 V DC
Connections and ambient conditions	
Sensor material (DIN)	Stainless steel
Max. tightening torque of fixing screws	
• E_{max} = 0.5, 1, 2 t	150 Nm[2)]
• E_{max} = 5 t	550 Nm[2)]
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 to DIN EN 60529; IEC 60529	IP68
Connection	
Function	Color
• EXC + (supply +)	Green
• EXC - (supply -)	Black
• SIG + (measured signal +)	White
• SIG - (measured signal -)	Red
• Shield	Transparent
Certificates and approvals	
Accuracy class according to OIML R60	C3[1)]

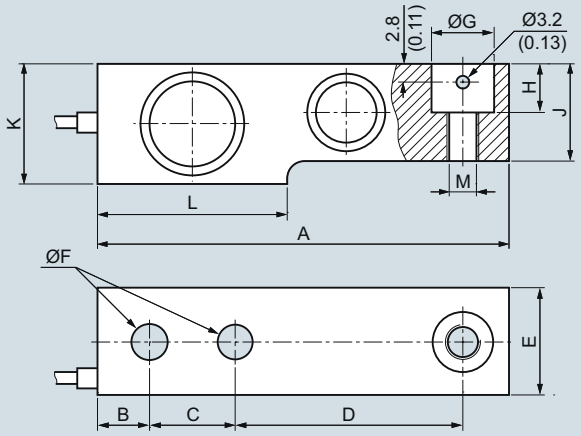
1) OIML type approval for SIWAREX WL230 SB-S SA 5 t available soon.
2) The tightening torque is to be selected according to the strength class.

© Siemens AG 2014

Selection and ordering data

	Article No.
Load cell type WL230 SB-S SA	**7MH5107-**
Legal-for-trade according to OIML R60 to 3 000d, connection cable 3 m (9.84 ft) at 500 kg (1 102.31 lb) to 1 t (0.98 tn. L.), connection cable 6 m (19.68 ft) at 2 t (1.97 tn. L.) to 5 t (4.92 tn. L.)	■ ■ **D 0** ■
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 for zones 0, 1, 2, 20, 21, 22	**1**

Dimensional drawings



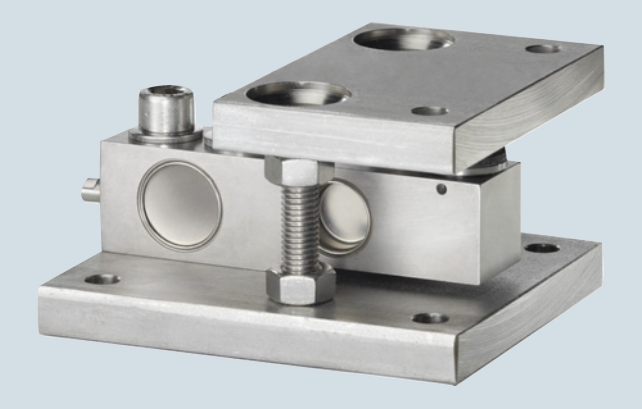
Rated load [t]	A	B	C	D	E	ØF
0.5	130 (5.12)	16 (0.63)	25.4 (1.00)	76 (2.99)	32 (1.26)	13 (0.51)
1	130 (5.12)	16 (0.63)	25.4 (1.00)	76 (2.99)	32 (1.26)	13 (0.51)
2	130 (5.12)	16 (0.63)	25.4 (1.00)	76 (2.99)	32 (1.26)	13 (0.51)
5	172 (6.77)	19 (0.63)	38.1 (1.50)	95 (3.74)	38 (1.50)	20.5 (0.81)

Rated load [t]	ØG	H	J	K	L	M
0.5	20.5 (0.81)	14 (0.55)	26 (1.02)	32 (1.26)	57 (2.24)	M12
1	20.5 (0.81)	14 (0.55)	28 (1.10)	32 (1.26)	57 (2.24)	M12
2	20.5 (0.81)	14 (0.55)	32 (1.26)	36 (1.42)	57 (2.24)	M12
5	30.2 (1.89)	20 (0.79)	40 (1.57)	44 (1.73)	76 (2.99)	M20

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

© Siemens AG 2014

Overview



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

Design

The compact mounting unit comprises a base plate and a top plate, a self-aligning bolt and two countersunk screws.

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 compact 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 with the self-aligning bolt into the compact mounting unit. Then the complete unit is installed in the scales. As the 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 undoing two hex 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 compact mounting unit permits sideways displacement of the top plate, and hence of the load bearing implement, by up to three millimeters.

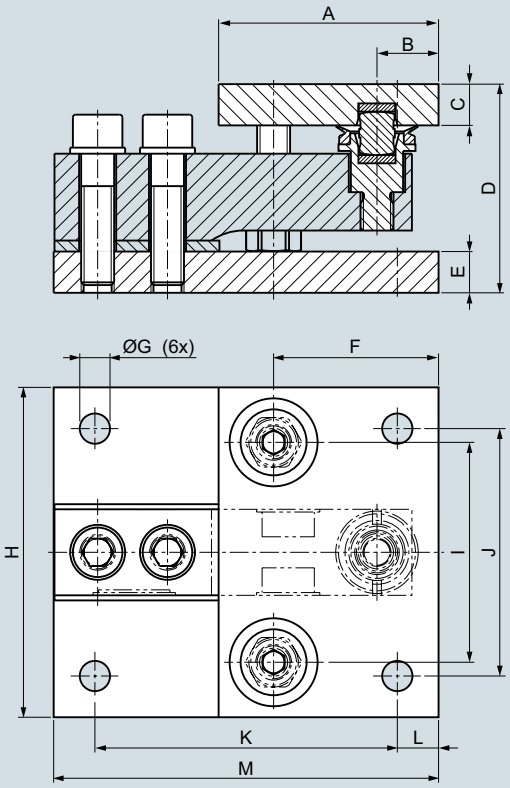
Technical specifications

Compact mounting unit for load cells of type SIWAREX WL230 SB-S SA		
Rated load	0.5, 1, 2 t (0.49, 0.98, 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)
Return force per mm lateral deflection of top plate, in percent of load applied to load cell	13 %/mm	10 %/mm
Permissible support load with anchored top plate	25 kN	35 kN
Permissible lifting force at top plate	25 kN	50 kN
Permissible lateral force at top plate when top plate is anchored	3 kN	5 kN

Selection and ordering data

	Article No.
Compact mounting unit	**7MH5707-**
For load cells of series SIWAREX WL230 SB-S SA	**4 ■ A 0 0**
Material: Stainless steel	
For load cells with a rated load of:[1)2)]	
• 500 kg (1 102.31 lb), 1 t (0.98 tn. L.)	**A**
• 2 t (1.97 tn. L.)	**G**
• 5 t (4.92 tn. L.)	**P**

Dimensional drawings



Rated load [t]	A	B	C	D	E	F
0,5 ... 2	80 (3.15)	22.4 (0.88)	15 (0.59)	76 (2.99)	15 (0.59)	60 (2.36)
5	105 (4.13)	31.6 (1.24)	20 (0.79)	108 (4.25)	25 (0.98)	80 (3.15)

Rated load [t]	ØG	H	I	J	K	L	M	s
0,5 ... 2	11 (4.33)	120 (4.72)	80 (3.14)	90 (3.54)	110 (4.33)	15 (0.59)	140 (5.51)	3 (0.12)
5	13.5 (0.53)	150 (5.91)	100 (3.94)	110 (4.33)	145 (5.71)	20 (0.79)	185 (7.28)	3 (0.12)

Compact mounting unit for load cells SIWAREX WL230 SB-S SA, dimensions in mm (inch)

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.

© Siemens AG 2014

Base plate and 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 series SIWAREX WL230 SB-S SA	**4** ■ ■ **0 0**
Material: Stainless steel	
For load cells with a rated load of:[1)2)]	
• 500 kg (1 102.31 lb), 1 t (0.98 tn. L.)	**A B**
• 2 t (1.97 tn. L.)	**G B**
• 5 t (4.92 tn. L.)	**P B**
Elastomer bearing	
For load cells of series SIWAREX WL230 SB-S SA	
Material: neoprene, stainless steel	
For load cells with a rated load of:[1)2)]	
• 500 kg (1 102.31 lb), 1 t (0.98 tn. L.)	**A C**
• 2 t (1.97 tn. L.)	**G C**
• 5 t (4.92 tn. L.)	**P C**

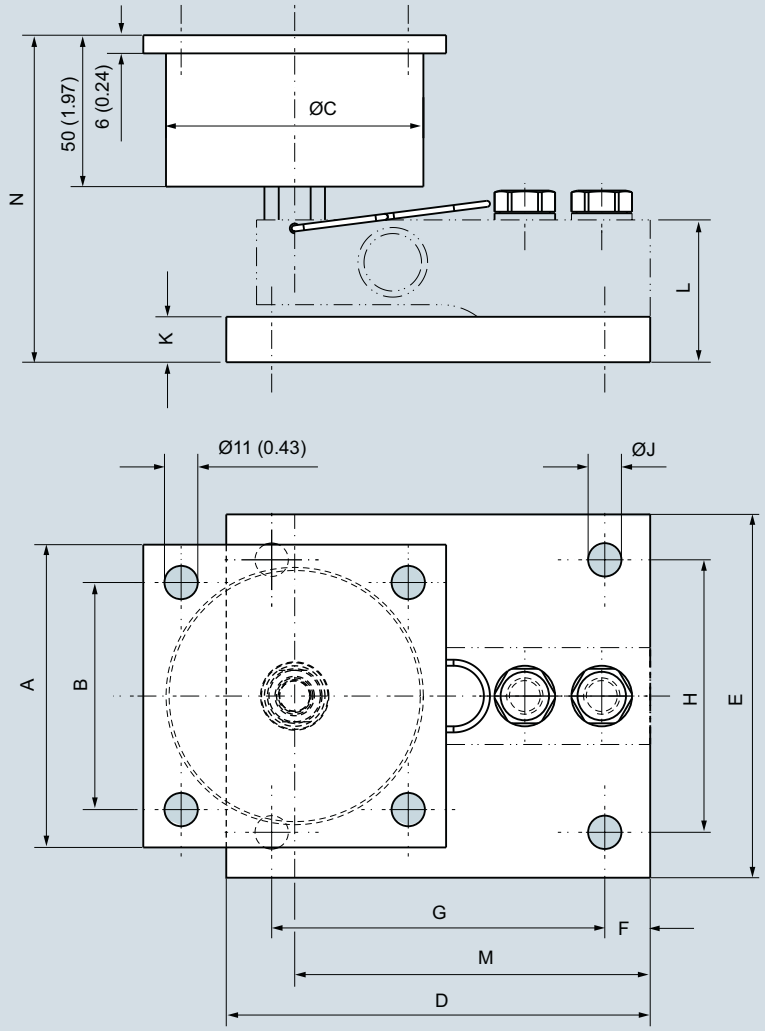
Technical specifications

Base plate and the elastomer bearing for load cells of type SIWAREX WL230 SB-S SA				
Rated load	500 kg (0.49 tn. L)	1 t (0.98 tn. L)	2 t (1.97 tn. L)	5 t (4.92 tn. L)
Maximum permitted lateral deflection	± 4 mm (0.16 in)	± 4 mm (0.16 in)	± 4 mm (0.16 in)	± 4 mm (0.16 in)
Vertical stiffness	5.9 kN/mm	5.9 kN/mm	29.98 kN/mm	29,98 kN/mm
Horizontal stiffness	0.16 kN/mm	0.16 kN/mm	0.54 kN/mm	0.54 kN/mm
Deflection at rated load	0.68 mm (0.037 in)	1.28 mm (0.050 in)	0.62 mm (0.024 in)	1.46 mm (0.057 in)

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.

© Siemens AG 2014

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	I	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)	108 (4.25)
2	90 (3.54)	11 (0.43)	15 (0.59)	51 (2.01)	117,4 (4.62)	112 (4.41)	112 (4.41)
5	110 (4.33)	13,5 (0.53)	25 (0.98)	69 (2.72)	153,1 (6.03)	134 (5.28)	134 (5.28)

Base plate and Elastomer bearings for load cells SIWAREX WL230 SB-S SA, dimensions in mm (inch)

© Siemens AG 2014

Overview



The compression load cell is particularly suitable for implementation in container, hopper 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.

Technical specifications

SIWAREX WL270 CP-S SA	
Possible applications	• Container scales • Overhead rail scales • Vehicle scales
Type	Compression load cell
Loads	
Rated load E_{max}	• 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.)
Min. initial loading E_{min}	0 % E_{max}
Max. working load L_u	150 % E_{max}
Break load L_d	300 % E_{max}
Max. lateral load L_{lq}	75 % E_{max}
Measurement characteristic values	
Rated measuring path h_n at E_{max}	0.5 mm (0.02 inch)
Rated characteristic value C_n	2.0 ± 0.02 % mV/V
Tolerance D_O of zero signal	≤ ± 1.0 % C_n
Max. scale interval n_{LC}	3 000
Min. scale interval V_{min}	
E_{max} = 2, 5, 10, 20, 50 t (1.97, 4.92, 9.84, 19.68, 49.21 tn. L.)	E_{max}/10 000

SIWAREX WL270 CP-S SA	
Minimum application range $R_{min(LC)}$	30 %
Combined error F_{comb}	± 0.02 % C_n
Creepage error F_{cr}	
• 30 min	≤ ± 0.023 % C_n
Temperature coefficient	
• Zero signal T_{Ko}	≤ ± 0.023 % C_n/5 K
• Characteristic value T_{Kc}	≤ ± 0.017 % C_n/5 K
Electrical characteristic values	
Recommended reference voltage U_{ref}	DC 5 ... 12 V
Input resistance R_e	700 Ω ± 7 Ω
Output resistance R_a	700 Ω ± 7 Ω
Insulation resistance R_{is}	5 000 MΩ 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}	-35 ... +65 °C (-31 ... +149 °F)
Degree of protection to DIN EN 60529; IEC 60529	IP68
Sensor material (DIN)	Stainless steel
Connection	
Function	Color
• EXC + (supply +)	Red
• EXC - (supply -)	Black
• SIG + (measured signal +)	Green
• SIG - (measured signal -)	White
• Shield	Transparent
Certificates and approvals	
Accuracy class according to OIML R60	C3[1]

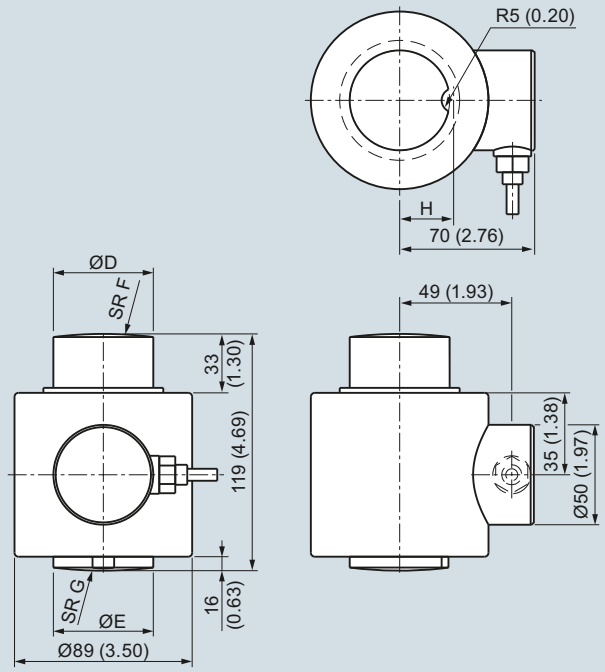
Selection and ordering data

	Article No.				
Load cell type WL270 CP-S SA	**7MH5108-**				
Legal-for-trade according to OIML R60 to 3 000d, connection cable 15 m (49.21 ft)	■	■	**D**	**0**	■
Rated load					
• 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 for zones 0, 1, 2, 20, 21, 22[2]					**1**

1) SIWAREX WL270 CP-S SA 2 t and 5 t are not released for „legal-for-trade“ applications.
2) SIWAREX WL270 CP-S SA 2 t and 5 t are not available in explosion-protected versions.

© Siemens AG 2014

Dimensional drawings



Rated load [t]	ØD	ØE	F	G	H
2, 5, 10, 20, 30	40 (1.57)	40 (1.57)	38 (1.50)	150 (5.91)	22 (8.67)
50	50 (1.97)	50 (1.97)	200 (7.87)	200 (7.87)	27 (1.06)

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

© Siemens AG 2014

Pressure piece set and adapter plates

Overview



In combination with a pressure piece set and adapter plate the SIWAREX WL270 CP-S SA produces a self-centering self-aligning bearing. This unit is particularly suitable for installation in container, hopper 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 round off the unit into a self-aligning bearing. The adapter plates can be bolted by means of the existing holes directly to the load bearing implement.

The self-centering, self-aligning bearing thus formed allows the load bearing implement 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 lateral direction, measures for restricting sideways play must be provided in the construction of the load bearing implement (e.g. stops or guide elements). 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 adapter plate package item consists of one unit.

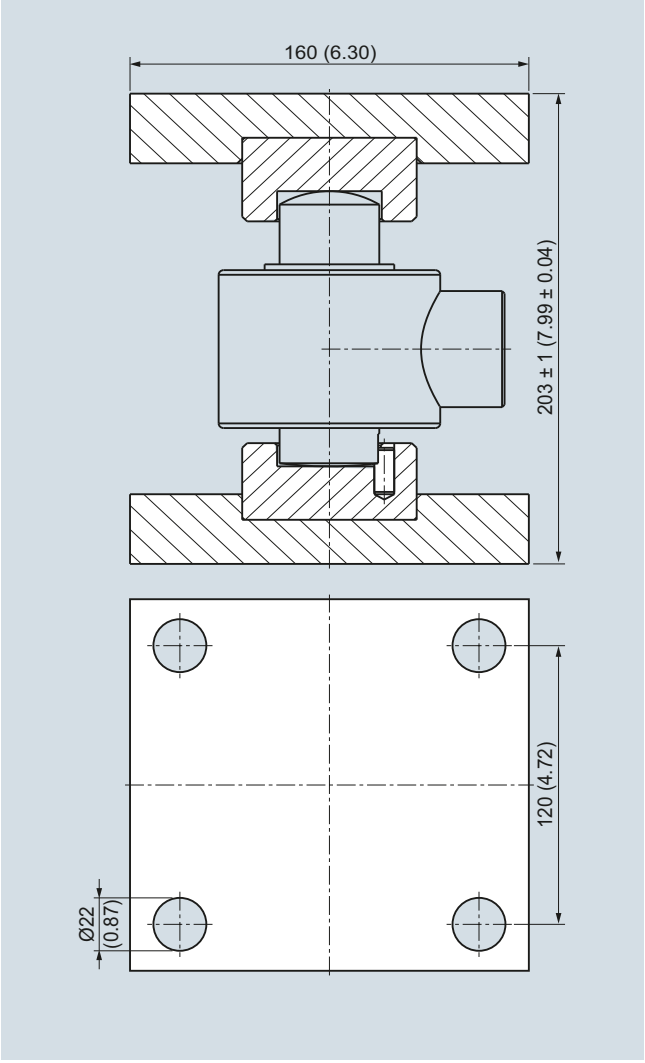
Technical specifications

Pressure piece set and adapter plate		
Rated load	2, 5, 10, 20, 30 t (1.97, 4.42, 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)
Return force per mm lateral deflection of top plate, in percent of load applied to load cell	0.5 %/mm	2 %/mm

Selection and ordering data

	Article No.
Pressure piece set[1]	**7MH5708-**
For individual installation of load cells of series SIWAREX WL270 CP-S SA	**5 ■ D 0 0**
Material: Stainless steel	
For load cells with a rated load of:[2)3)]	
• 2, 5, 10, 20, 30 t (1.97, 4.42, 9.84, 19.68, 29.53 tn. L.)	**K**
• 50 t (49.21 tn. L.)	**P**
Adapter plate	**7MH5708-**
Adapter for SIWAREX WL270 CP-S SA The package includes one plate.	**5 ■ B 0 0**
Material: Stainless steel	
For load cells with a rated load of:[2)3)]	
2 … 50 t (1.97 … 49.21 tn. L.)	**P**

Dimensional drawings

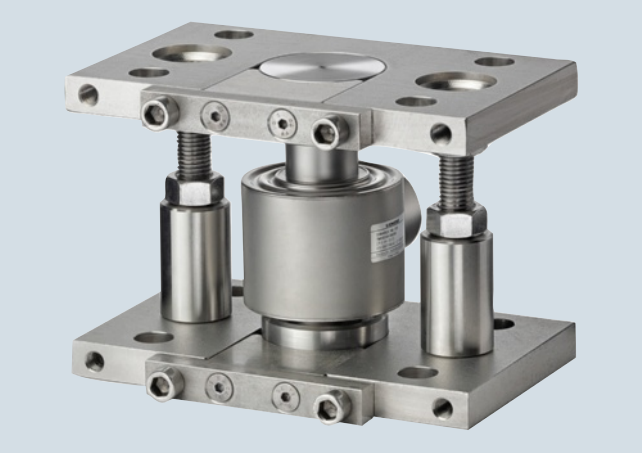


Pressure piece set and adapter plates for load cells SIWAREX WL270 CP-S SA (mounting condition), dimensions in mm (inch), valid for all load classes

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.

© Siemens AG 2014

Overview



The self-aligning compact mounting unit for SIWAREX WL270 CP-S SA load cells is particularly suitable for implementation in container, platform, vehicle and roller table scales.

Design

The compact mounting unit comprises a base plate and a top plate, two pressure pieces, two clamping pieces and two countersunk screws. 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 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.

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 compact 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 compact mounting unit. Then the complete unit is installed in the scales. As the 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 undoing two hex 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 compact 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 screws prevent the load bearing implement from being lifted off or toppling off.

Using the compact mounting unit as an installation aid results in optimum alignment of the load cells. This is essential for 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 screwing up the hex nuts. Replacement of the load cell is then easy after the clamping pieces are released.

Technical specifications

Compact mounting unit for load cells SIWAREX WL270 CP-S SA		
Rated load	2, 5, 10, 20, 30 t (1.97, 4.42, 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)
Return force per mm lateral deflection of top plate, in percent of load applied to load cell	0.5 %/mm	2 %/mm
Permissible support load with anchored top plate	70 kN	70 kN
Permissible lifting force at top plate	70 kN	70 kN
Permissible lateral force at top plate when top plate is anchored	30 kN	30 kN

Selection and ordering data

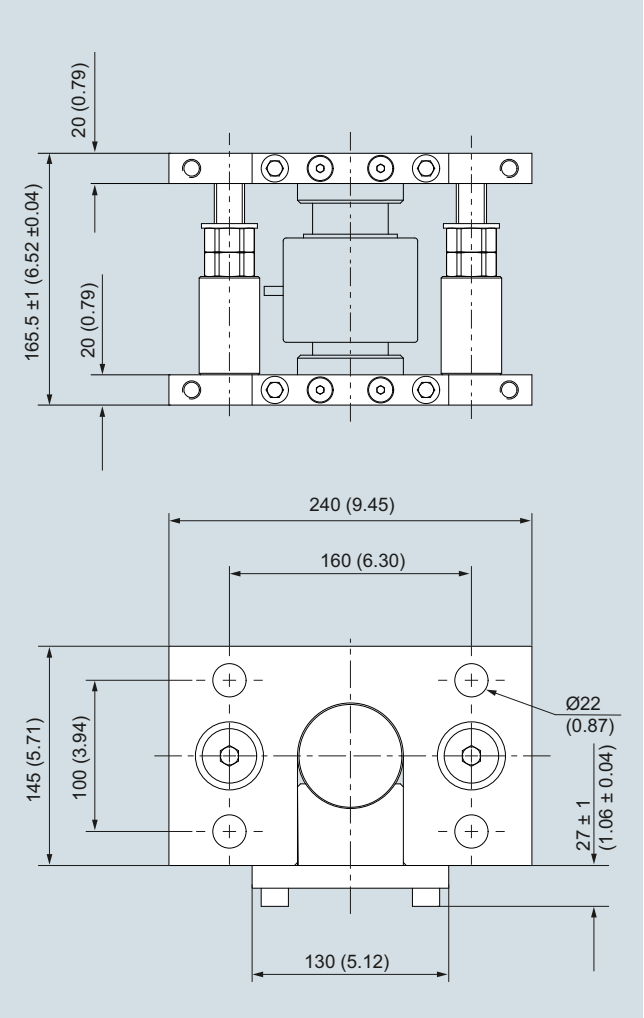
	Article No.
Compact mounting unit	**7MH5708-**
For load cells of series SIWAREX WL270 CP-S SA	**5 ■ A 0 0**
Material: Stainless steel	
For load cells with a rated load of:[1)2)]	
• 2, 5, 10, 20, 30 t (1.97, 4.42, 9.84, 19.68, 29.53 tn. L.)	**K**
• 50 t (49.21 tn. L.)	**P**

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.

© Siemens AG 2014

3

Dimensional drawings



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

© Siemens AG 2014

Overview



The compression load cell is particularly suitable for implementation in container, hopper 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.

Technical specifications

SIWAREX WL270 CP-S SB	
Possible applications	Container scales
Type	Compression load cell
Loads	
Rated load E_{max}	100 t (98.42 tn. L.)
Min. initial loading E_{min}	0 % E_{max}
Max. working load L_u	150 % E_{max}
Break load L_d	300 % E_{max}
Max. lateral load L_{lq}	10 % E_{max}
Measurement characteristic values	
Rated measuring path h_n at E_{max}	0.36 mm (0.01 inch)
Rated characteristic value C_n	2.0 ± 0.02 % mV/V
Tolerance D_O of zero signal	≤ ± 1.0 % C_n
Max. scale interval n_{LC}	3 000
Min. scale interval V_{min}	
E_{max} = 100 t (98.42 tn. L.)	E_{max}/9 000
Minimum application range $R_{min(LC)}$	33 %
Combined error F_{comb}	± 0.02 % C_n
Deviation F_v	± 0.02 % C_n
Creepage error F_{cr}	
• 30 min	≤ ± 0.023 % C_n
Temperature coefficient	
• Zero signal T_{Ko}	≤ ± 0.023 % C_n/5 K
• Characteristic value T_{Kc}	≤ ± 0.017 % C_n/5 K

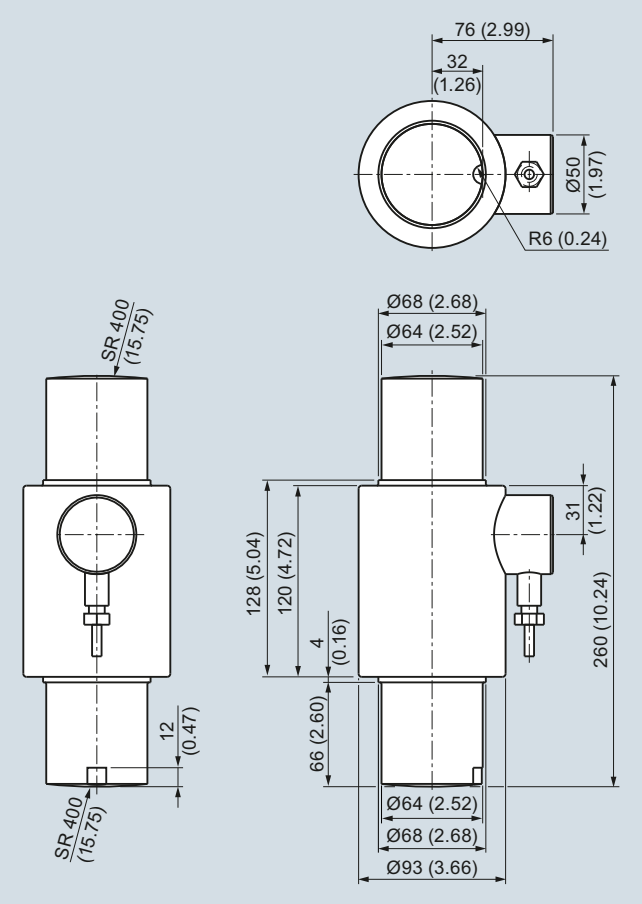
SIWAREX WL270 CP-S SB	
Electrical characteristic values	
Recommended reference voltage U_{ref}	DC 5 ... 12 V
Input resistance R_e	700 Ω ± 7 Ω
Output resistance R_a	700 Ω ± 7 Ω
Insulation resistance R_{is}	5 000 MΩ at 50 V DC
Connections and ambient conditions	
Sensor material (DIN)	Stainless steel
Rated 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 to DIN EN 60529; IEC 60529	IP68
Connection cable	
Function	Color
• EXC + (supply +)	Green
• EXC - (supply -)	Black
• SIG + (measured signal +)	White
• SIG - (measured signal -)	Red
• Sense + (sensor line +)	Yellow
• Sense – (sensor line -)	Blue
• Shield	Transparent
Certificates and approvals	
Accuracy class according to OIML R60	C3

Selection and ordering data

	Article No.
Load cell type WL270 CP-S SB	**7MH5110-**
Legal-for-trade according to OIML R60 to 3 000d, connection cable 20 m (65.62 ft)	**D 0**
Rated load	
100 t (98.42 tn. L.)	**6 A**
Explosion protection	
• Without	**0**
• Explosion protection for zones 0, 1, 2, 20, 21, 22	**1**

© Siemens AG 2014

Dimensional drawings



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

© Siemens AG 2014

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 container, hopper 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 implement 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 support is laterally displaced by more than 8 mm (0.32"), the design of the load support must include measures for restricting sideways play (e.g. stops or guide elements). 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.

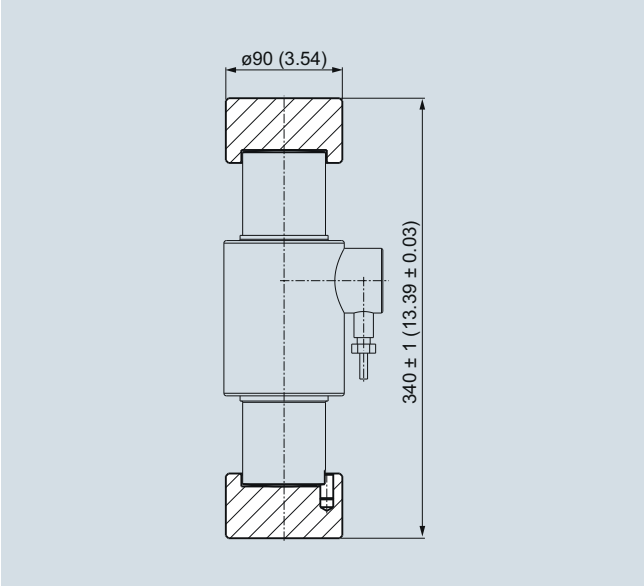
Technical specifications

Pressure piece set	
Rated load	100 t (98.42 tn. L)
Maximum lateral deflection with load cell	± 8 mm (0.12 inch)
Return force per mm lateral deflection of top plate, in percent of load applied to load cell	0.5 %/mm

Selection and ordering data

	Article No.
Pressure piece set[1)] For individual installation of load cells of series SIWAREX WL270 CP-S SB Material: Stainless steel For load cells with a rated load of[2)3)] 100 t (110.23 tn. L.)	**7MH5710-6AD00**

Dimensional drawings



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

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.

© Siemens AG 2014

Compact mounting unit

Overview



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

Design

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 compact 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 compact mounting unit. Then the complete unit is installed in the scales. As the 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 undoing two hex 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 compact 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 compact mounting unit as an installation aid results in optimum alignment of the load cells. This is essential for 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 screwing up the hex nuts. Replacement of the load cell is then easy after the clamping pieces are released.

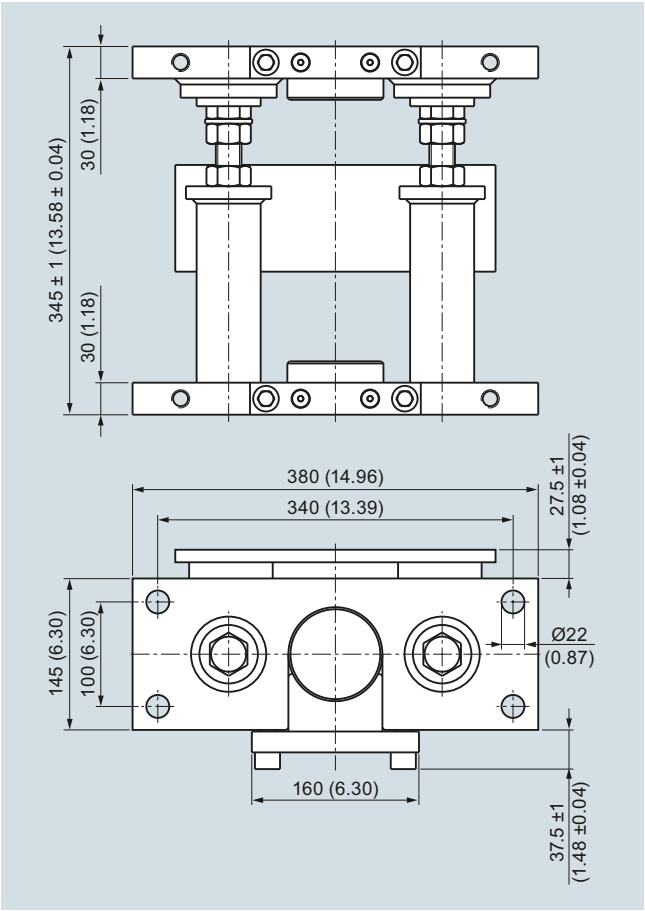
Technical specifications

Compact mounting unit for load cells SIWAREX WL270 CP-S SB	
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)
Return force per mm lateral deflection of top plate, in percent of load applied to load cell	0.5 %/mm
Permissible support load with anchored top plate	140 kN
Permissible lifting force at top plate	140 kN
Permissible lateral force at top plate when top plate is anchored	50 kN

Selection and ordering data

	Article No.
Compact mounting unit	
For load cells of series SIWAREX WL270 CP-S SB	
Material: Stainless steel	
For load cells with a rated load of:[1)2)]	
100 t (98.42 tn. L.)	**7MH5710-6AA00**

Dimensional drawings



Compact mounting unit for load cells SIWAREX WL270 CP-S SB (mounting condition), dimensions in mm (inch)

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.

© Siemens AG 2014

Overview



The compression force load cell is particularly suitable for use in container and bin weighing equipment.

Design

The measuring element is a cylinder made of stainless 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 measuring path depends on the rated load and is between 0.23 and 3.11 mm (0.01 and 0.12 inch).

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: High temperature range

A high-temperature range option is available for all SIWAREX WL270 K load cells. Specially developed strain gauges are deployed here. They can be used in temperatures ranging from -30 °C to 250 °C (-22 °F to 482 °F) without being damaged. Accuracy is only minimally affected.

Cables and accessory parts are also specially adapted to suit this extended temperature range.

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.

These options can be ordered for load classes from 13 t (12.79 tn. L.). Double bridge and high temperature options can also be ordered together.

Technical specifications

SIWAREX WL270 K-S CA	
Possible applications	• Container scales • Bin weighing equipment
Type	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.)
Min. initial loading E_{min}	0 % E_{max}
Max. working load L_u	120 % E_{max}
Break load L_d	300 % E_{max}
Max. lateral load L_{lq}	10 % E_{max}
Measurement characteristic values	
Rated measuring path 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_O of zero signal	≤ ± 1.5 % C_n
Tolerance D_c of characteristic value	± 0.5 %
Combined error F_{comb}	≤ ± 0.1 %
Deviation F_v	≤ ± 0.1 %
Creepage error F_{CR}	
• 30 min	≤ ± 0.06 %
Temperature coefficient	
• Zero signal T_{Ko}	≤ ± 0.25 % C_n/5 K
• Characteristic value T_{Kc}	≤ ± 0.25 % C_n/5 K
Electrical characteristic values	
Recommended reference voltage U_{ref}	DC 6 ... 12 V
Supply voltage U_{sr} (reference value)	6 V
Input resistance R_e	

© Siemens AG 2014

SIWAREX WL270 K-S CA	
• 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 Ω ± 50 Ω
• 350, 500 t (344.47, 492.10 tn. L.)	450 Ω ± 4.5 Ω
Output resistance R_a	
• 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 Ω ± 0.2 Ω
• 350, 500 t (344.47, 492.10 tn. L.)	480 Ω ± 4.8 Ω
Insulation resistance R_{is}	≥ 5000 MΩ
Connections and ambient conditions	
Sensor material (DIN)	Steel, painted
Rated temperature range B_{tn}	-10 ... +60 °C (+14 ... +140 °F)
Operating temperature range B_{tu}	-20 ... +70 °C (-4 ... +158 °F)
Storage temperature range B_{ts}	-30 ... +80 °C (-22 ... +176 °F)
Degree of protection to DIN EN 60529; IEC 60529	IP66
Accuracy class	0.1 %

SIWAREX WL270 K-S CA	
Connection cable	
Function	Color
• EXC + (supply +)	Red
• EXC - (supply -)	White
• SIG + (measured signal +)	Black
• SIG - (measured signal -)	Blue
• Shield	Transparent

High temperature versions

Some technical data of the high temperature versions change over the temperature range. For this reason the values are given for three partial 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	1.5 ± 0.02 mV/V	1.5 ± 0.1 mV/V	1.5 ± 0.1 mV/V
Tolerance D_O of zero signal	≤ ± 1.0 % C_n	≤ ± 1.5 % C_n	≤ ± 3 % C_n
Measurement characteristic values			
Combined error F_{comb}	≤ ± 0.3 %	≤ ± 0.5 %	≤ ± 5 %
Deviation F_v	≤ ± 0.3 %	≤ ± 0.5 %	≤ ± 5 %
Creepage error F_{CR}			
30 min	≤ ± 0.3 %	≤ ± 0.4 %	≤ ± 4 %
Temperature coefficient			
• Zero signal T_{Ko}	≤ ± 0.25 % C_n/5 K	≤ ± 0.25 % C_n/5 K	≤ ± 0.5 % C_n/5 K
• Characteristic value T_{Kc}	≤ ± 0.25 % C_n/5 K	≤ ± 0.5 % C_n/5 K	≤ ± 0.5 % C_n/5 K
Electrical characteristic values			
Input resistance R_e			
• 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 Ω ± 7 Ω	275 Ω ± 15 Ω	275 Ω ± 15 Ω
• 350, 500 t (344.47, 492.10 tn. L.)	450 Ω ± 4.5 Ω	450 Ω ± 10 Ω	450 Ω ± 10 Ω
Output resistance R_a			
• 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 Ω ± 0.5 Ω	245 Ω ± 1 Ω	245 Ω ± 1 Ω
• 350, 500 t (344.47, 492.10 tn. L.)	480 Ω ± 4.8 Ω	480 Ω ± 10 Ω	480 Ω ± 10 Ω
Insulation resistance R_{is}	≥ 5000 MΩ		
Connections and ambient 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)		

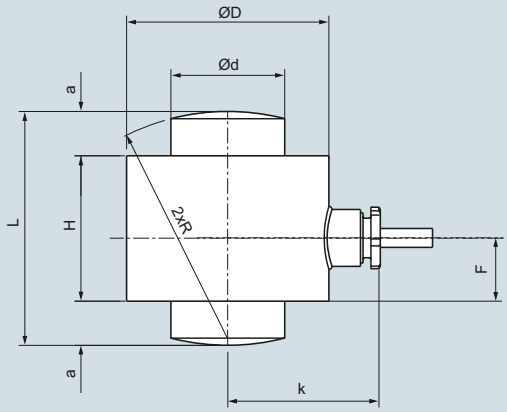
© Siemens AG 2014

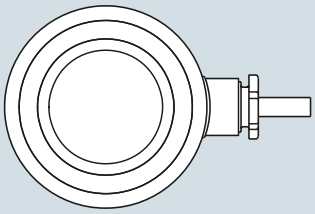
Selection and ordering data

Load cell type SIWAREX WL270 K-S CA	Article No. 7MH5114-
Accuracy class 0.1 %, without explosion protection. Heat resistant connecting cable[1]	■ ■ L ■ 0
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.) / 20 m (65.62 ft)	6 L
• 500 t (292.10 tn. L.) / 20 m (65.62 ft)	6 P

Load cell type SIWAREX WL270 K-S CA	Article No. 7MH5114-
Accuracy class 0.1 %, without explosion protection. Heat resistant connecting cable[1]	■ ■ L ■ 0
Options	
Double bridge[2] Load cell, redundant design, without explosion protection	6
High temperature 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
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

Dimensional drawings



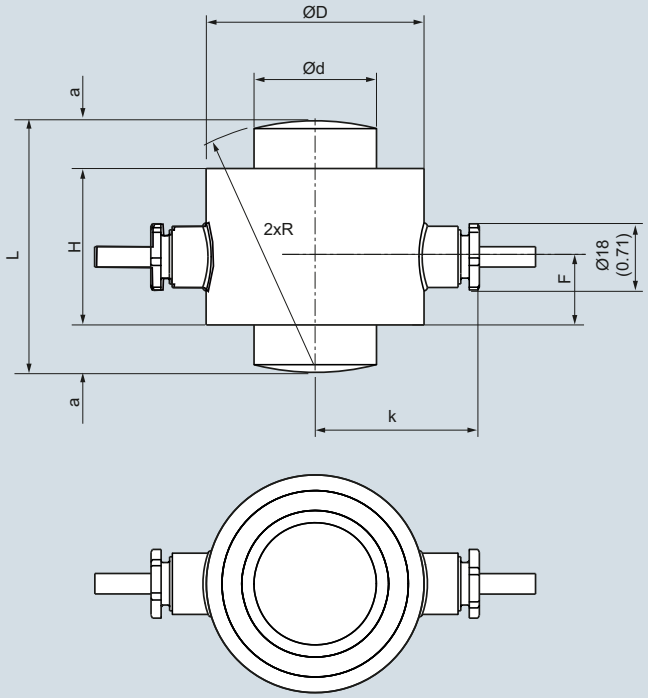


Rated load [t (tn. L.)]	a	ød	øD	F	H	k	L	R
2,8, 6 (2.76, 5.91)	8 (0.31)	16.7 (0.65)	45 (1.77)	20 (0.59)	40 (1.57)	40.5 (1.59)	56 (2.2)	50 (1.96)
13 (12.79)	12 (0.47)	24.5 (0.96)	55 (2.16)	20 (0.59)	44 (1.73)	45.5 (1.79)	68 (2.67)	66 (2.6)
28 (27.56)	14 (0.55)	36 (1.41)	64 (2.51)	20 (0.59)	46 (1.81)	48 (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)	80 (3.14)	100.5 (3.96)	170 (6.7)	183 (7.2)
350 (344.47)	40 (1.58)	132 (5.20)	202 (7.95)	50 (1.97)	160 (6.30)	127 (5.00)	240 (9.45)	325 (12.80)
500 (492.10)	47 (1.85)	155 (6.10)	236 (9.29)	50 (1.97)	181 (7.13)	144 5.67)	275 (10.83)	450 (17.72)

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

[1] Heat-resistant cable: -60 ... +180 °C (-76 ... +356 °F). The cable for high temperature versions is heat resistant up to 250 °C (238 °F).
[2] Can be ordered from 13 t (12.79 tn. L.).

© Siemens AG 2014



Rated load [t (tn.L.)]	a	ød	øD	F	H	k	L	R
13 (12.79)	12	24.5	55	20	44	45,5	68	66
	(0.47)	(0.96)	(2.16)	(0.79)	(1.73)	(1.79)	(2.67)	(2.6)
28 (27.56)	14	36	64	20	46	48	74	72
	(0.55)	(1.41)	(2.51)	(0.79)	(1.81)	(1.88)	(2.91)	(2.83)
60 (59.05)	20	52.7	90	20	50	63	90	100
	(0.78)	(2.07)	(3.54)	(0.79)	(1.96)	(2.48)	(3.54)	(3.93)
130 (127.95)	26	77.5	121	20	64	78,5	116	125
	(1.02)	(3.05)	(4.76)	(0.79)	(2.51)	(3.09)	(4.56)	(4.92)
280 (275.58)	45	114	165	20	80	100,5	170	183
	(1.77)	(4.48)	(6.5)	(0.79)	(3.14)	(3.96)	(6.7)	(7.2)
350 (344.47)	40	132	202	50	160	127	240	325
	(1.58)	(5.20)	(7.95)	(1.97)	(6.30)	(5.00)	(9.45)	(12.80)
500(492.10)	47	155	236	50	181	144	275	450
	(1.85)	(6.10)	(9.29)	(1.97)	(7.13)	(5.67)	(10.83)	(17.72)

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

© Siemens AG 2014

Overview



The self-centering self-aligning bearing for SIWAREX WL270 K-S CA load cells is particularly suitable for use in container and hopper scales.

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.

Technical specifications

Self-aligning bearing for load cells of 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 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 measuring path 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)

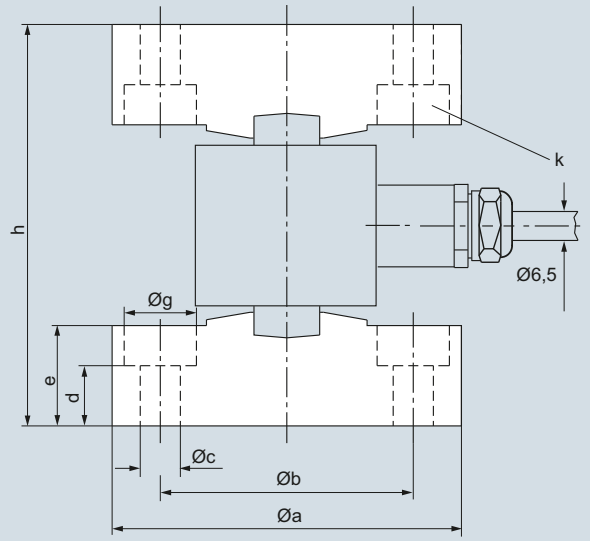
Selection and ordering data

	Article No.
Pressure plate[1)2)]	
For SIWAREX WL270 K-S CA load cells . 2 pressure plates are required to set up a self-aligning bearing, one each at the top and bottom respectively.	
Material: Painted steel	
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.

© Siemens AG 2014

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

© Siemens AG 2014

Overview



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

Design

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

All load cells with a rated load of up to 13 t are equipped with an integral overload protection

Technical specifications

SIWAREX WL280 RN-S SA			
Possible applications	• Container scales • Conveyor scales • Platform scales • Roller table scales		
Type	Ring-torsion load cell		
Loads			
Rated load 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.)
Min. initial loading E_{min}	≥ 0 % E_{max}	≥ 0 % E_{max}	≥ 0 % E_{max}
Max. working load L_u	200 % E_{max}	150 % E_{max}	150 % E_{max}
Break load L_d	500 % E_{max}	300 % E_{max}	300 % E_{max}
Max. lateral load L_{lq}	75 % E_{max}	100 % E_{max}	75 % E_{max}
Measurement characteristic values			
Rated measuring path h_n at E_{max}	0.07 mm (0.003 inch)	0.1 ± 0.02 mm (0.04 ± 0.0008 inch)	0.11 … 0.2 mm (0.004 … 0.008 inch)
Rated characteristic value C_n	1 mV/V	2 mV/V	2 mV/V
Tolerance D0 of zero signal	≤ ± 1.0 % C_n	≤ ± 1.0 % C_n	≤ ± 1.0 % C_n
Max. scale interval n_{LC}	3 000	3 000	3 000
Min. load cell verification intervals V_{min}	E_{max}/16 000	E_{max}/17 500	E_{max}/17 500
Minimum application range $R_{min(LC)}$	19 %	17 %	17 %
Combined error F_{comb}	≤ ± 0.02 % C_n	≤ ± 0.02 % C_n	≤ ± 0.02 % C_n
Deviation F_v	≤ ± 0.01 % C_n	≤ ± 0.01 % C_n	≤ ± 0.01 % C_n
Return of zero signal	≤ ± 0.0167 % C_n [2)]	≤ ± 0.0167 % C_n [2)]	≤ ± 0.0167 % C_n [2)]
Creepage error F_{cr}			
• 30 min	≤ ± 0.0245 % C_n [2)]	≤ ± 0.0245 % C_n [2)]	≤ ± 0.0245 % C_n [2)]
• 20 … 30 min	≤ ± 0.0053 % C_n [2)]	≤ ± 0.0053 % C_n [2)]	≤ ± 0.0053 % C_n [2)]
Temperature coefficient			
• Zero signal T_{Ko}	≤ ± 0.004 % C_n/5K	≤ ± 0.004 % C_n/5K	≤ ± 0.004 % C_n/5K
• Characteristic value T_{Kc}	≤ ± 0.004 % C_n/5K	≤ ± 0.004 % C_n/5K	≤ ± 0.004 % C_n/5K

© Siemens AG 2014

Load cell

SIWAREX WL280 RN-S SA			
Electrical characteristic values			
Overload protection	integrated	integrated	integrated at 13 t (12.80 tn. L.)
Recommended reference voltage U_{ref}	5 … 30 V	5 … 30 V	5 … 30 V
Supply voltage U_{sr} (reference value)	15 V	10 V	15 V
Tolerance D_c of characteristic value	0.01 mV/V	0.1 mV/V	0.1 mV/V
Input resistance R_e	60 kg (132.28 lb), 130 kg (286.60 lb): 1 260 Ω ± 100 Ω 280 kg (617.29 lb): 1 260 Ω ± 250 Ω	1 100 Ω ± 100 Ω	13 t (11.61 tn. L.): 1 200 Ω ± 100 Ω 28 t (25.00 tn. L.): 1 075 Ω ± 100 Ω 60 t (53.57 tn. L.): 1 350 Ω ± 200 Ω
Output resistance R_a	1 020 Ω ± 0.5 Ω	1 025 Ω ± 25 Ω	13 t (11.61 tn. L.): 1 000 Ω ± 0.5 Ω 28 t (25.00 tn. L.): 930 Ω ± 0.5 Ω 60 t (53.57 tn. L.): 1 175 Ω ± 0.5 Ω
Insulation resistance R_{is}	≥ 20 MΩ	≥ 5 000 MΩ	≥ 20 MΩ
SC current calibration[3)]	Standard	Standard	Standard
Connection and ambient conditions			
Sensor material (DIN)	Stainless steel, mat. no. 14542	Stainless steel, mat. no. 14542	Stainless steel, mat. no. 14542
Recommended tightening torque of the fixing screws	8 Nm	10 Nm	-
Rated temperature range B_{tn}	-10 ... +40 °C (14 ... 158 °F)	-10 ... +40 °C (14 ... 158 °F)	-10 ... +40 °C (14 ... 158 °F)
Operating temperature range B_{tu}	-35 … +70 °C (95 ... 104 °F)	-35 … +70 °C (95 ... 104 °F)	-35 … +70 °C (95 ... 104 °F)
Storage temperature range B_{ts}	-50 … +90 °C (122 ... 194 °F)	-50 … +90 °C (122 ... 194 °F)	-50 … +90 °C (122 ... 194 °F)
Degree of protection to DIN EN 60529; IEC 60529	IP66/68	IP66/68	IP66/68
Connection			
Function	Color	Color	Color
• EXC + (supply +)	pink	pink	pink
• EXC - (supply -)	gray	gray	gray
• SIG + (measured signal +)	brown	brown	brown
• SIG - (measured signal -)	white	white	white
• Shield	transparent	transparent	transparent
Certificates and approvals			
Accuracy class according to OIML R60	C3[1)]	C3[1)]	C3[1)]
Ex protection to ATEX (optional)	available soon	available soon	available soon

1) OIML R60 test certificate available soon.
2) For rated temperature -10 ... +40 °C (14 ... 104 °F).
3) 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.

© Siemens AG 2014

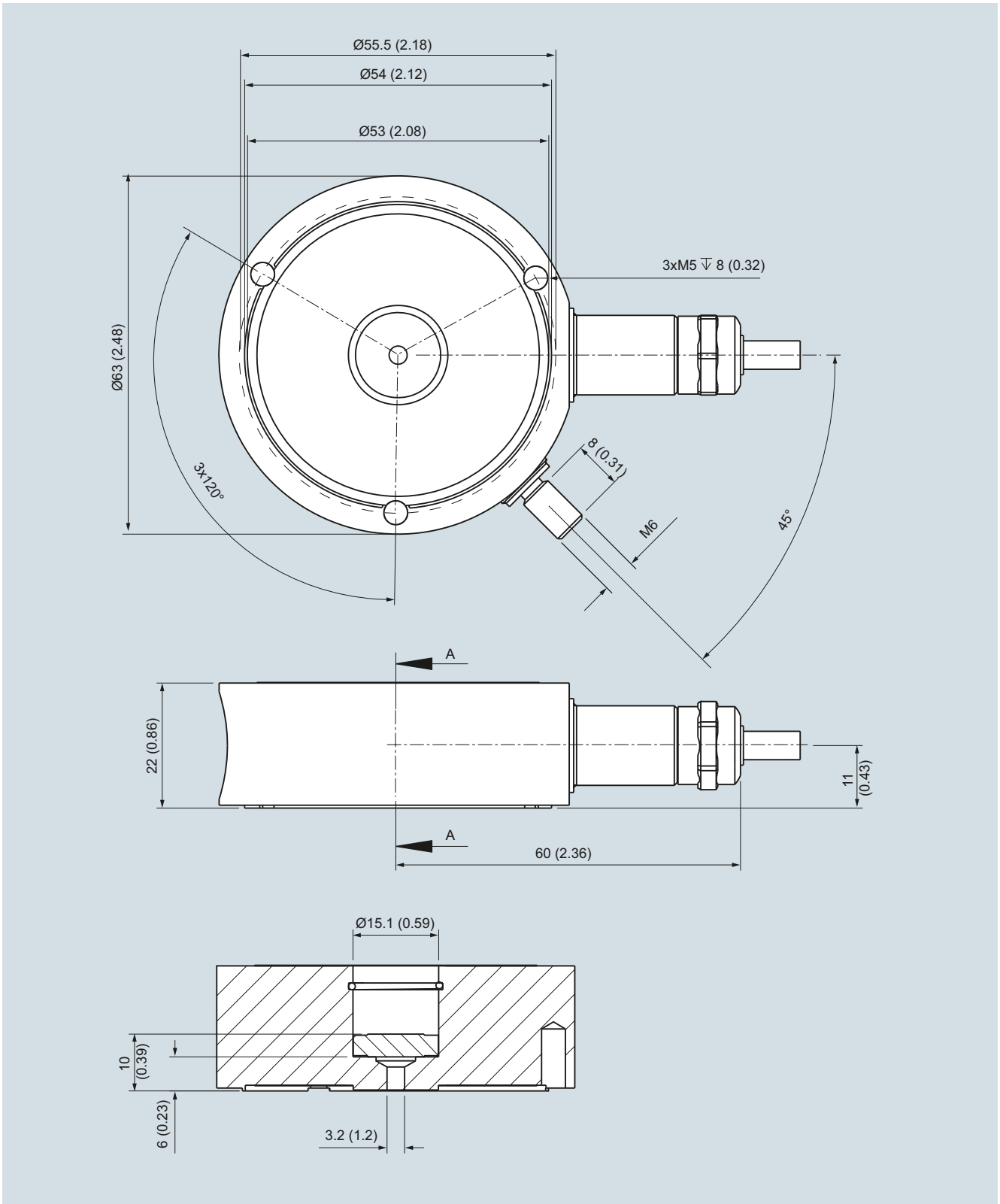
Selection and ordering data

		Article No.				
Load cell SIWAREX WL280 RN-S SA		**7MH5113-**				
Stainless steel, low mounting height, IP66/68, accuracy class C3 according to OIML R60[1]		■	■	**D**	**0**	■
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**			
Explosion protection[2]						
Without						**0**
Explosion protection for zones 1, 2, 20, 21, 22						**1**

[1] OIML R60 test certificate available soon.
[2] ATEX certification available soon.

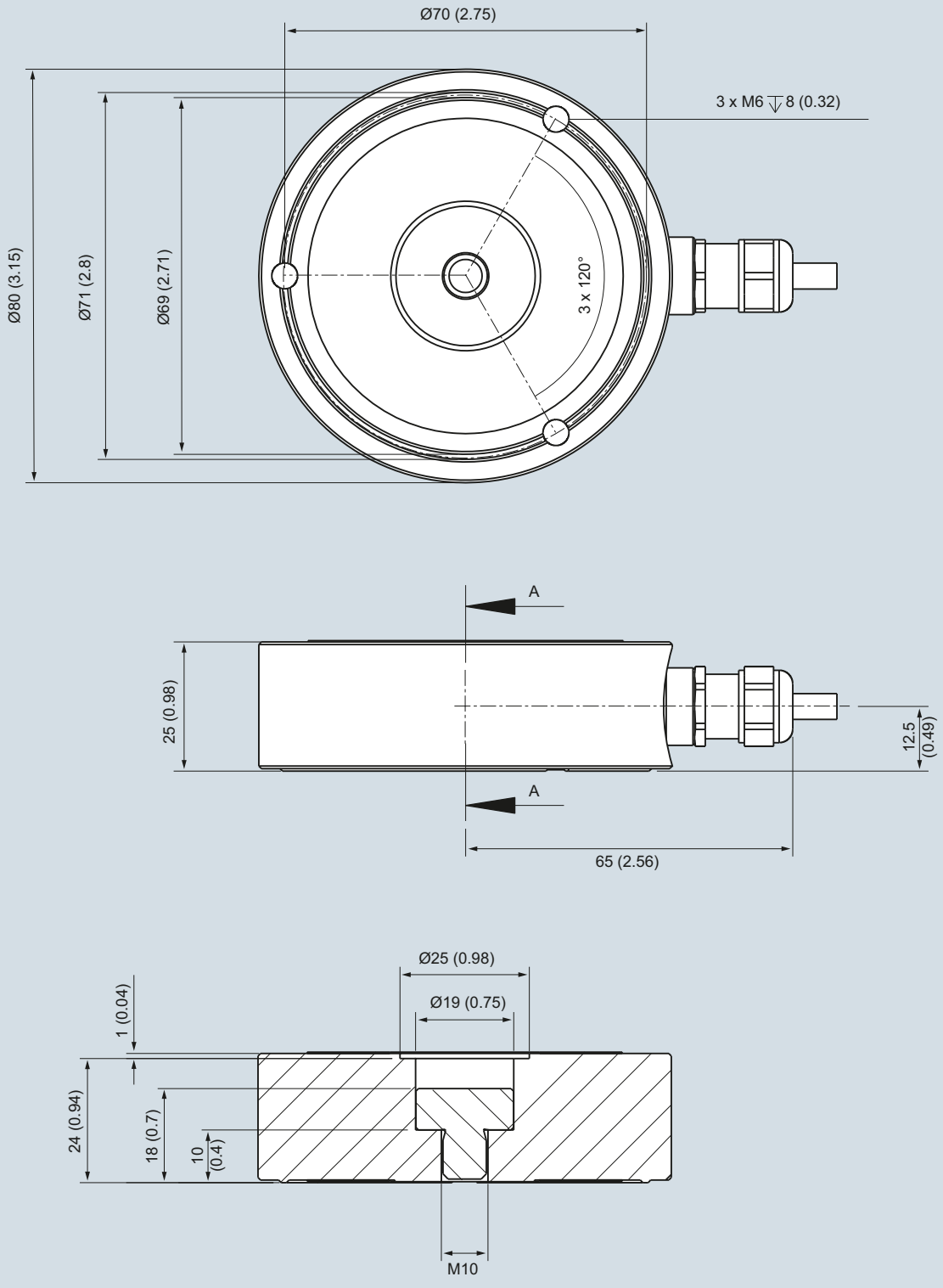
© Siemens AG 2014

Dimensional drawings



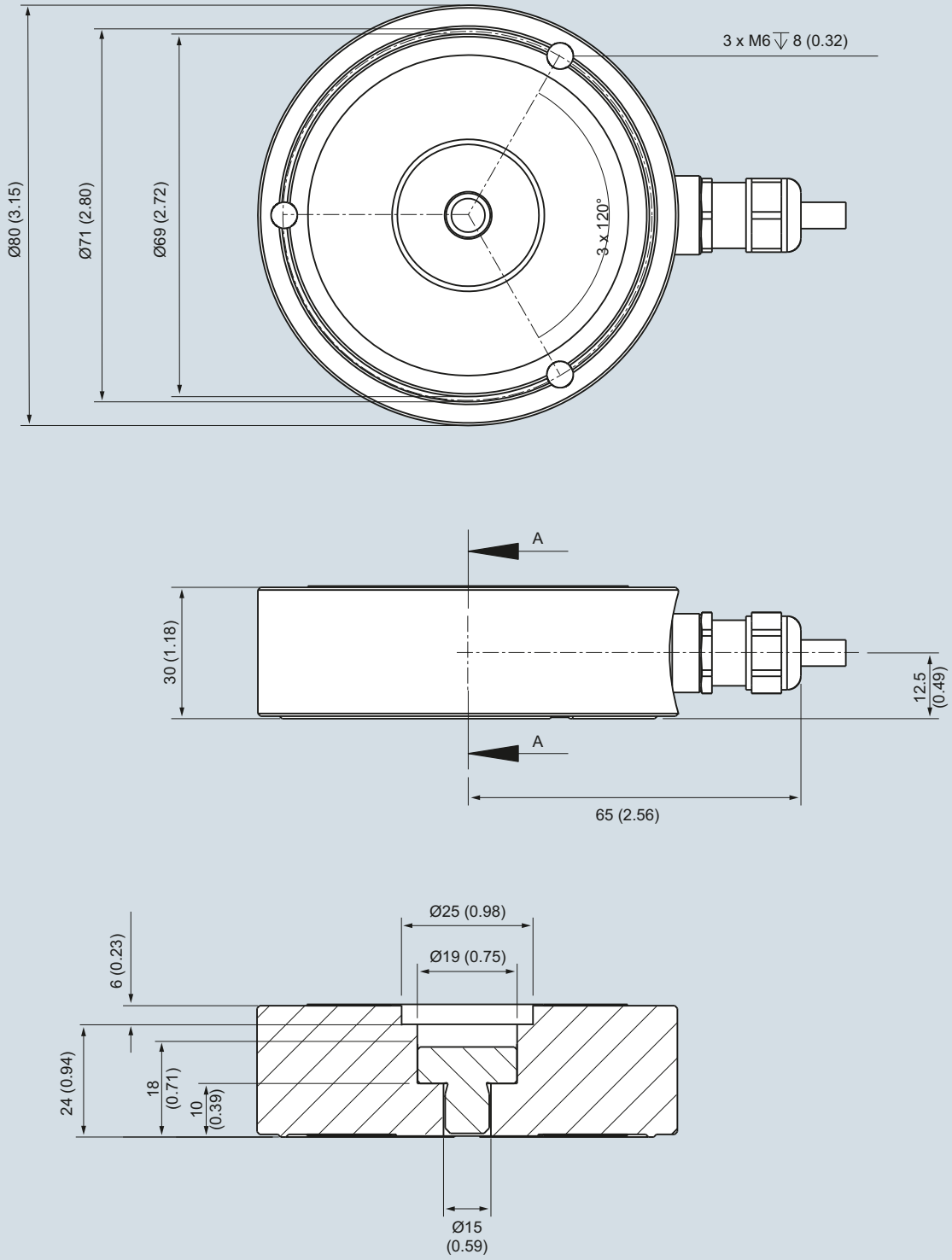
Load cell SIWAREX WL280 RN-S SA (60 kg, 130 kg, 280 kg (132.28, 286.60, 617.29 lb)), dimensions in mm (inch)

© Siemens AG 2014



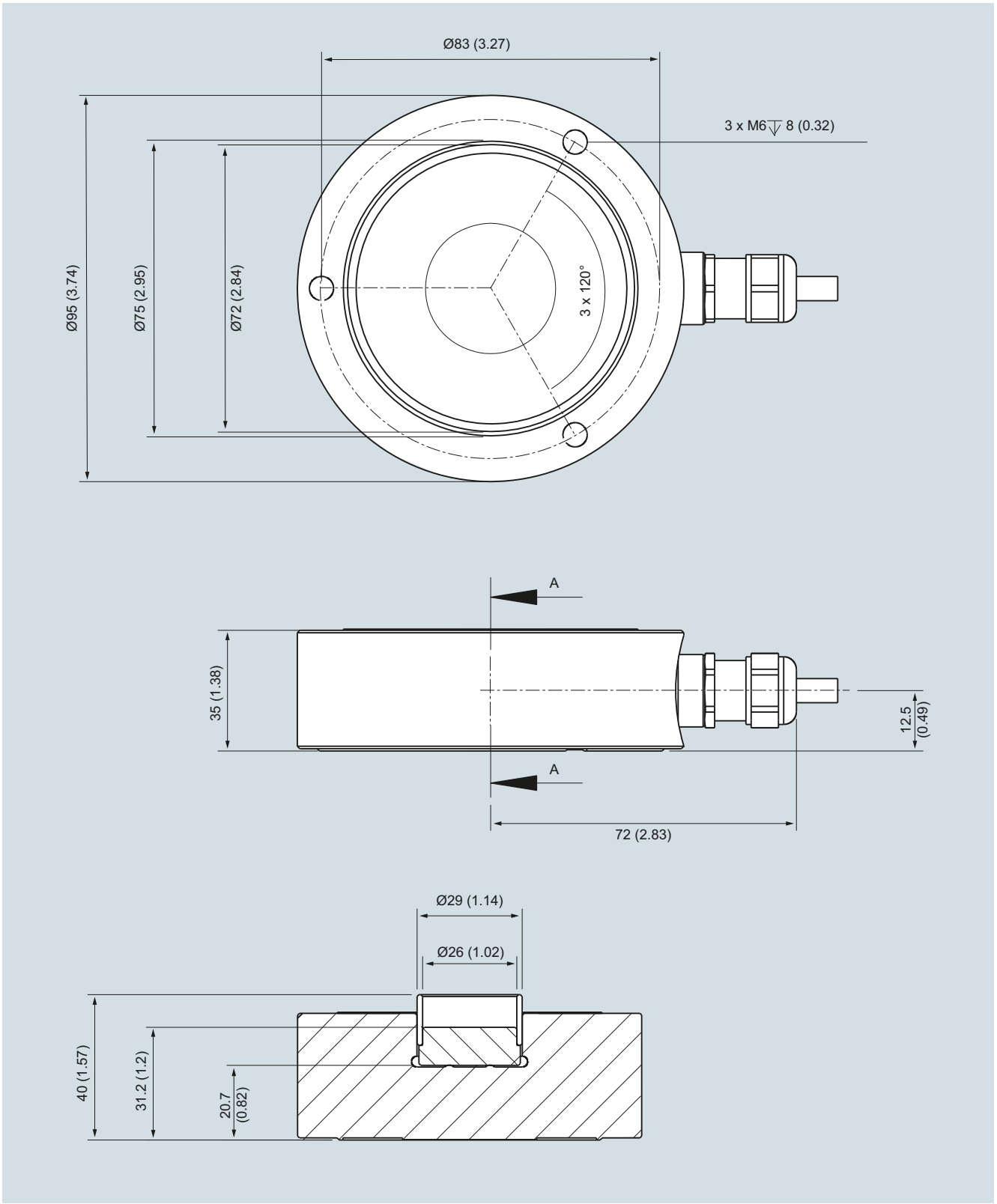
Load cell SIWAREX WL280 RN-S SA (0.5 t, 1 t (0.49, 0.98 tn. L.)), dimensions in mm (inch)

© Siemens AG 2014



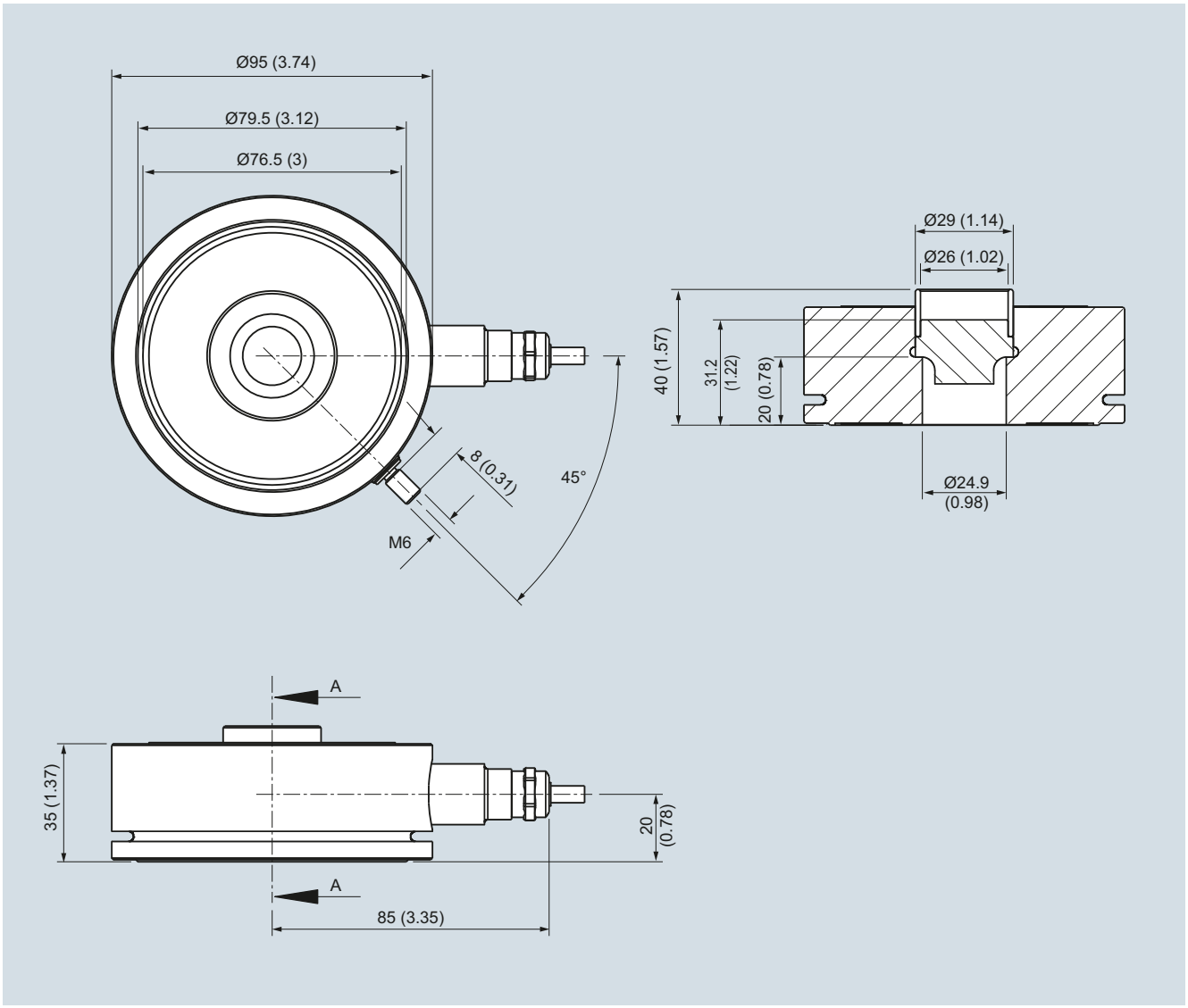
Load cell SIWAREX WL280 RN-S SA (2 t, 3 t, 5 t (1.97, 2.95, 4.92 tn. L.)), dimensions in mm (inch)

© Siemens AG 2014



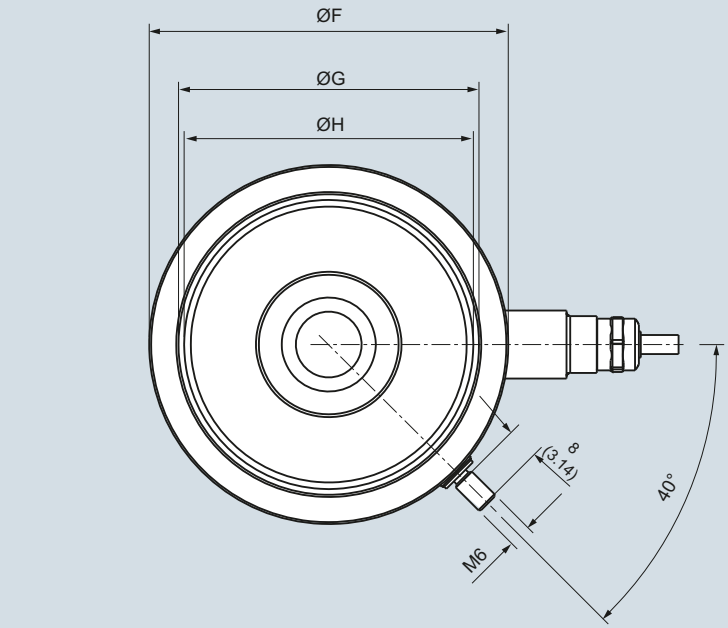
Load cell SIWAREX WL280 RN-S SA (10 t (9.84 tn. L.)), dimensions in mm (inch)

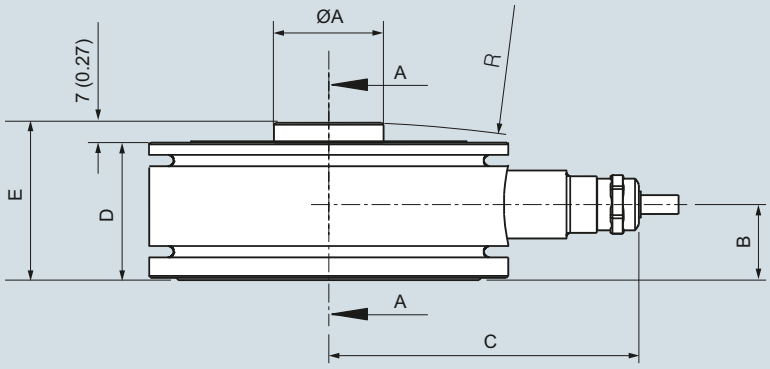
© Siemens AG 2014



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

© Siemens AG 2014





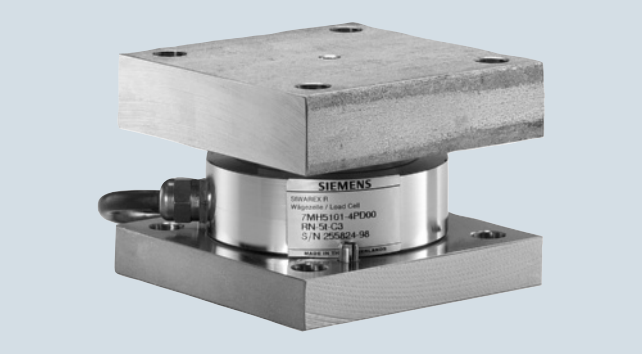
Rated load [t]	øA	B	C	D	E	øF	øG	øH	R
28	35.9 (1.41)	25 (0.98)	94 (3.7)	46 (1.8)	53 (2.08)	120 (4.72)	102 (4)	98 (3.85)	R400
60	47.9 (1.88)	34 (1.33)	105 (4.13)	62 (2.44)	69 (2.71)	140 (5.5)	124 (4.88)	120 (4.72)	R600

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

© Siemens AG 2014

Self-aligning bearing

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

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

The design of the load support must be such as to limit the lateral play (e.g. with limit stops), if the load support is displaced horizontally by the following values:

- > 4 mm (0.16") (up to 5 t (4.92 tn. l.) rated load)
- > 7 mm (0.28") (up to 13 t (12.80 tn. l.) rated load)
- > 10 mm (0.39") (up 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.

Technical specifications

Self-aligning bearing for load cells SIWAREX WL280 RN-S SA			
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 mm (inch)	± 4 mm (0.16)	± 7 mm (0.28)	± 10 mm (0.39)

Selection and ordering data

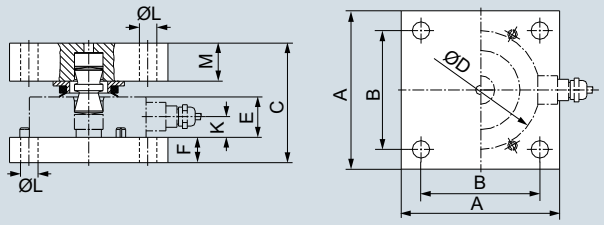
	Article No.
Self-aligning bearing top part[1)2)]	
For SIWAREX WL280 RN-S SA load cells comprising: Top plate with seal holder and sealing ring, top plate pressure piece, self-aligning bolt, cell pressure piece (not for 28 t (27.56 tn. L.) and 60 t (59.05 tn. L.))	
Material: Stainless steel	
For load cells with a rated load of	
• 60, 130, 280 kg (132.28, 286.60, 617.29 lb)	**7MH4115-3DB11**
• 0.5, 1 t (0.49, 0.98 tn. L.)	**7MH4132-4AK11**
• 2, 3.5, 5 t (1.97, 3.45, 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 part[1)]	
For SIWAREX WL280 RN-S SA load cells comprising: Base plate, 3 tension pins	
Material: Stainless steel	
For load cells with a rated load of	
• 60, 130, 280 kg (132.28, 286.60, 617.29 lb)	**7MH4115-3DC11**
• 0.5, 1, 2, 3.5, 5 t (0.49, 0.98, 1.97, 3.45, 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**

	Article No.
Accessories	
Pressure piece set	
for load cells of type SIWAREX WL280 RN-S SA. The set consists of pressure piece and self-aligning support. Use this set to facilitate your own customer-specific installation. Material: Stainless steel	
For load cells exhibiting a rated load of:	
• 60, 130, 280 kg (132.28, 286.60, 617.29 lb)	**7MH5713-3JD00**
• 0.5; 1 t (0.49; 0.98 tn. L.)	**7MH5713-4AD00**

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

© Siemens AG 2014

Dimensional drawings

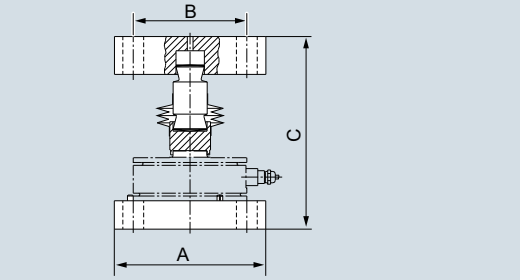


Rated load	A	B	C	ØD	E
60 ... 280 kg	80 (3.15)	60 (2.36)	52 (2.05)	63 (2.48)	22 (0.87)
0.5 t, 1 t	100 (3.94)	75 (2.95)	79 (3.11)	80 (3.15)	25 (0.98)
2 t, 3.5 t, 5 t	100 (3.94)	75 (2.95)	79 (3.11)	80 (3.15)	30 (1.18)
10 t, 13 t	120 (4.72)	90 (3.54)	121.2 (4.77)	95 (3.74)	35 (1.97)

Rated load	F	K	ØL	M	s
60 ... 280 kg	8 (0.31)	11 (0.43)	9 (0.35)	12 (0.47)	4 (0.16)
0.5 t, 1 t	15 (0.59)	10 (0.39)	11 (0.43)	25 (0.98)	4 (0.16)
2 t, 3.5 t, 5 t	15 (0.59)	8.5 (0.33)	11 (0.43)	25 (0.98)	4 (0.16)
10 t, 13 t	20 (0.79)	20 (0.79)	14 (0.55)	40 (1.57)	7 (0.28)

G_WT01_XX_10122

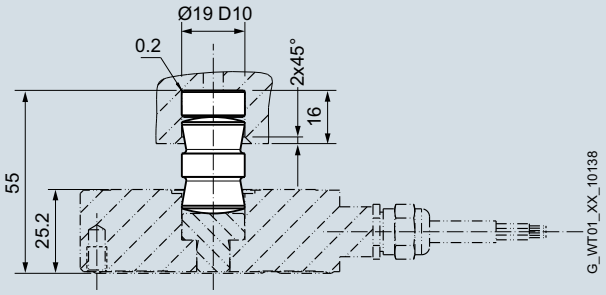
Self-aligning bearing for load cells SIWAREX WL280 RN-S SA, 0.06 … 13 t (0.07 … 14.33 tn. L.), dimensions in mm (inch)



Rated load [t]	A	B	C	s
28	160 (6.30)	120 (4.72)	203 (7.99)	10 (0.39)
60	200 (7.87)	140 (5.51)	254 (10.00)	10 (0.39)

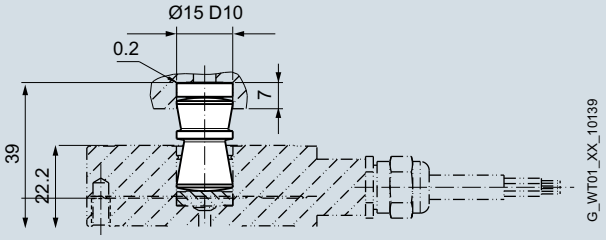
G_WT01_XX_10118

Self-aligning bearing for load cells SIWAREX WL280 RN-S SA, 28 … 60 t (27.56 … 59.05 tn. L.), dimensions in mm (inch)



G_WT01_XX_10138

Pressure piece set WL280 RN-S SA for 0.5; 1 t (0.49; 0.98 tn. L.)

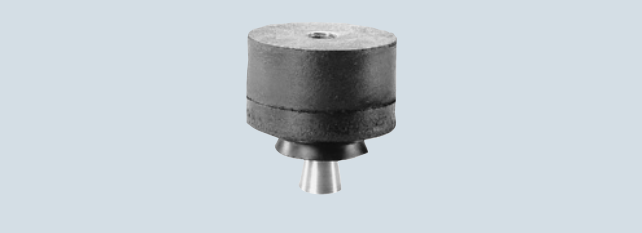


G_WT01_XX_10139

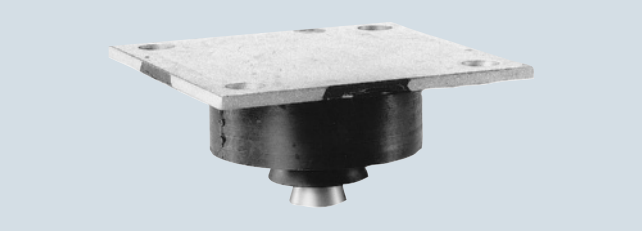
Pressure piece set WL280 RN-S SA for 60, 130, 280 kg (132.28, 286.60, 617.29 lb)

© Siemens AG 2014

Overview



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



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

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 support is horizontally displaced by more than 4 mm (0.16") or 6 mm (0.24") for a rated load of 10 t (9.84 tn. L.) and 13 t (12.80 tn. L.), the design of the load support must include measures to restrict lateral play (e.g. limit stops). 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 bottom part are not included in the scope of delivery of the elastomer bearing.

Technical specifications

Elastomer bearing for load cells type SIWAREX WL280 RN-S SA		
Rated load t (tn. L)	0.06 ... 5 (0.06 ... 4.92)	10 ... 13 (9.84 ... 12.80)
Permissible lateral deflection mm (inch)	± 4 mm (0.16)	± 6 mm (0.24)

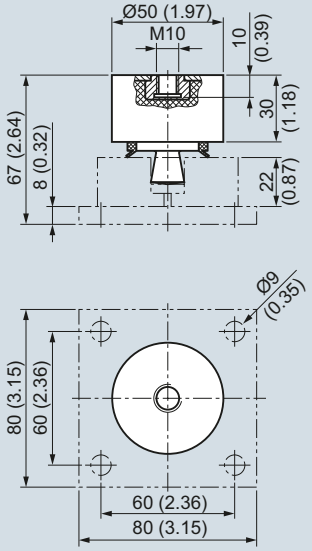
Selection and ordering data

	Article No.
Elastomer bearing[1]	
for load cells of type SIWAREX WL280 RN-S SA, comprising: Elastomer package with fixing plate, force transfer, seal	
Material: Stainless steel and neoprene	
For load cells with a rated load of	
• 60, 130, 280 kg (132.28, 286.60, 617.29 lb)	**7MH4130-3EE11**
• 0.5, 1 t (0.49, 0.98 tn. L.)	**7MH4130-4AE11**
• 2, 3.5, 5 t (1.97, 3.44, 4.92 tn. L.)	**7MH4130-4KE11**
• 10, 13 t (9.84, 12.80 tn. L.)	**7MH4130-5CE11**

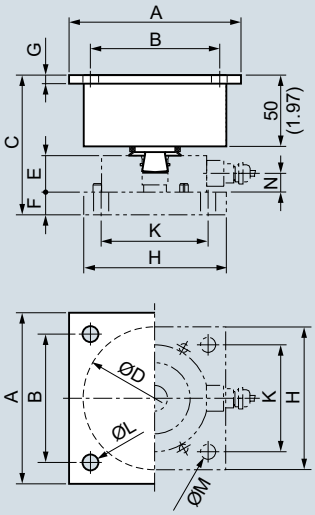
[1] The load cell and the self-aligning bearing base are not included in the scope of delivery.

© Siemens AG 2014

Dimensional drawings



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



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)

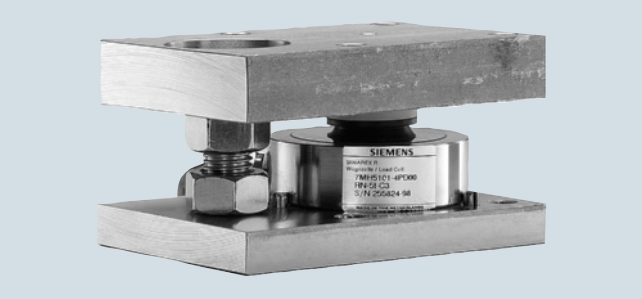
G_WT01_XX_10120

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

© Siemens AG 2014

Compact mounting unit

Overview



The self-aligning compact mounting unit for SIWAREX WL280 RN-S SA load cells is particularly suitable for implementation in container, platform and roller table scales due to its low constructional height.

Design

The compact mounting unit comprises a self-aligning bolt, a top plate and a base plate and one or two countersunk screws that serve as oscillation limitation and a protection against raising up.

The self-centering, self-aligning bolt allows the top plate, and thus the load support, to accommodate horizontal displacements (e.g. due to temperature fluctuations). The design of the self-aligning bolt creates a restoring force, which is dependent on the size of the displacement and the applied load. The oscillation limitation prevents excessive lateral displacement, thus protecting the load cell against damage. It can accommodate a maximum horizontal force of F_h = 10 kN. The max. lateral displacement is ± 3 mm (0.12") (60 kg ... 5 t (132.28 lb … 4.92 tn. L.)) or ± 4.5 mm (10 t (9.84 tn. L.), 13 t (12.80 tn. L.)).

The protection against raising up prevents the load support from lifting against a maximum vertical force of F_v = 25 kN.

The load cell is not included in the scope of delivery of the compact mounting unit.

Technical specifications

Compact mounting unit for load cells of type SIWAREX WL280 RN-S SA		
Rated load t (tn. L)	0.06 ... 5 (0.06 ... 4.92)	10 ... 13 (9.84 ... 12.80)
Permissible lateral deflection mm (inch)	± 3 mm (0.16)	± 4.5 mm (0.18)
Lifting path of the top plate mm (inch)	3 ... 4 (0.12 ... 0.16)	4.5 ... 5.5 (0.18... 0.22)
Max. lateral force	10 kN	25 kN

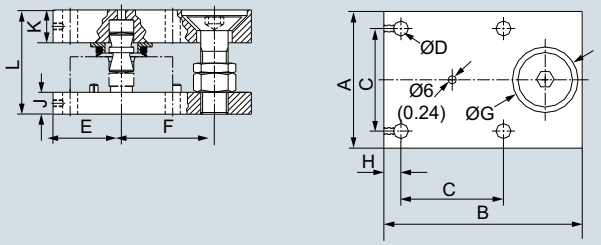
Selection and ordering data

	Article No.
Compact mounting unit[1)2)]	
for load cells of type SIWAREX WL280 RN-S SA	
Material: Stainless steel	
For load cells with a rated load of	
• 60, 130, 280 kg (132.28, 286.60, 617.29 lb)	**7MH4125-3DA11**
• 0.5, 1 t (0.49, 0.98 tn. L.)	**7MH4132-4AC11**
• 2, 3.5, 5 t (1.97, 3.44, 4.92 tn. L.)	**7MH4132-4KC11**
• 10, 13 t (9.84, 12.80 tn. L.)	**7MH4125-5BA11**

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.

© Siemens AG 2014

Dimensional drawings

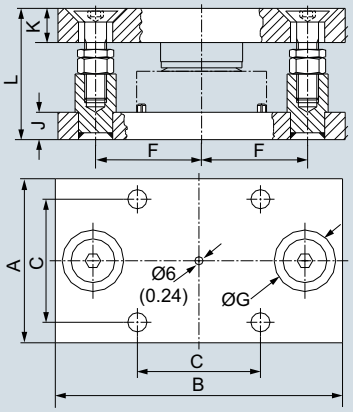


Rated load	A	B	C	ØD	E
60,130, 280 kg	80 (3.15)	118 (4.65)	60 (2.36)	9 (0.35)	40 (1.57)
0,5, 1 t	100 (3.94)	145 (5.71)	75 (2.95)	11 (0.43)	50 (1.97)

Rated load	F	ØG	H	J	K	L	s
60, 130, 280 kg	57 (2.24)	39 (1.54)	10 (0.39)	8 (0.31)	12 (0.47)	52 (2.05)	3 (0.12)
0,5, 1 t	68 (2.68)	48 (1.89)	12.5 (0.49)	15 (0.59)	25 (0.98)	79 (3.11)	3 (0.12)

G_WT01_XX_10124

Compact mounting unit for load cells SIWAREX WL280 RN-S SA, 60 … 280 kg (132.28 … 617.30 lb), dimensions in mm (inch)



Rated load [t]	A	B	C	øD	E
2, 3,5, 5	100 (3.94)	190 (7.48)	75 (2.95)	11 (0.43)	-
10, 13	120 (4.72)	210 (8.27)	90 (3.54)	14 (0.55)	-

Rated load [t]	F	øG	H	J	K	L	s
2, 3,5, 5	68 (2.68)	48 (5.71)	-	15 (0.59)	25 (0.98)	79 (3.11)	3 (0,12)
10, 13	77,5 (3.05)	45 (1.77)	-	20 (0.79)	40 (1.57)	121.2 (4.77)	4.5 (0,18)

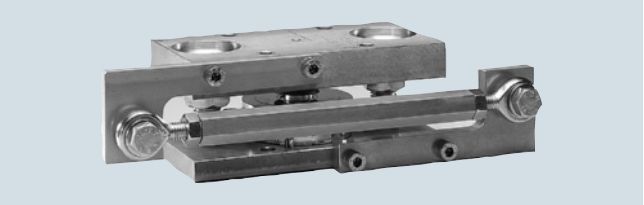
G_WT01_XX_10119

Compact mounting unit for load cells SIWAREX WL280 RN-S SA, 2 … 13 t (1.97 … 12.80 tn. L.), dimensions in mm (inch)

© Siemens AG 2014

Guide element for compact mounting unit

Overview



The guide element can be used as an addition to the compact mounting unit of the SIWAREX WL280 RN-S SA load cells. It is used if unwanted horizontal forces occur during the weighing process, e.g. caused by mixer operation in the case of container weighing or by acceleration of the goods to be weighed on conveyor belts.

Design

The guide element consists of two ball-joints, a connecting piece and two flanges for mounting to the compact mounting unit.

The ancillary guide element can also be retrofitted to compact mounting units, in case lateral forces arise unexpectedly when operating the scales and the compact mounting unit is mounted according to the requirements.

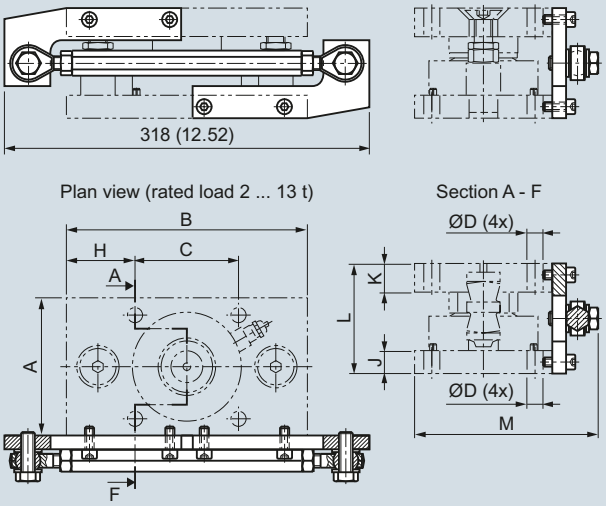
The guide element conducts lateral forces of up to 1.7 kN into the foundation, thereby minimizing the influences on the load cells and mounted components.

The load cell and the compact mounting unit are not included in the scope of delivery of the guide element.

Selection and ordering data

	Article No.
Guide element for compact mounting unit[1] for load cells of type SIWAREX WL280 RN-S SA	
Comprising: 2 flanges, 2 ball-joints, 1 connecting piece, fixings	
Material: Stainless steel	
For load cells with a rated load of	
• 0.5 t, 1 t (0.49, 0.98 tn. L.)	**7MH4132-4AQ12**
• 2 t, 3.5 t, 5 t (1.97, 3.44, 4.92 tn. L.)	**7MH4132-4KQ12**
• 10 t, 13 t (9.84, 12.80 tn. L.)	**7MH4134-5BQ12**

Dimensional drawings



Rat. load [t]	A	B	C	ØD	H	J	K	L	M
0,5, 1	100 (3.94)	145 (5.71)	75 (2.95)	11 (0.43)	12,5 (0.49)	15 (0.59)	25 (0.98)	79 (3.11)	140 (5.51)
2, 3,5, 5	100 (3.94)	190 (7.48)	75 (2.95)	11 (0.43)	57,5 (2.26)	15 (0.59)	25 (0.98)	79 (3.11)	140 (5.51)
10, 13	120 (4.72)	210 (8.27)	90 (3.54)	14 (0.55)	60 (2.36)	20 (0.79)	40 (1.57)	121.2 (4.77)	160 (6.30)

Guide element for compact mounting unit of load cells SIWAREX WL280 RN-S SA, dimensions in mm (inch)

[1] The load cell and the compact mounting unit are not included in the scope of delivery.

© Siemens AG 2014

Overview

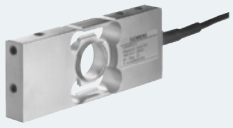
SIWAREX R load cells are equipped with strain gauges (DMS). They can be used for static and dynamic weight measurements. The various series cover rated load ranges from 10 kg (22.05 lb) to 280 t (275.58 tn. L.).



© Siemens AG 2014

Platform and bending beam load cells

Overview

Design	Platform	Bending beam
Possible applications	Small platform scales Small conveyor scales	Container, conveyor and platform scales
Series	SP	BB
Pictures		
Rated load E_{max}	• 6 kg (13.23 lb) • 12 kg (26.46 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) • 350 kg (771.72 lb)[1)]
Accuracy class	C3	C3
Max. load cell verification interval (n_{LC})	3 000	3 000
Min. load cell verification interval (V_{min})	E_{max}/12 000	E_{max}/15 000
Supply voltage (U_{sr})	5 ... 15 V	5 ... 15 V
Rated characteristic value	2 mV/V	2 mV/V
Degree of protection	IP66/IP68	IP66/IP68
Material	Stainless steel	Stainless steel
Ex protection according to ATEX (optional)	II 2 G EEx ib IIC T6/T4 II 3 G EEx nA/nL IIC T6/T4 II 1D/2D/3D T 70 °C (158 °F)	II 2 G EEx ib IIC T6/T4 II 3 G EEx nA/nL IIC T6/T4 II 1D/2D/3D T 70 °C (158 °F)
Mounting units	-	• Base plate with overload protection • Elastomer bearings • Combination mounting units

[1)] Installation accessories: On request.

© Siemens AG 2014

Selection and ordering data

Platform	Article No.				
SP series	**7MH4107-**				
Legal-for-trade according to OIML R60 up to 3 000 d, connecting cable 7 m[1)]	■	■	**C**	■	**1**
Rated load					
• 6 kg (13.22 lb)	**1**	**L**			
• 12 kg (26.46 lb)	**2**	**B**			
Explosion protection					
Without				**0**	
Explosion protection for zones 1, 2, 20, 21, 22				**1**	

Bending beam	Article No.				
BB series	**7MH4103-**				
Legal-for-trade according to OIML R60 up to 3 000 d, connecting cable 3 m[1)]	■	■	**C**	■	**1**
Rated load					
• 10 kg (22.05 lb)	**2**	**A**			
• 20 kg (44.09 lb)	**2**	**D**			
• 50 kg (110.23 lb)	**2**	**K**			
• 100 kg (220.46 lb)	**3**	**A**			
• 200 kg (440.92 lb)	**3**	**D**			
• 350 kg (771.72 lb)[2)]	**3**	**G**			
Explosion protection					
Without				**0**	
Explosion protection for zones 1, 2, 20, 21, 22				**1**	
Base plate with overload protection					
for load cells in the BB series[3)4)]					
Material: Stainless steel					
For load cells with a rated load of:					
10 … 200 kg (22.05 … 440.92 lb)	**7MH4133-3DG11**				
Elastomer bearings					
for load cells in the BB series[3)]					
Material: Stainless steel					
For load cells with a rated load of:					
• 10 … 50 kg (22.05 … 110.23 lb)	**7MH4133-2KE11**				
• 100 … 200 kg (220.46 … 440.92 lb)	**7MH4133-3DE11**				
Combination mounting units					
for load cells in the BB series[3)4)]					
Material: Stainless steel					
For load cells with a rated load of:					
10 … 200 kg (22.05 … 440.92 lb)	**7MH4133-3DC11**				
Accessories					
Grounding cable made of copper	**7MH3701-1AA1**				
For discharging parasitic currents, length 400 mm (15.75 inch), see page 3/71					
SIWAREX EB extension box, aluminum housing	**7MH4710-2AA**				
For extending the connection cables of load cells, see page 3/69					

1) Length tolerance ± 100 mm (3.94 inch).
2) Installation accessories on request.
3) The load cell is not included in the scope of delivery.
4) It is highly recommendable to use a grounding cable (7MH3701-1AA1) in order to protect the load cell.

© Siemens AG 2014

Overview

Design	Shear beam
Possible applications	Container, conveyor, overhead rail and platform scales
Series	SB
Picture	
Rated 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.)
Accuracy class	C3
Max. load cell verification interval (n_{LC})	3 000
Min. load cell verification interval (V_{min})	E_{max}/10 000
Supply voltage (U_{sr})	5 ... 18 V
Rated characteristic value	2 mV/V
Degree of protection	IP66/IP68
Material	Stainless steel
Ex protection according to ATEX (optional)	II 2 G EEx ib IIC T6/T4 II 3 G, EEx nA/nL IIC T6/T4, II 1D/2D/3D T 70 °C (158 °F)
Mounting units	• Base plate with overload protection • Elastomer bearings • Combination mounting units • Guide element for combination mounting units

© Siemens AG 2014

Selection and ordering data

Shear beam	Article No.				
SB series	**7MH4105-**				
Legal-for-trade according to OIML R60 up to 3 000 d, connecting cable 5 m[1]	■	■	**C**	■	**1**
Rated load					
• 500 kg (1 102.31 lb)	**3**	**K**			
• 1 t (0.98 tn. L.)	**4**	**A**			
• 2 t (1.97 tn. L.)	**4**	**D**			
• 5 t (4.92 tn. L.)	**4**	**K**			
Explosion protection					
Without				**0**	
Explosion protection for zones 1, 2, 20, 21, 22				**1**	
Base plate with overload protection					
for load cells in the SB series[2)3)]					
Material: Stainless steel					
For load cells with a rated load of:					
• 0.5, 1, 2 t (0.49, 0.98, 1.97 tn. L.)	**7MH4135-4DG11**				
• 5 t (4.92 tn. L.)	**7MH4135-4KG11**				
Elastomer bearings					
for load cells in the SB series[2)]					
Material: Stainless steel					
For load cells with a rated load of:					
• 500 kg (1 102.31 lb), 1 t (0.98 tn. L.)	**7MH4135-4AE11**				
• 2 t (1.97 tn. L.)	**7MH4135-4DE11**				
• 5 t (4.92 tn. L.)	**7MH4135-4KE11**				
Combination mounting unit					
for load cells in the SB series[2)3)]					
Material: Stainless steel					
For load cells with a rated load of:					
• 0.5, 1, 2 t (0.49, 0.98, 1.97 tn. L.)	**7MH4135-4DC11**				
• 5 t (4.92 tn. L.)	**7MH4135-4KC11**				
Guide element for combination mounting unit					
for load cells in the SB series[2)]					
Material: Stainless steel					
For load cells with a rated load of:					
• 0.5, 1, 2 t (0.49, 0.98, 1.97 tn. L.)	**7MH4135-4DQ12**				
• 5 t (4.92 tn. L.)	**7MH4135-4KQ12**				
Accessories					
Grounding cable made of copper	**7MH3701-1AA1**				
For discharging parasitic currents, length 400 mm (15.75 inch), see page 3/71					
SIWAREX EB extension box, aluminum housing	**7MH4710-2AA**				
For extending the connection cables of load cells, see page 3/69					

1) Length tolerance ± 100 mm (3.94 inch)
2) The load cell is not included in the scope of delivery.
3) It is highly recommendable to use a grounding cable (7MH3701-1AA1) in order to protect the load cell.

© Siemens AG 2014

3

Overview

Design	Bending ring		
Possible applications	Container, conveyor and platform scales		
Series	RN		
Picture			
Rated load E_{max}	• 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 (3.45 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	C3	C3	C3
Max. load cell verification interval (n_{LC})	3 000	3 000	3 000
Min. load cell verification interval (V_{min})	E_{max}/17 500	E_{max}/10 000	E_{max}/17 500
Supply voltage (U_{sr})	5 … 30 V	5 … 30 V	5 … 30 V
Rated characteristic value	1 mV/V	2 mV/V	2 mV/V
Degree of protection	IP66/IP68	IP66/IP68	IP66/IP68
Material	Stainless steel	Stainless steel	Stainless steel
Ex protection according to ATEX (optional)	II 2 G EEx ib IIC T6/T4 II 3 G EEx nA/nL IIC T6/T4 II 1D/2D/3D T 70 °C (158 °F)	II 2 G EEx ib IIC T6/T4 II 3 G EEx nA/nL IIC T6/T4 II 1D/2D/3D T 70 °C (158 °F)	II 2 G EEx ib IIC T6/T4 II 3 G EEx nA/nL IIC T6/T4 II 1D/2D/3D T 70 °C (158 °F)
Mounting units	• Elastomer bearing • Combination mounting unit • Guide element for combination mounting units • Self-aligning bearings		

Selection and ordering data

Bending ring		Article No.				
RN series		**7MH5101-**				
Legal-for-trade according to OIML R60 up to 3 000 d, connecting cable 10 m[1)]		■	■	**D**	**0**	■
Rated load	**Cable length**					
• 60 kg (132.28 lb)	3 m (9.84 inch)	**2**	**Q**			
• 130 kg (286.60 lb)	3 m (9.84 inch)	**3**	**D**			
• 280 kg (617.29 lb)	3 m (9.84 inch)	**3**	**J**			
• 500 kg (1 102.31 lb)	3 m (9.84 inch)	**3**	**P**			
• 1 t (0.98 tn. L.)	3 m (9.84 inch)	**4**	**A**			
• 2 t (1.97 tn. L.)	5 m (16.40 inch)	**4**	**G**			
• 3.5 t (3.45 tn. L.)	5 m (16.40 inch)	**4**	**L**			
• 5 t (4.92 tn. L.)	5 m (16.40 inch)	**4**	**P**			
• 10 t (9.84 tn. L.)	5 m (16.40 inch)	**5**	**A**			
• 13 t (12.80 tn. L.)	10 m (32.81 inch)	**5**	**D**			
• 28 t (27.56 tn. L.)	10 m (32.81 inch)	**5**	**J**			
• 60 t (59.05 tn. L.)	10 m (32.81 inch)	**5**	**Q**			
Explosion protection						
Without						**0**
Explosion protection for zones 1, 2, 20, 21, 22						**1**

© Siemens AG 2014

Bending ring	Article No.
Self-aligning bearing top part[2)4)]	
for load cells in the RN series	
Consisting of: Top plate with seal holder and sealing ring, top plate pressure piece, self-aligning bolt, cell pressure piece (not for 28 t (27.56 tn. L.) and 60 t (59.05 tn. L.))	
Material: Stainless steel	
For load cells with a rated load of:	
• 60, 130, 280 kg (132.28, 286.60, 617.29 lb)	**7MH4115-3DB11**
• 0.5, 1 t (0.49, 0.98 tn. L.)	**7MH4132-4AK11**
• 2, 3.5, 5 t (1.97, 3.45, 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 part	
for load cells in the RN series	
Consisting of: Base plate, 3 tension pins	
Material: Stainless steel	
For load cells with a rated load of:	
• 60, 130, 280 kg (132.28, 286.60, 617.29 lb)	**7MH4115-3DC11**
• 0,5, 1; 2, 3.5, 5 t (0.49, 0.98; 1.97, 3.45, 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**
Elastomer bearings	
for load cells in the RN series[2)4)]	
Material: Stainless steel	
For load cells with a rated load of:	
• 60, 130, 280 kg (132.28, 286.60, 617.29 lb)	**7MH4130-3EE11**
• 0.5, 1 t (0.49, 0.98 tn. L.)	**7MH4130-4AE11**
• 2, 3.5, 5 t (1.97, 3.45, 4.92 tn. L.)	**7MH4130-4KE11**
• 10, 13 t (9.84, 12.80 tn. L.)	**7MH4130-4CE11**
Combination mounting unit	
for load cells in the RN series[2)3)]	
Material: Stainless steel	
For load cells with a rated load of:	
• 60, 130, 280 kg (132.28, 286.60, 617.29 lb)	**7MH4125-3DA11**
• 0.5, 1 t (0.49, 0.98 tn. L.)	**7MH4132-4AC11**
• 2, 3.5, 5 t (1.97, 3.45, 4.92 tn. L.)	**7MH4132-4KC11**
• 10, 13 t (9.84, 12.80 tn. L.)	**7MH4125-5BA11**
Guide element for combination mounting unit	
for load cells in the RN series[2)]	
Material: Stainless steel	
For load cells with a rated load of:	
• 0.5, 1 t (0.49, 0.98 tn. L.)	**7MH4132-4AQ12**
• 2, 3.5, 5 t (1.97, 3.45, 4.92 tn. L.)	**7MH4132-4KQ12**
• 10, 13 t (9.84, 12.80 tn. L.)	**7MH4134-5BQ12**
Accessories	
Grounding cable made of copper	**7MH3701-1AA1**
For discharging parasitic currents, length 400 mm (15.75 inch), see page 3/71	
SIWAREX EB extension box, aluminum housing	**7MH4710-2AA**
For extending the connection cables of load cells, see page 3/69	

1) Length tolerance ± 100 mm (3.94 inch).
2) The load cell is not included in the scope of delivery.
3) It is highly recommendable to use a grounding cable (7MH3701-1AA1) in order to protect the load cell.
4) The self-aligning bearing base part is not included in the scope of delivery.

© Siemens AG 2014

Overview

Design	Compression cell		
Possible applications	Container, hopper and vehicle scales		Container, hopper and vehicle scales
Series	CC		K
Pictures			
Rated load E_{max}	• 10 t (9.84 tn. L.) • 25 t (24.61 tn. L.) • 40 t (39.37 tn. L.) • 60 t (59.05 tn. L.)	• 100 t (98.42 tn. L.)	• 2.8 t (2.76 tn. L.) • 6 t (5.91 tn. L.) • 13 t (12.80 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.)
Accuracy class	C3	C1	0.1 %
Max. load cell verification interval (n_{LC})	3 000	1 000	-
Min. load cell verification interval (V_{min})	E_{max}/12 500	E_{max}/10 000	-
Supply voltage (U_{sr})	5 … 25 V		6 … 12 V
Rated characteristic value	2 mV/V		1.5 mV/V
Degree of protection	IP66/IP68		IP65
Material	Stainless steel		Steel, painted
Ex protection according to ATEX (optional)	II 2 G EEx ib IIC T6/T4 II 3 G EEx nA/nL IIC T6/T4 II 1D/2D/3D T 70 II 2 G EEx ib IIC T6/T4 II 3 G EEx nA /nL IIC T6/T4, II 1D / 2D / 3D T 70°C (158 °F)		-
Mounting units	• Combination mounting units • Self-aligning bearings	• Self-aligning bearings	• Self-aligning bearings

© Siemens AG 2014

Selection and ordering data

Compression cell		Article No.
CC series		**7MH4106-** ■ ■ ■ ■ **1**
Legal-for-trade according to OIML R60 up to 3 000 d		
Rated load	**Cable length**	
• 10 t (9.84 tn. L.)	10 m (32.81 inch)[4]	**5 A C**
• 25 t (24.61 tn. L.)	20 m (65.62 inch)[5]	**5 E C**
• 40 t (39.37 tn. L.)	20 m (65.62 inch)[5]	**5 H C**
• 60 t (59.05 tn. L.)	20 m (65.62 inch)[5]	**5 L C**
• 100 t (98.42 tn. L.)	20 m (65.62 inch)[5]	**6 A A**
Explosion protection		
Without		**0**
Explosion protection for zones 1, 2, 20, 21, 22		**1**
Self-aligning bearings		
for load cells in the CC series[1][2]		
Comprising a top plate, base plate and 3 pressure pieces		
Material: Stainless steel[3]		
For load cells with a rated load of:		
• 10, 25 t (9.84, 24.61 tn. L.)		**7MH4136-5EA11**
• 40, 60 t (39.37, 59.05 tn. L.)		**7MH4136-5LA11**
• 100 t (98.42 tn. L.)		**7MH4136-6AA11**
Combination mounting unit		
for load cells in the CC series[1][2]		
Material: Stainless steel[3]		
For load cells with a rated load of:		
• 10, 25 t (9.84, 24.61 tn. L.)		**7MH4136-5EC11**
• 40, 60 t (39.37, 59.05 tn. L.)		**7MH4136-5LC11**

Compression cell		Article No.
K series		**7MH3105-** ■ ■ **C 0**
Accuracy class 0.2 without explosion protection		
Rated load	**Cable length**[4] [6]	
• 2.8 t (2.76 tn. L.)	5 m (16.40 inch)	**2 A**
• 6 t (5.91 tn. L.)	5 m (16.40 inch)	**3 A**
• 13 t (12.80 tn. L.)	10 m (32.81 inch)	**1 B**
• 28 t (27.56 tn. L.)	10 m (32.81 inch)	**2 B**
• 60 t (59.05 tn. L.)	10 m (32.81 inch)	**3 B**
• 130 t (127.95 tn. L.)	10 m (32.81 inch)	**1 C**
• 280 t (275.58 tn. L.)	10 m (32.81 inch)	**2 C**
Pressure plate		
for load cells in the K series[1][2]		
To set up a self-aligning bearing, 2 pressure plates are required, one each at the top and bottom respectively Scope of supply: 1 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 (12.80 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**

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.
3) Pressure pieces made of tool steel.
4) Length tolerance ± 100 mm (3.94 inch).
5) Length tolerance ± 300 mm (11.81 inch).
6) Heat-resistant cable: -60 … +180 °C (-76 … +356 °C).

© Siemens AG 2014

SIWAREX JB junction box with aluminium housing

Overview



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

If more than 4 load cells are to be connected, a second junction box must be connected in parallel via a cross connection. The junction box can be used in potentially explosive areas (grounded, intrinsically-safe circuits).

Design

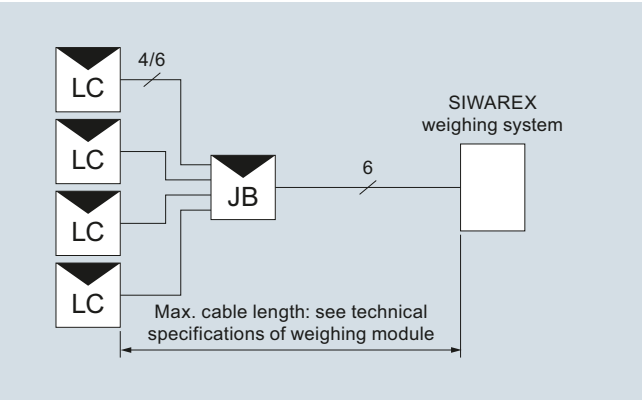
The junction box made of die-cast aluminum consists of a base section and a cover. The housing is sealed against penetration of dust and splashed water in accordance with IP 66 degree of protection. The cables enter the casing via metric cable glands. In the housing, there are 28 terminals with spring-mounted contacts. The spring-mounted system results in vibration-resistant, maintenance-free connections.

The internal resistance, characteristic value and nominal load of all load cells connected in parallel must be identical. The values of these variables are not limited by the junction box. Load cells can be connected using a four-wire or six-wire system.

With the four-wire system, two jumpers must be set in addition.

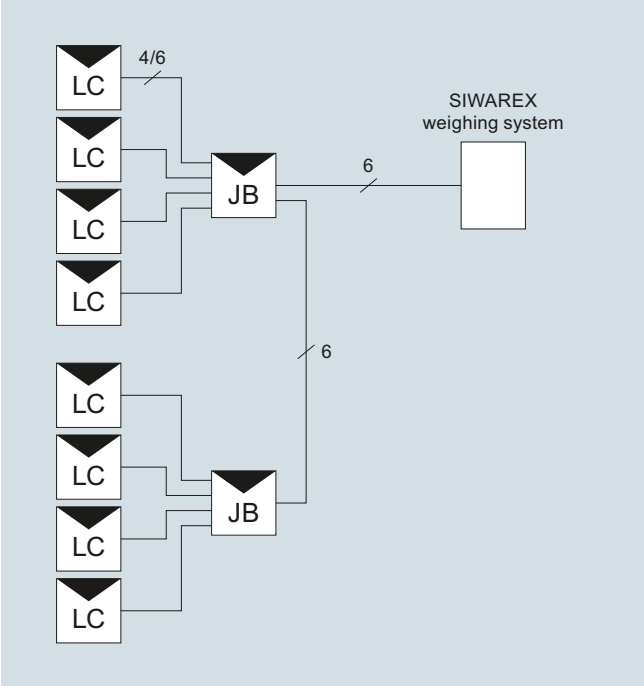
Connection examples

4 load cells:



LC: Load cell
JB: Aluminum junction box

8 load cells:



LC: Load cell
JB: Aluminum junction box

Technical specifications

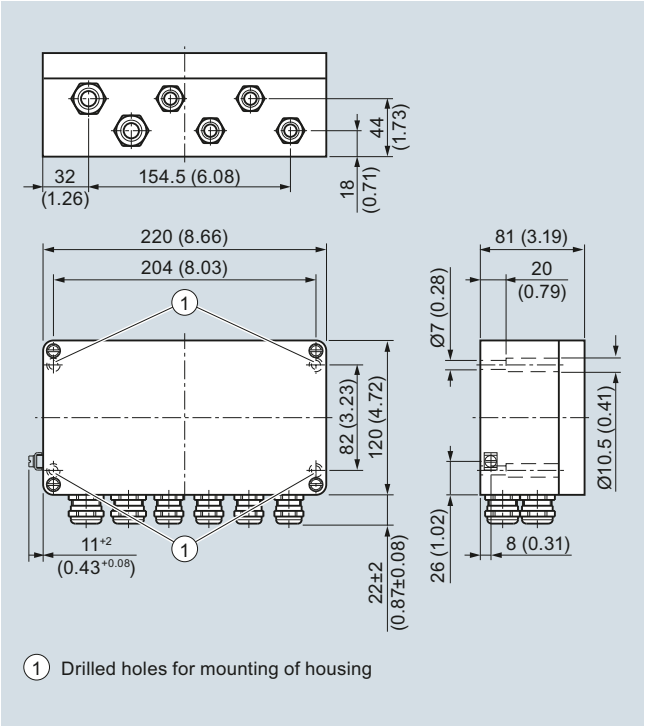
SIWAREX JB junction box, aluminum housing	
Cable glands	
• Load cells	4 x M16
• Electronics	2 x M20
Permissible ambient temperature	
• During operation	-30 … +85 °C (-22 … +185 °F)
• During operation for legal-for-trade medium accuracy weighing machine	-10 … +40 °C (-14 … +104 °F)
• During transportation and storage	-40 … +90 °C (-40 … +194 °F)
Degree of protection	IP66 to EN 60529
Vibration resistance of terminals to DIN VDE 0611 11/77	12 Hz and 50 Hz, amplitude 1 mm (0.04 inch)
Insulation resistance of terminals	$\geq 10^{12}\ \Omega$

© Siemens AG 2014

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	**7MH4710-1BA**
Cables (optional)	
Cable Li2Y 1 x 2 x 0.75 ST + 2 x (2 x 0.34 ST) - CY, orange sheath to connect SIWAREX U, CS, MS, FTA, FTC, M and CF to the junction box (JB), extension box (EB) or Ex interface (Ex-I) or between two JBs, for fixed laying, occasional bending permitted, 10.8 mm outer diameter, for ambient temperature -40 to +80 °C	**7MH4702-8AG**
Cable Li2Y 1 x 2 x 0.75 ST + 2 x (2 x 0.34 ST) - CY, blue sheath to connect the junction box (JB) or extension box (EB) in a potentially explosive atmosphere to the Ex interface (Ex-I), for fixed laying, occasional bending permitted, blue PVC insulating sheath, approx. 10.8 mm outer diameter, for ambient temperature -40 ... +80 °C	**7MH4702-8AF**

Dimensional drawings



SIWAREX JB junction box in aluminum (7MH4710-1BA), dimensions in mm (inch)

© Siemens AG 2014

SIWAREX JB junction box with stainless steel housing

Overview



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

The junction box can be used in potentially explosive areas (grounded, intrinsically-safe circuits).

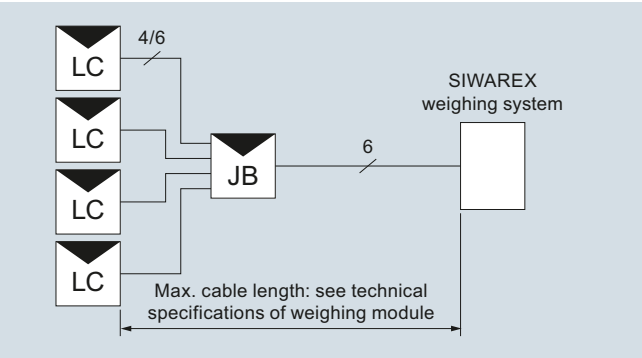
Design

The stainless steel junction box consists of a base section and a cover. The housing is sealed against penetration of dust and splashed water in accordance with IP 66 degree of protection. The cables enter the casing via metric EMC cable glands (brass, nickel-plated). In the housing, there are 18 terminals with spring-mounted contacts. The spring-mounted system results in vibration-resistant, maintenance-free connections.

The internal resistance, characteristic value and nominal load of all load cells connected in parallel must be identical. The values of these variables are not limited by the junction box. Load cells can be connected using a four-wire or six-wire system.

With the four-wire system, two jumpers must be set in addition.

Connection example



LC: Load cell JB: Stainless steel junction box

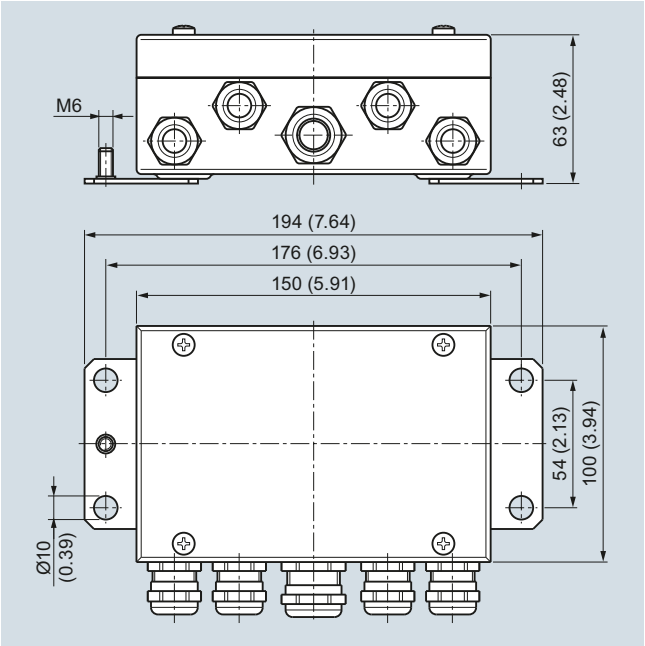
Technical specifications

SIWAREX JB junction box, stainless steel housing	
Cable glands	
• Load cells	4 x M16
• Electronics	1 x M20
Permissible ambient temperature	
• During operation	-30 ... +85 °C (-22 … +185 °F)
• During operation for legal-for-trade medium accuracy weighing machine	-10 ... +40 °C (-14 … +104 °F)
• During transportation and storage	-40 ... +90 °C (-40 … +194 °F)
Degree of protection	IP66 to EN 60529
Vibration resistance of terminals to DIN VDE 0611 11/77	12 Hz and 50 Hz, amplitude 1 mm
Insulation resistance of terminals	≥ 10^{12} Ω cm

Selection and ordering data

	Article No.
SIWAREX JB junction box, stainless steel housing for connecting up to 4 load cells in parallel	**7MH4710-1EA**
Cables (optional)	
Cable Li2Y 1 x 2 x 0.75 ST + 2 x (2 x 0.34 ST) - CY, orange sheath to connect SIWAREX U, CS, MS, FTA, FTC, M and CF to the junction box (JB), extension box (EB) or Ex interface (Ex-I) or between two JBs, for fixed laying, occasional bending permitted, 10.8 mm outer diameter, for ambient temperature -40 to +80 °C	**7MH4702-8AG**
Cable Li2Y 1 x 2 x 0.75 ST + 2 x (2 x 0.34 ST) - CY, blue sheath to connect the junction box (JB) or extension box (EB) in a potentially explosive atmosphere to the Ex interface (Ex-I), for fixed laying, occasional bending permitted, blue PVC insulating sheath, approx. 10.8 mm outer diameter, for ambient temperature -40 to +80 °C	**7MH4702-8AF**

Dimensional drawings



SIWAREX JB junction box in stainless steel (7MH4710-1EA), dimensions in mm (inch)

© Siemens AG 2014

Overview



The extension box EB is used to lengthen the connection cable of load cells.

Load cells can be connected using 4-wire and 6-wire systems. The cable connection to the weighing module or to the junction box JB must always be made using a 6-wire system. The SIWAREX cable 7MH4 702-8AG or ...-8AF is recommended.

If load cell cables are extended to a junction box JB, the cable glands M16 x 1.5 must be replaced. The following are required per 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.

The extension box can be used in potentially explosive areas (grounded, intrinsically-safe circuits).

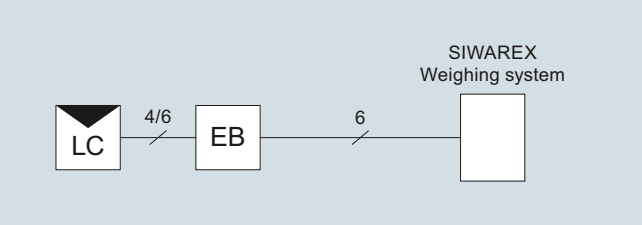
Design

The extension box has a housing made of die-cast aluminum. The housing is sealed against penetration of dust and splashed water in accordance with IP66. The cables enter the casing via metric EMC cable glands and are connected to spring-mounted terminals. The spring-mounted system results in vibration-resistant, maintenance-free connections.

When connecting load cells with a 4-wire system, two jumper elements are inserted for feedback of the sense signal.

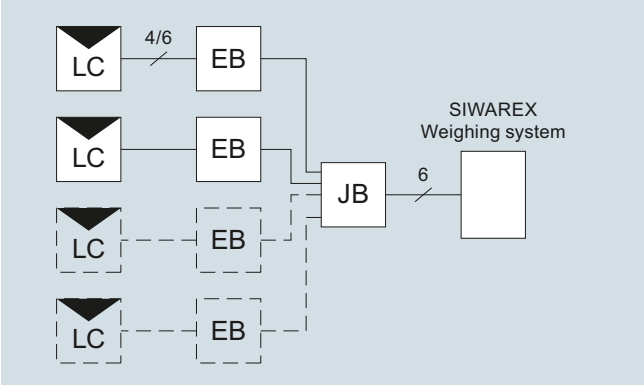
Connection examples

Connection of one load cell:



LC: Load cell EB: Extension box

Connection of several load cells:



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

Technical specifications

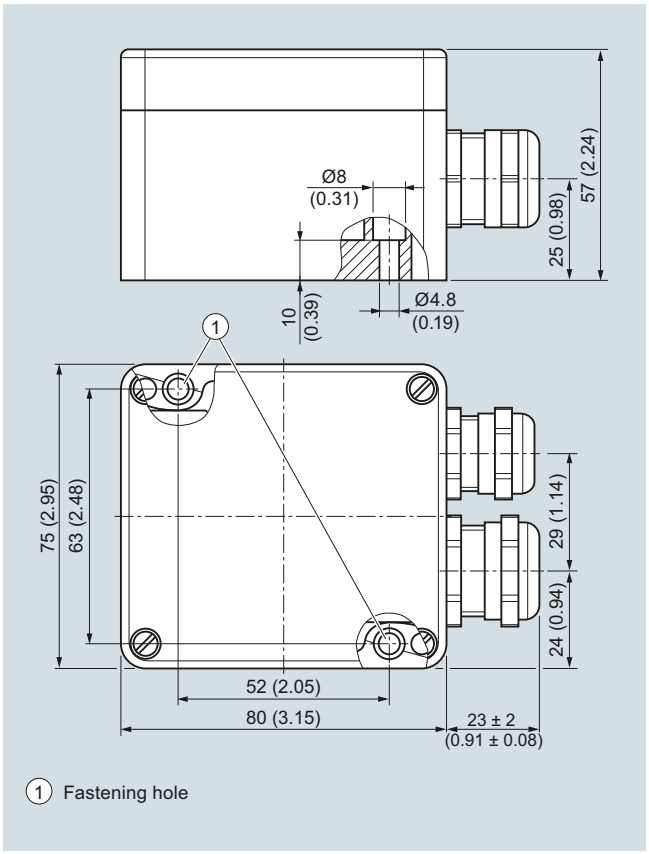
SIWAREX EB extension box	
Cable glands	
• of load cell cable	M16 x 1.5
• of signal cable	M20 x 1.5
Permissible ambient temperature	
• During operation	-30 … +85 °C (-22 … +185 °F)
• During operation for legal-for-trade medium accuracy weighing machine	-10 … +40 °C (-14 … +104 °F)
• During transportation and storage	-40 … +90 °C (-40 … +194 °F)
Degree of protection to EN 60529	IP66
Vibration resistance of terminals to DIN VDE 0611 11/77	12 Hz and 50 Hz, amplitude 1 mm (0.04 inch)
Insulation resistance of the terminals	$\geq 10^{12}\ \Omega$
Dimensions (H x W x D) in mm	80 x 75 x 57 (3.15 x 2.95 x 2.24)

Selection and ordering data

	Article No.
SIWAREX EB extension box, aluminum housing to extend the connection cables of load cells	**7MH4710-2AA**
Cable (optional)	
Cable Li2Y 1 x 2 x 0.75 ST + 2 x (2 x 0.34 ST) - CY, orange sheath to connect SIWAREX U, M, P, FTA, FTC and CS to the junction box (JB), extension box (EB) or Ex interface (Ex-I) or between two JBs, for fixed laying, occasional bending is possible, 10.8 mm outer diameter, for ambient temperature –40 to +80 °C	**7MH4702-8AG**
Cable Li2Y 1 x 2 x 0.75 ST + 2 x (2 x 0.34 ST) - CY, blue sheath to connect the junction box (JB) or extension box (EB) in a potentially explosive atmosphere to the Ex interface (Ex-I), for fixed laying, occasional bending is possible, blue PVC insulating sheath, approx. 10.8 mm outer diameter, for ambient temperature –40 to +80 °C	**7MH4702-8AF**

© Siemens AG 2014

Dimensional drawings



SIWAREX EB expansion box (7MH4710-2AA), dimensions in mm (inch)

© Siemens AG 2014

Overview



The highly flexible grounding cable is used to discharge parasitic currents.

Design

The grounding cable is 400 mm long and corresponds to an electrical bypass.

It protects the load cell from undesirable voltages which can occur e.g. when welding or as a result of lightning.

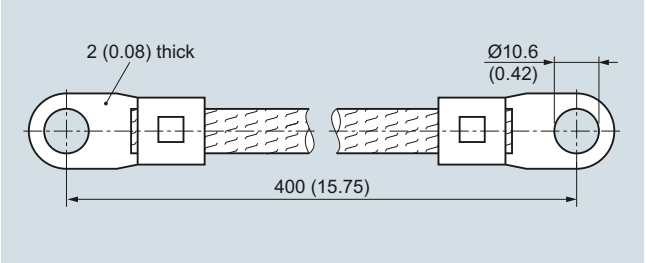
We recommend using one grounding cable for each load cell.

The load cell and/or other mounting elements 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 Length 400 mm	**7MH3701-1AA1**

Dimensional drawings



Grounding cable, dimensions in mm (inch)

© Siemens AG 2014

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 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 check 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
Empty weight of container	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 t × 1.2 = 0.9 t (0.74 tn. L. x 1.2 = 0.89 tn. L.)

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

© Siemens AG 2014

Overview

Example 1: Container weighing

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

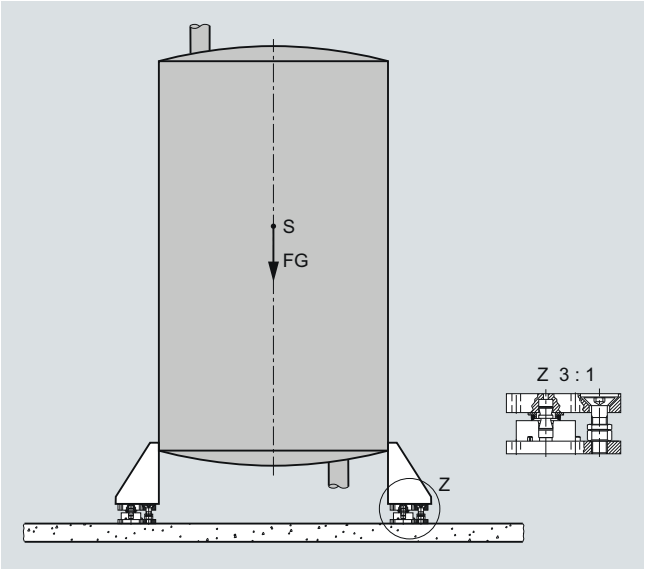
It is supported on 4 brackets (container manufacturer specification), has an empty weight (i.e. dead load) of 1.2 t (1.18 tn. L.) and a maximum capacity of 1.8 t (1.77 tn. L.). The load is evenly distributed across all 4 load cells.

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, leads to a rated load of 1 t (0.98 tn. L.).



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

For the above example, 4 SIWAREX WL280 RN-S SA load cells were used with a rated load of 1 t ((0.98 tn. L.) because the high-quality precision RN load cells have an extremely low constructional height.

Self-centering compact mounting units are used as mounting components as, in addition to their oscillation function and oscillation limitation, they are also fitted with a protection against raising up. The protection against raising up can handle a maximum vertical force of 10 kN. In the event of greater lifting forces (e.g due to wind load), the container must be safeguarded with additional catastrophe protection.

Configurator for container weighing (basic configuration)

Item	Description	Article No.	Selection criterion	Amount needed in example
1	SIWAREX WL280 RN-S SA, rated load 1 t (0.98 tn. L.), C3	**7MH5113-4AD00**	High-quality ring-torsion load cell with low constructional height, ideal for container weighing	4
2	Compact mounting unit for SIWAREX WL280 RN-S SA load cell, rated load 1 t (0.98 tn. L.), Material: Stainless steel	**7MH4132-4AC11**	Ensures not only the oscillation function with oscillation limitation, but also the protection against raising up function	4
3	Grounding cable	**7MH3701-1AA1**	For discharging undesirable currents	4

© Siemens AG 2014

Configuration example 2

Overview

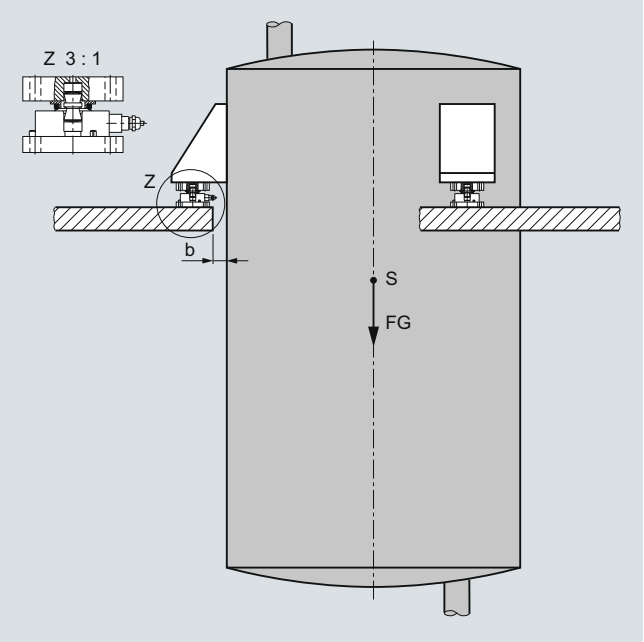
Example 2: Container weighing

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

It is supported on 3 brackets, has an empty weight (i.e. 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 to approx. 55° C (131° C).

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, page Seite 66). Due to its low constructional height, the WL280 RN load cell was used.



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

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.

If the width of the gap is larger in other applications, it may be necessary to install compact mounting units (instead of the self-aligning bearing) or alternatively, external oscillation limiters (see configuration example 4).

Configurator for container weighing (basic configuration)

Item	Description	Article No.	Selection criterion	Amount needed in example
1	SIWAREX WL280 RN-S SA, rated load 2 t (1.97 tn. L.), C3	**7MH5113-4GD00**	High-quality ring-torsion load cell with low constructional 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**	Supports accommodation of temperature expansion, without transferring interfering reaction forces to the load cell	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 discharging undesirable currents	3

© Siemens AG 2014

Additional info

Example 3: Mixer weighing

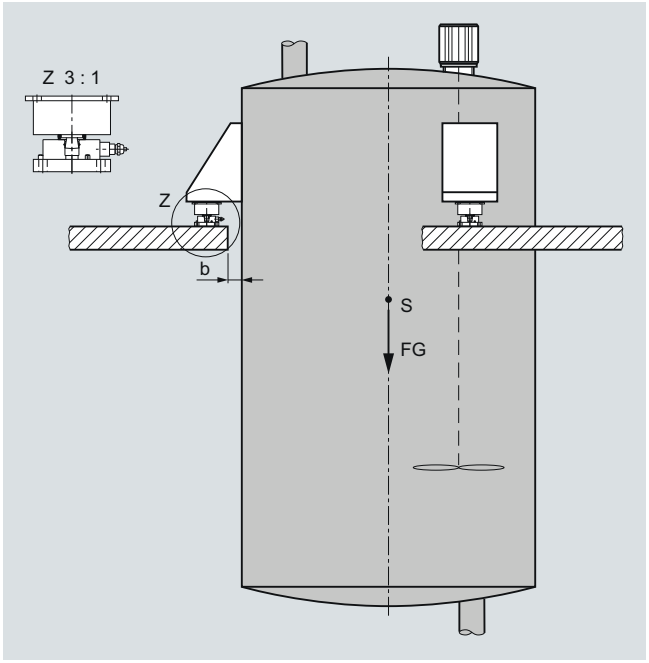
The total center of gravity **S** of the suspended container lies below the level of the load cells.

It is supported on 3 brackets, has an empty weight (i.e. 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.

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 precision WL280 RN load cell has an extremely low constructional height (for determination of rated load: please refer to introduction, page Seite 66)



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

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.

If the width of the gap is larger in other applications, limit stops or external oscillation limiters must be provided.

Configurator for mixer weighing (basic configuration)

Item	Description	Article No.	Selection criterion	Amount needed in example
1	SIWAREX WL280 RN-S SA, rated load 3.5 t , C3, without EEx	**7MH5113-4LD00**	High-quality ring-torsion load cell with low constructional 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**	For vibration damping to minimize the effects on the load cell	3
4	Grounding cable	**7MH3701-1AA1**	For discharging undesirable currents	3

© Siemens AG 2014

Notes