

Load Cells

Double shear beam load cells

SIWAREX WL290 DB-S CA Load cell

Overview



The SIWAREX WL290 DB-S CA double shear beam load cell is made of nickel-plated specialty steel. WL290 DB-S CA load cells are especially suited for large platform and hopper scales. A special mounting unit makes them particularly suitable for assembling scales in vehicles. The double shear beam load cell is installed without oscillation or elastomer force-transmitting mechanisms since transverse forces do not result in the otherwise usual oscillating or deflection effects in the load cell. The load cells are legal-for-trade according to OIML R60. They are available in accuracy class C3.

Design

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

Selection and ordering data

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

Technical specifications

| SIWAREX WL290 DB-S CA | |
|--|--|
| Possible applications | <ul style="list-style-type: none"> Platform scales Hopper scales Scales in vehicles |
| Type of construction | Double cutter |
| Loads | |
| Rated load/maximum capacity E_{max} | <ul style="list-style-type: none"> 2.3 t (2.26 tn. l.) 4.5 t (4.43 tn. l.) 9.1 t (8.96 tn. l.) 13.6 t (13.39 tn. l.) 18 t (17.81 tn. l.) 23 t (22.24 tn. l.) 27 t (26.77 tn. l.) 34 t (33.46 tn. l.) 45 t (44.29 tn. l.) 68 t (66.93 tn. l.) 91 t (89.56 tn. l.) 113 t (111.22 tn. l.) |
| Min. dead load E_{min} | 0 kg |
| Max. working load L_u | 150% E_{max} |
| Breaking load L_d | 300% E_{max} |
| Measurement characteristic values | |
| Rated displacement h_n at E_{max} | |
| • $E_{max} = 2.3$ t (2.26 tn. l.) | 0.5 mm |
| • $E_{max} = 4.5$ t (4.43 tn. l.) | 0.6 mm |
| • $E_{max} = 9.1$ t (8.96 tn. l.) | 1.1 mm |
| • $E_{max} = 13.6 \dots 23$ t (13.39 ... 22.24 tn. l.) | 0.5 mm |
| • $E_{max} = 27$ t (26.77 tn. l.) | 0.6 mm |
| • $E_{max} = 34 \dots 68$ t (33.46 ... 66.93 tn. l.) | 0.5 mm |
| • $E_{max} = 91, 113$ t (89.56, 111.22 tn. l.) | 0.9 mm |
| Rated characteristic value C_n | 3.0 ± 0.008 mV/V |
| Tolerance D_0 of zero signal | ≤ ± 1.0% C_n |
| Max. scale interval n_{LC} | 3 000 |
| Min. scale interval V_{min} | $E_{max}/10\ 000$ |
| Combined error F_{comb} | ≤ ± 0.023% C_n |
| Creep error 30 min F_{cr} | ≤ ± 0.015% C_n |
| Electrical characteristic values | |
| Recommended supply voltage | 5 ... 12 V DC |
| Maximum supply voltage | 18 V DC |
| Input resistance R_e | 700 ± 7 Ω |
| Output resistance R_a | 700 ± 7 Ω |
| Insulation resistance R_{is} | ≥ 5 000 MΩ at 50 V DC |
| Connection and environmental conditions | |
| Rated temperature range B_{rn} | -10 ... +40 °C (+14 ... +104 °F) |
| Operating temperature range B_{tu} | -35 ... +60 °C (-31 ... +140 °F) |
| Storage temperature range B_{ts} | -40 ... +80 °C (-40 ... +176 °F) |
| Sensor material (DIN) | Steel, nickel-plated |
| Degree of protection according to EN 60529; IEC 60529 | IP67 |
| Cable connection | |
| Length of the connecting cable (four-core) | 9 m |
| Diameter of the connecting cable | |
| • 2.3 ... 9.1 t (2.26 ... 8.96 tn. l.) | 5 mm |
| • 13.6 ... 113 t (13.39 ... 111.22 tn. l.) | 8 mm |
| Function | Color |
| • EXC + | Red |
| • EXC - | Black |
| • SIG + | Green |

Technical specifications (Continued)

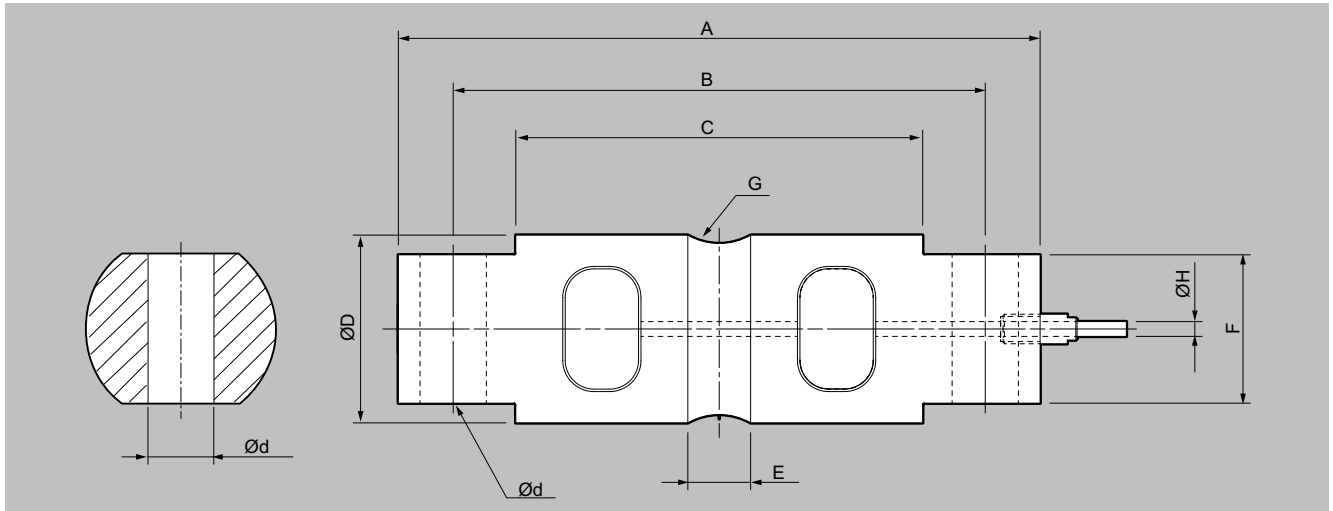
| SIWAREX WL290 DB-S CA | |
|--|--|
| • SIG - | White |
| • Shield (not connected to the load cell body) | Transparent |
| Certificates and approvals | |
| Accuracy class according to OIML R60 | C3 |
| Explosion protection | <ul style="list-style-type: none"> EU/UK: <ul style="list-style-type: none"> - ATEX/UKEX II 1 G Ex ia IIC T4 - ATEX/UKEX II 1 D Ex ia IIIC T200 135°C - Da - ATEX/UKEX II 3 G Ex ic IIC T4 Gc - ATEX/UKEX II 3 D Ex tc IIIC T73°C Dc - ATEX/UKEX II 3 G Ex ec T4 IIC Gc USA: <ul style="list-style-type: none"> - IS CL I, II, III, DIV 1, GP A, B, C, D, E, F, G; T4 - IS CL I, ZN 0, AEx ia IIC T4 Ga - Zone 20, AEx ia IIIC T135°C Da - CL I, II, III, DIV 2, GP A, B, C, D, E, F, G; T4 - CL 1, ZN 2, GP IIC T4 - IS CL I, ZN 2, AEx ic IIC T4 Gc Canada: <ul style="list-style-type: none"> - IS CL I, II, III, DIV 1, GP A, B, C, D, E, F, G; T4 - IS CL I, ZN 0, Ex ia IIC T4 Ga - Ex ia IIIC T135°C Da - CL I, II, III, DIV 2, GP A, B, C, D, E, F, G; T4 - CL 1, ZN 2, GP IIC T4 - Ex ic IIC T4 Gc |

Load Cells

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SIWAREX WL290 DB-S CA Load cell

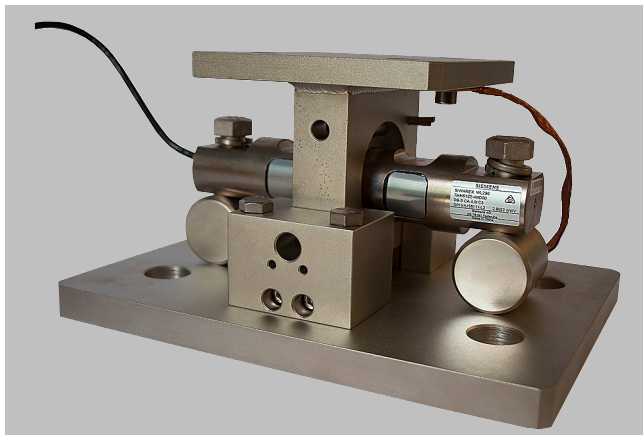
Dimensional drawings



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

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

Overview



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

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

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

Design

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

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

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

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

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

Selection and ordering data

| Silo mounting unit For load cells of the SIWAREX WL290 DB-S CA series Material: Steel, nickel-plated | | Article No. 7MH5722- | |
|--|--|-------------------------|---|
| | | ● ● A 1 0 | |
| Click on the Article No. for the online configuration in the PIA Life Cycle Portal. | | | |
| For load cells with a rated load of¹⁾ | | | |
| • 2.3 ... 9.1 t (2.26 ... 8.96 tn. l.) | | 4 | U |
| • 13.6 ... 34 t (13.39 ... 33.46 tn. l.) | | 5 | L |
| • 45 t (44.29 tn. l.) | | 5 | N |
| • 68 t (66.93 tn. l.) | | 5 | R |
| • 91 ... 113 t (88.58 ... 111.22 tn. l.) | | 6 | A |

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

Load Cells

Double shear beam load cells

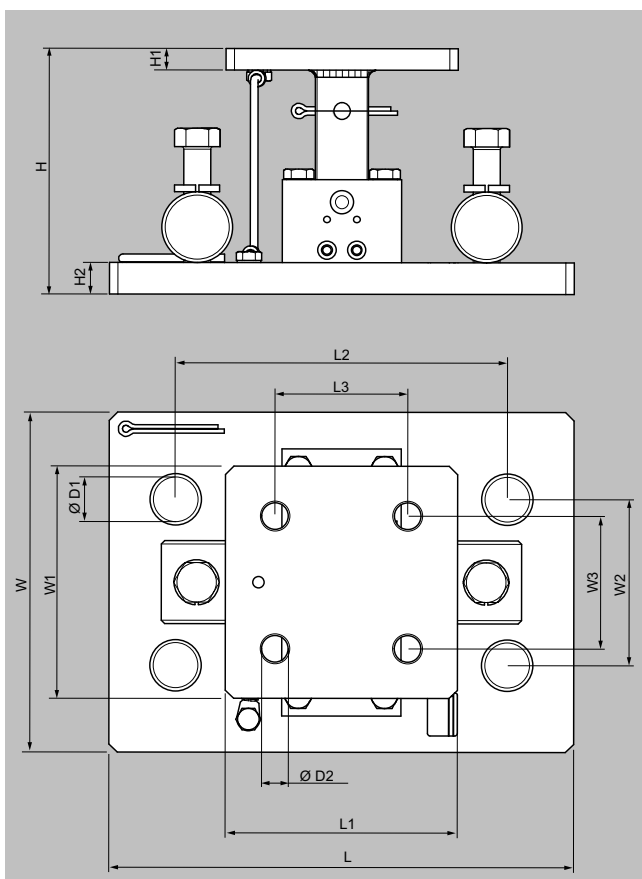
SIWAREX WL290 DB-S CA Silo-mounting unit

Technical specifications

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

| Rated load | 2.3 ... 4.5 t (2.26 ... 4.43 tn. l.) | 9.1 t (8.96 tn. l.) | 13.6 ... 34 t (13.39 ... 33.46 tn. l.) | 45 t (44.29 tn. l.) | 68 t (66.93 tn. l.) | 91 ... 113 t (88.58 ... 111.22 tn. l.) |
|--|---|-------------------------|---|-------------------------|-------------------------|---|
| Maximum lateral deflection | +/- 5 mm (0.2 inch) | +/- 5 mm (0.2 inch) | +/- 5 mm (0.2 inch) | +/- 5 mm (0.2 inch) | +/- 5 mm (0.2 inch) | +/- 5 mm (0.2 inch) |
| Lifting path of top part | 1.43 mm (0.056 inch) | 1.26 mm (0.050 inch) | 1.07 mm (0.042 inch) | 1.69 mm (0.066 inch) | 1.69 mm (0.067 inch) | 0.97 mm (0.038 inch) |
| Permissible lateral force with load cell | 18 kN | 18 kN | 68 kN | 90 kN | 136 kN | 226 kN |
| Permissible lateral force as dummy | 10 kN | 10 kN | 21 kN | 41 kN | 41 kN | 68 kN |
| Permissible lifting force | 15 kN | 15 kN | 50 kN | 75 kN | 75 kN | 310 kN |
| Tightening torque of mounting bolts for load cells | 20 Nm | 20 Nm | 25 Nm | 25 Nm | 25 Nm | 30 Nm |
| Material | Steel, nickel-plated | | | | | |

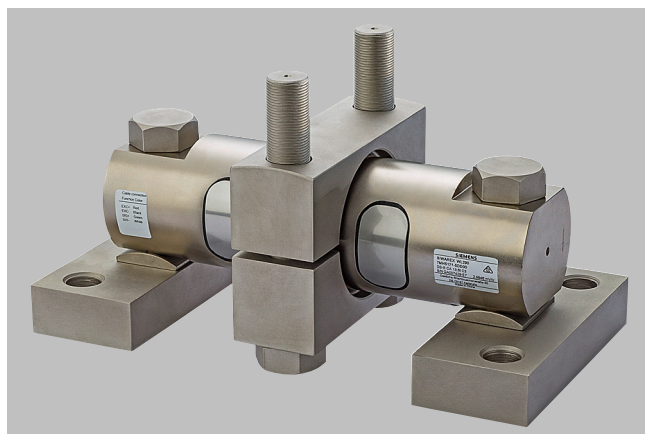
Dimensional drawings



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

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

Overview



SIWAREX WL290 DB-S CA load cell with mounting unit

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

Design

The load cell is bolted onto the bearing plates. By using a two-part bearing collar, the load bearing implement is also firmly connected to the load cell and without play. The bearing collar transfers the weight force centered into the load cell. Since all connections are tight, possible acceleration forces, caused for example by a container on a vehicle, are directed to the chassis from the load cell and mounting unit. Additional latching mechanisms are not required. Due to the zero play mounting of the load cell no wear can occur, making any maintenance measures superfluous.

Selection and ordering data

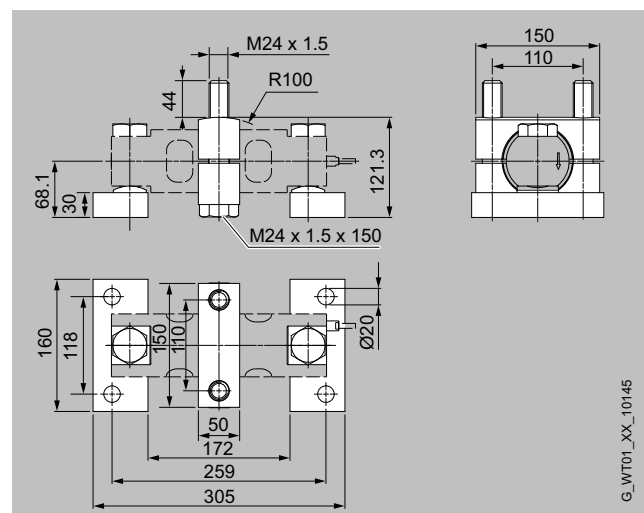
| | Article No. |
|---|---------------|
| Mounting unit For load cells of the SIWAREX WL290 DB-S CA series Material: Steel, nickel-plated For load cells with a rated load of ¹⁾ | |
| • 13.6 ... 34 t (13.39 ... 33.46 tn. l.) | 7MH5722-5LA11 |

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

Technical specifications

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

Dimensional drawings



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