

SIEMENS

SIWAREX WL230

Compact installation units SB-S SA

Operating Instructions

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Legal information

Warning notice system

This manual contains notices you have to observe in order to ensure your personal safety, as well as to prevent damage to property. The notices referring to your personal safety are highlighted in the manual by a safety alert symbol, notices referring only to property damage have no safety alert symbol. These notices shown below are graded according to the degree of danger.

⚠ DANGER
indicates that death or severe personal injury will result if proper precautions are not taken.
⚠ WARNING
indicates that death or severe personal injury may result if proper precautions are not taken.
⚠ CAUTION
with a safety alert symbol, indicates that minor personal injury can result if proper precautions are not taken.
CAUTION
without a safety alert symbol, indicates that property damage can result if proper precautions are not taken.
NOTICE
indicates that an unintended result or situation can occur if the relevant information is not taken into account.

If more than one degree of danger is present, the warning notice representing the highest degree of danger will be used. A notice warning of injury to persons with a safety alert symbol may also include a warning relating to property damage.

Qualified Personnel

The product/system described in this documentation may be operated only by **personnel qualified** for the specific task in accordance with the relevant documentation, in particular its warning notices and safety instructions. Qualified personnel are those who, based on their training and experience, are capable of identifying risks and avoiding potential hazards when working with these products/systems.

Proper use of Siemens products

Note the following:

⚠ WARNING
Siemens products may only be used for the applications described in the catalog and in the relevant technical documentation. If products and components from other manufacturers are used, these must be recommended or approved by Siemens. Proper transport, storage, installation, assembly, commissioning, operation and maintenance are required to ensure that the products operate safely and without any problems. The permissible ambient conditions must be complied with. The information in the relevant documentation must be observed.

Trademarks

All names identified by ® are registered trademarks of Siemens AG. The remaining trademarks in this publication may be trademarks whose use by third parties for their own purposes could violate the rights of the owner.

Disclaimer of Liability

We have reviewed the contents of this publication to ensure consistency with the hardware and software described. Since variance cannot be precluded entirely, we cannot guarantee full consistency. However, the information in this publication is reviewed regularly and any necessary corrections are included in subsequent editions.

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Introduction

1.1 Purpose of this documentation

These instructions contain all the information you need for commissioning and using the device.

It is aimed at persons who install the device mechanically and commission it, as well as at service and maintenance engineers.

1.2 History

The following versions of this documentation have been released to date. The changes apply to the previous version:

Edition	Comment / change
11/2008	Initial release
12/2011	Fixing screws and tightening torques

1.3 Scope of delivery

The scope of delivery is made up of the following components:

- Information sheet
- Pre-assembled compact installation unit
- Pendulum bolts accessories pack:
 - Pendulum bolts
 - Pendulum bolt enclosure with flat seal
- Accessories pack for installation:
 - 2 x hexagon bolts
 - 2 x washers
 - Spacing strip: Only for variants with a rated load of 0.5 t and 1 t.

Note

Other scope of delivery information

Drawings of the parts of the compact installation unit can be found in Section Preparing the compact installation unit (Page 24)

1.4 Environmental protection

Environmental protection

Devices described in this programming manual can be recycled owing to the low content of noxious substances in their version. Please contact a certified waste disposal company for eco-friendly recycling and to dispose of your old devices.

Notes on handling the product

Proper use

Proper use means that this product must only be used within the limits of the technical specifications and intended purposes of these operating instructions.

If this device is used properly in compliance with the safety notices, this device will not present any danger.

This device can only function correctly and safely if it is transported, stored, set up and mounted correctly.

Correct operation of the device must be ensured by complying with the technical specifications.

Improper handling can result in death, personal injury or property damage.

Notes on liability for defects

We expressly point out that the product quality is exclusively and conclusively described in the sales contract. The content of this product documentation is neither part of a previous or existing agreement, promise or legal relationship, nor is it intended to modify these. All obligations on the part of Siemens AG are contained in the respective sales contract, which also contains the complete and solely applicable liability provisions. The provisions defined in the sales contract for the responsibility for defects are neither extended nor limited by the remarks in this document.

Delivery information

The current scope of delivery is listed on the shipping documents enclosed with the delivery in accordance with the valid sales contract.

When opening the packaging, please observe the relevant information. Check the delivery for completeness and undamaged condition. In particular, the order number on the rating plate must be compared to the ordering data.

Before you start work, please read these operating instructions. They contain important information and data whose observation ensures the general safety and functionality of this device. The manual will help you to handle this product more easily and efficiently, allowing you to achieve reliable results.

Qualified personnel

In the context of this documentation, qualified personnel are people who are familiar with the installation, mounting, commissioning, and operation of the product.

These people must have the following qualifications:

- They must be trained, instructed and authorized to operate and maintain devices and systems in accordance with their place of work and in compliance with the safety engineering standards for
 - Electrical circuits
 - High pressures
 - Corrosive and hazardous media
- They must be trained, instructed and authorized to maintain and use appropriate safety equipment according to the standards for safety engineering.
- In the case of devices with explosion protection, qualified persons must be trained, instructed and authorized to perform work on electrical circuits in plants subject to explosion hazards.

Protection against explosion

There is no potential risk of ignition from the installation units of the load cells. Therefore they are not subject to the EC directive 94/9 EC (ATEX).

Trademarks

SIWAREX ® is a registered trademark of Siemens AG.

All other names appearing in these instructions may be trademarks; use of such names by third parties for their own purposes may infringe upon owners rights.

Description

3.1 Application

3.1.1 Use of compact installation units

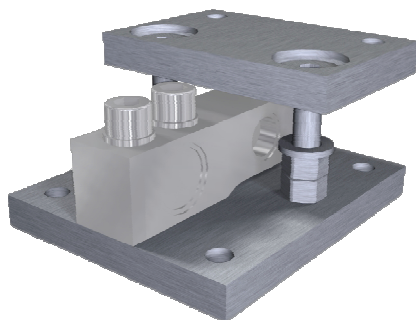
Compact installation units take on the direct introduction of force into the load cells.

The compact installation units have the following characteristics:

- Easy installation of the load cell
- Easy adjustment of the load cell under the load bearing implement
- Self-centering on the load bearing implement
- Can be used as a dummy for light installation work
- Ensure slow and controlled lowering of the load bearing implement
- Can be used as a transport lock by fixing the top plate
- Integrated lifting protection
- Designed relief of the load cell during installation
- Overload protection of the load cell during installation

Compact installation unit for SIWAREX WL230 SB-S SA

The type SIWAREX WL230 SB-S SA self-centering compact installation unit for load cells is especially well suited for installation in container scales, platform scales and roller table scales.



3.1.2 Lifting protection

The lifting protection prevents the load bearing implements from being lifted off of the load cells.

If there is a risk of the load bearing implement being lifted or toppled, then lifting protection is required. This is required in the case of lightweight containers and tall, outdoor silos.

3.1.3 Overload protection

The overload protection protects load cells from a load that is too great.

There is overload protection against excessive loads in the measuring direction and overload protection against excessive transverse forces.

Transverse forces are caused by, for example, wind, filling processes, acceleration, or conveyor belt friction. If these forces exceed certain values, the load cells must be protected from them.

3.1.4 Use of the grounding cable

The grounding cable is used to protect the load cells from undesired currents. The causes of such currents are, for example:

- Equalizing currents with missing or faulty equipotential bonding conductors.
- A lightning strike nearby
- Welding work
- Static charge

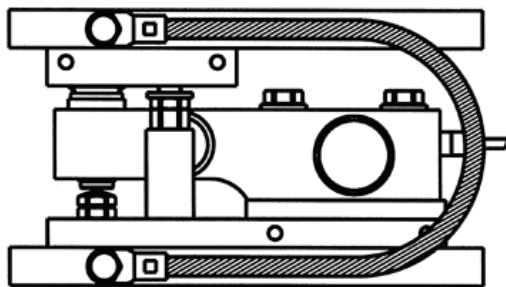


Figure 3-1 Example usage of the grounding cable

3.2 Layout and function

3.2.1 Design and mode of operation of the compact installation unit

Design

The compact installation unit comprises the following main components:

- Base plate ①
- Top plate ③
- Pendulum bolt ⑤
- Two countersunk head screws ② as aids to installation and adjustment

Together with the load cell, the compact installation unit represents a self-centering bearing unit.

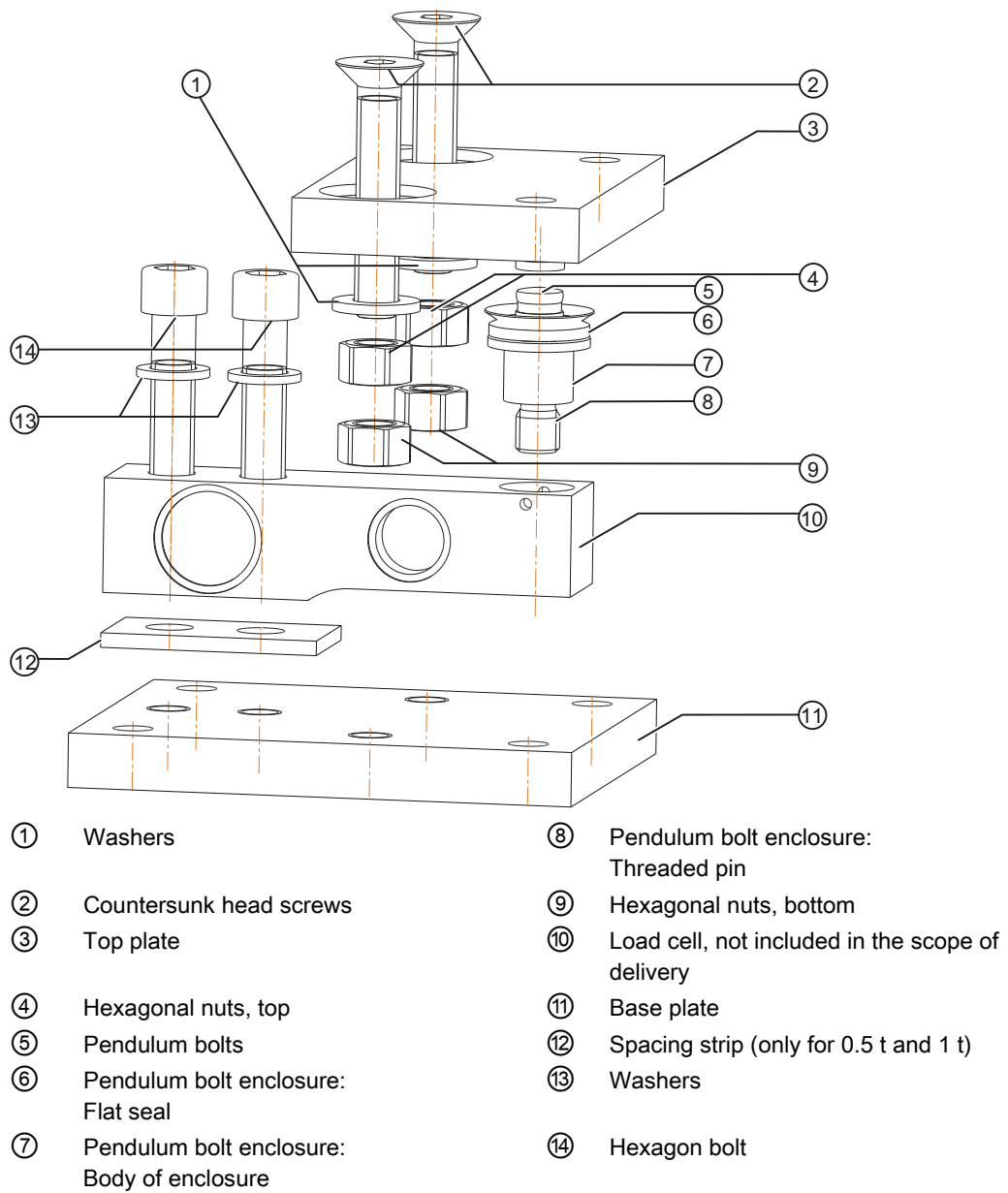


Figure 3-2 Exploded view: compact installation unit with built-in load cell

Principle of operation

The top plate is aligned and secured by the two countersunk head screws through the base plate. This results in a stable unit. The set height of the top plate is three millimeters higher upon delivery than the installation height with a load cell.

In this condition, the compact installation unit serves as an installation aid and can be used as a dummy for lighter installation work.

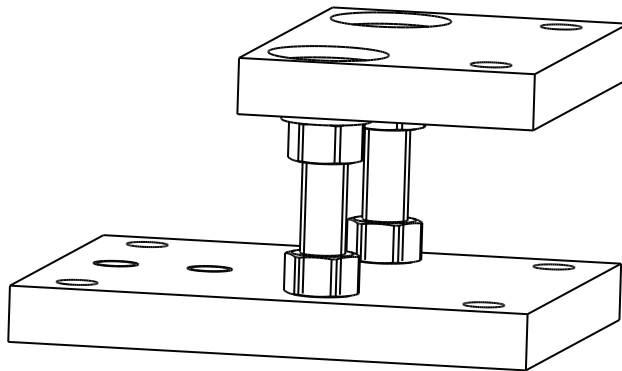


Figure 3-3 Compact installation unit: pre-assembled upon delivery

Before installation, the load cell is installed in the compact installation unit using the pendulum bolt. Then the complete unit is installed in the scale. This aligns the load bearing implement and the installation units. The load cells are not yet loaded.

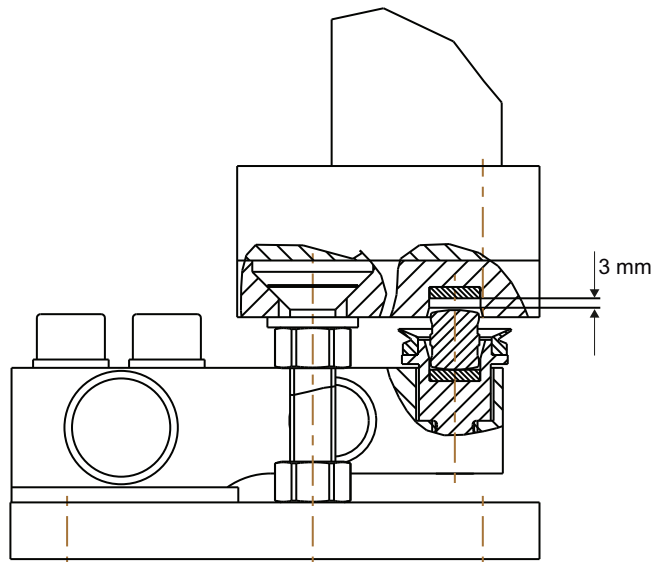


Figure 3-4 Installation state

Finally, the load bearing implement is lowered by loosening the two upper hexagonal nuts under the top plate. The top plate is lowered onto the pendulum bolts. The weight is now on the load cells.

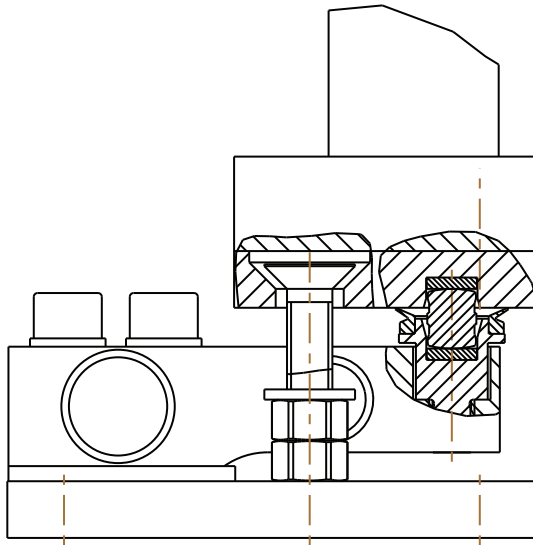
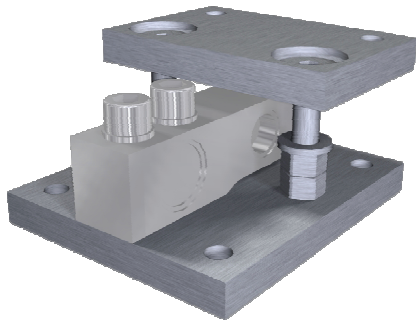


Figure 3-5 Operating state

In this state, the load cell and the pressure piece form a self-centering unit. The compact installation unit allows the top plate and the load bearing implement to be deflected up to three millimeters to the side. The countersunk head screws make up the lifting protection.



3.2.2 Design and function of the grounding cable

Design

The grounding cable consists of a fine-gauge copper wire with a cross-section of 50 mm² and two lugs, Ø 10 mm.

Principle of operation

The grounding cable represents an electrical by-pass via the load cell and installation unit. High weld currents can destroy the load cell, installation unit or the electronics. The electronics can be affected by voltage sparkovers or static discharges.

Application planning

4.1 Load cell dummies

Principle of operation

Load cells are sensitive sensors. To protect the load cells from becoming damaged during installation and transport, the load cells should only be installed at the last minute. During installation and transport, the load cells should therefore be replaced by space holders, so-called dummies or phantoms.

Dummies might be designed as follows:

- A copy of the installation unit by means of a welded construction for coarse installation work
- Use of a SIWAREX WL230 compact installation unit for light installation work

A copy of the installation unit by means of a welded construction

A piece of pipe or some other steel profile is welded between two plates with the hole pattern for the fixing screws. The total height corresponds to the installation height of the installation unit. This is the most stable and secure version. Rough installation work can be carried out with the welded construction.

Use of a SIWAREX WL230 compact installation unit

The compact installation units are delivered pre-assembled. Compact installation units are set to the installation height of the operational unit. With compact installation units, light installation work can be carried out.

4.2 Lifting protection

Lifting protection is integrated in the compact installation units for the load cells of the SIWAREX WL230 series. When other installation units are used, lifting protection must be provided for in the design if applicable.

The following figure shows a proposed solution for lifting protection. The X designates the possible lifting path of the load bearing implement. The bore $\varnothing D$ must be larger than the diameter of the bolt $\varnothing d$. The movement of the load bearing implement must not be hindered.

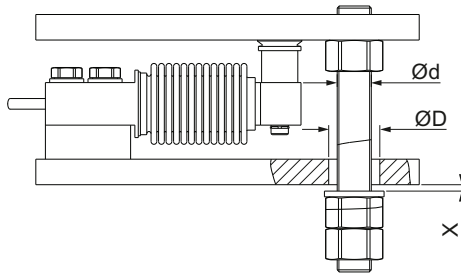


Figure 4-1 Proposed solution for lifting protection

4.3 Load pick-up

Mounting areas

For the mounting areas of the installation units, the following requirements apply:

- The positional and angular deviations of the mounting areas to each other should correspond to the general tolerances for welded constructions in EN ISO 13920.
- Ensure that the foundations are absolutely firm and free of depressions. In concrete foundations, flat steel plates should be poured in so that installation units can be installed on them.
- The mounting surfaces must be vertical to the measuring direction and preferably in one plane.
- A plane of ≤ 0.2 mm is required for the mounting surfaces.

More than three support points

For more than three support points, the load bearing implement is usually statically indeterminate. With firm foundations and load bearing implements, the load is not evenly distributed to all load cells. The same applies to unstable mounts such as a steel construction. Two diagonal load cells bear the main load. The other cells only support the load bearing implement.

There are two ways to take this into consideration:

- Over-dimensioning of the load cells
- Height compensation of the support points

Over-dimensioning of the load cells

The rated load of the load cells is calculated such that with, for example, four support points the entire weight can be borne by two load cells.

This also prevents an overload of the load cells if depressions in the foundation have to be taken into consideration, e.g. for racks in the steel structure.

Height compensation of the support points

With this method, the output signals of all of the load cells are attuned to each other under a load. To ensure that all of the load cells receive approximately the same load, spacer plates are used to compensate the heights. The spacer plates are positioned between the bracket and top plate of the installation unit.

The output signals of the individual load cells correspond to the load distribution.

Proceed as follows to measure the output signals:

1. Disconnect the load cell wires SIG+ and SIG-.
2. Supply the load cells with power from the power supply.
3. Measure the output voltage between SIG+ and SIG- of each individual load cell.
4. Place spacing plates under the load cell bracket with the lowest value until the output voltages are equal.

4.4 Overload protection

CAUTION
Irreparable faults and damage to the load cells
When using load cells with small rated loads, always provide overload protection in order to protect the cells from becoming damaged. This applies both to the measuring direction and the transverse direction.
If load cells are used beyond the maximum working load or the maximum transverse load, this can cause irreparable faults and even fracturing of the load cell or the installation unit.

Overload protection in the measuring direction

Load cells can be protected against vertical overload by placing a stop screw under the point where force is introduced. The stop screw limits the measuring path of the load cell.

For load cells with high rated loads, the risk of an unintentional overload is not as great. Possible additional loads can already be taken into consideration during the dimensioning of the load cells.

Another method for protecting load cells from an overload is to over-dimension the load cells.

Overload protection in the transverse direction

For the SB-S SA load cells, the weight force is introduced into the load cells via pendulum bolts. These elements allow lateral movement of the load bearing implement or a change in its length as a result of expansion due to heat, up to a certain degree. They generate a restoring force corresponding to the deflection, which re-centers the load bearing implement. This freedom of movement is desired and necessary for accurate weighing.

If the transverse force is so great that it exceeds the restoring force of the pendulum bolt (and thus the deflection limit), then corresponding protective measures are required. Pendulum limiters or guide elements are suitable for this, for example.

Pendulum limiters must be constructed or set in such a way that the maximum deflection cannot be exceeded in any direction. This is shown in two examples in the following figure.

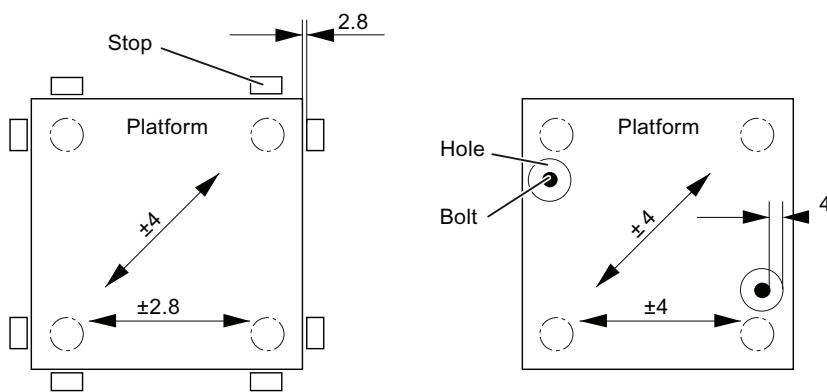


Figure 4-2 Pendulum limitation with a maximum deflection of 4 mm as exemplified by two weighing platforms

Pendulum limiters are integrated in the SB-S SA compact installation units.

4.5 Guide elements

Use the guide elements in the following cases:

- A weight should be determined under the influence of transverse forces.
- Horizontal movement of the load bearing implement should be prevented.

A change in the distance between the support points, for example as a result of expansion of the load bearing implement due to heat, must not lead to mutual tensioning of the guide elements.

The following figure shows the ideal arrangement of guide elements.

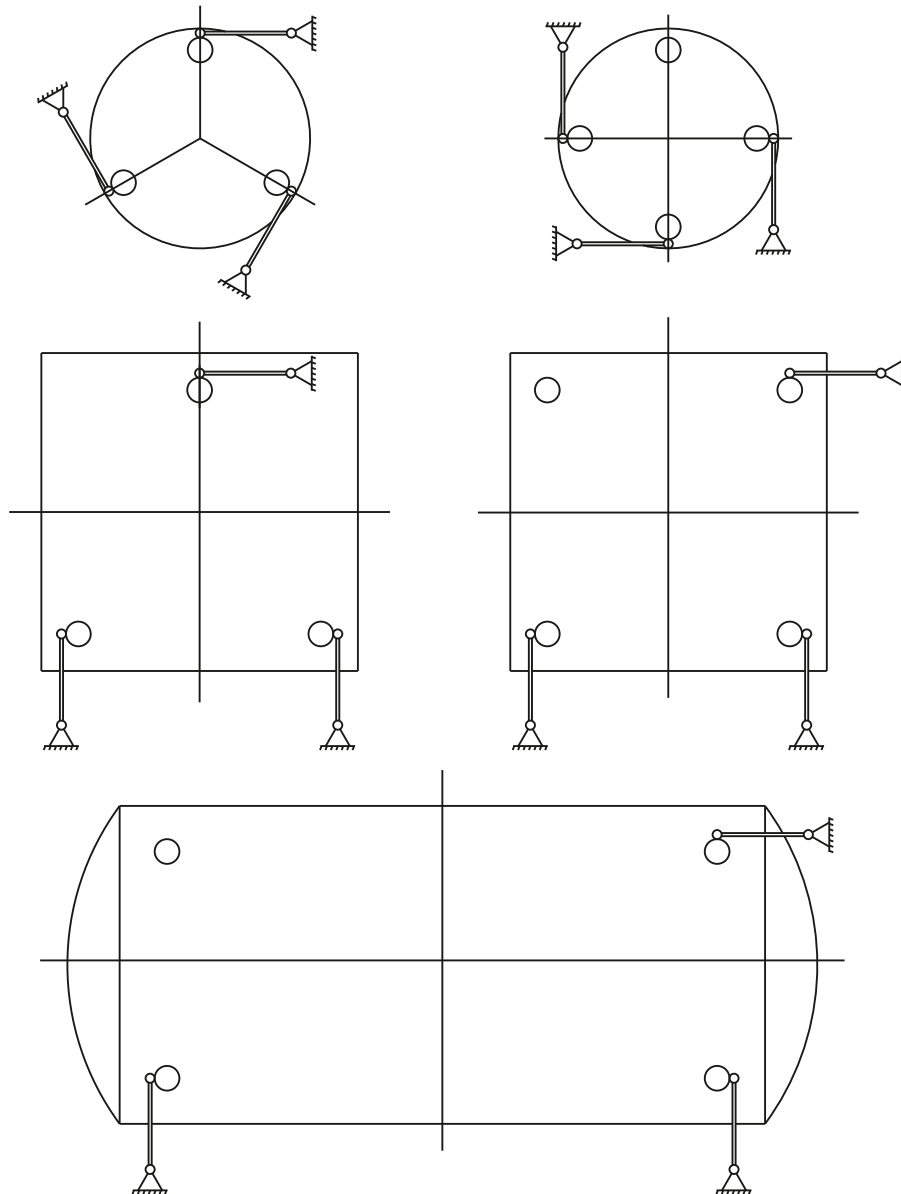


Figure 4-3 Arrangement of guide elements

To ensure that no force components occur in the measuring direction, you must install guide elements at precise right angles to the effective direction of the load cells.

Three guide elements are sufficient to statically fix a weighing platform or container.

NOTICE
Weighing errors
With four guide elements, there is a risk of the guide elements mutually tensioning, which in turn induces weighing errors. If you nevertheless want to use four guide elements, the guide elements must be installed with a sufficient amount of play.


Ensure that the guide elements to be used comply with the principles applicable to weighing technology.

4.6 Protection against explosion

There is no potential risk of ignition from the installation units of the load cells. Therefore the installation units are not subject to EC directive 94/9 EC (ATEX).

5.1 Safety information/instructions

Load cells are precision components and must therefore be handled carefully. Particular care must be taken during transport and installation.

 DANGER
Danger to life from falling loads
<ul style="list-style-type: none">• Load cells are not machine components which have been constructed with the normal safety factors. For this reason, appropriate protection against falling and catastrophes must be implemented in accordance with the potential risks.• Use suitable hoisting equipment to lift the load carrier. Observe the appropriate safety regulations.

CAUTION
Damage to load cells through incorrect handling
<ul style="list-style-type: none">• SIWAREX load cells are only permitted to be mounted and connected by qualified personnel.• Mechanical shocks or falls can irreparably damage the load cell.• When mounting the load cell, ensure that you do not damage or cut the cables of the load cell. Load cells must not be carried by their connecting cables.• Protect the load cells from shocks and welding currents. Replace the load cells with dummies until the installation work on the scale structure is completed.

CAUTION

Damage to load cells through high currents

- If welding is undertaken after the load cells have been installed, ensure that the welding current is not diverted through the load cells.
 - You can do this by attaching the grounding clamp of the welding unit making reliable contact close to the weld.
 - Bridge the load cells with a ground cable, see Installing the grounding cable (Page 31)
 - Disconnect the individual load cells.
- Undesirable electrical currents can arise during lightning. To protect the load cell against such currents, bridge the load cells using highly flexible grounding cables, see also Installing the grounding cable (Page 31).

CAUTION

Damage to load cells through incorrect mounting

- Provide indented claws or crane eyebolts on the load carrier to ensure that hoisting gear can be used safely.
- Load cells must never be overloaded. Put the load carrier down slowly for this reason. With load cells of smaller rated loads in particular, there is a risk of stretching the load cell bodies when attaching force transfer devices, e.g. when tightening locknuts.
- Adjust the existing overload protection to ensure that it can still reliably sense transfer of the required load. The overload protection must permit a rise in weight unhindered until the setpoint weight is reached.
- Protect the gap between the load cell and overload protection from the build up of dirt or ice.
- The load must be introduced in the measuring direction of the load cell. Torsional and bending moments, eccentric loads and transverse loads are disturbance variables. These disturbance variables cause errors in the measuring result and can damage the load cells and installation units if the maximum limits are exceeded.
The mounting components normally allow so much room for movement that heat expansion will not result in lateral loading.

5.2 Installing the compact installation unit

5.2.1 General installation information

The installation conditions vary widely. The dead load of the load bearing implement can be very low or relatively high. You might be dealing with a container, platform or a roller conveyor. The following installation instructions can therefore only describe the general procedures.

Always set up the load bearing implement on dummies in order to protect the load cells from damage during installation.

The load bearing implement then only has to be raised a few millimeters from bracket to bracket in order to position the compact installation unit. The following description of the installation is based on this assumption.

Note

Maintenance-friendly design

When planning the layout, ensure that the load cells are easily accessible once they are installed. Then you can replace the load cells as needed without having to remove the installation units.

Depending on the installation conditions, the detailed procedure may deviate from the following description.

The following actions are required in order to install the compact installation unit.

1. Preparing the load cell
2. Preparing the compact installation unit
3. Installing the load cell in the compact installation unit
4. Installing the compact installation unit
5. Lowering the load bearing implement onto the load cell
6. Checking the installation

The actions are described in detail in the following.

5.2.2 Preparing the load cell

CAUTION
Damage to the load cell
Observe the operating instructions for the load cell.
When mounting the load cell, ensure that you do not damage or cut the cables of the load cell. Load cells must not be carried by their connecting cables.

A data sheet with the calibration values of the load cell are supplied with each load cell. It can be found in a shipping pouch which is glued to the packaging.

1. Unpack the load cell.

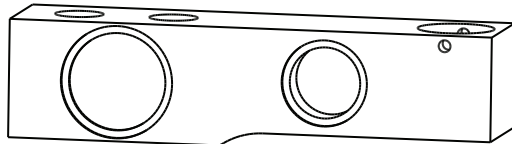


Figure 5-1 Load cell SB-S SA

2. Read the accompanying information sheet.
3. Read the operating instructions for the SIWAREX WL load cells.

5.2.3 Preparing the compact installation unit

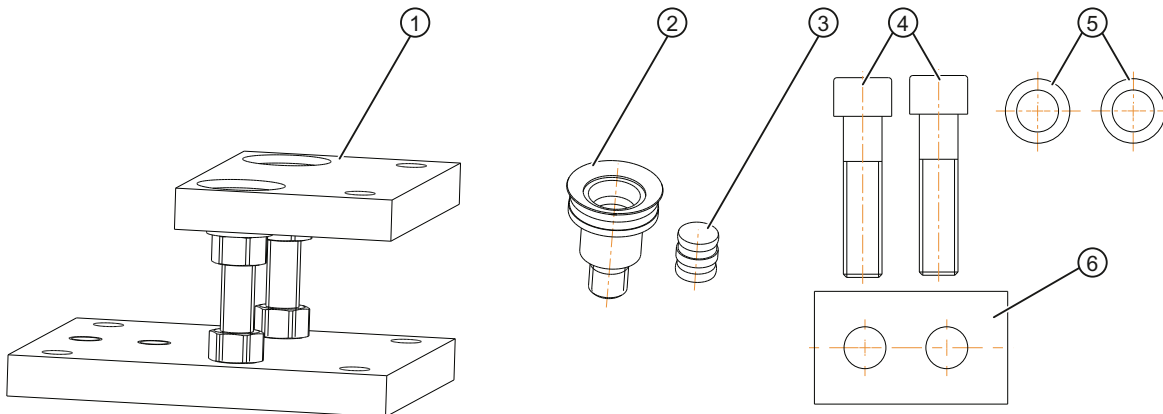



Figure 5-2 Compact installation unit - scope of delivery

1. Unpack the compact installation unit.
2. Read the accompanying information sheet

3. Check the delivery kit:
 - Compact installation unit, assembled ①.
 - Pendulum bolt enclosure ② with flat seal
 - Pendulum bolt ③
 - 2 hexagon bolts ④ with washers ⑤
 - Spacing strip ⑥: Only for the versions for 0.5 t and 1 t
4. Upon delivery, an additional 3 mm of height is set in order to relieve the built-in load cell.
 - Take the added height of 3 mm into consideration if you are installing the compact installation units as dummies.
 - For further information, see Dimension drawings of the compact installation units (Page 37)

Rated load	Installation height	Functional installation height	Lifting path
0.5 t, 1 t, 2 t	79 mm	76 mm	3 mm
5 t	111 mm	108 mm	3 mm

5.2.4 Installing the load cell in the compact installation unit

 DANGER
<p>Death or serious bodily injury</p> <p>A falling load bearing implement can lead to serious bodily injury or considerable material damage depending on the potential risk.</p>
<p>CAUTION</p> <p>Damaging of load cells</p> <p>Incorrect or incomplete installation can result in damage to the load cells, installed parts and the load bearing implement.</p> <p>Observe the warning notices at the start of the chapter, see: Safety information/instructions (Page 21)</p>

Inserting the pendulum bolt

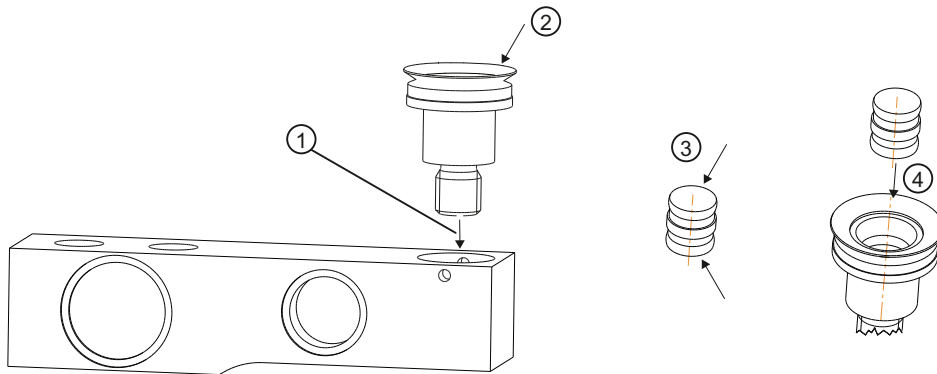


Figure 5-3 Installing the pendulum bolt

1. Insert the pendulum bolt enclosure into the load cell ①.
2. Check the flat seal to ensure it is seated correctly ②.
3. Grease the surfaces of the pendulum bolt bearings using a ball-bearing lubricant ③.
4. Insert the pendulum bolt into the pendulum bolt enclosure ④.

Installing the load cell

1. Insert the load cell with the pendulum bolt into the compact installation unit.

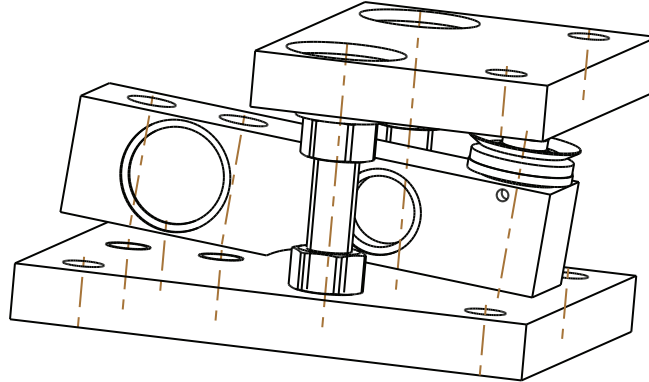


Figure 5-4 Inserting the load cell

2. For the version for 0.5 t and 1 t, you will also need a spacing strip.
 - Place the spacing strip (4) on the base plate (3), such that the bore holes are aligned with the threaded holes of the base plate and are flush with the plate. The spacing strip is not symmetrical.
3. Screw the load cell (2) onto the base plate (3) using two hexagon bolts (1) and the corresponding washers (5).
 - For the version for 0.5 t and 1 t, you will also need a spacing strip (4).
 - Tightening torque:
SIWAREX WL230 SB-S SA load cell with a rated load of 0.5 t, 1 t, 2 t: 80 Nm
SIWAREX WL230 SB-S SA load cell with a rated load of 5 t: 391 Nm
 - When screwing tight, do not hold the load cell to counter the force. This will prevent damage to the load cell.

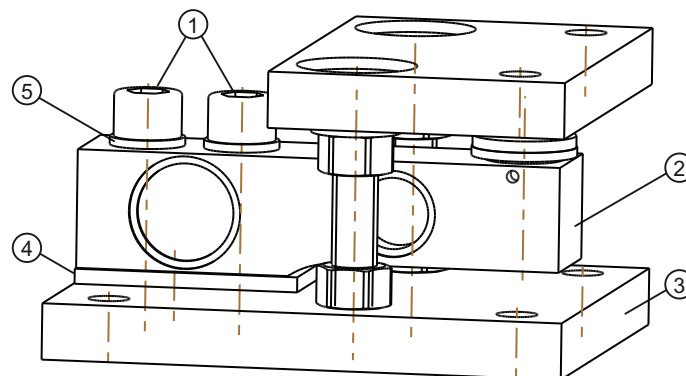


Figure 5-5 Tightening the load cell with screws

The top plate is now ideally centered above the base plate.

5.2 Installing the compact installation unit

Until the hexagonal nuts on the top plate are removed, the compact installation unit with the load cell is installed with an added height of 3 mm. The load cell is relieved and protected against an overload due to the assembly.

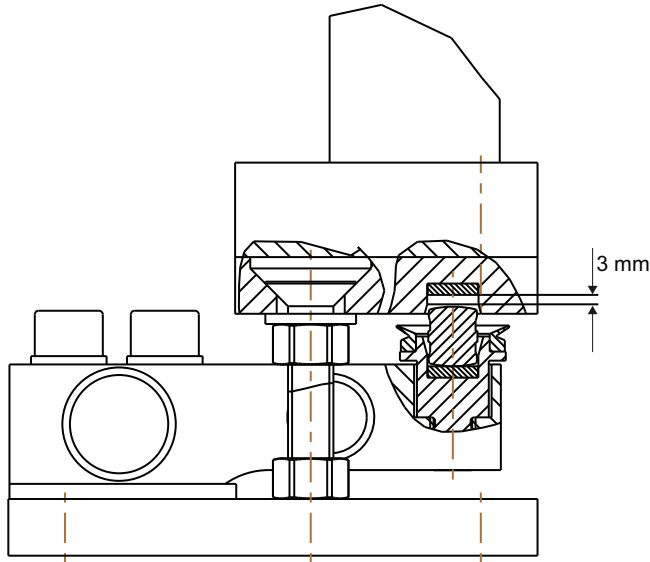


Figure 5-6 Installation state

5.2.5 Installing the compact installation unit

CAUTION
Personal injuries, damage to the load cells
Insufficiently secured loads can fall and cause injuries or material damage. Therefore, appropriate lifting tools must be used to lift the load bearing implement. The corresponding safety regulations must be observed.

Depending on the installation conditions, the detailed procedure may deviate from the following description.

Installing the compact installation unit

CAUTION**Destruction of the load cells and the installation unit**

Check that the load cells and installation unit are installed correctly, e.g. by checking the mounting dimensions and oscillation distances. Incorrect assembly can lead to the destruction of the load cell and the installation unit.

Ensure that the cable does not become damaged or is cut off.

Lay the cable through cable glands in the form of a vertical downward loop to discourage the penetration of water.

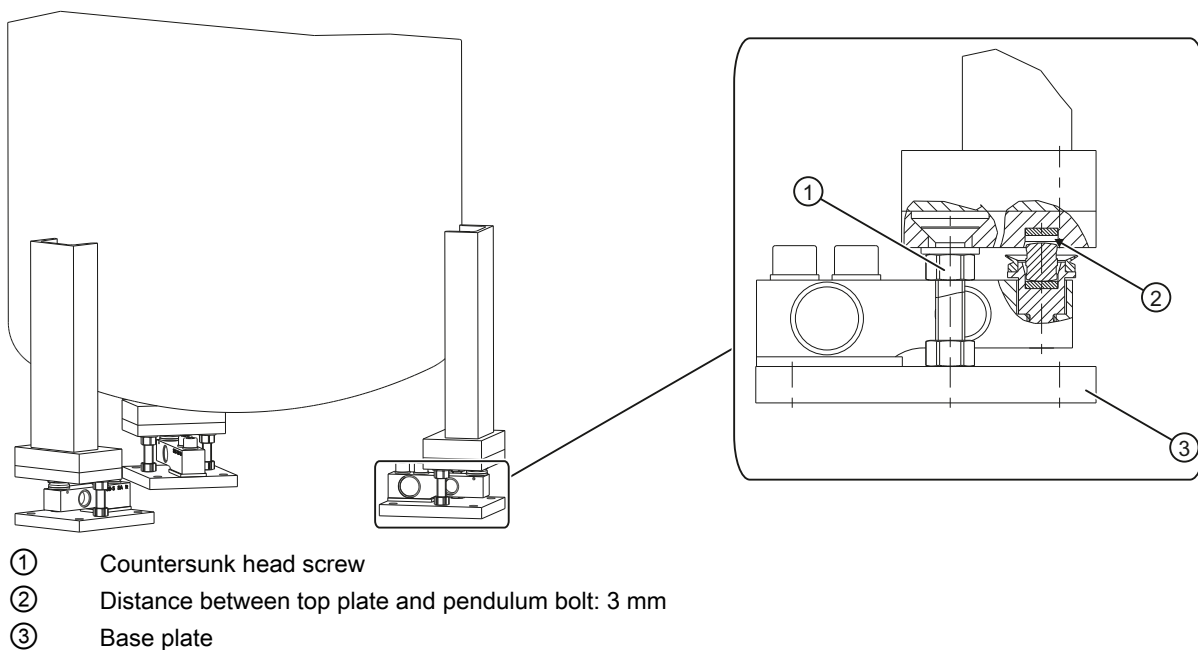


Figure 5-7 Installing the compact installation unit

1. Remove the bolted connections of the load cell dummies.
2. The load bearing implement only has to be raised a few millimeters from bracket to bracket in order to replace the dummies with the compact installation unit.
3. Raise the load bearing implement at the first bracket and remove the load cell dummy.
4. Insert the compact installation unit and loosely tighten the fastening screws.
5. Install all of the additional compact installation units as described in 1 - 4.
6. Lightly tighten the bolted connections of the compact installation units.

The load bearing implement of the scale is in the following condition:

- The compact installation units are in the installation state.
- The hexagonal nuts are on top.
- There is a distance of 3 mm between the top plate and the pendulum bolt.
- There is no load on the load cells.
- The compact installation units are aligned to one another as much as possible.
- The compact installation units act as dummies.
- The compact installation units provide protection during transport.

In this condition, light assembly work can still be carried out.

5.2.6 Lowering the top plate onto the load cells

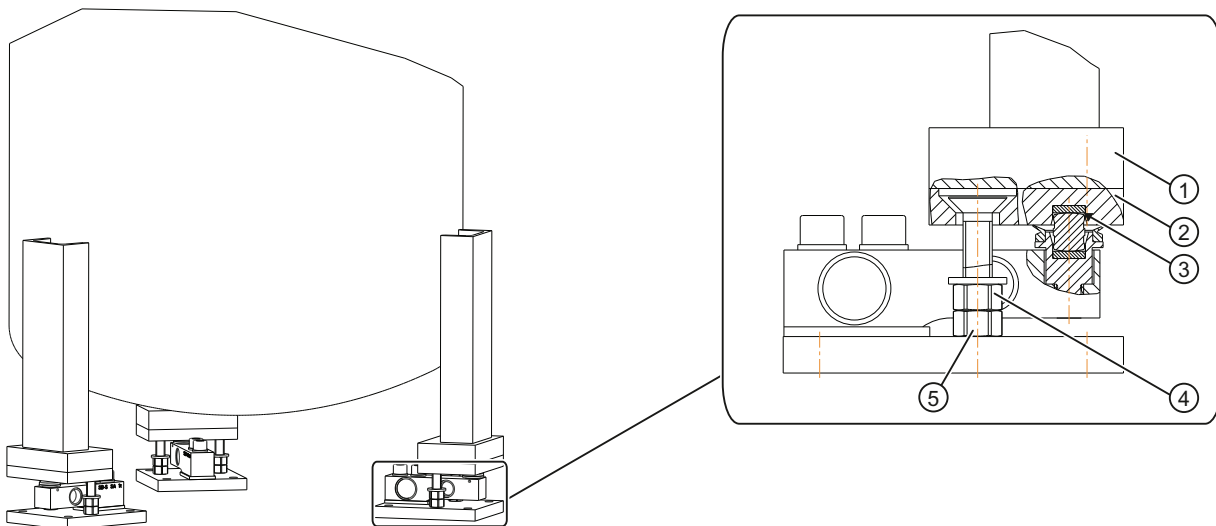


Figure 5-8 Lowering the top plate

1. Loosen the top nuts ④ in succession and slowly lower the load bearing implement ①.
2. Rotate the top nuts ④ downward. The top plate ② is lying on the load cell ③ via the pendulum bolts. The respective load cell is loaded.
3. Tighten the lowered nuts ④ against the bottom nuts ⑤. In this way, you prevent the nuts ④ from rotating upwards due to vibrations.
4. Tighten the bolted connections of the compact installation units.

5.2.7 Checking the installation

! DANGER

Personal injury and damage to property

Incorrectly set countersunk head screws lead to erroneous measurements due to blocking and can lead to the scale overflowing. Personal injury and material damage may occur.

CAUTION

Destruction of the load cells and the installation unit

Check that the load cells and installation unit are installed correctly, e.g. by checking the mounting dimensions and oscillation distances. Incorrect assembly can lead to the destruction of the load cell and the installation unit.

1. Check to ensure that the following items are fulfilled after the installation:
 - The load bearing implement must be able to oscillate freely.
 - The countersunk head screws ① should be located as close as possible to the center in the bores of the top plate ②. This gives the top plate ideal freedom of movement and it prevents any incidental forces from occurring.
 - The countersunk head screws ① must not project out through the top plate ②.

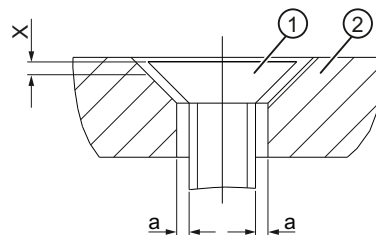


Figure 5-9 Lifting protection and pendulum limitation

5.3 Installing the grounding cable

1. Prepare a permanently contacting bolted connection such as M10 on the load bearing implement and foundation for securing the grounding cable.
2. Screw the grounding cable tight.

5.4 Dismantling

For the disassembly of load cells, the same safety rules and requirements apply as for installation and assembly.

1. Disconnect all the supply voltages and auxiliary voltages.
2. Secure the load carrier against falling.
3. Use appropriate hoisting gear and tools.
4. Take the load off the load cell.
5. Carefully remove the load cell without using force. Do not pull on the cable of the load cell.
6. Do not cut the cable if the load cell is to be re-used or sent in for repair.
7. Do not carry the load cell by the cable.

Service and maintenance

6.1 Servicing and maintenance

Important notes on cleaning

CAUTION**Damage to load cells, measurement errors**

Dirt must not be allowed to accumulate in the vicinity of a load cell.

Do not subject cable glands, sealing elements and flat seals directly to the jet from a high-pressure hose.

Compact installation unit

- Check the compact installation units according to the ambient conditions. Select the servicing intervals based on the emergence of dust, dirt and moisture.
- Keep the compact installation units free of dirt.
- Check the bearing surfaces of the pendulum bolts:
 - Clean the locking ball-pins as required.
 - Grease the locking ball-pins as needed.

Overload protection

 **DANGER****Personal injury and damage to property**

Dirty, frozen or incorrectly adjusted overload protection elements lead to erroneous measurements due to blockage or to an overflow of the scale. Personal injury and material damage may occur.

- Regularly check the existing overload protection elements:
 - Select the servicing intervals based on the emergence of dust, dirt and moisture.
 - Keep the overload protection elements free of dirt and ice.
 - Check the settings for the overload protection elements.
 - Re-adjust (correct) the overload protection as needed.

Grounding cable

- Check the connecting points at regular intervals for corrosion and conductivity.

Technical data

Compact installation unit

Size	Value	
	For a rated load of 0.5 t; 1 t; 2 t	For a rated load of 5 t
Maximum lateral deflection with load cell	± 3 mm	± 3 mm
Lifting path of the top plate	3 mm	3 mm
Restoring force per millimeter of lateral deflection of the top plate in % of the applied load with load cell	13% per mm	10% per mm
Permitted supporting load with fixed top plate	25 kN	35 kN
Permitted lifting force on the top plate	25 kN	50 kN
Permitted transverse force on the top plate with fixed top plate	3 kN	5 kN

Dimension drawings

8.1 Dimension drawings of the compact installation units

The following dimension drawings show the compact installation units for the various versions of the SB-S SA compact installation unit. All of the dimensions are in millimeters.

Two dimension drawings are specified for each installation unit:

- Installation state
 - The compact installation unit is delivered in this condition.
 - A distance of 3 mm is set between the load and the load cell. A built-in load cell is not loaded
- Operating state
 - In this state, a built-in load cell is loaded.

SB-S SA 0.5 ... 2 t installation state

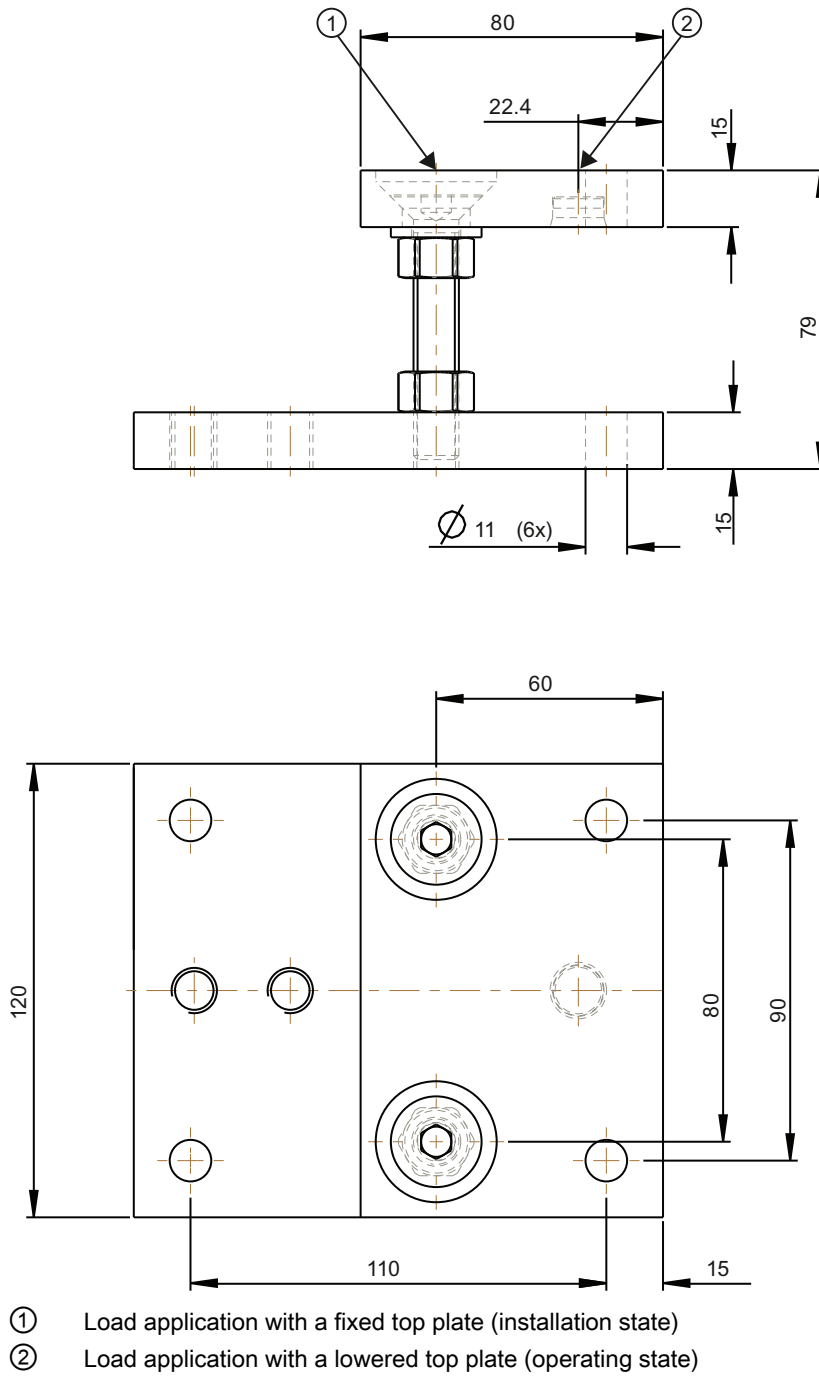


Figure 8-1 Dimension drawing of SB-S SA compact installation unit 0.5 ... 2 t installation state

SB-S SA 0.5 ... 2 t operating state

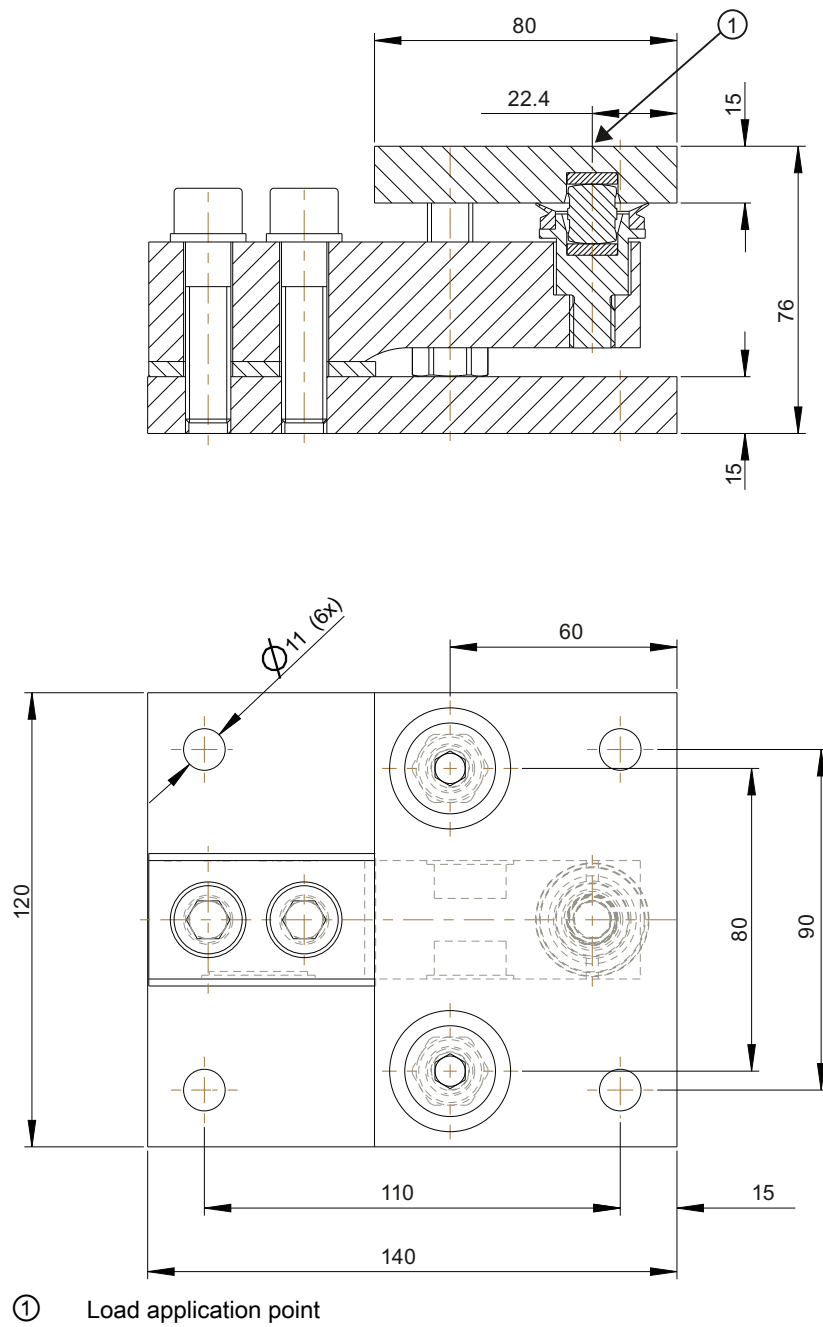


Figure 8-2 Dimension drawing of SB-S SA compact installation unit 0.5 ... 2 t operating state

SB-S SA 5 t installation state

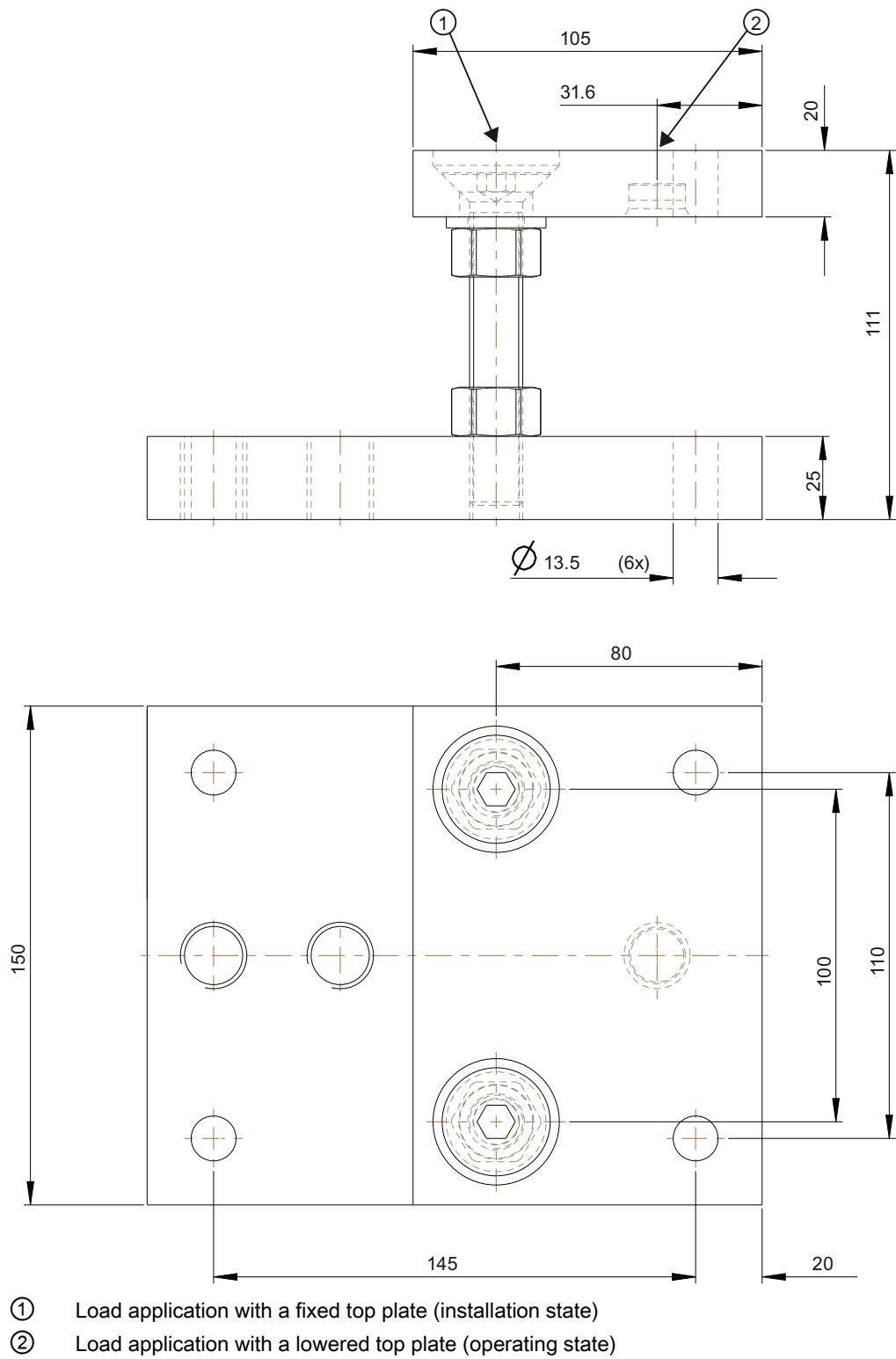


Figure 8-3 Dimension drawing of SB-S SA compact installation unit 5 t installation state

SB-S SA 5 t operating state

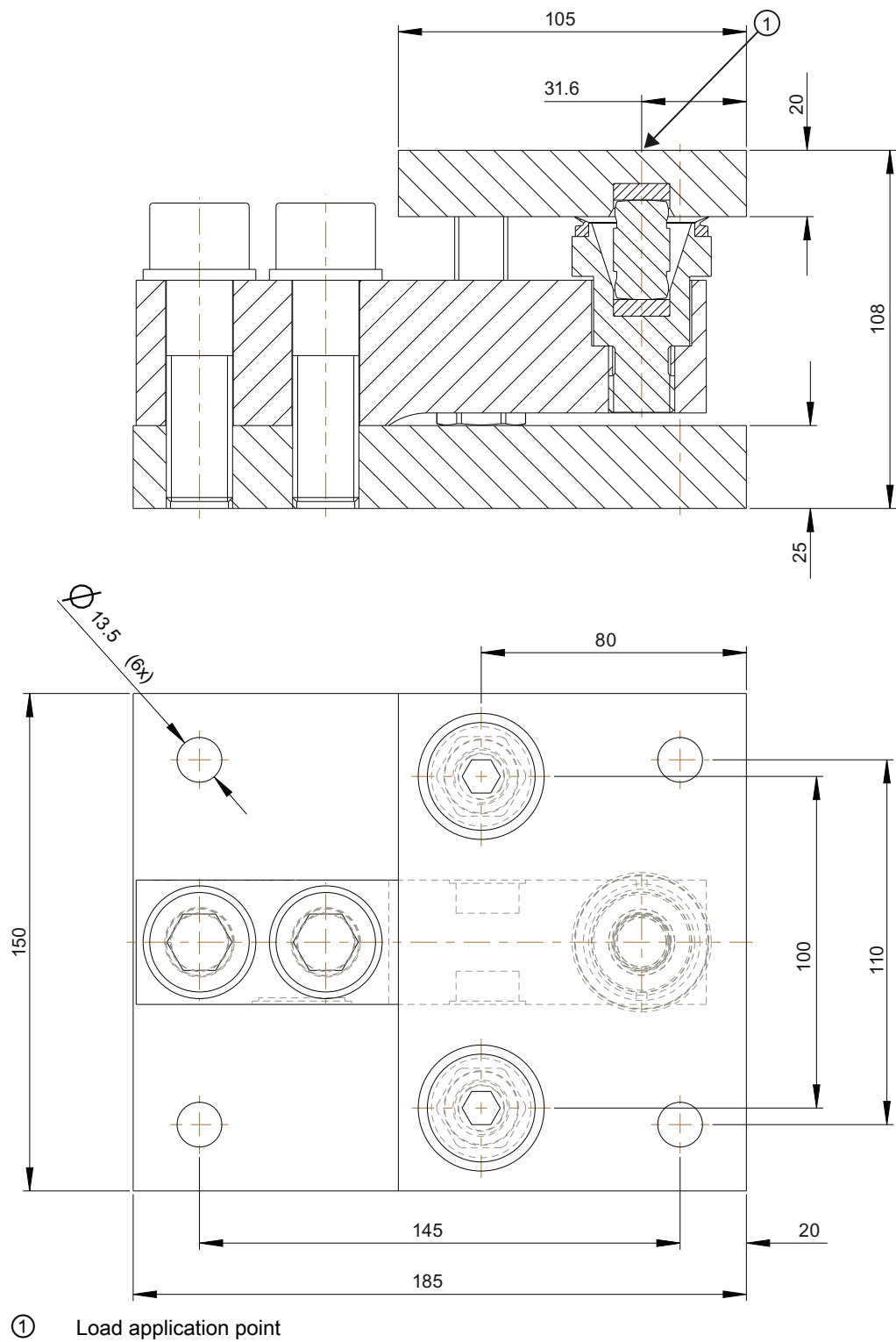


Figure 8-4 Dimension drawing of SB-S SA compact installation unit 5 t operating state

8.2 Dimension drawing of the grounding cable

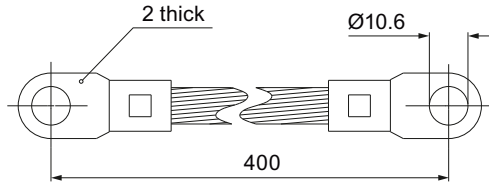


Figure 8-5 Dimension drawing of the grounding cable

Ordering data

Compact installation unit

Compact installation unit		
Designation	Rated load	Order No.
SB-S SA	500 kg; 1 t	7MH5707-4AA00
SB-S SA	2 t	7MH5707-4GA00
SB-S SA	5 t	7MH5707-4PA00

The load cells are not included in the compact installation units.

Grounding cable

Highly flexible grounding cable		
Designation	Description	Order No.
SIWAREX R grounding cable	Highly flexible grounding cable for diverting parasitic currents	7MH3701-1AA1

Appendix

A.1 Technical support

Technical Support

You can contact Technical Support for all IA and DT products:

- Via the Internet using the **Support Request:**
Support request (<http://www.siemens.com/automation/support-request>)
- E-mail (<mailto:support.automation@siemens.com>)
- Phone: +49 (911) 895-7222
- Fax: +49 (911) 895-7223

Further information about our technical support is available in the Internet at Technical Support (<http://www.siemens.com/automation/csi/service>)

Service & Support on the Internet

In addition to our documentation, we offer a comprehensive knowledge base online on the Internet at:

Services & Support (<http://www.siemens.com/automation/service&support>)

There you will find:

- The latest product information, FAQs, downloads, tips and tricks.
- Our newsletter, providing you with the latest information about your products.
- A Knowledge Manager to find the right documents for you.
- Our bulletin board, where users and specialists share their knowledge worldwide.
- You can find your local contact partner for Industry Automation and Drives Technologies in our partner database.
- Information about field service, repairs, spare parts and lots more under "Services."

Additional Support

Please contact your local Siemens representative and offices if you have any questions about the products described in this manual and do not find the right answers.

Find your contact partner at:

Partner (<http://www.automation.siemens.com/partner>)

A signpost to the documentation of the various products and systems is available at:

Documentation (<http://www.siemens.com/weighing/documentation>)

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