

KCPN

Kit for CPx series compression load cells, to weigh silos, vats and high-capacity hoppers.



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INTRODUCTION

The KCPN kit is a mechanical assembly made entirely out of STAINLESS STEEL, which is devised to facilitate the installation of compression load cells from the CP series underneath silos, hoppers, vats and hard structures in general, in difficult work environments or with high hygienic requirements.

The KCPN kit was devised and built to guarantee the correct positioning and operation of the load cell and to protect it against overloads, electrostatic charges and stresses. In addition, it considerably aids routine and extraordinary system maintenance.

MAIN COMPONENTS AND FUNCTIONS

■ 1. BYPASS/SAFETY SUPPORTS

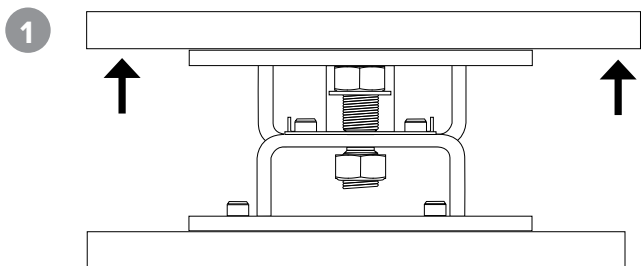
A simple and effective solution designed to support the load during the load cell installation and maintenance operations.

ADVANTAGES

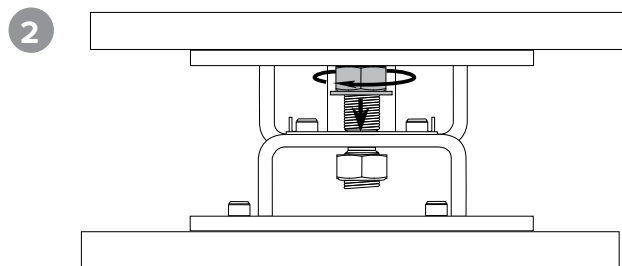
- ✓ Rapid load cell installation and replacement
- ✓ Safety during maintenance operations and diagnostics *
- ✓ Load cell protection during structure transportation *

* IMPORTANT:

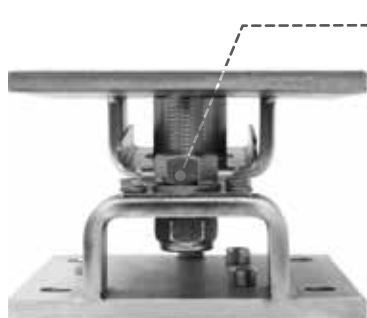
the maximum load applicable to the safety supports in the absence of a load cell is specified on page 6.



Lift the load with the aid of a hydraulic jack

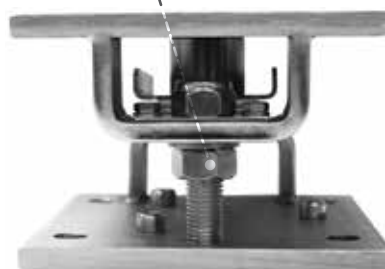


Screw the support nuts tightly on both sides



View A

support nuts



View B

■ 2. SELF-CENTRING PLATE

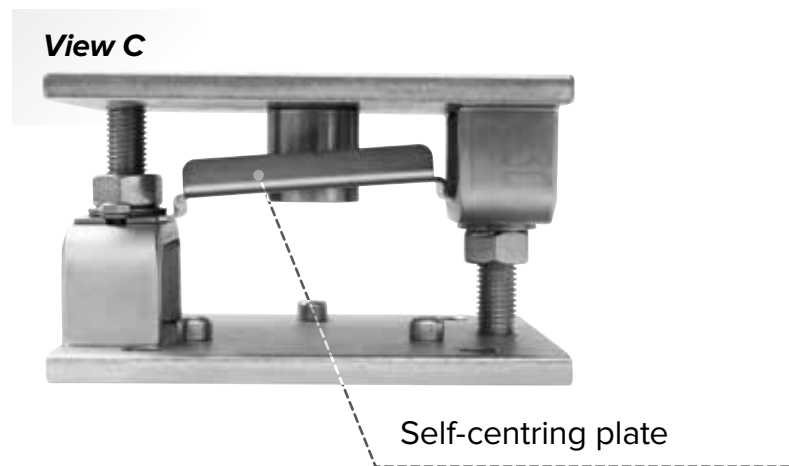
When installing the kit, the plate guarantees the correct positioning of the load cell, avoiding friction or misalignment forces which could affect the weighing precision.

During the weighing process, the plate makes it possible to compensate for lateral expansion of the weighed structure: depending on the orientation of the plate, the dilation can be more or less free, up to +/- 3 mm.

For greater compensation values, we recommend the use of tie rods sized according to the forces to be contrasted.

In addition, in rooms at risk of electrostatic charge formation (for instance, powder dosage), the plate protects the load cell against electrostatic discharges.

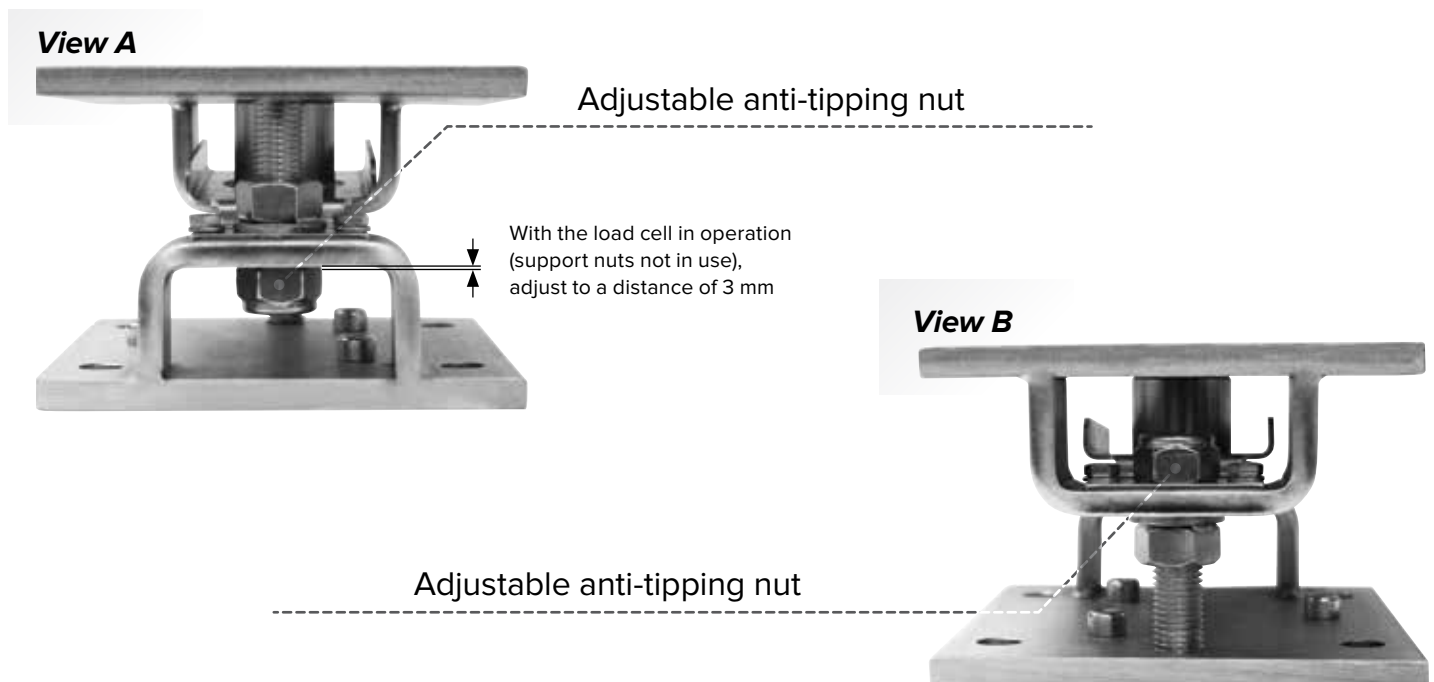
For the correct earthing of the system, please follow the instructions provided on page 15.












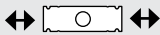
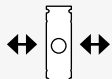
■ 3. ANTI-TIPPING NUTS

Designed to contribute to supporting the structure in the event of accidental tipping or overturning.

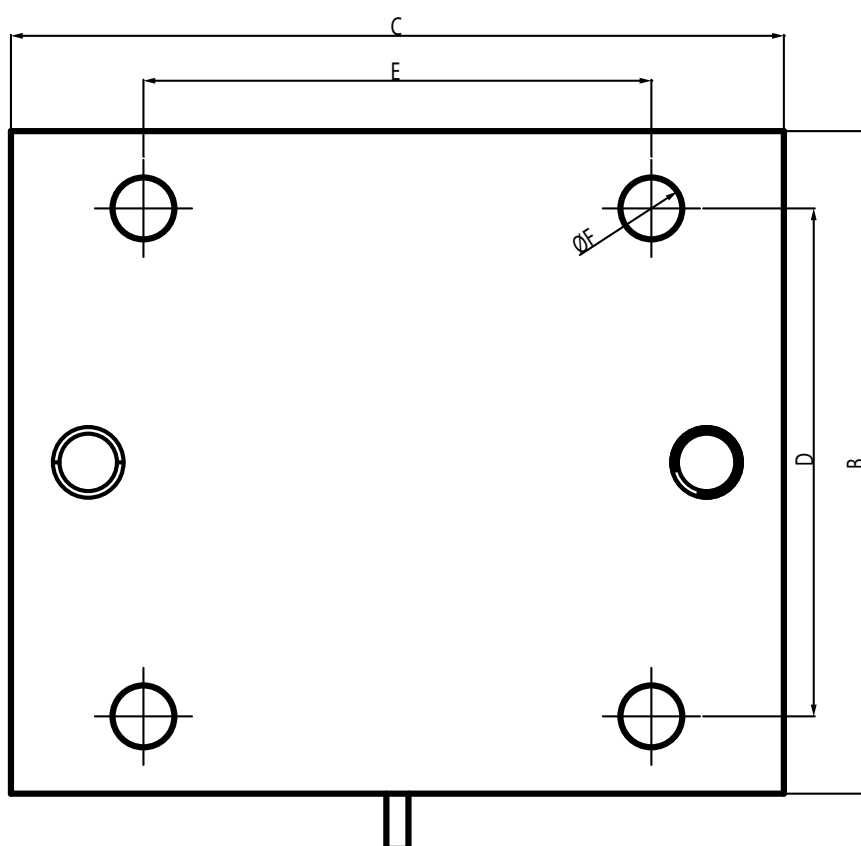
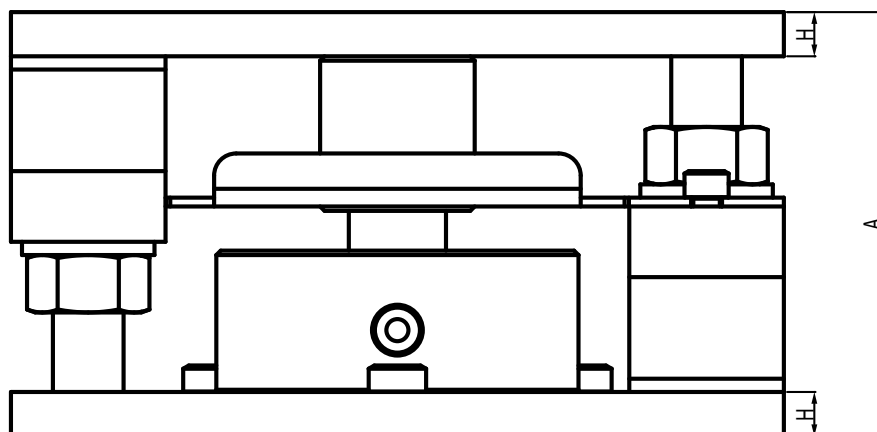
The operating specifications and capacities are specified in the table on page 6.



TECHNICAL CHARACTERISTICS

		KCPN10	KCPN15	KCPN30	KCPN50
MATERIAL		AISI304 STAINLESS STEEL			
Weight (kg)	<i>WITH LOAD CELL</i>	8	8	14	41
	<i>WITHOUT LOAD CELL</i>	6	6	10	32
COMPRESSION SAFETY LOAD	 <i>WITH LOAD CELL</i>	120KN	180KN	360KN	1200KN
	 <i>WITHOUT LOAD CELL</i>	45KN	45KN	45KN	90KN
COMPRESSION TENSILE STRENGTH	 <i>WITH LOAD CELL</i>	Depending on the load cell			
	 <i>WITHOUT LOAD CELL</i>	55KN	55KN	55KN	100KN
TRACTION SAFETY LOAD	 <i>WITH LOAD CELL</i>	45KN	45KN	45KN	90KN
	 <i>WITHOUT LOAD CELL</i>	45KN	45KN	45KN	90KN
TRACTION TENSILE STRENGTH	 <i>WITH LOAD CELL</i>	55KN	55KN	55KN	100KN
	 <i>WITHOUT LOAD CELL</i>	55KN	55KN	55KN	100KN
SAFETY LOAD ACROSS THE PLATE		20% of the load applied, max 25KN.	20% of the load applied, max 25KN.	20% of the load applied, max 30KN.	20% of the load applied, max 40KN.
TENSILE STRENGTH ACROSS THE PLATE		30% of the load applied, max 35KN.	30% of the load applied, max 35KN.	30% of the load applied, max 40KN.	30% of the load applied, max 50KN.
MAXIMUM TILT ANGLE OF SUPPORT PLATE			+/-1°	+/-1°	+/-1°
COMPENSATING FOR ANY DILATIONS		+/- 3 mm	+/- 3 mm	+/- 3 mm	+/- 3 mm
		+/- 3 mm	+/- 3 mm	+/- 3 mm	+/- 3 mm
ATEX EX MARKING (upon request)		Ex II 2GD X			

DIMENSIONS



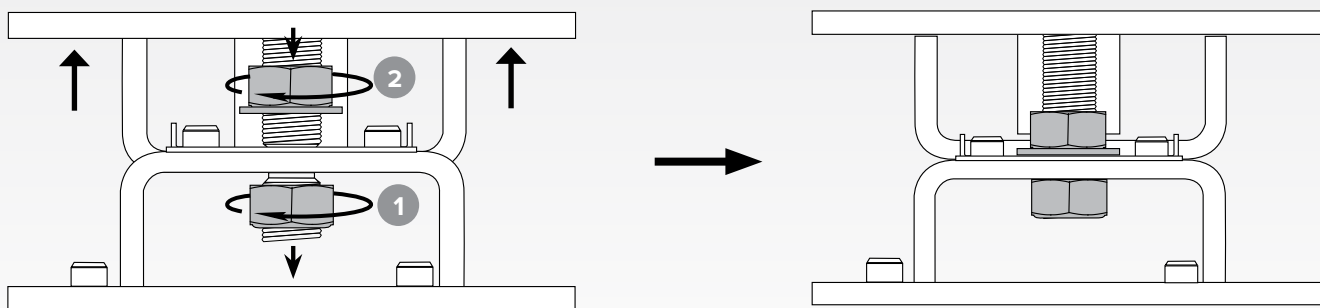
	KCPN10	KCPN15	KCPN30	KCPN50
A (mm)	96	96	118	154
B (mm)	150	150	200	320
C (mm)	175	175	230	320
D (mm)	115	115	160	250
E (mm)	115	115	160	250
F (mm)	14	14	17	23
H (mm)	10	10	10	15

INSTALLATION

INSTALLING THE KIT

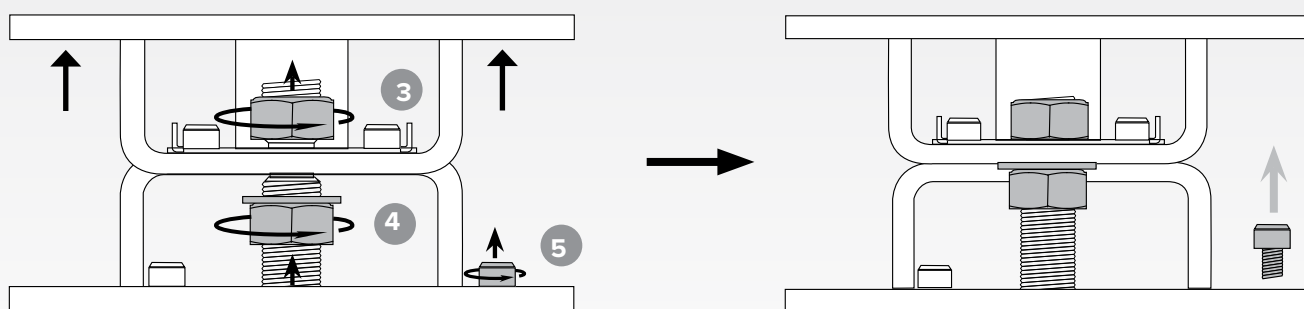
To assemble, use a hydraulic jack with a suitable capacity and a size 24 hex screw spanner.

View A



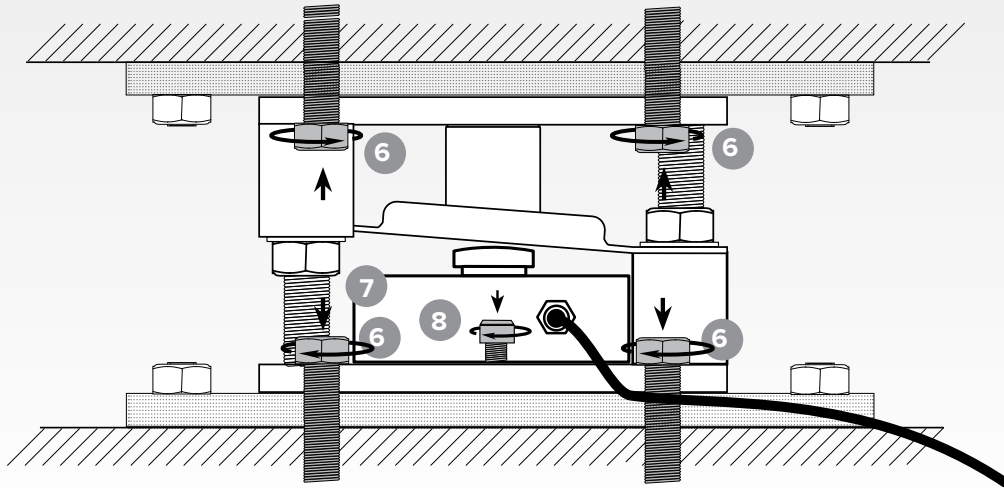
- 1 Loosen the anti-tipping nut entirely.
- 2 Screw the support nut tightly.

View B



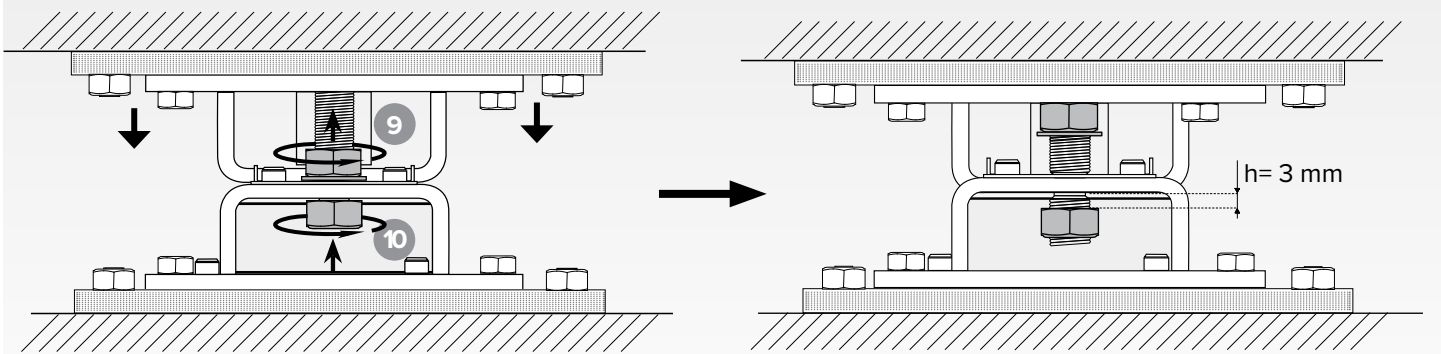
- 3 Loosen the anti-tipping nut entirely.
- 4 Screw the support nut tightly.
- 5 Remove the locking screws from the load cell.

View C



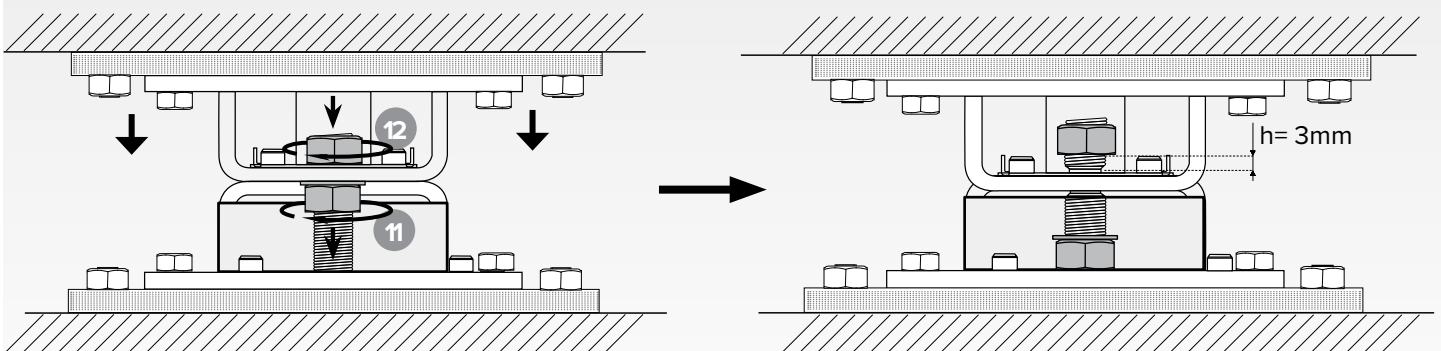
- ⑥ Position the kit and secure it to the structure to be weighed.
- ⑦ Position the load cell.
- ⑧ Position the locking screws from the load cell.

View A



- ⑨ Screw the support nuts tightly, all the way up to the plate.
- ⑩ Tighten the anti-tipping nuts, leaving approximately 3 mm of freedom of movement.

View B



- ⑪ Screw the support nuts tightly, all the way up to the plate.
- ⑫ Tighten the anti-tipping nuts, leaving approximately 3 mm of freedom of movement.

INSTALLATION TIPS

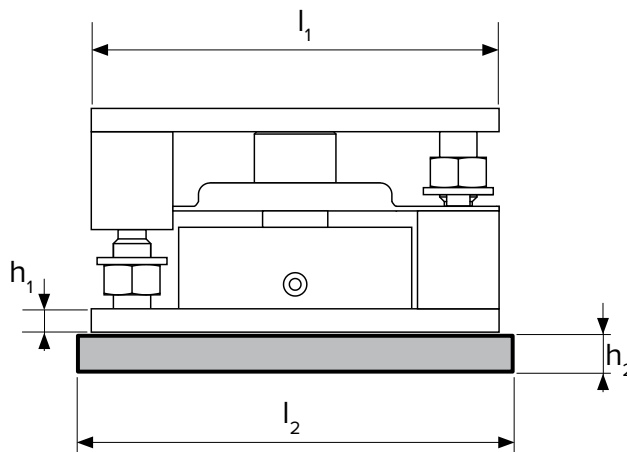
■ SUPPORT BASE CHARACTERISTICS

The weighing kit support base must be extremely rigid and have suitable thickness and surface to guarantee the correct installation of the lower plate of the KCPN kit.

Calculate the thickness h_2 according to the load, to the structure to support and to the environmental conditions.

We recommend you consider at least

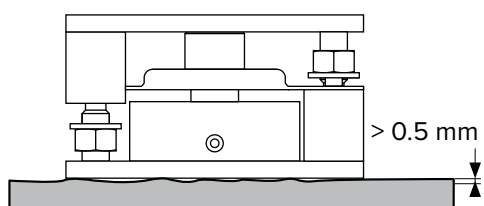
$$h_2 \geq h_1 \text{ and } l_2 \geq l_1$$



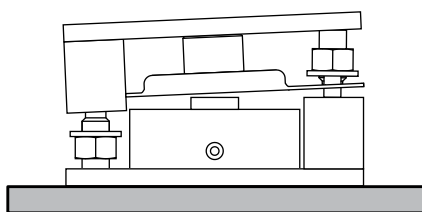
Recommended dimensions:

KCPN10	$h_2 \geq 12 \text{ mm}$	$l_2 \geq 150 \times 175 \text{ mm}$
KCPN15	$h_2 \geq 12 \text{ mm}$	$l_2 \geq 150 \times 175 \text{ mm}$
KCPN30	$h_2 \geq 12 \text{ mm}$	$l_2 \geq 200 \times 230 \text{ mm}$
KCPN50	$h_2 \geq 18 \text{ mm}$	$l_2 \geq 320 \times 320 \text{ mm}$

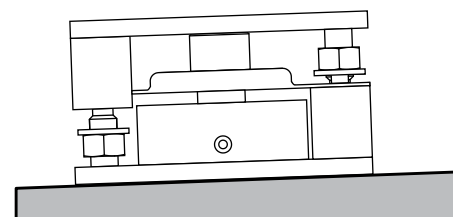
■ TO BE AVOIDED



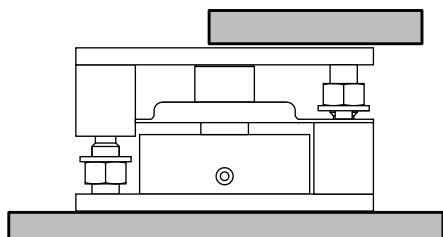
Non-flat, irregular surfaces and with a roughness of more than 0.5 mm



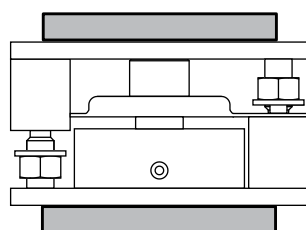
Top plate and bottom plate not parallel



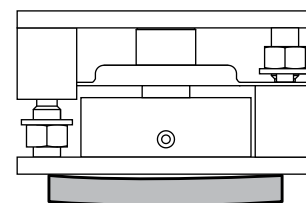
Sloping surfaces



Misaligned load



Kit support base too thin or too short



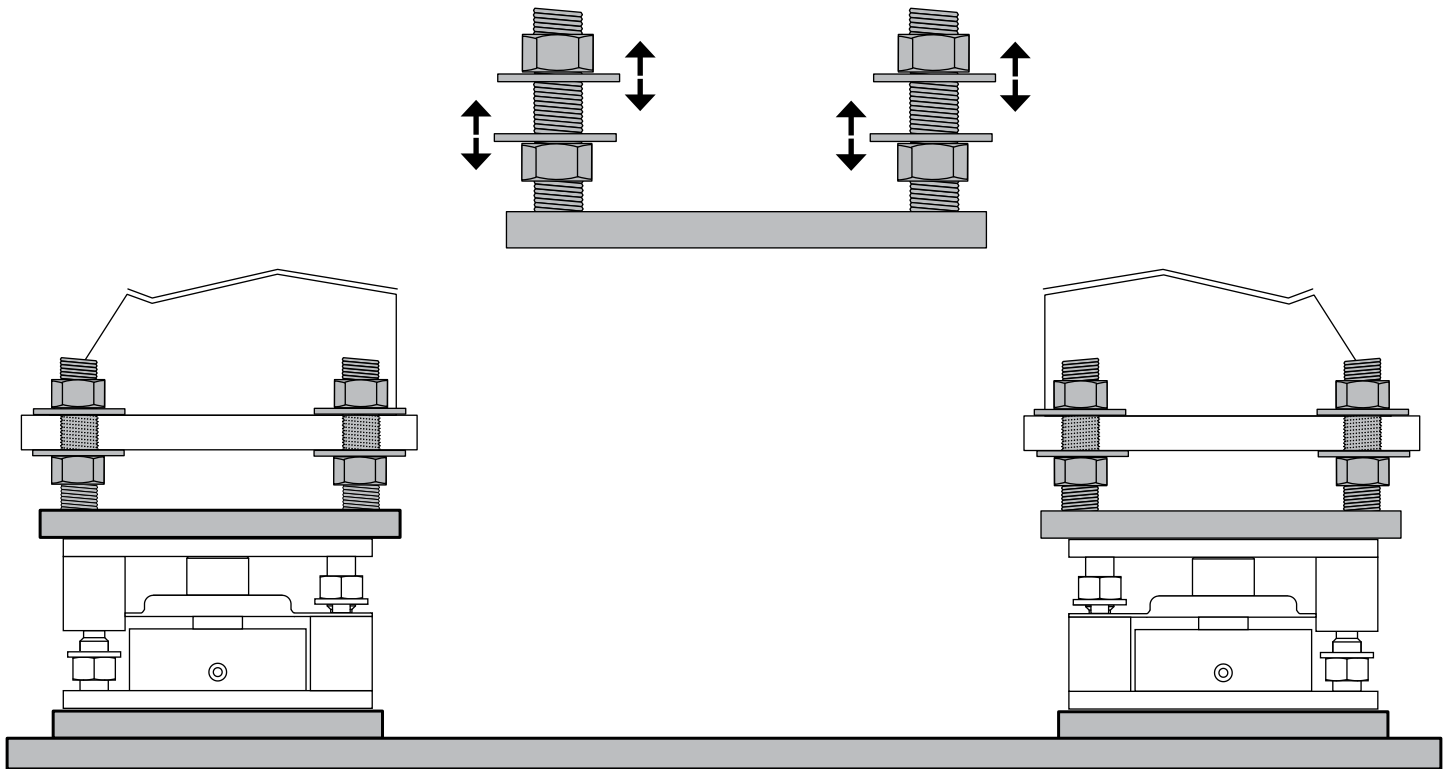
Support bases not rigid, may warp under the load

■ SYSTEM FOR ADJUSTING THE LEVELS OF THE STRUCTURE TO BE WEIGHED

To simplify the adjustment of the levels after installation, we recommend you prepare a mechanical system to adjust the levels.

The simplest solution is to create an additional rigid plate, with n fastening points which are long enough

to allow the optimal level-adjustment of each support foot. The designer shall take into considerations the forces at play to achieve the correct sizing of such a system.

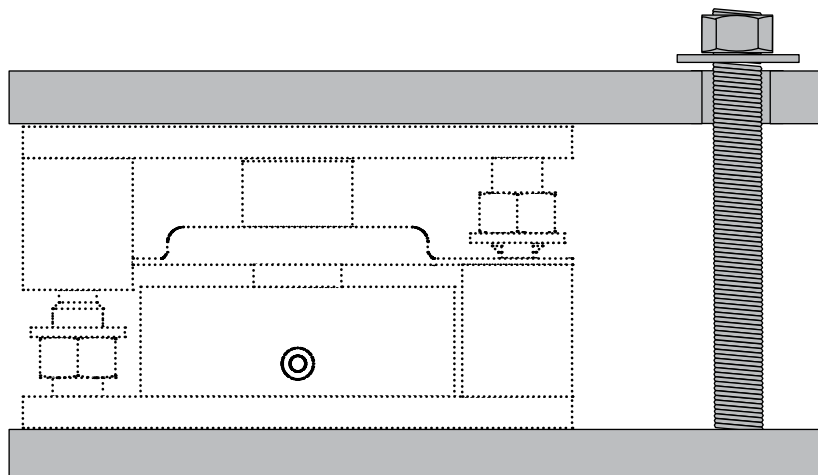


■ ADDITIONAL ANTI-TIPPING SOLUTIONS

KPC kits play an anti-tipping role for the forces specified in the table on page 6.

Depending on the application, on the forces at play, on the atmospheric and environmental conditions, the designer may increase the protection of the weighing

structure by adding suitably sized anti-tipping systems. It is good practice to adjust the system so as to allow a maximum top travel of no more than 2 mm.

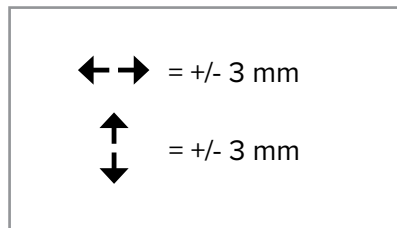


Sample diagram of anti-tipping solution.

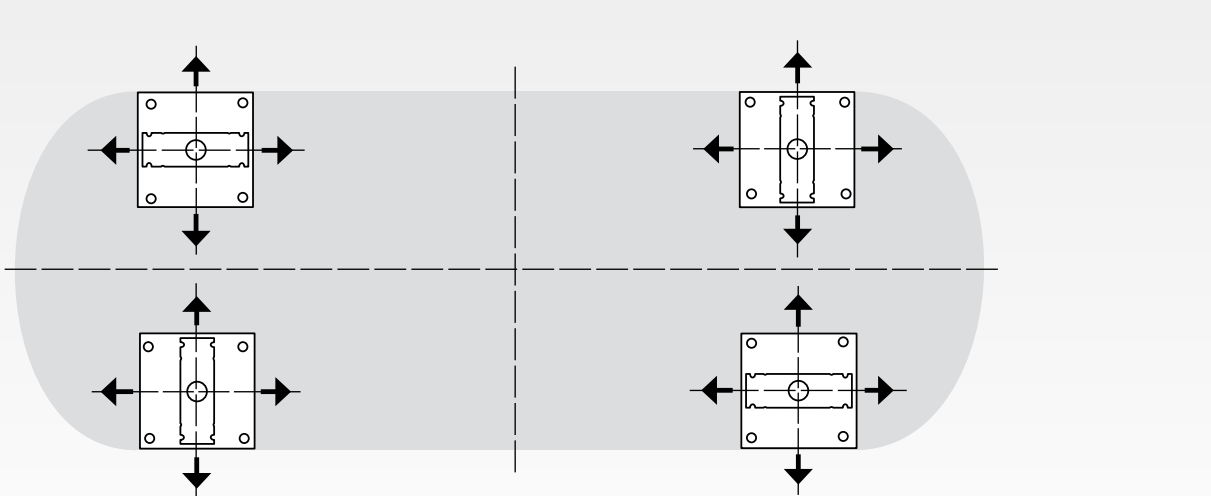
COMPENSATING FOR ANY DILATIONS

HORIZONTAL SILOS AND VERTICAL SILOS WITH 4 OR 3 FEET

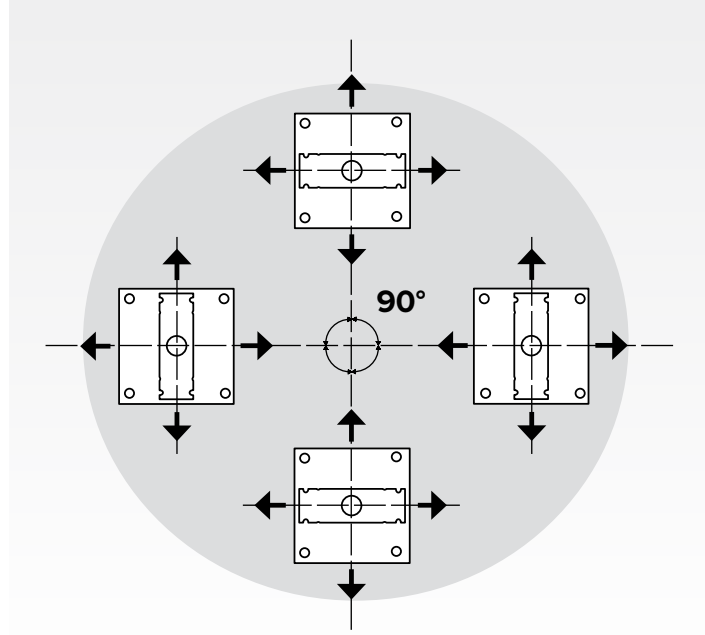
Typical applications



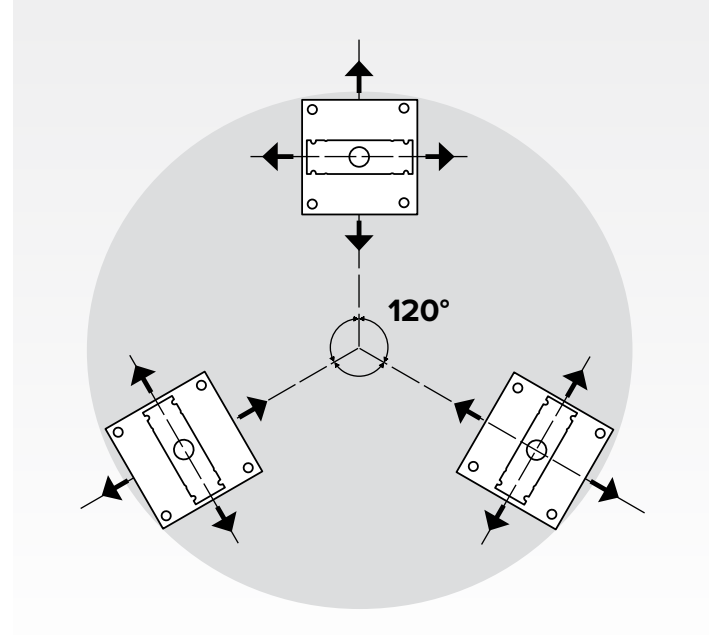
Horizontal silos



Vertical silos with 4 feet



Vertical silos with three feet



USING DUMMY LOAD CELLS

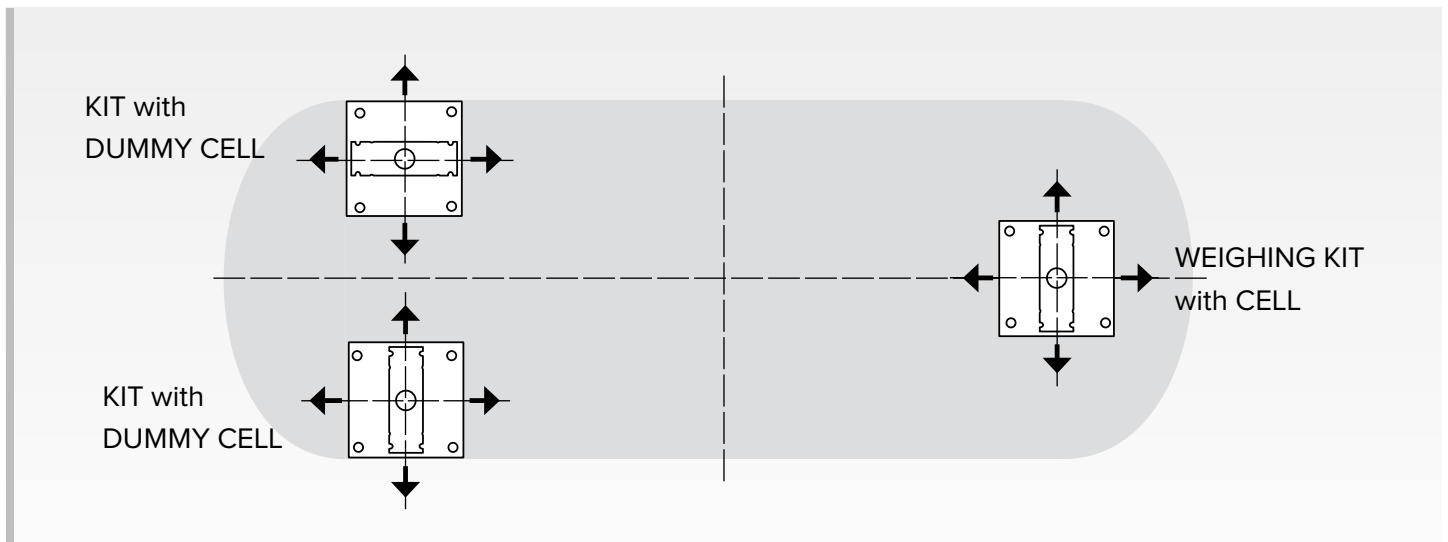
Solution used to measure levels and weigh fluids and high-capacity liquid gases.

It envisages the use of a single weighing kit with a load cell and n KCPN kits equipped with a dummy load cell, which retain all the mechanical properties of compensating for the dilations and allow the

subsequent addition of load cells to increase precision.

ADVANTAGES

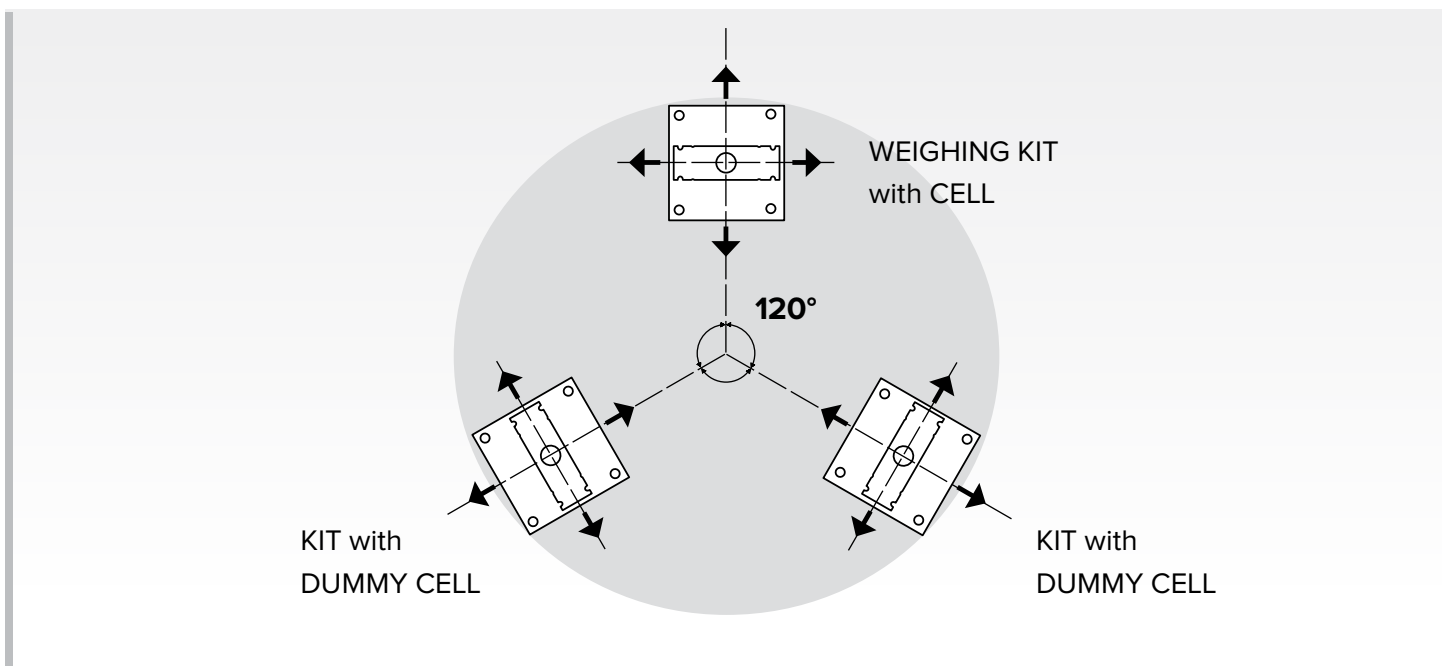
- ✓ Affordable price
- ✓ Speedy installation



To perform theoretical calibration with a Dini Argeo weight indicator, set:

$CEL.CAP = \text{capacity of the load cell} \times 2$

$CEL.SE_n = \text{nominal cell signal (e.g. 2mV/V)}$



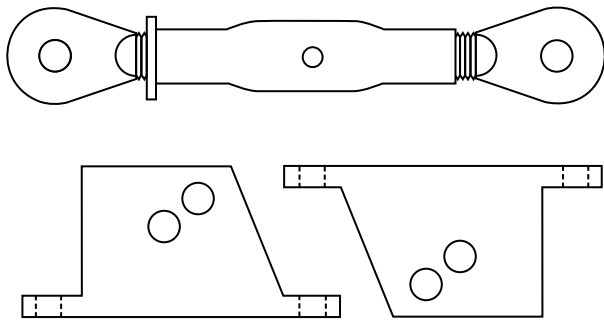
To perform theoretical calibration with a Dini Argeo weight indicator, set:

$CEL.CAP = \text{capacity of the load cell} \times 3$

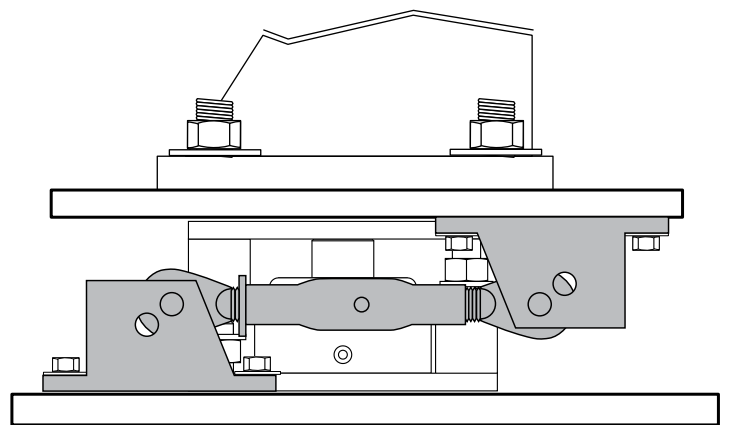
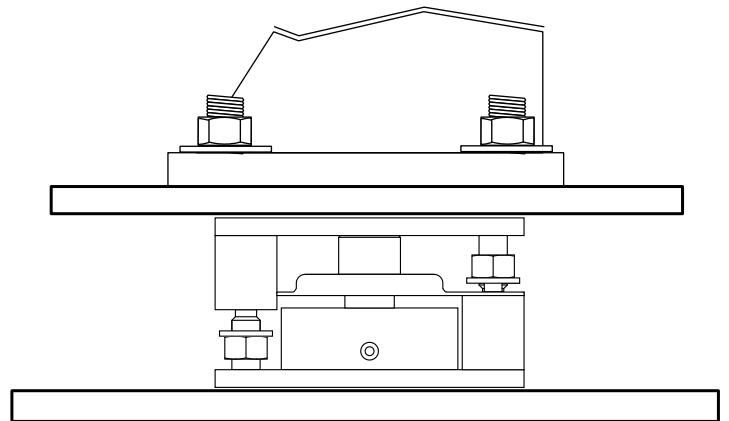
$CEL.SE_n = \text{nominal cell signal (e.g. 2mV/V)}$

TENSIONERS FOR LATERAL FORCES

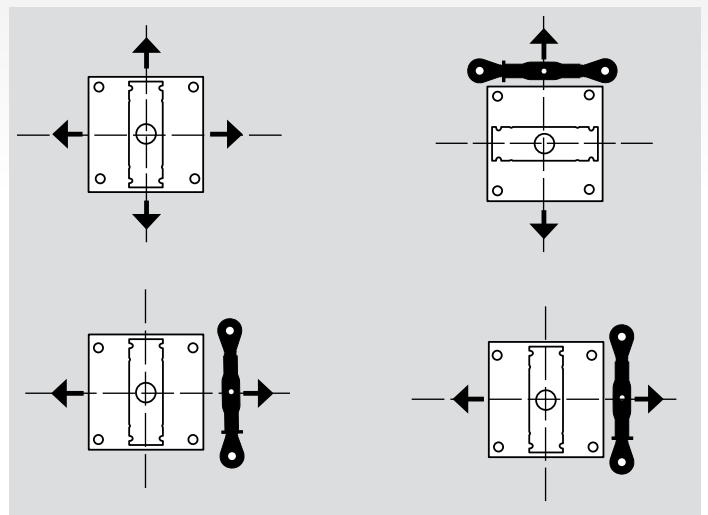
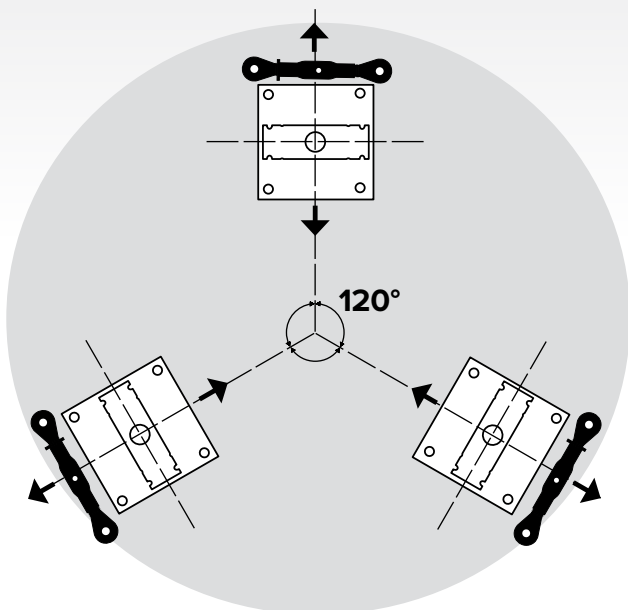
Ideal to contrast any lateral forces such as wind, dilations, accidental impact which may compromise the operation of the weighing kit.



tensioner kit and assembly supports



Recommended layout examples

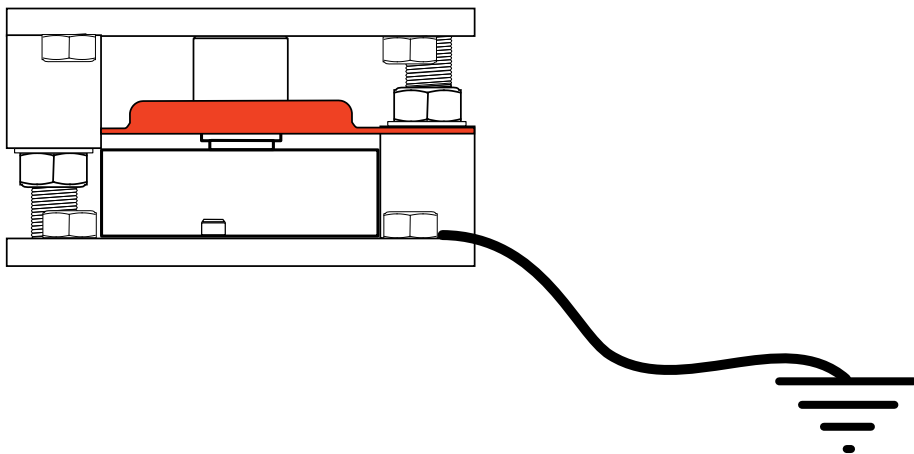


EARTHING CONNECTION

To protect the load cell against electrostatic discharges, it is advisable to make the earthing connection of each weighing kit correctly, following one of the following 2 diagrams:

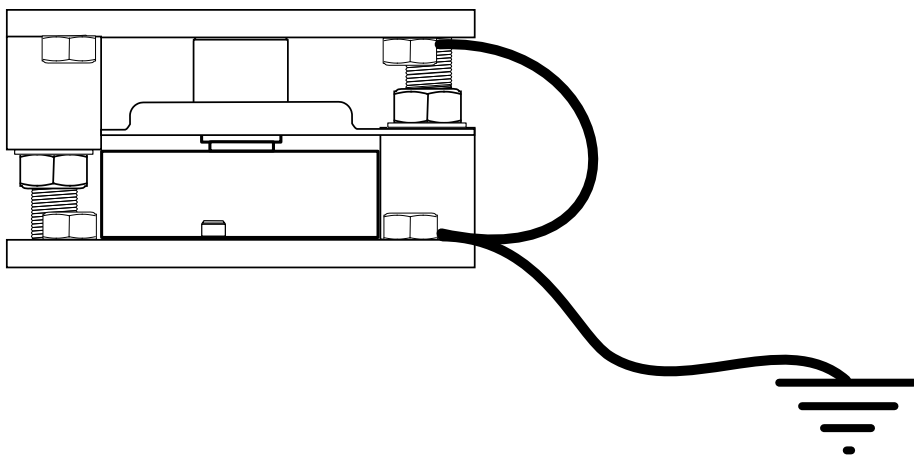
■ SOLUTION 1

For settings with a low likelihood of electrostatic discharge formation, you can use the self-centring plate, reducing the number of connections:



■ SOLUTION 2

For settings with a high likelihood of electrostatic discharges (presence of dusts, plastic substances, synthetic materials etc.), we recommend you create a further bypass between the top plate and the bottom plate:



■ CABLE CROSS SECTION

We recommend you use a cable with a cross section that is suitable for the electrostatic discharges to withstand, and in any case of no less than 16 mm. To connect the cable to the kit, use ring wire terminals with a suitable diameter.



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