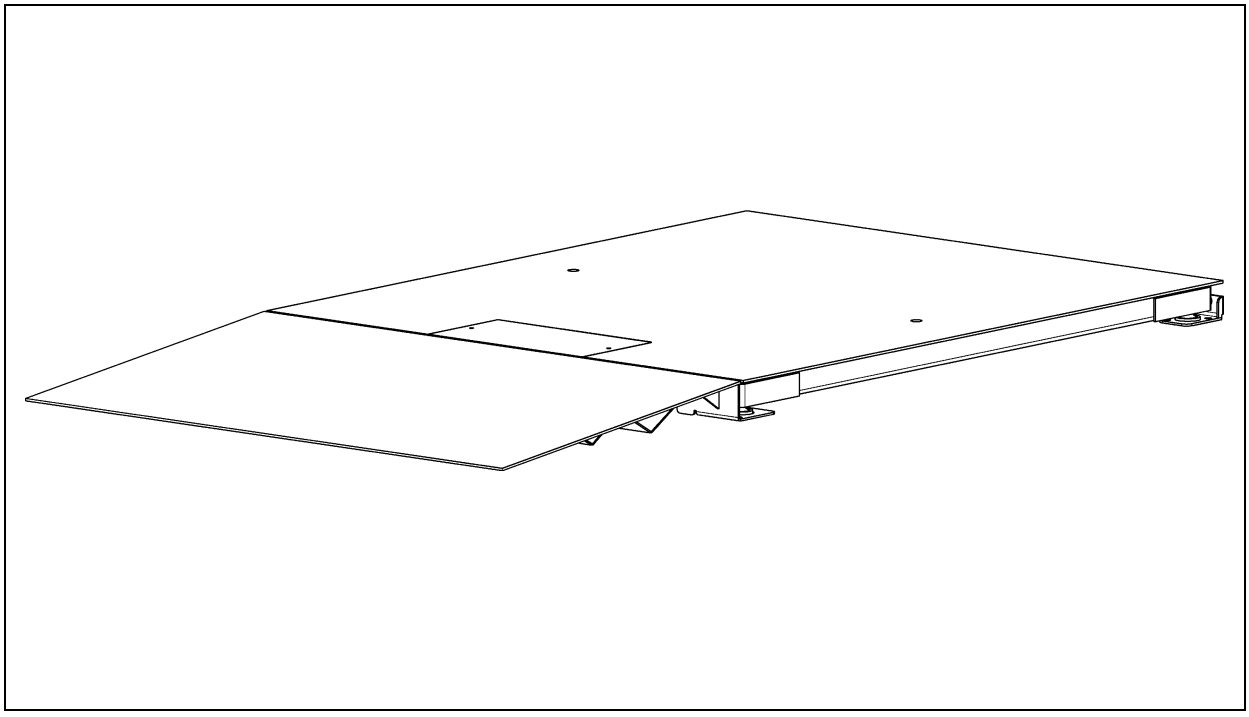
DFF & DFG Series Floor Scales

Instruction Manual



1. INTRODUCTION

Thank you for purchasing the DFF & DFG Series Floor Scale from OHAUS, a leading manufacturer of precision Balances, Scales and Indicators.

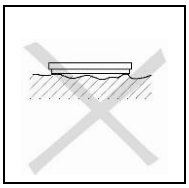
This manual covers installation, maintenance, replacement parts and service information for the Ohaus DFF & DFG Series Floor Scale. A separate instruction manual for the indicator is included if ordering the DFF & DFG Series Floor Scale with an Ohaus indicator. Please read this manual completely before installation and operation.

2. SAFETY INSTRUCTIONS

Selecting the Installation Location:

Ambient Conditions

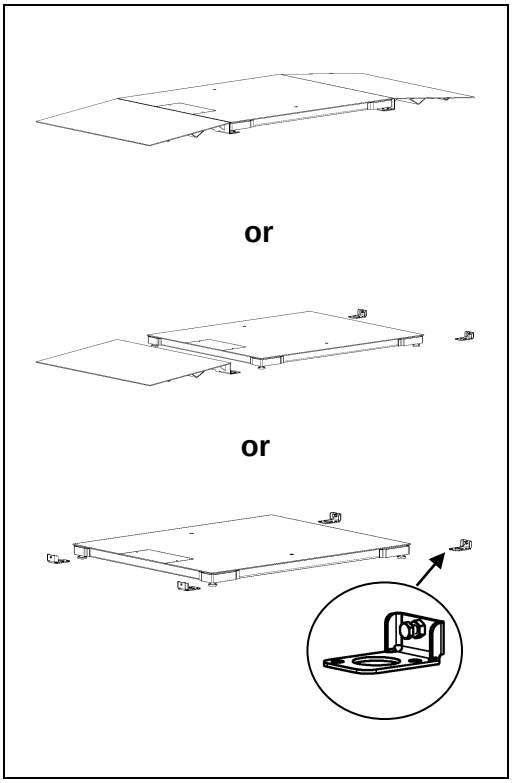
- Never operate in hazardous areas or in areas hazarded by gases, vapors, mist and dust!
- DFF (Painted steel version) – the weighing platform may be used in a dry environment only.
- DFG (Stainless steel version) – the weighing platform may be used in a dry or humid environment.



- The foundation at the installation location must be capable of safely supporting the weight of the scale at the support points when it carries the maximum load. At the same time, it should be so stable that no vibrations arise during weighing operations. This applies also when the weighing platform is integrated in conveying systems and the like.
- Ensure that vibrations due to machines near the installation site are kept to a minimum.

3. SETTING UP

3.1 Certifiable Application



1) Depending on the model, the following accessories must be available when setting up the weighing platform:
   - 2 approach ramps
     or
   - 1 approach ramp and 1 set of foot plates
     or
   - 2 sets of foot plates
2) Place approach ramps and/or foot plates on the floor in front of and behind the weighing platform.
3) Lift weighing platform and position the levelling feet in the slots provided in the ramps or foot plates.
4) Ensure the surface is completely flat in the area of the scale location, especially in the region of the levelling feet, and the foot plates and ramps are positioned horizontally. Small differences in height can be compensated by the adjustable feet.
5) Align ramps and foot plates.
6) Mark position of the ramps and foot plates. It is essential to fix them to the floor through drill holes using the dowels provided (foot plates: 2 dowels each, ramp: 2 dowels each).

3.2 Non-certifiable Application

The weighing platform can also be operated without ramps or foot plates in case of non-certifiable applications.

3.3 Connecting the Indicator

1) Route the load cell connection cable to the indicator.

   Caution: Ensure the connection cable is protected against possible damage when routed to the indicator.

2) Consult the installation instructions of the indicator for the steps involved in attaching the indicator (if not already connected).

3) Connect the load cell connection cable to the indicator in accordance with the following table:

Indicator	Color
EXC+ (IN+)	Green
SEN+	Yellow
SIG+ (OUT+)	Orange
SIG- (OUT-)	Red
SEN-	Brown
EXC- (IN-)	Black

4. SCALE CONFIGURATIONS

The floor scales are configured ex-factory as follows:

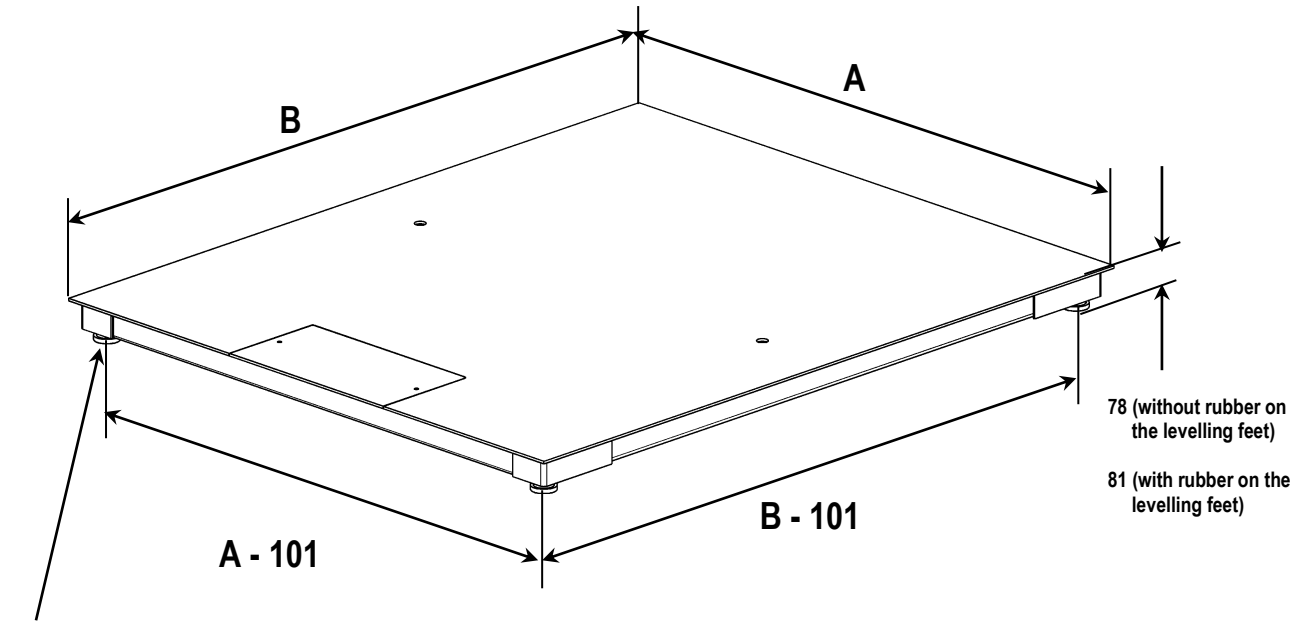
- Verifiable
- Single Range 1 x 3000 e

If allowed, the following configurations can be set through the indicator setup menu (please refer to the installation instructions of the indicator):

Types	Maximum Capacity	Verification Scale Interval	
		Approvable	Non-approvable*
DF300…	300kg	0.1kg	0.1 / 0.05 / 0.02kg
DF600…	600kg	0.2kg	0.2 / 0.1 / 0.05kg
DF1500…	1500kg	0.5kg	0.5 / 0.2 / 0.1kg
DF3000…	3000kg	1kg	1 / 0.5 / 0.2kg

* Non-approval resolution depends on the A/D converter of the indicator

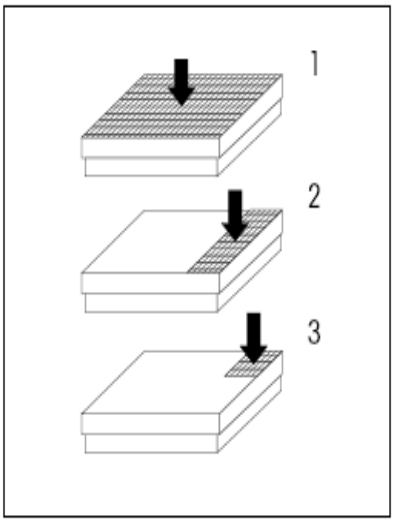
DIMENSIONS (mm)



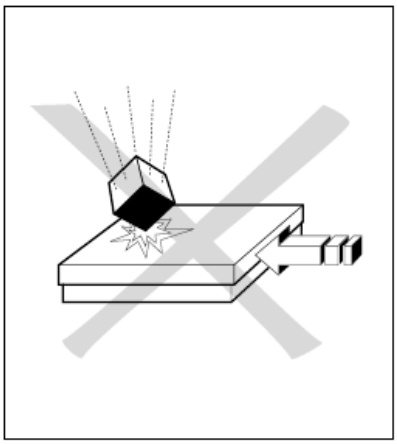
Dimensions	DF…S	DF…R	DF…LX	DF…X	DF…XV
A	800	1000	1250	1500	1500
B	800	1000	1500	1500	2000

5. OPERATING LIMITS

- Although the weighing platforms have extremely rugged construction, certain load limits must not be exceeded.
- Depending on the type of loading, the maximum safe static load, i.e. the maximum admissible loading is:



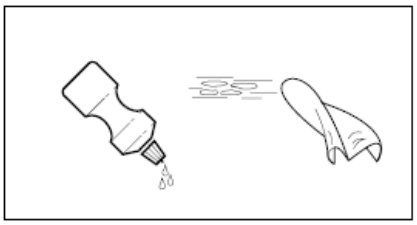
Model	(1) Maximum Central Load	(2) Maximum Side Load	(3) One Side Corner Load
DF300…	1000	800	400
DF600…	3000	2000	1000
DF1500/3000…LX/X	4500	3000	1500
DF1500/3000…XV	3300	2200	1000



- Avoid falling loads, shocks and lateral impacts!
- The load plate of the weighing platform is the active weighing component, the approach ramps are passive, i.e. in the weighing operation all wheels of the conveying vehicle must be on the load plate.
- The air gap between load plate and the approach ramps must be free. It is thus essential, particularly when weighing granular or small sized weighing samples, to check the gap at regular intervals and keep it free.

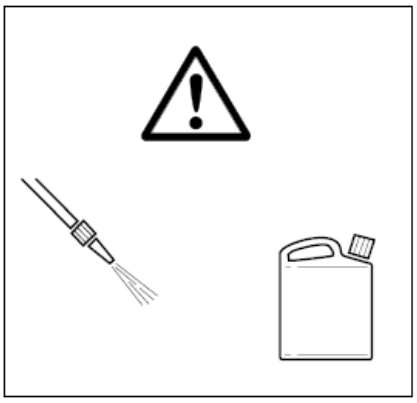
6. CLEANING AND MAINTENANCE

Maintenance of the weighing platform is limited to regular cleaning. The procedure depends on the type of surface and on the ambient conditions prevalent at the installation site.



Cleaning the DFF (painted steel version) in a dry environment:

- Wipe with a damp cloth.
- Use only common household cleaning agents.
- Never use water or high pressure cleaners!

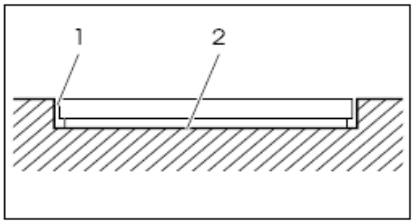


Cleaning the DFG (stainless steel version) in a wet environment:

- Water jet up to 60°C.
- Use only common household cleaning agents.

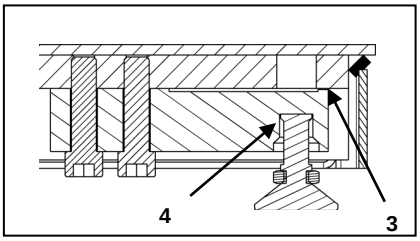
Cleaning in a corrosive environment

- Water jet up to 60°C.
- Ensure that corrosive substances are removed at regular intervals.
- Treat with the enclosed universal oil as necessary.



Cleaning of recessed weighing platform

- Always keep gap (1) between weighing platform and base frame free from dirt.
- Remove fairly large dirt deposits on the pit bottom (2) at regular intervals.



Cleaning the interior

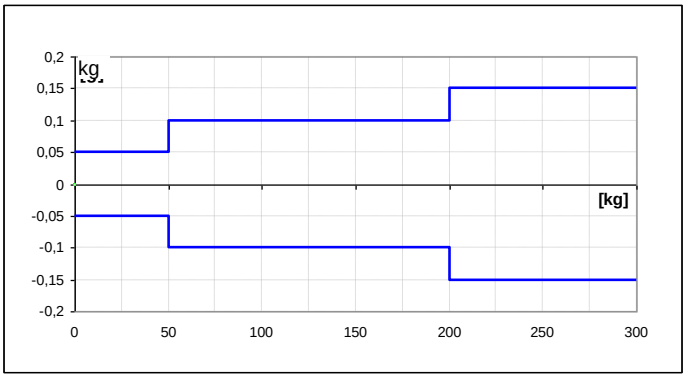
- When necessary, remove dirt and deposits in the interior of the weighing platform by blowing off dirt, or rinsing by water jet
- Remove dirt particles in the gap (3) between the overload protection of the force transducer and the load plate by using compressed air.
- Lubricate contact surfaces (4) and O-rings of the load supports if required.

7. ADJUSTMENT SPECIFICATIONS

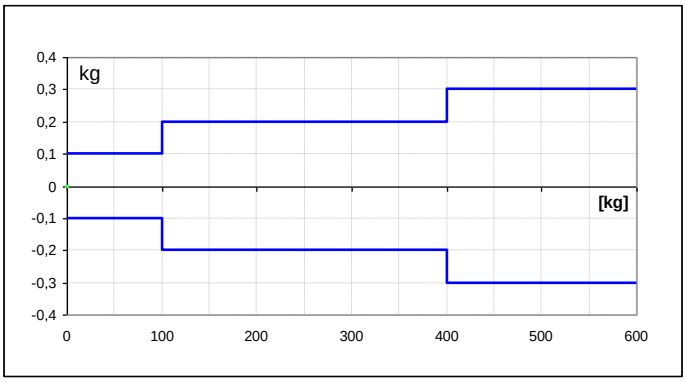
Testing and adjustment specifications:

Capacity	300 kg	600 kg	1500 kg	3000 kg
Readability	100 g	200 g	500 g	1000 g
Minimum	2 kg	4 kg	10 kg	20 kg
Maximum	300 kg	600 kg	1500 kg	3000 kg
1/3 corner load	100 kg	200 kg	500 kg	1000 kg

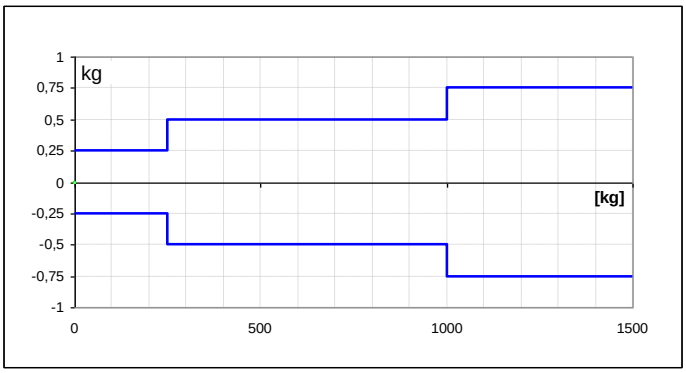
300 kg



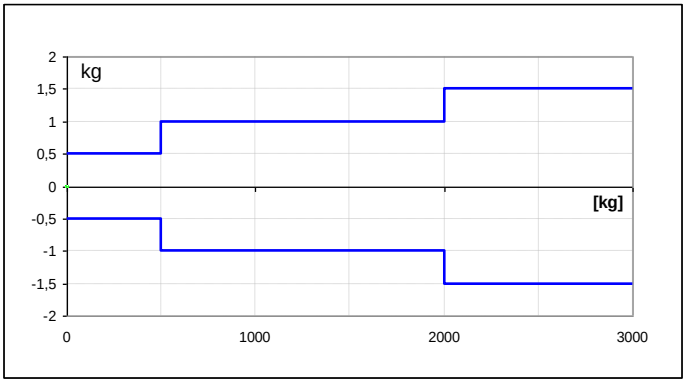
600 kg



1500 kg

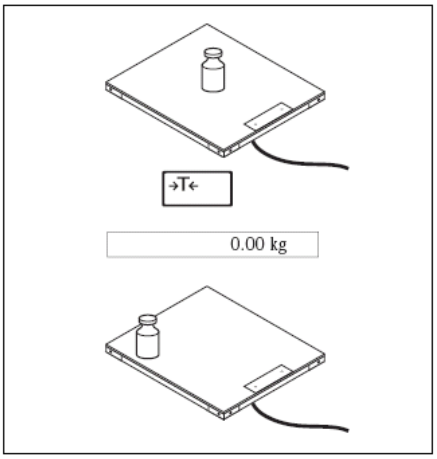


3000 kg



8. CHECKING AND ADJUSTING THE CORNER LOAD

A. Testing the Corner Load:

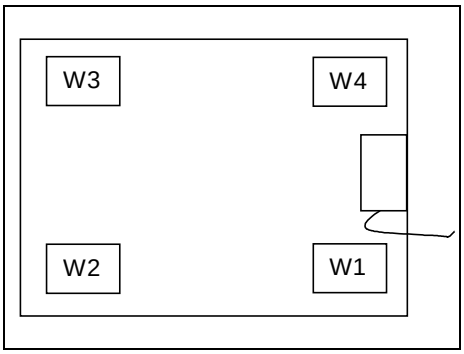


- Place appropriate test weights (see overview in *Section 7*) in the centre of the load plate and tare.
- Scale shows -0-.
- Place test weights in succession at all four corners.
- Deviations are displayed with a sign.
- Record values.
- If the deviations lie outside the tolerances listed in *Section 7*, adjustment is necessary.

B. Adjusting the Corner Load

1. Set the highest readability for test purposes in the indicator set up mode for improved checking of changes resulting during adjustment.
   - Weighing range 300 kg, readability 0,02 kg
   - Weighing range 600 kg, readability 0,05 kg
   - Weighing range 1500 kg, readability 0,1 kg
   - Weighing range 3000 kg, readability 0,2 kg

2. Access the connection box and activate the adjustment potentiometer.



Adjustment Rule:

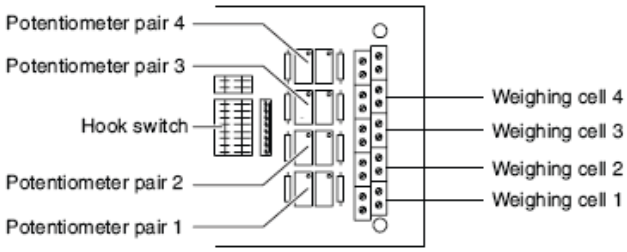
- The corner (load cell) with the greatest negative deviation must be set to zero.
- Do not change the setting of this corner, even after repeated adjustment cycles.

Adjustment of the Corner Load:

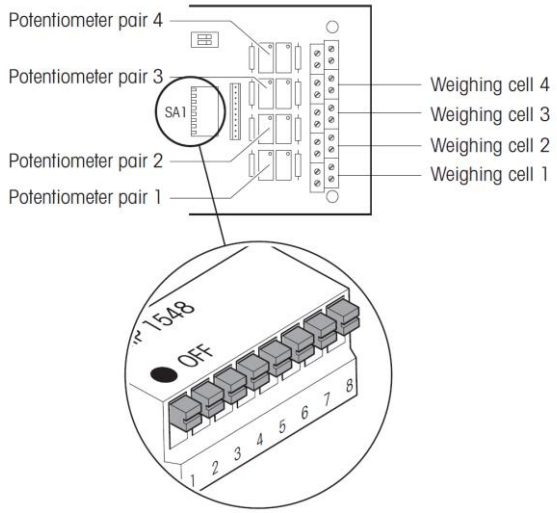
- Start by adjusting the corner at which the greatest positive deviation was found.

C. Adjustment at Analogue PCB

- The load cell 1 is adjusted using the potentiometer pair 1, load cell 2 at pair 2, etc.
- The hook/DIP switches on the analogue PCB must be opened for this purpose.



- With a positive deviation: turn both potentiometers the same number of rotations to the right
- With a negative deviation: turn both potentiometers the same number of rotations to the left



9. REPLACING PARTS

9.1 Replacing the Analogue PCB

1) Set scale up on edge.

2) Remove the analogue PCB:
   - Unscrew and remove the cover of the connection box.
   - Detach the connecting wires of the load cells and the connecting cables to the indicator.
   - Mark the cables for subsequent reconnection.
   - Detach the PCB from the retainer and remove it.

3) Reinstall the analogue PCB:
   - Connect the load cells to the analogue PCB by attaching the load cell connecting cable to the corresponding terminal strip in accordance with the following table:

Terminal	State	Colour
EXC +	Supply +	Green
SIG +	Signal +	White
SIG -	Signal -	Red
EXC -	Supply -	Black

   - Attach the connecting cable to the indicator in accordance with the following table:

Terminal	State	Colour
EXC +	Supply +	Green
SEN +	Control line +	Yellow
SIG +	Signal +	Orange
SIG -	Signal -	Red
SEN -	Control line -	Brown
EXC -	Supply -	Black

Note: The load cells are calibrated at the factory in such a way that adjustment of the corner load is usually not required. If corrections are required in individual cases, adjustment can be carried out at the potentiometer pairs 1, 2, 3 and 4.

9.2 Replacing the Load Cells

Note: Load cells can be damaged by dynamic shocks, for example. They must be replaced if the corner load test results are not in line with the specified tolerances.

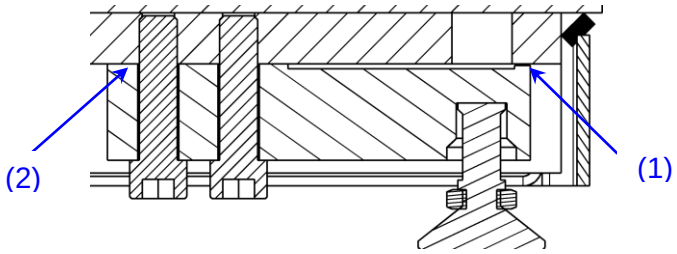
1) Set scale up on edge

2) Disconnect the load cell:
   - Unscrew and remove the cover of the connection box to the analogue PCB.
   - Detach the connecting wires of the concerned load cell from the analogue PCB.
   - Disconnect the respective cable gland and pull out the cable.

3) Replace the load cell:
   - Lay the scale upside down on a suitable surface. When doing so, ensure that the connecting cable to the indicator is not pulled off.
   - Loosen two Allen screws and remove the concerned load cell.
   - Unhook the retaining spring at the load supports and remove the old load cell.
   - Hook the retaining spring to the new load cell and install the load cell.
   - Route the cable in the frame up to the connection box.
   - Insert the load supports into the cut-out of the load cell.
   - Re-hook the retaining spring in the load supports.

   Note: When installing the replacement load cell, ensure that the screws are tightened evenly. The two Allen screws must be tightened with a torque of 70 Nm. Use a torque spanner if possible.

4) Check Overload Stop



- The distance (1) between the load frame and the overload stop must comply with the following values:

Model	Distance
DF300/600/1500	0,4 mm
DF3000	0,5 mm

- The distance can be adjust by adding an available shim 0,2 mm on the load cell (2).

9.3 Connecting the Load Cells

Note: Measures for shielding against incoming and outgoing interference are especially important with a long connecting cable. The maximum interference immunity classes will only be achieved with careful and proper installation and wiring of all connected peripherals and scale base mechanisms.

1) As needed, shorten the new load cell cable based on the old cable
2) Attach the screw gland to cable
3) Lead cable through the hole in the housing
4) Screw nut onto threading of the cable gland
5) Connect wires
6) Screw cover onto connection box and make scale ready for operation.

Note: The following tests must be performed after a load cell has been replaced:

- Check side load and adjust as needed
- Calibrate with maximum load

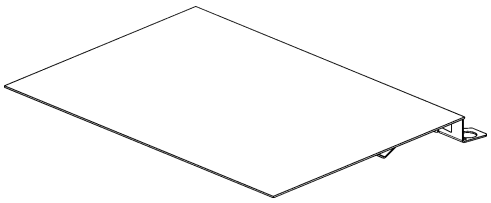
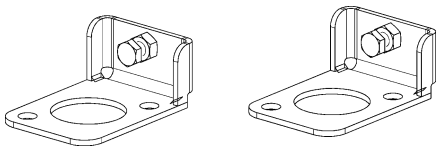
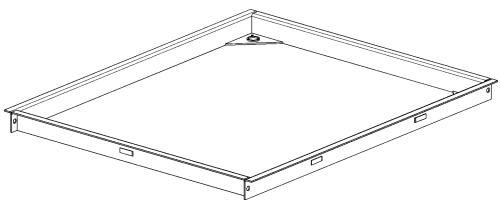
9.4 Replacing Levelling Feet

1) Stand scale up
2) Unhook retaining springs from the defective foot and remove it
3) Lubricate new foot with O-ring and insert into the load cells
4) Hook retaining springs into the new foot

10. SPARE PARTS

Designation	Order number	Min. Order Quantity
Analogue board	00205924	1 piece
Cable Kit, LC, 6 meters, DF52xx	30424408	1 piece
Cable gland (M12)	22008791	4 pieces
Levelling foot	22015032	1 piece
Rubber for foot plate	22003510	1 piece
Retaining spring	22003508	1 piece
Beam load cell 0,25t / C3 / for 300 kg platform	72192180	1 piece
Beam load cell 0,5t / C3 / for 600 kg platform	72192181	1 piece
Beam load cell 1,0t / C3 / for 1500 kg platform	72192182	1 piece
Beam load cell 2,0t / C3 / for 3000 kg platform	72192183	1 piece
Seal (housing)	22015355	1 piece
Shim for load cell 0,2 mm	00204539	4 pieces

11. ACCESSORIES

Accessory	Item	Order Number
	**Ramps (mild steel):**	
	ramp 800mm	22015464
	ramp 1000mm	22015465
	ramp 1250mm	22015466
	ramp 1500mm	22015467
	Ramps (stainless steel):	
	ramp 800mm	22015473
	ramp 1000mm	22015474
	ramp 1250mm	22015475
	ramp 1500mm	22015476
	**Foot plates (1 set = 2 pieces):**	
	Mild steel	22015499
	Stainless steel	22015581
	**Pit frames for pit installations:**	
	Mild steel	
	Pit frame DFF…800x800mm	22015392
	Pit frame DFF…1000x 1000mm	22015393
	Pit frame DFF...1500x1250mm	22015394
	Pit frame DFF...1500x1500mm	22015396
	Pit frame DFF...2000x1500mm	22015397
	Stainless steel	
	Pit frame DFG…800x800mm	22015493
	Pit frame DFG…1000x 1000mm	22015494
	Pit frame DFG...1500x1250mm	22015495
	Pit frame DFG...1500x1500mm	22015496
	Pit frame DFG...2000x1500mm	22015497