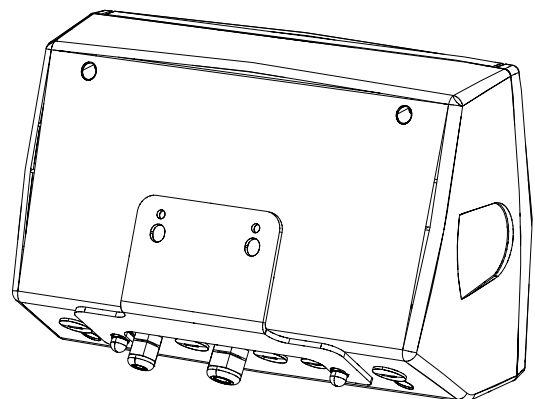
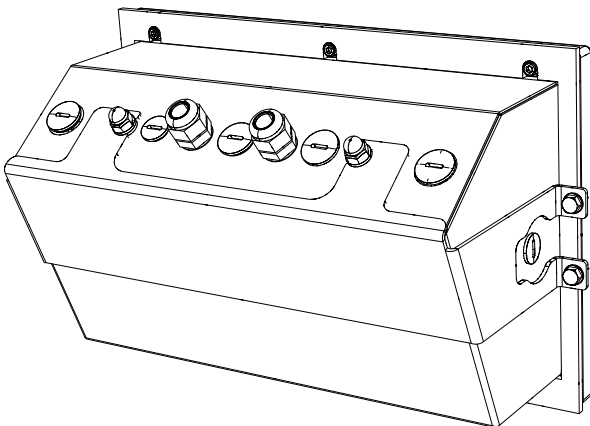
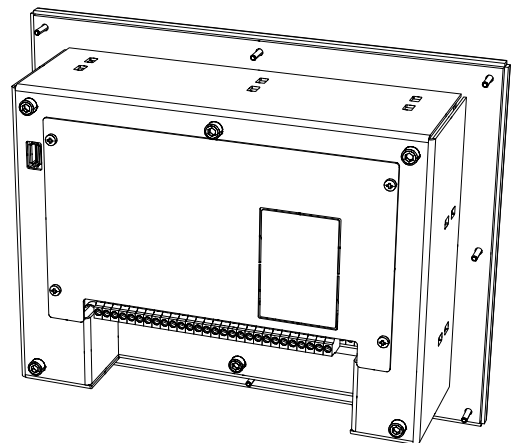
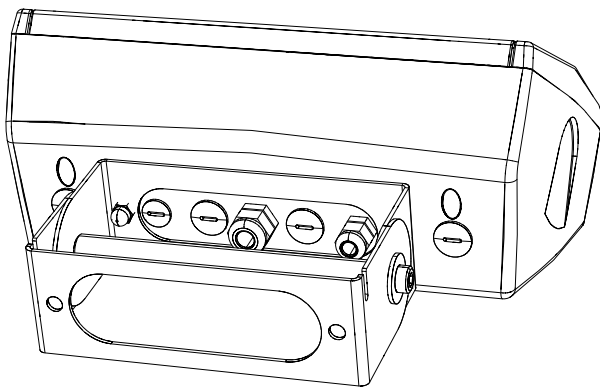


# 3590 MOUNT INSTALLATION

Mounting Installation Instructions for 3590 Touch Instruments

USER MANUAL

ENGLISH





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# Introduction

Dear Customer,  
Thank you for purchasing a DINI ARGEO product.

This manual contains the instructions necessary to correctly install a 3590 in various surfaces (bench, panel, or wall). Please read and follow the provided instructions to install the instrument.

This publication, or portions thereof, may not be duplicated without written permission from the Manufacturer.

All information herein is based on the data available at the time of publication. The Manufacturer reserves the right to make changes to its products at any time without notice and without incurring any penalty. We therefore recommend that you always check for any updates.

The utmost care has been taken in compiling this manual, but reports of any inaccuracies are always welcome.

The instrument is covered by warranty and **MUST NOT BE TAMPERED WITH BY THE USER** under any circumstances. Any attempt at repair or modification may expose the user to the danger of electric shock and voids any warranty conditions, relieving the Manufacturer from all liability.

Any problem with the product must be reported to the manufacturer or to the retailer where it was purchased. Always **DISCONNECT POWER** before any installation or repair operation.

## Electrical precautions

- Mains power supply adjusted within  $\pm 10\%$  of the nominal voltage
- Electrical protections (fuses, etc.) are to be provided by the installer.
- Comply with the minimum recommended distances between different categories of cables.
- The load cell or signal amplifier extension cables, which are used for serial port and analog output connection, must comply with the maximum permitted lengths.
- The load cell or signal amplifier extension cables, which are used for serial port and analog output connection, must be shielded and must also be inserted alone into the conduit or metal pipe.
- Cell or amplifier cable input into the electrical panel must be autonomous. If possible, they must be connected directly to the indicator's terminal board without passing through the conduit with other cables.
- Install an "RC" filter on coil contactors, solenoid valves and all devices that generate electrical interferences.
- If condensation can develop inside the scale's transmitter, it is recommended to keep the equipment running.
- With regard to all shielded and non-shielded cables (cell cable, PC cable, power supply cable, etc.) that are connected to the indicator, you must keep the cable as short as possible and make a minimum amount of the cables exit from the shield in order to be connected to the terminal board;
- If the indicator is situated inside an electrical panel, you must also use a shielded cable for power supply and must keep the cable as short as possible and far from the cables supplying coils, inverter, electromotive force, etc., and apply a de-coupling transformer to supply the indicator only.

## Cable classification

The various cables are classified according to the signals they transmit:

### Category I

- Fieldbus, LAN network ( PROFIBUS, Ethernet, Devicenet...)
- Data shielded cables (RS232 ...)
- Shielded cables for analog digital signals < 25V (sensors, load cells.)
- Low-voltage power supply cables (<60V)
- Coaxial cables

### Category II

- DC power supply cables with >60V and <400V
- AC power supply cables with >25V and <400V

### Category III

- Power supply cables with >400V
- Telephone cable

### Category IV

- Any cables subject to lightning hazards

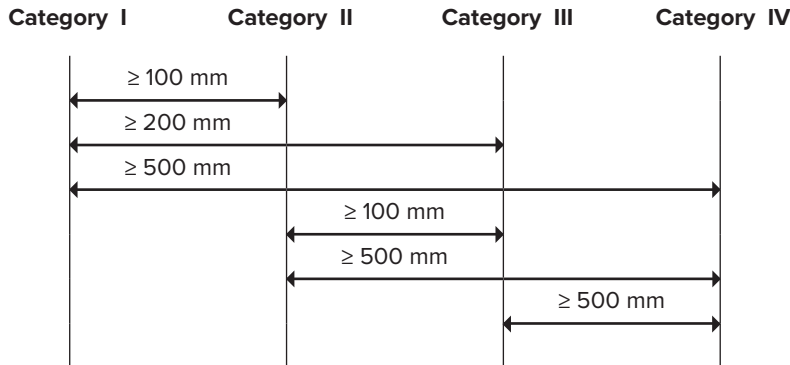
## Operating Temperature Range

For correct operation, the environmental temperature must be moderated:

- Legal for trade applications: -10 to 40°C
- Internal use applications: -20 to 50°C

# Recommended distance between cables

- When cables are laid parallel, they must be at the distances specified in the figure below
- These distances are intended in the air and are reduced if the housings are separated by metal boards connected to the ground
- Cables from different categories can cross (90°)



## Maximum cable lengths

### LOAD CELL CONNECTION CABLE

The cable can reach the following maximum lengths in order to connect the load cells:

- 50 metres with a  $6 \times 0.25 \text{ mm}^2$  cable
- 100 metres with a  $6 \times 0.5 \text{ mm}^2$  cable

### RS232 CONNECTION CABLE

The relative cable can reach a maximum length of approximately 15 metres from the line for RS 232 connections, with a baud rate of up to 19200.

### RS485 CONNECTION CABLE

The relative cable can reach a maximum length of approximately 1200 metres from the line with a baud rate of up to 9600.

### ANALOGUE OUTPUT CONNECTION CABLE

The maximum length for current analog output is:

- 100 metres with a  $2 \times 0.25 \text{ mm}^2$  cable
- 150 metres with a  $2 \times 0.5 \text{ mm}^2$  cable
- 300 metres with a  $2 \times 1 \text{ mm}^2$  cable

The maximum length for voltage analog output is:

- 50 metres with a  $2 \times 0.25 \text{ mm}^2$  cable
- 75 metres with a  $2 \times 0.5 \text{ mm}^2$  cable
- 150 metres with a  $2 \times 1 \text{ mm}^2$  cable

# Earthing system

For correct system operation, you must connect the indicator, load cells, any junction boxes and weighing structure to earth.

## INDICATOR

Connect the case's external earth terminal to earth with copper cables having a minimum dimension of 16 mm<sup>2</sup>.

## LOAD CELLS AND JUNCTION BOX

Earthing must be carried out by connecting the earthing cables to the earth bar; the cables must have a minimum dimension of 16 mm<sup>2</sup>. Also, connect the earth bar to the earth pole with a minimum cable of 50 mm<sup>2</sup>.

- If the load cells are connected to the indicator via a junction box, you must connect the cable shield from the indicator and the cell cable shields to the earth terminal of the junction box (refer to the junction box manual) and connect the latter to earth by means of a copper cable having a minimum dimension of 16 mm<sup>2</sup>.
- If the load cells are connected directly to the indicator (without using a junction box), you must connect the cell cable shields to the earthing point (or earth bar) inside the case.
- If the weighing system is for a large and/or outdoor structure, such as a weighbridge, and the junction box is connected to the indicator with a cable longer than 10 m, or if there are interferences, connect the cable's braiding from the indicator to the earth terminal in the junction box and indicator and connect the two earth systems with an earth cable having a minimum dimension of 16 mm<sup>2</sup>.

## WEIGHING STRUCTURE

Connect the weighing structure and any other structures that are not connected (for example silos that leave material on the weighing structure) to earth with cables having a minimum dimension of 16 mm<sup>2</sup>.

You must also connect the upper part of each cell with the lower part of the cell with a copper braid having a minimum dimension of 16 mm<sup>2</sup>. The upper part must be short circuited with the surface of the weighing structure and the lower part must be connected to earth with a copper braid having a minimum dimension of 16 mm<sup>2</sup>.

## SERIAL CABLES AND INSTRUMENT CONNECTIONS

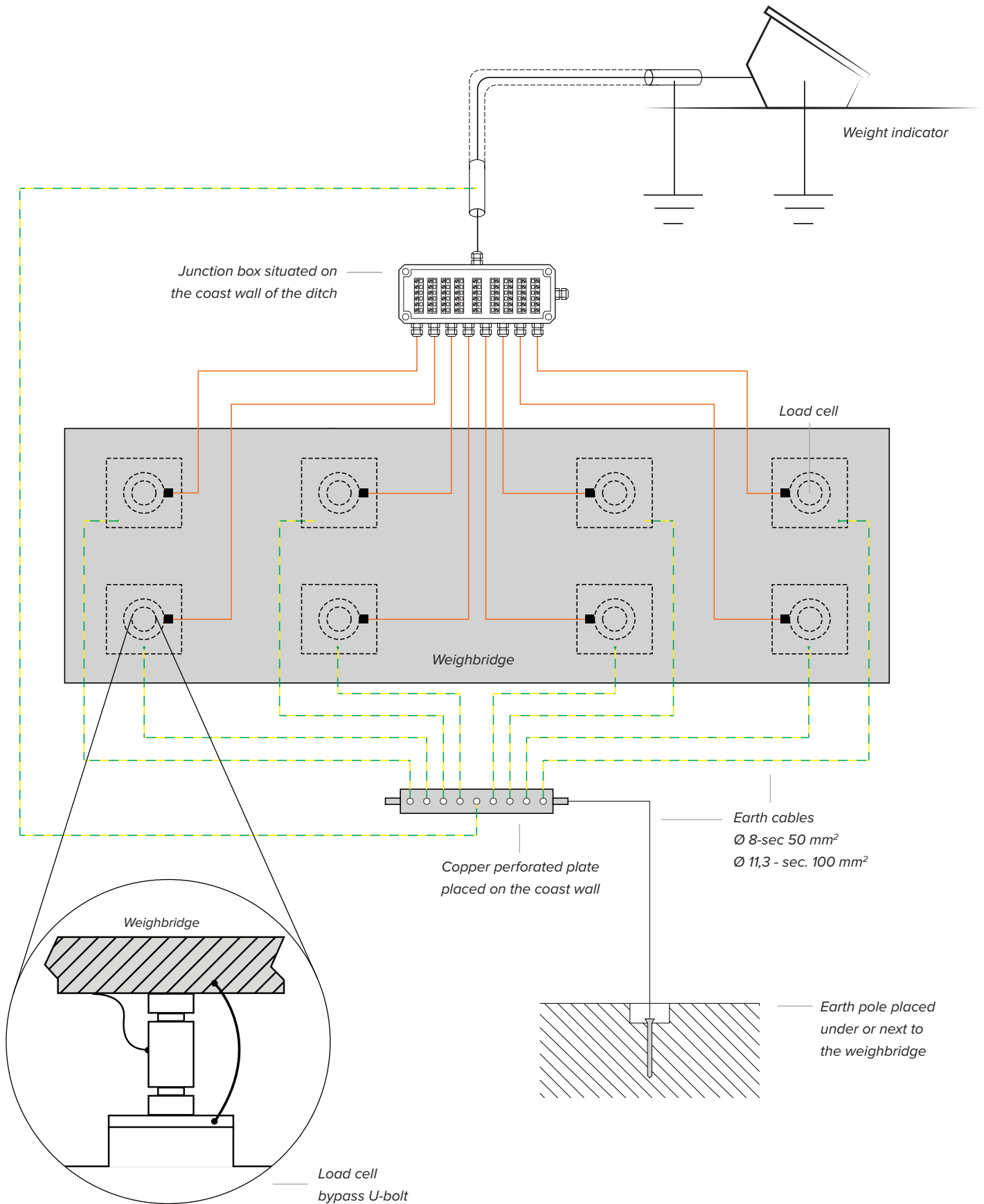
Connect the serial cable shield to the earthing point (or earth bar) inside the case (on the end part of the cable towards indicator) and to the earth terminal of the connected instrument (on the end part of the cable towards the instrument connected), and connect the earth terminal of the connected instrument to earth with copper cables having a minimum dimension of 16 mm<sup>2</sup>. The connection cable, instrument, and indicator must use the same ground to avoid undesired effects.



### NOTES:

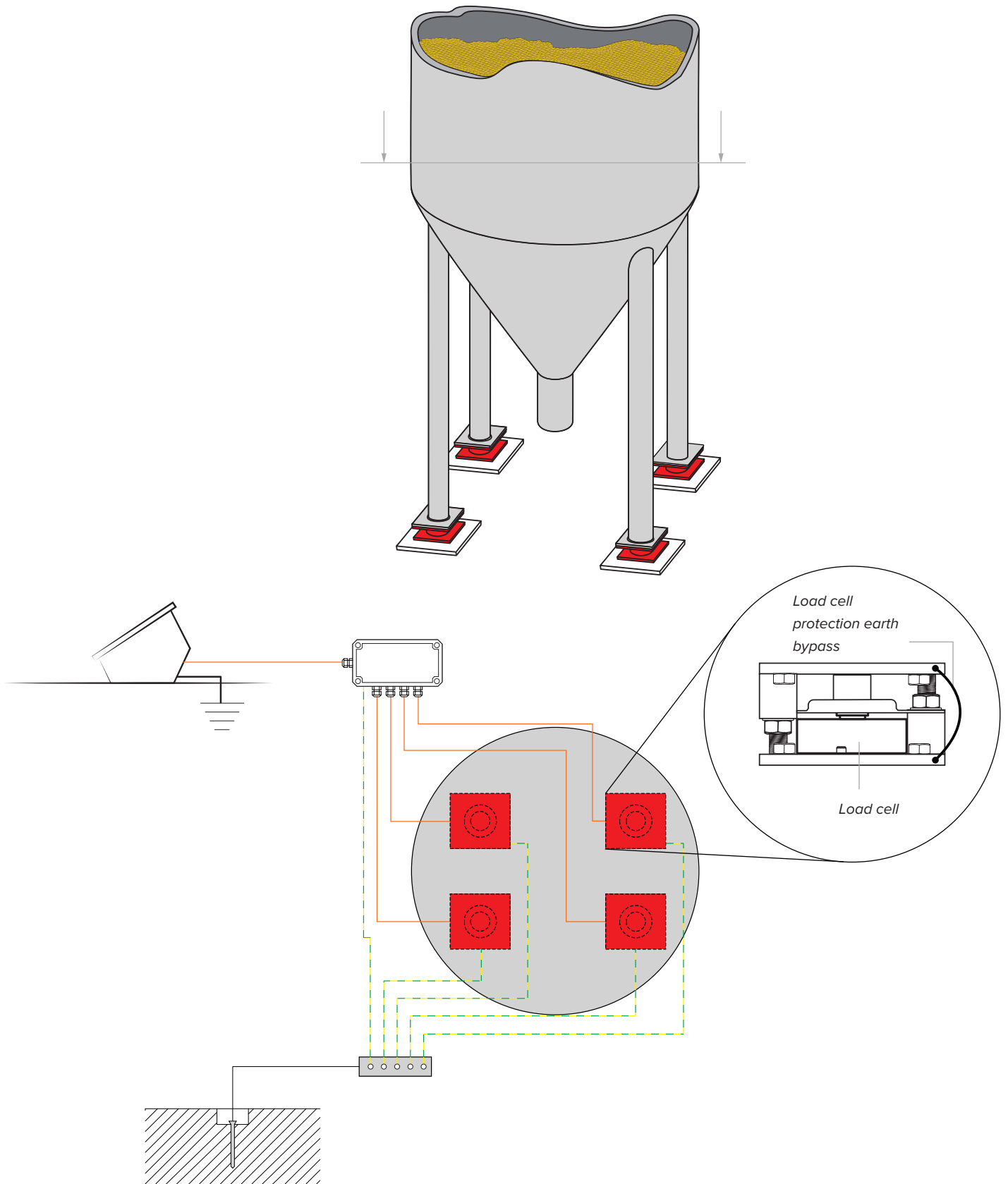
- All earth cables must have a suitable length in order to obtain an **overall resistance of the earthing system below 1Ω**.
- With regard to large and/or outdoor weighing system structures, such as a weighbridge:
  - connection to earth must be carried out by connecting the earth cables to an earth bar, and the earth bar to an earth pole with a minimum cable of 50 mm<sup>2</sup>.
  - The cables must be larger (e.g. 50 mm<sup>2</sup> instead of 16 mm<sup>2</sup> and 100 mm<sup>2</sup> instead of 50 mm<sup>2</sup>) since the voltage involved is higher (e.g. lightning);
  - the earth pole must be situated at a minimum distance of 10 m from the weighbridge structure;
- You must open SENSE-REFERENCE inside the indicator in order to compensate for the shift due to an increase in temperature.
- You must check and, if necessary, remove the connection between electrical installation earth and neutral.

# Example of weighbridge earthing





# Example of silos earthing



# Technical Data

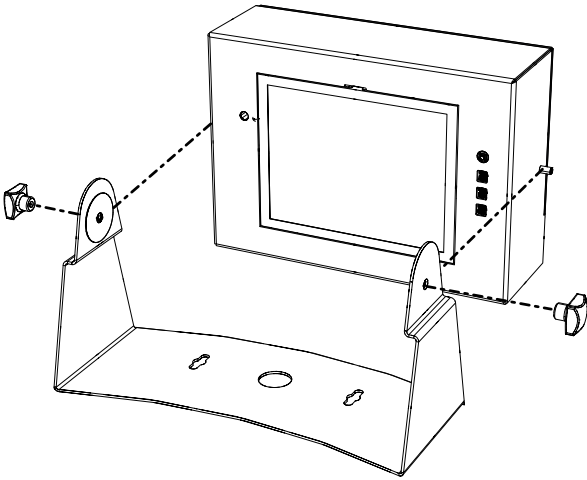
		3590ET	3590ET8	3590ETD
<b>Case</b>		ABS		
<b>Screen</b>		5,7" TFT LCD 120x90 mm	8" TFT LCD 160x120 mm	5,7" TFT LCD 120x90 mm
<b>Brightness</b>		5 levels (max 350 cd/m <sup>2</sup> )	5 levels (max 400 cd/m <sup>2</sup> )	5 levels (max 350 cd/m <sup>2</sup> )
<b>Keyboard</b>	<i>Hardware</i>	1 key (power button) external keyboard (USB or PS/2)		
	<i>Software</i>	QWERTY / AZERTY / QWERTZ		
<b>IP Rating</b>		IP65 IP40 (3590ETP)	IP65 IP40 (3590ETP8)	IP65
<b>Cable Glands</b>	<i>Standard</i>	2 PG9, plastic	1 PG7, plastic 1 PG9, plastic	
	<i>Extra</i>	3 PG9 2 PG7	4 PG9 1 PG7	
<b>Load Cell Inputs</b>	<i>Terminals</i>	1		RS485 for digital load cells
	<i>AMP</i>	4 (excludes terminal connection)		-
<b>Number of Scales</b>		Up to 4 + remote scale (serial)		
<b>Maximum number of load cells</b>		16 x 350 Ω or 45 x 1000 Ω		Up to 16
<b>Maximum input current to load cells</b>		120 mA		-
<b>Temperature Range</b>	<i>Internal Use</i>	-10 to 40°C		
	<i>Approved</i>	-10 to 40°C		
<b>Power Supply</b>	<i>Battery</i>	-		
	<i>Battery Life</i>	-		
	<i>Power Supply</i>	IN: 110/240 Vac OUT: 12Vdc	IN: 110/240 Vac OUT: 12Vdc	IN: 110/240 Vac OUT: 15Vdc
	<i>Available plugs</i>	EU, AU, UK, US, CH		
<b>Serial Ports</b>	<i>RS232</i>	3	3	2
	<i>RS485</i>	1 (requires RS485C) excludes RS232 port	1 (requires RS485C) excludes RS232 port	1 (for digital load cells)
	<i>TTL</i>	1 (for inclinometer)		
	<i>Ethernet</i>	-	1 (internal)	-
	<i>USB host</i>	1		
	<i>Keyboard port</i>	1		
<b>Digital inputs</b>	<i>Max. 12 / 24 Vdc Max. 20 mA</i>	2 (+ 6 with expansion board)		
<b>Digital outputs</b>	<i>Max. 48 Vac / 60 Vdc Max. 500 mA Max. 10 Ω</i>	4 (+ 12 with expansion board)		
<b>Number of Divisions</b>	<i>Internal use</i>	up to 1.000.000	up to 1.000.000	up to 1.000.000
	<i>Approved</i>	10.000e or multirange 3 x 3000e @ 0,3 μV/e		Depending on load cells
<b>Mounting</b>	<i>Standard</i>	Unsecured Bench		
	<i>Optional</i>	Wall mounting with STFI or STFR brackets		
<b>Printer</b>		Integrated thermal printer (3590ETP model)	Integrated thermal printer (3590ETP8 model)	-

		3590ET8D	3590EGT	3590EGTC3GD
<b>Case</b>		ABS	Stainless steel AISI 304	
<b>Screen</b>		8" TFT LCD 160x120 mm	5.7" TFT LCD 120x90 mm	5.7" TFT LCD 120x90 mm
<b>Brightness</b>		5 levels (max 400 cd/m <sup>2</sup> )	5 levels (max 350 cd/m <sup>2</sup> )	5 levels (max 350 cd/m <sup>2</sup> )
<b>Keyboard</b>	<i>Hardware</i>	1 key (power button) external keyboard (USB or PS/2)	15 keys external keyboard (USB or PS/2)	15 keys external keyboard (USB or PS/2)
	<i>Software</i>	QWERTY / AZERTY / QWERTZ		
<b>IP Rating</b>		IP65	IP68 (IP69K optional)	IP68
<b>Cable Glands</b>	<i>Standard</i>	2 PG9, plastic	2 PG9, metal	2 PG9, metal
	<i>Extra</i>	3 PG9 2 PG7	3 PG9 1 PG7	3 PG9 2 PG7
<b>Load Cell Inputs</b>	<i>Terminals</i>	RS485 for digital load cells	1	
	<i>AMP</i>	-	4 (excludes terminal connection)	
<b>Number of Scales</b>		Up to 4 + remote scale (serial)		
<b>Maximum number of load cells</b>		Up to 16	16 x 350 Ω or 45 x 1000 Ω	
<b>Maximum input current to load cells</b>		-	120 mA	
<b>Temperature Range</b>	<i>Internal Use</i>	-10 to 40°C		
	<i>Approved</i>	-10 to 40°C		
<b>Power Supply</b>	<i>Battery</i>	-		
	<i>Battery Life</i>	-		
	<i>Power Supply</i>	IN: 110/240 Vac OUT: 15Vdc	IN: 110/240 Vac OUT: 12Vdc	IN: 110/240 Vac OUT: 15Vdc
	<i>Available plugs</i>	EU, AU, UK, US, CH		
<b>Serial Ports</b>	<i>RS232</i>	2	3	
	<i>RS485</i>	1 (for digital load cells)	1 (requires RS485C) excludes RS232 port	1 excludes RS232 port
	<i>TTL</i>	1 (for inclinometer)		
	<i>Ethernet</i>	1 (internal)	-	-
	<i>USB host</i>	1		
	<i>Keyboard port</i>	1		
<b>Digital inputs</b>	<i>Max. 12 / 24 Vdc Max. 20 mA</i>	2 (+ 6 with expansion board)		
<b>Digital outputs</b>	<i>Max. 48 Vac / 60 Vdc Max. 500 mA Max. 10 Ω</i>	4 (+ 12 with expansion board)		
<b>Number of Divisions</b>	<i>Internal Use</i>	up to 1.000.000	up to 1.000.000	
	<i>Approved</i>	Depending on load cells	10.000e or multirange 3 x 3000e @ 0,3 μV/e	
<b>Mounting</b>	<i>Standard</i>	Unsecured Bench		
	<i>Optional</i>	Wall mounting with STFI or STFR brackets	Wall mounting with STFI or STFR brackets Panel mounting with PANEL-ST bracket	
<b>Printer</b>		-		

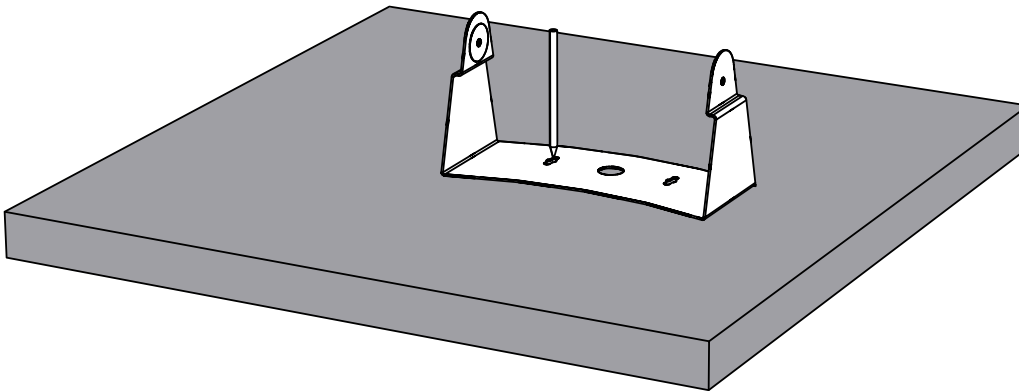
		3590EGT8	3590EGTT	3590EGTB8
<b>Case</b>		Stainless steel AISI 304		
<b>Screen</b>		8" TFT LCD 160x120 mm	5,7" TFT LCD 120x90 mm	8" TFT LCD 160x120 mm
<b>Brightness</b>		5 levels (max 400 cd/m <sup>2</sup> )	5 levels (max 350 cd/m <sup>2</sup> )	5 levels (max 400 cd/m <sup>2</sup> )
<b>Keyboard</b>	<i>Hardware</i>	1 key (power button) external keyboard (USB or PS/2)	15 keys external keyboard (USB or PS/2)	external keyboard (USB or PS/2)
	<i>Software</i>	QWERTY / AZERTY / QWERTZ		
<b>IP Rating</b>		IP68	IP68	IP65 (front protection)
<b>Cable Glands</b>	<i>Standard</i>	5 PG9, metal	5 PG9, metal	-
	<i>Extra</i>	1 PG9 1 PG11	1 PG9 1 PG11	-
<b>Load Cell Inputs</b>	<i>Terminals</i>	1		
	<i>AMP</i>	4 (excludes terminal connection)		
<b>Number of Scales</b>		Up to 4 + remote scale (serial)		
<b>Maximum number of load cells</b>		16 x 350 Ω or 45 x 1000 Ω		
<b>Maximum input current to load cells</b>		120 mA		
<b>Temperature Range</b>	<i>Internal Use</i>	-10 to 40°C		
	<i>Approved</i>	-10 to 40°C		
<b>Power Supply</b>	<i>Battery</i>	-		
	<i>Battery Life</i>	-		
	<i>Power Supply</i>	IN: 110/240 Vac OUT: 12Vdc		-
	<i>Available plugs</i>	EU, AU, UK, US, CH		-
<b>Serial Ports</b>	<i>RS232</i>	3		
	<i>RS485</i>	1 (requires RS485C) excludes RS232 port	1 excludes RS232 port	1 (requires RS485C) excludes RS232 port
	<i>TTL</i>	1 (for inclinometer)		
	<i>Ethernet</i>	1 (internal)	-	1 (internal)
	<i>USB host</i>	1		
	<i>Keyboard port</i>	1		
<b>Digital inputs</b>	<i>Max. 12 / 24 Vdc Max. 20 mA</i>	2 (+ 6 with expansion board)		
<b>Digital outputs</b>	<i>Max. 48 Vac / 60 Vdc Max. 500 mA Max. 10 Ω</i>	4 (+ 12 with expansion board)		
<b>Number of Divisions</b>	<i>Internal Use</i>	up to 1.000.000	up to 1.000.000	up to 1.000.000
	<i>Approved</i>	10.000e or multirange 3 x 3000e @ 0,3 μV/e		
<b>Mounting</b>	<i>Standard</i>	Unsecured Bench or Wall mounting		Panel mounting
	<i>Optional</i>	-	-	-
<b>Printer</b>		-	-	-

# Bench Installation (3590EGT8 and 3590EGTT)

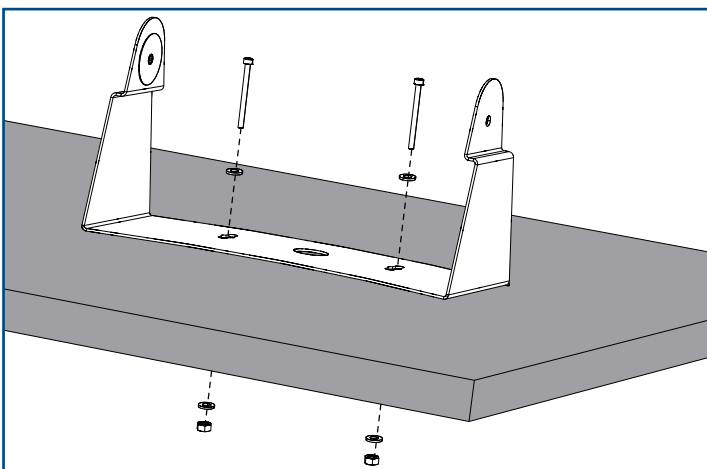
1. Unplug the instrument from the power source.
2. Detach hand screws and remove instrument from stand.



3. Use stand as template and carefully mark mounting hole locations with writing utensil.

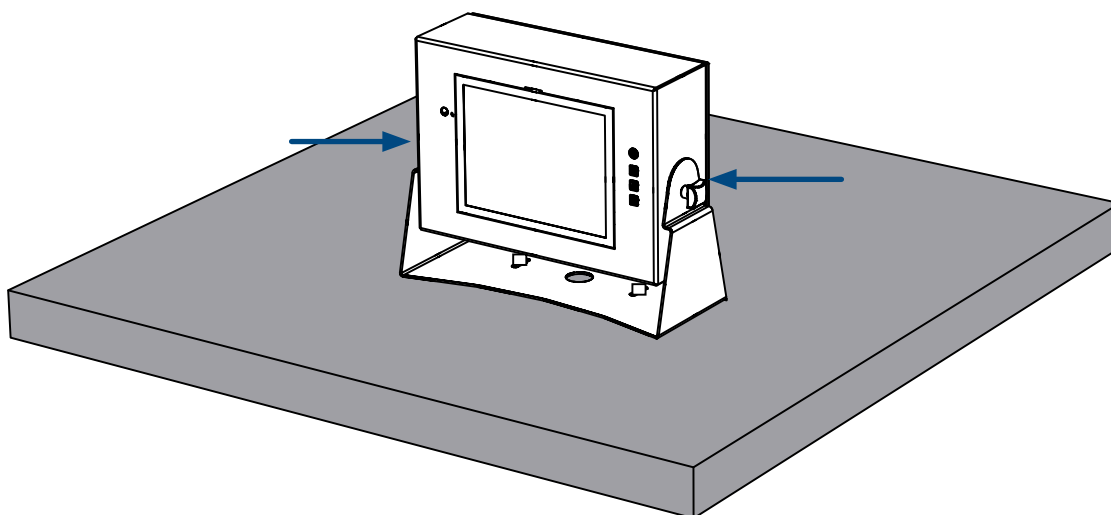


4. Drill holes in mounting surface.
5. Mount stand with preferred hardware (not included).

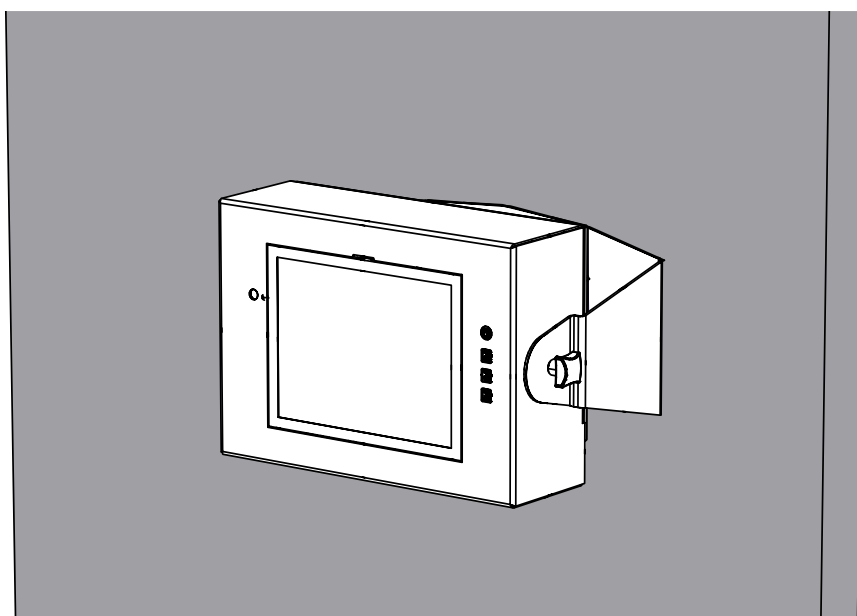


This example shows mounting the stand on a horizontal surface. The stand may also be mounted vertically following the same steps.

6. Reinstall instrument to stand with hand screws.

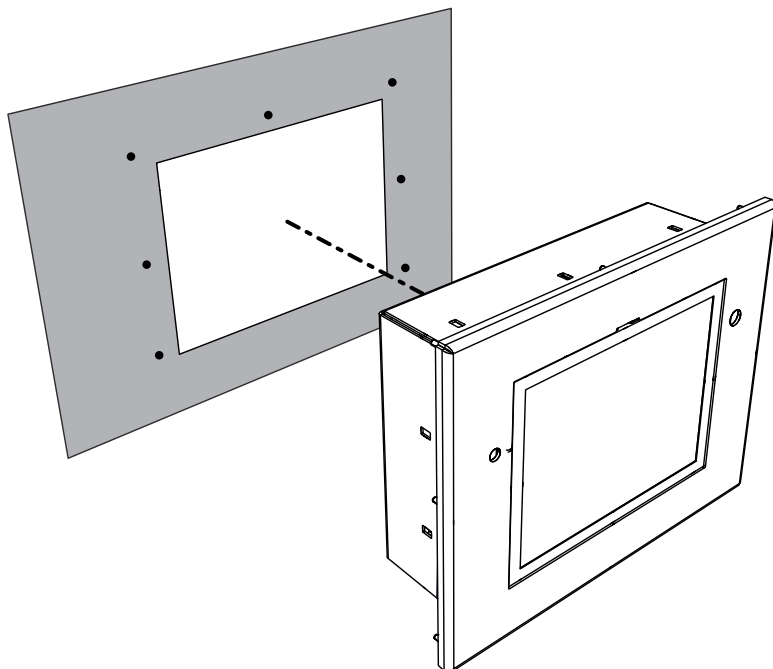


**i** NOTE: For reference, the following image displays an example of the stand mounted on a vertical surface.

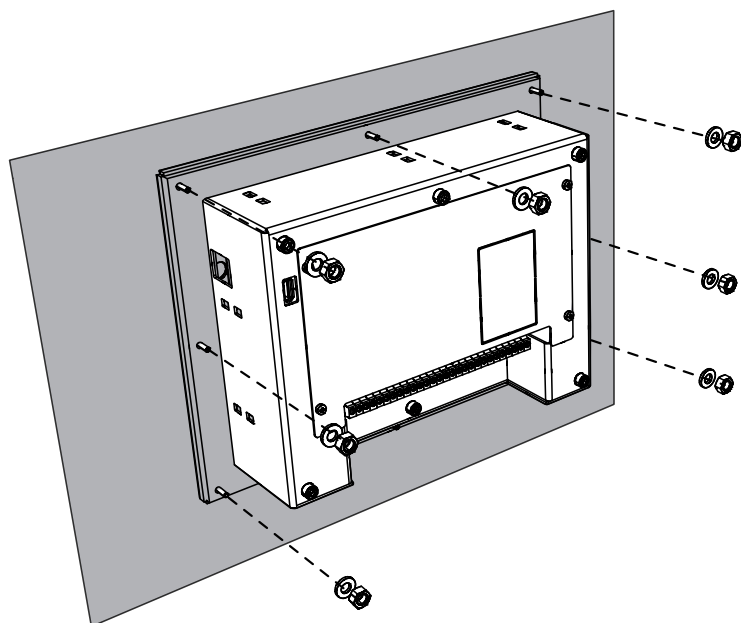


## Panel Installation (3590EGTB8)

1. Using a computer, navigate [www.diniargeo.com](http://www.diniargeo.com) and download technical drawing: TECH\_DRAWING\_3590EGTB8.pdf.
2. While referring to the technical drawing, use a writing utensil to mark required cut and drill lines on the panel.
3. Carefully cut holes in the panel.
4. Sand cuts to remove burrs and sharp edges.
5. Unplug instrument from power source.
6. Slide instrument into front of panel.

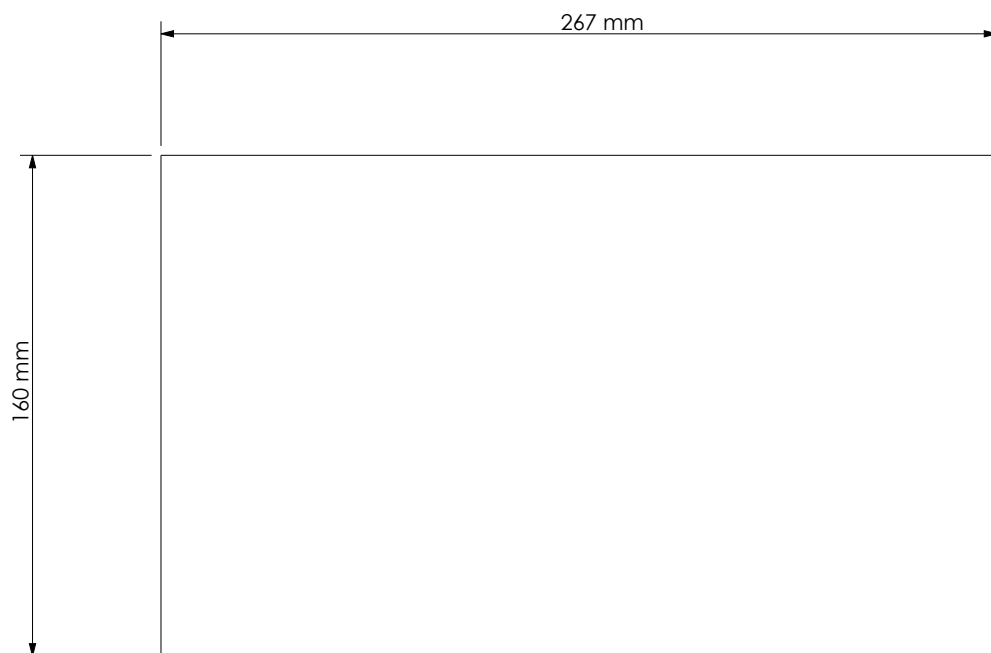


7. Secure instrument to panel with the provided washers and nuts.

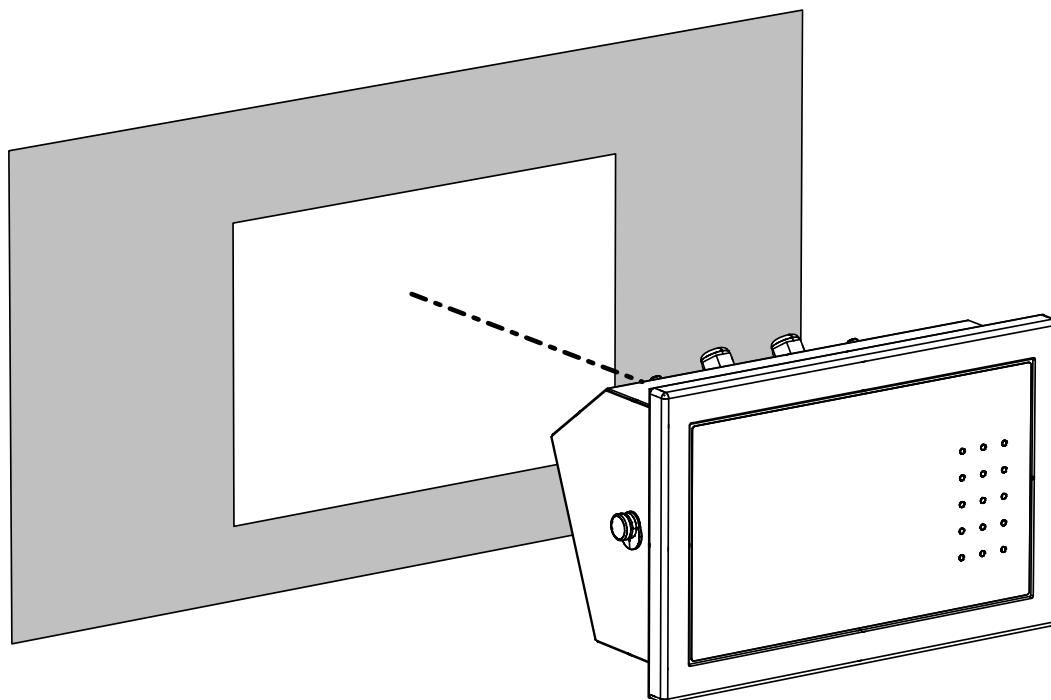


## PANEL-ST Installation (3590EGT and 3590EGT3GD)

1. While referring to the following technical drawing below, use a writing utensil to mark required cut lines on the panel.

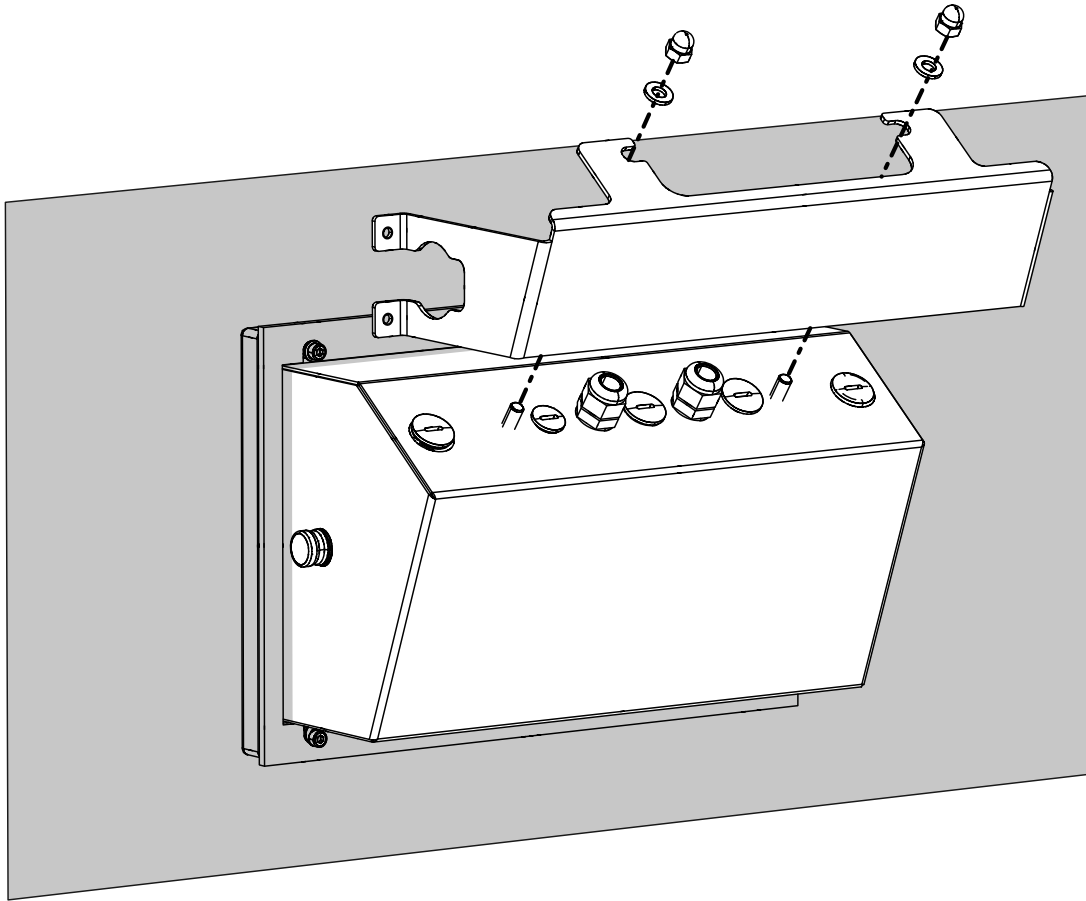


2. Carefully cut hole in the panel.
3. Sand cuts to remove burs and sharp edges.
4. Unplug instrument from power source.
5. Slide instrument into front of panel.

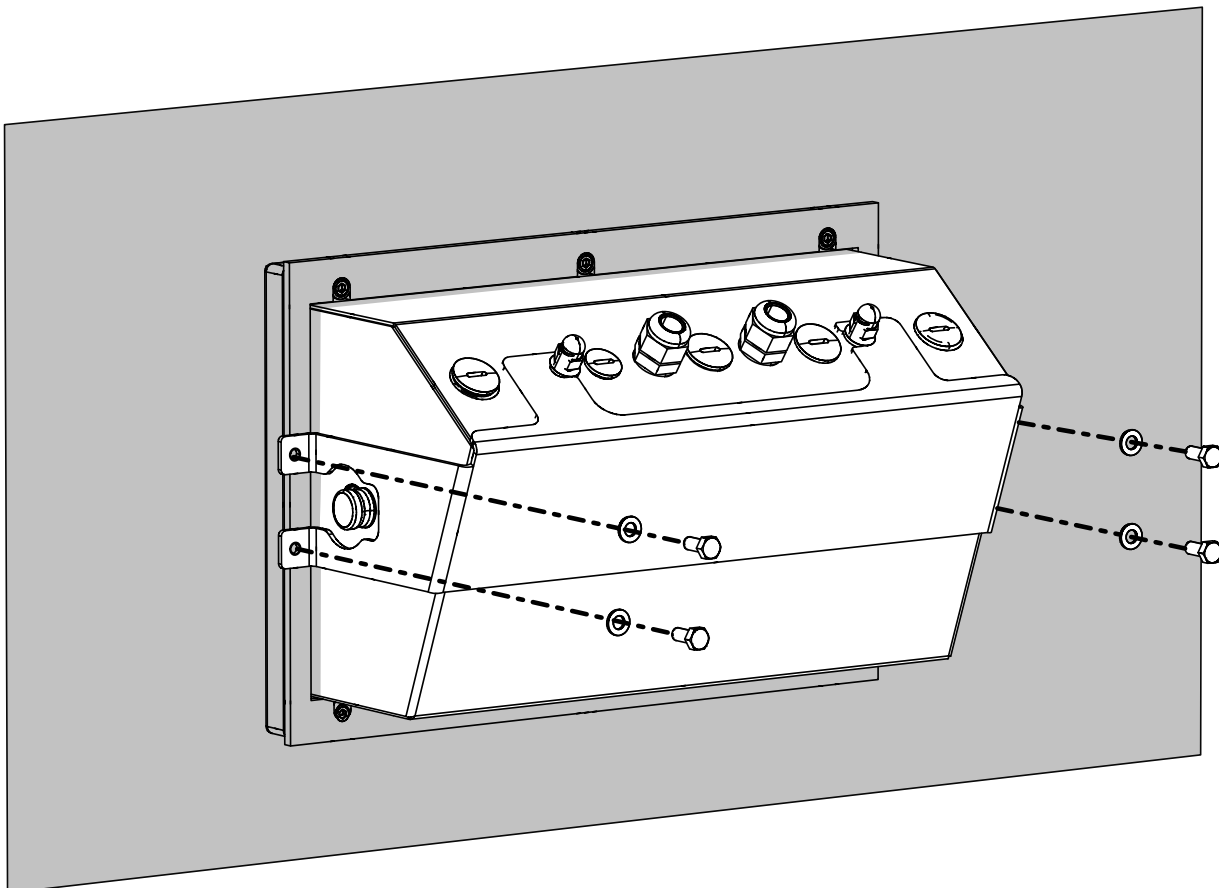




6. Secure support bracket to indicator with provided two washers and nuts.



7. Attach support bracket with four washers and hex bolts.

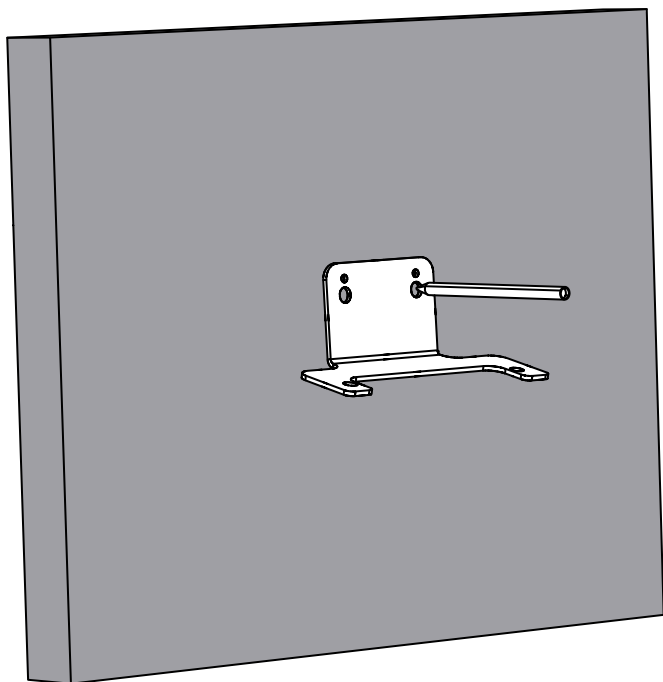


# STFI-1 Installation (3590ET, 3590ET8, 3590ETD, 3590ET8D, 3590EGT and 3590EGT3GD)

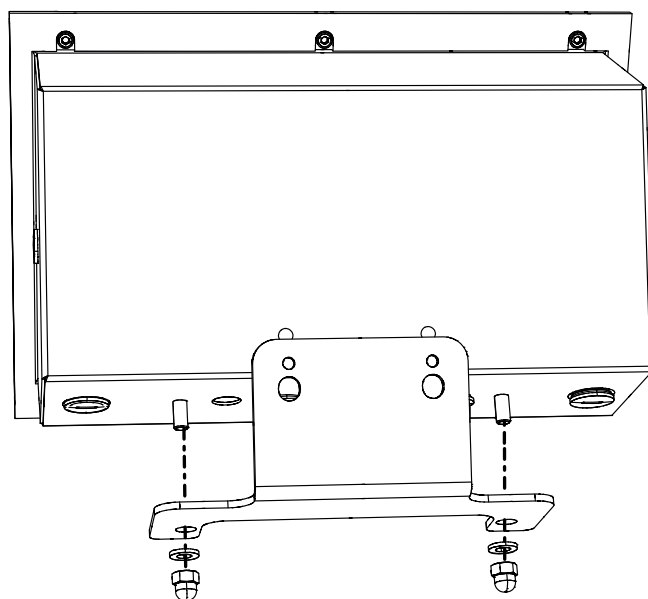
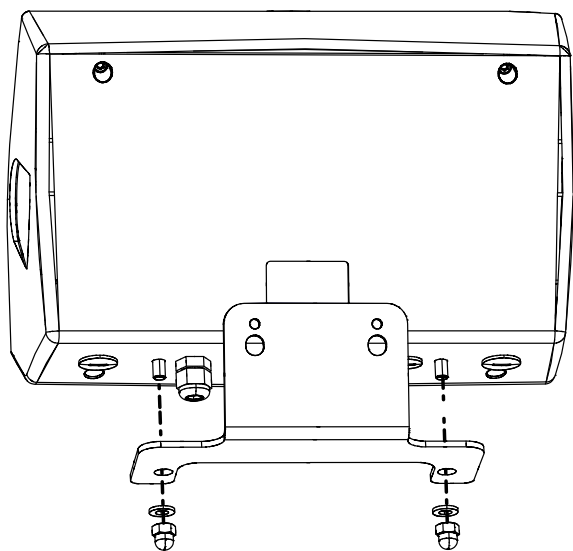


NOTE: Illustrations in this procedure display the STFI-1 bracket installed to two types of indicators.

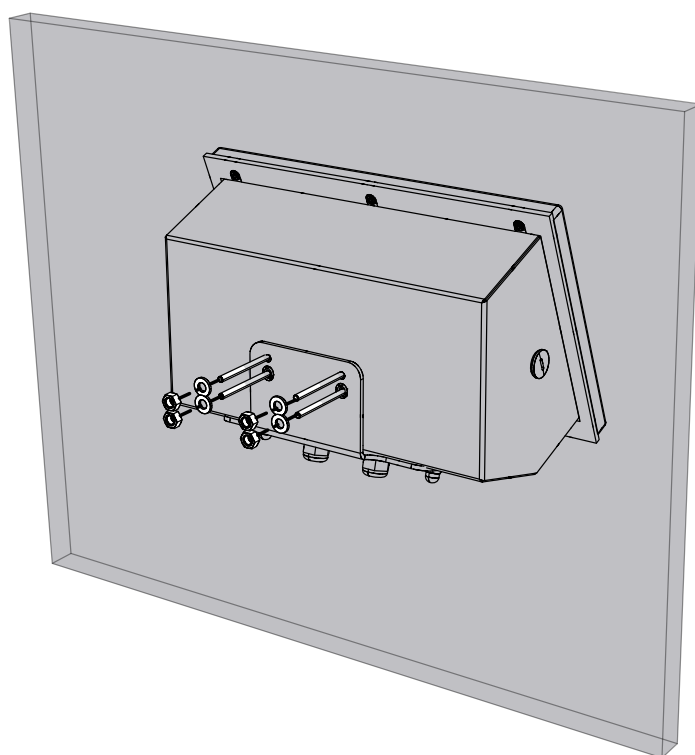
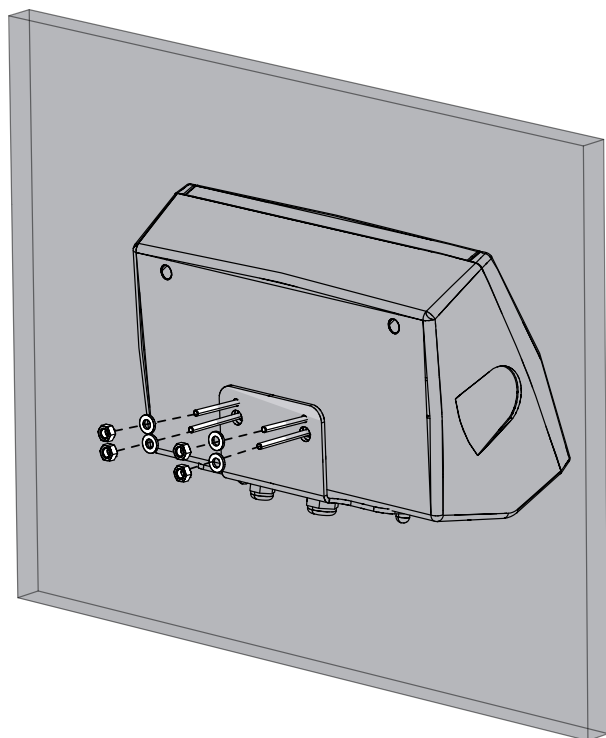
1. Use mounting bracket as template and carefully mark mounting hole locations with writing utensil.
2. Drill holes for mounting bracket.



3. Unplug instrument from power source.
4. Secure mounting bracket to instrument with two washers and nuts.



6. Secure mounting bracket to wall with preferred mounting hardware (not included).

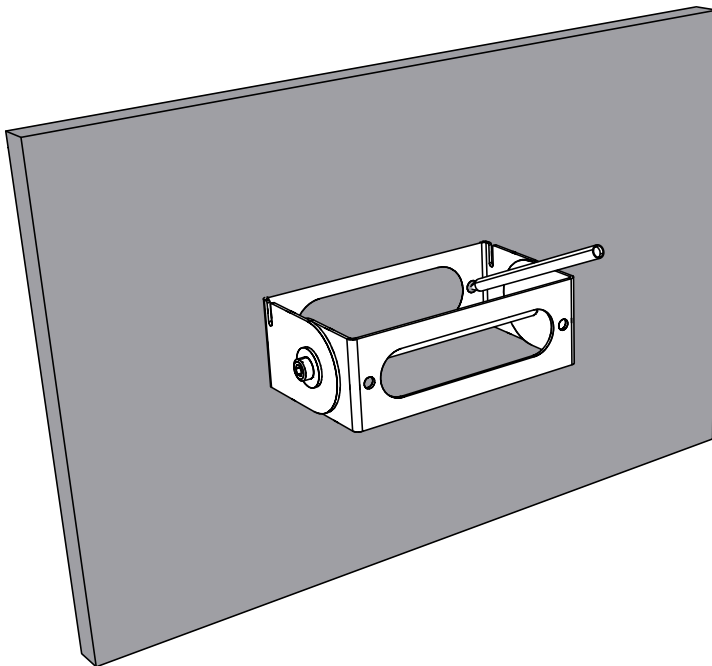


# STFR-1 Installation (3590ET, 3590ET8, 3590ETD, 3590ET8D, 3590EGT and 3590EGT3GD)

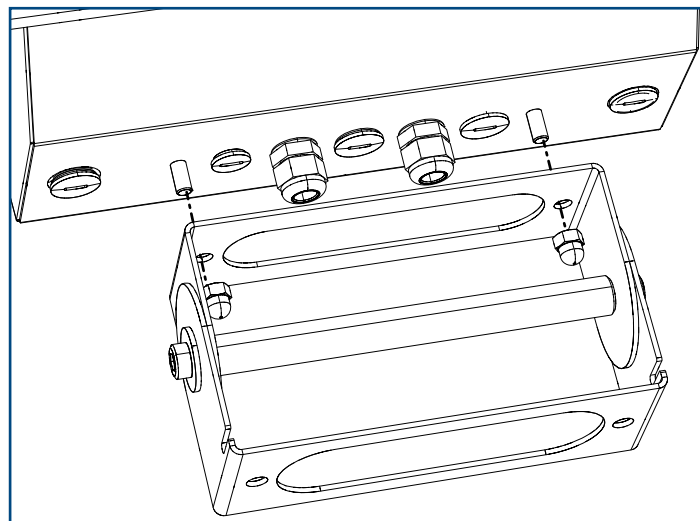
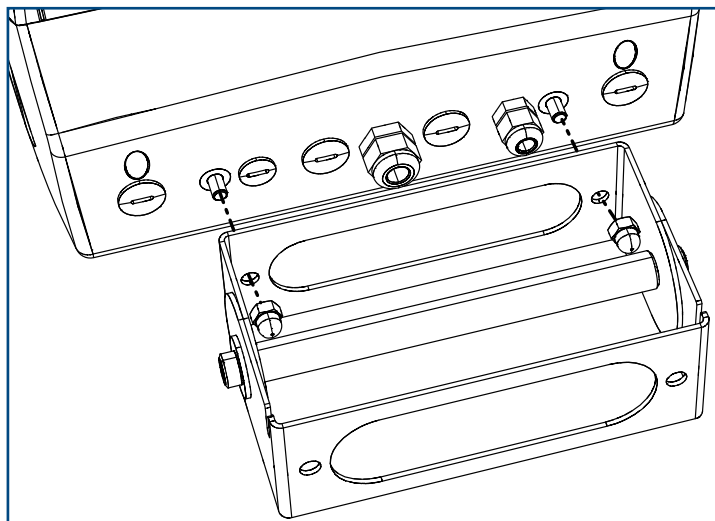


NOTE: Illustrations in this procedure display the STRI-1 bracket installed to two types of indicators.

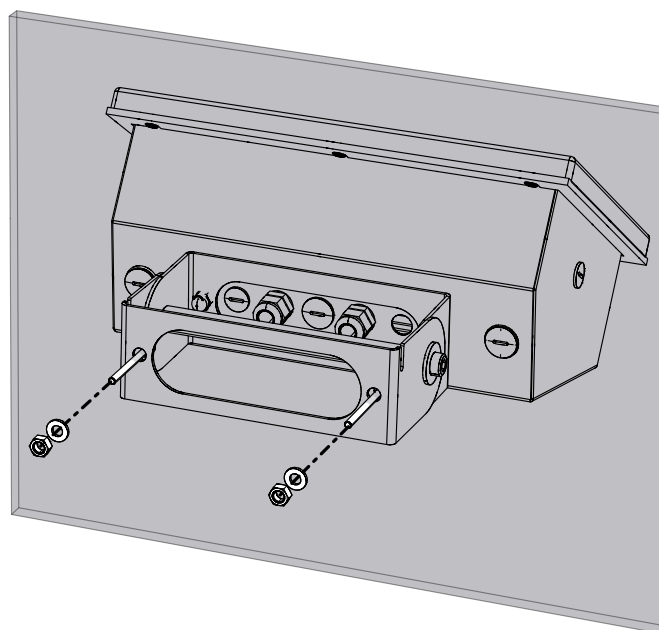
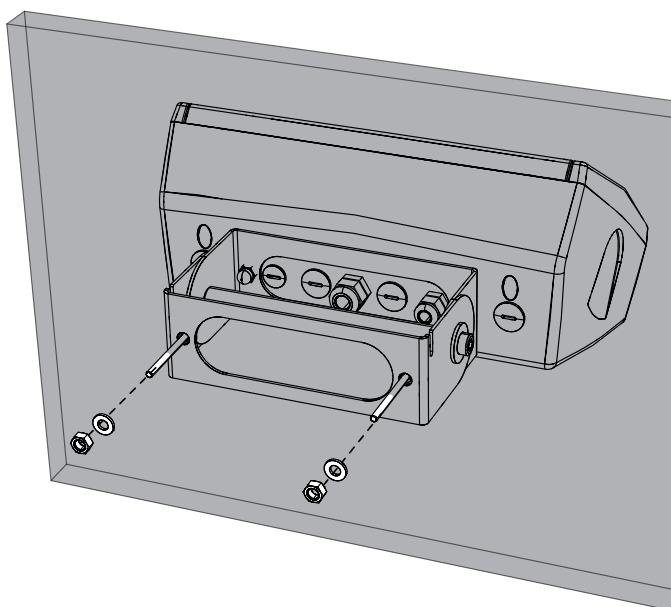
1. Use mounting bracket as template and carefully mark mounting hole locations with writing utensil.
2. Drill holes for bracket mounting.



3. Unplug instrument from power source.
4. Secure mounting bracket to instrument mounting studs with two dome nuts.

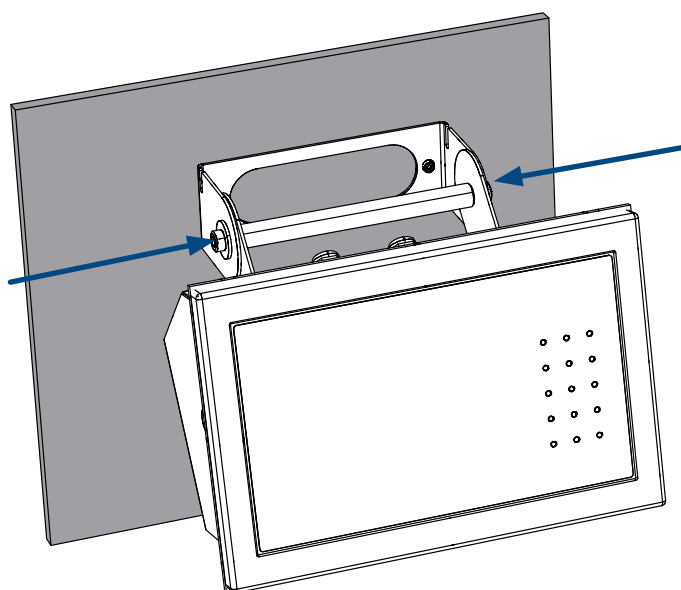
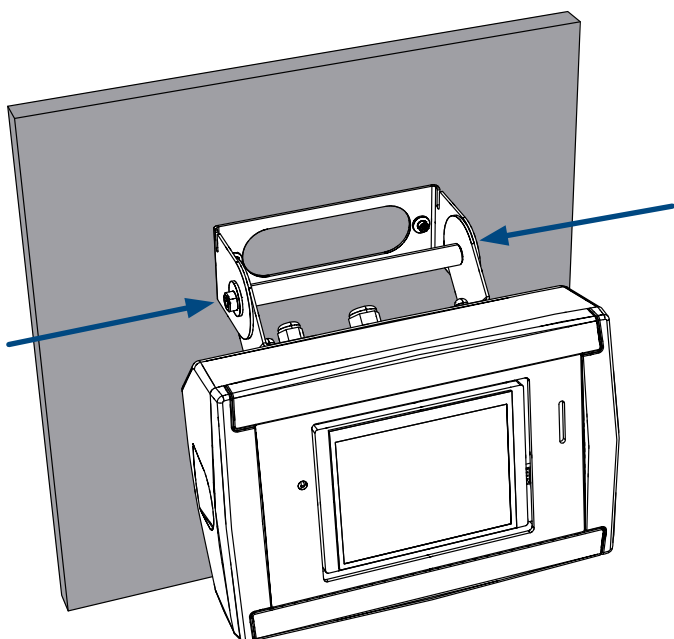


6. Secure mounting bracket to wall with preferred mounting hardware (not included).



7. Loosen adjustment bolts and position instrument in desired angle.

8. Tighten adjustment bolts.



# Notes

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