Operating Instructions

Industrial PTZ Camera

IC-942

THE STRONGEST LINK.

Operating Instructions version: **01.00.00**
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Disclaimer

Publisher and copyright holder:

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We reserve the right to amend our products and their specifications at any time, provided it is in the interest of technical progress. The information in the current Operating Instructions (online) or the included in the delivery applies.

Target group

These Operating Instructions are intended for the following groups of people:

- Project engineers
- Electricians and installers
- Operators
- Operating staff
- Maintenance staff

How to use this manual

- Read these Operating Instructions, especially the safety notes, carefully before use.
- Take note of all other applicable documents.
- Keep the Operating Instructions for the entire length of the service life of the device.
- Make the Operating Instructions accessible to operating and maintenance staff at all times.
- Pass the Operating Instructions on to each subsequent owner or user of the device.
- Update the Operating Instructions every time R. STAHL issues an amendment.

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Returning the device

Only return or package the devices after consulting R. STAHL. Contact the responsible representative from R. STAHL.
R. STAHL's customer service is available to handle returns if repair or service is required.

Contact customer service via E-mail or telephone:

E-mail: service.dehm@r-stahl.com

Telephone: +49 221 768 06 - 3000

Requesting a RMA ticked via our website:

Go to r-stahl.com.

Under "Support" > "RMA" > select "RMA-REQUEST".

Fill out the form and send it in.

You will automatically receive and E-mail with an RMA ticket.

Print out the RMA ticket.

Clearly copy the RMA number onto the outside of the package.

Send the device with the RMA ticket included in the package to R. STAHL HMI Systems GmbH.

Notice to device designation

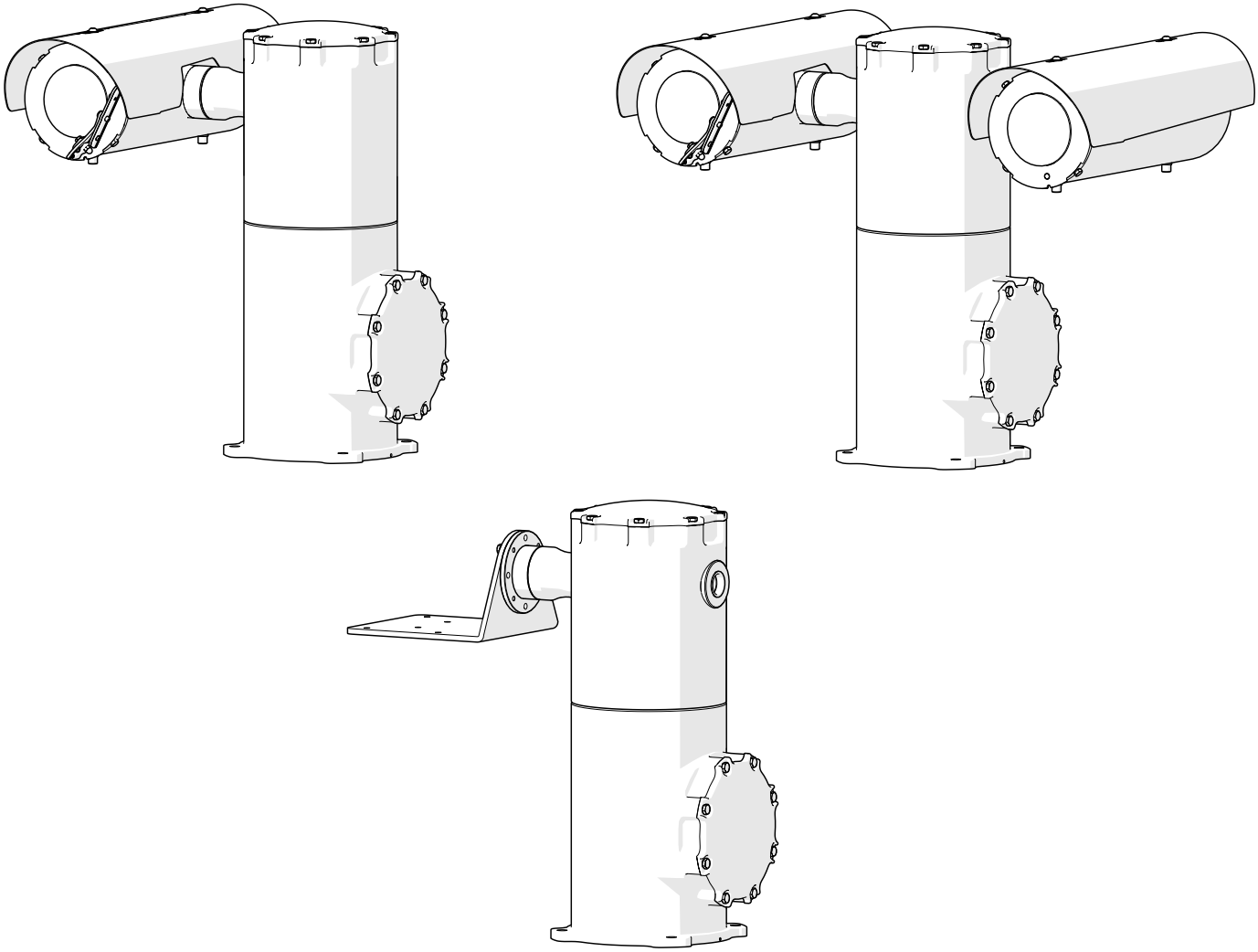
The table below lists the Camera devices together with their marking on the type plate and the Operating Instructions.

Designation STAHL	Device designation original
IC-942-TSP**A**TV**B**-**CC**-S	TSP**A**TV**B**-**CC**-S

Position in code	Possible value	Description
A	1	Power supply 24 VAC
	2	Power supply 120 VAC
	3	Power supply 230 VAC
	4	Power supply 24 VDC
B	2	Resolution 3MP
	4	Resolution 4K
CC	IP	IP camera
	SM	FO converter single mode
	CX	Coaxial converter

INNO PTZ Series

Stainless Steel PTZ Camera Station



Installation and operation manual

Rev. 5-20250320

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1- PRELIMINARY INFORMATION

1.1 General information

This manual explains how to use INNO PTZ series, which includes:

- TSP camera station series (Single camera PTZ);
- TSPD camera station series (Dual camera PTZ);
- TSP-LED camera station series (Dual head with camera and IR LED illuminator PTZ);
- TSP-LB camera station series (PTZ with mounting bracket for 3rd party camera housing).

1.2 Description

INNO PTZ is an AISI 316L Stainless Steel device specifically designed for hostile and highly corrosive environments. Built with belt-drive technology, INNO PTZ allows PAN and TILT rotations with very low power consumption.
It is equipped with the latest generation zoom module day/night and thermal imaging cameras.
It is suitable for customer's specified cameras installations. Quick installation, ease of configuration and easy end user maintenance make INNO PTZ a highly versatile product.
This product must only be installed by suitably trained personnel in accordance with the national legislation and code of practice. These instructions are intended for their sole use.

1.3 Symbols

WARNING

It indicates a potentially dangerous situation that, if ignored, could lead to physical or mortal injuries and/or damage to the unit. Read the provided instructions carefully.

ELECTRICAL HAZARD

It indicates a potentially dangerous situation involving electricity risks that could lead to physical or mortal injuries and/or damage to the unit. Read the provided instructions carefully.

OPTICAL RADIATION

It indicates a potentially dangerous situation due to the emission of visible light or infrared that could be harmful for eyes. Read the provided instructions carefully.

1.4 Preliminary remarks

	Prior to installation and operation, read carefully all instructions in this manual and heed all warnings.
	Use the original packaging to transport the unit. Disconnect power supply before moving it. In case of returning the equipment, the original packaging must be used.
	Any change performed on the unit that is not previously approved by the manufacturer will void both the certification and the warranty. If this equipment is not utilized according to the instructions of this document, the protection of the equipment may be impaired.
	Trying to manually force the wiper will result in damaging the device and will void the warranty.
	When leaving the unit unused for long periods, disconnect supply cables.
	For security reasons, do not install the unit in the proximity of water containers and never push objects or pour liquids into the unit. The unit can be safely used in damp environments or outdoors, as long as the connectors are properly sealed.
	The internal transformer of the unit should never be used to power external devices.
	No ventilation is needed for the unit, as it is completely sealed.
	Before performing any operation, turn off the power. The installation of the unit can be performed only by qualified personnel in accordance with the national legislation and code of practice.

Only for versions with integrated IR LED illuminator:

	The unit emits high intensity IR light. Wear protective eyewear. Avoid direct eye and skin exposure. Please follow safety precautions given in IEC 60825-1 and IEC 62471.

1.5 Technical Data

General & Mechanical

Construction:	AISI316L Stainless Steel
Finishing:	Electro-polished
Pan:	Angle: 360° (continuous rotation); Speed: 0 – 40°/second
Tilt:	Angle: 180° (±90°); Speed: 0 – 20°/second

Electrical

Heater:	T[°C] ON=12±4°C, T[°C] OFF=20±3°C (thermostatically controlled)
Supply voltage:	24V~, 115V~, 230V~ (±10%) specified at order
Power consumption:	130W MAX for TSP Series (single head) 170W MAX for TSPD Series (dual camera) 155W MAX for TSP-LED Series (dual head with spotlight) 90W MAX for TSP-LB Series (mounting bracket)

Certifications

Weatherproof standard: IP66/IP67/IP68/IP69
CE compliant

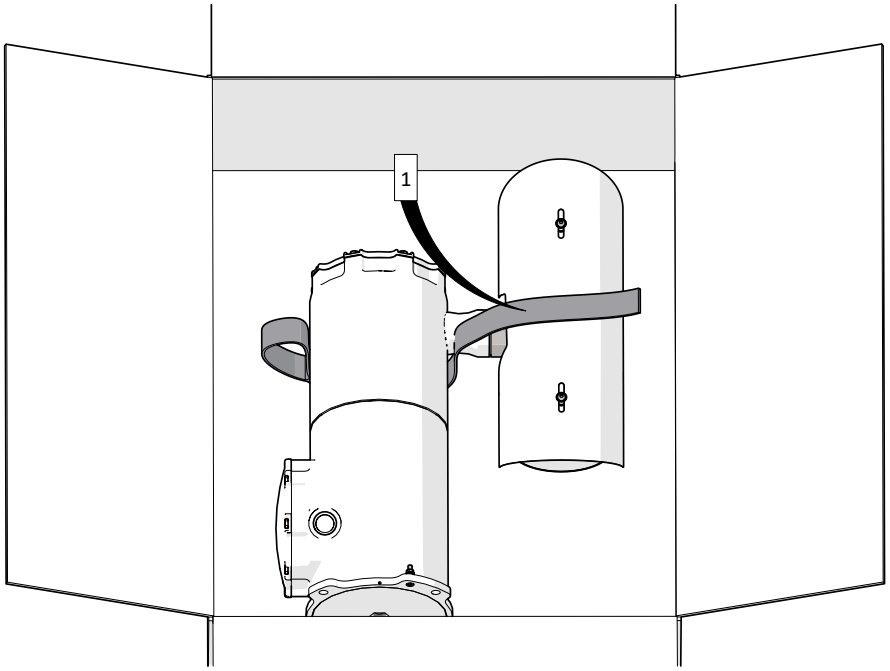
2- UNPACKING AND CONTENTS

2.1 Unpacking

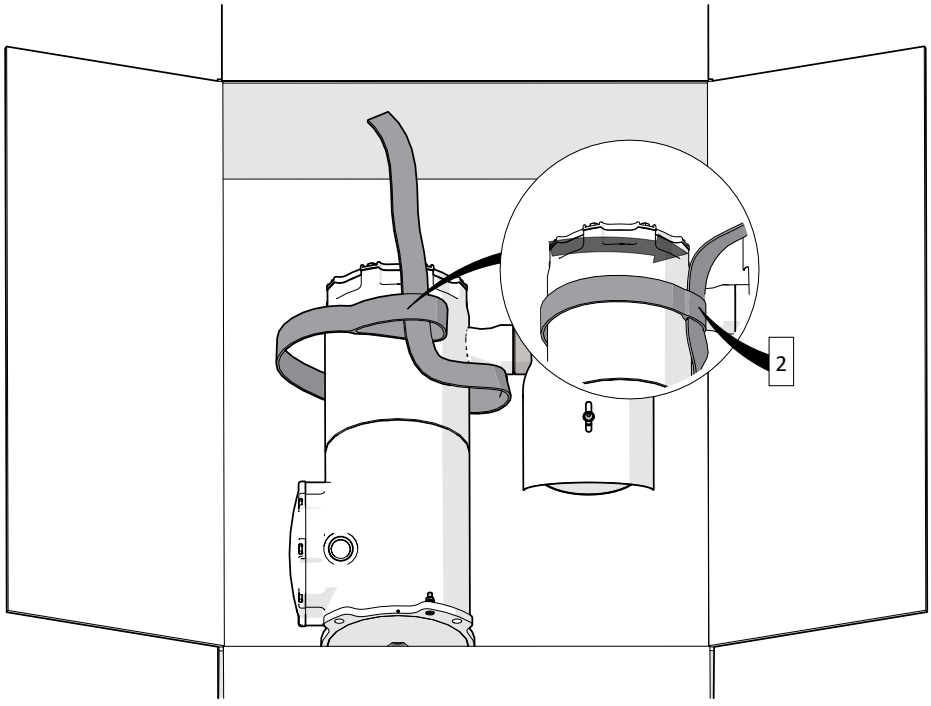
Unpack this equipment and handle it carefully. If the package appears to be damaged, notify the shipper immediately.
Check that all parts listed in "*2.2 Contents of the box*" are included in the box.

Always use suitable lifting equipment that complies with all applicable standards during all the unit handling operations. The unit must be harnessed with a suitable anchor strap (minimum capacity: 500kg, minimum length: 2m).

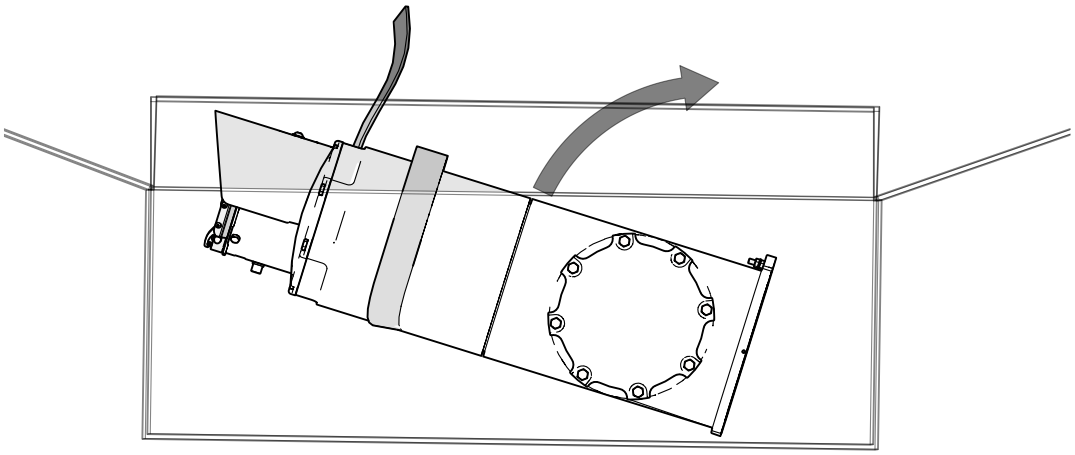
Pass the anchor strap (1) under the unit.



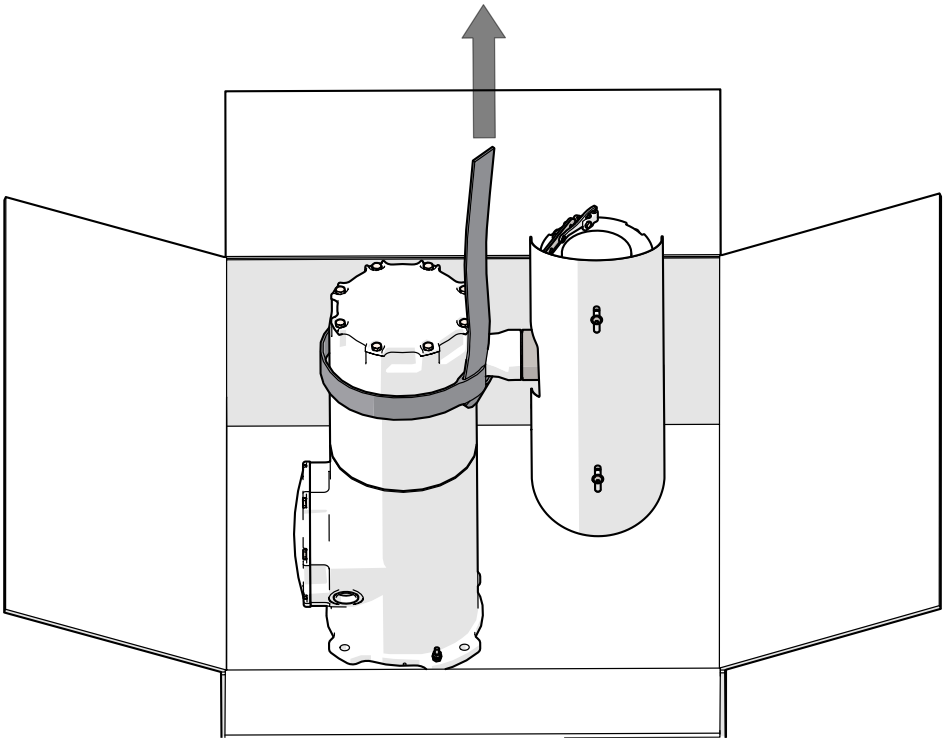
Pass the strap through the end of loop and tighten (2).



Pull the strap to tilt the unit in vertical position while still in the box.



Lift the PTZ out of the box.
Be careful to any sudden movements of the unit while lifting.



2.2 Contents of the box

For TSP and TSP-LED camera station:

- 1 Explosionproof Pan&Tilt unit
- 1 Hard copy "Installation and operation manual"
- 1 Washing nozzle brackets kit (for wiper versions only)
- 1 Camera fixing kit

For TSPD camera station:

- 1 Explosionproof Pan&Tilt unit
- 1 Hard copy "Installation and operation manual"
- 1 Washing nozzle brackets kit (for wiper versions only)
- 2 Camera fixing kit

For TSP-LB camera station:

- 1 Explosionproof Pan&Tilt unit
- 1 Hard copy "Installation and operation manual"
- 1 male cable

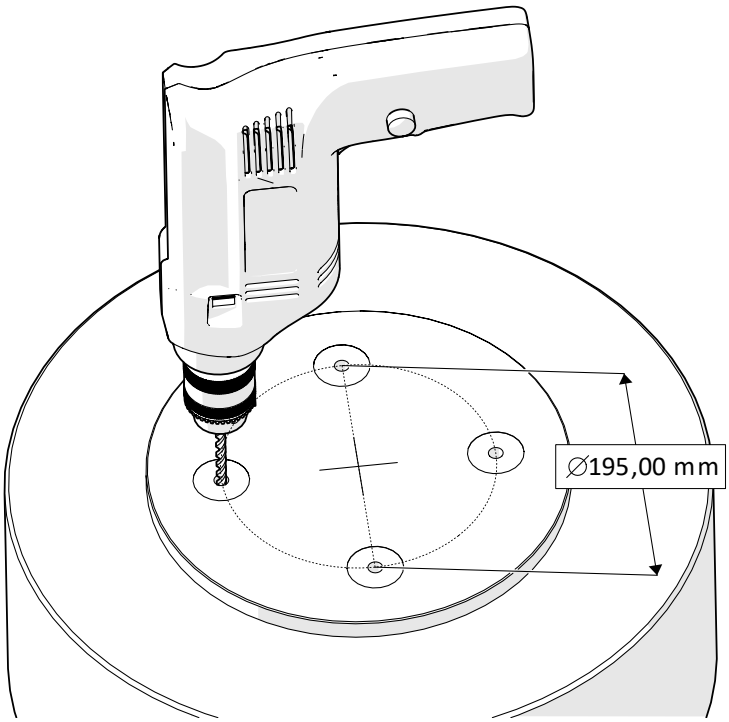
3- MOUNTING AND FIXING THE UNIT

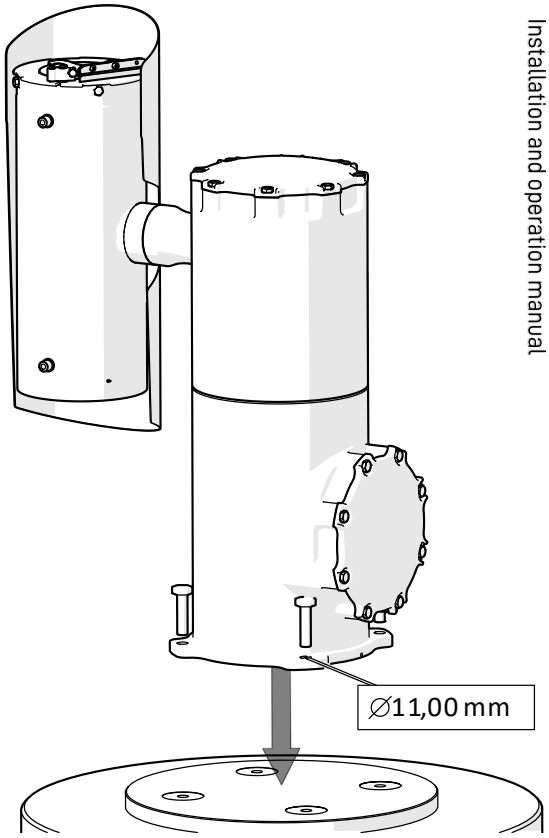
3.1 Assembling and installing the unit remarks

	Proper stainless steel tools should be carefully chosen and used during installation and to fasten the unit to the surfaces, in accordance with the environmental requirements.
	The unit cannot be installed horizontally.
	Make sure that the installation surface can support at least four times the weight of the unit in normal operating conditions. Where the equipment may be exposed to excessive external stresses (e.g., vibration, heat, impact), then the equipment must be protected by additional means of protection. Additional protection may be required if the equipment is to be installed in locations where it may be subject to damage.
	Tightening/loosening screws using automatic tools (such as drill drivers) may result in damaged threads.
	Use caution when lifting and assembling the unit. It is recommended that non-slip protective gloves be worn during installation. The unit could bear sharp edges.
	Electrical connections (such as plugs and cords) must be protected from potential hazardous environmental factors (e.g., foot traffic, hitting objects).
	Earth ground attachment point is a stud M5-0.8 x20 A4-70 ISO 4762 with dual nut and dual serrated washer. During installation it is important to connect the Earth Ground attachment point to an appropriate grounding location using a minimum 6 mm^2 (10 AWG) copper stranded wire.
	An all-pole mains switch with an opening distance between the contacts at least 3 mm (1/8") in each pole must be incorporated in the electrical installation. The switch must be equipped with protection against the fault current towards the ground (differential) and the overcurrent (magnetothermal). It must be very quickly recognizable and readily accessible. A suitable fuse must also be installed for protection.
	For connection to the main power supply use suitably insulated multipolar cable having minimum 3x 1,5 mm^2 (15 AWG). PE wire must be longer than the others.
	Connecting GND/Earth/PE to line or neutral will result in damaging the device and will void the warranty.
	Fasten all the cables inside the housing with cables ties or other fixing means to avoid the electrical contact with surrounding parts in case that terminal blocks screw off. Route all the cables avoiding contact with the wiper shaft and motor.
	Ensure that the unit case is properly earthed, connecting all the earth ground studs.
	Do not connect the unit to a supply circuit unless the installation is completed. Check the proper position of the O-ring seals in their groove.

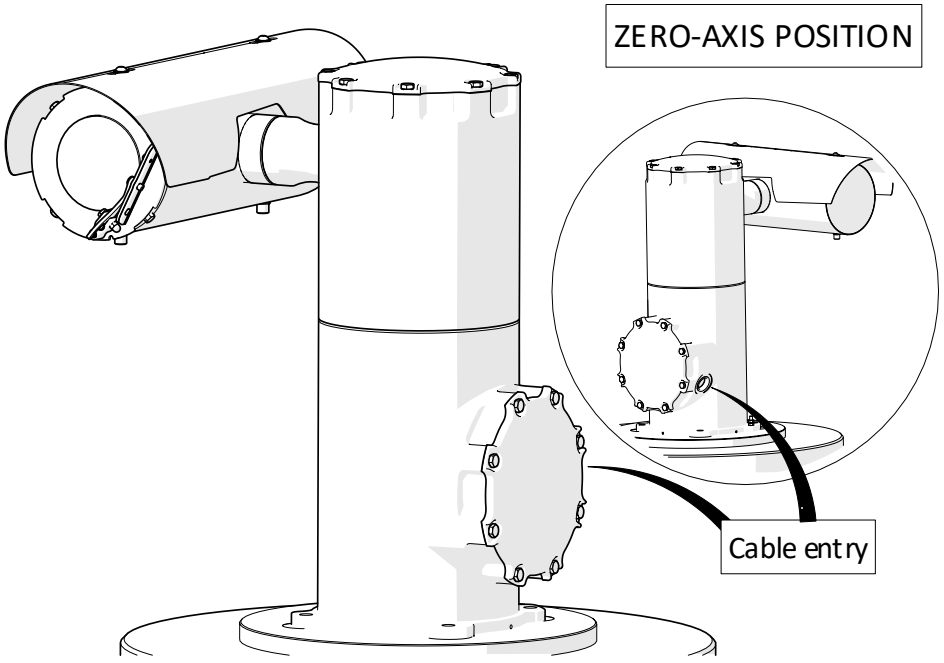
3.2 Plane surface /pole mounting

Install the INNO PTZ on a top flange or on plane surface which can support the unit. Choose a proper fastener depending to the installation surface.
The screws must be tightened with suitable traction load by authorised and qualified operators only, by using a suitable torque wrench tool.



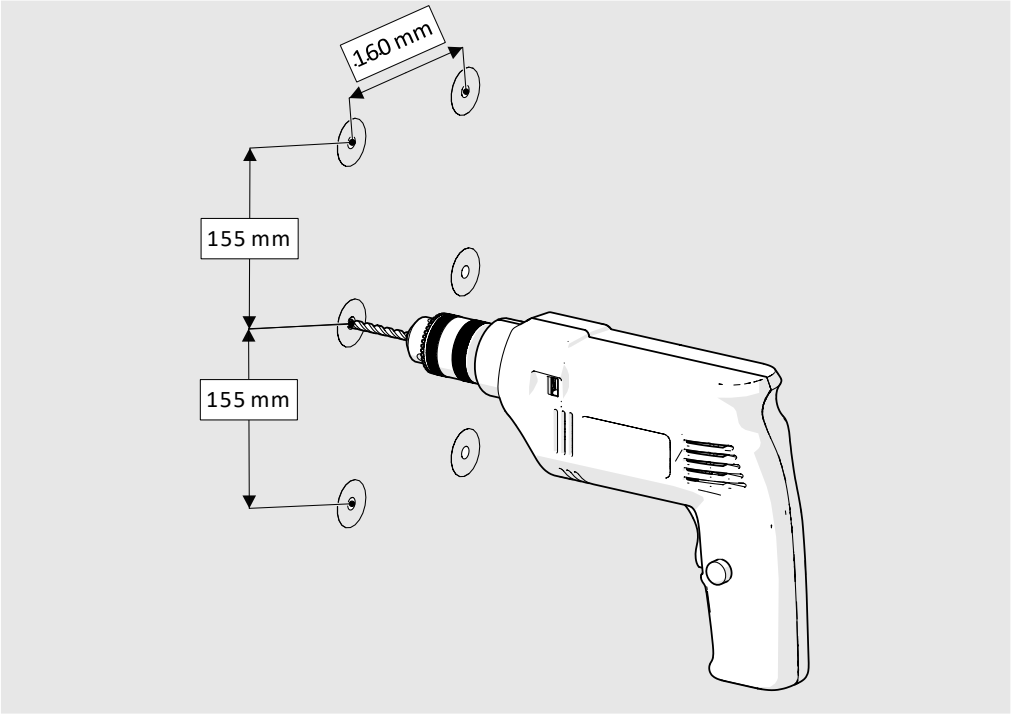


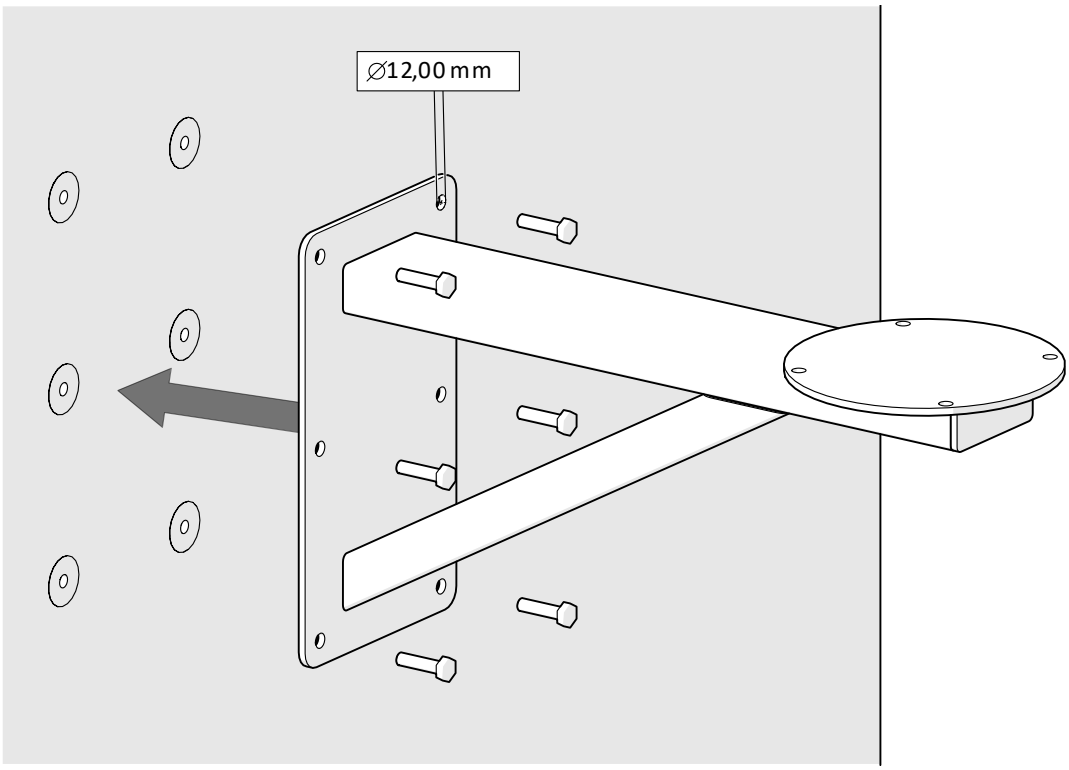
Upon each start-up, the unit will perform a "zero-axis" calibration. "Zero-axis" position is with side flange on the left (cable entry on the back) and camera(s) facing forward. The unit should be installed with the cable gland facing the opposite direction to the zone to be monitored.



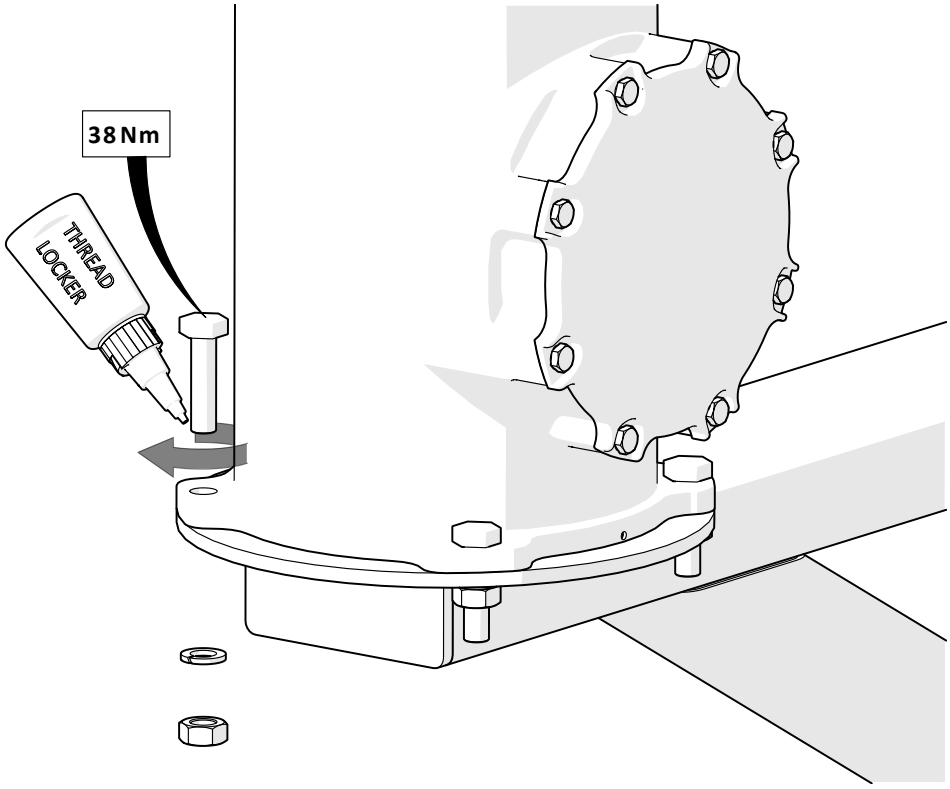
3.3 Wall mounting, fixing the unit with bracket

Use SSBK-L to install the INNO PTZ to a wall surface. Choose proper fasteners depending to the installation surface.

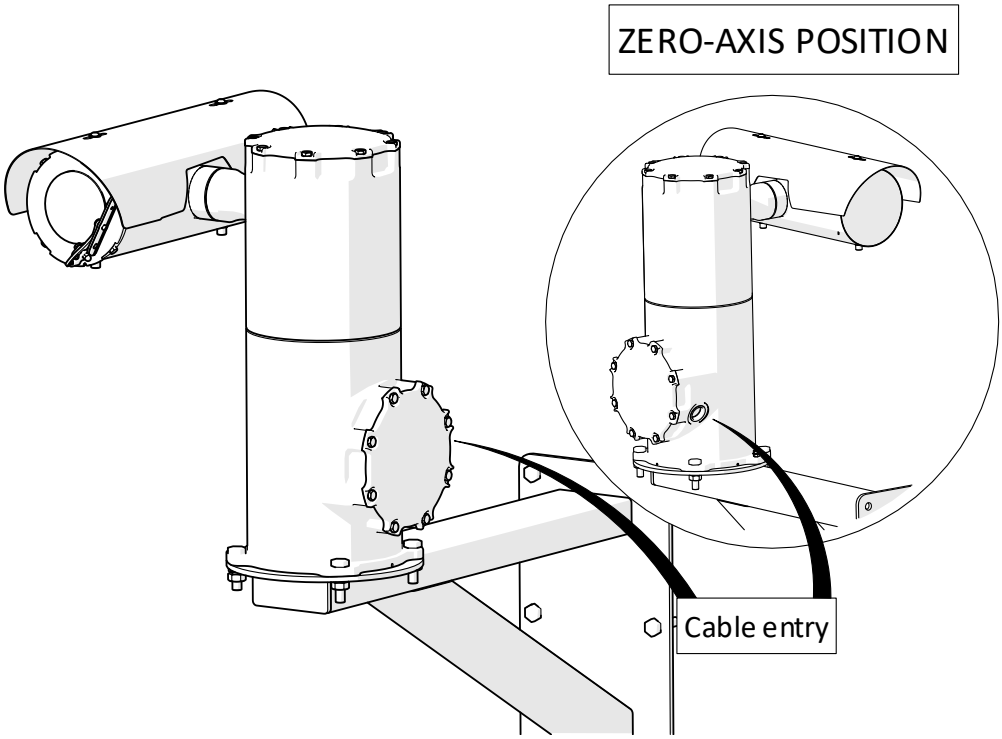




To install the PTZ to the bracket, 4x M10 screws, 4x lock Washer and 4x nuts (provided with the SSBK-L bracket) must be used.
Check that all the threads are clean. When fixing the screws use thread locking compound (e.g., Loctite) and allow an appropriate rest period. Screws must be tightened to 38 Nm with an adequate torque wrench.



Upon each start-up, the unit will perform a "zero-axis" calibration. "Zero-axis" position is with side flange on the left (cable entry on the back) and camera(s) facing forward. The unit should be installed with the cable gland facing the opposite direction to the zone to be monitored.



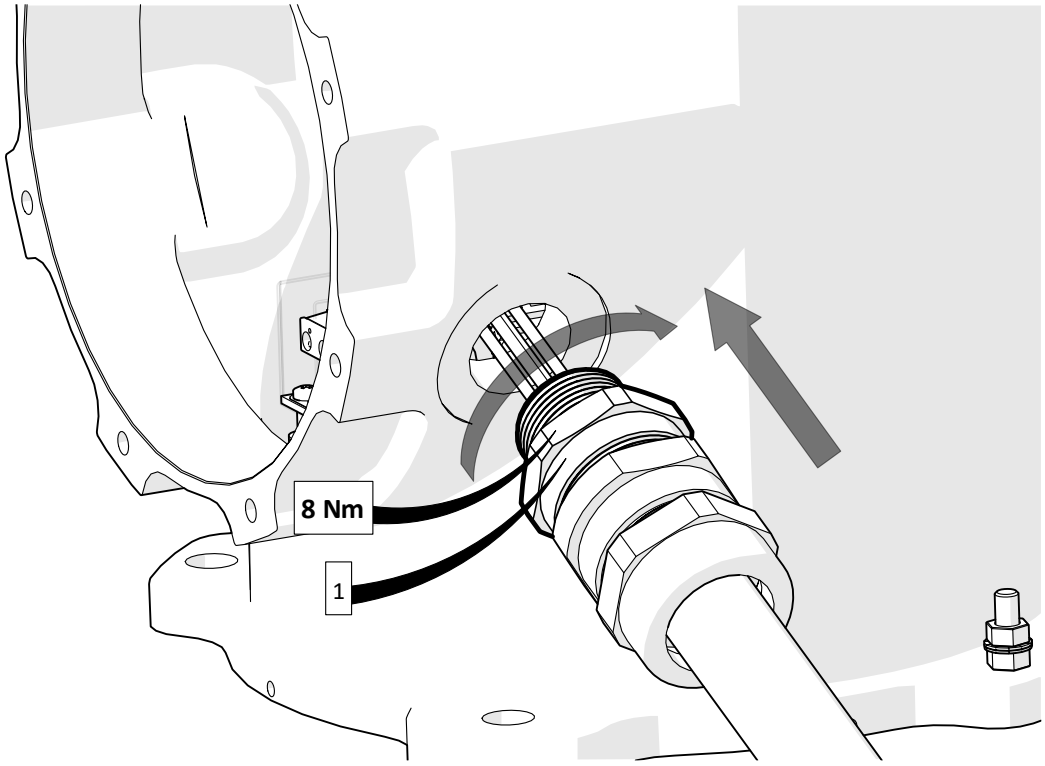
4- COMMISSIONING THE UNIT

4.1 Perform the electrical connections remarks

⚠	Any action performed on the unit which is not described in this manual may damage it.
	Complete the installation performing the camera connection referring to the manual of the camera/housing.
	Open only the covers pointed out in this installation manual. Other covers should be open only by the manufacturer.
ϟ	Check carefully the supply voltage marked on the label. Incorrect power supply voltage may damage the unit. Do not overload the terminal connection, as it may cause a fire or electrical shock hazard.
	Permanently connected equipment: a readily accessible disconnect device shall be incorporated in the building installation wiring.
	The internal grounding terminal shall be used for the equipment grounding connection. The external terminal is only for a supplementary bonding connection where local codes or authorities permit or require such connection.
	Keep the unit tightly closed when operating.
	Disconnect the equipment from the supply circuit and wait at least 5 minutes before opening.
	Do not connect the unit to a supply circuit unless the installation is completed. Check the proper position of the O-ring seals in their groove.

4.2 Installing cable tail to the unit

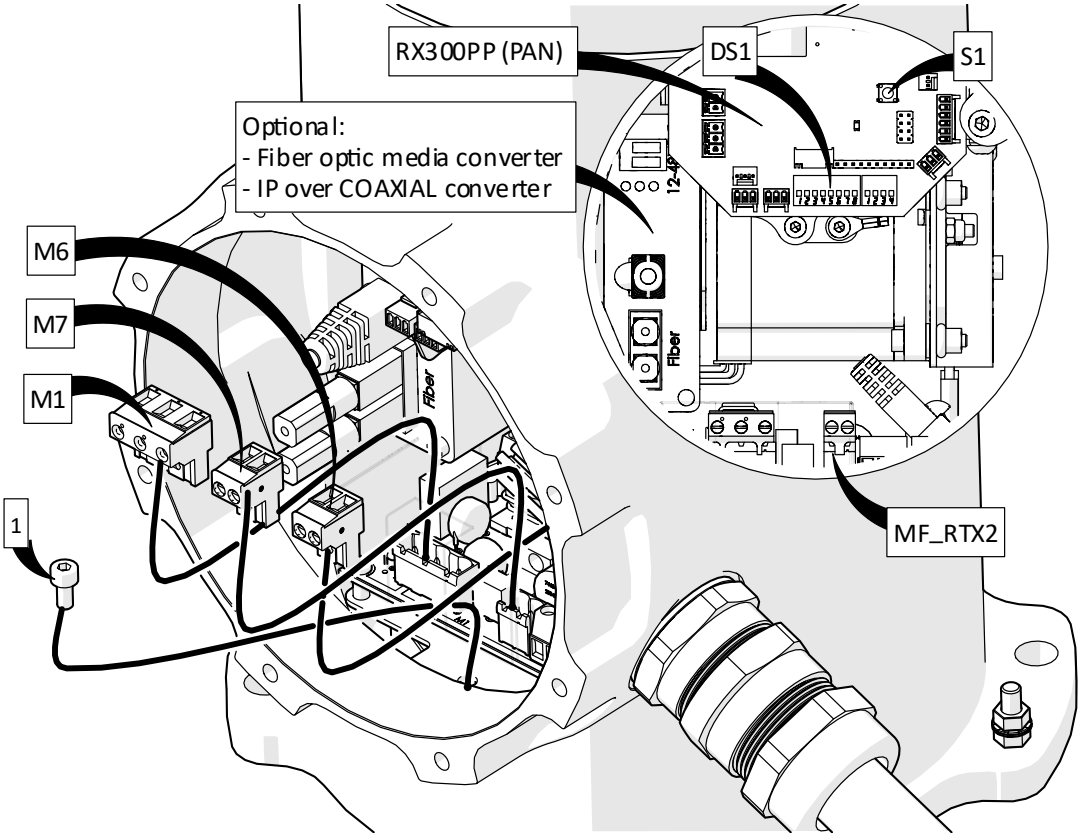
If the cable tail isn't provided by Tecnovideo, please check the correct cable gland thread dimension. To maintain the IP rating of the unit, use only cables, cable glands, blanking elements, adapters and the like that are suitably rated. Any unused cable entry must be closed with an adequate blank. Eventual plastic caps used to protect cable entries threads should be removed.
Fix the Tecnovideo cable tail (1) to the lower body of the unit. Tighten them to 8 Nm.



4.3 Electrical connections to MF_RTX2

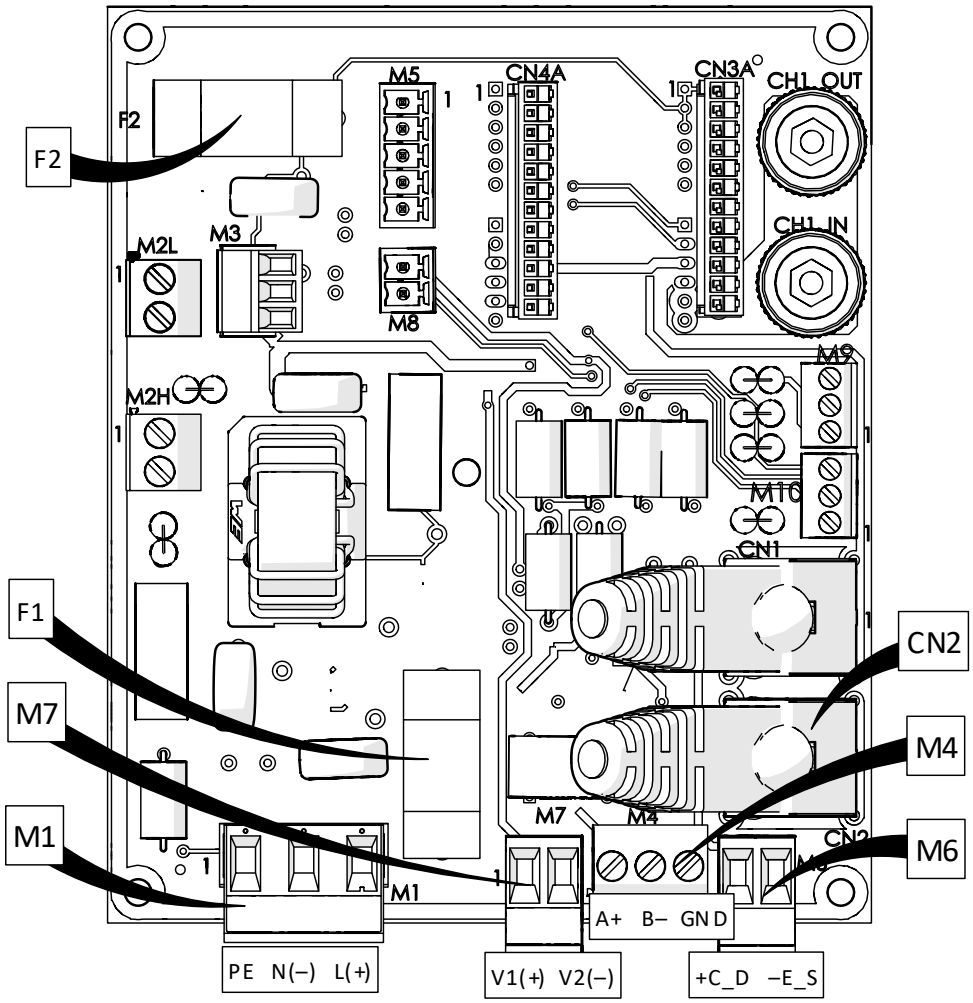
Perform the connections on the MF_RTX2 interface board.

M1, M6 and M7 terminal blocks can be removed from PCB to perform electrical connections.
If necessary, remove locking screw (1) and slide out the PCB to have a better access to the other terminal blocks.



Each plug-in connector is different in shape and/or colour to avoid any wrong connection. The connections should be performed according to the below indications:

ID	Name	Notes
M1	Supply voltage	Depending on model. Please refer to marking plate supply voltage information.
M4	Data input (RS485)	Standard: Pelco D Protocol to control Tecnovideo telemetry receivers.
M6	Low level water alarm input	Connect dry contact low level water alarm output from washer unit (if available).
M7	Auxiliary 24V~/24V⎓ output	Designed to activate washer systems. 24V⎓ output only for 24V⎓ supply voltage versions.
CN2	Ethernet	Signal out for camera. Use shielded or unshielded cable according to the needs.



PAY ATTENTION!

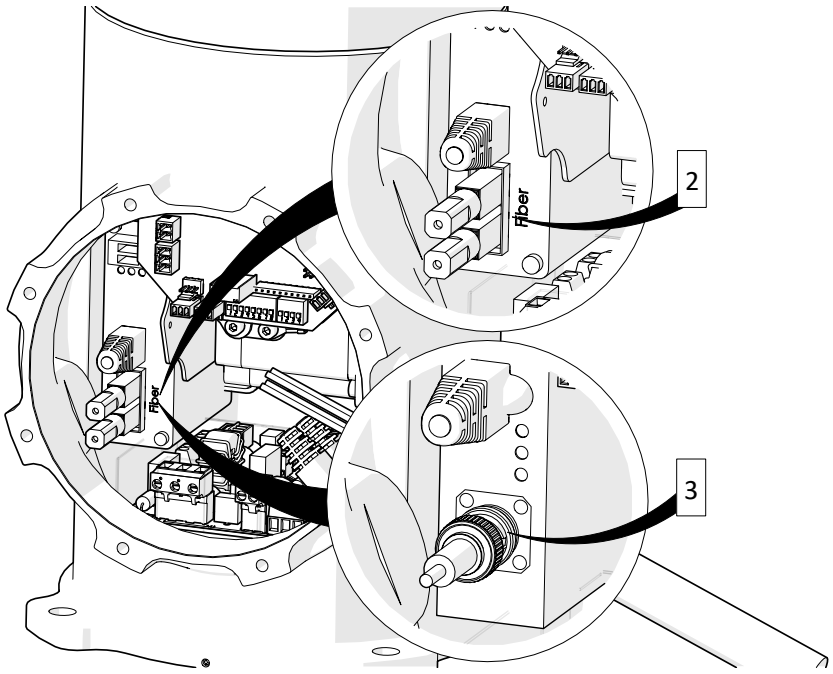
"DS1" DIP switch position of TILT RX300PP must be the same of "DS1" DIP switch of PAN RX300PP (see chapter "4.10 Settings and electrical connections on RX300PP telemetry receiver").

ID	Name	Notes
DIS1	Unit address and baud rate	Used for setting the unit address and baud rate of camera station. PIN 1-6: PTZ Address ID (default 1). PIN 7-8: DIS1-7 / DIS1-8 / Baud rate OFF / OFF / 2400 OFF / ON / 9600 ON / OFF / 19200 ON / ON / 57600
S1	Reset button	Push 15 seconds to reset to default settings. CAUTION: this operation will reset all the existing presets and the PAN axis limits.

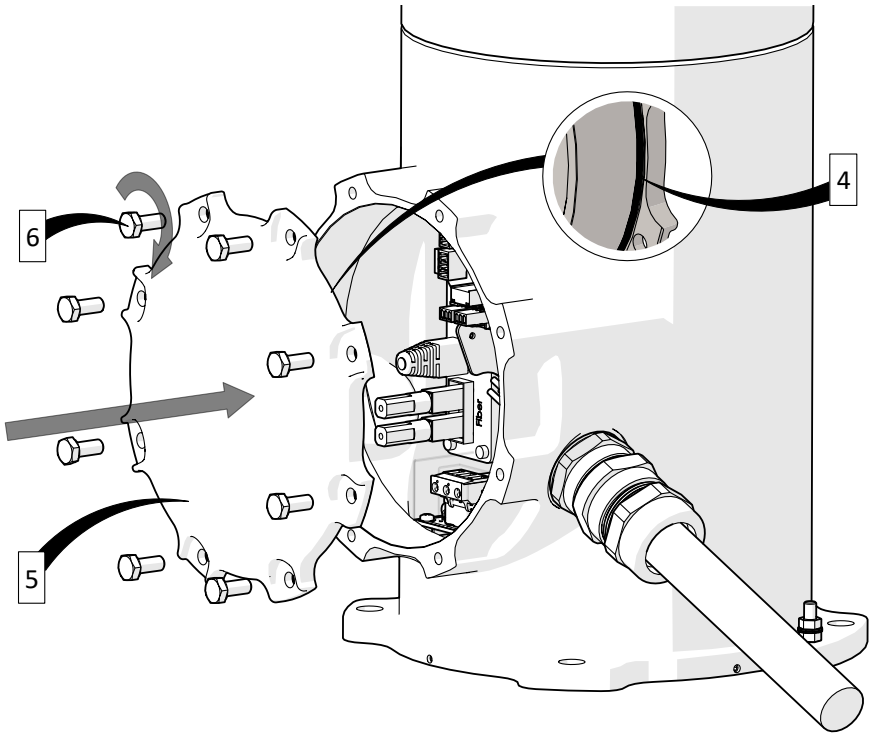
Only for fiber optic (SM-MM) or IP over COAX (CX) versions:
The media converter is installed in the base of the unit. It can be a fiber optic media converter or a coaxial to IP media converter.

For camera station with single-mode (SM) or multi-mode (MM) fiber optic media converter: connect the fiber optic module to slot (ref. option 2).

For camera station with coaxial media converter: connect the BNC to the slot (ref. option 3).
To ensure proper communication, media converter provided with camera station kit must be coupled with camera station media converter.

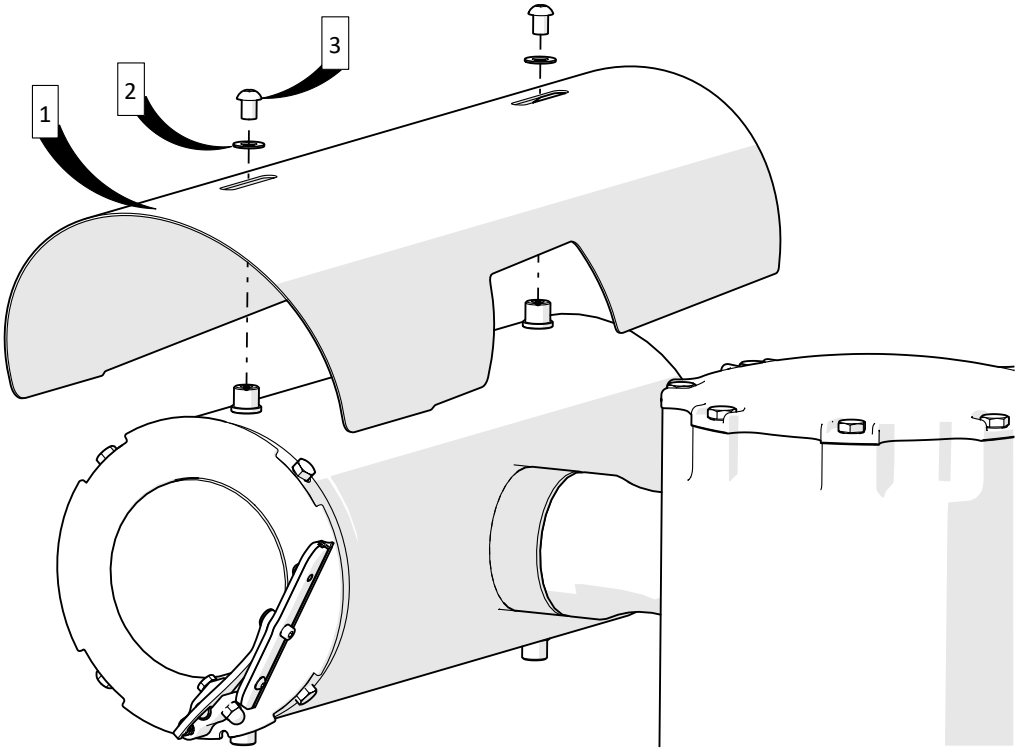


Check if the O-Ring gasket (4) is in its grove before proceeding.
Assembly rear flange (5) in the PTZ and tight the screws (6) to 11 Nm.

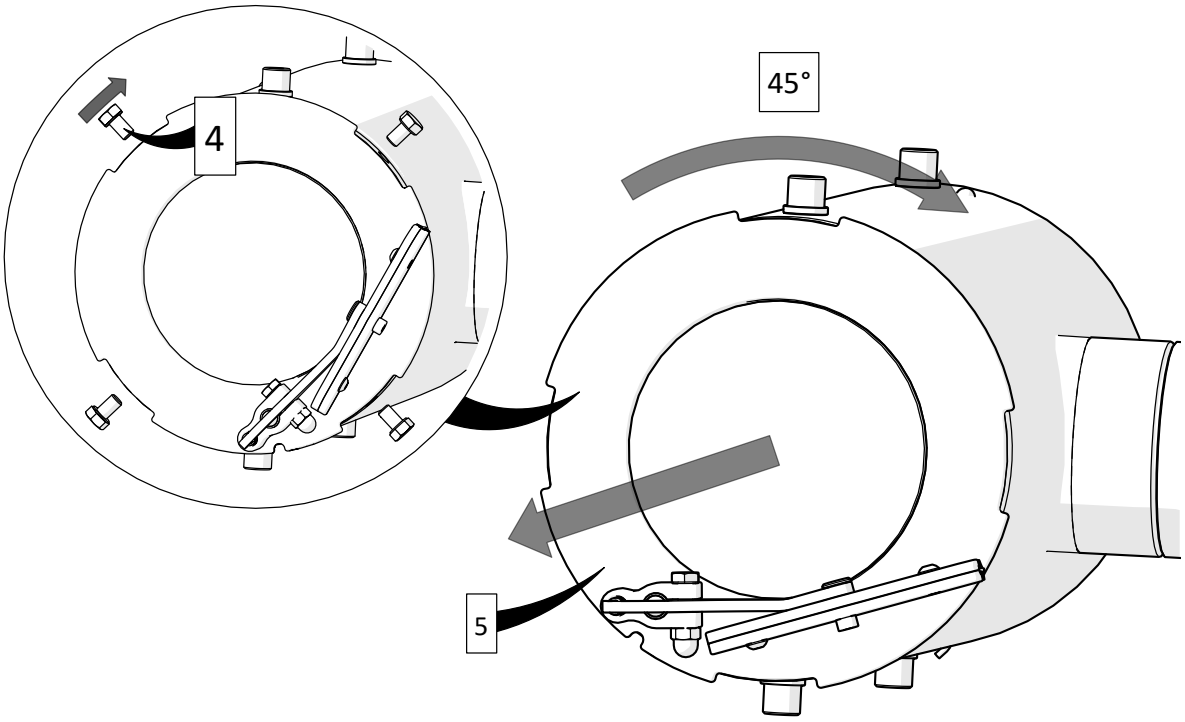


4.4 Installing camera in TSP, TSPD, TSP-LED (only for customer camera)

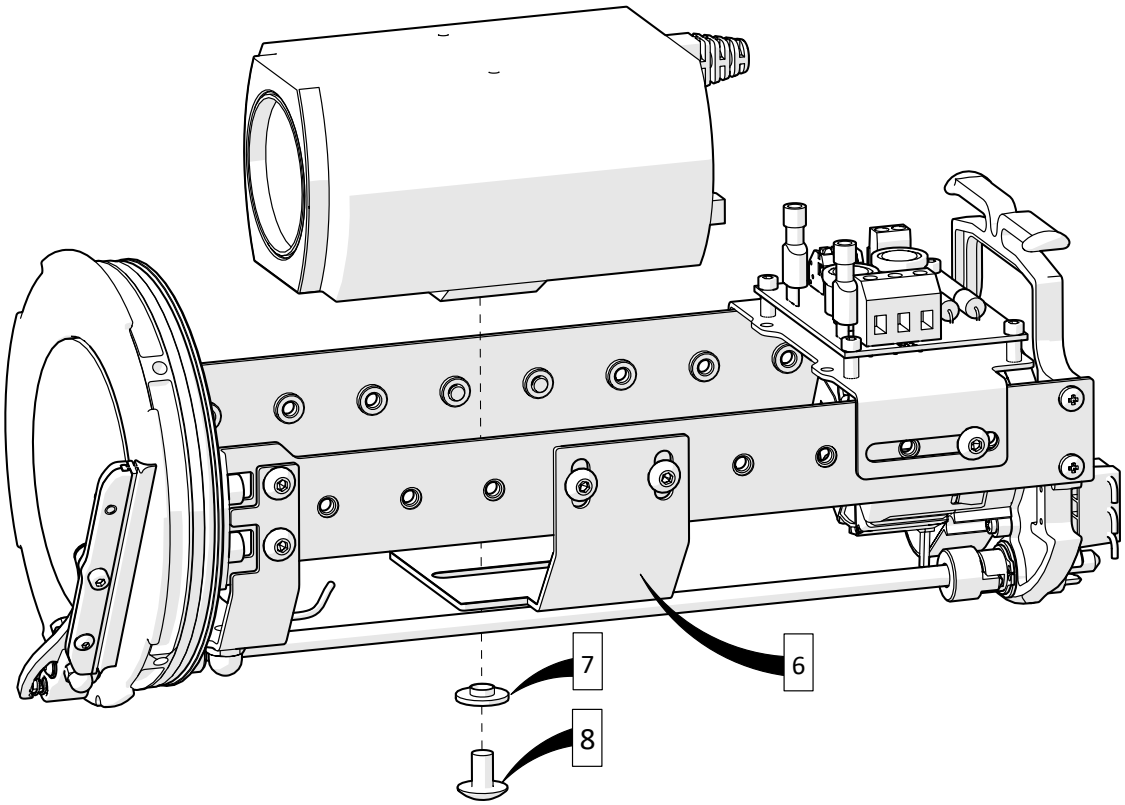
Unscrew and remove 2x screws (3) and 2x washers (2). Remove the sunshield (1).



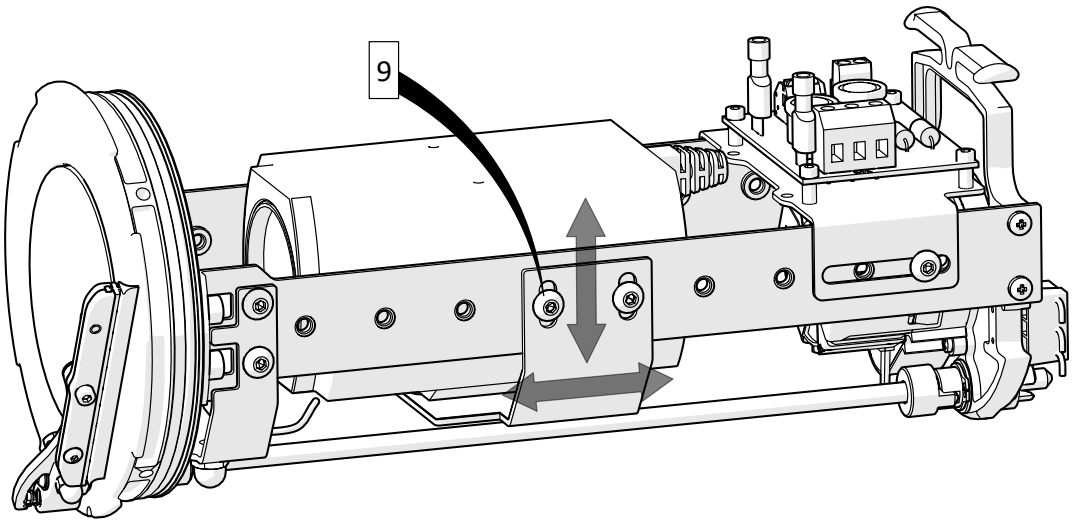
Remove screws (4) from the window flange camera housing (5). Rotate 45° the front flange clockwise while sliding it out. Rotate 45° the front flange counterclockwise for the IR camera housing of TSPD.



Fix the camera to the internal rail (6) using insulating washer (7) and ¼"-UNC screw (8) supplied with the camera station. Choose the ¼"-UNC screw (8) with the correct length from those supplied.



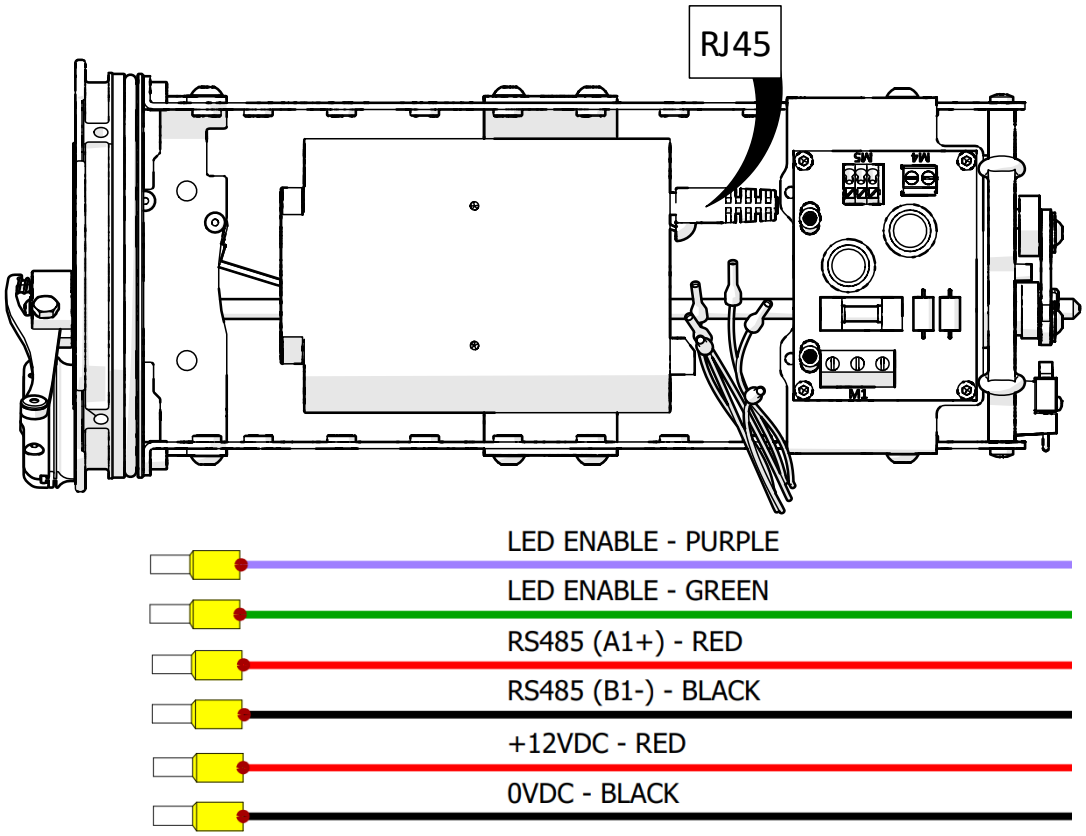
Internal rail can be adjusted vertically loosening the 4 screws (9) and sliding it on the slots of the rail.
Removing the 4 screws (9) and moving to the next or previous couple of fixing holes, the internal rail can be adjusted horizontally.
Install the camera as close as possible to the centre of the window, both horizontally and vertically.



4.5 Cabling camera to TSP, TSPD, TSP-LED (only for customer camera)

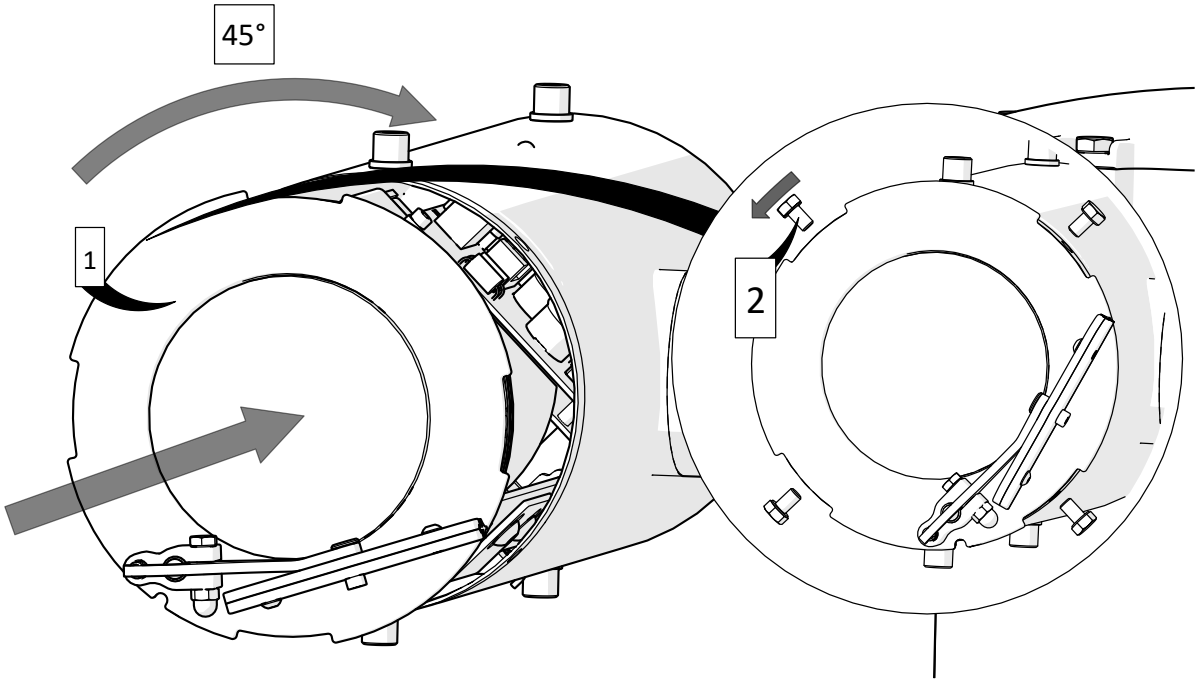
Connect Ethernet video cable (RJ45) to the camera.

Perform electrical connection to the camera according to the following indications:



LED ENABLE: connect IR LED activation only on TSP-LED models.

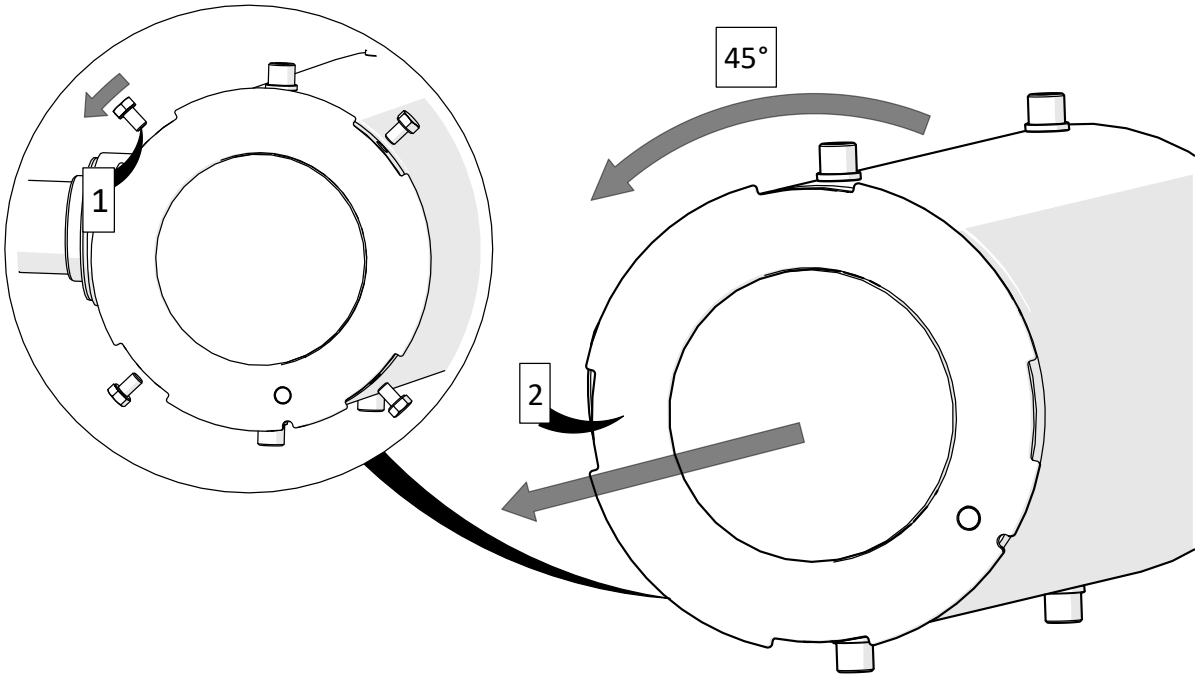
Assembly window flange (1) in the camera housing rotating it 45°. Tighten the screws (2) to 6.5 Nm.



4.6 Cabling and setting illuminator IR01 (only for TSP-LED series)

Remove the sunshield as mentioned *in "4.4 Installing camera in TSP, TSPD, TSP-LED (only for customer camera)".*

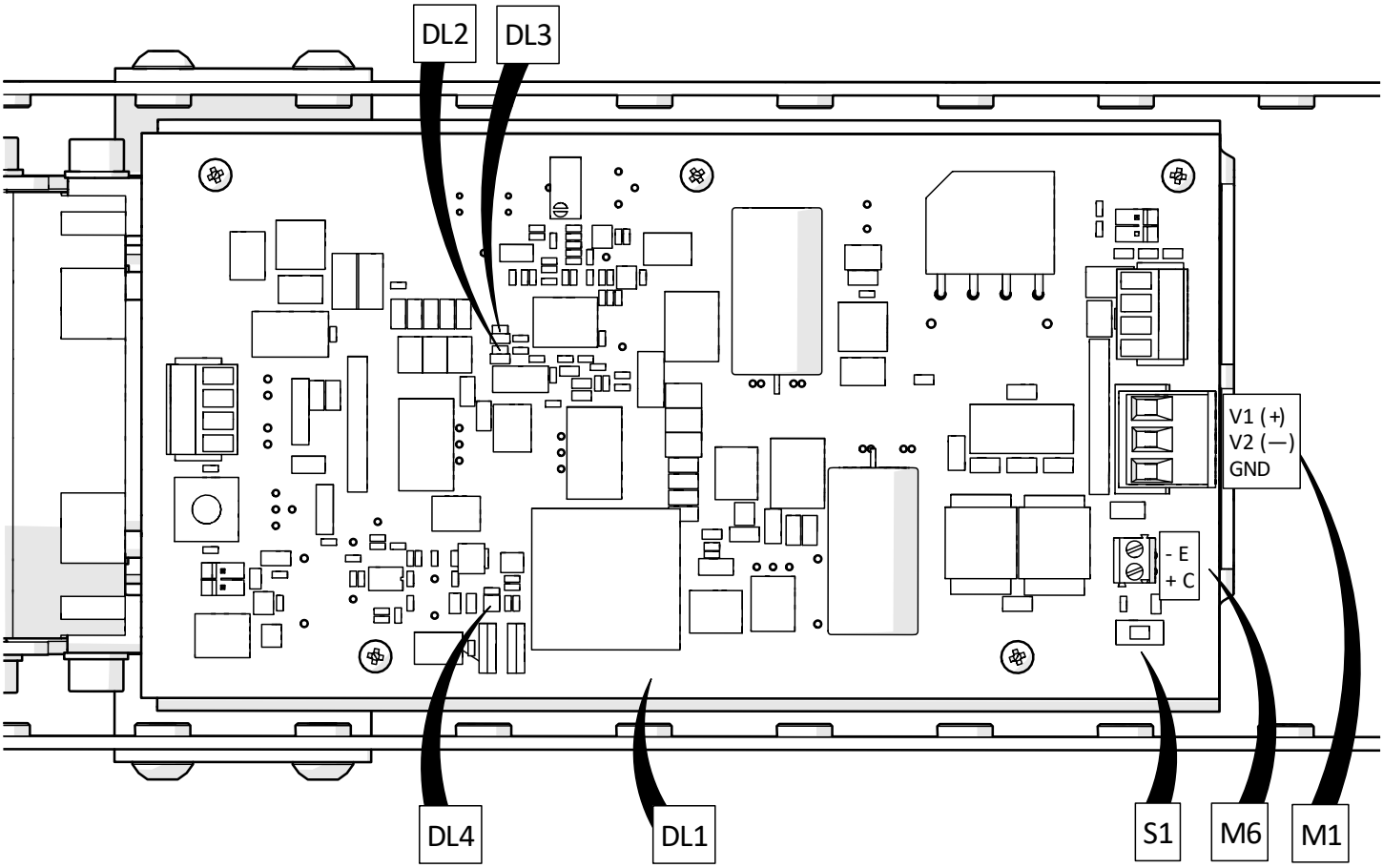
Remove screws (1) from the window flange camera housing (2). Rotate 45° the front flange counterclockwise while sliding it out.



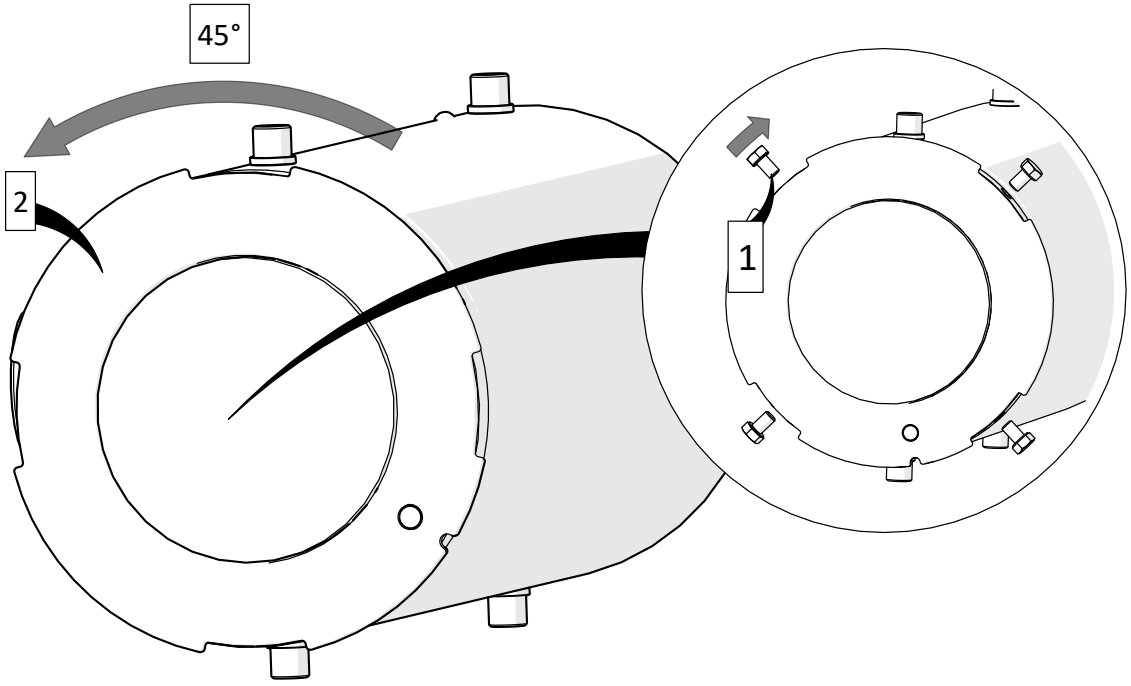
Perform electrical connection on the board according to the following indications:

ID	Name	Notes
M1	Supply voltage	24V~/24V⎓ power supply input.
M6	Digital input	Dry contact/Open collector (NPN) input for IR LEDs activation (Example: external camera output).
S1	Activation Test Button	Manual IR LEDs activation test.

The IR01 board installed inside the IR LED illuminator is equipped with four LEDs.
The DL1 LED (green) is ON when the board is correctly powered.
The DL2 LED (yellow) is ON when the IR LEDs are interrupted (open-led).
The DL3 LED (red) is ON when the IR LEDs are not activated or when they are in short-circuit.
The DL4 LED (yellow) is ON when the IR LEDs are in the activation phase during its hysteresis delay-time.

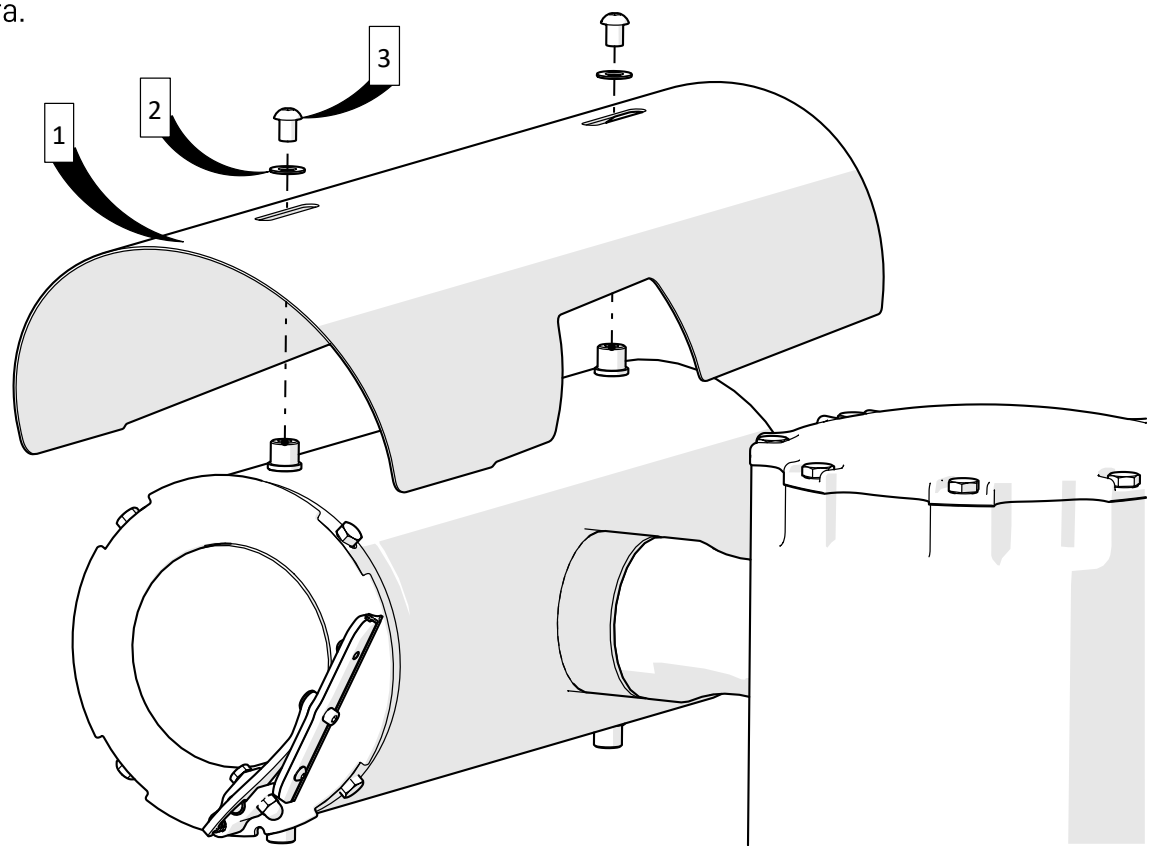


Assembly window flange (2) in the camera housing rotating it 45° counterclockwise. Tighten the screws (1) to 6.5 Nm.



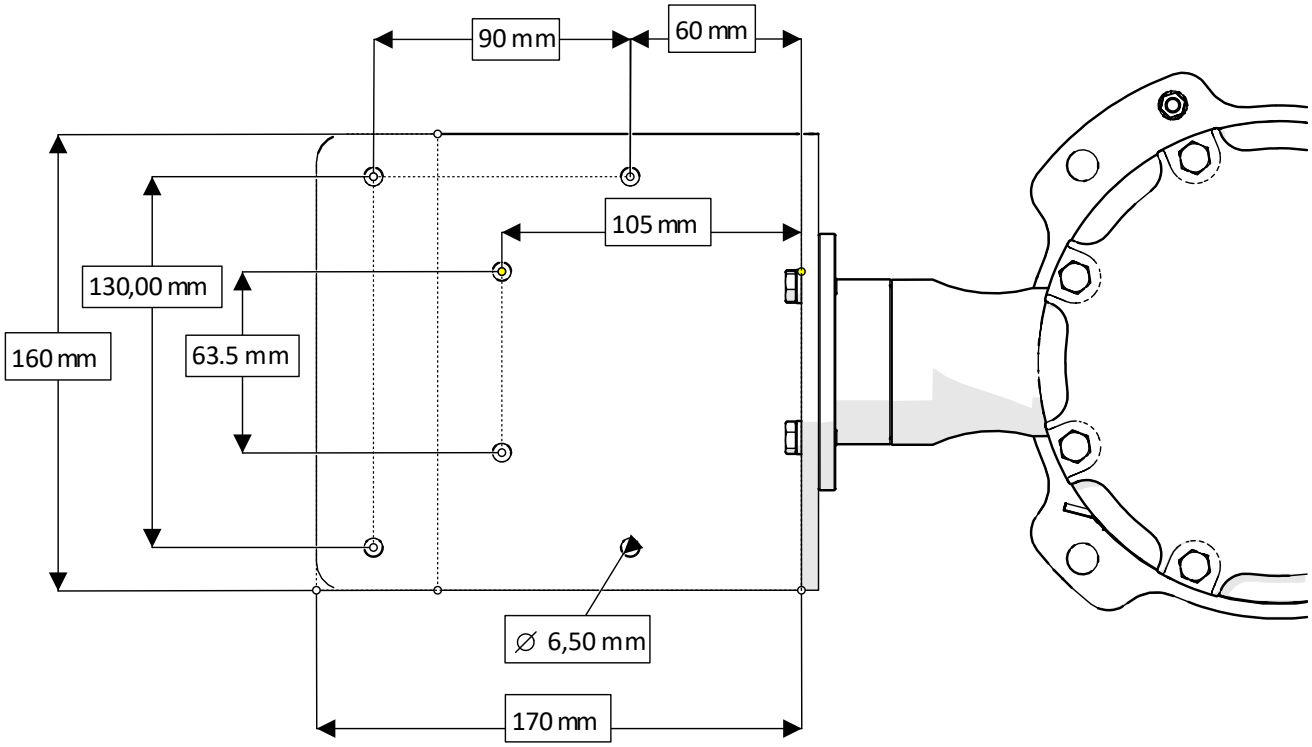
4.7 Installing sunshield on the camera housing

Mount the sunshield (1) on the camera housing using the provided washers (2) and screws (3). Horizontal position of the sunshield can be adjusted to limit the effect of the sunlight on the camera.



4.8 Installing external camera housing (only for TSP-LB series)

TSP-LB camera station allows the attachment of different camera housings. Please refer to the following mounting pattern to choose a suitable camera housing to be installed.



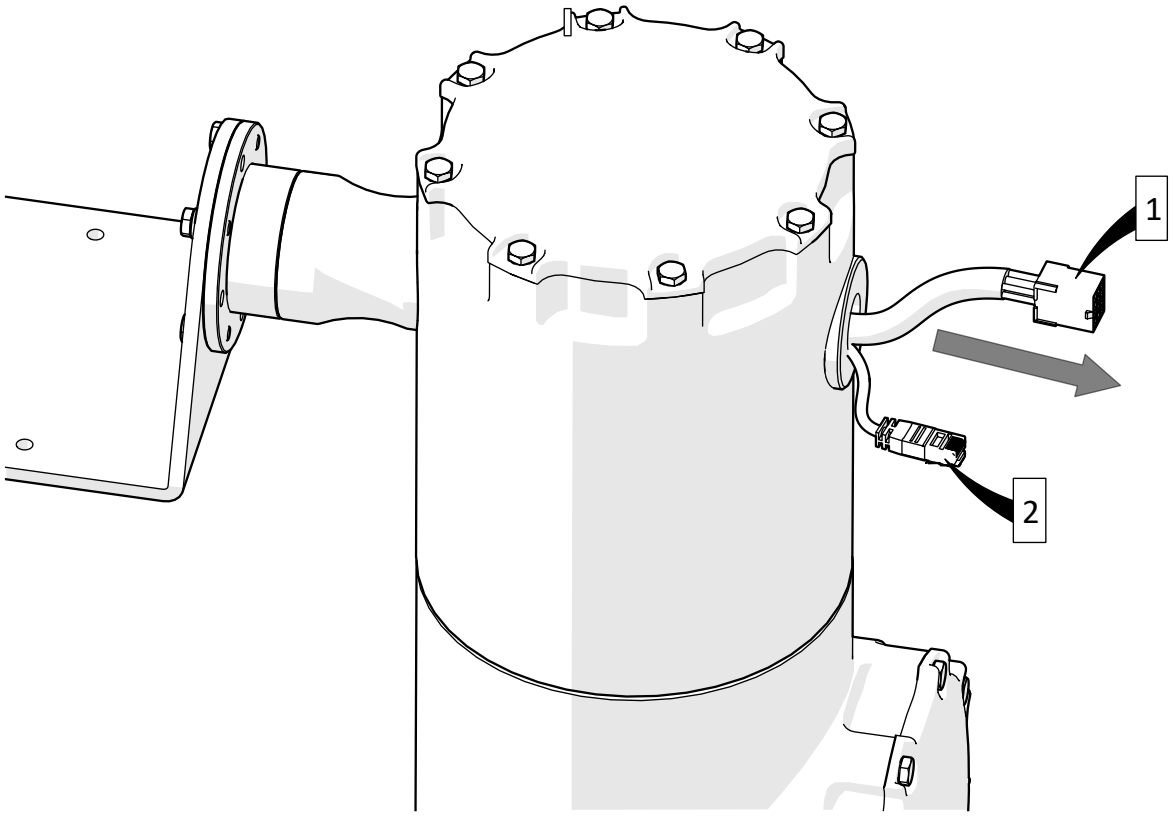
4.9 Installing and cabling cable tail patch (only for TSP-LB series)

If the composite cable tail isn't provided by Tecnovideo, please check the correct cable gland thread dimension. To maintain the IP rating of the unit, use only cables, cable glands, blanking elements, adapters and the like that are suitably rated. Any unused cable entry must be closed with an adequate blank. Eventual plastic caps used to protect cable entries threads during shipment must be removed.

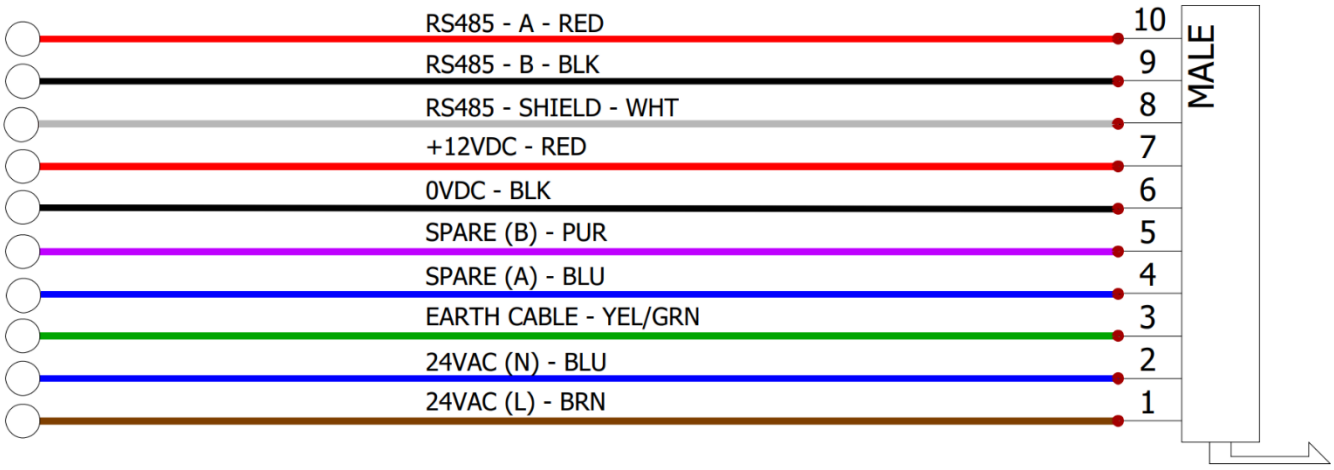
Slide out the plugs (1) and (2) from the inside of camera station.

Connect Tecnovideo patch composite cable connectors to the plugs (2) and (3).

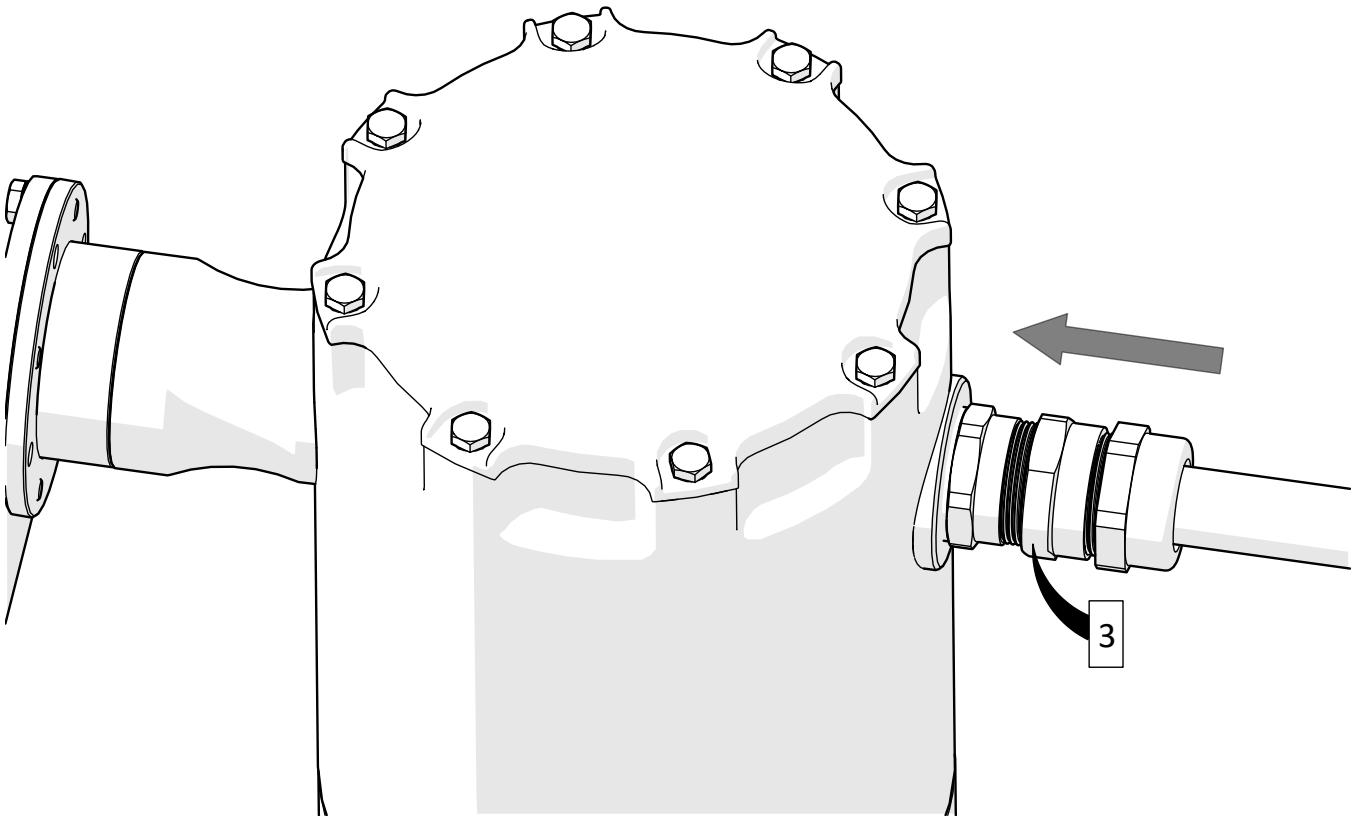
If you are not using the Tecnovideo patch composite cable:
A male cable (A) is supplied in the camera station kit. Connect it to the connector (1).
Connect the female RJ45 video cable to plug (2) (cable not provided with the camera station kit).



Male cable (A) details for cabling inside camera housing:

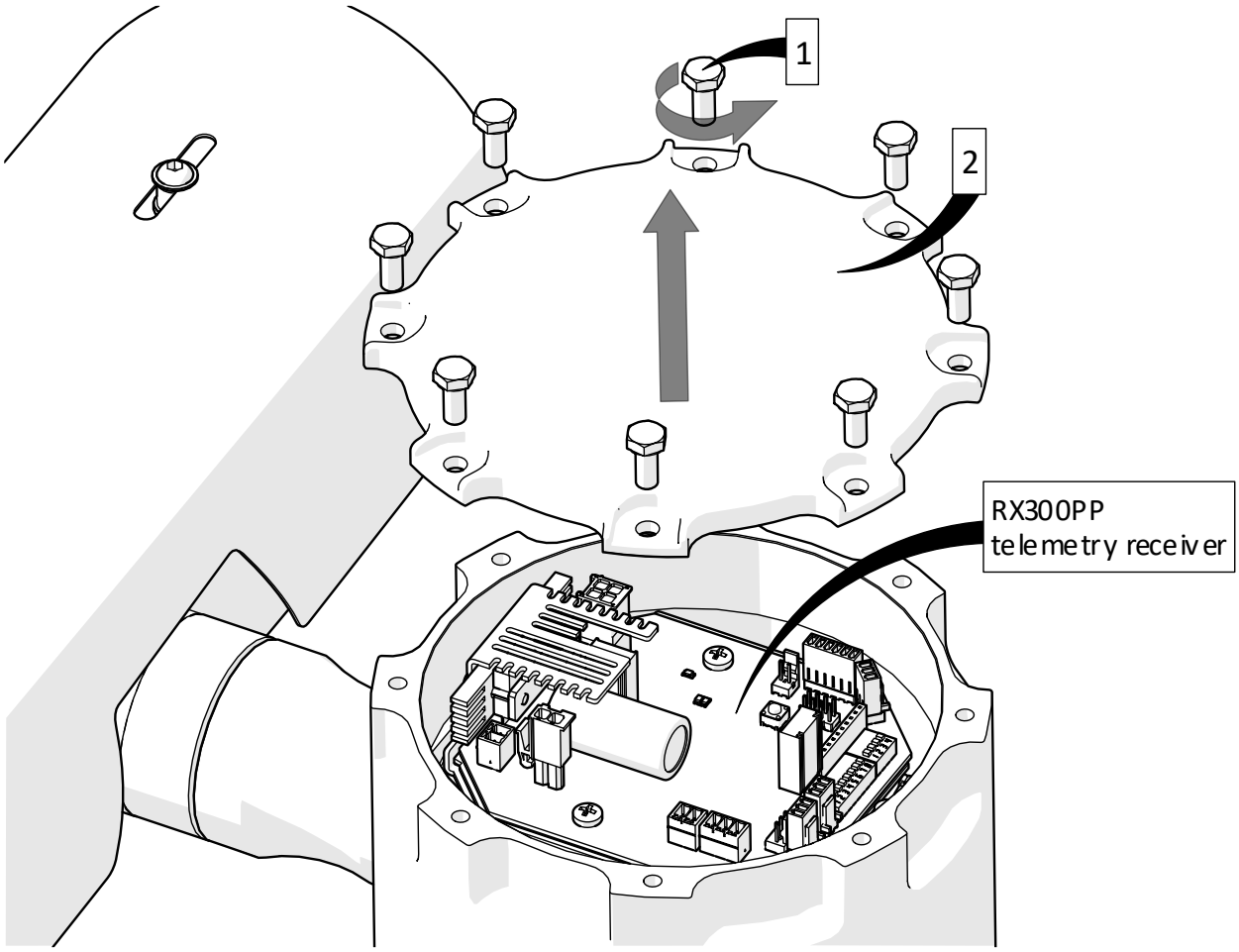


Fix the cable tail patch (3) to the upper body PTZ.
If you are using Tecnovideo cable tail, please follow the instructions in "*4.2 Install cable tail to the unit*".



4.10 Settings and electrical connections on RX300PP telemetry receiver

In order to get access to the RX300PP telemetry receiver, remove screws (1) from the upper flange of the camera station (2).

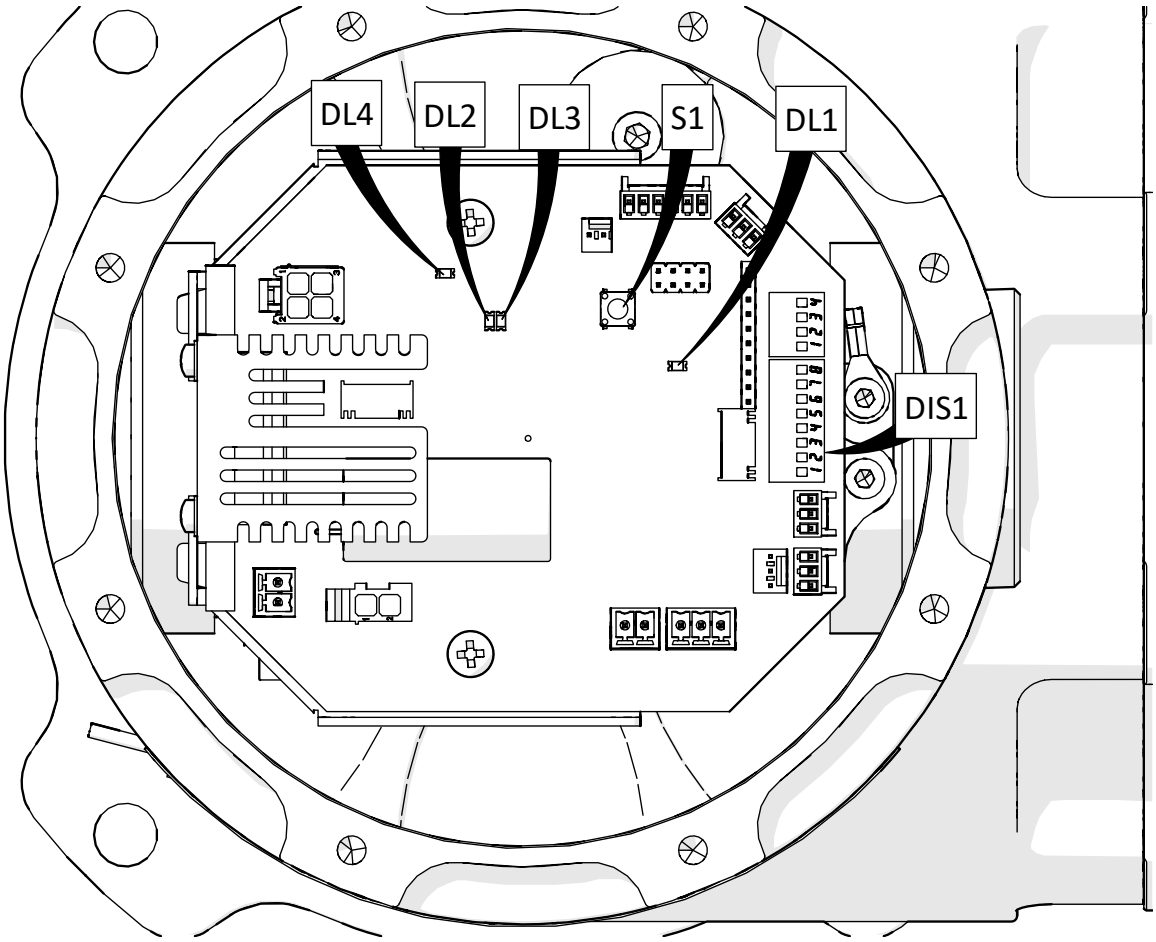


The device can be controlled from a PC with RS 485 converter using a suitable program (for example: Visual Studio).

Perform electrical connection on the tilt RX300PP telemetry receiver board.

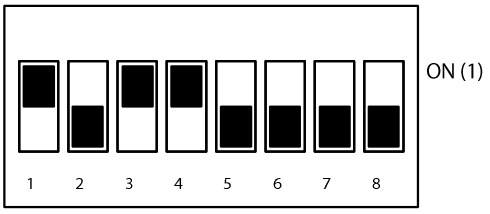
Field installation		
ID	Name	Notes
DIS1	Unit address and baud rate	Used for setting the unit address and baud rate of camera station. PIN 1-6: PTZ Address ID (default 1) (see below) PIN 7-8: DIS1-7 / DIS1-8 / Baud rate OFF / OFF / 2400 OFF / ON / 9600 ON / OFF / 19200 ON / ON / 57600
S1	Reset button	Push 15 seconds to reset to default settings. CAUTION: this operation will reset all the existing presets and the TILT axis limits.

The RX300PP board installed inside the PTZ unit is equipped with four LEDs.
The DL1 LED (green) is ON when the board is correctly powered.
The DL2 LED (green) blinks whenever the board receives data from the Primary BUS.
The DL3 LED (yellow) blinks whenever the board transmits data by the Primary BUS.
The DL4 LED (red) blinks when fault is detected.



4.11 Control the unit using RS485 Pelco D

The first six DIP of 8-way DIP switch *(DIS1)* on the telemetry receiver can be used to set up the unit address in binary. When a switch is on the ON position, the relative digit has value 1, otherwise the value is 0.
Switch 1 is referred to the least significant digit (2^0), while switch 6 is referred to the most significant digit (2^5). For example, the address 13 (001101 in binary) can be set up turning ON the switch 1, 3 and 4 (see figure).



Decimal to binary conversion chart:

Decimal	Binary
1	000001
2	000010
3	000011
4	000100
5	000101
6	000110
7	000111
8	001000
9	001001
10	001010
11	001011
12	001100
13	001101

Decimal	Binary
14	001110
15	001111
16	010000
17	010001
18	010010
19	010011
20	010100
21	010101
22	010110
23	010111
24	011000
25	011001
26	011010

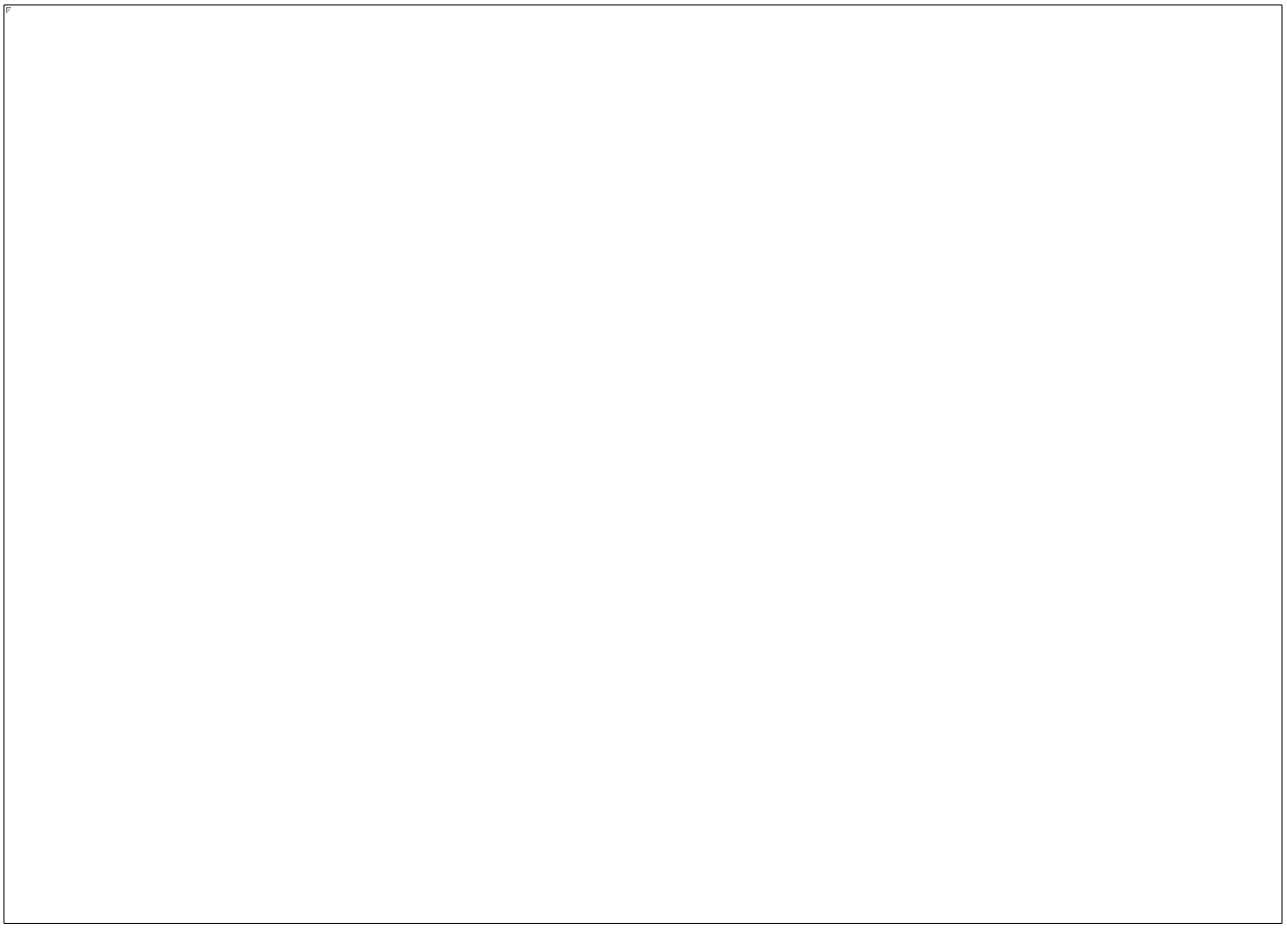
Decimal	Binary
27	011011
28	011100
29	011101
30	011110
31	011111
32	100000
33	100001
34	100010
35	100011
36	100100
37	100101
38	100110
39	100111

Decimal	Binary
40	101000
41	101001
42	101010
43	101011
44	101100
45	101101
46	101110
47	101111
48	110000
49	110001
50	110010
51	110011
52	110100

Decimal	Binary
53	110101
54	110110
55	110111
56	111000
57	111001
58	111010
59	111011
60	111100
61	111101
62	111110
63	111111

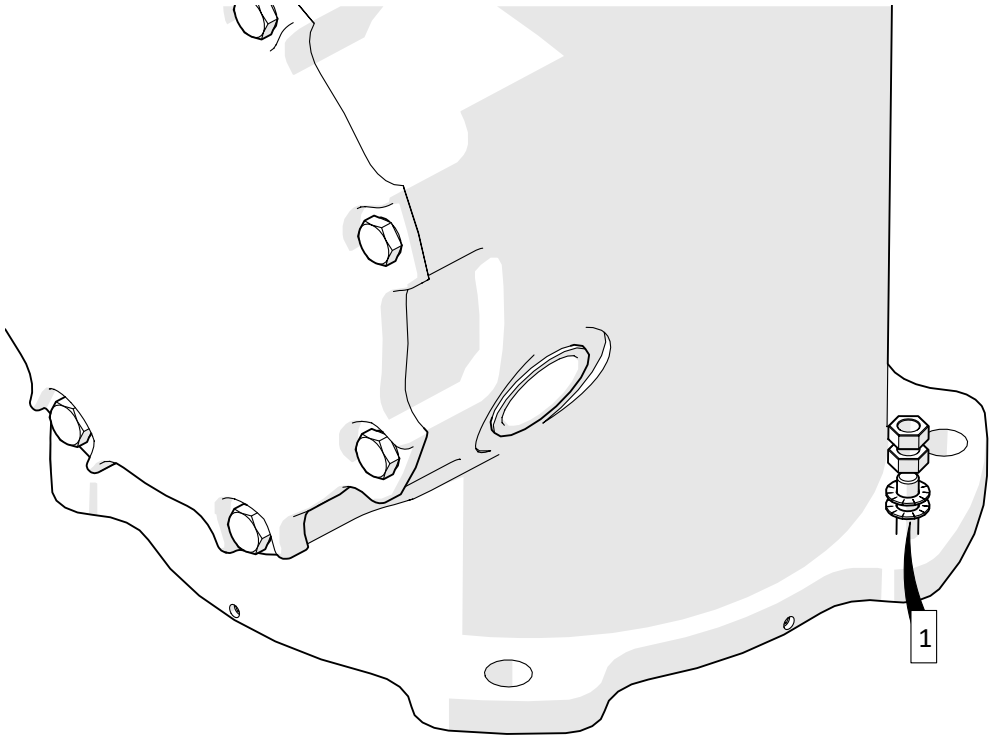
PAY ATTENTION!
"DS1" DIP switch position of TILT RX300PP must be the same of "DS1" DIP switch of PAN RX300PP (see chapter "4.3 Electrical connections to MF_RTX2").

Assembly flange (2) in the camera housing and tight the screws (3) to 11 Nm.
Check if the O-Ring gasket (1) is inside its grove before proceeding.



4.12 Ground connection for PTZ without washer system

Connect earth cable to the PTZ base, under the nuts and screws (1), with M5 eyelet terminal.

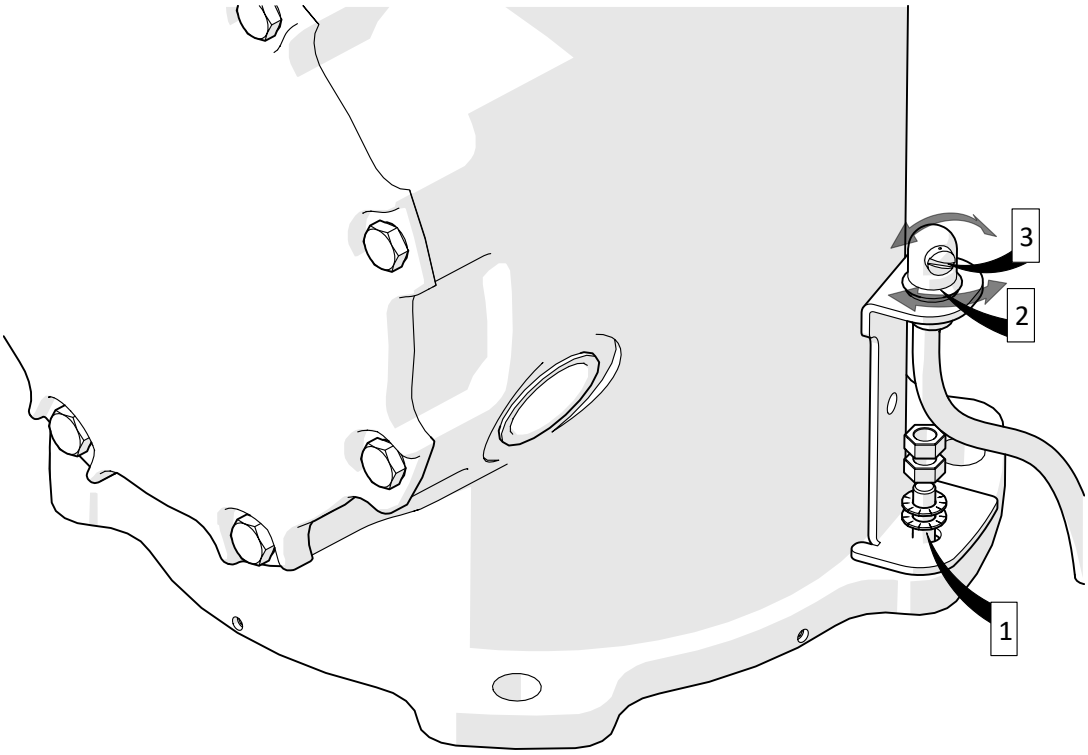


4.13 Ground connection and installing washer nozzle for PTZ washer system

Connect earth cable to the PTZ base, between nozzle bracket and screws (1), with M5 eyelet terminal.

Fix the nozzle bracket on the PTZ with the provided nuts and washers (1).

Adjust horizontal position of the nozzle, use the screwdriver slot (3) on the nozzle to adjust the tilt position.



5- SWITCHING ON

5.1 Switching on remarks

	Make sure that all parts are tightly closed and all screws are tightened.
	Upon each start up, after the first command received, the unit will perform a "zero-axis" calibration (in which the unit won't accept any further command). Make sure that during this operation the unit will not hit anything or anybody.
	WARNING: Hazardous moving parts: the device is remotely controlled and may change position at any time. When installing, choose a place where moving parts could not hit anyone or any object, creating hazardous situations.

5.2 Presets

Preset from 1 to 69 and from 100 to 150 can be used to set/call specific positions. The other presets are factory reserved and cannot be used to set/call specific positions.

Factory reserved presets:

- Setting preset 84 changes the "zero-axis" calibration behaviour, making the unit performing it when supply voltage is provided.
- Setting preset 74 switches back the behaviour of the unit to perform the "zero-axis" calibration on the first command received after the startup.
- Calling preset 92 performs a pan and tilt "zero-axis" calibration.
- Calling preset 90 performs a Pan "zero-axis" calibration.
- Calling preset 91 performs a Tilt "zero-axis" calibration.
- Calling preset 93 moves the unit to zero position (0°) both on pan and tilt axis.
- Calling preset 87 activates auxiliary output AUX3 (wash wiper cycle). Auto off after 30 seconds.
- Calling preset 88 activates auxiliary output AUX1 (wiper). Auto off after 10 seconds.
- Calling preset 89 activates auxiliary output AUX2 (washer). Auto off after 5 seconds.

5.3 Limits

Limits on Pan and Tilt movements can be set in order to protect it from impact with obstacles.
Default Pan limit is not factory set (continuous rotation).
Default Tilt limit is ±100° (mechanical limit).
Limits work only for manual movements. Preset recalling position is always performed through the shortest path, eventually trespassing the limits set. For this reason, it is strongly recommended to set Pan limits below 180°.
Custom limits can be set using the below presets:

Set limits:

Set Pan left limit:	Preset set 80
Set Pan right limit:	Preset set 81
Set Tilt up limit:	Preset set 82
Set Tilt down limit:	Preset set 83

Clear limits:

Clear Pan left limit:	Preset set 70
Clear Pan right limit:	Preset set 71
Clear Tilt up limit:	Preset set 72
Clear Tilt down limit:	Preset set 73

	"Zero-axis" position must be within limits range.
	Setting a limit will clear all previously saved presets.

5.4 Password and reset button

The unit is password protected to prevent unintended limits setting. To unlock this function, the password is 16325 (Preset Call 1+6+3+2+5; every Preset must be called within 10 seconds from the previous one). Limits unlock is enabled until a lock password is set.
To lock the limits modification, the password is 65324 (Preset Call 6+5+3+2+4; every Preset must be called within 10 seconds from the previous one).
Warning: Preset 1, 2, 3, 4, 5, 6 must be set before they can be called.

5.5 Auxiliary functions

The unit has 8 auxiliary functions, as described below:

- Aux1 is used for Wiper activation only (this function will activate the wiper for approx. 10 seconds).
- Aux2 is used for Washer pump activation only (this function will activate the washer pump for approx. 5 seconds).
- Aux3 is used for Wash-Wiper STOPPABLE automatic cycle (this function will activate the wash-wiper cycle approx. 30 seconds). Whenever a command is issued, the cycle will be interrupted.
- Aux4 is used for Wash-Wiper UNSTOPPABLE automatic cycle (this function will activate the wash-wiper cycle approx. 30 seconds). During the Wash-Wiper cycle, any command issued is ignored.
- Aux5 is used for Autofocus refresh (only for external motorized lenses).
- Aux6 is factory reserved.
- Aux7 is factory reserved.
- Aux8 is factory reserved.

5.6 Special auxiliary functions mode

The unit has a Special auxiliary functions mode. This mode is useful when neither auxiliary output nor preset above 86 are available.
In this mode, the unit works as described below:

- Preset Call 27 activates wiper (same as auxiliary output AUX1 and Preset Call 88). Auto off after 10 seconds.
- Preset Call 28 activates washer (same as auxiliary output AUX2 and Preset Call 89). Auto off after 5 seconds.
- Preset Call 29 activates the STOPPABLE front window cleaning cycle on wiper versions with washer systems (same as auxiliary output AUX3).
- Preset Call 30 activates the UNSTOPPABLE front window cleaning cycle on wiper versions with washer systems (same as auxiliary output AUX4).

If the VMS and/or camera preset numbering starts from 0 instead of 1, the above presets become 26 (AUX1), 27 (AUX2), 28 (AUX3), 29 (AUX4).

To enter Special auxiliary functions mode, the password is 25412 (Preset Call 2+5+4+1+2; every Preset must be called within 15 seconds from the previous one).
To exit Special auxiliary functions mode, the password is 35432 (Preset Call 3+5+4+3+2; every Preset must be called within 15 seconds from the previous one).
Warning: Preset 1, 2, 3, 4, 5 must be set before they can be called.

6- MAINTENANCE

6.1 Maintenance remarks

	Please read and be familiar with the following instructions before servicing the unit.
	Any repair or replacement of parts must be done by the manufacturer or its appointed repair agent.
	Ensure proper operating condition of the unit performing safety checks upon completion of maintenance.
	Disconnect the unit from the supply circuit before cleaning. Do not use caustic or abrasive cleaning products.
	Use only replacement parts specified by the manufacturer.
	Problems with aggressive substances and environments: Be aware that aggressive substances may require extra protection and suitable precautions. Aggressive substances: acidic liquids or gases that may attack metals, or solvents that may affect polymeric materials. Suitable precautions: regular checks as part of routine inspections or establishing from the material's data sheet that it is resistant to specific chemicals.
	Disconnect the unit from the supply circuit and report to qualified service personnel whenever any damage to the equipment has been detected.
	Do not use electrical equipment that seem worn or old.

6.2 Inspection interval

Suggested inspection interval is 6 months, but extremely harsh environments may require more frequent inspection and maintenance checks. On each inspection check the O-ring seals and the window wiper blade. Replace them if necessary.

6.3 Routine maintenance

- Clean the glass: use water or a liquid detergent that will not generate a hazardous situation.
- Clean the germanium window: use water or a liquid detergent that will not generate a hazardous situation. Be careful not to scratch the carbon coating. Using ethyl alcohol, solvents, hydrogenated hydrocarbons, strong acids or alkalis will irreparably damage the germanium window.
- Clean the unit: use a damp cloth. Do not use compressed air.
- Check electrical connections: check cables and electrical connections for integrity and tightness. If the cables seem wore or damaged, refer to the extraordinary maintenance section.
- Check mounting accessories: check mounting bolts and screws for integrity and tightness. Replace or tighten any damaged/loose mounting hardware.

6.4 Fuse replacement

If necessary, replace the fuses F1 or F2, illustrated in "*4.3 Electrical connections to MF_RTX2*".
The following fuse values are used:

24 VAC/DC supply voltage	
Fuse name	Fuse value
F1	8 A HT 250 VAC 5x20
F2	10 A HT 250 VAC 5x20

115 VAC / 230 VAC supply voltage	
Fuse name	Fuse value
F1	3.15 A HT 250 VAC 5x20
F2	10 A HT 250 VAC 5x20

All the fuses must be ceramic T type (time lag) with a breaking capacity of 1500 A.
Different supply voltage can be supplied and may require different fuse values. In such cases, please contact Tecnovideo.

7- TROUBLESHOOTING

Refer to "*4.10 Settings and electrical connections on the RX300PP telemetry receiver*" to locate the telemetry receiver and the LEDs, to facilitate the solution to the problem.

Problem	Possible cause	Solution
The unit is powered up but there is no motion or any video signals.	Incorrect power cable connections. Protection fuses have been triggered.	Check if the power supply value is correct. Replace any burnt fuse.
The unit is powered up, receives video signals but does not respond to the commands to move.	Incorrect baud rate settings of camera, address protocol. Incorrect serial communication, wiring.	Check the unit and the system serial communication settings and values.
The preset value saved is different from the one recalled.	Incorrect setting of preset.	Set and check again the unit preset position.
The wiper does not work.	The wiper blade is externally stuck or the wiper mechanism is stuck internally.	Check the wiper blade from outside. Check the wiper mechanism inside to be sure it doesn't hit any element and it's free to move/rotate.
Once the wiper is activated, it won't stop or stops in the wrong position.	The internal wiper motor microswitch is damaged.	Check the wiper motor microswitch with a multimeter, and check that it's working and hitting properly the mechanical arm.
The washer does not work.	The connections for the washer out are worn or the fuse is burnt.	Check the wiring of the washer out signal and the fuse.
There is no video signal and the "VIDEO LOSS" warning appears on the screen.	The video camera installed inside the unit is not connected or is faulty.	Check the video camera.
There is no video signal.	Video cabling issue.	Check the video signal cabling.

8- EU DECLARATION OF CONFORMITY

We declare under our sole responsibility that the products here specified, to which this declaration refers, are in conformity with the following relevant EU legislation:

2014/30/EU	EMC Directive
2014/35/EU	Low Voltage Directive
2011/65/EU + 2015/863/EU	RoHS Directive
2012/19/EU	WEEE Directive

Reference Standards:

EMC Directive:

EN 55032:2015 + AC:2016 + A11:2020 + A1:2020
EN 55035:2017 + A11:2020
IEC 61000-3-2:2018 + AMD1 :2020/EN IEC 61000-3-2:2019 + A1 :2021
IEC 61000-3-3:2013 + AMD1 :2017 + AMD2:2021/EN 61000-3-3:2013 + A1 :2019 + A2:2021
IEC 61000-6-2:2016/EN IEC 61000-6-2:2019
IEC 61000-6-4:2018/EN IEC 61000-6-4:2019
DNV-CG-0339 Edition August 2021
CISPR 32:2015 + AMD1:2019
CISPR 35:2016

Lov Voltage Directive:

IEC 62368-1:2018 + IEC 62368-1/COR1:2020
EN IEC 62368-1:2020 + EN IEC 62368-1/A11:2020 +EN IEC 62368-1/AC:2020

Product code: INNO Series (TSF, TSP)

Product description: Stainless steel weatherproof fixed/PTZ camera station

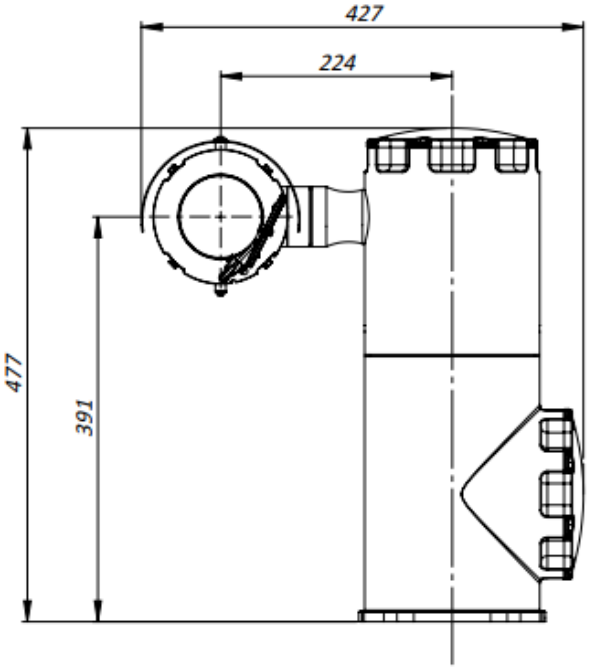
Location	Villaverla	Villaverla
Date of issue	30/10/2023	30/10/2023
Name	Christian Fabris	Moremp De Pretto
Organisational role	Managing Director	Certification Manager

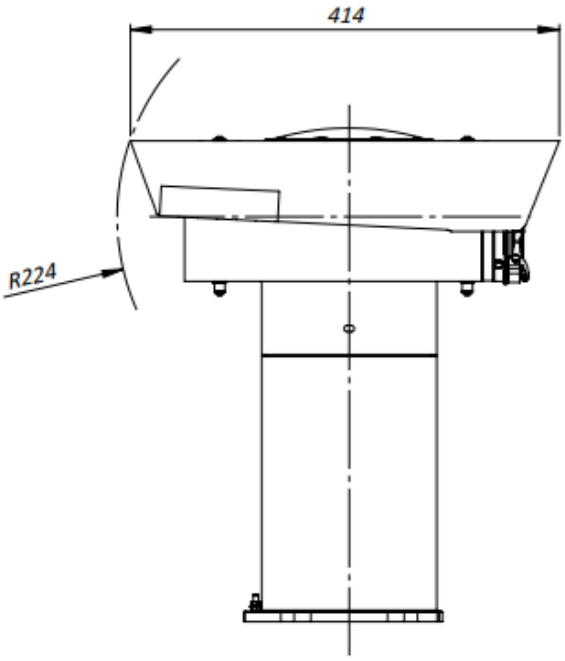
TECNOVIDEO s.r.l.

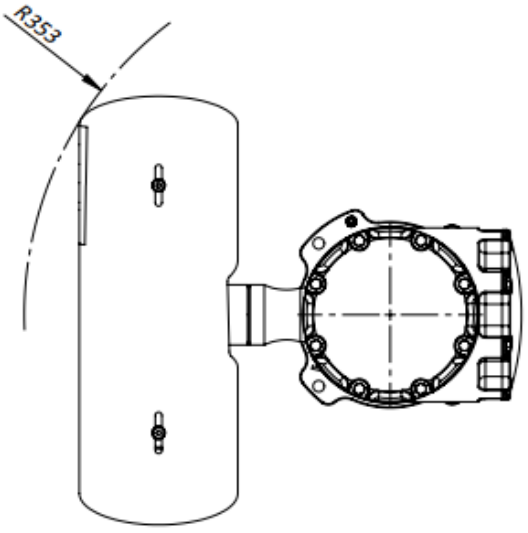
TECNOVIDEO s.r.l.

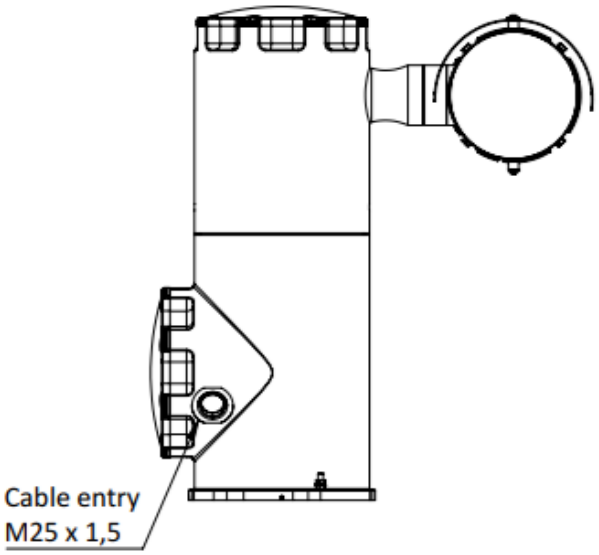
9- DIMENSIONS

10.1 TSP technical drawings

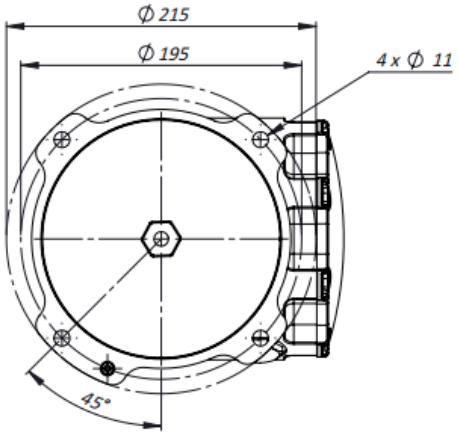




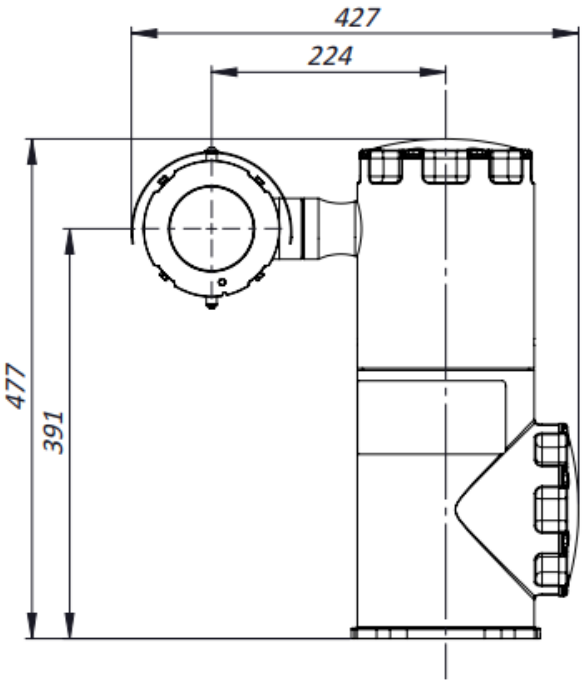


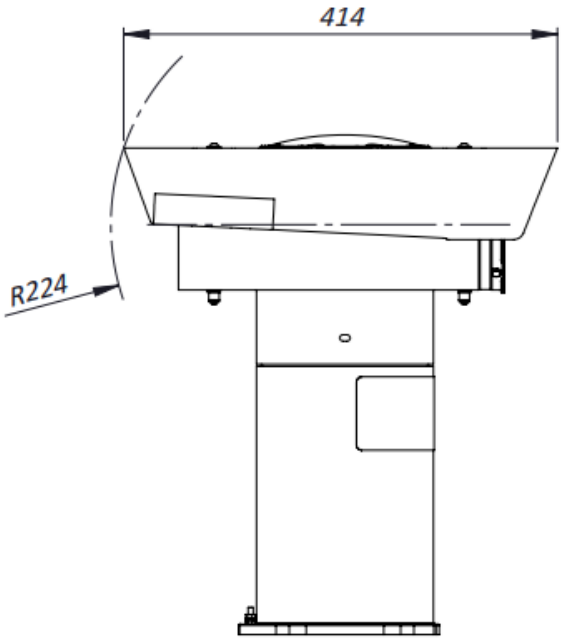


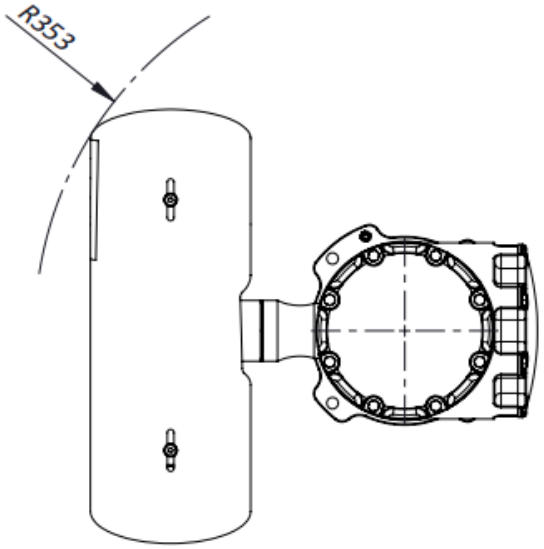
MOUNTING PATTERN

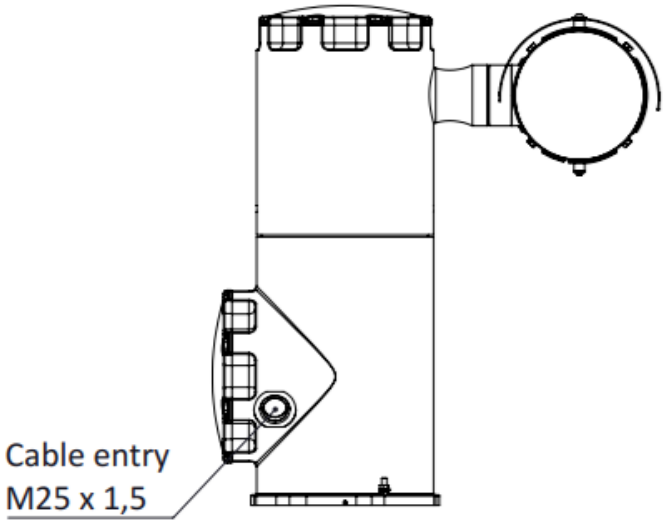


10.2 TSP-IR technical drawings

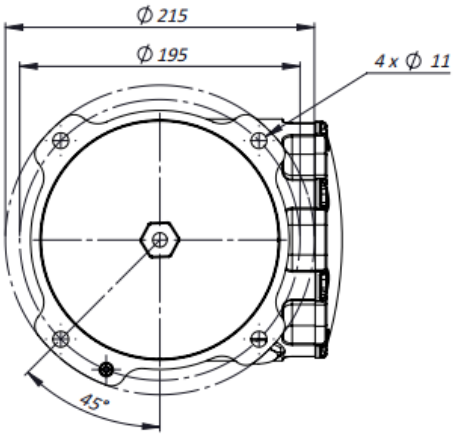




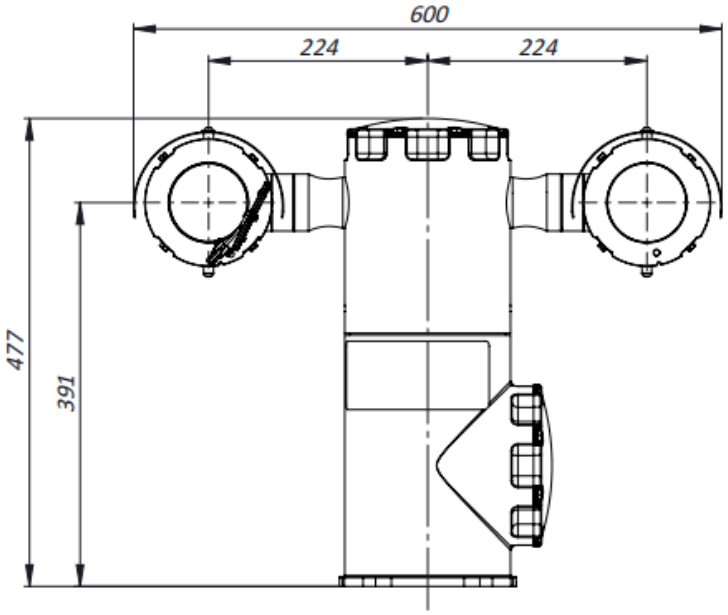


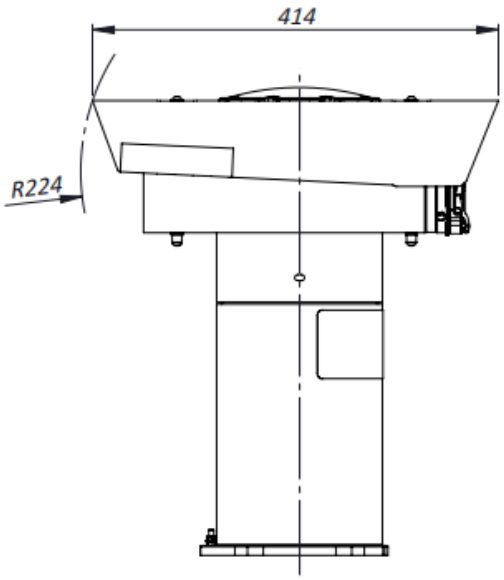


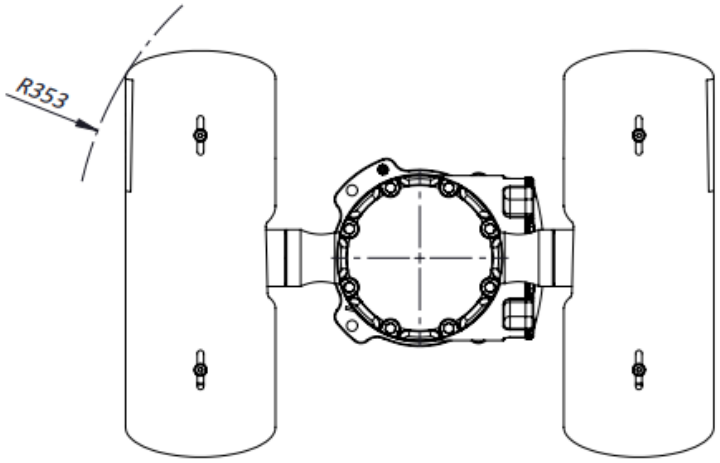
MOUNTING PATTERN

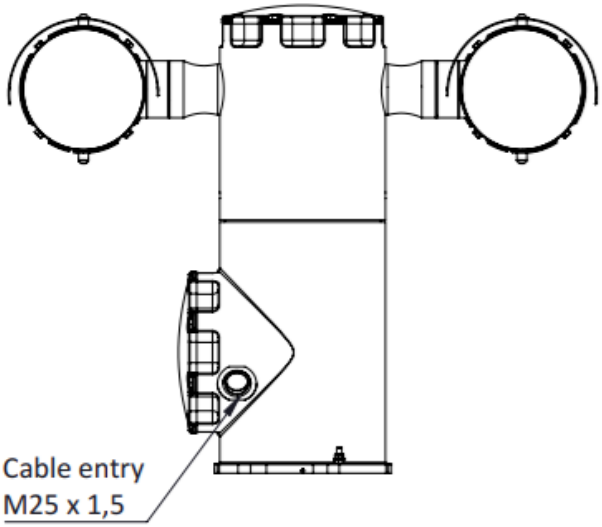


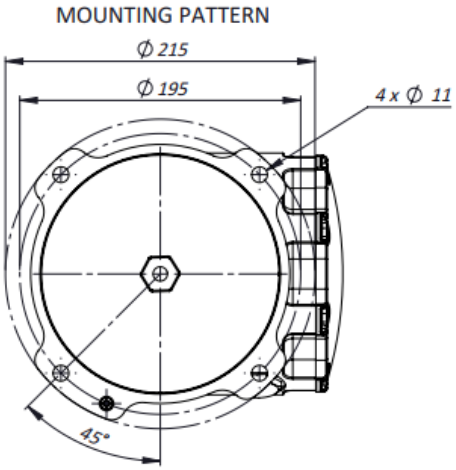
10.3 TSPD technical drawings



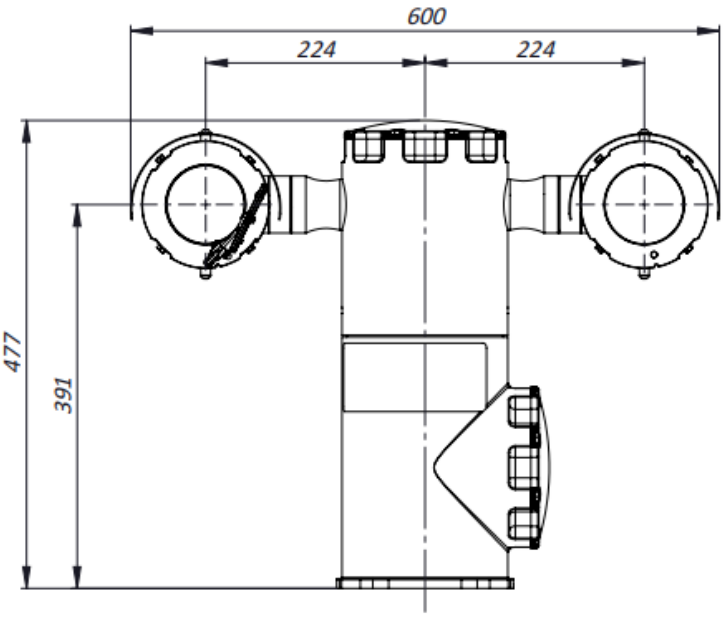


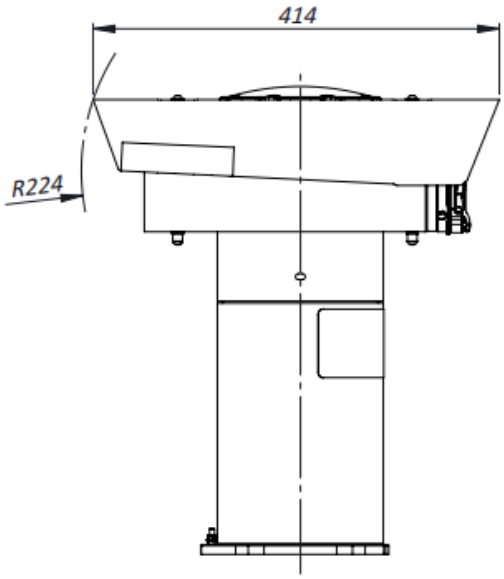


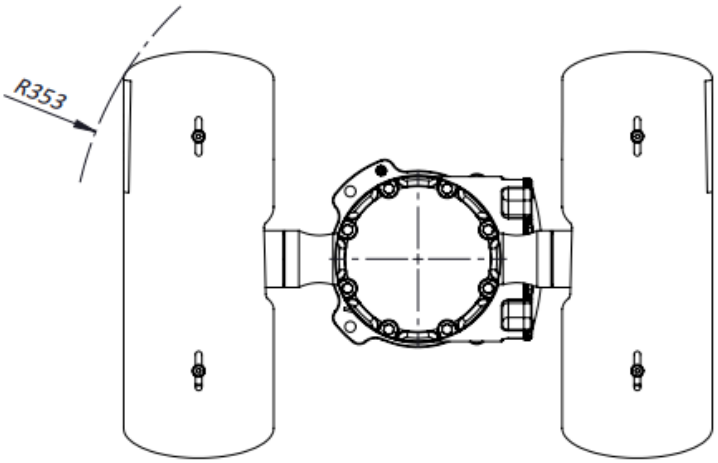


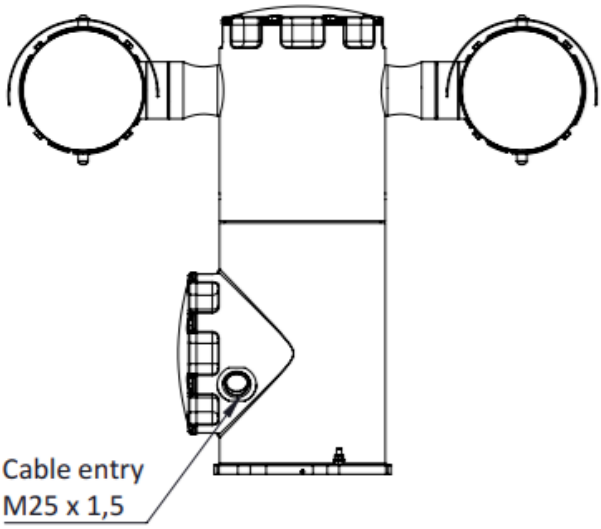


10.4 TSP-LED technical drawings

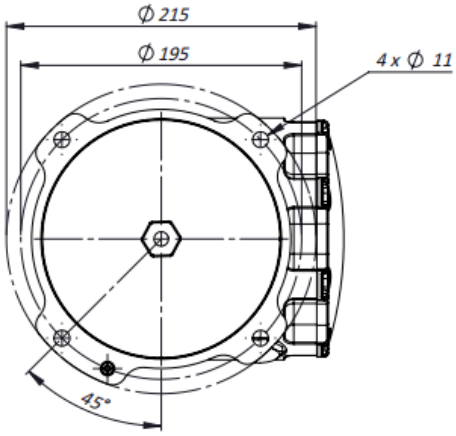




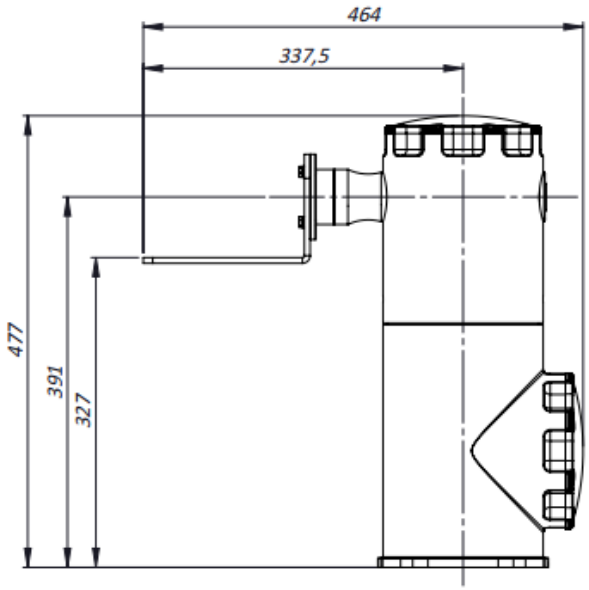


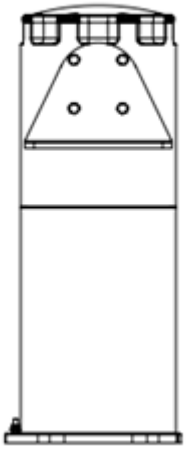


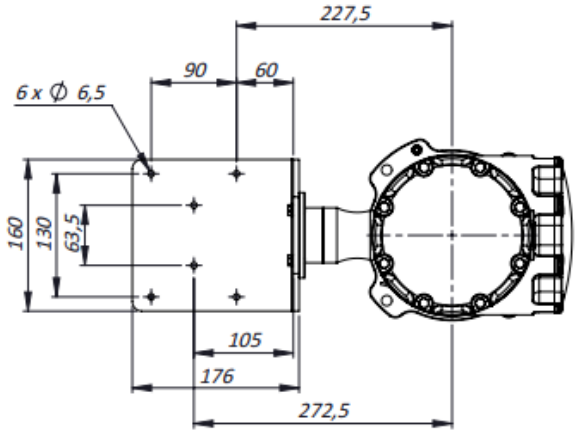
MOUNTING PATTERN

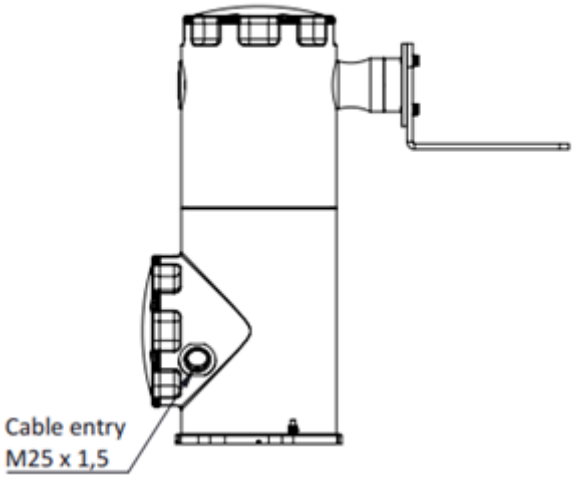


10.5 TSP-LB technical drawings









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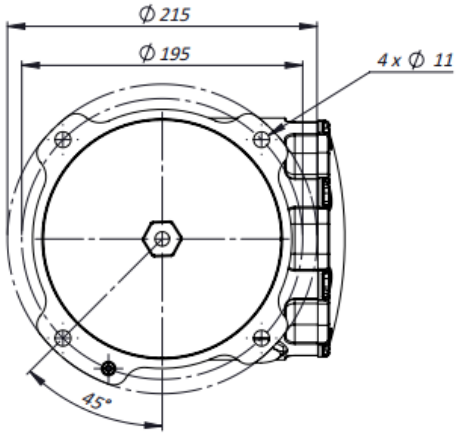

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The manufacturer declines all liability for any consequence resulting from improper installation practices, tampering or improper uses of the product.

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