ARMENDUS

SUPPORT ARM & ENCLOSURE SYSTEMS

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8-Return Spring

9-Cover Screw

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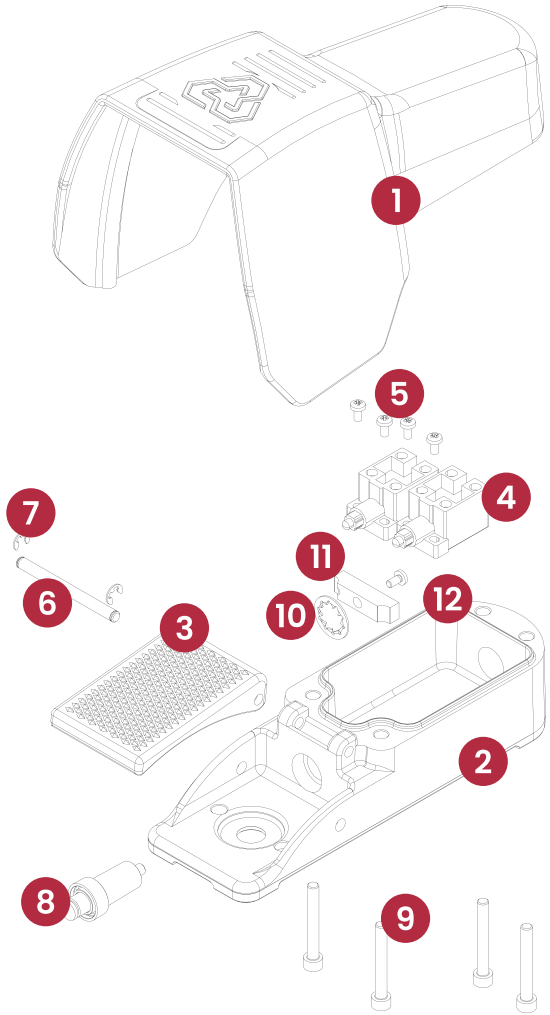
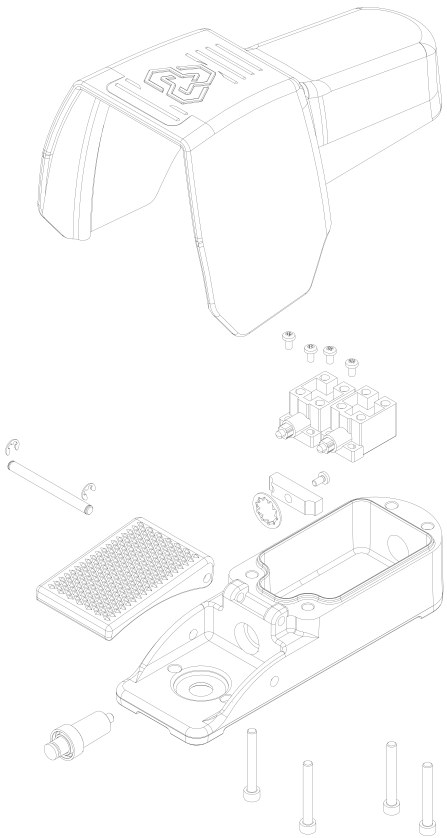
11-Dual Switch Pressure Plastic / Actuator Plastic

12-Switch Pressure Plastic Bolt



SINGLE FOOT SWITCH

Foot Pedal Operating And Working Principles



1. General Description

The foot pedal is a control unit that activates the relevant contact elements by transmitting the downward force applied by the user through a mechanical movement. It is designed to provide reliable and precise control in industrial applications.

2. Contact Structure

The contact configuration for each pedal is offered with the following options:

•Maximum of 4 switch modules

•Alternatively, 1 potentiometer

Switch modules are available in the following contact types:

•NC (Normally Closed)

•NO (Normally Open)

•Double Contact (Double Make / Double Break)

Depending on the application requirements, contacts can be equipped with slow-action or snap-action contact elements.

3. Pressure Point – Tactile Feedback

The pressure point felt during pedal movement provides tactile feedback to the user by creating mechanical resistance.

•The pedal force increases significantly at this point.

•Once the resistance is overcome, the required actuation force decreases.

•It allows the user to sense a specific actuation position.

Operating Notes

•The pedal must only be used within its designed mechanical and electrical limits.

•Installation and connection procedures must be performed by authorized technical personnel.

•The product should be inspected regularly, and mechanical wear should be monitored.

SINGLE FOOT SWITCH

Assembly of the Pedal Mechanism

•Place the pedal pressure plastics on the outer side and insert the mechanical transmission elements into the housing in the order shown **(Figure 3).**

•Verify that the serrated lock washer secures the movement of the pressure plastic.

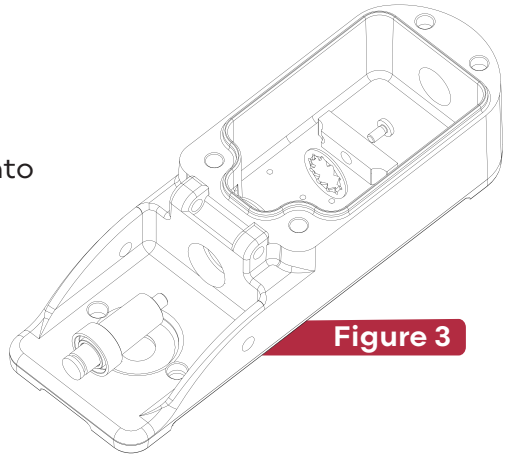


Figure 3

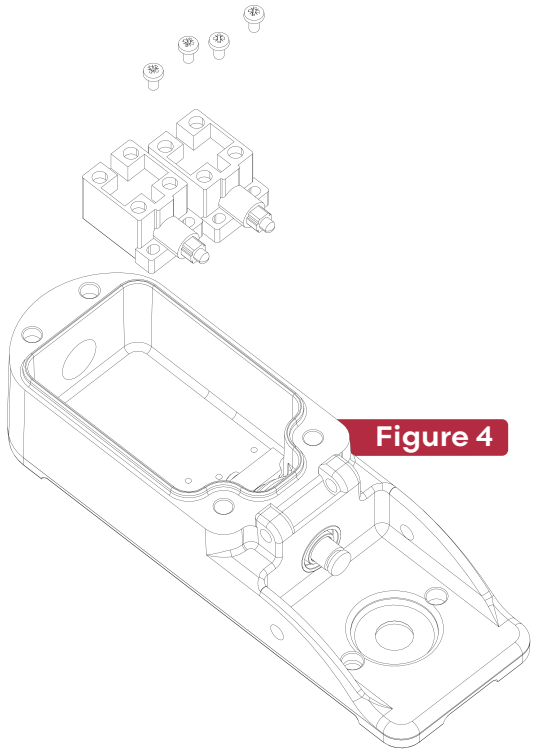


Figure 4

Switch / Analog Module Placement

•Mount the switch modules or the analog (potentiometer) block into their designated slots based on the selected configuration **(Figure 4).**

•Ensure that the modules are triggered correctly by the pedal movement.

Caution: Mechanical alignment must be checked before making electrical connections.

SINGLE FOOT SWITCH

Pedal Plastic Assembly

Complete the assembly by placing the pedal plastic, pins, and circlips as shown. After all assembly steps are finished, check the mechanical movement by manually pressing the pedal **(Figure 5).**

Ensure that the pressure point, bi-stable function, and switching behavior are functioning correctly.

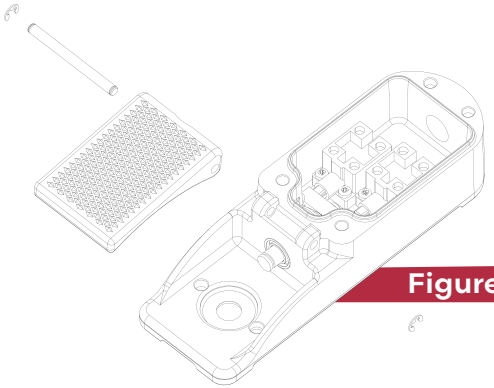
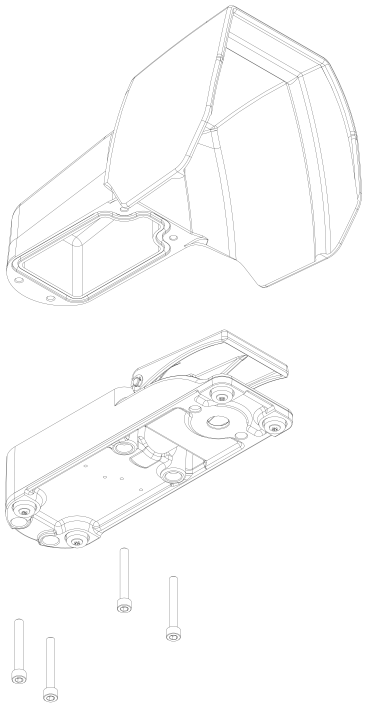


Figure 5



Base Plate and Cover Assembly

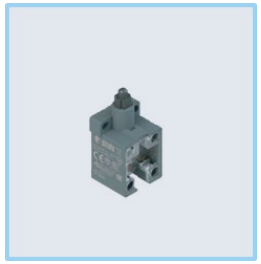
Join the base plate and the top cover with the correct orientation. Ensure that the mounting holes on the parts are aligned.

The base plate and cover must be secured using **4 bolts**. Tighten the bolts gradually using a cross-tightening (star) pattern.

Note: After assembly, verify that there are no gaps between the cover and the base plate and that the parts are fully seated.

SINGLE FOOT SWITCH

Technical Drawing



Main features
- Technopolymer housing
- Protection degree IP20 (terminals), IP40 (contacts)
- 14 contact blocks available
- Actuators with plastic plunger
- Contact block with positive opening
- For internal use in PA, PX, PC series foot switches

Quality marks:

IMQ approval: CA02.06217
UL approval: E131787
CCC approval: 2024010305656752
EAC approval: RU Д-IT.PA07.B.37848/24

General data

Ambient temperature:	-40°C ... +80°C
Safety parameter B10D:	40,000,000 for NC contacts
Max. actuation frequency:	3600 operating cycles/hour
Mechanical endurance:	20 million operating cycles
Max. actuation speed:	0.5 m/s
Min. actuation speed:	1 mm/s (slow action) 0.01 mm/s (snap action)
Tightening torque of the terminal screws:	0.6 ... 0.8 Nm

In compliance with standards:
IEC 60947-5-1, EN 60947-5-1, IEC 60947-1, EN 60947-1, IEC 60204-1, EN 60204-1, EN ISO 14119, EN ISO 12100, IEC 60529, EN 60529, EN IEC 63000, UL 508, CSA C22.2 No. 14, GB/T14048.5.
Approvals:
UL 508, CSA C22.2 No. 14, EN 60947-1, EN 60947-5-1.

Compliance with the requirements of:
Low Voltage Directive 2014/35/EU, EMC Directive 2014/30/EU, RoHS Directive 2011/65/EU.
Positive contact opening in conformity with standards:
IEC 60947-5-1, EN 60947-5-1.

Installation for safety applications:
Use only switches marked with the symbol beside the product code. Always connect the safety circuit to the **NC contacts** (normally closed contacts: 11-12, 21-22 or 31-32) as required by **EN ISO 14119, paragraph 5.4** for specific interlock applications and EN ISO 13849-2 table D3 (well-tried components) and **D.8** (fault exclusions) for safety applications in general. Actuate the switch **at least up to the positive opening travel** reported in the travel diagrams. Actuate the switch **at least with the positive opening force,** reported in brackets below each article, next to the minimum force value.

FOOT PEDAL
(ANTHRACITE GRAY)
PDL1140
010000000000
010600000000

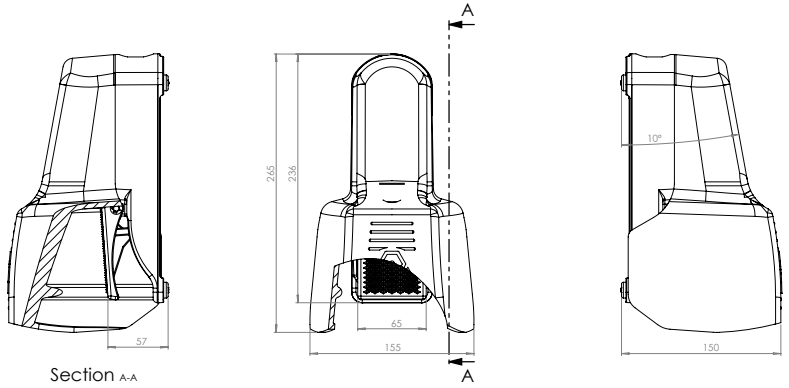
FOOT PEDAL
(RED)
PDL1110
010000000000
010600000000

FOOT PEDAL
(YELLOW)
PDL1120
010000000000
010600000000

SINGLE FOOT SWITCH

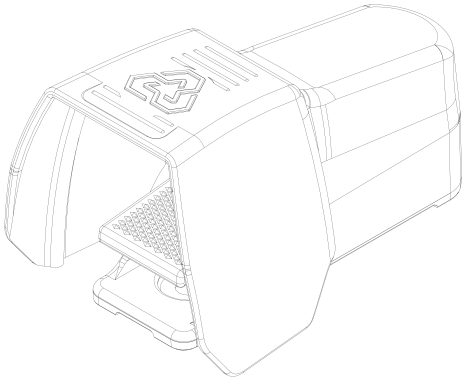
Installation for safety applications

Use only switches marked with the symbol beside the product code. Always connect the safety circuit to the NC contacts **(normally closed contacts: 11-12, 21-22 or 31-32)** as required by EN ISO 14119, paragraph 5.4 for specific interlock applications and EN ISO 13849-2 table D3 **(well-tried components)** and D.8 **(fault exclusions)** for safety applications in general. Actuate the switch at least up to the positive opening travel reported in the travel diagrams. Actuate the switch at least with the positive opening force, reported in brackets below each article, next to the minimum force value.



Section A-A

SINGLE FOOT SWITCH



Electrical data

Thermal current (Ith):	10 A
Rated insulation voltage (Ui):	500 Vac 600 Vdc
Rated impulse withstand voltage (Uimp):	6 kV
Conditional short circuit current:	1000 A acc. to EN 60947-5-1
Protection against short circuits:	type aM fuse 10 A 500 V
Pollution degree:	3

Utilization category

Alternating current: AC15 (50÷60 Hz)

Ue (V)	250	400	500
Ie (A)	6	4	1

Direct current: DC13

Ue (V)	24	125	250
Ie (A)	3	0.55	0.3

Features approved by IMQ

Rated insulation voltage (Ui):
500 Vac (for contact blocks [B] 5, 6, 7, 9, 10, 12, 13, 14, 15, 17, 18, 19, 66, 67)
400 Vac (for contact blocks [B] 11, 37)
Conventional free air thermal current (Ith): 10 A
Protection against short circuits: type aM fuse 10 A 500 V Rated
impulse withstand voltage (U_{imp}): 6 kV
Protection degree of the housing: IP20
MV terminals (screw terminals)
Pollution degree: 3
Utilization category: AC15
Operating voltage (Ue): 400 Vac (50/60 Hz)
Operating current (Ie): 4 A Forms

of the contact element: Zb, Y+Y, X+X, Y, X

Positive opening contacts on contact blocks [B] 5, 6, 7, 9, 11, 13, 14, 17, 18, 19, 37, 66
In compliance with standards: EN 60947-1, EN 60947-5-1, fundamental requirements of the Low Voltage Directive 2014/35/EU.

Please contact our technical department for the list of approved products.

Description

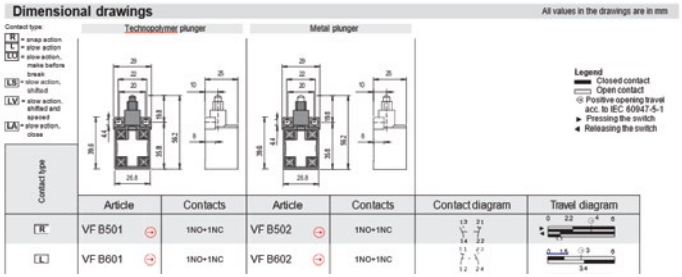
Contact block with captive screws, finger protection and self-lifting clamping screw plates. Provided with positive opening NC con- tacts for safety applications. Provided with twin bridge contacts, they are particularly suitable for high-reliability applications.
Suitable for installation inside PA, PX and PC series foot switches (for more information see the General Catalogue HMI).

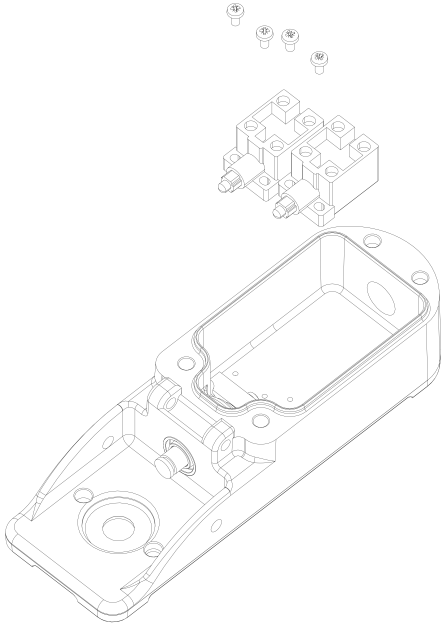
Features approved by UL

Electrical ratings: Q300 (69 VA, 125-250 Vdc)
A600 (720 VA, 120-600 Vac)

Housing features: open type.
For all contact blocks use 60 or 75°C copper (Cu) conductors, rigid or flexible, wire size 12, 14 AWG.
Tightening torque for terminal screws of 7.1 lb in (0.8 Nm).

Please contact our technical department for the list of approved products.





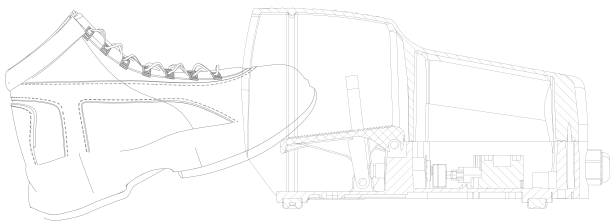
SINGLE FOOT SWITCH

Technical Installation and Mechanism

Images 1 & 2 (Internal Assembly): During installation, ensure that the internal trigger lever and return spring move freely. The mechanical alignment shown in the cross-sections determines the pedal's sensitivity.

Image 3 (Spring Tension): The spring system shown in the A-A section must be centered. Verify that the downward pressure is distributed evenly across the surface.

1



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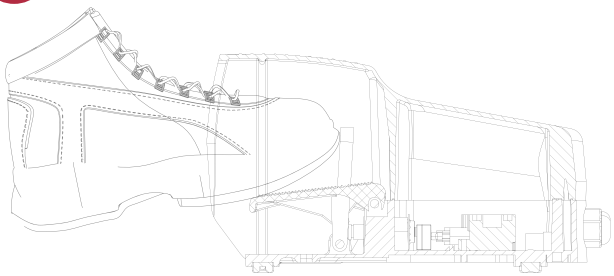

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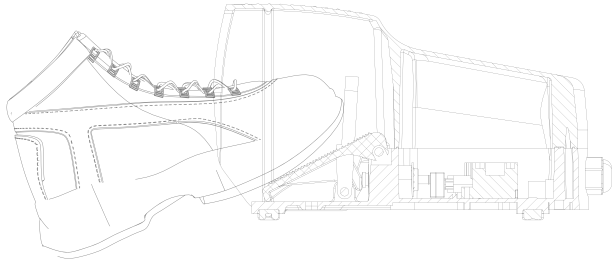


SINGLE FOOT SWITCH

Technical Installation and Mechanism

Images 4 & 5 (Switch Connection): When performing electrical wiring, ensure cables do not contact moving parts. Check the torque of the fastening screws.

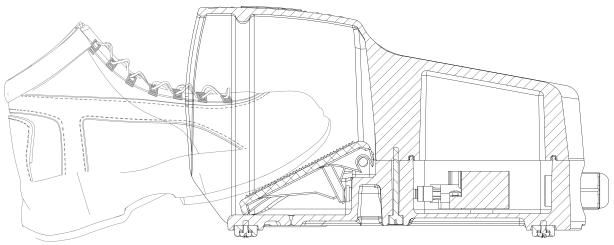
Image 6 (Foot Positioning): The shoe or safety boot must be fully inserted into the protective housing.

Activation: Apply balanced pressure with the front of your foot to the lever mechanism inside. Avoid sudden or violent impacts.

Cleaning: Dust or metal debris accumulated inside the mechanism may cause jamming over time. Clean periodically with compressed air.

Safety: The protective housing is designed to prevent accidental activation if an object falls on it. Regularly inspect the structural integrity of the housing.

4



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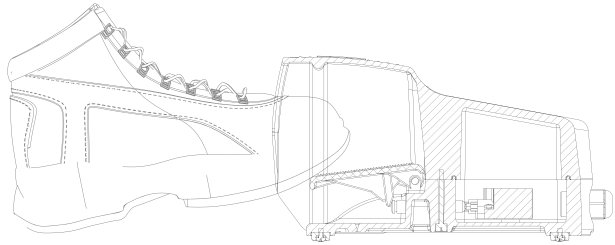

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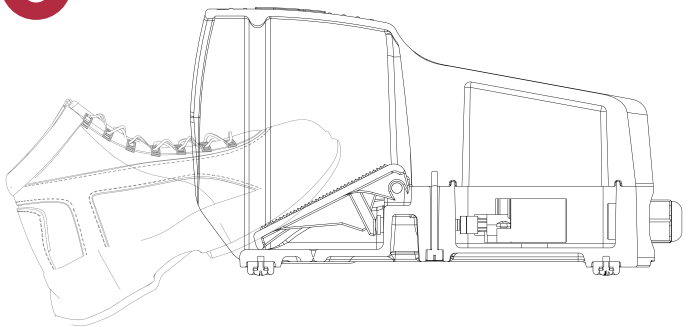
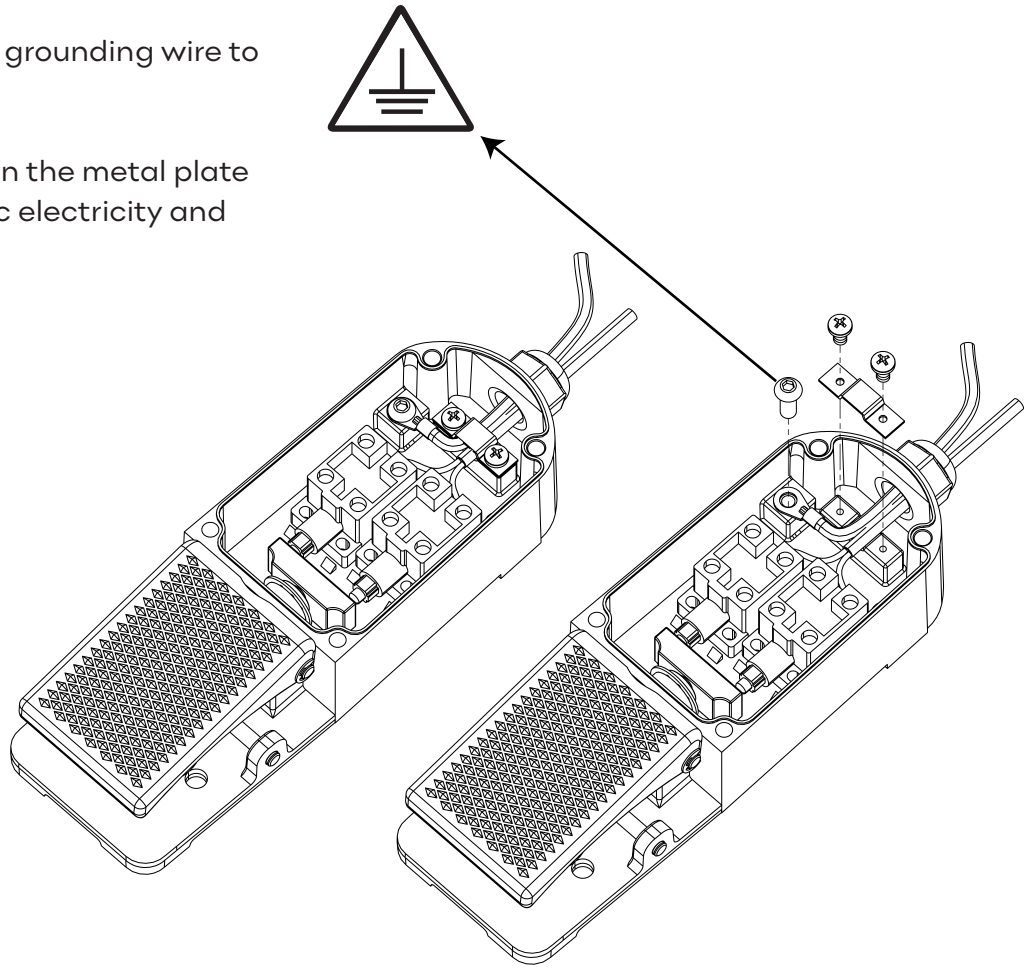


SINGLE FOOT SWITCH

Safety Grounding (Earthing)

Grounding Connection: It is mandatory to connect the yellow-green grounding wire to the terminal indicated by the grounding symbol in the diagram.

Plate and Screw Assembly: Secure the grounding conductor between the metal plate and the screw located next to the terminal block. This prevents static electricity and leakage current on the housing.

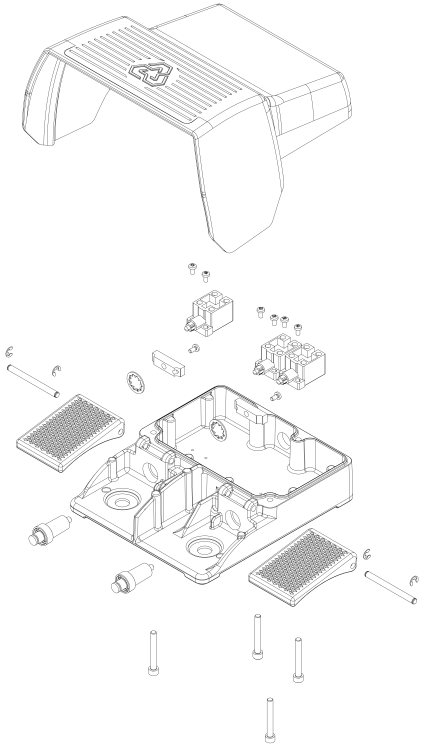


Cable Entry and Terminal Connections

Cable Gland: Pass the cables through the sealing gland located at the rear of the housing. This ensures the internal mechanism remains protected from dust and moisture.

Terminal Blocks: Insert the stripped cable ends into the respective terminal blocks and tighten the screws according to the specified torque values. Ensure that there is no contact between individual cable ends.

DOUBLE FOOT SWITCH



1. Visual Structure & Layout

This page provides a comprehensive overview of the double-pedal configuration:

•**Exploded View (Left):** Illustrates the internal assembly sequence of all mechanical and electrical components, including the cover, base plate, and individual switch modules.

•**Assembled View (Right):** Shows the final, ready-to-use state of the industrial control unit.

2. Core Mechanical Components

Based on the component list, the system consists of:

•**Industrial Housing:** A durable cover designed to protect the internal mechanisms from accidental activation.

•**Pedal Mechanism:** Each pedal utilizes a return spring and pivot pins to ensure smooth, repeatable movement.

•**Switch Modules:** High-reliability contact blocks (NC, NO, or Double Contact) that translate mechanical force into electrical signals .

3. Operational Principles

•**Activation:** The unit is activated by applying downward force through the front of the foot.

•**Tactile Feedback:** The mechanism includes a specific "pressure point" that provides mechanical resistance, allowing the operator to sense exactly when the switch is triggered.

•**Safety Housing:** The protective cover is engineered to prevent unintended operation if objects fall on the device.

4. Key Technical Specifications

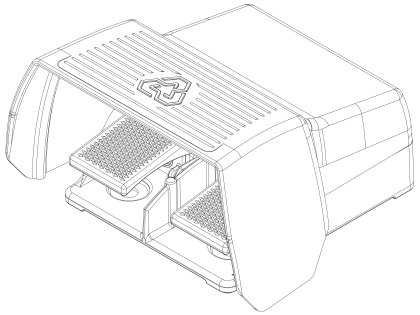
According to the technical data provided for these industrial pedals:

•**Mechanical Endurance:** Designed for 20 million operating cycles.

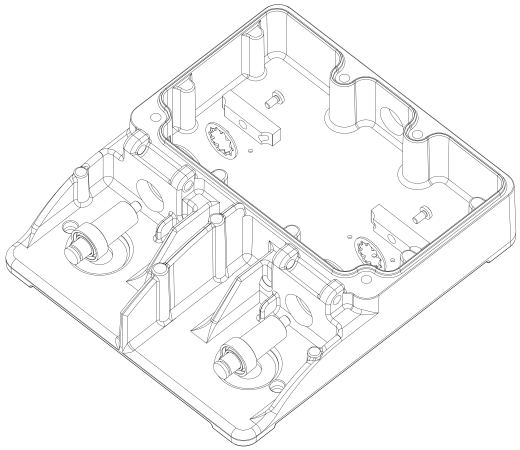
•**Temperature Range:** Reliable performance in ambient temperatures from -40°C to +80°C.

•**Electrical Ratings:** Features a thermal current of 10 A and a rated insulation voltage of 500 Vac.

•**Protection Rating:** The housing provides an IP20 protection degree.



DOUBLE FOOT SWITCH



Steps 1 & 2: Mechanical Transmission Assembly

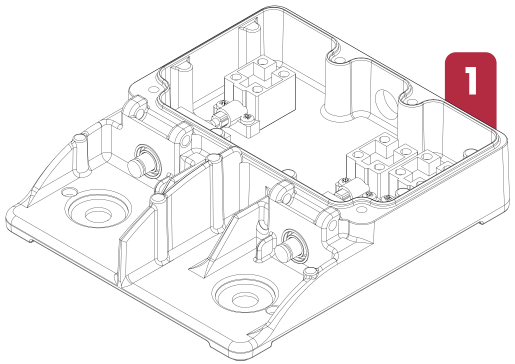
- Place the pedal pressure plastics on the outer side.
- Insert the mechanical transmission elements into the housing in the order shown.
- Verify that the serrated lock washer secures the movement of the pressure plastic.

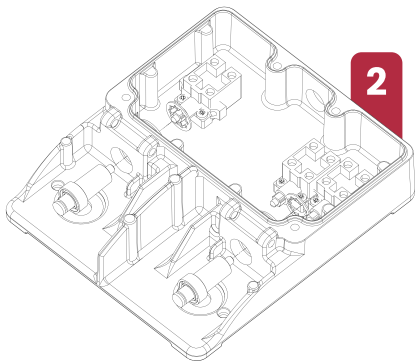
Step 3: Module Placement

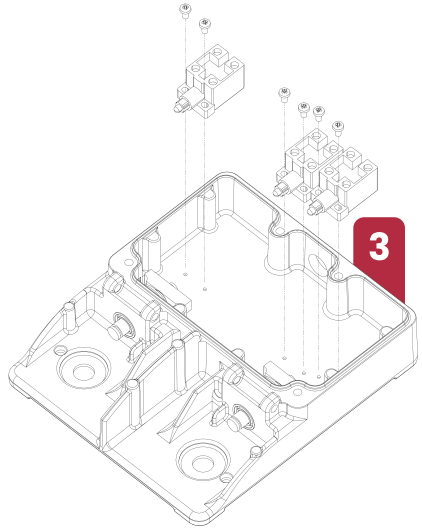
- Mount the switch modules or the analog (potentiometer) block into their designated slots based on the selected configuration.
- Ensure that the modules are triggered correctly by the pedal movement.

Important Notice

- **Caution:** Mechanical alignment must be checked before making electrical connections.







DOUBLE FOOT SWITCH

Pedal Plastic Assembly

Complete the assembly by placing the pedal plastic, pins, and circlips as shown in the diagram.

Mechanical Movement Check

After all assembly steps are finished, verify the mechanical movement, pressure point, and switching behavior by manually pressing the pedal.

Base Plate and Cover Assembly

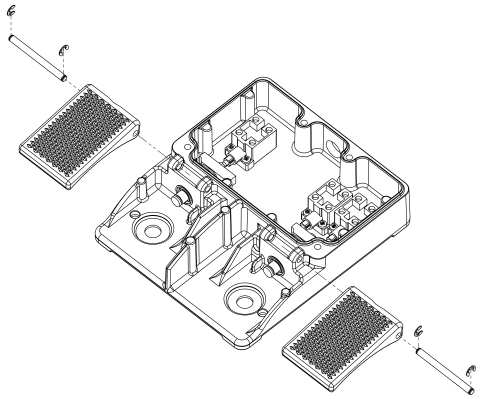
Join the base plate and the top cover with the correct orientation, ensuring that the mounting holes are properly aligned.

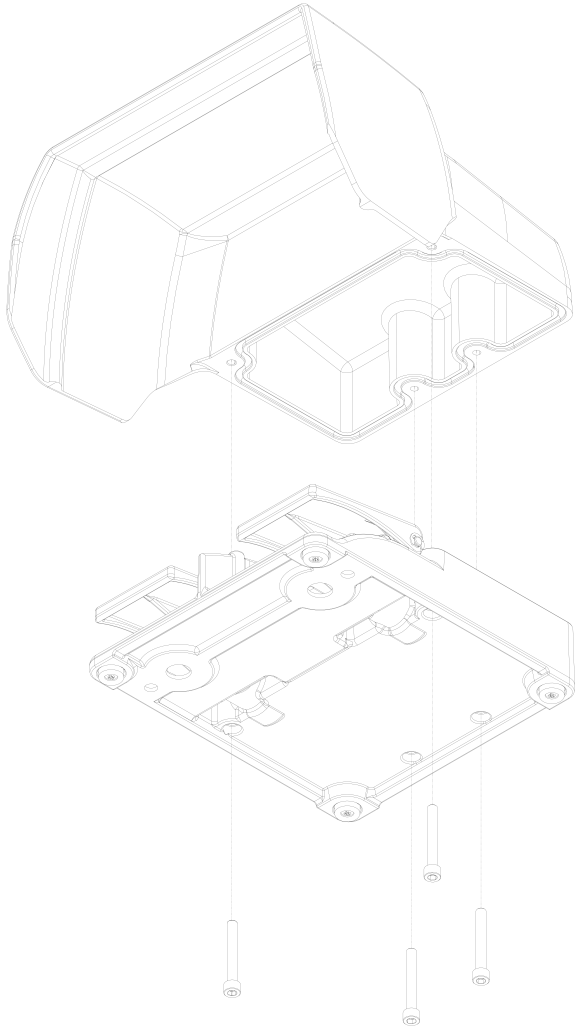
Securing the Housing

The base plate and cover must be secured using 4 bolts; tighten them gradually using a cross-tightening (star) pattern.

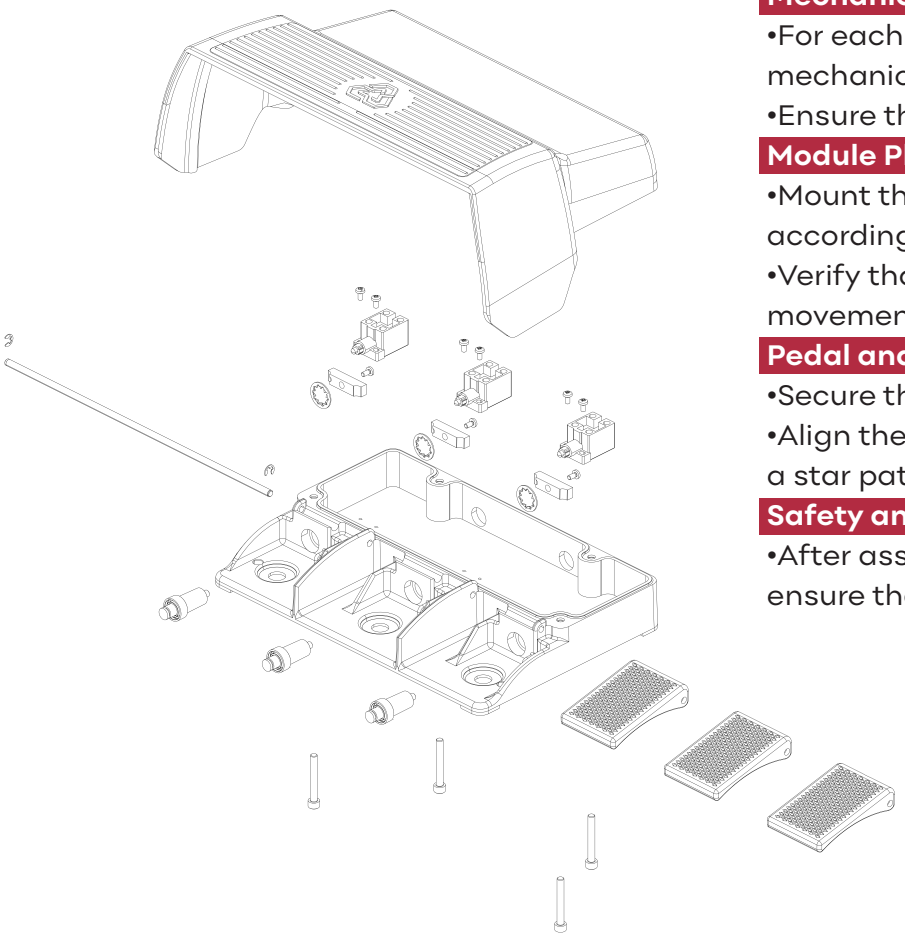
Final Verification

After assembly, verify that there are no gaps between the cover and the base plate and that all parts are fully seated.





TRIPLE FOOT SWITCH



Mechanical Transmission Assembly

•For each slot in the triple housing structure, insert the pedal pressure plastics and mechanical transmission elements in the order illustrated.

•Ensure that the serrated lock washers fully secure the movement of the pressure plastics.

Module Placement and Configuration

•Mount the switch modules or analog (potentiometer) blocks into the three designated slots according to the selected configuration.

•Verify that each module is triggered accurately and in synchronization with the pedal movement.

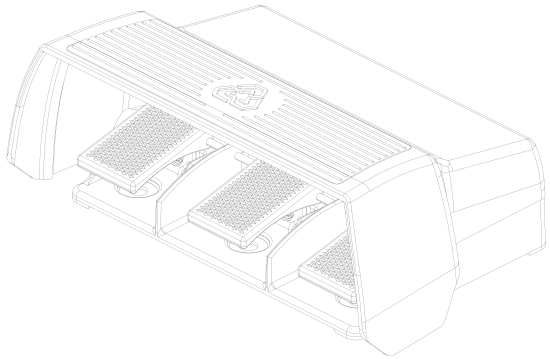
Pedal and Housing Assembly

•Secure the three pedal plastics to the housing using the pins and circlips provided .

•Align the top protective cover with the base plate and secure it by tightening the 4 bolts in a star pattern .

Safety and Sensitivity Verification

•After assembly, manually verify the tactile feedback (pressure point) of all three pedals and ensure the return springs move freely .



TRIPLE FOOT SWITCH

Steps 1 & 2: Mechanical Transmission Assembly

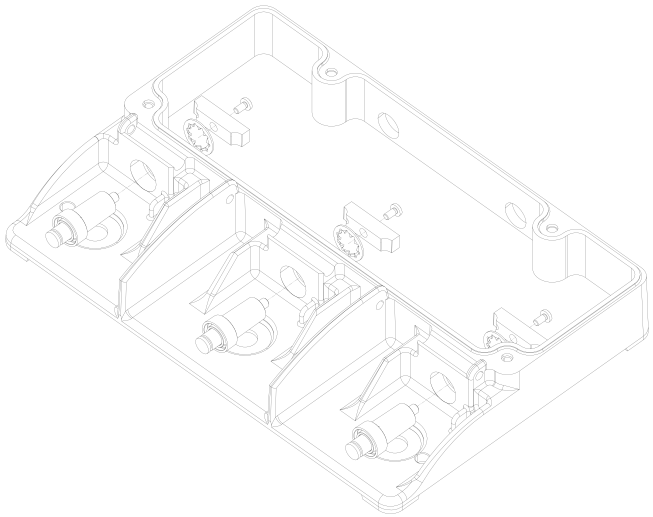
•Insert the internal trigger levers and return springs into the three housing slots in the order shown.
•Verify that the springs and levers move freely without any interference.
•Ensure that the serrated lock washer correctly secures the movement of the mechanical components.

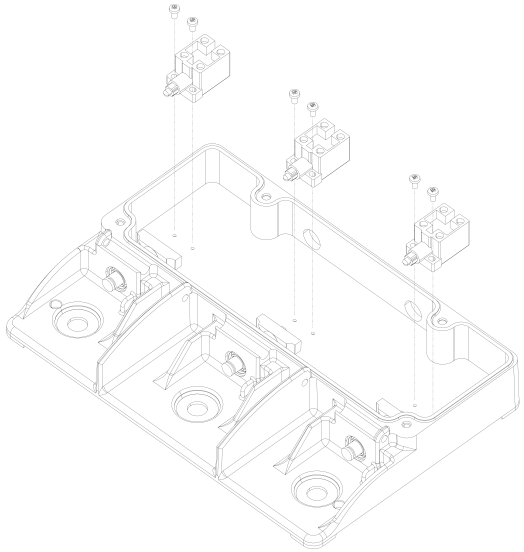
Step 3: Module Placement

•Mount the switch modules or the analog (potentiometer) block into the three designated slots based on the selected configuration.
•Confirm that each module is triggered accurately and precisely by the pedal movement.

Important Notice

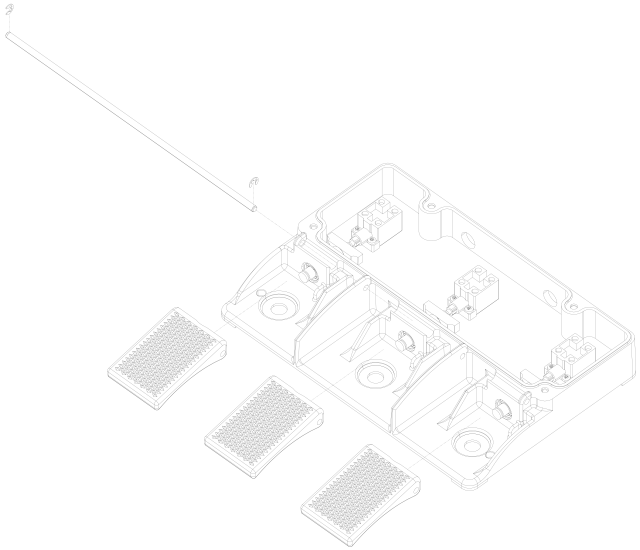
•**Caution:** Mechanical alignment must be checked and verified before making any electrical connections.

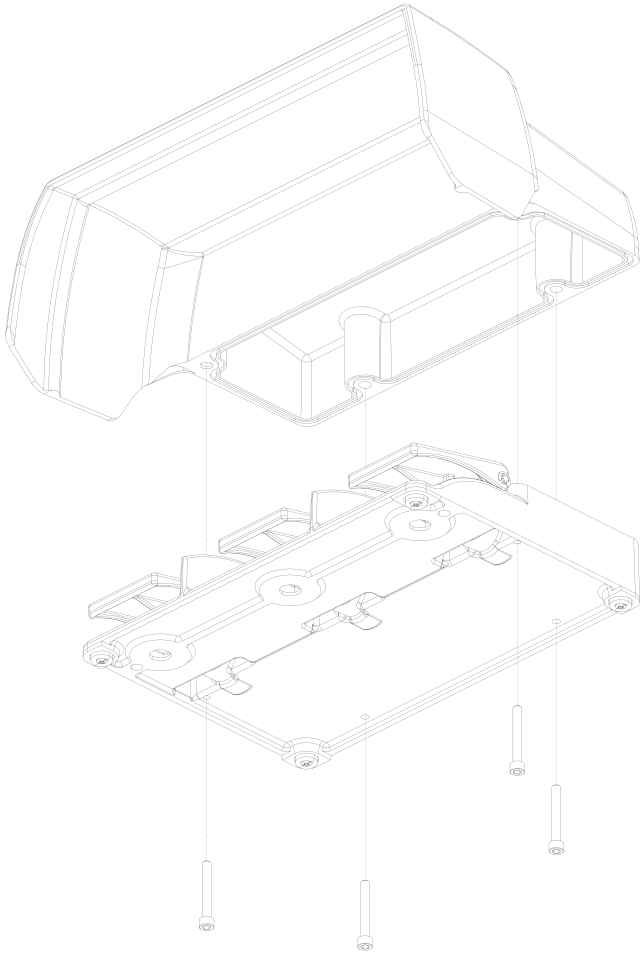




TRIPLE FOOT SWITCH

Pedal Plastic Assembly: Complete the assembly by inserting the three pedal plastics, pins, and circlips as shown in the diagram.
Base Plate and Cover Assembly: Join the base plate and the top protective cover with the correct orientation, ensuring the mounting holes are perfectly aligned.
Securing the Housing: Secure the base plate and cover using 4 bolts. Tighten the bolts gradually using a cross-tightening (star) pattern.
Gap and Seating Verification: After assembly, verify that there are no gaps between the cover and the base plate and that all components are fully seated in their designated positions.





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