











RIVENDITORI

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Notes:

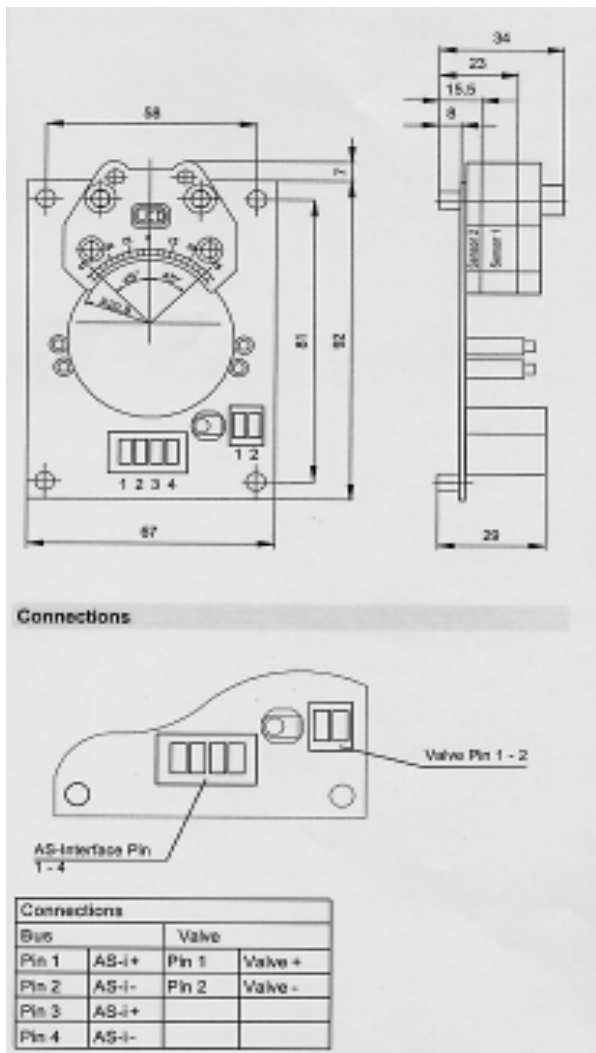
OPERATION AND SERVICE MANUAL



(Example of connection with two inductive sensors)

Summary

BEP-12 (Pepperl+Fuchs inductive sensors)



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Introduction

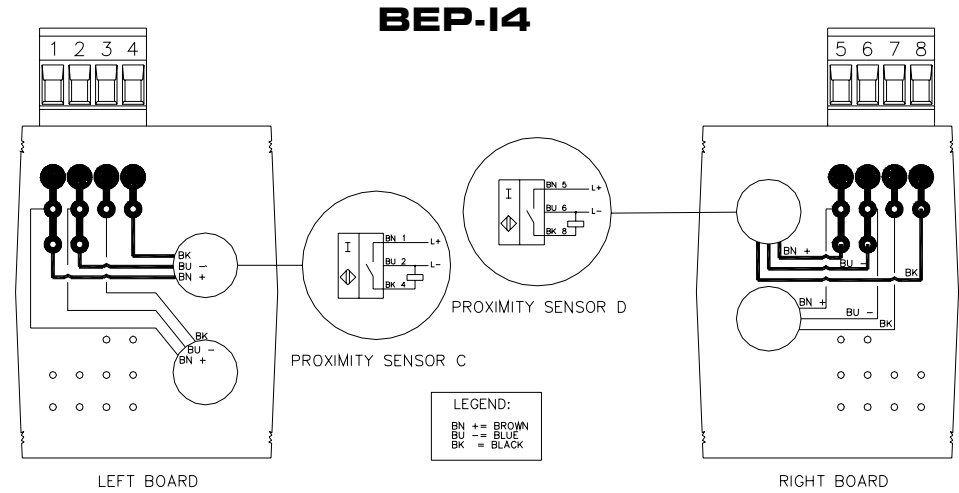
Kind Customer,

We at G.T. Attuatori congratulate You for preferring us in the choice of your new accessories.

G.T. Attuatori has been for a long time in pneumatic actuators field, in which we distinguished for manufacturing accuracy by using the most advanced mechanical technologies.

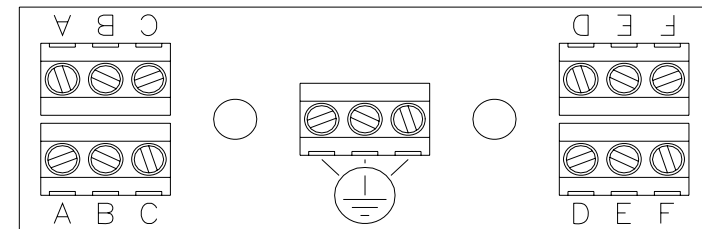
Our Technical Office staff develops solutions for installations problems by using superior level software, optimizing the projects according to all kind of sollecitations involved in machinery operation.

The G.T. Attuatori BEP-BOX is characterized by its “complete” and “essential” structure, wich allows a quick and safe use, assuring high performance and precision, being manufactured by using selected, high fidelity and long duration components and materials.



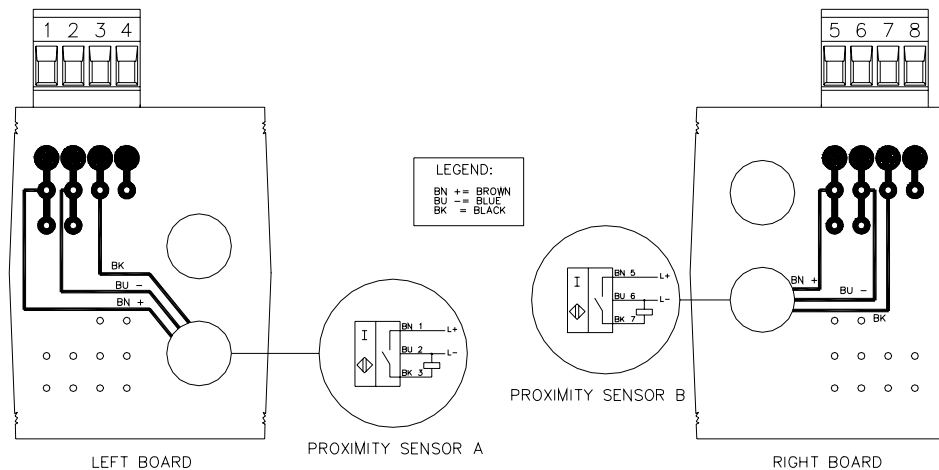
1. Supply of “C” sensor 10÷60 VDC max. 200mA
2. “C” negative ground
4. PNP positive output for user
5. Supply of “D” sensor 10÷60 VDC max.200mA
6. “D” negative ground
8. PNP positive output for userper utilizzatore

In the version with four micro-switches, an additional card for the eventual control of an electro-valve is introduced



Generality

BEP-12



Board BEP-12 connection

1. Common "C" micro-switch max. ~250V 5A
2. N.O. (normally open) "C" micro-switch
3. N.C. (normally closed) "C" micro-switch
4. Common "D" micro-switch
5. N.O. (normally open) "D" micro-switch
6. N.C. (normally closed) "D" micro-switch

The GT BEP explosion-proof indicating box conceived and constructed according to the Directive **ATEX 94/9/CE** with reference to the European Standard **EN 50014 (general requirement)**, **EN 50018 ("d" explosion-proof boxes)** and **EN 50281-1-1** (electrical constructions destined to environments in which there are combustible dusts) is installed on a rotating pneumatic actuator, mounted on a ball valve, butterfly valve, male valve, roller shutter valve or on a mechanical organ which requires a position indication and, as a consequence, an electrical signal.

Made by die-cast aluminium and painted with epoxy-polyester powder, the signal Boxes of G.T. ATTUATORI have the possibility to be adjusted in height towards the upper surface of the actuator. Usable without distinction with shafts having protrusion over the actuator top of 20mm.(NAMUR 20), 30mm.(NAMUR 30), 40mm. and 50mm.(NAMUR 50), due to the possibility of easy adjustment by fixed steps, obtainable simply changing the position of the screws which fasten the feet-brackets on the box body.

Other peculiarity of BEP-BOX is the possibility to easily self-adapt to the two different top drillings required by NAMUR standard for the fixing of the box to the actuator body that are mm.30x80 or mm. 30x130, with the simple reversal of the two feet-brackets from left to right and vice versa.

The adjustment of the switches control cams is done by two screws which allow a fine positioning of same cams with a system to unblock and block them against unintentional rotation.

The terminal boards are pull-out type to make easier the cables connection.

All G.T. Attuatori boxes may be provided with the patented tridimensional indicator "Perry" visible by the top and by the side.

Cams command rod and all the fasteners are in stainless steel.

Warnings

The installation and the starting up of the BEP-BOX have to be done as described on following instructions.

The device can be put in service only by personnel which know the contents of these instructions.

Pneumatic actuators produce a strong torque consequently during the installation and the starting up must be observed safety instructions to avoid possible injuries.

Before to open the box cover be sure that power has been previously switched off.

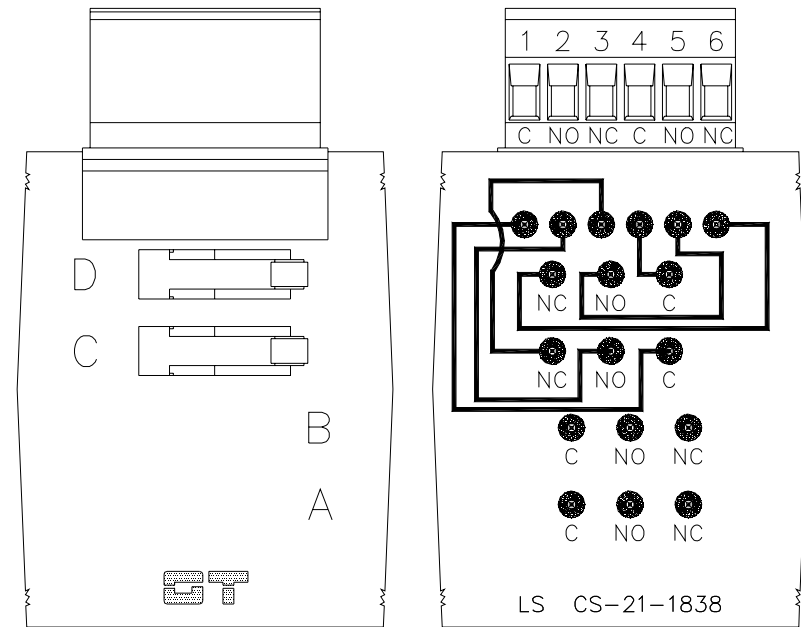
Strongly screw in the screws UNI 5931 in AISI 304 which close the cover before the starting up.

Take care that may be present residual electrostatic charge.

For cleaning use damp cloth only.

Besides the ground connection foreseen inside the box, the latter is equipped with a second externally positioned ground connection.

BEP-M4



BEP-M4 additional board connections

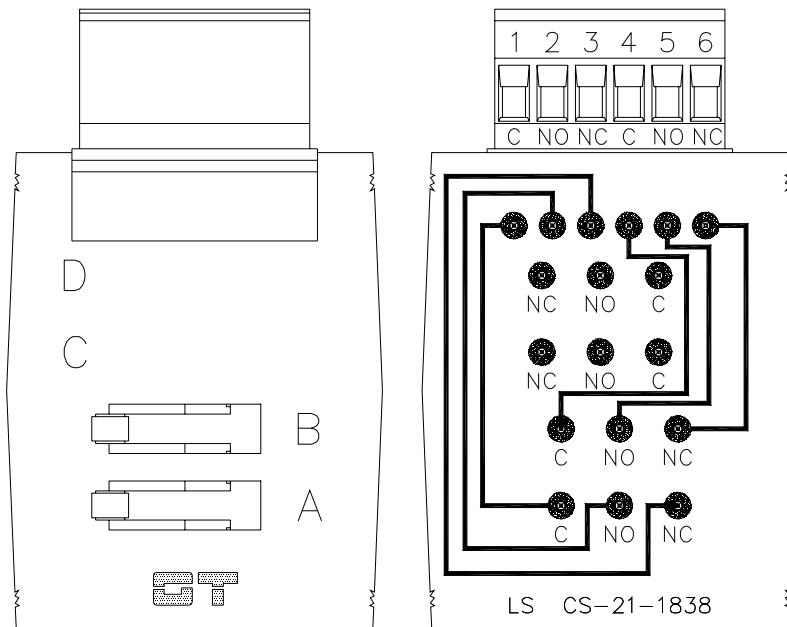
1. Common "C" micro-switch max. ~250V 5A
2. N.O. (normally open) "C" micro-switch
3. N.C. (normally closed) "C" micro-switch
4. Common "D" micro-switch
5. N.O. (normally open) "D" micro-switch
6. N.C. (normally closed) "D" micro-switch

Electrical connections



CAUTION: *To be sure that power is switched off before to proceed with electrical connections.*

BEP-M2



Board BEP-M2 connections

1. Common "A" micro-switch max. ~250V 5A
2. N.O. (normally open) "A" micro-switch
3. N.C. (normally closed) "A" micro-switch
4. Common "B" micro-switch
5. N.O. (normally open) "B" micro-switch
6. N.C. (normally closed) "B" micro-switch

Safety and caution general conditions

The same construction of the box is practically the protections against all the parts in motion all placed inside the box.

Possible damaged power cable must be replaced !

For all the works regarding installation, starting up, equipping, use, utilization and using mode modifications, ordinary maintenance and inspections must be followed the putting out of service procedures specified in this Operator's manual.

The Operator's manual must be always to hand, in order to have the possibility to look it up to verify correct operating cycle every time there are doubts or it is necessary a new setting up.

Putting out of service

Whenever it is requested to put out of service the box, it is necessary to follow some basic rules able to protect the operator health and the environment too.

Sheaths, flexible tubes and plastic materials, or in any case non metallic parts, must be disassembled and disposed separately.

Pneumatic and electrical components as valves, solenoid valves, switches and transformers, if any, should be disassembled to be re-used if in good conditions otherwise to be overhauled and recycled when possible.

Metal parts should be disassembled and grouped together by metal type to be casted again in order to allow the recycling of the materials forming the box.

Checks and maintenance of the explosion-proof boxes

The BEP BOX needs no extraordinary maintenance. In fact, inside it, there are no organs which need it.

When it is necessary to open the box, unscrew the 8 fixing screws.

ONLY AFTER CUTTING THE VOLTAGE

- The terminals of the electrical connections must be strictly tightened to avoid high contact resistance and consequent overheating
- The cover must be strictly tightened and blocked against the loosening of the suitable locking screw
- The replacement of fittings and parts of the cable inputs must be carried out using identical components to those supplied by the manufacturer in order to guarantee a suitable protection

The surfaces of the explosion-proof joints must not be modified and no seals must be introduced different from those supplied by the manufacturer. These surfaces must be kept clean.

When substituting the clamping screws please make sure you use screw type A2-70 UNI 5931

Cable inputs

The connections must be made by means of cable inputs or piping complying with the standard EN 60079-14.

The cable input must be made so as not to alter the specific properties of the protection mode as it is indicated in the standard EN 50018 (paragraphs 13.1 and 13.2) for the EEx-d boxes (explosion-proof protection mode).

When the cable input is made by means of a cable gland, it must be correctly chosen with respect to the type of installation and cable. The cable gland must be strictly tightened so that the sealing rings can create the pressure necessary to:

- a) avoid the transmission of mechanical strains onto the terminals;
- b) guarantee the mechanical protection (IP degree) of the box.

The cable inputs must be made with EEx-d locking junctions or cable glands certified according to the standards EN 50014, EN 50018 and EN 50281-1-1. Furthermore, any fittings which are not supplied by the manufacturer cannot be added. An anti-loosening blocking mechanism for the UNI 338 cylindrical threads must be produced using a Loctite sealing procedure

Ground connection

Besides the ground connection foreseen inside the box, the latter is equipped with a second externally positioned ground connection.

It must be connected to the general ground of the installation using a suitable section conductor.

According to the S section of the line conductor, the section of the ground conductor must be:

$\approx S$	For $S < 16\text{mm}^2$
16	For $16\text{ mm}^2 < S \leq 35\text{ mm}^2$
$\geq 0.5 S$	For $S > 35\text{ mm}^2$

Installation

Adjust the feet-brackets at desired height, in order to insert the milled bottom part of the box rod into the slot on the upper part of the actuator shaft.

The feet-brackets may be inverted to change the wheelbase of fixing bolts from 80 mm. to 130 mm.

Fix the box to the actuator by mean the bolts issued with the box.

Adjustment

To adjust the cams of BEP-BOX please to proceed as shown on below picture:



1- Unscrew the fixing screws using an exagonal wrench of 4 mm.



2- Rotate and pull up the cover taking care to do not deform the indicator rod.

Safety instructions for the installation in dangerous areas

Installation of the explosion-proof boxes

Before installing the BOX, carefully read the user and maintenance manual.

Suitability of the GT BEP BOX for the installation site

In the case it is used in areas with danger of explosion, it is important to check that the box is suitable for the area classification and for the characteristics of the inflammable substances present on the installation.

The fundamental safety requirements against the risk of explosion in the classified areas are established by the European directives 94/9/CE of 23 March 1994 (with reference to the equipment) and 1999/92/CE of 16 December 1999 (with reference to the installations).

Areas with presence of gases, inflammable vapours or fogs, and dusts

The criteria for the classification of the areas with a risk of explosion are established by the standards EN 60079-10 (classification of the dangerous areas due to the presence of gases) and EN 50281-3 (classification of the areas in which combustible dusts can be present).

The technical requirements of the electrical installations in the classified areas are established by the standards EN 60079-14 (choice, installation, maintenance and repairing of the electrical constructions to be used in dangerous areas) and EN50281-1-2 (electrical constructions destined to environments where there are combustible dusts – Electrical constructions protected by means of an envelope – Choice, installation and maintenance).

According to these technical and legislative provisions, the choice of the box must consider the following factors:

- type of installation: surface installations (group II)
- area classification: 0, 1, 2, 20, 21, 22 (for which equipment of 1, 2, 3 category respectively is suitable)
- characteristics of the inflammable substances present in the form of gases, vapours or fogs, and dusts layer
- sub-group IIA, IIB, IIC
- T6 temperature class (it defines the ignition temperature of gases)
- IP 66 (degree of protection)
- T (maximum surface temperature).

Safety instructions

Description

The GT BEP model box has been conceived and constructed according to the Directive ATEX 94/9/CE Gruppo II, category 2 GD, with reference to the standards EN 50014, EN 50018 and EN 50281-1-1.



The protection mode is: **EExd IIB T6 IP66 T 85° C**

Electrical features

	Proximity sensors	Inductive sensors	Micro-mechanical
Maximum nominal voltage	10 ÷ 60 v	25 ÷ 30 V DC	250 V
Maximum nominal current	200 mA	100 mA	5A
Frequency	3000 Hz		50 ÷ 60 Hz
Environmental temp.	- 20 ÷ + 70 ° C	- 20 ÷ + 70 ° C	- 20 ÷ 70 ° C

Marking

CE  II 2 GD

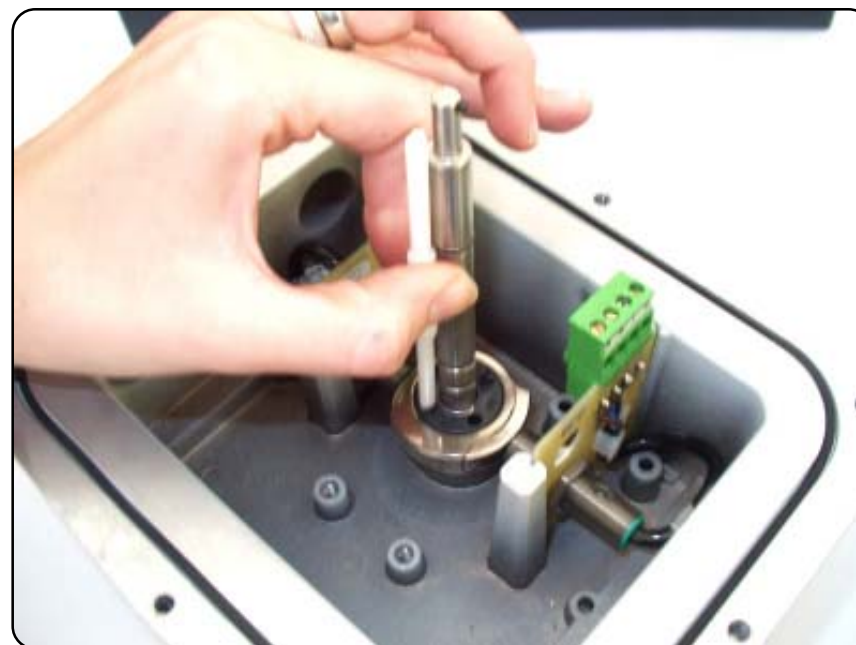
	Marking of compliance with the applicable European directives
....	n. of notified organism (for ATEX surveillance)
	Marking of compliance with the directive 94/9/CE and with the relative technical rules
II	Group II (surface)
2	Category 2 apparatus
GD	Explosive atmosphere with presence of gases, vapours, fogs and dusts
EExd IIB T6	Type of protection, gas group, class of temperature
IP66	Degree of protection
T 85 °C	Maximum surface temperature
Environmental temperature	-20 + 70° C

Dangerous area		Installation category in compliance with the Directive ATEX 94/9/C
Gases, fogs, vapours and dusts	Zone 1/21	2 GD
Gases, fogs, vapours and dusts	Zone 2/22	3 GD

The adjustment of BEP-BOX cams is possible operating by means of proper screwdriver, present on the box, on the proper adjusting screws present on the top cam.

Push the screw A to unblock the lower cam, then rotate the screw to move the cam to desired position and lastly release the screw to block the cam.

Repeat same operation with the screw B to unblock the upper cam, then rotate the screw to move the cam to desired position and lastly release the screw to block the cam.



Cams adjustment by means of the proper plastic tool.

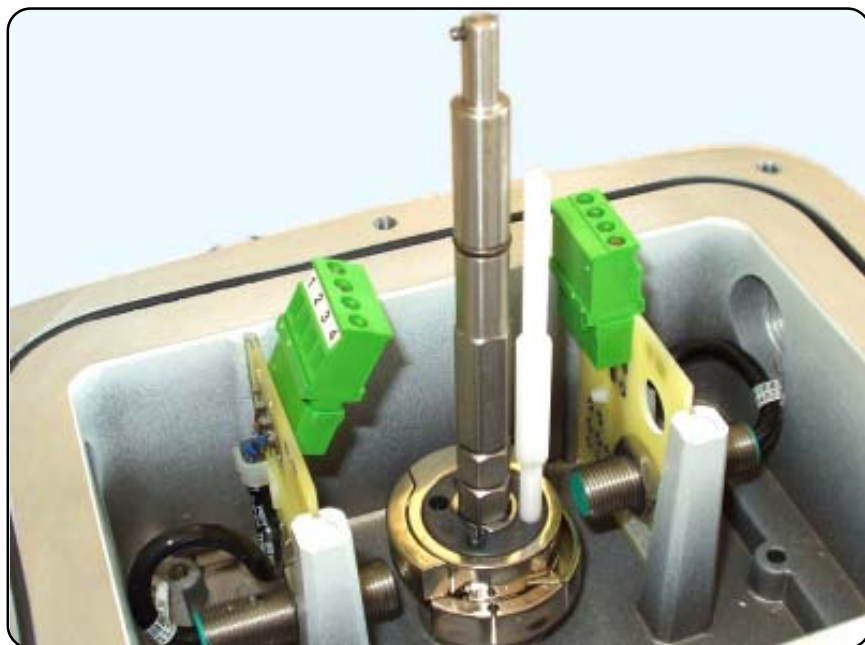
In the case of BEP-BOX with 4 cams, it is possible to adjust the 2 lower cams by inserting the tool into the 2 holes present on the top of upper cams.

Finished the adjustment proceed with the riassembling of the box cover.



CAUTION: *During disassembling and cams adjusting it is possible that the O-Ring placed on the top of box body comes out of proper seat.*

Take care that the O-Ring is well placed into his seat before to re-assemble the cover to avoid malfunction of the BEP-BOX and/or leakages of the sealing.

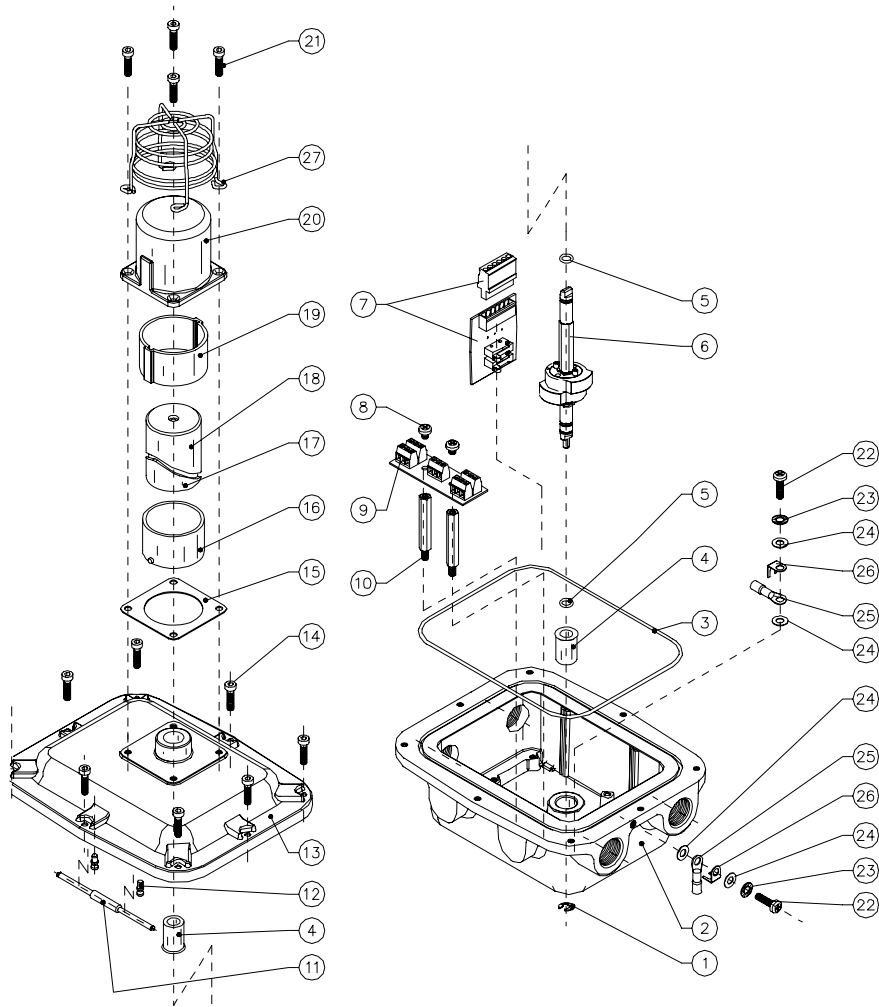


Adjustment of lower cams.

Spare parts

ID	Descrizione	Q.tà	Materiale	Riferimenti
1	BENZING CIRCLIP Ø10	2	Stainless steel	UNI 7434
2	BOX Eexd 4 x 3/4" NPT GREY 7035	1	Aluminium alloy	EN AB46100
3	O-Ring Ø190.18x2.62	1	NBR 70 SH	OR 3750
4	BRONZE BUSH Ø16x9.9	2	brass OT68	
5	O-Ring Ø6.75x1.78	2	NBR 70 SH	OR 106
6	ROD-CAMS ASSEMBLY	1	Stainless steel + IXEF 1022	
7	LEFT BOARD + MICROSWITCHES	1		
8	SOCKET HEAD SCREWS M5x8	2	steel AISI 304	UNI 7687
9	SOLENOID VALVE BOARD	1		
10	PIN SPACERS M5x50	2	brass OT68	
11	SCREWDRIVER	1	HOSTAFORM	
12	SCREWDRIVER HOLDERS	2	HOSTAFORM	
13	BOX COVER GREY 7035	1	Aluminium alloy	EN AB46100
14	SOCKET HEAD SCREWS M5x20	8	steel AISI 304	UNI 5931
15	UPPER DIE CUT SEAL	1	NBR 70 SH	
16	MOBILE BLACK RING	1	ABS	
17	HALF LOWER YELLOW INDICATOR	1	ABS	
18	HALF UPPER YELLOW INDICATOR	1	ABS	
19	FIXED GREY 7035 INDICATOR RING	1	ABS	
20	TRANSPARENT INDICATOR DOME	1	POLYCARBONATE	
21	SOCKET HEAD SCREWS M5x15	4	steel AISI 304	UNI 5931
22	SOCKET HEAD SCREWS M5x10	2	steel AISI 304	UNI 7687
23	TOOTHED WASHER Ø5	2	steel AISI 304	UNI 8842
24	FLAT WASHER Ø5	4	steel AISI 304	UNI EN ISO 7089
25	WIRE TERMINAL	2		
26	WIRE TERMINAL ANTI-ROTATION WASHER	2	steel AISI 304	
27	ANTI-ELECTROSTATIC CAGE	1	Steel Fe 360	UNI EN 10025

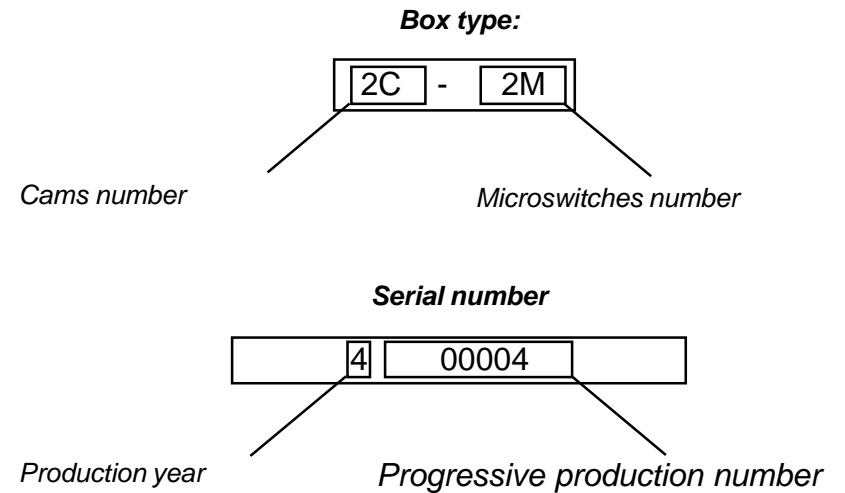
Spare parts



Identification



On top of box cover is present an identification plate showing the box type identification and the serial number of the box.
On the lower left corner, close to the logo Ex is indicated the switches type and related technical data.



Technical data

Allowable environment temperature	-20÷+70° C on work -40÷+ 80° C stock
Protection type	IP66
Dimensions	SEE on Lay-out
Approximate weight	3.8Kg
Body and brackets	Dye cast aluminium (UNI 5076 alloy) powder coated
Electrical connections	Extractable 1,5mm ² terminals AWG14
Fasteners	Stainless steel AISI 304
Connection cables fittings (user instruction)	Must be certified as standard EN50014, EN 50018 and EN 50281-1-1 ATEX (directive 94/97CE) and with a IP66 minimum protection grade
Rotation way	Reversibile
Adjustment	By block and unblock cams
Mechanical microswitches max.4	OMRON SSG-5L2P~250V 5 A or similar
Proximity sensors max.4	P+F NJ2-12GM40-E 10 ÷60V d.c. 200mA
Inductive sensors max.2	P+F PL1-F25-B23-S 25 ÷30V DC 100mA

Lay-out

