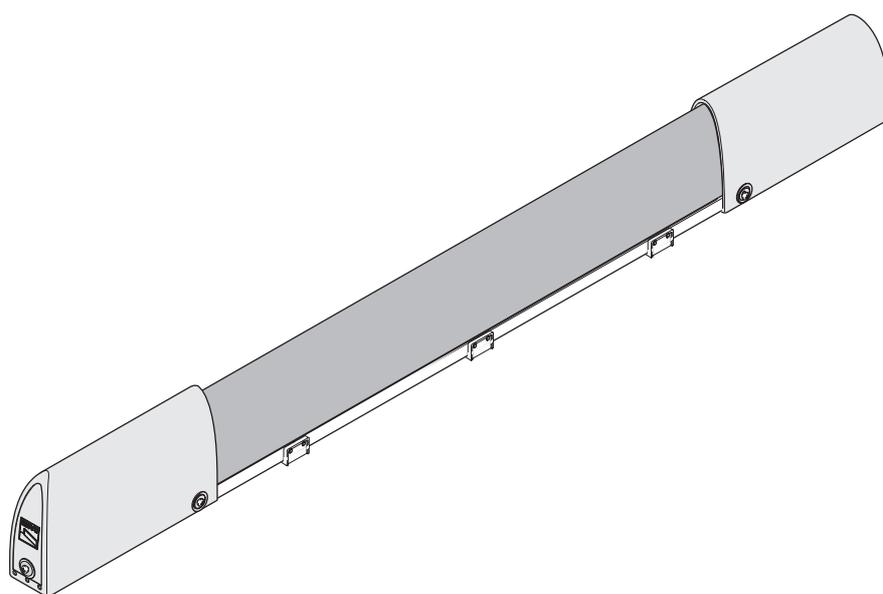


*MECHANICAL CONTACT RUBBER SAFETY
SENSITIVE EDGE*

DF



INSTALLATION MANUAL

1 Legend symbols



This symbol indicates sections to read carefully.



This symbol indicates sections regarding safety.



This symbol marks information that is meant specifically for the end user.

2 Destination

2.1 Destination use

DF safety sensitive edges are meant mainly for promiscuous use gate automation systems, for protection against crushing and trapping hazards. Detection is through contact along the entire length of the edge, including its two ends, thanks to the new articulated lever system.



The DF sensitive edge should not be employed for any other purpose than its intended use, as specified above. Installing the device in a manner other than as indicated in the manual may hamper the device's safety function.



This manual is intended only for the technical personnel qualified for the installation.

3 Standard followed

The following standards were complied with for this product: EN 12978, UNI EN 954-1, CEI EN 60335-1, UNI EN 12453.

4 Description

4.1 Sensitive edge

The sensitive edge is built in compliance with current safety standards, and it is certified (PR&S no. 04.363) for vertical application.

The articulated lever mechanism is an exclusive CAME CANCELLI AUTOMATICI S.p.A. patent

The detection device is made up of a rubber profile, two rubber plugs, within which an articulated lever mechanism operates, joined by a \varnothing 1.3 mm steel cable. The entire device is supported by an aluminium profile.

The sensitive edge is supplied preassembled in the following lengths:

001DF15 - Mechanical contact rubber sensitive edge L = 1,5 m.

001DF17 - Mechanical contact rubber sensitive edge L = 1,7 m.

001DF20 - Mechanical contact rubber sensitive edge L = 2,0 m.

001DF25 - Mechanical contact rubber sensitive edge L = 2,5 m.

The following items in lengths up to 4 or 6 meters may be supplied for other needs:

001CMP - Sensitive rubber and aluminium profile.

001TMF – Set of mechanical contact mechanisms and plugs for sensitive profiles (4 m).

001TMF6 – Set of mechanical contact mechanisms and plugs for sensitive profiles (6 m).

001DFI - Plastic container with cable gland, and control card, which checks for any mechanical damage of electrical connections between the sensitive edge and the electrical panel.

4.2 Connection specifications

The Power supply must be SELV or PELV.

Circuits connected to DF and DFI devices must be protected against power surges, as in their contacts' maximum capacity.

4.3 Technical information

SENSITIVE EDGE

Outputs: C-NC-NO

Contact range: 3A / 24V (Resistive load)

Maximum length: 6 m

Protection level: IP54 (for vertical fastening)

IP44 (for non-vertical fastening)

Category: 2/3 (EN 954-1)

Insulation class: 

Maximum detection speed: 12 m/min.

Materials: CCA 48S_HA thermoplastic rubber profile

SEBS 60S_HA thermoplastic rubber plugs

POM articulated levers

steel cable

Operative temperature:



DFI BOX

Power supply: 12V<24V AC/DC

63 mA (12V/24V) fuse

Outputs: NC

Contact capacity: 3A / 24V (Resistive load)

Inlet: C-NC-NO

Protection level: IP56

Category: 2/3 (EN 954-1)

Insulation class: 

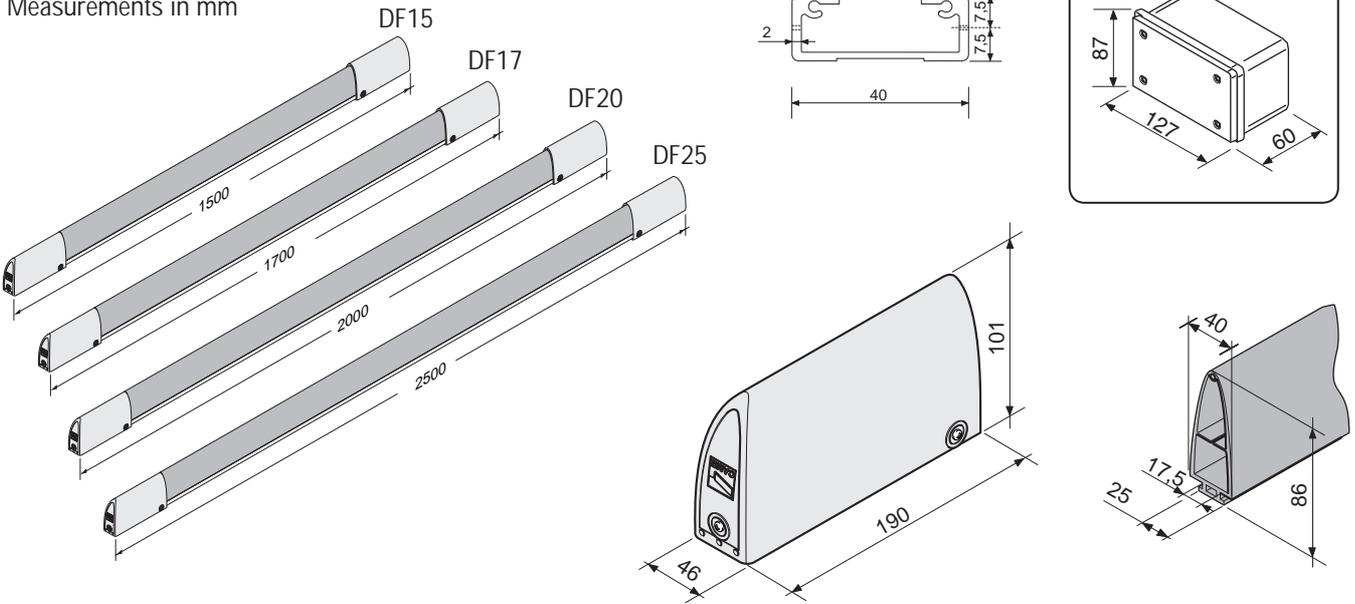
Material: box made of self-extinguishing techno polymer insulation

Operative temperature:



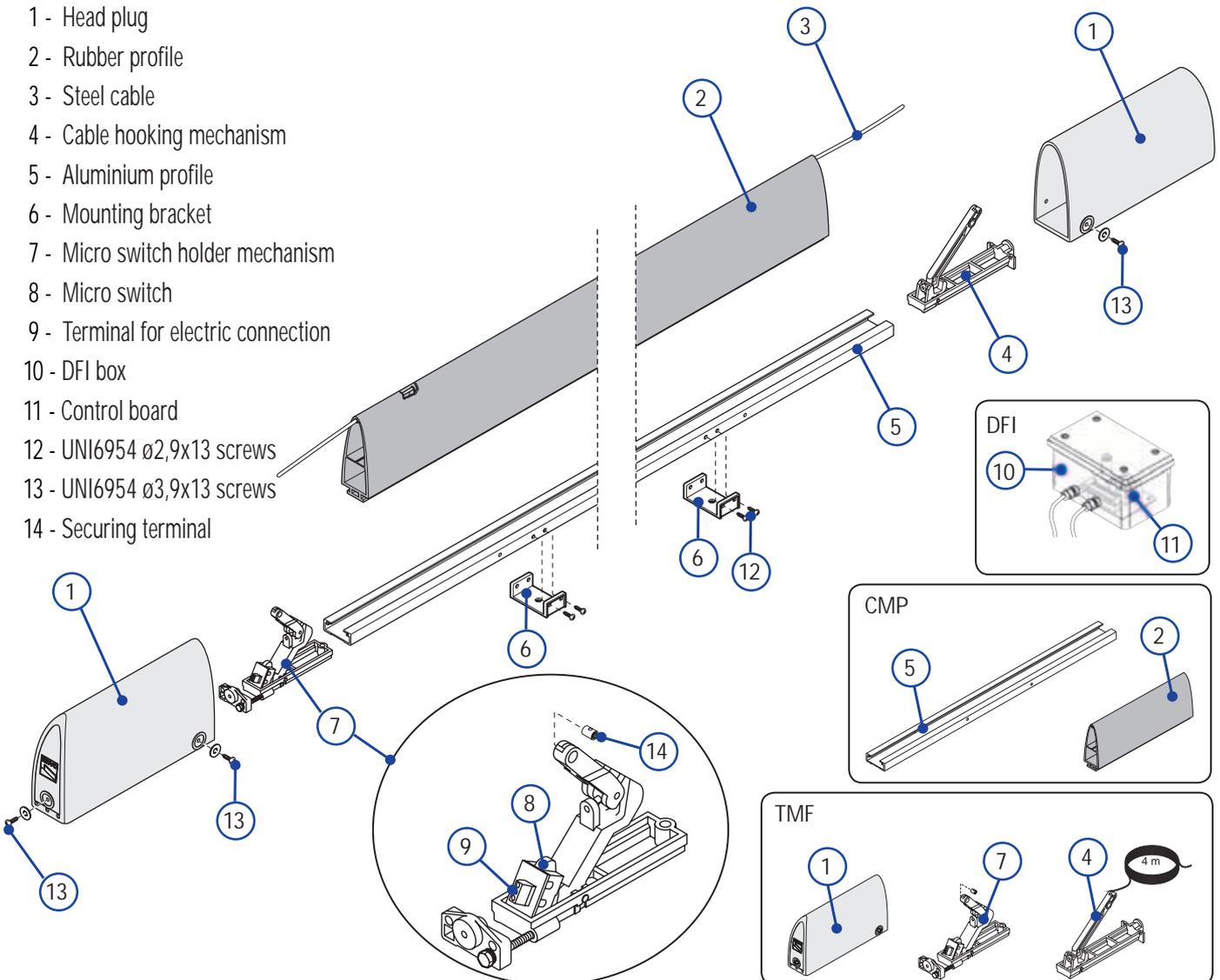
4.4 Size measurements

Measurements in mm



4.5 Parts description

- 1 - Head plug
- 2 - Rubber profile
- 3 - Steel cable
- 4 - Cable hooking mechanism
- 5 - Aluminium profile
- 6 - Mounting bracket
- 7 - Micro switch holder mechanism
- 8 - Micro switch
- 9 - Terminal for electric connection
- 10 - DFI box
- 11 - Control board
- 12 - UNI6954 $\varnothing 2,9 \times 13$ screws
- 13 - UNI6954 $\varnothing 3,9 \times 13$ screws
- 14 - Securing terminal



5 Installation

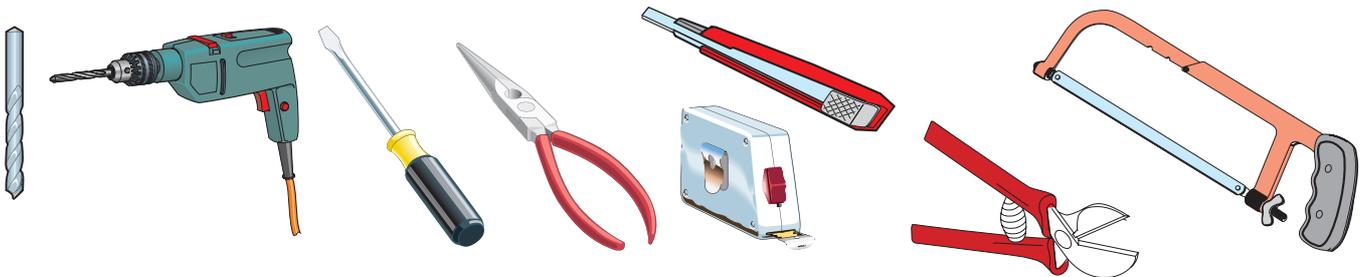
⚠ Warning: improper installation may cause serious damage. Follow all installation instructions.

5.1 Preliminary checks

⚠ It is necessary to verify that the sensitive edge's fixing point is on a suitable surface prior to installation.

5.2 Tools and materials

Make sure all tools and materials necessary are within reach to install the edge in maximum safety, according to regulations in force. The following figure illustrates the minimum equipment for the installer.

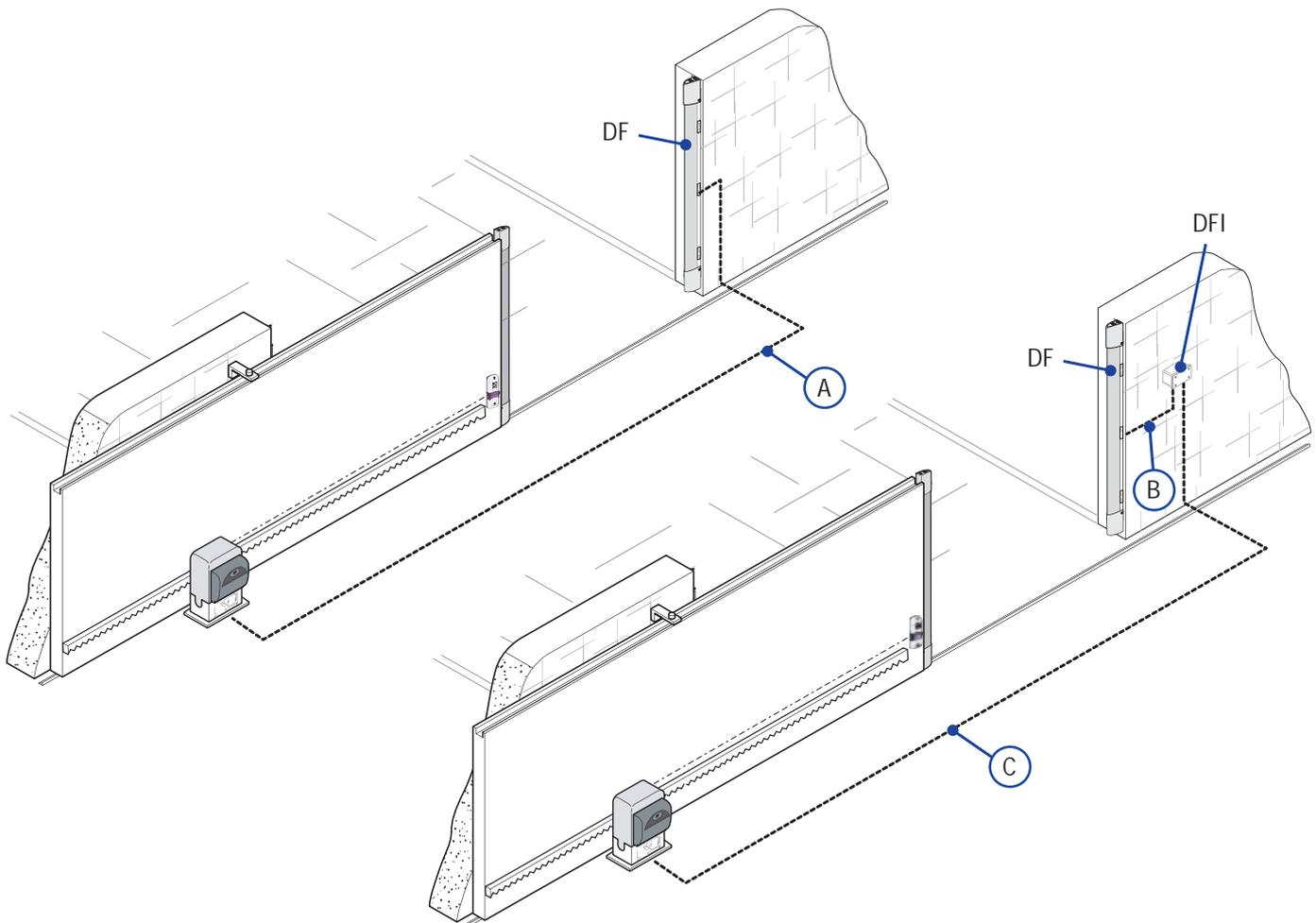


5.3 Cable list

Prepare ducts and tubes suitable for the passage of electrical wiring so as to guarantee protection against mechanical damage. Type of cables recommended:

Connection	Cable type and minimum section	Maximum length allowed
A - Output contacts C - N.C.	FROR (flexible) 2 x 0.5 mm ²	30 m*
B - Output contacts C - N.C. - N.O.	FROR (flexible) 3 x 0.5 mm ²	30 m*
C - Output contacts C - N.C. + Power supply 12-24V	FROR (flexible) 4 x 0.5 mm ²	30 m*

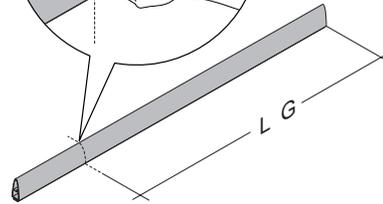
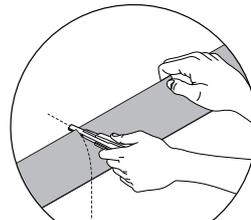
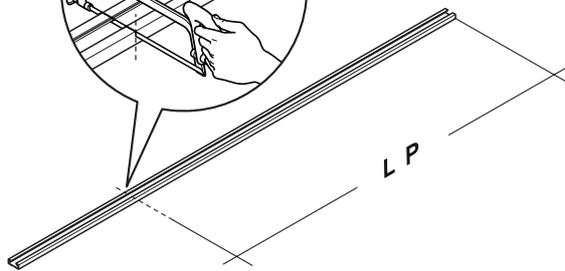
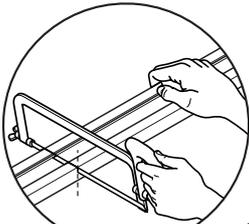
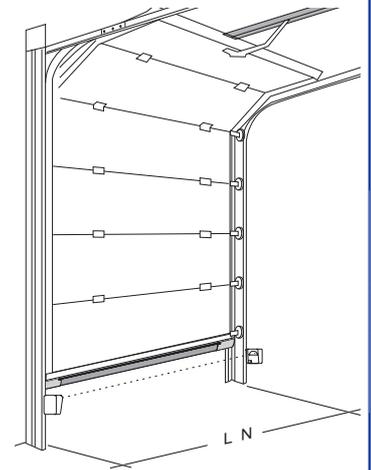
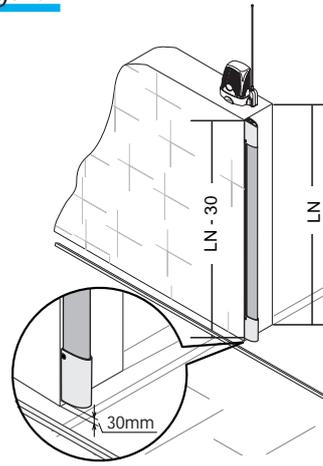
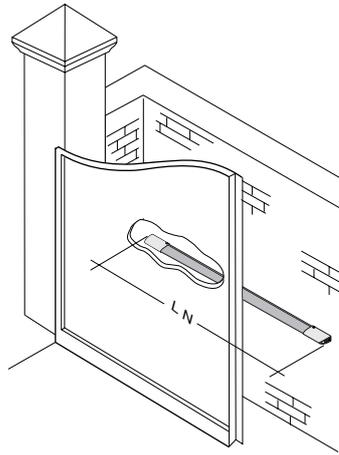
*A longer cable may be used as long as the section is greater.



5.4 Preparation of sensitive edge for varying lengths

1) Identify the area to be protected, nominal length (LN).

NB.: in vertical installations, reduce nominal length (LN) by 30 mm to prevent contact with ground.

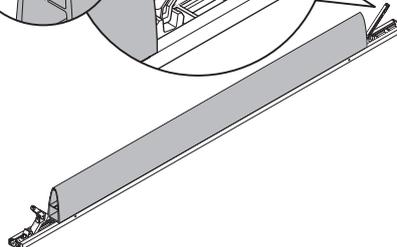
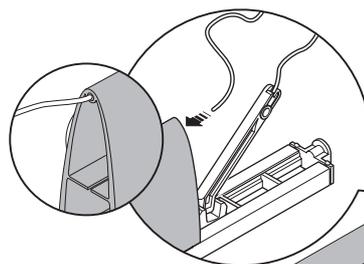
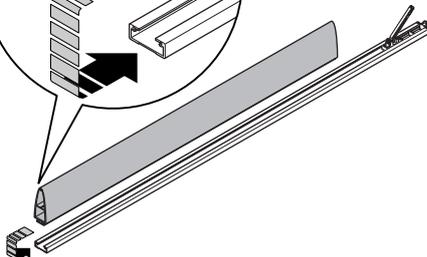
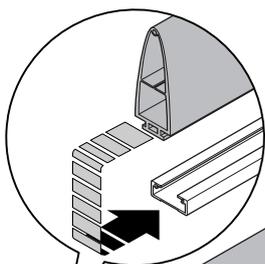
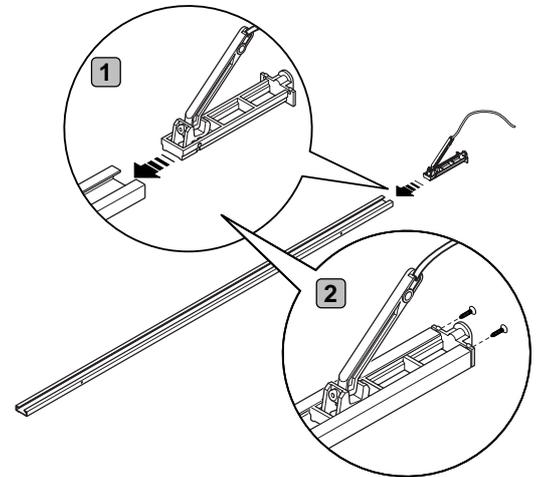
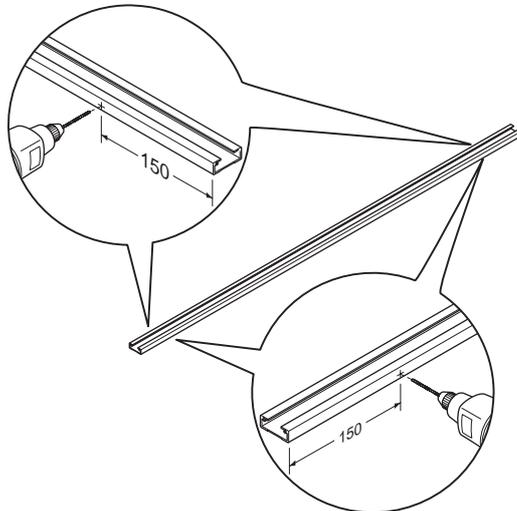


2) Cut the aluminium profile (LP) and the rubber profile (LG) in the following manner:

$LP = LN - 40 \text{ mm}$;

$LG = LN - 285 \text{ mm}$.

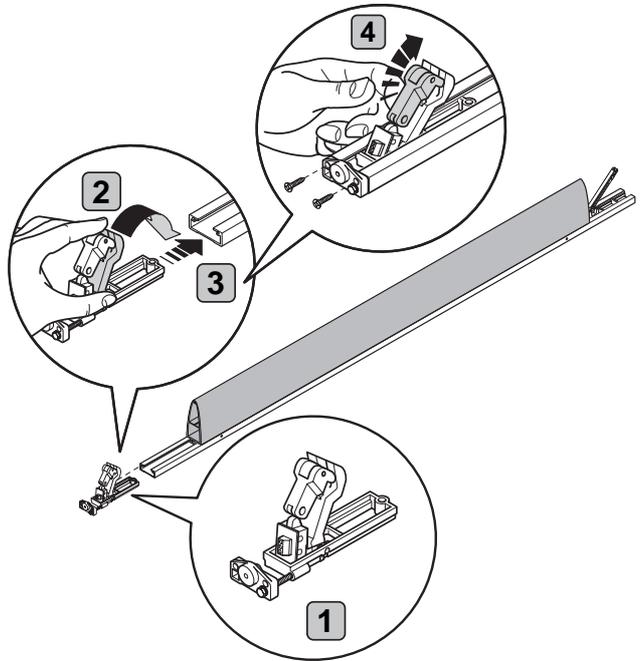
3) Bore a hole in the aluminium profile with a $\varnothing 3 \text{ mm}$ bit on both sides to secure plugs, insert the cable hooking mechanism and tighten the two UNI6955 $\varnothing 3.9 \times 13$ screws.



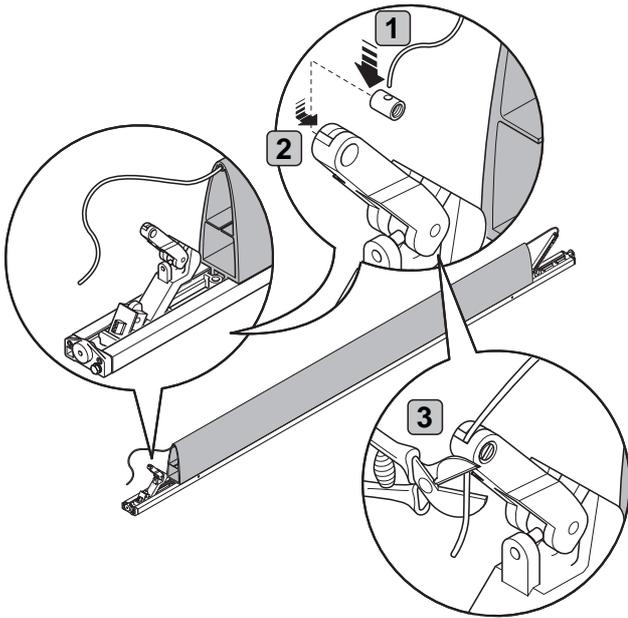
4) Insert the rubber profile in the aluminium profile up to the mechanism ledge and thread the steel cable through the sheath's top hole.

5) Insert the micro switch holder mechanism.

Once inserted, release the lever with slight downward pressure and tighten the two UNI6955 $\varnothing 2.9 \times 13$ screws



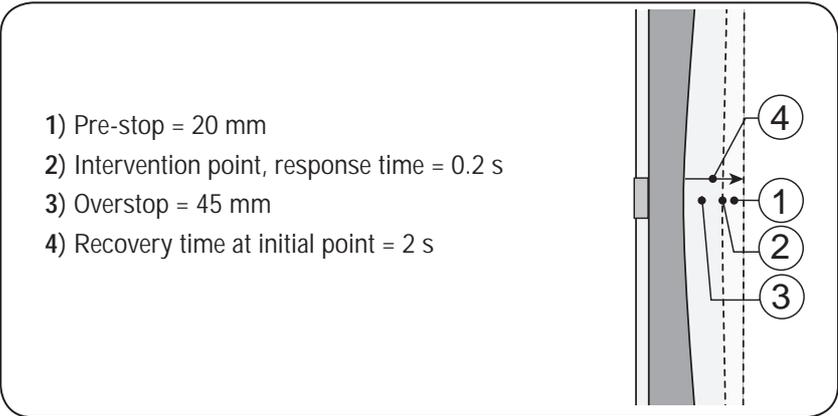
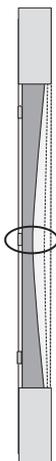
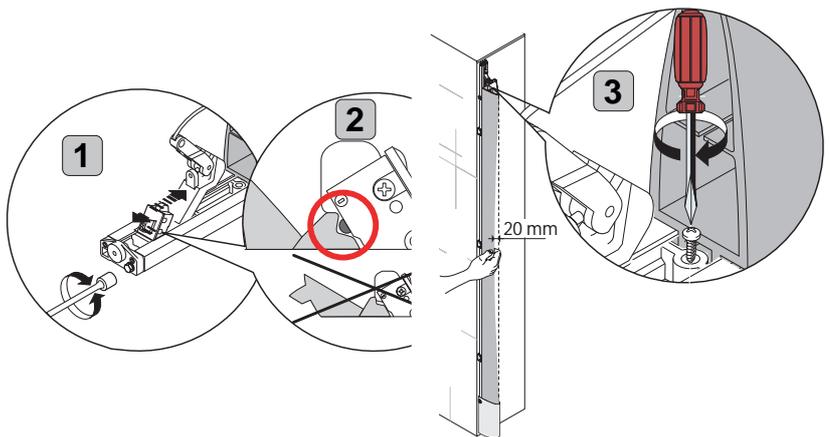
6) Insert the steel cable in the connecting terminal hole; insert everything in the lever, tension the cable and screw. Once the cable is adjusted, cut any excess cable.

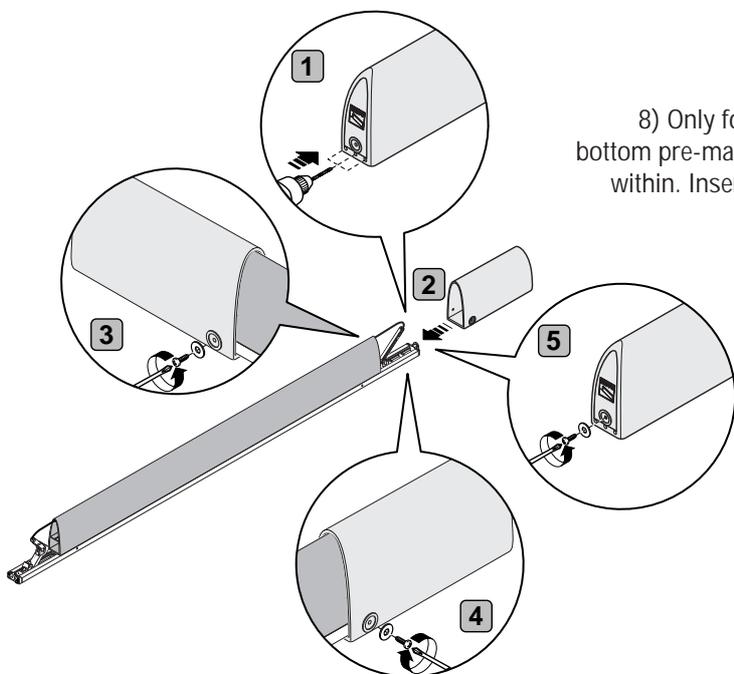


7) Adjust the cable tension on the mechanism by means of the adjustment screw and verify that the NC contact micro switch operates properly with an Ohmmeter.

Important: for proper adjustment, make sure the mechanism starts up after 20 mm max. deformation.

Secure the screw to block the mechanism.

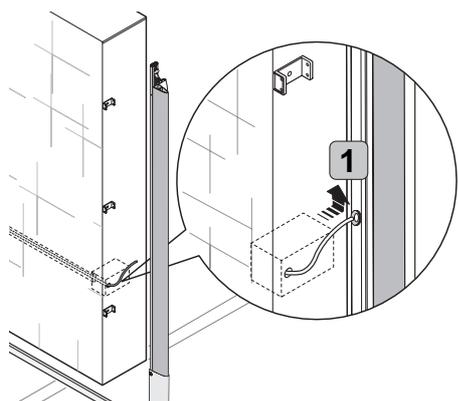
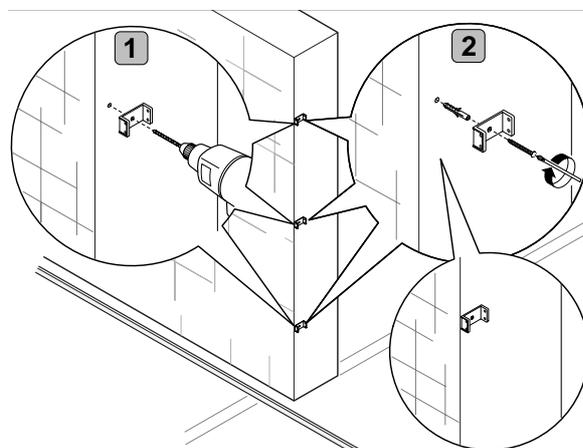




8) Only for vertical installations: bore a hole with a $\varnothing 4$ mm bit in the bottom pre-marked area of the plug to prevent condensate from gathering within. Insert the plug and secure it with 3 UNI 6954 $\varnothing 3.9 \times 13$ screws and washers.

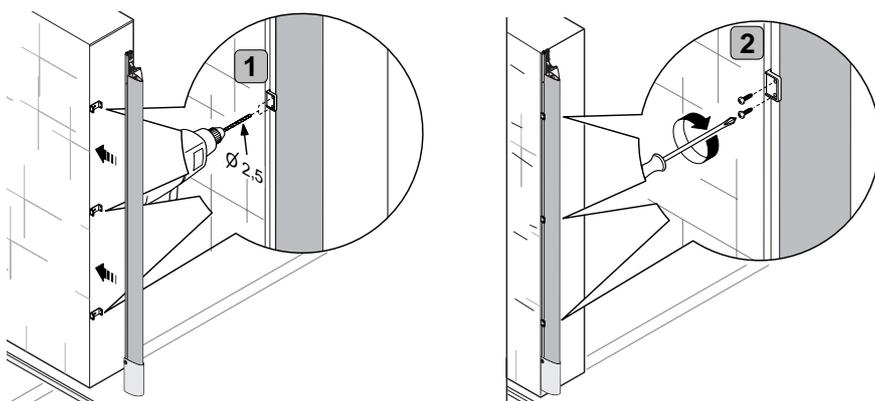
9) *Note: if the sensitive edge is positioned vertically, the micro switch holder mechanism must be set in an elevated position.*

Position the three mounting brackets equidistantly, bore a hole and secure with $\varnothing 4$ mm screws + custom-made inserts or $\varnothing 3.9$ mm self-threading self-tapping screws to a metallic surface or its equivalent. All screws must be the countersunk-head type.



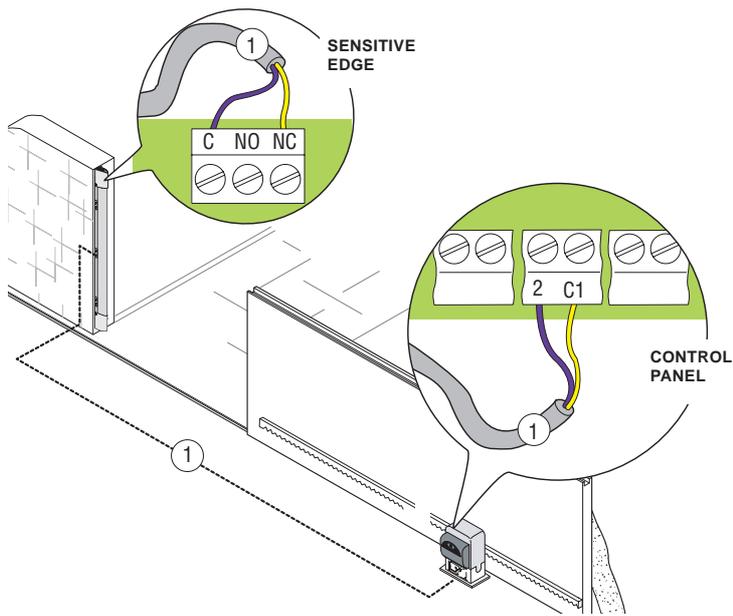
10) Bore a hole in the aluminium profile with fairlead to allow cable passage and slide cable in for electrical connections. The use of a probe is recommended to facilitate cable sliding through the profile. In articles DF15/17/20 the hole is already present.

11) Bore a hole with a $\varnothing 0.5$ mm bit and secure with UNI 6954 $\varnothing 3.9 \times 13$ screws.



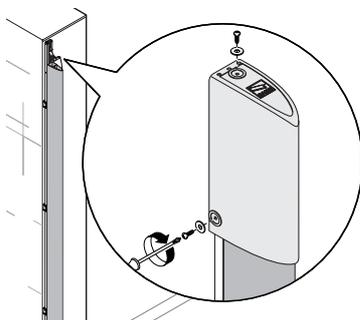
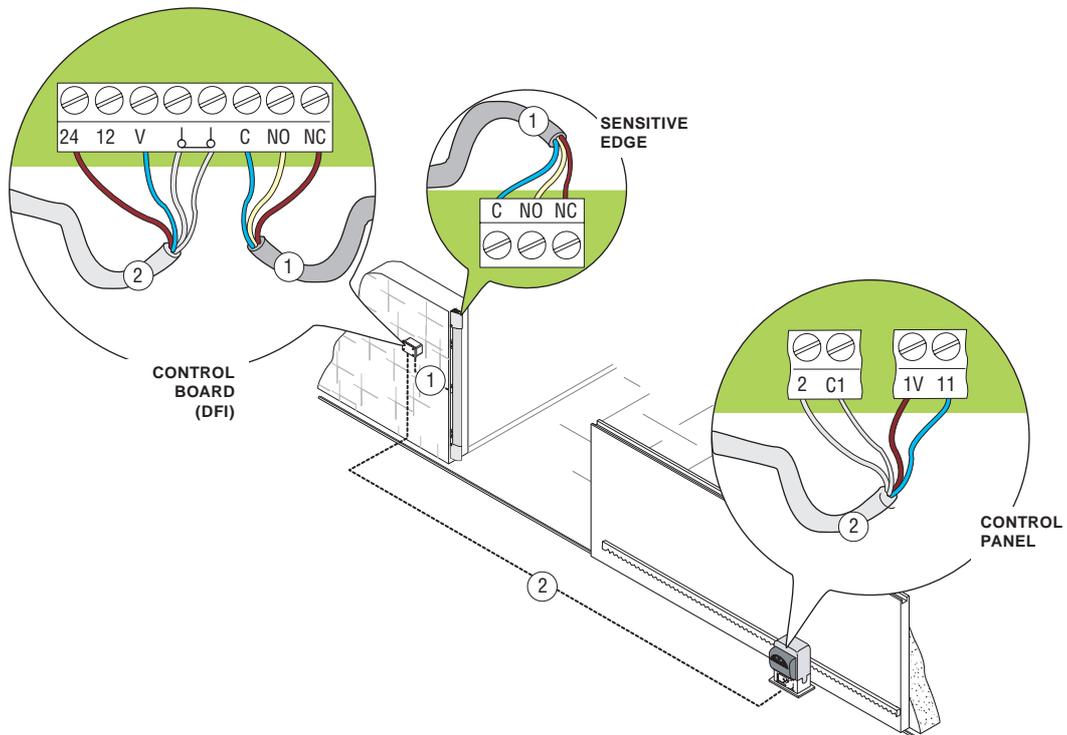
5.5 Electrical connections

See paragraph 5.3, Cable List, for choice of cables.



Electrical connection of sensitive edge to control panel at terminals for NC safety contacts.

Electrical connection with control board (DFI) connected between the sensitive edge mounted on moving wings and control panel.



After electrical connection operations, insert the head plug and secure it with three UNI6954 \varnothing 3.9x13 screws and washers.

Attention! Before securing the head plug, make sure the sensitive edge's micro switch is in the correct position (see paragraph 5.4 Edge Preparation, point 7).

6 Information for End User

6.1 Periodic maintenance

 The sensitive edge does not require special maintenance, but it is good practice to periodically (every six months) check the condition of the rubber profile and verify the correct operation of the device itself. Every check must be recorded (in the user's manual maintenance record book).

Moreover, if needed, clean the device with a vacuum or a cloth moistened with water to remove dirt and debris (**do not use solvents or detergents**).

 Any changes made to the safety device may cause hazardous situations!

6.2 Problem solving

MALFUNCTION	POSSIBLE CAUSES	CHECKS AND SOLUTIONS
Sensitive edge does not react	• Damaged connections	• Prevent use of automatic system as it has become unsafe, alert technician
Sensitive edge operates with delayed reaction	• Micro switch not adjusted properly	• Alert technician
The automatic system does not close	• Sensitive edge under strain • Damaged connections	• Check if there are objects lying against the edge or if the edge is warped (call technician)

7 Demolition and disposal

 In its premises, CAME CANCELLI AUTOMATICI S.p.A. implements an Environmental Management System certified in compliance with the UNI EN ISO 14001 standard to ensure environmental protection.

Please continue our efforts to protect the environment—which CAME considers one of the cardinal elements in the development of its operational and market strategies—simply by observing brief recommendations as regards disposal:

 **DISPOSAL OF PACKAGING** – The packaging components (cardboard, plastic, etc.) are all classifiable as solid urban waste products and may be disposed of easily, keeping in mind recycling possibilities.

Prior to disposal, it is always advisable to check specific regulations in force in the place of installation.

PLEASE DISPOSE OF PROPERLY!

 **PRODUCT DISPOSAL** – Our products are made up of various types of materials. Most of them (aluminium, plastics, iron, electrical wires, etc.) may be disposed of in normal garbage collection bins and can be recycled by disposing of in specific recyclable material collection bins and disposal in authorized centres. Other components (electrical boards, remote control batteries, etc.), however, may contain polluting substances. They should therefore be removed and given to qualified service companies for proper disposal.

Prior to disposal, it is always advisable to check specific regulations in force in the place of disposal.

PLEASE DISPOSE OF PROPERLY!

8 Manufacturer's warranty



MANUFACTURER'S DECLARATION OF CONFORMITY

Pursuant to annex II C of the Machinery Directive 98/37/EC



CAME Cancelli Automatici S.p.A.
via Martiri della Libertà, 15
31030 Dosson di Casier - Treviso - ITALY
tel (+39) 0422 4940 - fax (+39) 0422 4941
internet: www.came.it - e-mail: info@came.it

Declares under its own responsibility that the equipments for automatic garage doors and gates listed below:

SENSITIVE EDGES

DF15 - DF17 - DF20 - DF25 - CMP - TMF - TMF6 - DFI

...protects you from the risk of being crushed or hit by the gate, rated EN 954-1, category 2/3 in compliance with Standard EN 13241-1 concerning EEC 89/106 Building Materials.

... comply with the National Law related to the following European Directives and to the applicable parts of the following Standards.

98/37/CE - 98/79/CE	MACHINERY DIRECTIVE
98/336/CEE - 92/31/CEE	ELECTROMAGNETIC COMPATIBILITY DIRECTIVE
73/23/CEE - 93/68/CE	LOW VOLTAGE DIRECTIVE
89/106/CEE	CONSTRUCTION PRODUCTS DIRECTIVE

EN 13241-1	EN 12635
EN 12978	EN 60204-1
EN 954-1	EN 61000-6-2

IMPORTANT WARNING!

**Do not use the equipment specified here above, before completing the full installation
In full compliance with the Machinery Directive 98/37/EC**

MANAGING DIRECTOR
Mr. Andrea Menuzzo

Reference code to request a true copy of the original: **DDF C EN D002 ver.1.0**

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CERTIFICATO DI CONFORMITA' CERTIFICATE OF CONFORMITY

n. 04.363

alle prescrizioni tecniche contenute nelle seguenti Norme e/o specifiche tecniche
according to the technical requirements of the following Standard and/or technical specifications

EN 12978 (2003-05)

che conferiscono presunzione di conformità ai requisiti di protezione stabiliti dalle Direttive CEE n.

- 98/37/CE Annex I

which give compliance with the protection requirements stated by Directive n. 98/37/CE Annex I.

Identificazione del prodotto:
Product identification :

Type: PRESSURE SENSITIVE EDGE : DF
SAFETY CIRCUIT : DFI

Descrizione prodotto:
Product description:

Pressure sensitive edge for vertical mounting Mod. DF + safety
circuit Mod. DFI

Rif. Rapporto tecnico di prova:
Ref. Technical test report:

MAC.TR.04.731

Costruito da:
Manufactured by:

CAME
Via Martiri della Libertà, 15
31030 Dosson di Casier (TV) ITALY

Rappresentante autorizzato:
Authorized representative:

Idem come sopra
As above

Si richiama l'attenzione del Costruttore che il presente Certificato consente di apporre sul prodotto sopradescripto la marcatura di conformità CE e di redigere la Dichiarazione di conformità CE quando sono soddisfatte tutte le altre disposizioni della sopraccitata Direttiva e, qualora sia disciplinato da altre direttive relative ad aspetti diversi e che prevedono l'apposizione della stessa marcatura, di tutte queste altre direttive.

This certificate allows the firm to affix on the above mentioned product the CE marking and to prepare the EC Declaration of conformity when are fulfilled all other requirements of the aforementioned Directive and, where the same product is the subject of other Directives providing for the CE marking, when complies with the relevant requirements of those other Directives.

Como, 03/03/2005

Sig. Furfari Roberto
Technical Manager

European Notified Body and European Competent Body

Prima Ricerca & Sviluppo Srl soggetta a direzione e coordinamento da parte della Giovanni Maspero & C. S.p.A. - C.I. 02634780130
Sede legale : 22100 Tavernola (CO) Via Conciliazione, 1 Cod. FISC. e N. R.I. CO 02635860139
Sede operativa : Laboratori Via Campagna, 92 22020 Faloppio fraz. Gaggino (CO) Tel. +39 03135000.11 Fax +39 031991309

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Tel 0044 115 9210430

Fax 0044 115 9210431

