



**MANUALE DI INSTALLAZIONE E D'USO**  
**INSTALLATION AND OPERATION MANUAL**



**PROTEZIONE INCENDIO**  
**FIRE PROTECTION**

# BTT 25



  
**BROFER**<sup>®</sup>  
AIR ENGINEERING





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## SPECIFICATIONS/GENERAL INFORMATION

Fire damper suitable for installation on a wall, made from duct and galvanized steel components, calcium silicate blade mono slab sp. 25 mm with perimeter seals to ensure sealing requirements to cold and hot smoke. The control device ( manual with electromagnetic release or motorized ) consists of a plate removable and replaceable even after installation, on which they are installed all the elements necessary for the proper operation and functioning of the fire damper; the particular geometry of the control mechanism, prevents that the pressure present in the duct (up to 500 Pa) opening the blade if not acting directly from the reset lever. When installation is completed, the command will be out of the masonry simplify any post-installation actions. The dampers, installed according to the instructions in this manual, are used in HVAC systems by restoring the partitioning between two rooms, ensuring perfect insulation from heat and smoke seal.

**The installer has the obligation to follow the installation procedures and use of the equipment described in this manual, in order to comply with the same conditions as the samples to be tested. Any deviation from the instructions, affect the validity of the certification of the product and the declaration of correct installation**

## NORMATIVE REFERENCES

Fire dampers tested according EN 1366/2 and classified according to EN 13501/3

CLASSIFICAZIONI DI RESISTENZA			
SUPPORTO	EI 120 S - 500 Pa	EI 90 S - 500 Pa	EI 60 S - 500 Pa
AERATED CONCRETE WALL THICKNESS 100 mm ( $V_e i \leftrightarrow 0$ )	from DN 100 to DN 315 SR / M	from DN 100 to DN 315 SR / M	from DN 100 to DN 315 SR / M
GYPSUM PLASTERBOARD TYPE F WALL THICKNESS 125 mm ( $V_e i \leftrightarrow 0$ )		from DN 100 to DN 315 SR / M	from DN 100 to DN 315 SR / M
AERATED CONCRETE SLAB THICKNESS 150 mm ( $h_0 i \leftrightarrow 0$ )	from DN 100 to DN 315 SR / M	from DN 100 to DN 315 SR / M	from DN 100 to DN 315 SR / M

### Legenda

E = integrity

$V_e$  = vertical installation

MA = manual reset device

I = thermal insulation

$h_0$  = horizontal installation

SE = device with servomotor

S = smoke seal

$i \leftrightarrow 0$  = side exposed to fire indifferent

## PRECAUTIONS FOR HANDLING AND INSTALLATION

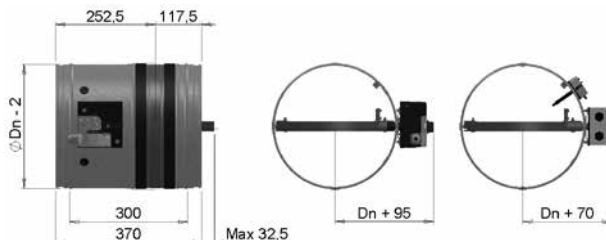
### CAUTION!

- All operations of handling and installation shall be made with the blade of the fire damper in the closed position (our standard delivery).
- All operations of connection power line must be performed by qualified service personnel.
- Keep clean the connecting end from residues of cement to securely connect the rest of the duct
- Avoid any deformation of the duct and / or obstacle inside the duct which may prevent the successful rotation of the blade
- Check that there are no external obstacles (cables, pipes, etc. ...) to prevent the correct operation of the controls outside of the duct
- Keep the most accessible as possible to the control side in order to ensure the necessary space usage and maintenance of the damper.

## MAINTENANCE

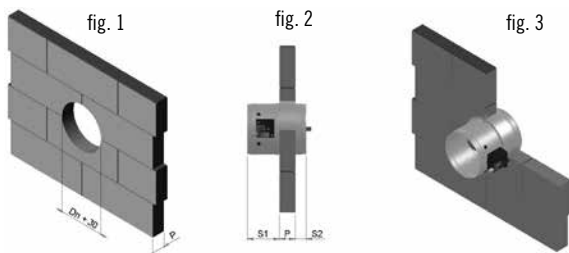
Is advisable to periodically run a check the correct operation of the actuating and signal the damper. In particular, check the correct and complete opening and closing of the blade: for the operation of the controls follow the instructions listed "CONTROL OPERATION." Also check that the warning devices at the beginning and ending are in good condition and working properly.

## DIMENSIONAL



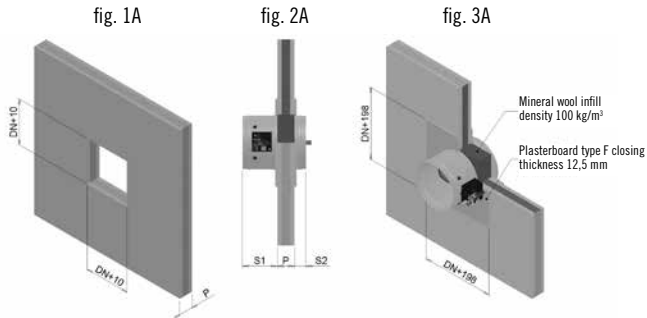
## WALL INSTALLATION

- 1 - Before proceeding with the installation, verify the integrity of the damper, the correct positioning of the blade in the closed position and the operation of the command.
- 2 - Provide support having an opening on the increased diameter of 30 mm from the nominal diameter of the damper (fig.1)
- 3 - Position the damper inside the opening, centering it horizontally in the same and making sure that the plane containing the blade in the closed position is parallel to the wall. Observe the protrusions shown in Figure 2 - Table 1
- 4 - Fill the gap between the wall and the damper with mortar (class M10 or higher) (Fig. 3)



## INSTALLATION ON LIGHT WALL

- 1 - Before proceeding with the installation, verify the integrity of the damper, the correct positioning of the blade in the closed position and operation of the command.
- 2 - Provide a square hole on the wall with dimensions increased by 10 mm compared to the nominal diameter of the damper (fig.1A).
- 3 - Position the damper within the aperture centering it horizontally in the same and making sure that the plane containing the blade in the closed position is parallel to the wall. Observe the projections indicated in fig.2A - Table 1.
- 4 - Fill the resulting gap between the wall and the damper with material type mineral wool with a density of 100 kg / m<sup>3</sup> and cover with a sheet of plasterboard type F (according to EN 520) on both sides to restore the strength and insulation (Figure .3A).



## INSTALLATION ON SLAB

- 1 - Before proceeding with the installation, verify the integrity of the damper, the correct positioning of the blade in the closed position and operation of the command
- 2 - Provide an opening in the ceiling with a diameter increased by 30 mm compared to the nominal diameter of the damper (fig.1B)
- 3 - Position the damper and make concentric within the opening and taking care that the plane containing the blade in the closed position is parallel and symmetrical to the slab as from tests carried out respecting the protrusions shown in Fig.2b - Table 1
- 4 - Fill the gap between the floor and the resulting damper with mortar fire resistant (class M10 or higher) to restore the strength and insulation (Fig.3b)

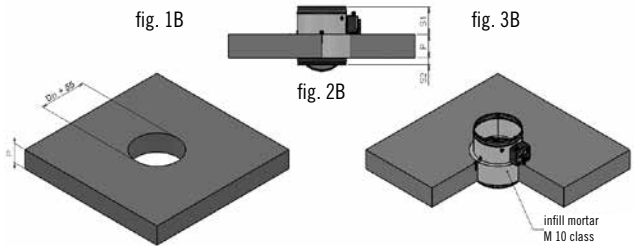


TABLE 1

TYPE OF INSTALLATION	P (mm)	S1 (mm)	S2 (mm)
WALL - LIGHT WALL	100	202,5	67,5
SLAB	150	277,5	17,5

## SUGGESTION

After installation it is recommended to perform a test operation by checking the correct rotation of the blade and the efficiency of the control (manual or motorized). It can be run as a manual rearming, with the lever, the blade and pressing the test button so simulating the operation. In the motorized version act on the lever of the thermoelectric fuse.

## OPERATING CONTROLS

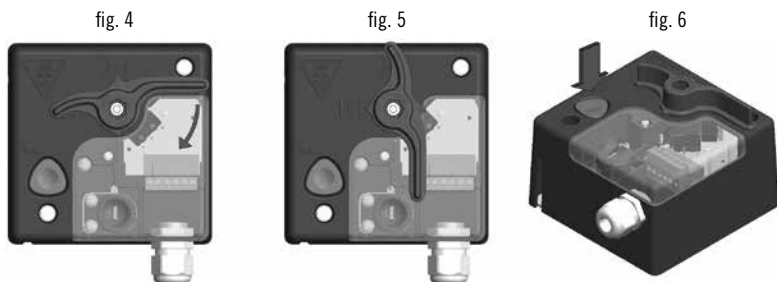
### Manual reset device

Reset:

- From the unlocked position (fig. 4), where the indicator on the reset lever is positioned on the symbol] - [ rotate the lever clockwise 90 degrees making sure that the command locks in the open position (fig. 5), the indicator lever is positioned on the symbol] | [.

Manual opening (test):

- Act on the button shown in fig.6.



### Manual control with electromagnet

Reset:

- Activate the state of the electromagnet opening and closing the power circuit of the same depending if the model of electromagnet is normally energized or de-energized
- Lift the metal lever (fig. 7 / fig. 8) on the cover of the control unit until it stops.
- Reset the damper as shown in the previous section

Manual opening (test):

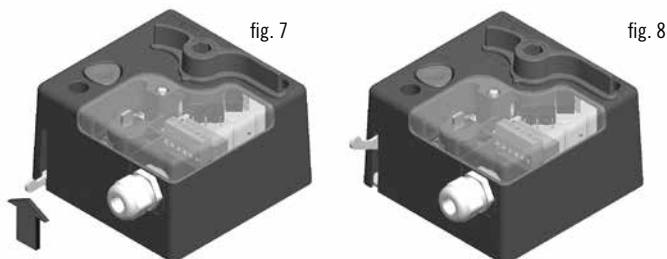
- Operate the test button shown in fig.6

Closure normally energized electromagnet:

- Power the electromagnet (to perform a function test unhook the power supply).

Closure normally de-energized electromagnet:

- Switch off the power of the electromagnet (to perform a function test hook the power supply).



### Operation with servo motor

Reset:

- Insert into the slot on the servomotor appropriate key supplied and turn it clockwise until the indicator in position  $90^\circ$
- Perform a fast rotating counterclockwise to lock the actuator in the open position

Manual opening (test):

- Insert into the slot on the servomotor appropriate key supplied and turn it counter-clockwise approximately  $\frac{1}{2}$  turn in order to engage the return spring that will bring in automatic servo motor in the closed position and the indicator at  $0^\circ$  position

Motorized opening (test):

- Turn the lever on the thermoelectric fuse located next to the servomotor or disconnect power.

## MECHANICAL FUSE REPLACEMENT

### CAUTION!

All operations of connection or maintenance must be carried out with the damper closed and de-energized.

### Operation

Fuse replacement is required every time the peak temperature within the duct, has exceeded the specified degrees Celsius on the same fuse. A tab shows the status of the fuse (fig. 9), when the body disappears into the plastic fuse holder (fig. 10), it is necessary to replace the fuse.

fig. 9



fig. 10



### Procedure:

- Make sure the damper is unarmed verifying visibly that the indicator on the lever indicates the symbol] - [on the carter. Otherwise, act on the test button to manually open the damper.
- Remove the clear plastic cover by unscrewing the central fixing screw (fig. 11)
- Unscrew the 2 screws and remove the release mechanism from the plate.
- Replace the fuse by compressing the spring and hooking the two protruding pins (fig. 12)

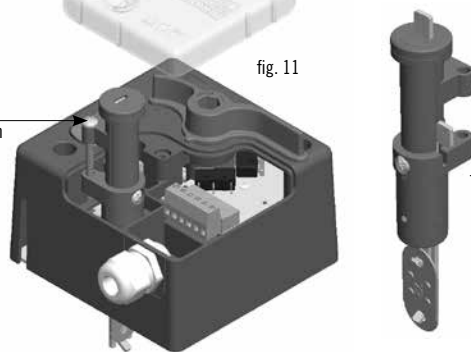
Central fixing screw

Clear plastic cover

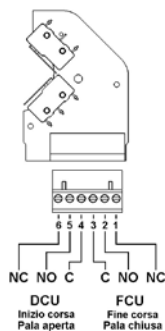
fig. 11

Fixing screw  
release mechanism

fig. 12



## OPERATION DATA AND WIRING MANUAL CONTROLS



### Microswitches start and end of stroke

The signaling devices stroke end FCU and beginning stroke DCU are both switches with two contacts independent of the type NC + NO.

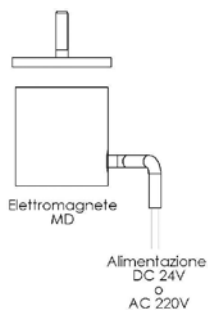
The first normally closed (NC) contacts 1 and 6, while the second normally open (NO) contacts 2 and 5.

At the click of the switch contact status is reversed, the NC contact opens and the NO contact closes.

Ex: contacts 1 and 6 (NC) is connected to the relay that controls power to the fan, while contacts in 2 and 5 (NO) is connected to a warning light alarm. In this case the closure of the damper, the fan will turn off and turn on the light.

Technical data of the switches

-Cable section: 2.5 mm<sup>2</sup> rigid - flexible with ferrule 1.5 mm<sup>2</sup> Operating temperature: from - 25 °C to + 70 °C



## Electromagnet device

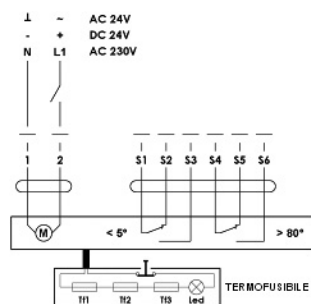
If necessary, you can equip the damper of an electromagnet that allows you to anticipate the closing of the damper with respect to the intervention of the thermal fuse. Depending on the type of electromagnet (normally energized or de-energized), sending or interrupting the electrical signal power, the damper will close preventing the diffusion of cold smoke.

In case of fire, the raising of the temperature, the thermal fuse has priority of action compared to the electromagnet.

Technical data of the magnets

- Holding force: 120N
- Degree of protection (En 60529): IP40
- Power consumption at 20 °C: 1.6 W (lack) - 3.5 W (output)
- Operating Temperature: -30 °C to +85 °C

## OPERATION DATA AND WIRING MOTORIZED CONTROLS



-24V Connection: transformer  
 -230V Connection: for the interruption of the network must incorporate a device which disconnects the phase conductors (contacts opening min. 3mm) ►

The operation of the motor is given by the connection to the electricity network (contacts 1 and 2) which brings the blade of the damper in the open position and simultaneously charging the internal spring which stores the force required to close the duct in case of alarm or black-outs.

The connection of the two switches inside the motor can make flexible the rest of the system. For example, by connecting the contacts S1 and S2 will be possible in the event of closure of the damper, can shut down the unit for ventilation, while the contacts S4 and S6 turn on a warning light.

The thermoelectric device is composed of three fuses: Fire dampers then become sensitive to the temperature inside the duct (with fuses Tf and Tf 2 3 which can be substituted) and the ambient temperature (Tf with fuse 1).

The device cuts off in an irreversible way, if not replacing the fuses, the supply line so that the servomotor leaving overs, with the spring force, the blade in the closed position.

It also has a manually operated key that simulates the operation of the fuses allowing testing of the damper.

Its position outside the damper and fastening with screws allows a safe temperature control and easy maintenance.



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