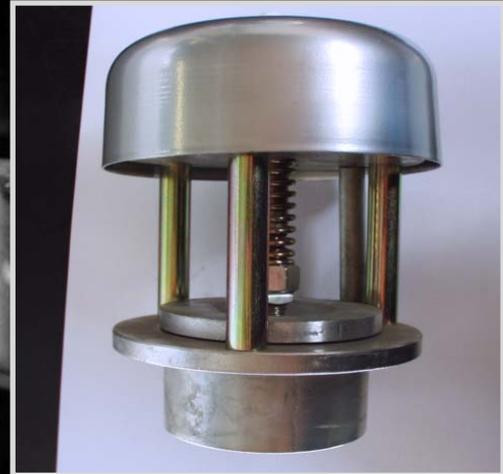


*Valves*



**Safety Valves  
for flame backfire**

TESE (E1800 rev. 01 - 22/04/2011)



## GENERAL WARNINGS:



■ All installation, maintenance, ignition and setting must be performed by qualified staff, respecting the norms present at the time and place of installation.

■ To avoid damage to people and objects, it is essential to observe all the points indicated in this handbook. The reported indications do not exonerate the Client/User from observing general or specific laws concerning accidents and environmental safeguarding.

■ The operator must wear proper DPI clothing (shoes, helmets ...) and respect the general safety, prevention and precaution norms.

■ To avoid the risks of burns or high voltage electrocution, the operator must avoid all contact with the burner and its control devices during the ignition phase and while it is running at high temperatures.

■ All ordinary and extraordinary maintenance must be performed when the system is off.

■ To assure correct and safe use of the combustion plant, it is of extreme importance that the contents of this document be brought to the attention of and be meticulously observed by all personnel in charge of controlling and working the devices.

■ The functioning of a combustion plant can be dangerous and cause injuries to persons or damage to equipment. Every burner must be provided with certified combustion safety and supervision devices.

■ The burner must be installed correctly to prevent any type of accidental/undesired heat transmission from the flame to the operator or the equipment.

■ The performances indicated in this technical document regarding the range of products are a result of experimental tests carried out at ESA-PYRONICS. The tests have been performed using ignition systems, flame detectors and supervisors developed by ESA-PYRONICS. The respect of the above mentioned functioning conditions cannot be guaranteed if equipment, which is not present in the ESA-PYRONICS catalogue, is used.

## DISPOSAL:



To dispose of the product, abide by the local legislations regarding it.

## GENERAL NOTES:



■ In accordance to the internal policy of constant quality improvement, ESA-PYRONICS reserves the right to modify the technical characteristics of the present document at any time and without warning.

■ It is possible to download technical sheets which have been updated to the latest revision from the [www.esapyronics.com](http://www.esapyronics.com) website.

## CERTIFICATIONS:



### EN746-2

The products manufactured by ESA-PYRONICS have been created in conformity to the **UNI EN 746-2** Norms: Equipment for industrial thermal process - Part 2: Safety requirements for combustion and the movement and treatment of combustible elements. This norm is in harmony with the Machine Directive **98/37/CE**. It is certified that the products in question respect all the requirements prescribed by the above mentioned Norms and Directives. These have been designed, produced, controlled and tested in accordance to the company's internal procedures for quality control, certified in conformity with the **UNI EN ISO 9001** Norm by DNV Italia s.r.l.

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The TESE series safety valves for flame backfire are vent devices that release the overpressure generated by the priming of a mixture mitigating the explosion effects that would otherwise jeopardize the operator safety and cause serious damage to the combustion plant.

## APPLICATIONS

- Premix plant piping

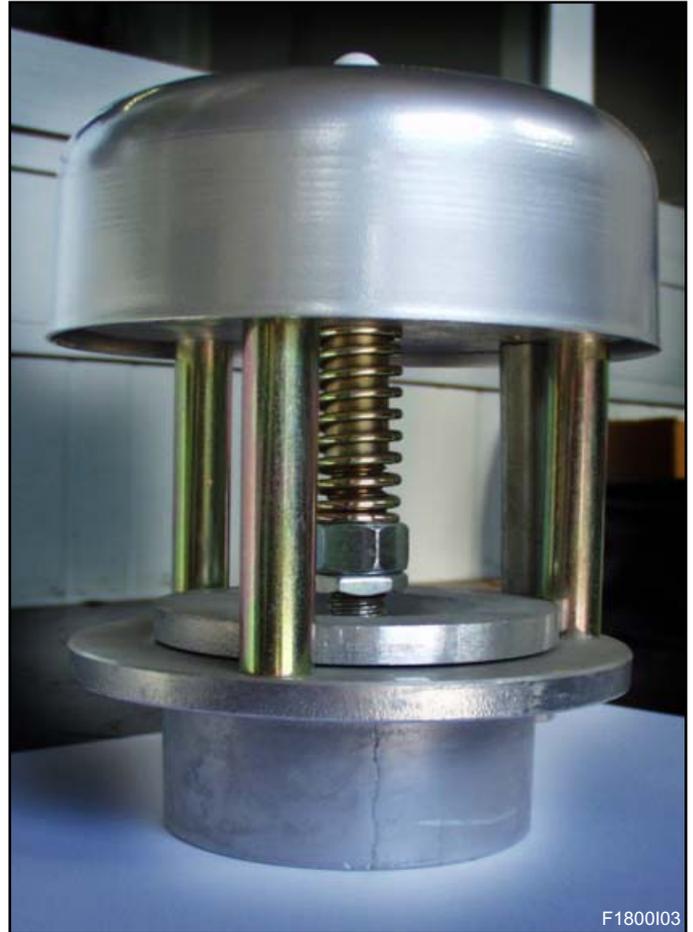
## CHARACTERISTICS

### VALVE:

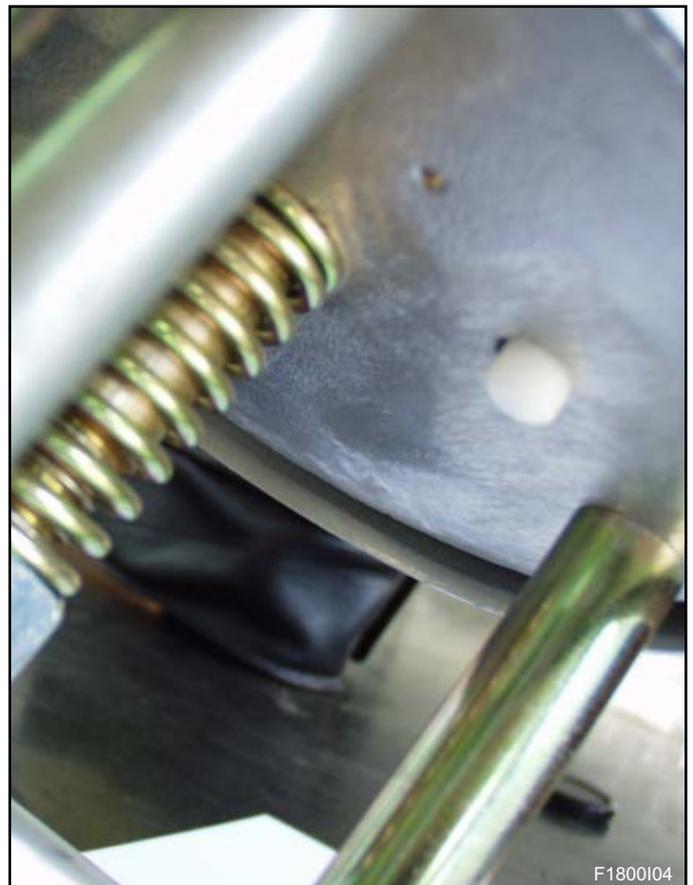
- Maximum working pressure: 300 mbar
- Available sizes: Rp.1.1/2", 2" e 3"
- Mass: 3.5 Kg
- Mounting position: horizontal and vertical  
(see. diagrams pag.04)
- Microswitch capacity: 1,5A 250 Vac

### MATERIAL COMPOSITION:

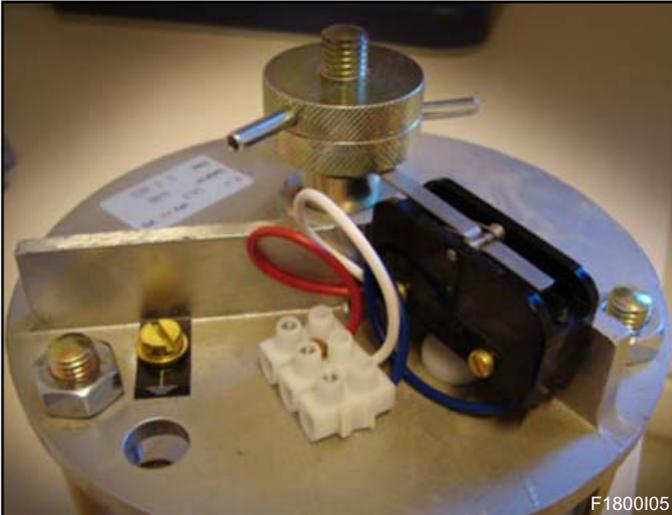
- Valve body: aluminium
- Mobile disc: aluminium
- Cover: aluminium
- Nut: Fe
- Spring: Fe
- Support shafts: Fe



F1800I03



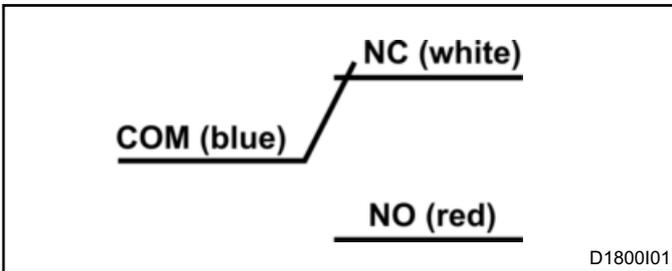
F1800I04



## DESCRIPTION

The TESE safety valves are installed on premix plants, more specifically on the burner manifold. The valve principle consists in the opening of a mobile disc in case of flame backfire. This allows to vent the overpressure generated due to priming, after which it closes again. An accidental pressure reduction of the safety mixture pressure (blower breaking, incorrect air setting, burner degeneration etc...) can generate flame backfires causing an explosion. The TESE safety valves limit the excess pressure inside the mixture manifolds in case of priming. The safety valves are made up of a tight disc, an adjustable spring that establishes the intervention pressure and a valve body. Furthermore, the valves also have a manual recocking microswitch used for:

- Switching off the solenoid gas valve.
- Visual and/or acoustic alarm.
- Data acquisition.



## WARNINGS

- Make sure that the working pressure and fluid temperature are lower than the maximum allowed values.
- Check the correct valve installation before starting the flow in the tubes.
- Any modification or repair carried out by third parties could compromise the application safety and will automatically cause the general guarantee conditions to expire.

## INSTALLATION

The TESE valves can be mounted horizontally or vertically according to the diagrams given below, and for correct installation carefully follow the instructions below:

- 1 - The safety valves must be mounted on the collector piping with the greatest diameter (see Fig. 01).
- 2 - The valves must be installed no further than 3 meters away from any burner.

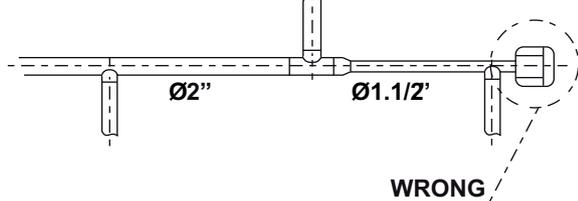
3 - The safety valves must always be mounted so that they are directly exposed to shock waves (see Fig. 02).

4 - Long manifolds must have safety valves on both ends.

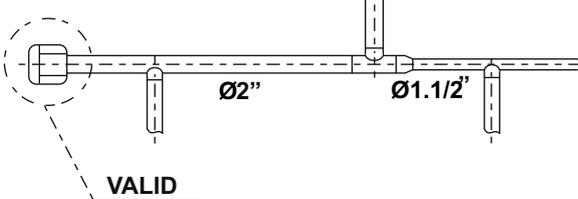
5 - The safety valves must always be mounted in positions that do not prove dangerous for the operators.

**Fig. 01**

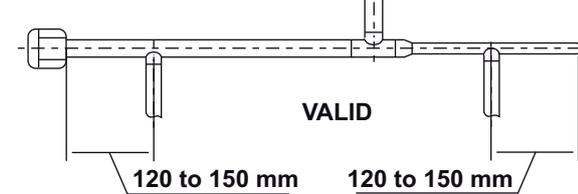
**WRONG MOUNTING**



**PROPER MOUNTING**

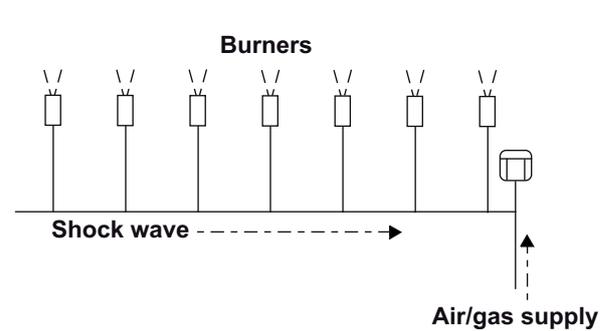


**PROPER MOUNTING**

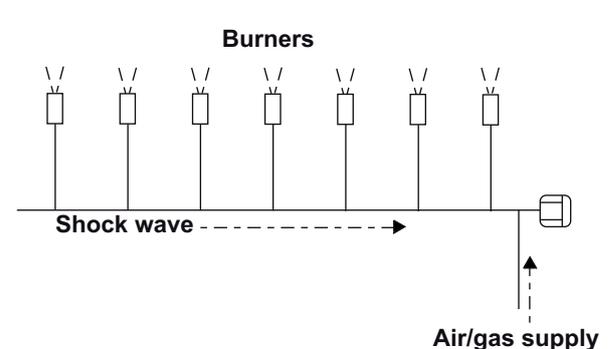


**Fig. 02**

**WRONG MOUNTING**



**PROPER MOUNTING**



D1800102

## REGULATION - SETTING

All the safety valves are preset to intervene at a pressure of 145 mbar. The intervention pressure scale range is 100+300 mbar. To correctly set the valves it is necessary to intervene on the nut placed at the base of the spring, screwing it on in a clockwise direction with a spanner, compressing the spring until it reaches the

beat. Setting is then done by unscrewing the nut. To simplify this operation, in the table below we have translated the number of turns the nut must do with the corresponding setting values.

n° turns for nut	Pressure
Completely screwed on	300 mbar (bottom scale)
- 3 turns	250 mbar
- 5 turns	200 mbar
- 6,5 turns	150 mbar
- 8 turns	100 mbar

## ORDINARY MAINTENANCE

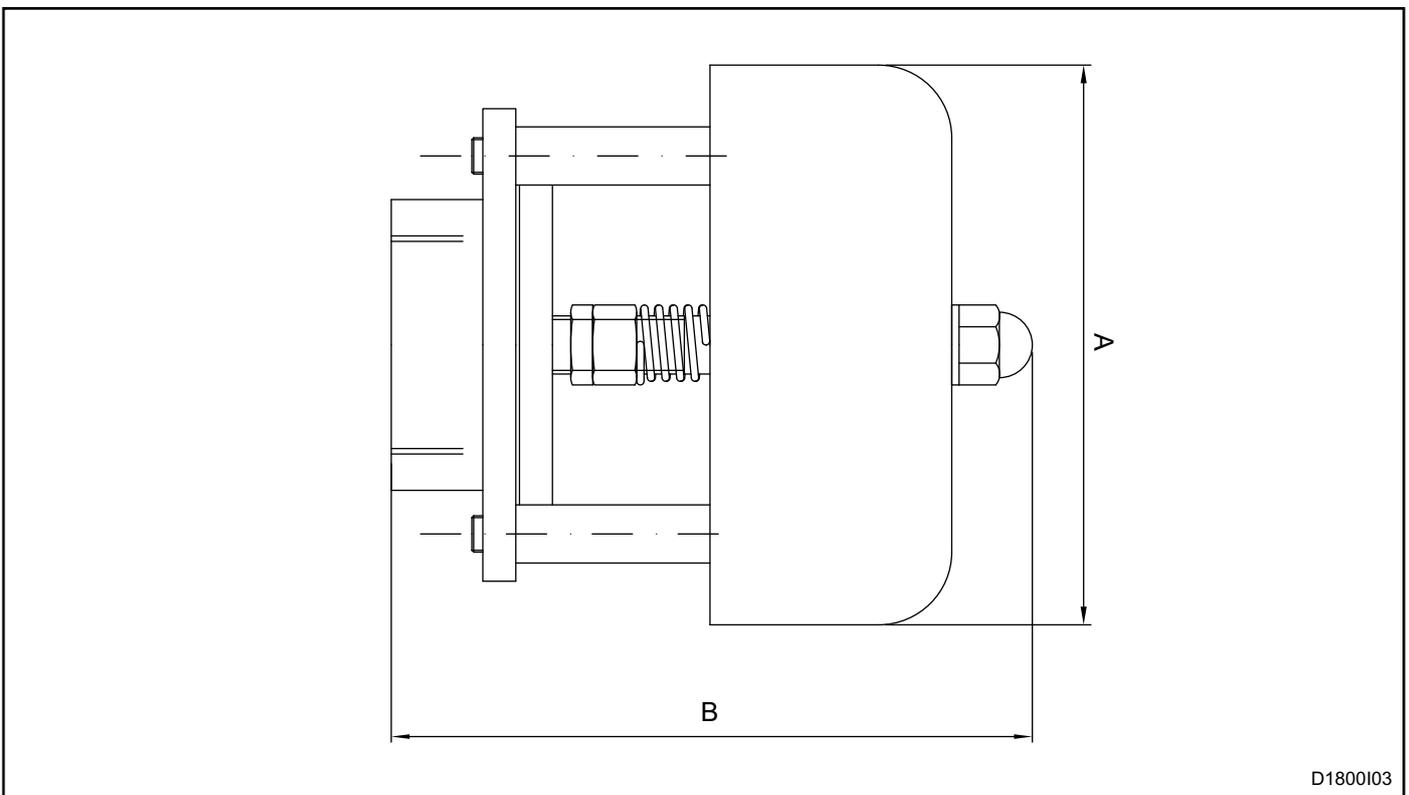
### INTEGRITY CHECK

- The valve integrity can be checked visually.
- Make sure that there are no foreign objects obstructing the working operations of the spring and mobile disc.
- The integrity of the electric cables can be checked visually.

### INSPECTION AFTER VALVE INTERVENTION

- - After each safety intervention it is necessary to make sure that the mobile disc returns to its original position and maintains correct tightness.
- Before switching the burners on again, it is necessary to remedy the cause for mixture priming.
- The general tightness of the safety valve must be checked regularly.

## OVERALL DIMENSIONS - TESE



∅ TESE	A mm	B mm
1.1/2"	155	150
2"	155	150
3"	175	205

Selected according to the diameter of the mixture collector.