

## OPERATING MANUAL FOR THE EMERGENCY PIPE PLUG

### SAFETY RULES FOR USE EMERGENCY PIPE PLUG and CONTROL PANNELS

Compliance with the instructions below is imperative to avoid any risk of accidents or injuries.

The emergency pipe equipment uses high pressure nitrogen cylinders (200 bars) and therefore requires use in strict compliance with the indications and safety rules below.

Our control pannels are delivered equipped and pre-set in the factory or on site by our technicians.

NEVER change the pressure of the Pressure Regulator, as this may cause damage to the equipment or burst the obturator, with all the consequences that this would entail (risk of serious injury and material damage).

Adjustments and work on the system must only be carried out by qualified Musthane personnel.

### INFLATION

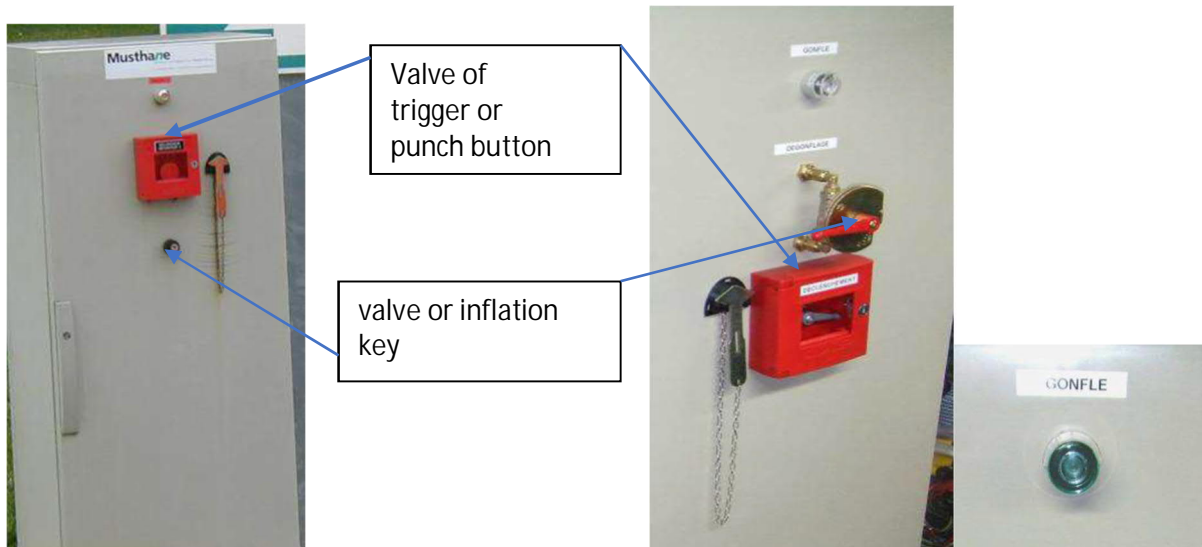
- Remove the padlock from the shut-off valve.



- Open the shut-off valve on the side of the cabinet to supply power to the circuit board,
- Break the glass with the glass breaker hammer,



- Open the release valve or press the mushroom button (depending on the model).
- The deflation key or valve must be closed (depending on the model),
- Once the light is activated, the balloon inflates.



## DEFLATE

CAUTION: Before any deflation, it is mandatory to check that there is no more water in static upstream of the emergency plug, otherwise the equipment may be damaged.

- Close the trigger valve or deactivate the mushroom button,
- Open the deflation valve,
- Allow air to escape completely,
- Wait for the emergency plug to return to its rest position in the pipeline,
- Visually check that the obturator is properly seated in the upper part of the pipeline,
- Close the shut-off valve,
- Check that sufficient pressure remains in the cylinder to allow re-inflation,
- Return the system to its initial position by repositioning the padlock on the shut-off valve and locking it.
- Replace the glass of the mushroom button (to be provided as a spare part, if necessary, please consult us).



*Note: Plan to change the compressed nitrogen bottles for the next inflation and deflation.*

## Periodic testing procedure

### Every 3 months

- Check the general condition of the boxes, plate, hoses, regulators, plugs, visually check the cleanliness of the pipe and have it cleaned/uncluttered if necessary (the plug will not be able to seal a congested pipe, the sealing is done on the entire periphery of the pipe).
- Check the pressure of the cylinders, (the pressure of a cylinder must be between 170 bar and 220 bar).
- Check the plate for leaks.

### At least once a year

- Carry out an inflation and deflation in order to check the correct operation of all the equipment.

### Special precautions

- It is strictly forbidden to modify the settings of the control boards WITHOUT authorization from MUSTHANE. This could result in the bursting of the emergency plug, which could cause damage to property or even personal injury.
- It is strictly forbidden to intervene upstream or downstream of the pipe: During the inflation or deflation of the obturator and once the plug has been inflated.
- After each use, it is imperative to check that the equipment is still operational (check the stopper, the load of the bottles, etc...).

CAUTION: Make sure to close and disconnect all nitrogen cylinders before working on the equipment.

### The emergency pipe plug

Concerning the emergency pipe plug, it has been designed for the precise diameter of the pipe that you have communicated to us; we formally advise you not to use it for another pipe without prior authorization from Musthane.

Compliance with the instructions below is imperative to avoid any risk of accidents or injury with pneumatic plugs.

1. Validate that the range of use of the plug is in accordance with the  $\emptyset$  of the pipe.

Each pneumatic plug has a precise radius of use (minimum and maximum) to be respected. The emergency pipe plug has been dimensioned at the time of your order for a precise diameter of pipe.

2. Respect the inflation pressure (PG)

It depends on the model, the back pressure to be retained, and the diameter of the pipe. The maximum pressure is shown on the obturator and the table below. In case of doubt, contact our teams

Ø canalisation mm	PG max bar
≤500	1.2
600	0.7
7	0.6
800-1500	0.5

3. Calculate the pressure that must be supported by the inflatable stopper and never exceed the maximum allowable back pressure.

Considerable pressure may be contained in or applied to the obturator during use. The total force exerted on the plug is directly proportional to the pressure exerted and to the surface of the pipe. It is calculated as follows:

$$F \text{ (force in daN)} = S \text{ (surface area in cm}^2 \text{ of the total section of the pipe)} \times P \text{ (pressure in bar)}$$

Example: 700 mm diameter pipe with a back pressure to be retained of 0.4 bar (i.e. 4m water height), the thrust on the obturator is more than 1.5 tons!  $F = p \times 35^2 \times 0.4 = 1539 \text{ daN}$

4. Determine if there are requirements for special heat or aggressive product resistance.

Our inflatable plugs are resistant to temperatures from -10°C to +70°C. For compatibility with chemicals in contact, please contact us.

5. Always inspect and clean inflatable stoppers and their equipment before and after use.

Check for dirt or debris trapped in the inflation valve that could cause a slow leak and thus deflate and eject the valve plug.

Check for cuts, abrasion, and cracking on the surface of the plug.

Slightly inflate the stopper to 200g (0.2 bar) and test the stopper and inflation accessories for leaks using soap foam.

Clean the plugs with a solution of soapy water, rinse and allow to dry.

Never clean a plug with solvents or petroleum products.

Check that the control box is functional. In case of doubt, contact Musthane.

6. Clean the pipe before installing the emergency pipe plug.

Remove any foreign matter inside the pipe, a sharp object may cause holes or puncture the plug when inflated. Methods may include high pressure cleaning or wire brush cleaning and rinsing with water.

7. Never stand in front of the obturator while it is in operation.

Make sure that no one is in the pipe anymore. Risk of serious injury if the plug is ejected.

8. Never pressurize an inflatable air plug.

9. Do not transform or modify the inflatable stoppers or their accessories, otherwise there is a risk of bursting.

10. When using the inflatable stopper, always consider the safety of the user and of the persons present at the site.

#### STORAGE & MAINTENANCE OF THE INFLATABLE SHUTTERS SAFETY AND SECURITY

- Store deflated inflatable plugs in a room protected from extreme weather conditions, aggressive vapors and rodents at a storage temperature between -5°C and +20°C and a humidity level between 40 and 70%.

- Protect them from sunlight, UV, or strong artificial light.

- Always inspect and clean inflatable pipe plugs and their equipment before and after use.

- Check for dirt or debris trapped in the inflation valve that could cause a slow leak and result in deflation followed by ejection of the valve plug.

- Do not use a pipe plug in contact with chemicals without having it inspected by Musthane. In case of doubt contact Musthane

- Check that there are no cuts, abrasions or cracks on the surface of the obturator.

- Slightly inflate the stopper to 200g (0.2 bar) and test the stopper and inflation accessories for leaks using soap foam.

- Clean the plugs with a solution of soapy water, rinse and allow to dry.

- Never clean a plug with solvents or petroleum products.

*Caution: the photos on this document are not contractual. Musthane reserves the right to update the plates shown above. No modification should be made arbitrarily or not without Musthane's validation.*

Only people who have undergone training with our teams are authorized to work on the control pannels. Failure to comply with the instructions will void any product warranty. B821