

## COMMISSIONING INSTRUCTIONS

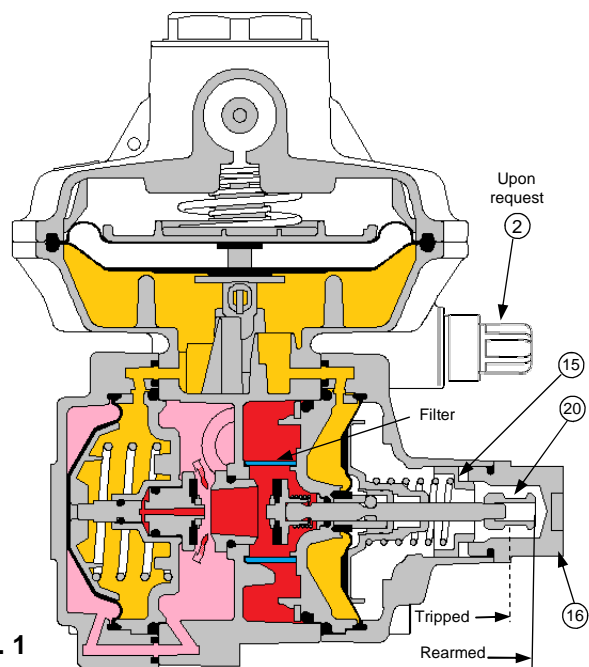
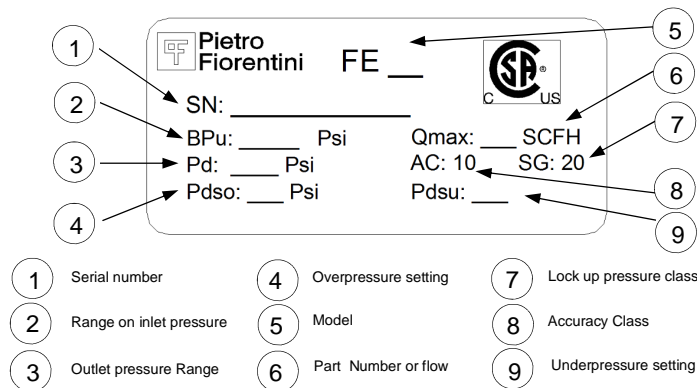


Fig. 1

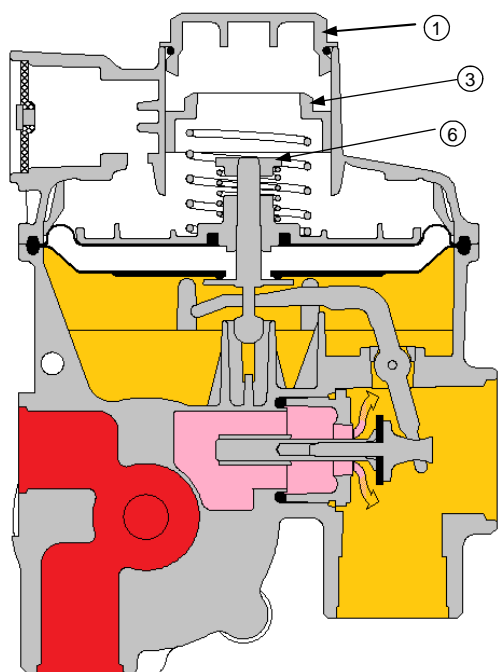


Fig. 2

INSTALLATION INSTRUCTIONS FOR MODEL FE REGULATORS  
MANUFACTURED BY PIETRO FIORENTINI.

## 1 GENERAL SPECIFICATION

The FE series pressure regulators are suitable for use with non-aggressive gases such as pipeline quality natural gas or propane distributed in North America. The characteristic of the FE regulator is the 2nd stage double diaphragm (working diaphragm and safety diaphragm).  
The FE series is CSA certified ANSI Z 21.80 for inlet pressure 10 PSIG.  
- Maximum design pressure (MAOP): 125 PSIG  
- Gas temperature: - 4°F to 140 °F  
- Ambient temperature: - 40°F to 140 °F  
- Outlet pressure 5.2" w.c. to 7.5 PSIG  
- ANSI Z21.80 Outlet pressure up to 14" w.c. AC:10 % Class I  
- ANSI Z21.80 Outlet pressure up to 1 PSIG. AC:10 % Class II  
- Maximum flow rate 875 SCFH  
- Suitable for use with Natural gas, LPG, Propane-air and any non-corrosive gas  
- Designed for indoor or outdoor installations  
NOTE: Installers and servicers must be trained, competent and should have the knowledge on how to install and maintain the equipment correctly.

## 2. INSTALLATION AND START UP

All work should be carried out by trained, qualified and authorized personnel using the correct tools and equipment to install and adjust the regulator to all relevant standards, local codes, requirements and procedures. Ensure the installation is approved and the piping is clear of all oil and debris and has been tested for leaks. Make sure the piping is supported and no stressful force is placed upon the regulator. If not otherwise specified, the regulator can be mounted in horizontal and vertical position with the directional flow arrow facing in the direction of the flow.

Verify that the regulator is installed according to the following:

- cut-off valve upstream, such as curb valve or meter riser valve.
- Note that freezing water inside the regulator might stop the accurate operation of the regulator and safety devices immediately.

Supply pipelines must be cleaned before installing the regulator. The regulator may be installed outdoors but should not be exposed to any corrosive chemicals. The equipment must be installed by qualified technicians. Due to the high safety and reliability, the regulator may have an internal relief valve which discharges a small amount of gas. When installed indoors, the regulator needs to be vented outside with an external vent pipeline. The manufacturer doesn't provide vent line and its connection I required. Installer shall verify Federal, local codes and regulations compliance before installing, including ventilation requirement in case of indoor installation with vent limiter.

## 3. START UP (ref. fig. 2)

To avoid an increase of downstream pressure tripping the slam-shut, the creation of a small leak by venting the line downstream (such a loosening the meter nut) is recommended (open the plug pos.4 if available). Slowly open the shut-off valve upstream of the regulator and ensure that gas is in the line. Remove the cap (pos.16) that covers the over pressure slam shut. Slowly pull the knob, (pos.20); the inlet pressure will create a resistance to this operation. Higher inlet pressure generates higher resistance. Direction of pulling should be straight out in direction of the knob. The knob should be pulled out about 3/8" and the knob will remain in position if the pressure rearming is successful.

**ATTENTION:** take care not to bend the stem during this operation!

Press the UPSO button (pos.2 if present) to reset the low pressure shutoff. Reinstall the cap (pos.16) after successful startup.

## 4. ADJUSTMENTS

Initial settings of regulator and safety devices must be carried out according to the following: The data indicated on the regulators name plate gives the initial regulator setting. It is possible to change the setting in every moment but not over than 10% of the nominal value indicated on the regulator name plate. To change the regulation pressure: remove the cap (pos. 1). Use a 27 mm socket wrench to screw the nut (pos. 3) to adjust the regulator pressure. If you increase the regulation pressure, you may need to increase the relief and the over pressure slam-shut valve setting as well. To adjust the regulator, turn the nut (pos.3) clockwise to increase the pressure. To reduce the pressure, turn the nut (pos.3) counter clockwise. To adjust the relief use a 16 mm socket wrench to turn the nut (pos.6) clockwise to increase the pressure. To reduce the pressure, turn the nut (pos.6) counter clockwise. To change the over pressure slam shut valve setting, remove the cap (pos.16). Use a 13 mm socket wrench. Turn the nut (pos.15) clockwise to increase the pressure. Turn the nut (pos.15) counter clockwise to reduce the pressure. Replace all removed caps after adjustment is done.

## DOWNSTREAM PRESSURE ADJUSTMENT SPRINGS

SPRINGS P/N	SPRINGS COLOR	SPRINGS RANGE [° w.c.]	SPRINGS RANGE [PSI]	SPRINGS RANGE [kPa]
US64470358BL	Blue	5.2 - 6.8	0.18 - 0.24	1.30 - 1.69
US64470401GI	Yellow	6 - 8	0.22 - 0.29	1.49 - 1.99
US64470359AR	Orange	6.8 - 8.8	0.24 - 0.32	1.69 - 2.20
US64470360VE	Green	8.8 - 11.2	0.32 - 0.40	2.20 - 2.79
US64470361RO	Red	11.2 - 15.3	0.40 - 0.55	2.79 - 3.81
US64470364GR	Grey	40.1 - 56.2	1.45 - 2.03	10 - 14
US64470365NE	Black	56.2 - 72.2	2.03 - 2.61	14 - 18

## OPSO ADJUSTMENT SPRINGS

SPRINGS P/N	SPRINGS COLOR	SPRINGS RANGE [° w.c.]	SPRINGS RANGE [PSI]	SPRINGS RANGE [kPa]
US6447038700	Stainless Steel	10 - 14	0.36 - 0.50	2.50 - 3.49
US64470120BLU	Blue	14 - 20	0.50 - 0.72	3.49 - 4.98
US64470402GI	Yellow	16 - 20	0.58 - 0.72	3.98 - 4.98
US64470121GI	Yellow	20 - 32	0.72 - 1.16	4.98 - 7.97
US64470122VE	Green	32 - 44	1.16 - 1.59	7.97 - 10.96
US6447040700	Violet	39 - 58	1.40 - 2.10	9.65 - 14.48
US64470123ROS	Red	44 - 65	1.59 - 2.32	11 - 16
US64470124AZ	Light Blue	65 - 88	2.32 - 3.20	16 - 22
US64470020MAR	Brown	88 - 120	3.20 - 4.30	22 - 30

## 5. TRIPPING OF OVER PRESSURE SHUT OFF VALVE (OPSO)

The over pressure slam shut valve trips if the downstream pressure exceeds the set-point. Tripping could be caused by internal leakage at the second stage during stand by or by dirty gas. Sudden interruptions of the gas flow can be caused by solenoid valves downstream (boiler or oven burners).

## 6. TRIPPING OF UNDER PRESSURE SHUT OFF VALVE &amp; EXCESS FLOW VALVE (UPSO) (Optional)

The UPSO trips in the case of decreasing of the regulation pressure beyond 70% when occurs one of the following conditions:

- The total volume of equipment served by the regulator shall not exceed the nominal value of flow rate indicated on the plate (see point 1). If this occurs, the UPSO trips when the flow rate is included between 110% and 150% of the nominal value of flow rate indicated on the plate (see point 1).
- Decreasing of upstream pressure under the minimum value indicated on the plate (see point 1).

## 7. INTERNAL RELIEF VALVE (IRV)

The IRV opens only in the case of little anomalies when downstream pressure value increases avoiding the intervention of the OPSO. The IRV closes when the downstream pressure decreases to the normal operating conditions (see Fig.2).

## 8. RESETTING THE SAFETY DEVICES AFTER TRIPPING (if installed)

Find what caused the failure tripping and repair it, before rearming any safety device. Tripping of the OPSO also causes the UPSO to trip. To reset the two devices follow this procedure:

- Remove the cap (pos.16) that covers the over pressure slam shut
  - Create a small leak by venting downstream of the regulator
  - Slowly pull the knob, (pos.20) the stroke of the knob is about 3/8" and the it will remain in position if the pressure rearming is successful.
  - Press button (pos. 2)
  - Close the small leak
- If only UPSO has tripped follow this procedure to reset the device:
- Create a small leak by venting downstream of the regulator
  - Press button (pos. 2)

If the operation has not been carried out properly, the OPSO may trip. In this case, the reduction of downstream pressure is required then proceed as explained in the instruction for rearming both the devices (OPSO and UPSO). **ATTENTION:** the OPSO valve cannot be reset if the downstream pressure is not reduced to a suitable level.

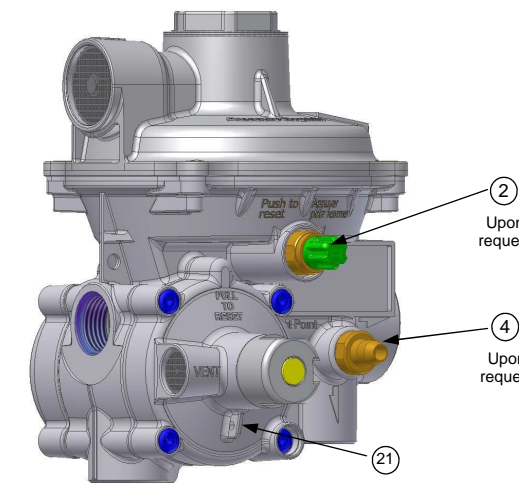


Fig. 3

## 9. SUGGESTIONS TO PREVENT TRIPPING OF THE SAFETY DEVICES

Do not exceed the maximum flow set-point values of the regulator. Do not feed the regulator with pressures lower than the minimum values indicated. Make sure you bleed the piping downstream to displace the air in the piping when the regulator is installed. Do not supply on-off type service loads (such as solenoid valves) if they are located close (approx. within 10 feet) to the regulator, unless a suitable downstream buffer volume is provided.

## 10. PERIODICAL INSPECTIONS

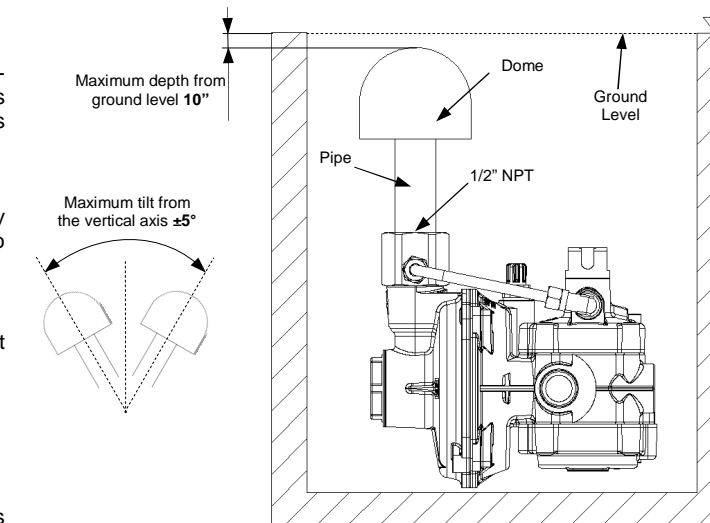
When inspections are performed on the regulator installations, checking the set points and good maintenance practices are recommended.

## MAINTENANCE MUST BE PERFORMED ON REGULATOR OUT OF SERVICE AND EMPTY SYSTEM.

## 11. FE REGULATOR UNDERGROUND/UNDERWATER VERSION

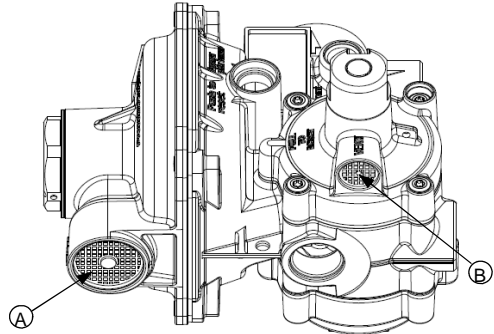
Connect the dome of the underground version to the vent, using the 1/2" NPT connection, keeping the dome as close as possible to ground level (pipe not supplied in the kit).

The pipe length changes according to the installation depth (the following image is only representative, the pipe may have different layouts).

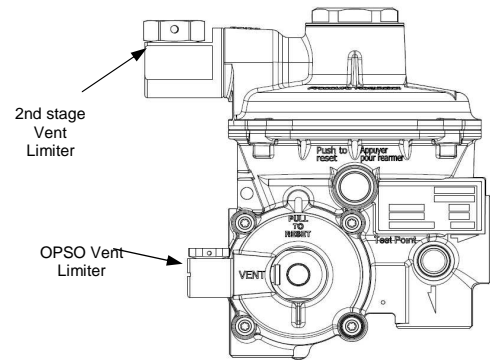


**12. FE REGULATOR ANTIFREEZING VERSION (SUITABLE FOR OUTDOOR INSTALLATIONS)**

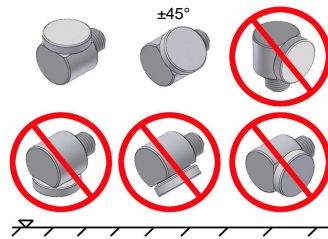
This version can be installed only in vertical position with both the vents (A and B) facing down, as shown in the following picture.



**13. FE REGULATOR - ANSI Z21.80 INSTALLATION DOUBLE VENT LIMITER KIT (ONLY FOR INDOOR INSTALLATIONS)**

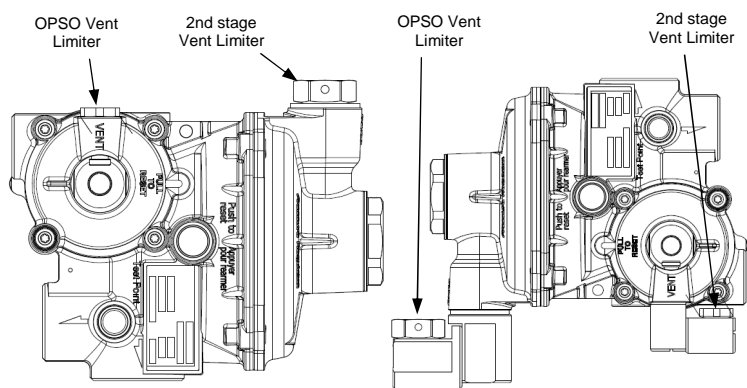


When using the external vent limiters, the flat top of the vent limiter must always be facing up, with the threads facing down, as shown in the following picture, so it operates properly.



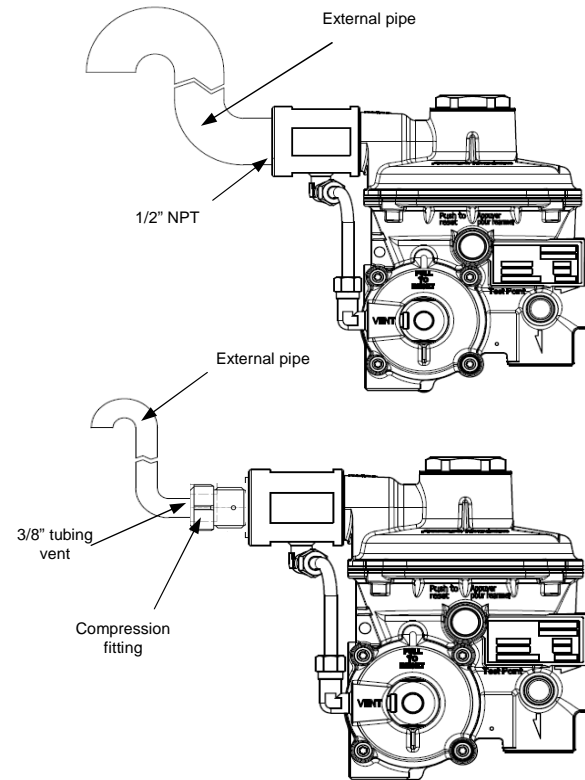
**NEVER USE THE VENT LIMITER IF THE REGULATOR IS INSTALLED OUTDOOR AND DON'T CONVERT THE VENT LIMITED VERSION FOR INDOOR APPLICATION TO OUTDOOR VERSION. VENT LIMITED VERSION FOR INDOOR APPLICATION HAS THE IRV DISABLED**

In the following pictures, it is shown how mount the vent limiters in the case of vertical gas flow:



**14. FE REGULATOR - UNIVENT KIT**

With a special kit it is possible to convert the anti-freezing version in the univent version. Remove the grids from the OPSO vent at the 2nd stage vent as explained at the point 15. Connect the OPSO vent at the 2nd stage vent as shown in the following pictures.



With this kit, you may use a single pipe to vent outside the regulator's head and slam shut:

- Maximum length of pipe : L = 35 feet
- Minimum internal diameter of pipe : 3/8 inches.

Additional pipes and adapters are not supplied in the kit. The picture is only representative, the pipe may have different layouts.

Vent line shall comply to NFPA 54, International Fuel gas code and any local code regulation, including sediments trap and termination protection.

To ensure the installation complies with CSA 6.22a-2005 and ANSI Z21.80a-2005 at no time should any restriction or plug be installed in the vent connection of the regulator. The outer end of the pipe shall be bent downwards to prevent entering of unwanted materials, protected by a grid to avoid the entrance of insects and provided of anti freezing protection.

**15. HOW TO REMOVE THE ANTI FREEZING GRIDS**

The grids are mounted only by interference with the covers; so to remove them, break the grid with a screwdriver and use it as a lever to pull out the grids.