

8 2 0 N O V A



Read the instructions before use. This control must be installed in accordance with the rules in force.

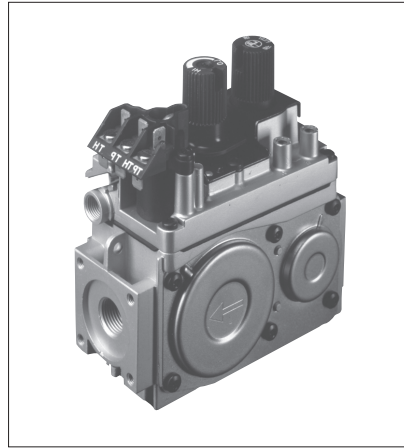
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APPLICATION

The 820 Nova Millivolt combination gas control is an On/Off gas valve suitable for use with gas fireplaces, gas log sets, gas space heaters and other gas heating equipment. Millivolt control permits complete regulation of the appliance, without requiring main supply voltage.

- The True Millivolt version utilizes a thermo-generator to power the main operator and the safety valve in B-vent applications.
- The Millivolt Plus is typically used in direct-vent applications where the main operator is powered by a thermo-generator and the safety valve is powered by a thermocouple with 11/32" thermocouple connection to the safety magnet.
- The Millivolt Plus may, in some instances, also be used in vent free applications that require a special oxygen depletion system (ODS) pilot. Valves for this application use a M8 thread for the thermocouple connection to the safety magnet.



SPECIFICATIONS

TECHNICAL DATA

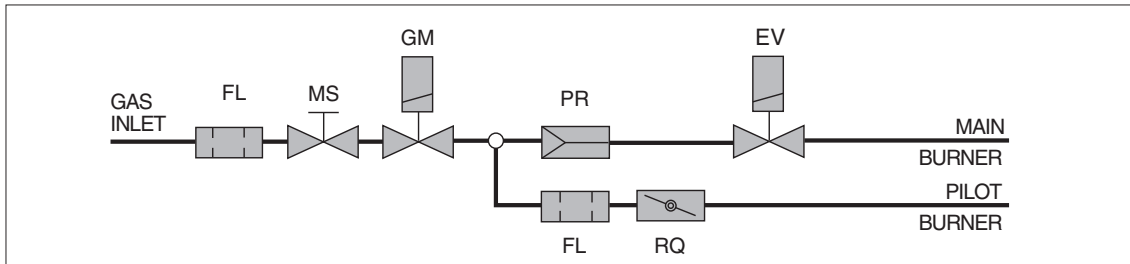
Gas connections	3/8" NPT or 1/2" NPT
Pilot connections	7/16" UNEF
Installation position	Multi-position, Never Upside down
Gas families	Liquefied Petroleum Gas or Natural Gas
Maximum gas inlet pressure	1/2 PSI
Maximum outlet pressure setting range	3.5"~6" w.c. for NG and 8"~12" w.c. for LPG
Working temperature range	32 ~ 175°F (optional 32 ~ 225°F)
Pressure regulator	Servo regulated

MAIN FEATURES

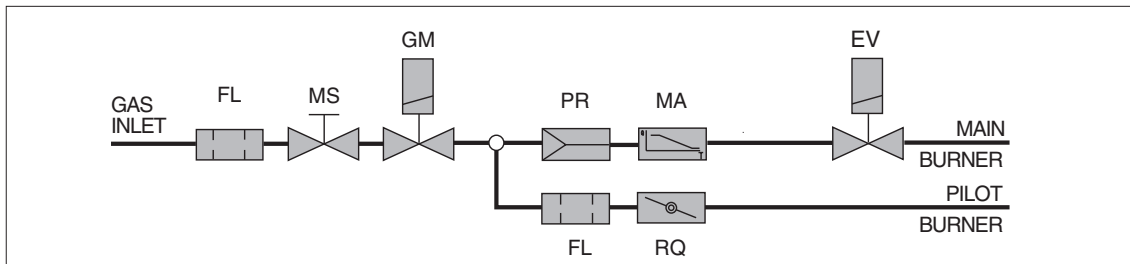
- Three position control knob: **"OFF/ PILOT / ON"** (MS)
- Thermo-electric flame failure device with re-start interlock (GM)
- Servo controlled Pressure Regulator (PR)
- Manual or electronic **"HI/LO"** adjustment (optional) (MA)
- Millivolt Operator (EV)
- Pilot outlet with flow adjustment screw (RQ)
- Inlet and pilot filters (FL)
- Inlet and outlet pressure test ports

WORKING DIAGRAM

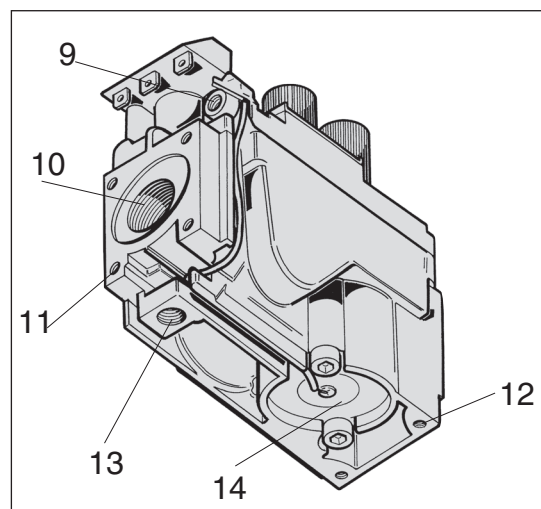
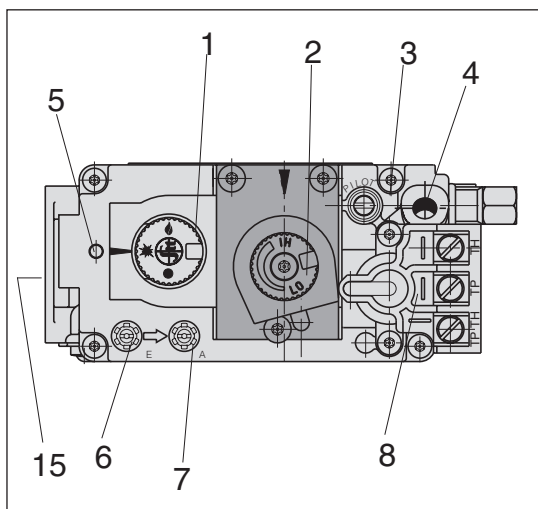
Versions with On/Off adjustment



Versions with manual flow adjustment



VALVE DESCRIPTION



- | | |
|---|-------------------------------------|
| 1. ON/PILOT/OFF Knob | 9. Pilot outlet |
| 2. Manual HI-LO adjustment or pressure regulator adjustment | 10. Main gas outlet |
| 3. Pilot adjustment | 11. Flange mounting screw holes |
| 4. Thermocouple connection | 12. Additional valve mounting holes |
| 5. Mounting for piezo & bracket | 13. Alternative TC connection point |
| 6. Inlet pressure test point | 14. Thermoelectric unit |
| 7. Outlet pressure test point | 15. Inlet |
| 8. Main operator | |

ELECTRICAL DATA



MAIN OPERATOR SPECIFICATIONS

Minimum open circuit voltage	$\geq 325\text{mV}$
Minimum closed circuit voltage	$\geq 100\text{mV}$
Operator resistance	$2.25\Omega \pm 0.5\Omega$

SAFETY MAGNET SPECIFICATIONS

Coil resistance	$0.015\Omega \sim 0.021\Omega$
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TYPICAL HOLD IN AND DROP OUT SPECIFICATIONS

	Hold In	Drop Out
True Millivolt	$<10\text{mA}$	$>4\text{mA}$
Millivolt Plus	$<285\text{mA}$	$>125\text{mA}$
Vent Free	$<200\text{mA}$	$>80\text{mA}$



STOP:

Do not install, replace, or in any way modify the gas valve or the appliance, unless CERTIFIED and QUALIFIED as a Gas Appliance Service Technician on the appliance this valve is used on. READ AND FOLLOW ALL INSTRUCTIONS.

INSTALLATION

When installation of this product begins...

1. Read all of these instructions carefully. Failure to follow these instructions could damage the product or cause a dangerous condition.
2. Check the ratings given in the instructions and on the appliance to make certain that the control is suitable for your application.
3. All operations of installation, calibration, conversion and regulation must be undertaken exclusively by a qualified and certified Gas Appliance Service Technician following the instruction specified in this catalog and those in the instruction manual of the appliance in which the valve is installed.
4. After installation is complete, verify that the appliance is operating as indicated in these instructions.

WARNING:

Oxygen Depletion Hazard.

Can cause injury or death by asphyxiation.

Do not use valves for vented appliances on unvented or vent free appliances. Do not use valves for unvented or vent free appliances on vented appliances.

WARNING:**Fire or Explosion Hazard.**

Can cause property damage, severe injury or death.

Follow these instructions completely.

1. Turn off gas supply at the appliance service valve before installation, and perform a Gas Leak Test after the installation is completed.
2. Always install the sediment trap in the gas supply line to prevent contamination of the gas control.
3. Do not force the control knob. Use only your hand to turn the knob. If the knob does not move by hand, the valve should be replaced by a trained service technician.

**CAUTION****Electrical shock or equipment damage hazard.**

Can shock individuals or short equipment circuitry.

Make sure to disconnect all electrical supplies before beginning the installation process.

**CAUTION**

Never apply a jumper wire between valve coil terminals, as this will damage the millivolt operator.

WARNING

Do not immerse in water the multifunctional gas control .

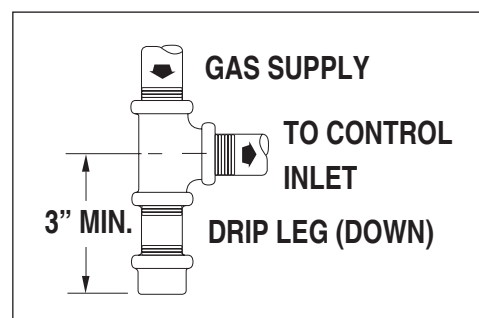
IMPORTANT

- These gas controls ship with anti-contamination seals over inlets and outlets.
- Do not remove the seals until ready for connection to piping.
- Appliance manufacturer's instructions supercede any instructions listed in this instruction book.

INSTALL PIPING TO THE GAS VALVE

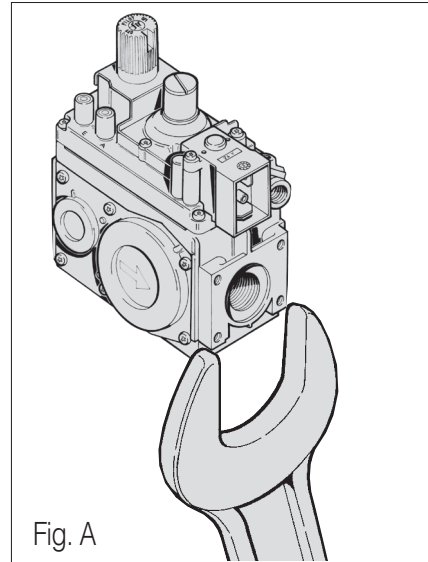
All piping must comply with local codes and ordinances or with the National Fuel Gas code (ANSI Z223.1 NFPA No. 54) whichever applies. Tubing installation must comply with approved standards and practices. Use appropriately sized fittings when connecting aluminum tubing to the pilot outlet.

1. Use new, clean and correctly reamed pipe free from burrs, chips, debris and any foreign matter. When tubing is used, make sure the ends are square and clean. All tubing bends must be smooth and without deformation.
2. Run pipe or tubing to the valve. If tubing is used, obtain a tube-to-pipe coupling to connect the tubing to the valve.
3. Install sediment trap (Drip Leg) in the supply line to the gas valve



INSTALLING THE VALVE

1. Mount the valve in the desired position.
2. Mount the valve so the flow of gas is consistent with the gas flow arrows on the valve.
3. Apply a moderate amount of quality pipe compound (DO NOT USE TEFLON TAPE) to the pipe only, leaving two end threads bare. On LP installations, use compound that resists exposure to LP gas.
4. Remove seals over inlet and outlet if necessary.
5. Connect pipe to valve inlet and outlet. Place wrench on valve as shown in (fig A).
6. Thread pipe into the valve until a gas tight seal is achieved. Typically, for NPT thread, penetration is usually no more than the diameter of the pipe or 2 and 1/4 turns of thread. Valve distortion or mechanical failure can result if the pipe is inserted too deeply.
7. Connect pilot tubing to valve with appropriately sized fittings.
8. Confirm gas tight seals with gas leak test.



WIRING

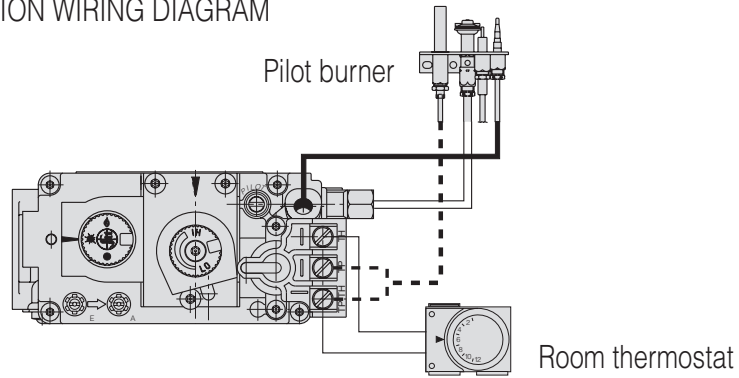
Follow the wiring instructions furnished by the appliance manufacturer, if available, or use the following general instructions. Appliance manufacturers instructions always supercede these instructions.

All wiring must comply with applicable electrical codes and ordinances.

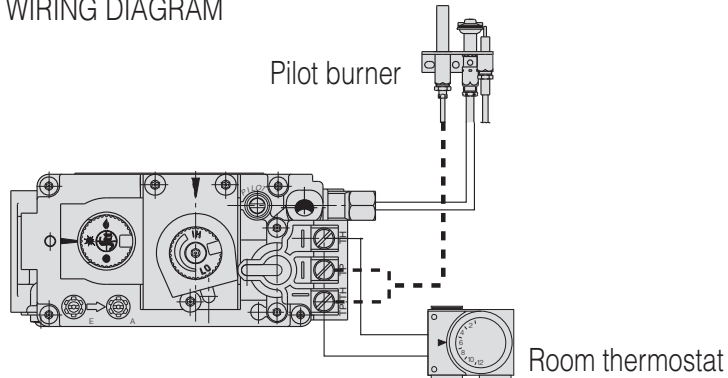
Disconnect the appliance power source before making any electrical connections to prevent the possibility of electrical shock or damage to equipment.

1. Check the millivolt rating on the gas valve and make sure it matches the available supply. Install thermostat and other accessories as required.
2. For the Millivolt Plus, connect thermocouple to convenient upper or lower connection port. Hand tighten, and then rotate 1/4 turn with wrench.
3. Connect the Thermo-generator leads to TPTH and TP terminals on main operator coil.
4. This valve may only be used in self-generating systems. Use only components specifically designed for use in a millivolt system.

MILLIVOLT "PLUS" VERSION WIRING DIAGRAM



MILLIVOLT VERSION WIRING DIAGRAM



WARNING:

Never connect valve to line voltage.

Failure to follow this will result in damage to equipment and could result in severe injury or death.

OPERATION

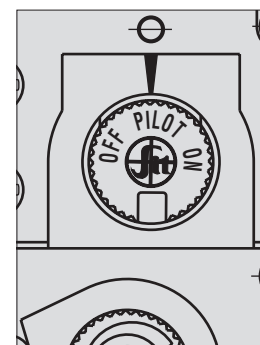
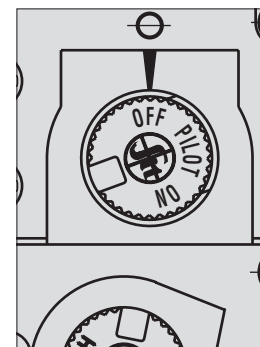
Start-up procedure

Set the thermostat, if present, to the lowest level. Press slightly and turn the control knob clockwise to the "OFF" position and wait five minutes; thus allowing any gases to escape which may have accumulated in the combustion chamber.

NOTE: LP gases do not vent upward.

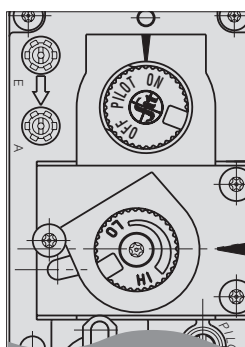
Pilot flame ignition

Press slightly and rotate the "OFF/ PILOT/ ON" control knob to the "PILOT" position. Press the knob and light the pilot flame, keeping the knob fully depressed for at least thirty (30) seconds until air in the pilot line vents and a strong pilot flame is present. Release the knob and verify that the pilot flame remains lit.



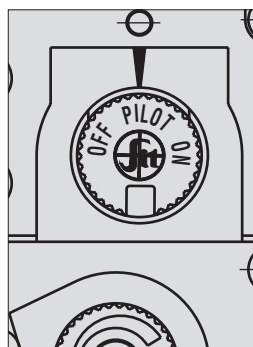
Igniting the main burner

Confirm that the thermostat is closed. Turn the “HI/LO” knob to the “LO” setting. Turn the control knob to the “ON” position. The gas path to the main burner is now open. The maximum gas flow to the burner is obtained with the knob fully turned counter-clockwise (“HI” position).



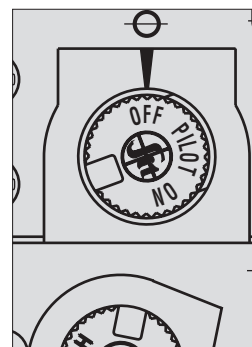
Stand-by position

To maintain a flame at the pilot burner with the main burner off, turn the control knob to the “PILOT” position.



Turning off

Turn the control knob to the “OFF” position.



CAUTION

After shutting down, wait at least five minutes before re-igniting. This will allow the safety interlock to reset.

FINAL CHECKS

WARNING:

Fire or Explosion hazard.

Can cause damage to property and severe injury or death.

Do not force the control knob. Use only your hand to turn the knob. If the knob does not move by hand, the valve should be replaced by a trained service technician.

PERFORM GAS LEAK TEST

WARNING:

Stand away from the main burner while lighting.

Hidden gas leaks can cause flashbacks in the appliance area. Check for gas leaks with rich soap and water solution any time work is done on a gas system.

GAS LEAK TEST

- Using a solution of soapy water, paint the piping connections, which are upstream of the control. The presence of bubbles indicates a gas leak.

- If a leak is detected, tighten the pipe connections and repeat leak test.
- Light the main burner.
- With the main burner in operation, paint all piping connections from the valve with a soap and water solution.
- If another leak is detected, tighten the connection.
- If after tightening the connections the leak is still present, replace the leaky part or valve. Shut off the main gas supply before attempting replacement of parts or the valve.
- Using the soap and water solution, test the pressure test ports to verify that no leak is present.
- If a leak is detected, tighten the screw and retest.
- If after tightening the pressure test port screw and the leak is still present, shut off main gas supply, then replace the valve.

SHUTDOWN PERFORMANCE TEST

WARNING:

Fire or Explosion Hazard.

Can cause severe injury or death.

Perform the safety shutdown check any time work is done on a gas system.

1. Place appliance in operation with the pilot and main burners lit.
2. Place gas control knob in **"PILOT"** position. Main burner should extinguish and pilot should remain lit.
3. Extinguish pilot flame. Pilot gas safety shutoff proves complete shutdown due to the fact the safety shutoff valve prohibits main burner and pilot gas flow.
4. Wait at least five minutes for the safety magnet to reset and residual gas to clear from the combustion chamber.
5. Relight pilot burner and operate the system through one complete cycle to ensure all functions operate correctly.

VALVE CONVERSION WITH CONVERSION KIT

- Turn control knob to the "OFF" position, and shut off the gas supply to the valve.
- Using a Torx T20 or Slotted screwdriver, remove and discard the three regulator assembly mounting screws, pressure diaphragm and the spring and diaphragm assembly. (fig. A)
- Insure that the rubber gasket is present and properly positioned, then install the new regulator assembly to the valve using the new screws supplied with the kit (fig. B) Tighten screws securely to 25 in/lbs torque.
- Install the enclosed identification label to the valve body where it can be easily seen. (fig. B)
- Apply gas to system and re-light appliance

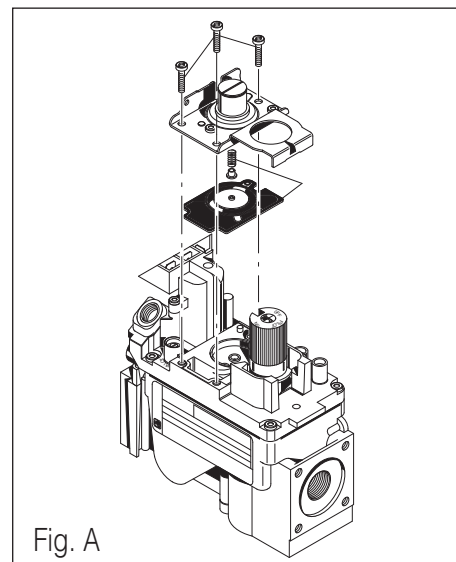


Fig. A

according to manufactures instructions.

- Use leak test explained in these instructions to test for leaks.
- Relight the main burner in both the “HI” and “LO” positions to verify proper burner ignition and operation.

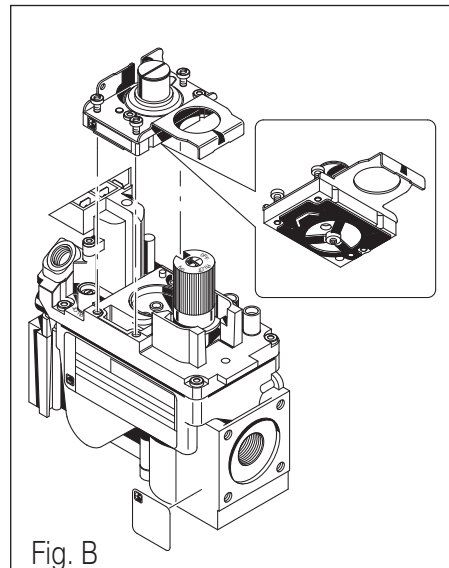


Fig. B

VALVE CONVERSION (CONVERTIBLE HI-LOW VERSION)

- Turn control knob to the "OFF" position, and shut off the gas supply to the valve.
- Allow the valve to cool down to room temperature.
- Remove the black protection cap by hands (fig. 1).
- Insert a 5/32" or 4 mm Allen wrench into the exagonal key-way of the screw (fig. 2), rotate it counter-clockwise until it is free and extract it.
- Check that the screw is clean and if necessary remove dirt.
- Flip the screw (fig. 3).
- Using the Allen wrench as shown in fig. 4, rotate the screw clockwise until a torque of 9 in·lbs.

WARNING!

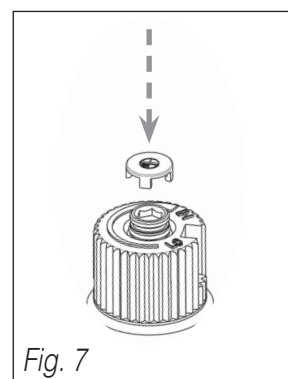
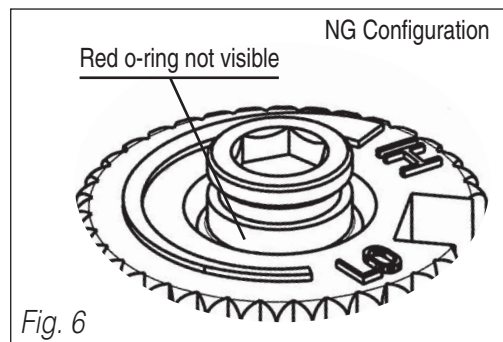
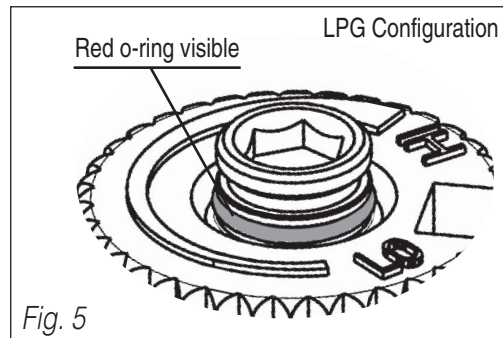
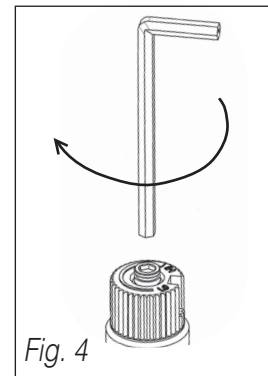
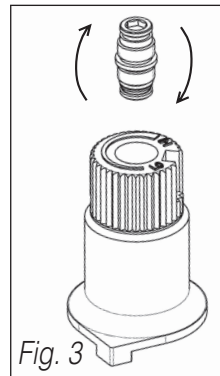
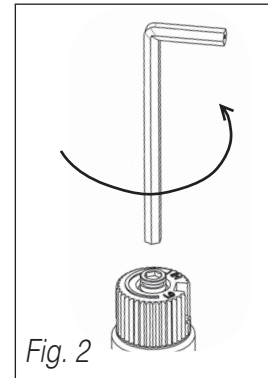
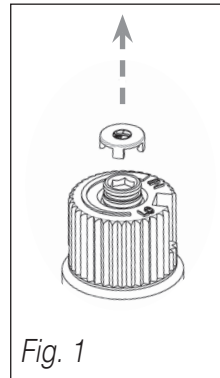
Do not overtighten the screw. Recommended to grip the wrench by the short side.

- Verify that if the conversion is from NG to LPG, the screw must be re-assembled with the red o-ring visible (fig. 5).
- If the conversion is from LPG to NG, the red o-ring of the screw must be not visible (fig. 6).
- Re-assemble the black protection cap (fig. 7).

WARNING!

Check that also the pilot and main burner injectors are appropriate for the gas type.

- Restore gas to system and re-light appliance according to manufactures instructions.
- Relight the main burner in both the "HI" and "LO" positions to verify proper burner ignition and operation.



Maintenance

This valve is not field serviceable. There are no replaceable parts. Do not disassemble, or attempt replacement of any parts on or in the valve. Improper adjustment or tampering with settings can result in severe injury or death.

If the main burner does not ignite when called for...

1. Confirm that the gas control knob is in the "ON" position.
2. Adjust the thermostat several degrees above ambient temperature.
3. Use a DC voltmeter to measure the voltage across the TPTH and TP terminals. Main operator voltage: Open circuit $\geq 325\text{mV}$ Closed circuit $\geq 100\text{mV}$
4. If voltage is not present, check the control circuit for proper operation.
5. If proper control system voltage is present, replace the gas control.

ACCESSORIES

Millivolt generator 450mm (19")	0.240.001
Millivolt generator 600mm (23")	0.240.002
Piezo-igniter	0.073.953
Bracket for piezo-igniter	0.978.099
Bracket mounting screw	0.953.303
Battery powered igniter	0.073.801
Battery igniter switch and cable	0.927.017
Control knob extension	0.916.188
Adjustment knob extension	0.916.189
<i>Many other accessories available on request</i>	

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