



RANCO • PARAGON • CASTFUTURA

# INSTALLATION GUIDE

## HOT SURFACE IGNITION GAS VALVE

### 8500 SERIES

The Robertshaw® 8500 series gas valves for use on hot surface ignition systems are designed for a wide variety of applications. The valve incorporates a switch, dual automatic valves and a main gas pressure regulator. Models for step-opening are also available.

The 8500 series valves have their pressure regulators factory pre-set at 3.5 W.C. for natural gas and 10 W.C. for LP gas

The 8500 series valves feature wiring connections, switch selector and adjustments that are all easily accessible on top of the valve. With a 3-9/16" swing radius, the valve lends itself well to replacing many O.E.M. valves. The valves are multi-position and can be mounted in any position (Any angle between 0 and 90 degrees from upright, except upside down).

#### SPECIFICATIONS

Electrical Ratings ..... 24 VAC, .280 amps

Pressure Regulator

Natural Gas ..... factory set at 3.5" W.C.

LP ..... factory set at 10.0" WC

Ambient Temperature ..... -40° to 175°F

Maximum Inlet Pressure ..... 1/2" PSI

#### REGULATION CAPACITIES

SIZE	TYPE GAS			
	NATURAL		LP	
	MIN.	MAX.	MIN.	MAX.
1/2" x 1/2"	15,000	250,000	40,000	440,000
3/4" x 3/4"	15,000	250,000	40,000	440,000

#### INSTALLATION INSTRUCTIONS

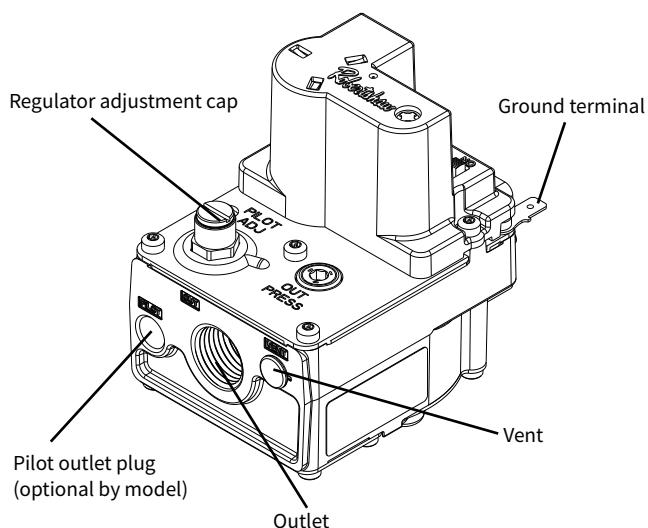
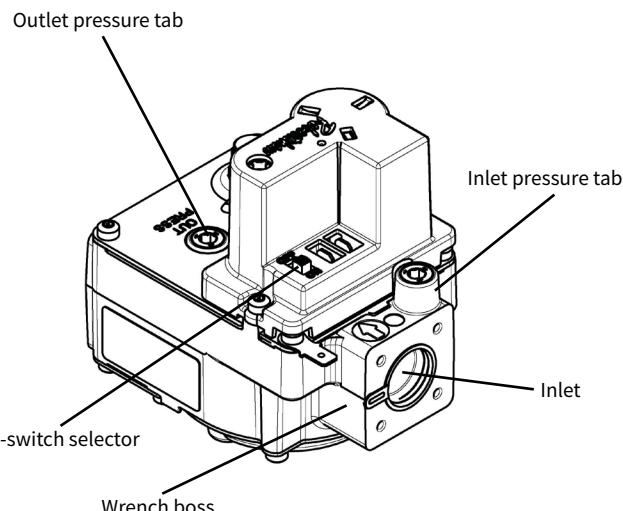


##### CAUTION

THIS DEVICE SHOULD BE INSTALLED BY A QUALIFIED  
TECHNICIAN WITH DUE REGARD FOR SAFETY AS IMPROPER  
INSTALLATION COULD RESULT IN A HAZARDOUS CONDITION.

**WARNING!**

To avoid possible injury, fire and explosion, please read and follow these precautions and all instructions on the appliance. This bulletin is intended as a guide to qualified servicemen installing or servicing Robertshaw Controls. Repairs, adjustments and servicing should be limited to the operations listed in this bulletin or on the appliance.



##### FOR YOUR SAFETY

**IF YOU SMELL GAS:** (A) turn off gas at line valve or meter, (B) open windows, (C) do not touch electrical switches, (D) extinguish all open flames, (E) immediately call your gas supplier from neighbors.

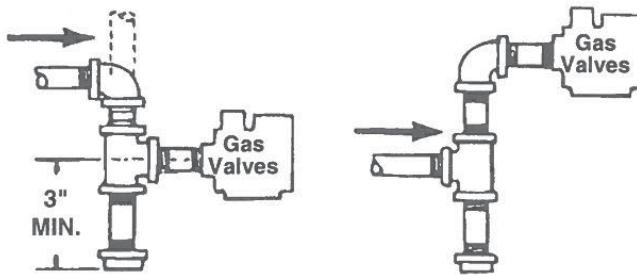
**Turn off gas supply and electrical power to equipment before servicing**

##### PIPING

1. Check replacement valve for multiple outlets (side outlets). If it has them, be sure all unused outlets are plugged using the sockets provided.
2. Pipe or tubing must be clean and free of scale and dirt.
3. Make sure gas piping is pressure tested before control is connected. High pressure can damage control causing a hazardous condition. Do not subject control to more than 1/2 PSI, (14" W.C.) inlet pressure.

## INSTALLATION INSTRUCTIONS (CON'T)

- If it's not already installed, a drip leg (sediment trap) must be added to the gas supply line to the control. (See figure below). All piping must comply with local codes and ordinances and with National Fuel Gas Code (ANSI.1/NFPA, No. 54).



- Using pipe thread compound suitable for gas being used, apply a small amount on the male pipe threads. (Do not use Teflon tape or Teflon compound). Leave the first two threads clean. Never use compound on female threads as it might be pushed into the control body.
- The gas valve is multi-position and can be mounted in any position (except upside down) without affecting its operation.
- Install gas valve so gas flow conforms with the inlet and outlet of the control.
- DO NOT** insert any object other than suitable pipe or tubing in the inlet or outlet of this control. Internal damage may occur and result in hazardous condition. A backup wrench should only be used on the wrench boss provided for this purpose (see drawing), never on body of the control, as this could distort the casting. **NOTE:** Do not overtighten any pipe connections, as this could crack the valve body. A valve with a cracked valve body will not be warranted.

## PILOT TUBING

**NOTE:** Some hot surface applications use the pilot outlet, if so proceed as directed below.

- Make sure tubing is free of burrs and dirt.
- We strongly recommend that the pilot orifice be checked and cleaned if necessary at this time.
- Connect pilot tubing into the control using fitting provided, and tighten for a gas-tight seal.

## WIRING

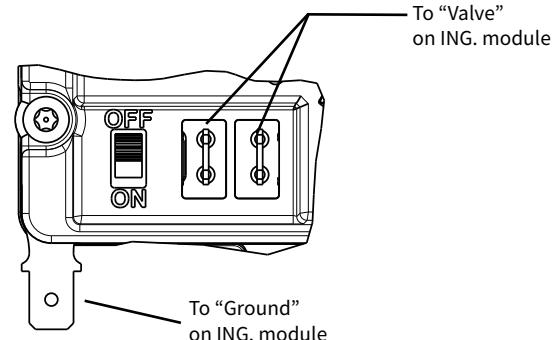
**DO NOT** short gas valve terminals. This will damage wall thermostat and void warranty.

Check the system for the proper transformer by comparing the VA ratings of the transformer and the system. The system rating is determined by multiplying the voltage draw times the amp draw. Normally 20VA transformers are sufficient for heating only applications and 40VA for heating/cooling applications.

**NOTE:** Improper transformer VA rating will cause erratic system operation.

## 8500 DER MODELS

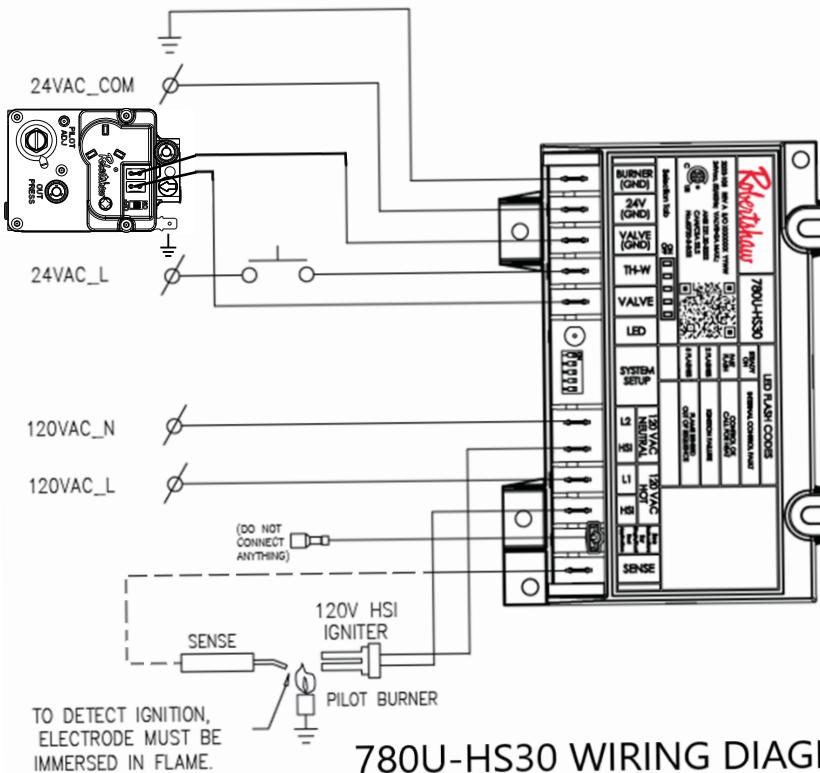
- Connect the gas valve terminal #1 to the "valve" terminal on the ignition control module. See wiring diagram shown below.
- Connect the gas valve terminal #2 to the "valve" terminal on the ignition control module. See wiring diagram shown below.



## LEAK TEST

Leak test with a soap solution after installing with main burner on. Coat pipe and tubing joints, gasket, etc. with soap solution. Bubbles indicate leaks.

## INSTALLATION INSTRUCTIONS (CON'T)



**780U-HS30 WIRING DIAGRAM  
(HOT SURFACE)**

120 VOLT IGNITOR

## OPERATING INSTRUCTIONS



### CAUTION

- WARNING:** If you do not follow these instructions exactly, a fire or explosion may result with property damage, personal injury or loss of life.
- Smell all around the appliance area for gas. If the appliance uses L.P. (bottled) gas also be sure to smell next to the floor because L.P. gas is heavier than air.
- WARNING:** If you smell gas, immediately shut off the manual valve in the gas piping to the appliance. Don't touch any electrical switch or use the phone. Leave the building and call your gas supplier. If he cannot be reached, call the fire department.
- WARNING: Do not force the gas control knob on the appliance.** Use only your hand to push down and/or to turn the gas control knob. Never use any tools. If the gas control knob will not operate by hand, the control should be replaced by a qualified service technician. Forced or attempted repair may result in fire or explosion.
- WARNING: The gas control must be replaced if it has been exposed to water.**

- Turn wall thermostat to its lowest setting. Remove burner access panel(s).  
Selector switch must only be operated by hand (see below).  
**DO NOT** use pliers, wrenches or other tools to operate the switch.
- Move selector switch to the "off" position. (See figure 1.)
- WARNING:** Wait at least 5 minutes to allow any gas in the combustion chamber to vent. If you then smell gas in the appliance area or near the floor, STOP and follow warning instructions to the left. Failure to do so may result in fire or explosion.
- Move selector switch to the "on" position, (see figure 2), and set room thermostat to desired temperature. Allow burner to cycle on and off.
- Leak test with a soap solution after installing with main burner on. Coat pipe and tubing joints, gasket, etc. with soap solution. Bubbles indicate leaks.
- Replace burner access panel.

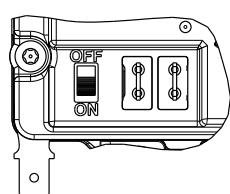


Figure 1

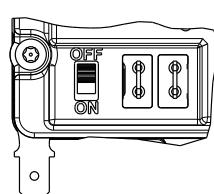


Figure 2

## SERVICE INSTRUCTIONS

**CAUTION:** If control has been exposed to water in any way, it must be replaced. If gas valve fails to shut off, do not turn off electrical power. Turn off gas supply allowing fan or circulating pump (if so equipped) to continue running until system has cooled. Replace control.



### WARNING

Servicing of gas controls, appliance and systems must be performed by qualified service personnel only.

## PRESSURE REGULATOR ADJUSTMENTS

Adjustment of the pressure regulator is not normally necessary since it is preset at the factory. However, field adjustment may be accomplished as follows:

**NOTE:** Manometer attachment may be accomplished at pressure tap plug, above control outlet, as shown in figure to the right. If using inlet pressure tap to measure incoming pressure. See drawing on first page.

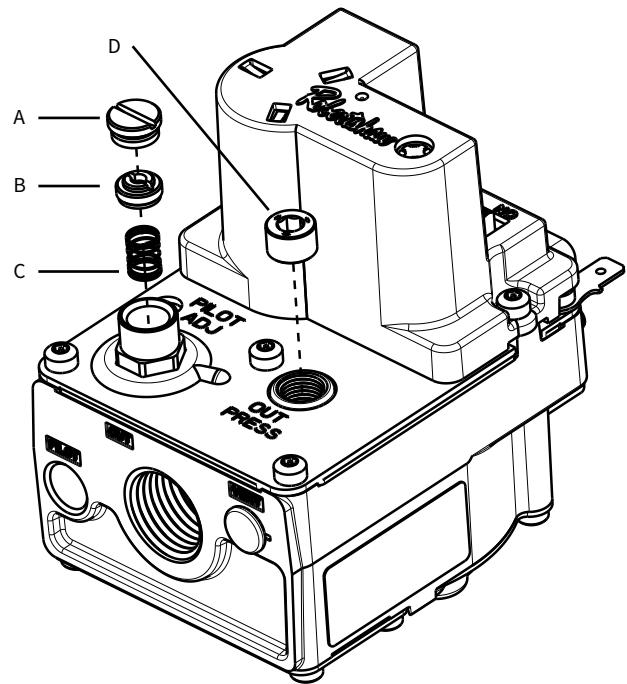
1. Manometer or gauge attachment may be accomplished at pressure tap plug (D).
2. Remove regulator adjustment screw cap (top of control - A).
3. With small screwdriver, rotate adjustment screw (B) "clockwise" to increase, or "counterclockwise" to decrease pressure to comply with manufacturer's specifications.
4. Replace regulator adjustment screw cap (A).

## REGULATOR CONVERSION

**CAUTION: Main burner and pilot orifices must be changed when regulator is converted from one type of gas to another.**

The 8500 series valves can be converted from natural to L.P. by installing the enclosed conversion kit.

1. Turn off gas and electricity to appliance.
2. Remove slotted cap (A), adjusting screw (B), and natural gas spring not color coded - (C), from control.
3. Install new L.P. spring - color coded with a black strip.
4. Install new adjusting screw (B).
5. Attach manometer or pressure gauge at the outlet pressure tap (D).
6. Turn gas and electricity on.
7. Turn room thermostat to call for heat.
8. With burner on, adjust screw (B) to supply L.P. gas to pressure as recommended by the appliance manufacturer.
9. If adjusting screw (B) reaches its maximum depth (bottoms out) before recommended pressure setting is reached, turn screw counterclockwise until pressure drops slightly (approximately 0.1" W.C.) **WARNING: Do not stretch or alter spring.**



10. Turn off gas and electricity to appliance.
11. Remove manometer or pressure gauge and reinstall pressure tap outlet plug (D).
12. Install new red slotted cap in place of (A).
13. Turn gas and electricity on.
14. With burner operating, immediately check all fittings for leaks with soap solution. Bubbles indicate leaks that must be corrected.
15. Attach label to show control has been converted to L.P.
16. Set room thermostat to desired temperature.

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