

# LP CONVERSION & INSTALLATION INSTRUCTIONS WHITE RODGERS 36J27 STEPPER MODULATING VALVE w D.S.I. IGNITION

## USE WITH RGFE, RGGE and RGJF SERIES FURNACES WITH HG and HH FUEL CODES

**BEFORE INSTALLING THIS KIT, CHECK THE "CONVERSION KIT INDEX" (92-21519-59) TO BE SURE YOU HAVE THE RIGHT KIT FOR THE FURNACE MODEL YOU ARE CONVERTING.**

Please be aware that in this case the specified kit on some older LP indexes is the RXGJ-FP07. This kit (RXGJ-FP27MX) replaces the modulating natural gas valve with a stepper LP gas valve.

**TO CONVERT FROM NATURAL TO LP GAS, USE KIT NUMBER (-)XGJ-FP27MX**

PARTS LIST		
DESCRIPTION	RHEEM PART NUMBER	Qty in (-)XGJ-FP27MX
Kit - Model Index Sheet	92-21519-59	1
Stepper Modulating Gas Valve, White-Rodgers #36J27	60-102787-01	1
Wire Assembly from Furnace Control to Twist-Lock, Upflows	45-24371-51	1
Wire Assembly from Furnace Control to Twist-Lock, Downflows and Horizontals	45-24371-52	1
Twist-Lock Wire Assembly	45-102786-01	1
Stepper Valve LP Conversion Kit	60-21193-05	1
	(WR #F92-1021)	
Orifice - Burner (1.15 mm) (For Altitudes up to 3,000 ft.)	62-22175-91	8
Wire Tie, 8"	64-17606-01	6
Wire Tie, Locking, Wing, Push Mount, 6"	64-25340-01	2
Installation Instructions (this document)	92-103973-01	1
Label, LP Conversion	92-18153-05	1
Label, Wiring Diagram (Valid for all configurations after this kit is installed.)	90-24216-05	1
Label - Gas Valve Converted / Fuel Code Change	92-103978-01	1



**Recognize this symbol as an indication of Important Safety Information!**



### **WARNING**

**THIS CONVERSION KIT IS TO BE INSTALLED BY A QUALIFIED SERVICE PROFESSIONAL IN ACCORDANCE WITH THE MANUFACTURER'S INSTRUCTIONS AND ALL CODES AND REQUIREMENTS OF THE AUTHORITY HAVING JURISDICTION. FAILURE TO FOLLOW INSTRUCTIONS COULD RESULT IN SERIOUS INJURY OR PROPERTY DAMAGE. THE QUALIFIED PERSONNEL PERFORMING THIS WORK ASSUMES RESPONSIBILITY FOR THIS CONVERSION.**

### **RECOMMENDED TOOLS:**

*Slotted Screwdriver    1/4" Nut driver    7/16" Socket or wrench    1/2" Wrench  
Pipe wrench(es)    Needle-nosed pliers    Pipe dope or Teflon Tape\*    Vice  
Adjustable Wrench(es)*

\* Use a pipe compound resistant to the action of the liquefied petroleum gases at all threaded pipe connections.

**IMPORTANT: DAMAGE TO THE PRODUCT RESULTING FROM FAILURE TO FOLLOW INSTRUCTIONS OR USE OF UNAUTHORIZED PARTS MAY BE EXCLUDED FROM THE MANUFACTURER'S PRODUCT WARRANTY COVERAGE.**

All gas piping must comply with the latest NFPA 54 National Fuel Gas Code and all state and local codes. All electrical wiring must comply with the latest NFPA 70, National Electrical Code and all state and local codes.

Be sure to check the fuel code of your furnace. The fuel code is the first two characters of the serial number. If the fuel code is HG or HH, this is the correct kit for converting your furnace to LP. All other fuel codes will use a different kit. See the most current LP conversion kit index (included in this kit) to determine the correct LP conversion kit.

**A NOTE ABOUT HIGH ALTITUDE INSTALLATIONS**

High altitude installations above elevations of 2000 ft. may require an orifice change. Different orifices must be used and ordered from PROSTOCK. Consult the LP Kit Conversion Kit Index (92-21519-59) for instructions.



**WARNING**

**WHEN CONVERTING NO<sub>x</sub> MODELS TURN OFF ELECTRICAL POWER AND MAIN GAS SUPPLY BEFORE BEGINNING MODIFICATION. FAILURE TO DO SO CAN RESULT IN ELECTRICAL SHOCK OR EXPLOSION CAUSING PROPERTY DAMAGE, PERSONAL INJURY OR DEATH.**

This furnace does not require the NO<sub>x</sub> stainless steel inserts located in the burner tube in order to meet SCAQMD NO<sub>x</sub> emission levels when run on LP gas. Carefully remove these inserts and retainer before firing this furnace on LP gas.

Discard the NO<sub>x</sub> inserts and rod.

Replace the burner tray assembly.

Reinstall the NO<sub>x</sub> rack mounting screws to seal the panel and prevent air leakage.

**KIT INSTALLATION (SEE PHOTOS)**



**WARNING: DISCONNECT GAS AND SHUT OFF ELECTRICAL POWER TO ANY FURNACE BEFORE SERVICING! FAILURE TO DO SO COULD RESULT IN SERIOUS INJURY OR DEATH.**

These instructions are written with the assumption that the furnace has never been connected to a gas supply (natural gas, LP or otherwise) or power. However, if the furnace is connected to gas or power before starting, the installer must make sure to disconnect the electrical supply and turn off the electrical switch to the furnace and shut of the gas supply to the furnace. Failure to do so could result in serious injury or death.

1. Disconnect electrical supply and turn off the electrical switch to the furnace.
2. Shut off the gas supply to the furnace.

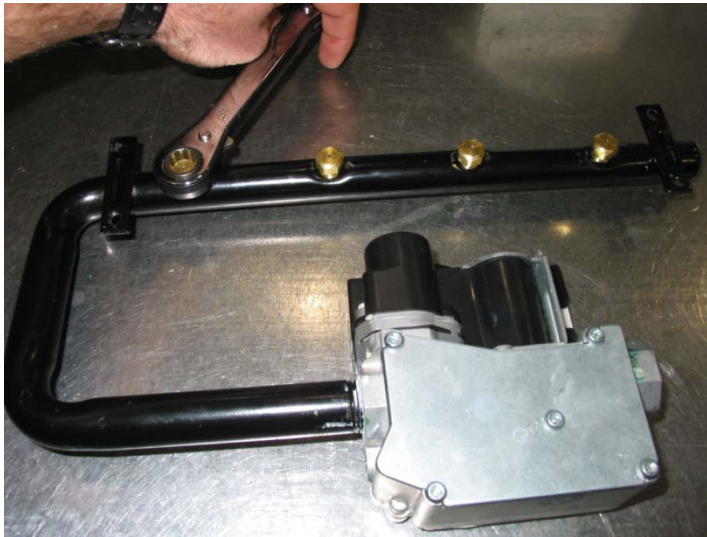
3. Remove the blower and burner compartment doors from the furnace.
4. Disconnect the gas line at the union ahead of the combination gas valve.
5. Disconnect the wire assembly from the gas valve.
6. Remove gas valve and manifold from the furnace by removing the four screws that hold the manifold assembly to the burner assembly.
7. Remove the gas valve from the manifold and clean the threaded end of the manifold to remove existing doping or Teflon tape.
8. Put fresh pipe dope or Teflon on the clean threads of the manifold.

NOTE: Use a pipe compound resistant to the action of the liquefied petroleum gases at all threaded pipe connections.

9. Install the replacement gas valve (White-Rodgers 36J27) that came with the kit ((-)XGJ-FP27MX)
10. Remove the existing orifices from the manifold assembly and replace with the appropriate LP orifices based on LP gas and attitude as described below:

**A. To Change Burner Orifice**

Remove each burner orifice from the manifold. See Figure 1. Refer to Table 1 (below) for U.S. installations and Table 2 (below) for Canadian installations and verify the correct burner orifice size required. Open the burner orifice envelope marked with the orifice drill size required and install in the burner when the unit is converted to LP gas.



**Figure 1:** Remove the factory orifices using a 1/2" wrench or socket

NOTE: Use a pipe compound resistant to the action of the liquefied petroleum gases at all threaded pipe connections.

**Orifice Selection: U.S. INSTALLATIONS  
PROPANE GAS AT 4% PER 1000 FEET DERATE**

Heating Value (Btu/Ft <sup>3</sup> )	0 to 2000 ft		2001 to 3000 ft		3001 to 4000 ft		4001 to 5000 ft	
	Orifice Number / (mm)	Input per Burner (BTU's)	Orifice Number / (mm)	Input per Burner (BTU's)	Orifice Number / (mm)	Input per Burner (BTU's)	Orifice Number / (mm)	Input per Burner (BTU's)
2500	1.15mm	15,000	1.15mm	13,200	1.10mm	12,600	#58 (approx 1.05mm)	12,000
Orifice Part #	62-22175-91 (included with RXGJ-FP27MX kit)		62-22175-91 (included with RXGJ-FP27MX kit)		62-22175-90		62-22175-58	

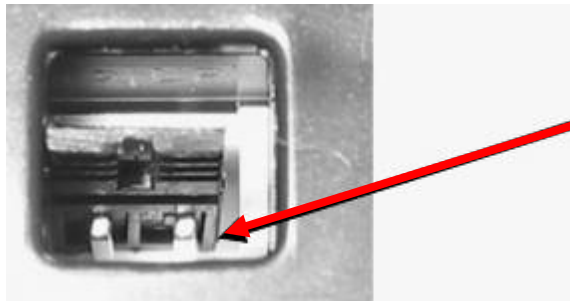
**Table 1:** LP Orifice Selection for U.S. Installations based on altitude.

**Orifice Selection: CANADIAN INSTALLATIONS**

ALTITUDE (ft above Sea Level)	INPUT	OUTPUT	ORIFICE SIZE
0' to 2000'	80,000 btu/hr	76,000 btu/hr	1.15 mm 62-22175-91 (included with RXGJ-FP27MX kit)
2001' to 4500'	80,000 btu/hr	76,000 btu/hr	1.15 mm 62-22175-91 (included with RXGJ-FP27MX kit)

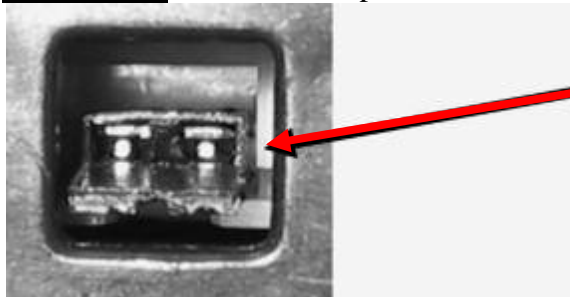
**Table 2:** LP Orifice Selection for Canadian Installations based on altitude.

- Follow detailed instructions supplied with the White-Rodgers conversion kit (WR #F92-1021 included as part of this kit ((-)XGJ-FP27MX)) to convert the gas valve for LP. A jumper must be installed and a new label (LP) placed over the jumper well (see Figure 6). Note that the jumper must be properly installed such that the pins in the jumper well (See Figure 6) are connected together by the jumper. Figure 2 (a and b) below shows both correct and incorrect installations of the jumper.



Incorrect Way to Install the jumper. The pins in the jumper well are NOT connected together.

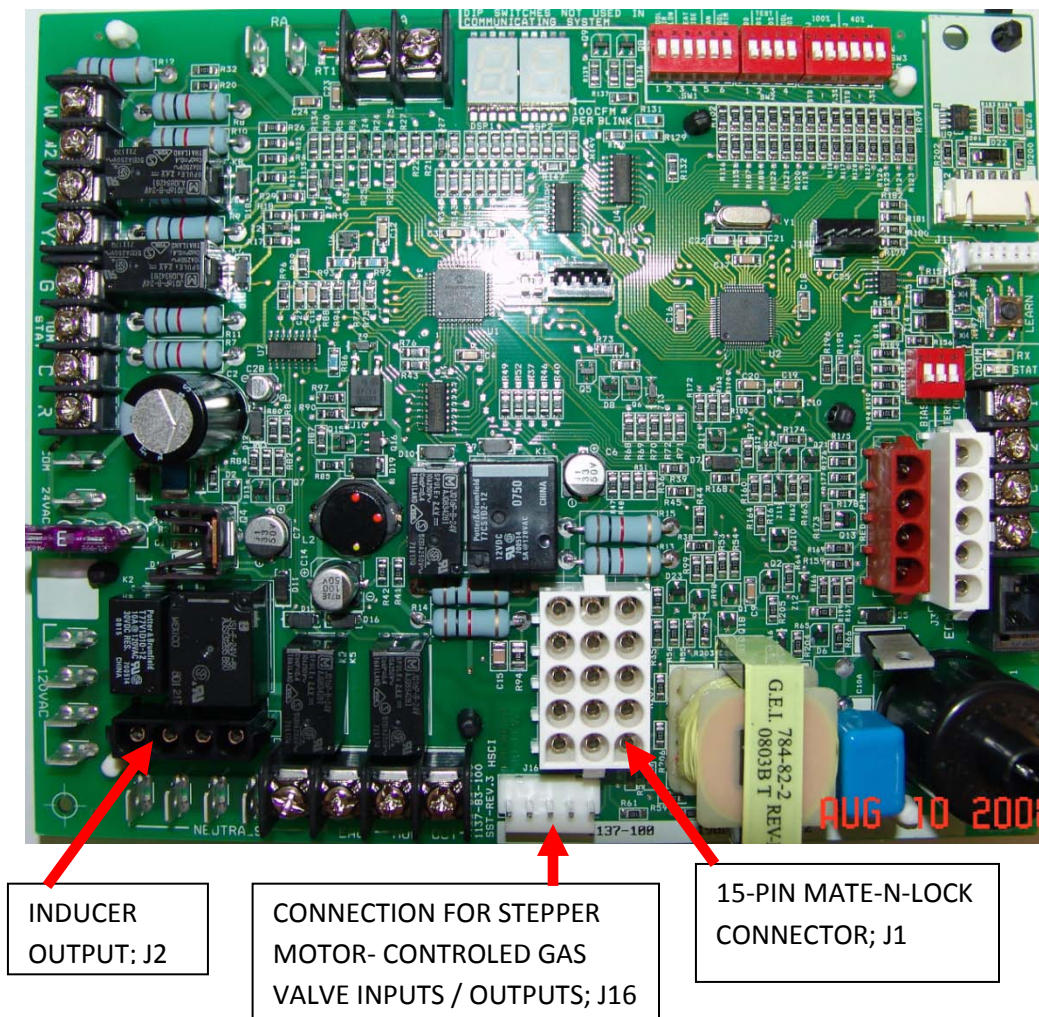
**Figure 2a:** Incorrect Jumper Installation.



Correct Way to Install the jumper. The pins in the jumper well ARE connected together.

**Figure 2b:** Correct Jumper Installation.

- Remove the wire assembly in the blower compartment from the furnace control to the twist-lock wire harness. For all models, this includes connections at J1 and J2 of the Integrated Furnace Control (IFC) (see Figure 3) and the 16-Pin connector to the twist-lock wire assembly. For downflows (-GGE's) and horizontals (-GJF's) only, remove the connectors (4) at the Heat-Assisted Limit Control (HALC) (also known as the Auxilliary limit). This limit control is mounted on the blower housing (see Figure 4).



**Figure 3:** Various Connectors on the UT Electronic Controls Modulating Furnace Control.

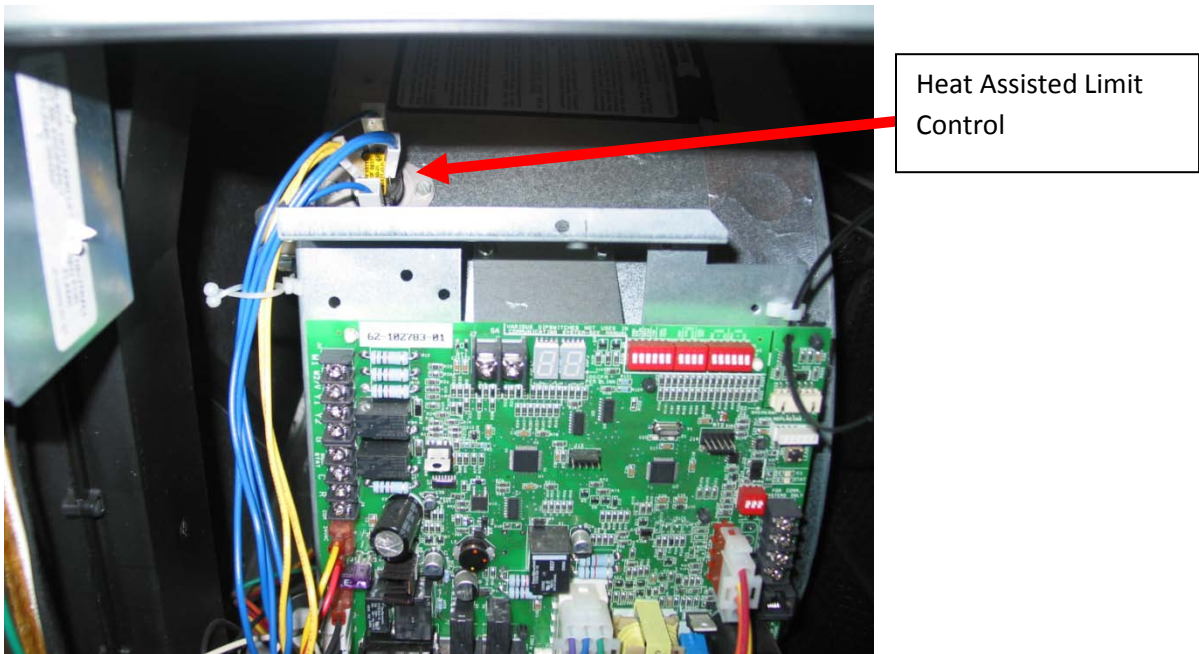
- Remove the twist-lock wire assembly from the furnace (see Figure 5). Unscrew the rubber grommet from the blower shelf by twisting it counter-clockwise (viewed from burner compartment). Next, disconnect all of the components connected to this wire assembly. This includes the gas valve (already disconnected from step #5 above), the pressure switches, main limit control, Manual Reset Limit Controls (MRLC's) and inducer.
- Install the modified manifold assembly with replacement valve to the burner assembly by installing the four screws that secure the manifold to the burner assembly.
- Replace the wire assembly removed in item 13 above with the twist-lock wire assembly supplied (45-102786-01) in this kit. This is the wire assembly with a large rubber

grommet. Note that the new twist lock assembly will have a connector for the replacement gas valve.

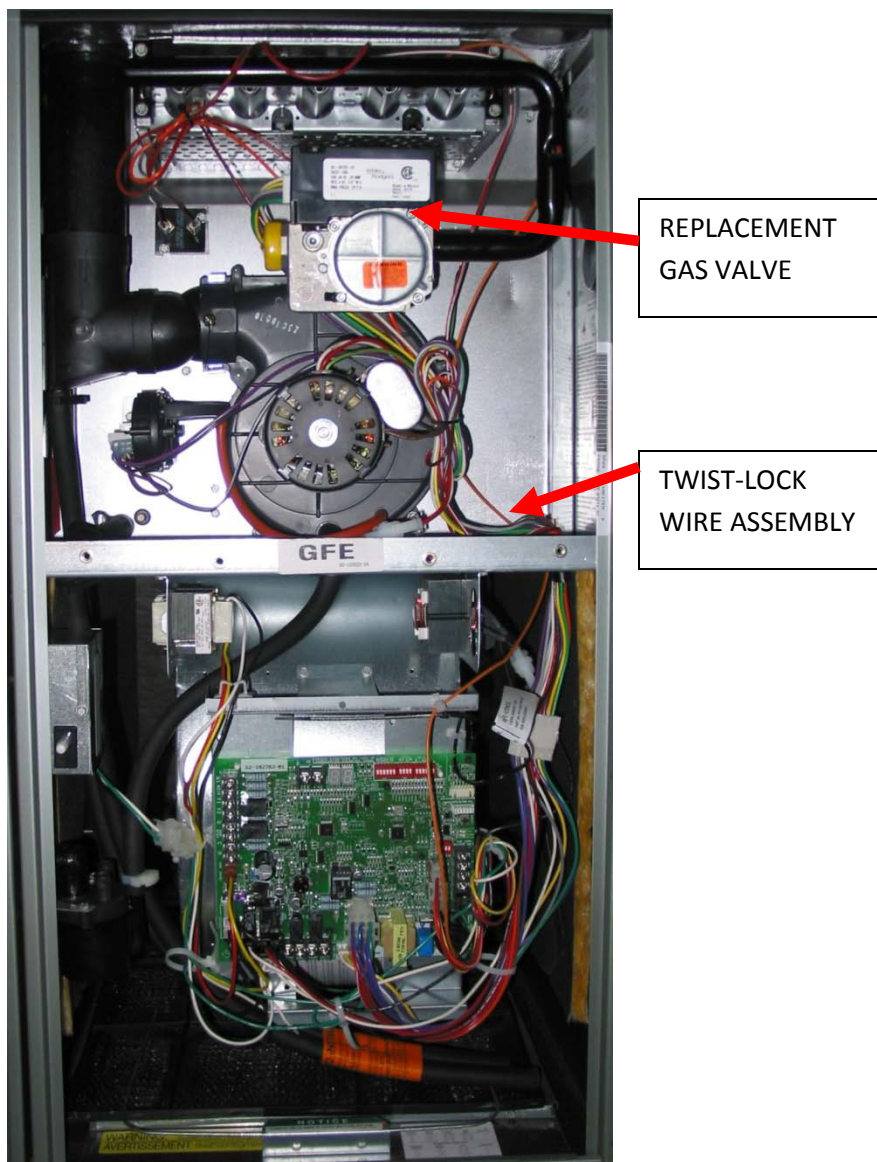
16. For Upflows only, use the wire assembly 45-24371-51 supplied in the kit to wire the furnace control to the twist-lock wire assembly. For downflows and horizontals, use the wire assembly 45-24371-52 supplied in the kit to wire the furnace control to the twist-lock wire assembly. To determine the difference between these two wire assemblies, see the engineering drawings at the end of this document. The dowflow/horizontal assembly (45-24371-52) has additional blue and yellow wires for the auxiliary limit control.

Connect the 15-pin connector to J1, the 4-pin connector to J2 and the 5-Pin connector to J16 on the integrated furnace control (see Figure 3) and the 16-pin connector to the twist-lock wire assembly.

For Downflows, also connect the Heat Assisted Limit Control (H.A.L.C.). See Figure 4.



**Figure 4:** Heat-Assisted Limit Control on Downflow and Horizontal models only. Note it is not possible to mis-wire this control. Two of the connectors are 3/16” quick-connects and two are 1/4” quick-connects. Polarity on either pair does not need to be observed.



**Figure 5:** Typical wiring after conversion (upflow shown).

17. Use the supplied wire ties to neatly arrange and route the new wiring. The wiring should be arranged so that it will not make contact with any sharp metal edges and will not touch hot surfaces or be pulled into the blower housing during blower operation.
18. **IMPORTANT:** Use one 8" wire tie to tie the orange igniter wire to the burner manifold to prevent this wire from coming too close to the replacement gas valve. The igniter wire needs to be at least 3 inches from the valve. Ignition noise from this wire can reset the gas valve and cause the furnace to shut down when the wire is too close to the valve.
19. Place the new wire diagram label (90-24216-05) supplied in the kit over the original wire diagram on the blower door. This diagram is valid for all configurations (upflow, downflow and horizontal) after installing this kit ((-)XGJ-FP27MX) provided that the original factory fuel code was HG or HH.
20. Place the conversion label adjacent to the A.G.A. rating plate.

21. Place the Gas Valve Converted / Fuel Code Changed label (*Furnace modified with LP kit RXGJ-FP27MX*) near the rating label on the furnace.
22. Connect gas to the furnace gas valve.
23. Connect electrical power (120VAC) to the furnace.
24. Turn on gas supply and electrical supply.
25. Check unit thoroughly for gas leaks – with liquid leak detector –not with a flame.
26. Follow lighting instructions to put furnace into operation.
27. Operate thermostat to check unit operation for ignition and extinction characteristics.
28. The gas supply line pressure should be between 11” and 14” W.C. at the appliance. This can be verified at the supply pressure tap (See Figure 6). Be sure to always replace the plug after checking pressure (See warning notes below). Manifold (valve outlet) gas pressure must be adjusted to 10” W.C. after valve conversion to LP gas with furnace in operation and proper gas supply pressure (see rating plate). This can be tested at the outlet or manifold pressure tap (See Figure 7). Be sure to always replace the plug after checking pressure (See Warning notes below).

The valve can be adjusted using a small slotted screwdriver to rotate the adjustment wheel located in the adjustment well (See Figure 6) on top of the valve (Note: a white button must be removed first to access the adjustment wheel. Be sure to replace the white button after making the adjustment. (See Warning notes below))

Note that this adjustment wheel has 16 setting: 0 thru F. If the adjustment is turned past F and back to 0, the valve pressure will drop to the lowest setting instead of increasing as might be expected. Similarly, when the adjustment wheel is rotated counterclockwise from 0 to F, the valve will jump from its lowest setting to its highest setting. This is because there is no stop on the adjustment wheel and the wheel can be adjusted past its highest setting down to its lowest (on the next step) and vice-versa.



**WARNING:**

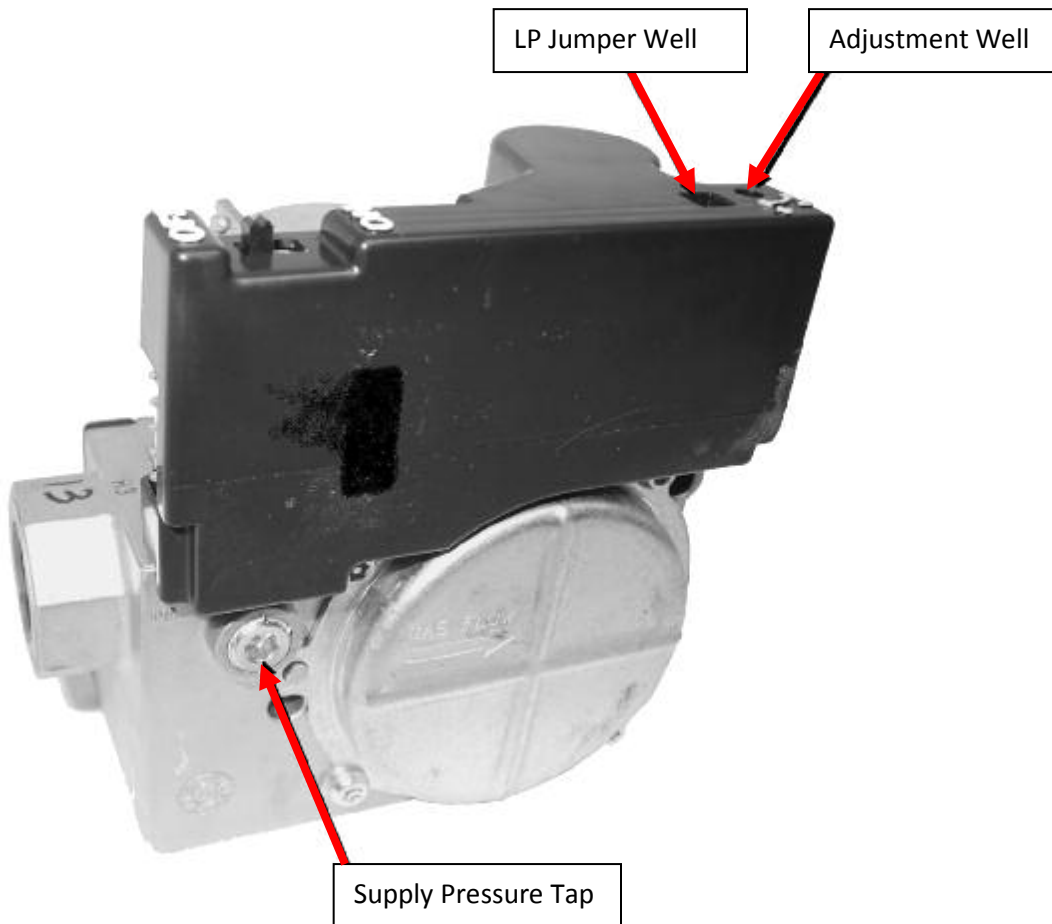
**ANY TIME A PLUG IS REMOVED FROM THE GAS VALVE, MANIFOLD OR ELSEWHERE ON THE GAS SUPPLY AND REPLACED WITH A TAP TO READ THE PRESSURE, THE TAP MUST BE SUFFICIENTLY TIGHTENED AND COVERED SO THAT NO GAS CAN LEAK WHILE TESTING. FURTHER, AFTER TESTING, THE CAP MUST BE REPLACED AND SUFFICIENTLY TIGHTENED TO PREVENT GAS FROM LEAKING. FAILURE TO DO SO COULD RESULT IN SERIOUS INJURY OR DEATH.**



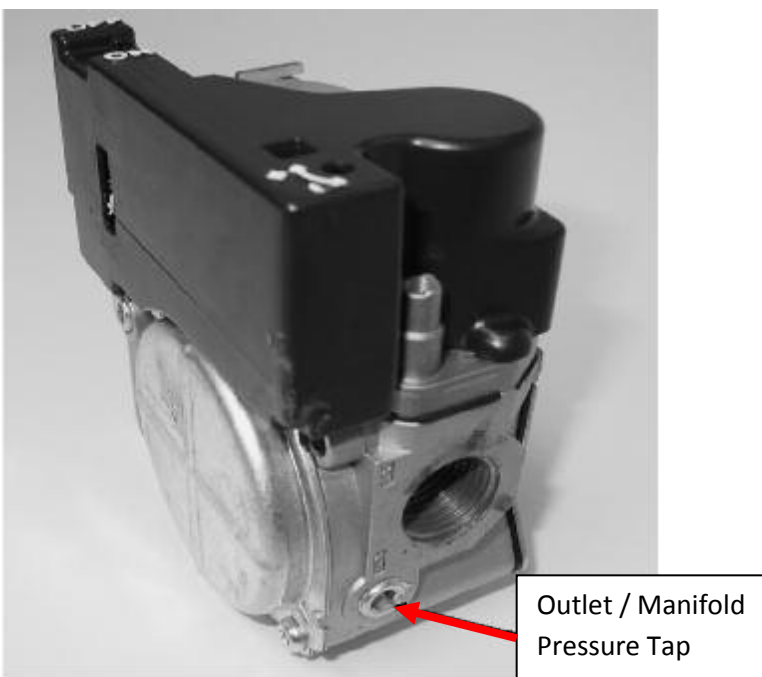
**WARNING:**

**PRESSURE READINGS SHOULD ONLY BE TAKEN BY QUALIFIED AND TRAINED TECHNICIANS.**





**Figure 6 (above):** LP Jumper Well, Adjustment Well and Supply Pressure Tap locations on the White-Rodgers 36J27 Modulating Gas Valve. Be sure to always replace the cap after checking the pressure. (See Warning notes above.)



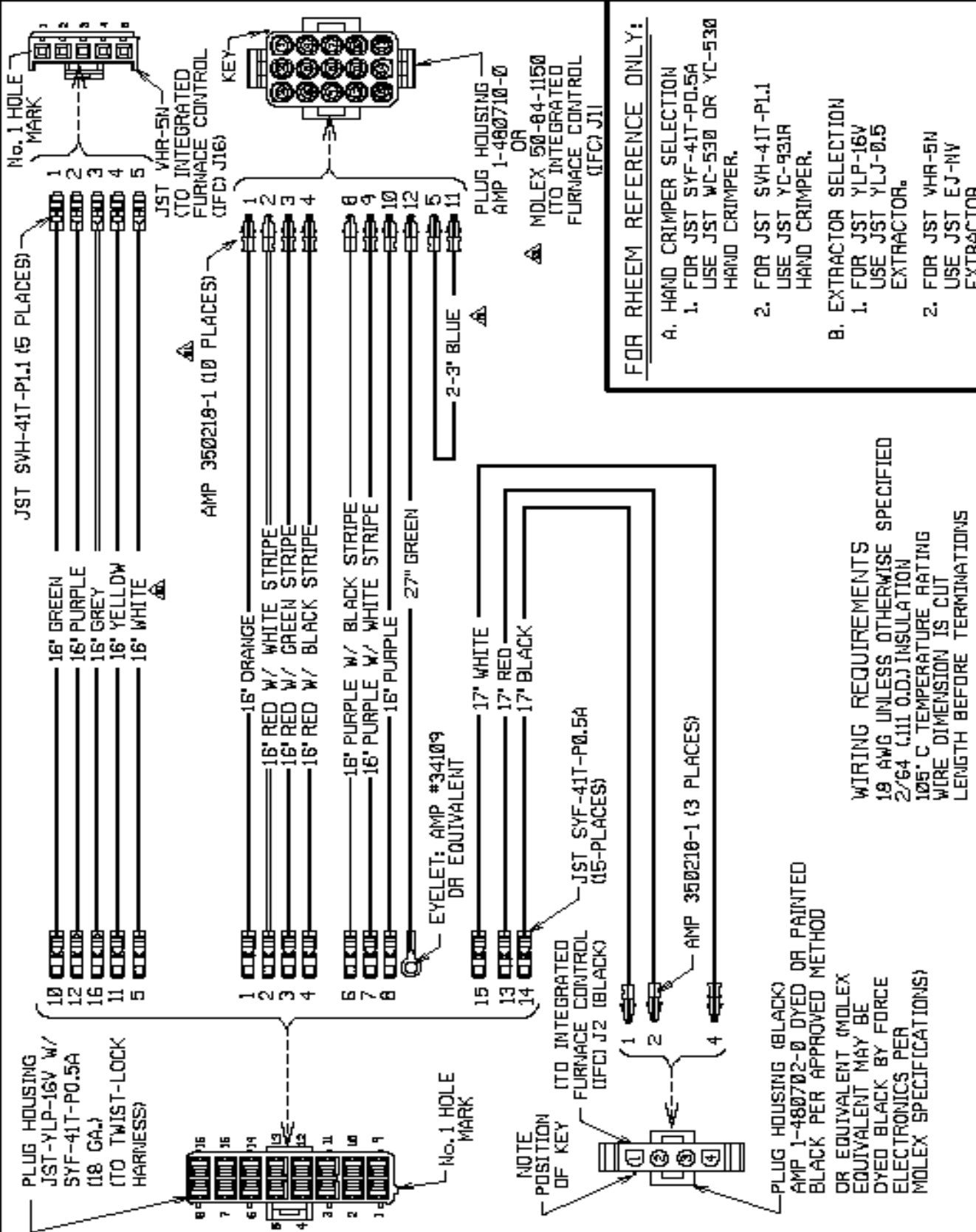
**Figure 7 (above):** Location of the outlet/manifold pressure tap on the White-Rodgers 36J27 Modulating Gas Valve. Be sure to always replace the cap after checking the pressure. (See Warning notes above.)

## COMPLETING CONVERSION

1. Using a ballpoint indelible pen, record the following information on label 92-18153-05 provided in this kit.
  - a. Date of conversion.
  - b. Installer's name, address and telephone number.
  - c. Burner orifice size.
2. Place completed conversion label next to the rating plate.
3. Install the burner and blower compartment access doors.
4. Test-fire the furnace one more time by setting the thermostat to heat and adjusting the setpoint above room temperature. Make sure heat is working properly then return the thermostat to the desired settings.

**RHEEM MANUFACTURING CO. RESEARCH & DEVELOPMENT DEPARTMENT**

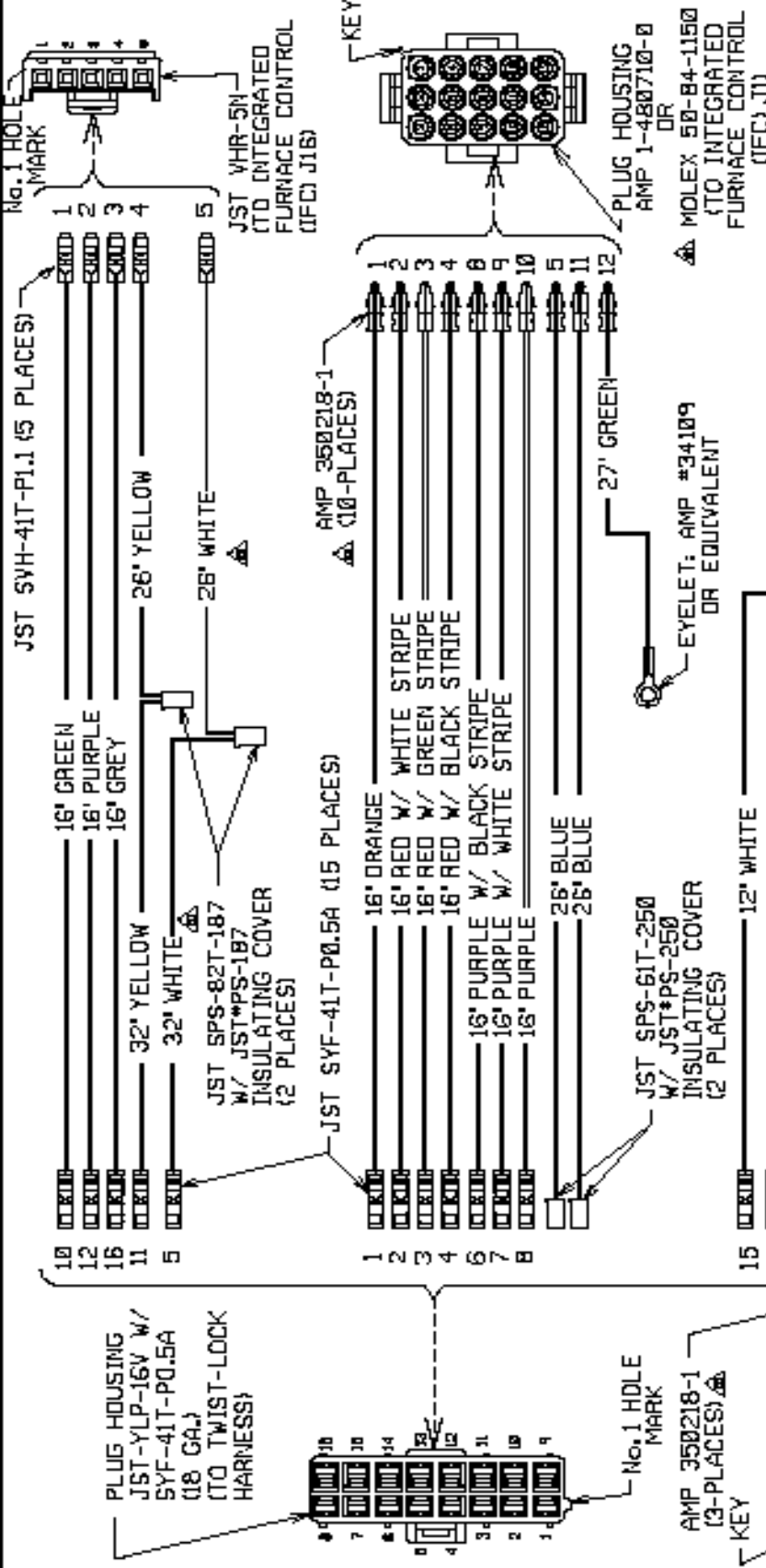
STANDARD TOLERANCE UNLESS OTHERWISE SPECIFIED	FRACTIONAL 11/32	DECIMAL 1.030
CHECKED	APPROVED	RELIAB ENGR
REVISIONS		
DATE	BY	REVISION
01	JIM	ORIGINAL



NO REVISION TO DESIGN MATERIAL TOOLING OR PROCESS IS ACCEPTABLE WITHOUT PROOF APPROVAL FROM RHEEM THROUGH QA AUTHORIZED ENGINEER A REVISED DIMENSIONS SPECIFICATION AND A REWORKING OF PARTS THE SUPPLIER IS RESPONSIBLE FOR NOTIFYING RHEEM IN A 30 DAY PERIOD BEFORE REWORKING IS INITIATED BY THE DIMENSIONS AFFECTING PRODUCT QUALITY OR PERFORMANCE. ALL DIMENSIONS REFERRED TO ON THIS DRAWING ARE INCLUDED IN THE SPECIFICATIONS FOR THIS COMPONENT.	DR BY JIM ORIGINAL DATE 7-18-00 RELEASE NO. G-10135000	NOTE: ALL SPACES ARE 90° UNLESS OTHERWISE SPECIFIED
PLUG HOUSING ASSEMBLY (COM. MOD) (U) IFC TO TWIST-LOCK WIRE ASS'Y. STEPPER-SERVO-CONT. GAS VALVE	PART NO. 45 - 24371 - 51	REV. 01

RHEEM MANUFACTURING CO. RESEARCH & DEVELOPMENT DEPARTMENT

STANDARD TOLERANCE	FRACTIONAL ±1/32
UNLESS OTHERWISE SPECIFIED	ANGULAR ±1° - 3'
	DECIMAL ±0.030
CHECKED	
APPROVED	
REL'AB ENGR	
VENDOR	



**FOR RHEEM REFERENCE ONLY:**

A. HAND CRIMPER SELECTION  
 1. FOR JST SYF-41T-P0.5A USE JST WC-530 OR YC-530 HAND CRIMPER.  
 2. FOR JST SYH-41T-P1.1 USE JST YC-931R HAND CRIMPER.

B. EXTRACTOR SELECTION  
 1. FOR JST YLP-16V USE JST YLJ-05 EXTRACTOR.  
 2. FOR JST VHR-5N USE JST EJ-NV EXTRACTOR.

**WIRING REQUIREMENTS**  
 18 AWG UNLESS OTHERWISE SPECIFIED  
 2/64 (.111 O.D.) INSULATION  
 105° C TEMPERATURE RATING  
 WIRE DIMENSION IS CUT LENGTH BEFORE TERMINATIONS

PLUG HOUSING (BLACK)  
 AMP 1-480702-0 DYED OR PAINTED BLACK PER APPROVED METHOD OR EQUIVALENT (MOLEX DYED BLACK BY FORCE ELECTRONICS PER MOLEX SPECIFICATIONS)

NOTE: ALL BRACES ARE 90° UNLESS OTHERWISE SPECIFIED

NO REVISIONS TO DESIGN, MATERIAL, TOOLING OR PROCESSING IS ACCEPTABLE WITHOUT APPROVAL FROM RHEEM THROUGH THE DESIGN ENGINEER. REVISIONS TO BE MADE BY THE SUPERVISOR RESPONSIBLE FOR NOTIFYING RHEEM IN WRITING THROUGH THE DESIGN ENGINEER. RHEEM IS NOT RESPONSIBLE FOR PRODUCT QUALITY, PERFORMANCE, DELIVERY OR NON-CONFORMANCE. SEE DOCUMENTS REFERRED TO IN THIS DRAWING FOR DETAILS OF THE SPECIFICATIONS FOR THIS COMPONENT.

DR. BY JIM ORIGINAL  
 DATE 7-18-08 RELEASE NO. G-1013S880

PLUG HOUSING ASSEMBLY (COM. MOD)  
 IFC TO TWIST-LOCK WIRE ASS'Y. (D)  
 STEPPER-SERVO-CONT. GAS VALVE

PART NO.	REV.
45 - 24371 - 52	01

Figure 8: Engineering Drawing of 45-24371-52 wire assembly for downflows and horizontals.