



Manufacturer of Distinctive Outdoor Fireplaces

**Warning: If the information in this manual is not followed exactly, a fire or explosion may result causing property damage, personal injury, or loss of life.**

**Do not store or use gasoline or other flammable vapors and liquids in the vicinity of this or any other appliance.**

#### **WHAT TO DO IF YOU SMELL GAS**

- **Do not try to light any appliance.**
- **Do not touch any electrical switch; do not use phone in your building.**
- **Immediately call your gas supplier from a neighbor's phone.**
- **Follow the gas supplier's instructions.**
- **If you cannot reach your gas supplier, call the fire department.**

**Installation and service must be performed by a qualified installer, service agency or the gas supplier.**

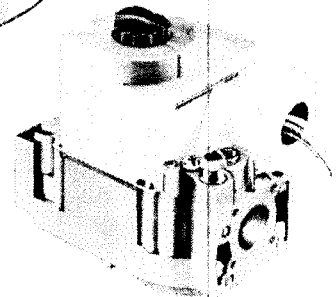
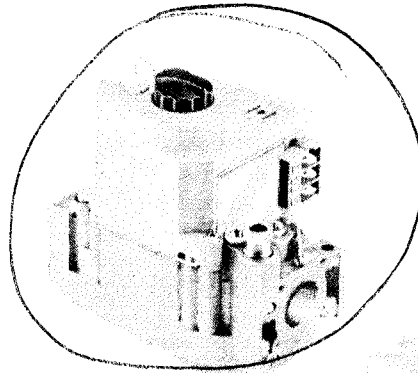
**WARNING: Improper installation, adjustment, alteration, service, or maintenance can cause injury or property damage. Read the installation, operating and maintenance instructions thoroughly before installing or servicing this equipment.**

**WARNING: FOR OUTDOOR USE ONLY**

## VR8204; VR4204

# Intermittent Pilot Dual Automatic Valve Combination Gas Controls

The VR8204 AND VR4204 Intermittent Pilot Dual Automatic Valve Combination Gas Controls are used in gas-fired, intermittent pilot appliances. The controls include a safety shutoff, a manual valve, two automatic operators, a pressure regulator, a pilot adjustment screw and a conduit cover (VR4204 only).



- VR8204 used with S8600, S8610 and S8620 Control Modules.
- VR4204 used with 120 Vac intermittent ignition modules.
- VR8204 for use with 24 Vac heating appliances and VR4204 for use with 120 Vac heating appliances that burn natural or manufactured gas, or liquified petroleum (LP) gas.
- Capacity rated at 150 cfh at 1 in. wc pressure drop [4.2 m<sup>3</sup>/hr at 0.25 kPa].
- Solenoid-operated first automatic valve opens on thermostat call for heat and closes when call for heat ends.
- Diaphragm-operated second automatic valve opens under control of the regulator and closes if gas or power supply is interrupted.
- Two-position gas control knob has ON and OFF positions.
- All adjustments and wiring connections are accessible from top of the control.
- Compact size.
- Straight-through body pattern; right angle adapters available for inlet and outlet.
- 1/2 in. inlet and 1/2 in. outlet; adapters available for 3/8 or 3/4 in.

- Adjustable servo regulator effectively maintains almost constant gas output pressure under wide fluctuations in gas supply pressure.
- Inlet and outlet screens included.
- Pilot filter included.
- Wiring terminal block color-coded orange to indicate intermittent pilot control.
- May be installed at any angle between 0 and 90 degrees from the upright position, including vertically.
- 1/4 in. male quick-connect terminals for electrical connections.
- 0° F to 175° F [-18° C to +79° C] temperature range standard; -40° F to 175° F [-40° C to +79° C] available.
- Inlet and outlet pressure taps provided; both taps accessible from top of control.
- Standard-, slow- and step-opening models available.

### CONTENTS

Specifications .....	2
Ordering Information .....	2
Installation .....	4
Startup and Checkout .....	8
Maintenance .....	10
Operation .....	10
Service .....	13

# Specifications

**IMPORTANT:** *The specifications given in this publication do not include normal manufacturing tolerances. Therefore, this unit may not exactly match the listed specifications. Also this product is tested and calibrated under closely controlled conditions, and some minor differences in performance can be expected if those conditions are changed.*

## TRADELINE® MODELS

TRADELINE controls are selected and packaged to provide ease of stocking, ease of handling and maximum replacement value. TRADELINE model specifications are the same as those of standard models except as noted below.

TRADELINE MODEL AVAILABLE: VR8204A Dual Automatic Combination Gas Control for Intermittent Pilot Systems. Models for natural or LP gas.

## ADDITIONAL FEATURES:

- 3/8 in. bushing.
- 3/4 in. straight flange assembly (with O-ring and screws).
- Tool for flange hex screws.
- Pilot compression fitting.

## STANDARD MODELS

MODELS: VR8204 and VR4204 Dual Automatic Valve Combination Gas Controls for use in Intermittent Pilot Systems. VR8204 for use with S8600, S8610 and S8620 Modules. VR4204 for use with 120 Vac modules. See Table 1 for model specifications.

## SUPPLY VOLTAGE:

VR4204: 120 Vac, 60 Hz.  
 VR8204: 24 Vac, 60 Hz.  
 (50/60 Hz models available on request.)

TABLE 1—MODEL SPECIFICATIONS.

Model No. Suffix Letter	Opening Characteristic	Type of Gas	Standard Factory Regulator Settings		Optional Factory Regulator Settings		Range of Field Adjustment	
			in. wc	kPa	in. wc	kPa	in. wc	kPa
VR8204A,M VR4204M	Standard	Natural	3.5	0.9	3 to 5	0.7 to 1.2	3 to 5	0.7 to 1.2
		IP	10.0	2.5	8 to 12	2 to 3	8 to 12	2 to 3
VR8204C,P VR4204P	Step-opening	Natural	Step—0.7, 0.9, 1.2 or 1.7, as ordered <sup>a</sup> Full Rate—3.5	Step—0.17, 0.22, 0.30 or 0.48 as ordered <sup>a</sup> Full Rate—0.9	Step—0.7, 0.9, 1.2 or 1.7 as ordered <sup>a</sup> Full Rate—3 to 5	Step—0.17, 0.22, 0.30 or 0.48, as ordered <sup>a</sup> Full Rate—0.7 to 1.2	Step—none; Full Rate—3-5	Step—none; Full Rate—0.7 to 1.2
		IP	Step—1.4, 2.5, 4.0 or 5.5, as ordered <sup>a</sup> Full Rate—10	Step—0.35, 0.62, 0.99 or 1.37 as ordered <sup>a</sup> Full Rate—2.5	Step—1.4, 2.5, 4.0 or 5.5, as ordered <sup>a</sup> Full Rate—8 to 12	Step—0.35, 0.62, 0.99 or 1.37, as ordered <sup>a</sup> Full Rate—2 to 3	Step—none; Full Rate—8-12	Step—none; Full Rate—2 to 3
VR8204H,K VR4204H	Slow-opening	Natural	3.5	0.9	3 to 5	0.7 to 1.2	3 to 5	0.7 to 1.2
		IP	10.0	2.5	8 to 12	2 to 3	8 to 12	2 to 3

<sup>a</sup>Step pressure is not adjustable.

# Ordering Information

When purchasing replacement and modernization products from your TRADELINE® wholesaler or your distributor, refer to the price sheets for complete ordering number, or specify:

1. Order number, TRADELINE, if desired.
2. Natural or LP gas.
3. Step pressure on VR4204C,P and VR8204C,P.
4. Accessories, if desired.
5. Order separately: pilot burner, igniter-sensor, transformer, limit controller, and thermostat or controller as required.

If you have additional questions, need further information, or would like to comment on our products or services, please write or phone:

1. Your local Honeywell Home and Building Control Sales Office (check white pages of your phone directory).
2. Home and Building Control Division Customer Satisfaction  
 Honeywell Inc., 1885 Douglas Drive North  
 Minneapolis, Minnesota 55422-4386 (612) 951-1000

In Canada—Honeywell Limited/Honeywell Limitee, 740 Ellesmere Road, Scarborough, Ontario M1P 2V9. International Sales and Service Offices in all principal cities of the world. Manufacturing in Australia, Canada, Finland, France, Germany, Japan, Mexico, Netherlands, Spain, Taiwan, United Kingdom, U.S.A.

**CURRENT DRAW:**

VR4204: 0.1A.

VR8204: 0.5A.

**ELECTRICAL CONNECTIONS:** 1/4 in. male quick-connects. Terminal block color-coded orange.

**TYPE OF GAS:** Separate models for natural (and manufactured) or LP gas.

**CAPACITY:**

At minimum regulation:

Natural gas: 20,000 Btuh [5860W]<sup>a</sup>.

LP gas: 40,000 Btuh [11,700W].

At 1 in. [0.25 kPa] pressure drop: 150,000 Btuh [44,000W]<sup>a</sup>.

At maximum regulation: 200,000 Btuh [58,600W]<sup>a</sup>.

<sup>a</sup>0.64 sp gr natural gas at 1 in. [0.25 kPa] pressure drop; use conversion factors in Table 2 to convert for other gases.

**BODY PATTERN:** Straight-through with 1/2 in. inlet and outlet. Flanges available for 3/8, 1/2 and 3/4 in. straight and 90° angle connection. See Table 3.

**PILOT GAS OUTLET:** Compression fitting for 1/4 in. OD tubing.

**PRESSURE TAPPING:** Inlet and outlet taps standard. Taps accessible from top of control. Tap is 1/8 in. NPT with plug containing recess for 3/16 in. Allen wrench.

**PRESSURE RATING:** AGA rating 1/2 psi [3.5 kPa] inlet pressure.

**PRESSURE REGULATION:** See Table 1. Regulator adjustment accessible from top of control.

TABLE 2—  
GAS CAPACITY CONVERSION FACTORS.

sp gr	Multiply Listed Capacity By
0.60	0.516
0.70	0.765
1.53	1.62

**MOUNTING:** Can be mounted 0 to 90 degrees in any direction, including vertically, from the upright position of the gas control knob.

**TEMPERATURE RATING:**

VR8204A,C,H and VR4204H: 0° F to 175° F [-18° C to +79° C].

VR8204M,P,K and VR4204M,P: -40° F to +175° F [-40° C to +79° C].

**DIMENSIONS:** See Fig. 1.

**APPROVALS:**

American Gas Association design certificate: L2025006.

Canadian Gas Association design certificate: L2025006.

Australian Gas Association design certificate: 4214.

Approved for Delta C applications.

**ACCESSORIES:**

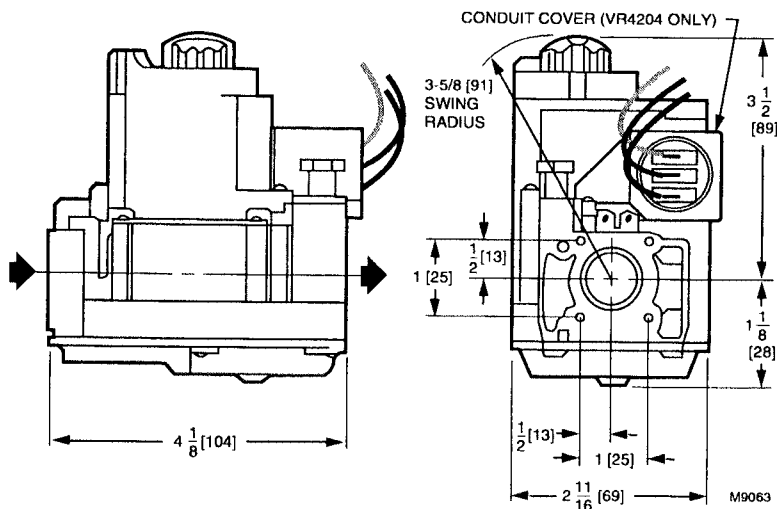
- Flanges, see Table 3.
- 394349 9/64 in. hex tool for flange assembly screws.
- 393691 Natural to LP Conversion Kit.
- 394588 LP to Natural Conversion Kit.

TABLE 3—FLANGE PART NUMBERS.

Inlet/Outlet Pipe Size	Flange Type	Part No.	
		Less Hex Wrench	With Hex Wrench
3/8 in. NPT	Straight	393690-1	393690-11
	Elbow	393690-2	393690-12
1/2 in. NPT	Straight	393690-6	393690-16
	Elbow	393690-3	393690-13
3/4 in. NPT	Straight	393690-4	393690-14
	Elbow	393690-5	393690-15

NOTE: Flange Kits include one flange, one O-ring and four mounting screws. TRADELINE® kits include a 9/64 in. hex wrench, as noted.

Fig. 1—Dimensions in in. [mm] of VR4204/VR8204 Combination Gas Control.



5. Connect other end of tubing to pilot burner according to pilot burner manufacturer instructions.

### WIRING

Follow the wiring instructions furnished by the appliance manufacturer, if available, or use the general instructions provided below. Where these instructions differ from the appliance manufacturer, follow the appliance manufacturer instructions.

All wiring must comply with applicable electrical codes and ordinances.

Disconnect power supply before making wiring connections to prevent electrical shock or equipment damage.

1. Check the power supply rating on the gas control and make sure it matches the available supply. Install thermostat and other controls as required.

2. For VR4204, when the gas control is installed external to the appliance, install the conduit cover on the conduit fitting. Do not secure conduit cover at this time.

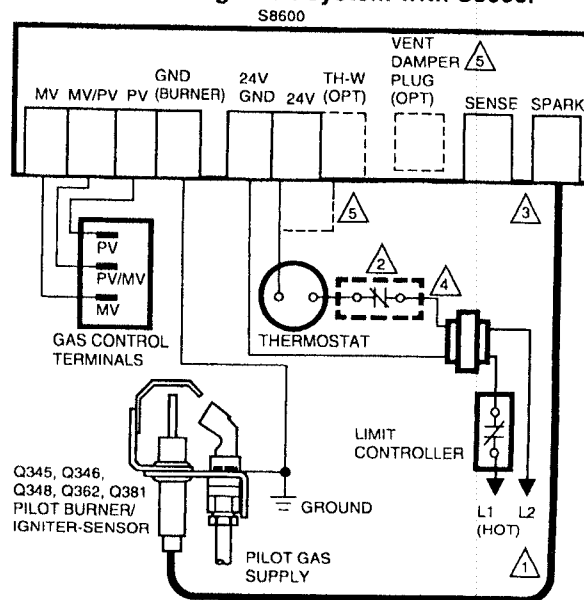
3. Connect control circuit to gas control terminals. See Figs. 5, 8 and 9.

NOTE: Use leadwires with insulated terminals.

4. For VR4204, make sure the conduit cover is in position and secured to the gas valve with the screw provided. See Fig. 2.

5. Adjust thermostat heat anticipator as instructed in the appliance manual (i.e., usually 0.1A for VR4204; 0.5A for VR8204).

**Fig. 8—Wiring connections for 24 volt control in intermittent ignition system with S8600.**



- ① POWER SUPPLY. PROVIDE DISCONNECT MEANS AND OVERLOAD PROTECTION AS REQUIRED.
- ② ALTERNATE LIMIT CONTROLLER LOCATION.
- ③ MAXIMUM WIRE LENGTH 3 ft (.9 m).
- ④ CONTROLS IN 24V CIRCUIT MUST NOT BE IN GROUND LEG TO TRANSFORMER.
- ⑤ FOR MODULE WITH TH-W TERMINAL AND VENT DAMPER PLUG, CONNECT THERMOSTAT TO TH-W. LEAVE 24V OPEN. DO NOT REMOVE VENT DAMPER PLUG.

# Startup and Checkout



## WARNING

### FIRE OR EXPLOSION HAZARD CAN CAUSE PROPERTY DAMAGE, SEVERE INJURY OR DEATH

1. Do not force the gas control knob on the appliance. Use only your hand to turn the gas control knob. Never use any tools.
2. If the knob will not operate by hand, the control should be replaced by a qualified service technician.


### GAS CONTROL KNOB SETTINGS

Gas control knob settings are as follows:

- OFF: Prevents pilot and main gas flow through the control.  
ON: Permits gas to flow into the control body. Under control of the thermostat and intermittent pilot module, gas can flow to the pilot and main burners.

NOTE: Controls are shipped with the gas control knob in the ON position.

### TURN ON SYSTEM

Rotate the gas control knob counterclockwise  to ON.

### TURN ON MAIN BURNER

Follow instructions provided by appliance manufacturer or turn up thermostat to call for heat.

### PERFORM GAS LEAK TEST



## WARNING

### FIRE OR EXPLOSION HAZARD CAN CAUSE PROPERTY DAMAGE, SEVERE INJURY OR DEATH

Check for gas leaks with soap and water solution any time work is done on a gas system.

### GAS LEAK TEST:

1. Paint pipe connections upstream of gas control with rich soap and water solution. Bubbles indicate gas leak.
2. If leak is detected, tighten pipe connections.
3. Stand clear of main burner while lighting to prevent injury caused from hidden leaks that could cause flashback in the appliance vestibule. Light main burner.
4. With main burner in operation, paint pipe joints (including adapters) and control inlet with rich soap and water solution.
5. If another leak is detected, tighten adapter screws, joints, and pipe connections.
6. Replace part if leak cannot be stopped.

### ADJUST PILOT FLAME

The pilot flame should envelop 3/8 to 1/2 in. [10 to 13 mm] of the tip of the igniter-sensor. See Fig. 10.

To adjust pilot flame:



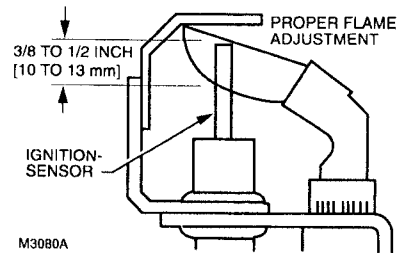
1. Remove pilot adjustment cover screw. See Fig. 5.
2. Turn inner adjustment screw clockwise  to decrease or counterclockwise  to increase pilot flame.
3. Always replace cover screw after adjustment. Tighten firmly to prevent gas leakage.

Fig. 10—Proper flame adjustment.



### CHECK SAFETY SHUTDOWN PERFORMANCE



## WARNING

### FIRE OR EXPLOSION HAZARD CAN CAUSE PROPERTY DAMAGE, SEVERE INJURY OR DEATH

Perform the safety shutdown test every time work is done on a gas system.

NOTE: Read steps 1-7 below before starting and compare to the safety shutdown or safety lockout tests recommended for the intermittent pilot (IP) module. Where they differ, use the procedure recommended for the module.



1. Turn off gas supply.
2. Set thermostat or controller above room temperature to call for heat.
3. Watch for spark at pilot burner either immediately or after prepurge. See IP module specifications.
4. If module has timed ignition, time length of spark operation. See IP module specifications.
5. After the module locks out, open manual gas cock and make sure no gas is flowing to pilot or main burner. *With modules that continue spark until pilot lights or system is shut down manually, pilot should light when manual gas cock is opened.*
6. Set thermostat below room temperature and wait one minute.
7. Operate system through one complete cycle to make sure all controls operate properly.

**CHECK AND ADJUST GAS INPUT AND BURNER IGNITION****CAUTION**

1. Do not exceed input rating stamped on appliance nameplate, or manufacturer recommended burner orifice pressure for size orifice(s) used. Make certain primary air supply to main burner is properly adjusted for complete combustion. Follow appliance manufacturer instructions.
2. **IF CHECKING GAS INPUT BY CLOCKING GAS METER.** Make certain there is no gas flow through the meter other than to the appliance being checked. Other appliances must remain off with their pilots extinguished (or their consumption must be deducted from the meter reading). Convert flow rate to Btuh as described in form 70-2602, Gas Controls Handbook, and compare to Btuh input rating on appliance nameplate.
3. **IF CHECKING GAS INPUT WITH MANOMETER:** Be sure gas control is in OFF position before removing outlet pressure tap plug to connect manometer (pressure gauge). Also turn gas control knob back to OFF when removing gauge and replacing plug. Before removing inlet pressure tap plug, shut off gas supply at the manual valve in the gas piping to the appliance or, for LP, at the tank. Also shut off gas supply before disconnecting manometer and replacing plug. Repeat Gas Leak Test at plug with main burner operating.

**Standard Pressure Regulator**

1. Check the manifold pressure listed on the appliance nameplate. Gas control outlet pressure should match the nameplate.
2. With main burner operating, check gas control flow rate using the meter clocking method or pressure using a manometer connected to the outlet pressure tap on the gas control. See Fig. 5.
3. If necessary, adjust pressure regulator to match appliance rating. See Table 4A or 4B for factory set nominal outlet pressure and adjustment range.
  - a. Remove pressure regulator adjustment cap screw.

- b. Using screwdriver, turn inner adjustment screw clockwise  to increase or counterclockwise  to decrease gas pressure to burner.
- c. Always replace cap screw and tighten firmly to prevent gas leakage.

4. If desired outlet pressure or flow rate cannot be achieved to adjusting the gas control, check gas control inlet pressure using a manometer at the gas control inlet pressure tap. If inlet pressure is in the nominal range (see Table 4A or 4B), replace gas control. Otherwise, take the necessary steps to provide proper gas pressure on the control.

**Slow-opening and Step-opening Pressure Regulators**



1. Check the *full* rate manifold pressure listed on the appliance nameplate. Gas control *full* rate outlet pressure should match this rating.
2. With main burner operating, check gas control flow rate using the meter clocking method or pressure using a manometer connected to the outlet pressure tap on the gas control. See Fig. 5.
3. If necessary, adjust pressure regulator to match appliance rating. See Table 4A or 4B for factory set nominal outlet pressure and adjustment range.
  - a. Remove pressure regulator adjustment screw.
  - b. Using screwdriver, turn inner adjustment screw clockwise  to increase or counterclockwise  to decrease gas pressure to burner.
  - c. Always replace cap screw and tighten firmly to prevent gas leakage.
4. If desired outlet pressure or flow rate cannot be achieved by adjusting the gas control, check gas control inlet pressure using a manometer at the gas control inlet pressure tap. If inlet pressure is in the nominal range (see Table 4A or 4B), replace gas control. Otherwise, take the necessary steps to provide proper gas pressure to the control.
5. **STEP-OPENING PRESSURE REGULATORS ONLY.** Carefully check burner lightoff at step pressure. Make sure burner lights smoothly and without flashback to orifice. Make sure all ports remain lit. Cycle burner several times, allowing at least 30 seconds between cycles for regulator to resume step function. Repeat after allowing burner to cool. Readjust full rate outlet pressure, if necessary, to improve lightoff characteristics.

TABLE 4A—PRESSURE REGULATOR SPECIFICATION PRESSURES (in. wc)

Model Type	Type of Gas	Nominal Inlet Pressure Range	Factory Set Nominal Outlet Press.		Setting Range	
			Step	Full Rate	Step	Full Rate
Standard, slow-opening	Natural	5.0 - 7.0	—	3.5	—	3.0 - 5.0
	LP	12.0 - 14.0	—	10.0	—	8.0 - 12.0
Step-opening	Natural	5.0 - 7.0	0.9	3.5	—	3.0 - 12.0
	LP	12.0 - 14.0	2.2	10.0	—	8.0 - 12.0

5. Connect other end of tubing to pilot burner according to pilot burner manufacturer instructions.

### WIRING

Follow the wiring instructions furnished by the appliance manufacturer, if available, or use the general instructions provided below. Where these instructions differ from the appliance manufacturer, follow the appliance manufacturer instructions.

All wiring must comply with applicable electrical codes and ordinances.

Disconnect power supply before making wiring connections to prevent electrical shock or equipment damage.

1. Check the power supply rating on the gas control and make sure it matches the available supply. Install thermostat and other controls as required.

2. For VR4204, when the gas control is installed external to the appliance, install the conduit cover on the conduit fitting. Do not secure conduit cover at this time.

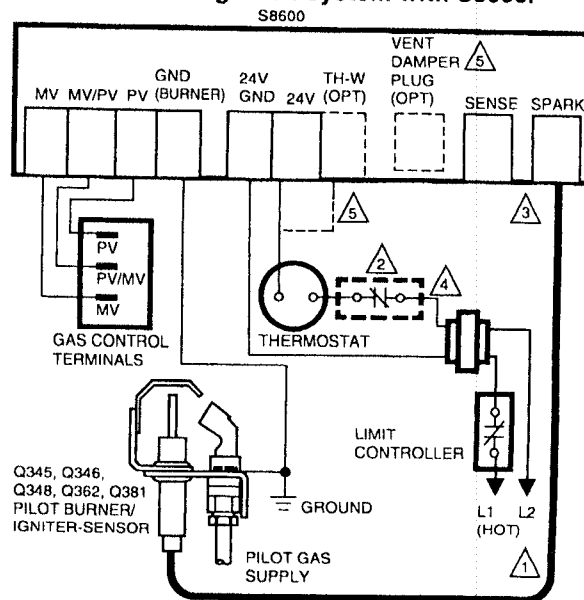
3. Connect control circuit to gas control terminals. See Figs. 5, 8 and 9.

NOTE: Use leadwires with insulated terminals.

4. For VR4204, make sure the conduit cover is in position and secured to the gas valve with the screw provided. See Fig. 2.

5. Adjust thermostat heat anticipator as instructed in the appliance manual (i.e., usually 0.1A for VR4204; 0.5A for VR8204).

**Fig. 8—Wiring connections for 24 volt control in intermittent ignition system with S8600.**



- 1 POWER SUPPLY. PROVIDE DISCONNECT MEANS AND OVERLOAD PROTECTION AS REQUIRED.
- 2 ALTERNATE LIMIT CONTROLLER LOCATION.
- 3 MAXIMUM WIRE LENGTH 3 ft (.9 m).
- 4 CONTROLS IN 24V CIRCUIT MUST NOT BE IN GROUND LEG TO TRANSFORMER.
- 5 FOR MODULE WITH TH-W TERMINAL AND VENT DAMPER PLUG, CONNECT THERMOSTAT TO TH-W. LEAVE 24V OPEN. DO NOT REMOVE VENT DAMPER PLUG.