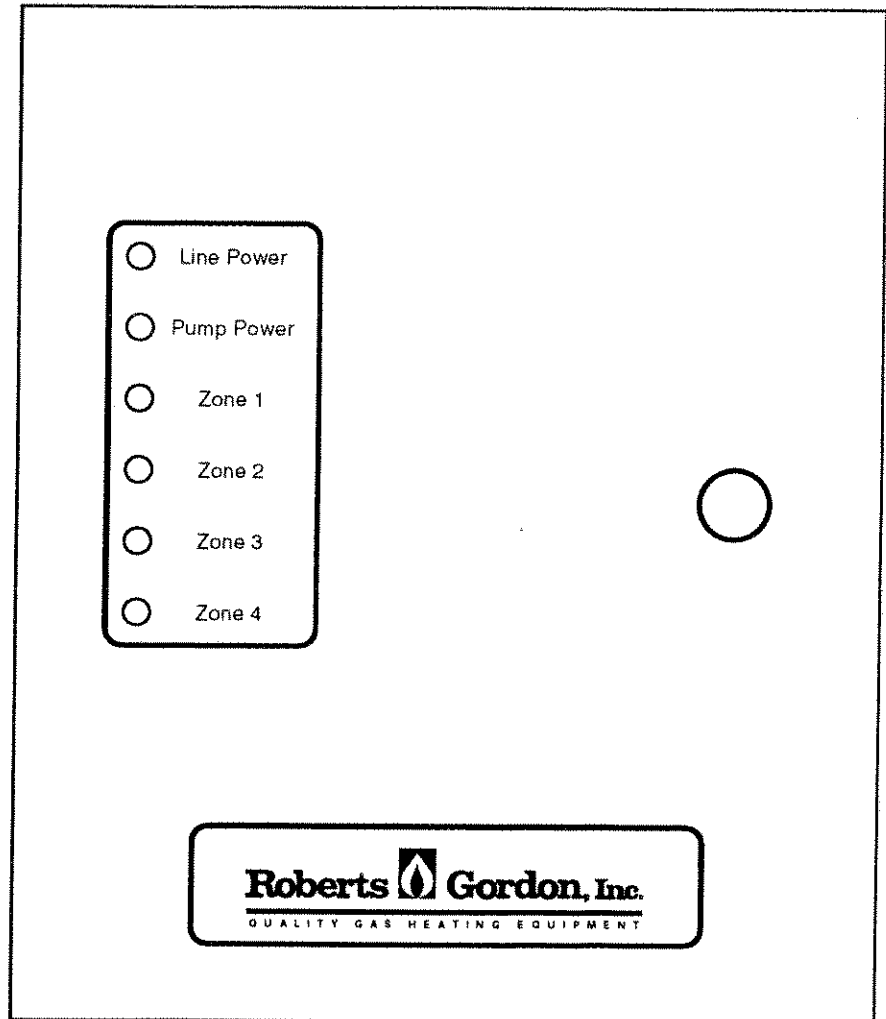


ELECTRONIC CONTROL PANEL

Part No. 02770001

Installation and Wiring Instructions



Roberts  Gordon, Inc.
1250 William St. • P.O. Box 44 • Buffalo, NY • 14240-0044
Phone: (716) 852-4400 • Fax: (716) 852-0854

Introduction

All Roberts-Gordon vacuum-fired heating systems are available with a solid state electronic control panel. In addition to providing system management, the control panel can also be used to provide individual zone temperature control for up to four zones. The control panel is standard on large systems (as defined by electrical requirements) and optional on small systems. (Smaller multi-burner systems can use a thermostat and relay, which can also provide zone temperature control for up to two different areas.)

This manual is intended to serve as a guide for installing and wiring the Electronic Control Panel (Part No. 02770001). For any other information regarding the installation and operation of heating systems, refer to the appropriate installation manual supplied with your Roberts-Gordon heating system.

IMPORTANT

This control panel is designed for use with infrared heating systems located in non-residential indoor spaces. These instructions, the layout drawing, local codes and ordinances, and applicable standards such as apply to gas piping, electrical wiring, venting, etc., must be thoroughly understood before proceeding with the installation.

IMPORTANT

The control panel, burner, vacuum pump and outside air blower if used, must be electrically grounded in accordance with the National Electrical Code ANSI/NFPA 70 - latest revision.

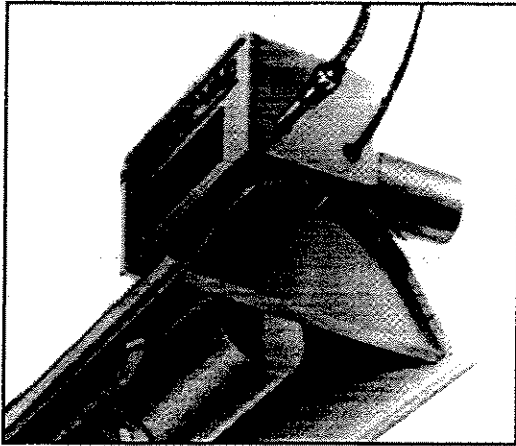
Wiring must conform to the most current National Electrical Code, local ordinances and any special diagrams furnished.

Installer Qualifications

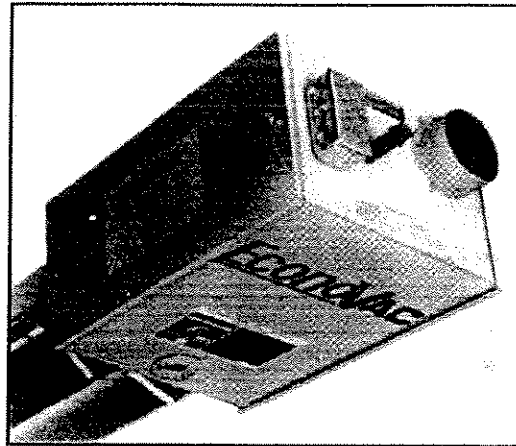
All heaters, associated gas piping and electrical wiring should be installed in accordance with applicable specifications and this installation made only by firms (or individuals) well qualified in this type of work. Consult local building inspectors, Fire Marshals or the local Roberts-Gordon Representative for guidance.

Installer Responsibility

Roberts-Gordon infrared heating systems are installed on the basis of information given in a layout drawing, which together with these instructions, associated installation manuals, and the cited codes and regulations, comprise the basic information needed to complete the installation. The installer must furnish all needed material that is not furnished as standard equipment, and it is his responsibility to see that such materials, as well as the installation methods he uses result in a job that is workmanlike and in compliance with all applicable codes. Roberts-Gordon Factory Representatives have had training and experience in the application of this equipment and can be called on for suggestions about installation which can save material and labor.



Roberts-Gordon Co-Ray-Vac model



Roberts-Gordon EconoVac model

Specifications

General Information

It is important to identify the type of burner being used with this control panel, as electrical requirements vary. Refer to the photographs above to identify your burner type.

Co-Ray-Vac Systems

A Co-Ray-Vac system consists of a vacuum pump with between one and four radiant tube branches. Each branch may have several small burner units (left picture above) firing in series. Each branch is considered a zone and every burner in a zone must be wired together. Co-Ray-Vac burners employ a direct-spark ignition system with low power requirements.

EconoVac Systems

EconoVac heating systems consist of a vacuum pump with between one and six radiant tube branches. Each branch has only one burner unit (right picture above) at the beginning of a radiant tube branch. With appropriate wiring, burners may be combined into zones. EconoVac burners employ a hot-surface ignition system which require higher starting amperage than direct-spark ignitions. For this reason, no more than two EconoVac burners may be wired to a single control panel without the use of a Load Relay Package (Part No. 05023000).

Electrical Requirements Summary

Electronic Control Panel: Single 20A, 120v power supply. Wiring to the control panel must be 12 AWG or larger to maintain proper voltage under full load conditions. Total load powered by the control panel must not exceed 20A. Loads totalling more than 20A must be powered by an additional 20A, 120v power supply circuit by use of the optional Load Relay Package.

- Thermostats:** Low-voltage thermostats (24v) should be used with the control panel. However, thermostats that draw 24v for operation **must not** be used since the control panel only provides 5v of power to each thermostat. Roberts-Gordon offers a selection of low-voltage thermostats approved for use with this control panel.
- Load Relay Package:** Provides an additional 20A, 120v power supply for use by two EconoVac burners, a vacuum pump, or the outside air blower.
- Co-Ray-Vac Burners:** Direct spark ignition. 0.30A maximum @120v. See Co-Ray-Vac Installation Manual for detailed internal wiring diagram.
- EconoVac Burners:** Hot-surface ignition. 5.0A maximum @120v. See EconoVac Installation Manual for detailed internal wiring diagram.
- Vacuum Proving Switch:** A vacuum proving switch (Part No. 90430600) preset at 1.7" w.c. is required for installation on the inlet of the vacuum pump. This switch is rated for 5.0A @ 120V and is required to interlock the operation of the vacuum pump with the control panel.
- Vacuum Pump:** 1/3-hp capacitor start. 6.0A Run (F.L.) @120v/60HZ
(Model EP-100)
- Vacuum Pump:** 3/4-hp capacitor start. 8.2A Run (F.L.) @120v/60HZ
(Model EP-200)
- Outside Air Supply Blower:** 2.2A Run (F.L.) @120v/60HZ
If used, the optional outside air supply blower is to be controlled in parallel with the vacuum pump. The blower incorporates an internal centrifugal interlock switch which must be wired in series with the vacuum proving switch on the pump. The load relay package is required with the blower. See Figure 6 for wiring details.

Replacement Parts

Electronic Control Panel Main Board Replacement	Part No. 90437500
Electronic Control Panel Pump Relay	Part No. 90437900
Electronic Control Panel Burner Zone Relay	Part No. 90438100
Electronic Control Panel Fuse	Part No. 90438200

Figure 1a: Interior View of Electronic Control Panel (P/N 02770001)

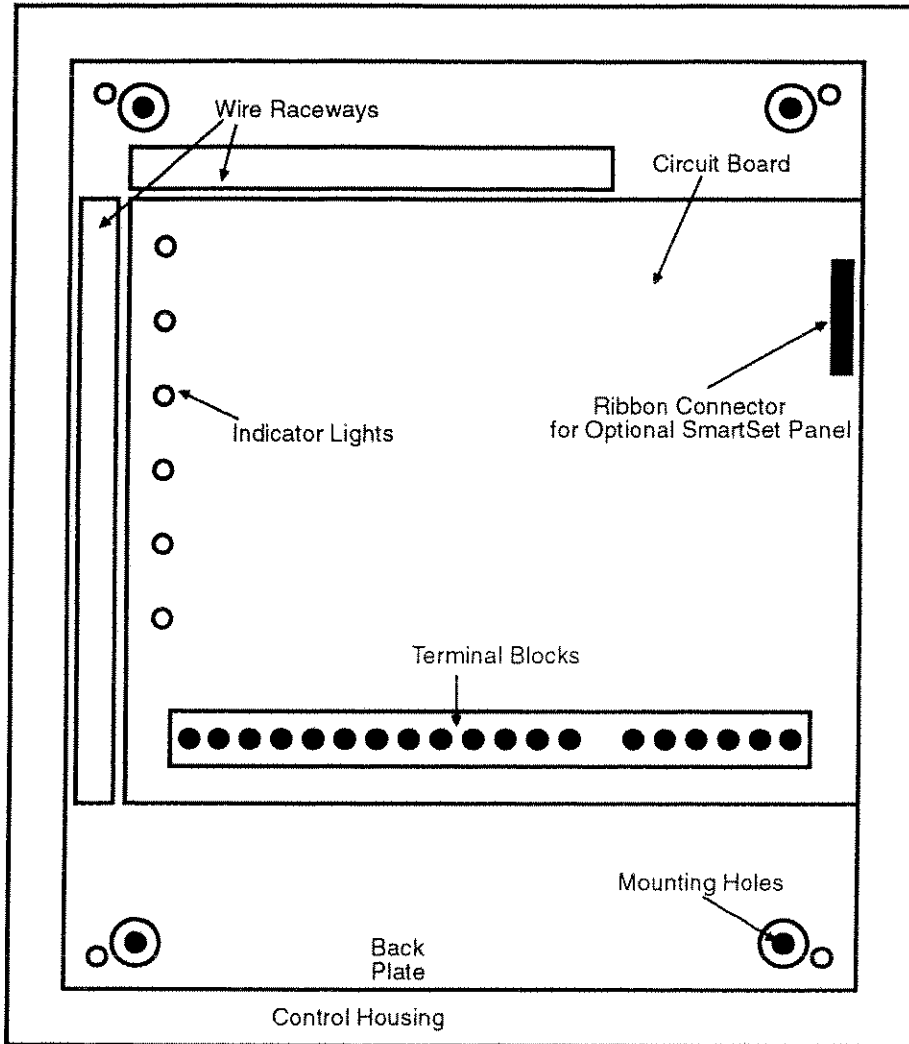


Figure 1b: Terminal Block Guide

The diagram below is intended to serve as a guide to the terminal abbreviations.

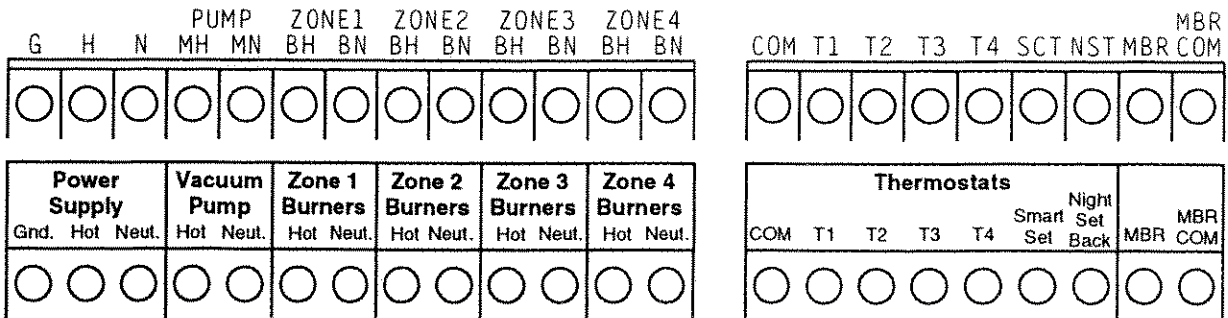


Figure 2: Typical Wiring of Co-Ray-Vac System

Use this diagram as a guide for wiring a Co-Ray-Vac system with up to four zones.
 For connection of the optional Outside Air Supply Blower, see Figure 6.

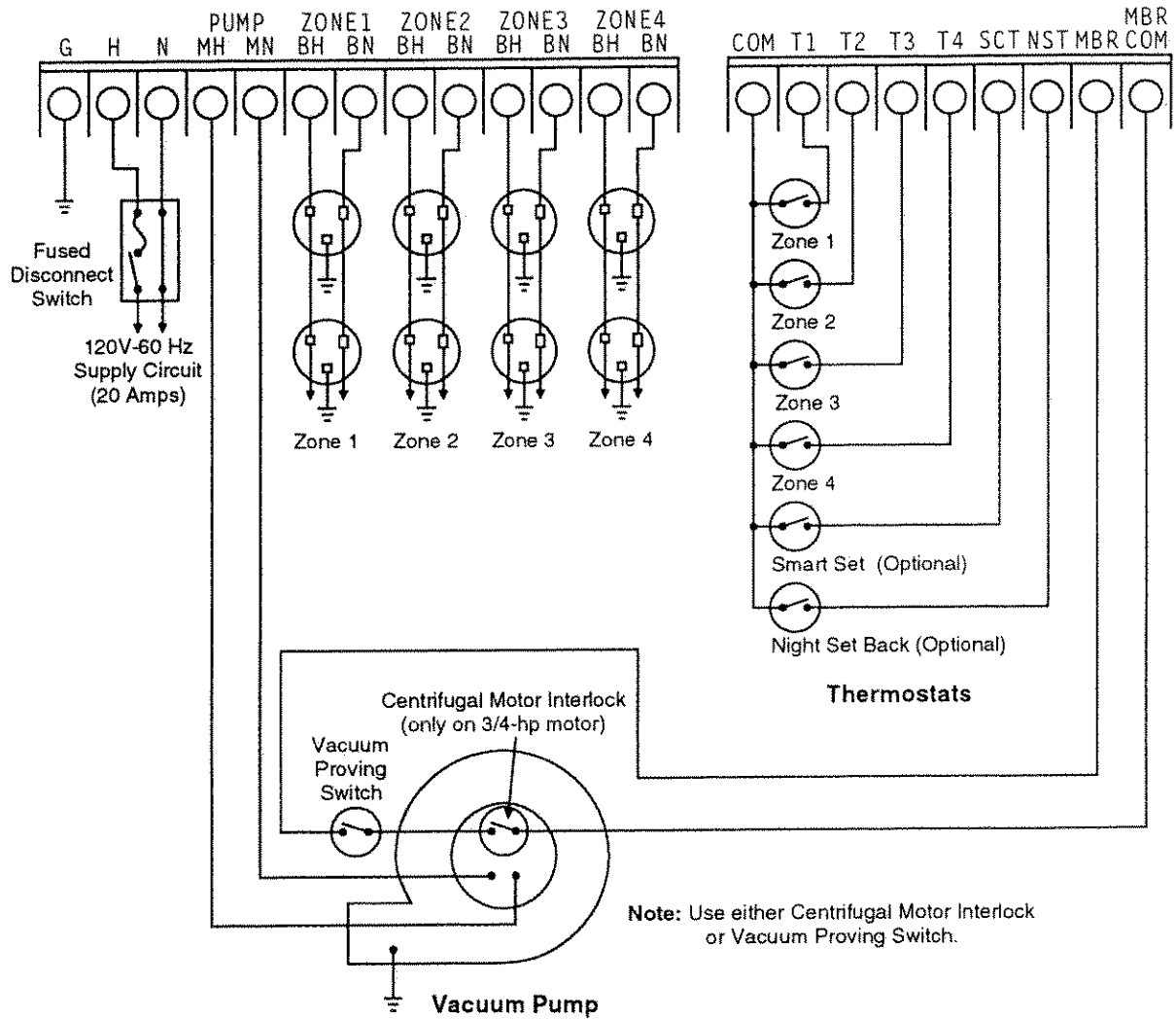
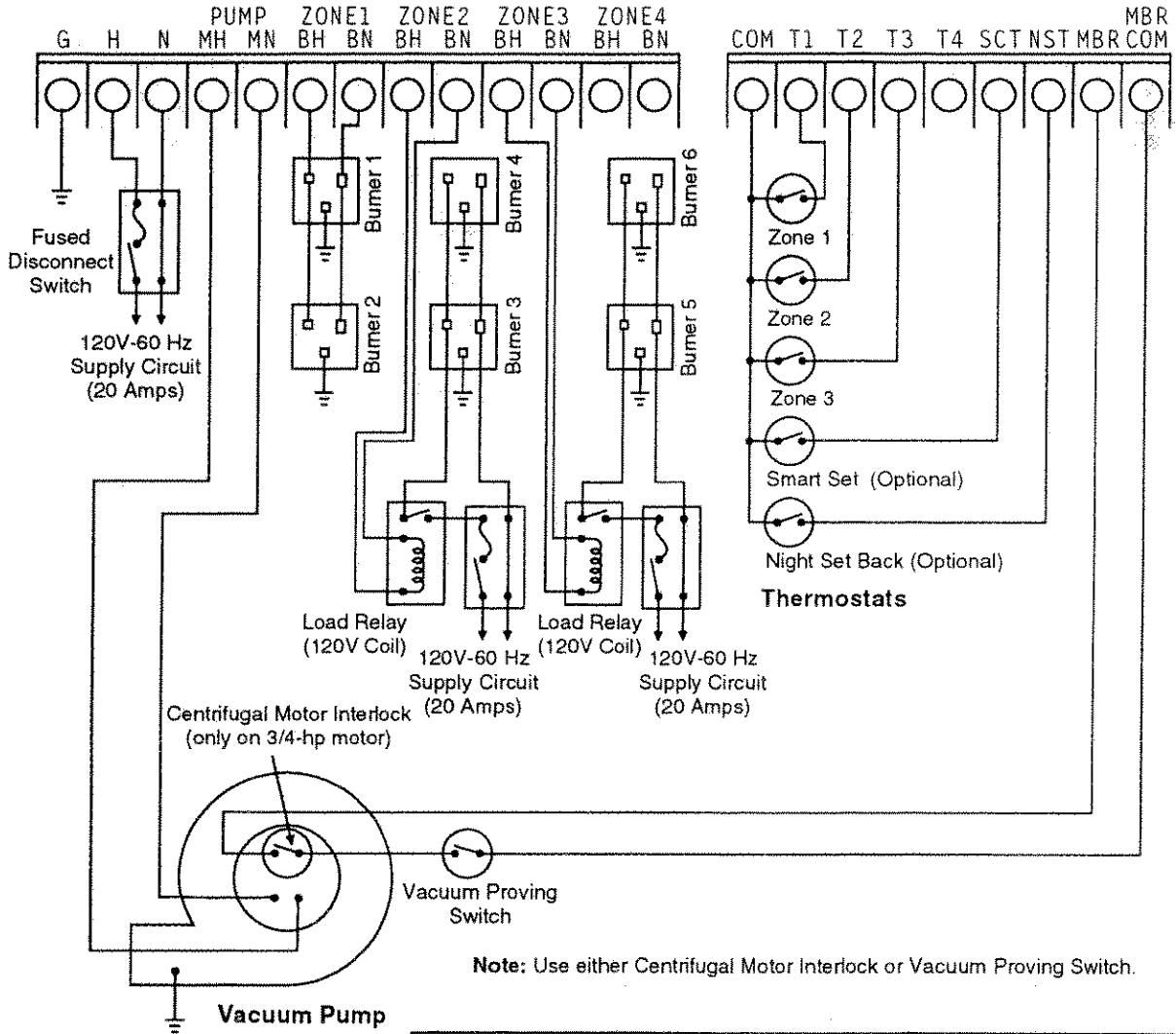


Figure 3: Typical Wiring of EconoVac System: 3 Zones with 6 Burners

The diagram below shows the maximum EconoVac configuration for one Control Panel. To use only one thermostat, add jumper circuits as shown in the inset box. For connection of the optional Outside Air Supply Blower, see Figure 6.



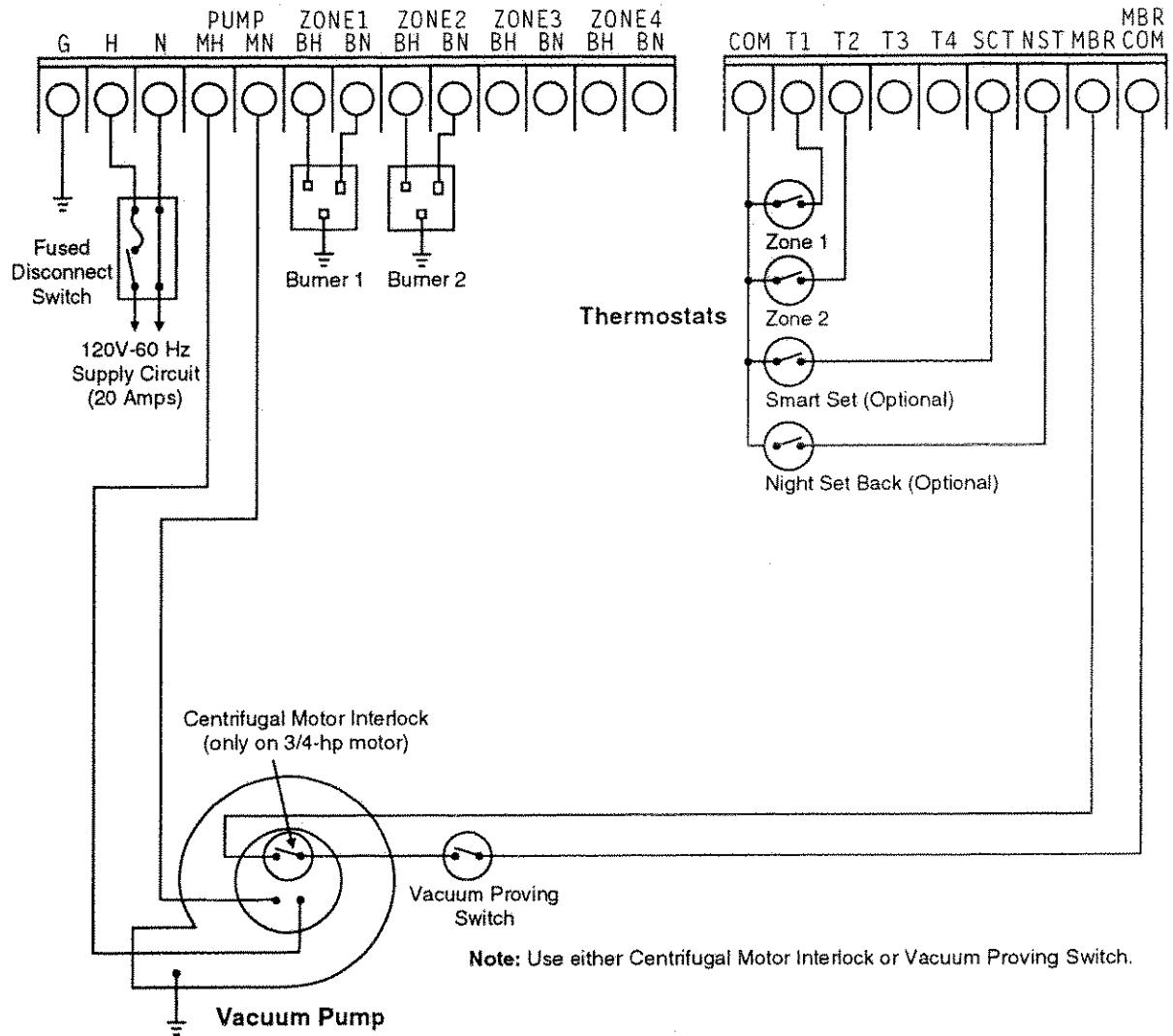
Note: Use either Centrifugal Motor Interlock or Vacuum Proving Switch.

To control the six burner system with only one thermostat, add jumper wires between the appropriate thermostat terminals as shown.

This method may be utilized in any EconoVac system requiring more than two burners per zone.

Figure 4: Typical Wiring of EconoVac System: 2 Burners with 2 Zones

For connection of the optional Outside Air Supply Blower, see Figure 6.



Operation and Maintenance

Once enabled, the Smart Control will automatically adjust the heating system operation to programmed parameters. If, for some reason, it is necessary to override programming for a period of time, this can be accomplished utilizing the "Smart Control Enable" and/or the "Night Setback Enable". Follow the instructions for these functions presented earlier in this manual, and select OFF to override the function for the zone required. Be sure to "re-enable" the zone changed when override is no longer required.

The SmartSet is equipped with a back-up battery to maintain program memory in the event of a power failure. The battery should be replaced approximately every 12-15 months. The battery is a 3 volt lithium cell (Panasonic BR2325 or equal) and should be replaced with a direct replacement battery.

CAUTION

Remove electrical supply before performing maintenance.

To replace battery, remove the mounting screws for the SmartSet panel. Remove the old battery from the holder and insert the replacement battery positive side UP. Program as necessary.

Note: The SmartSet Control will function without a battery in place, however, there is no program memory back-up in this condition.

There are no user serviceable components, other than battery back-up, in the SmartSet assembly. Malfunctioning controls should be referred to Roberts-Gordon or their agent for replacement or repair.

Figure 5: Typical Wiring of Load Relay Package

The diagram below shows typical wiring for the Load Relay Package (Part No. 05023000). The package contains (1) Relay, (1) pre-wired Relay Receptacle, and (1) Relay Cover with screws. The package may also contain other items which can be discarded.

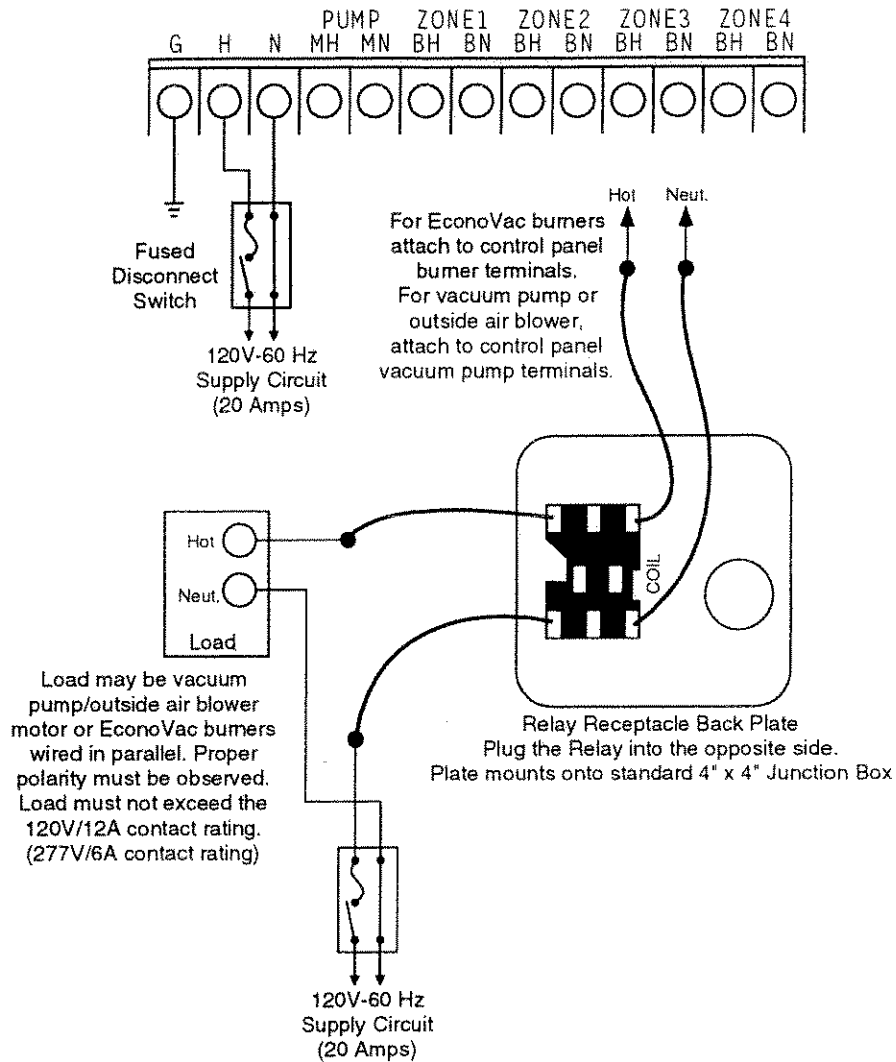
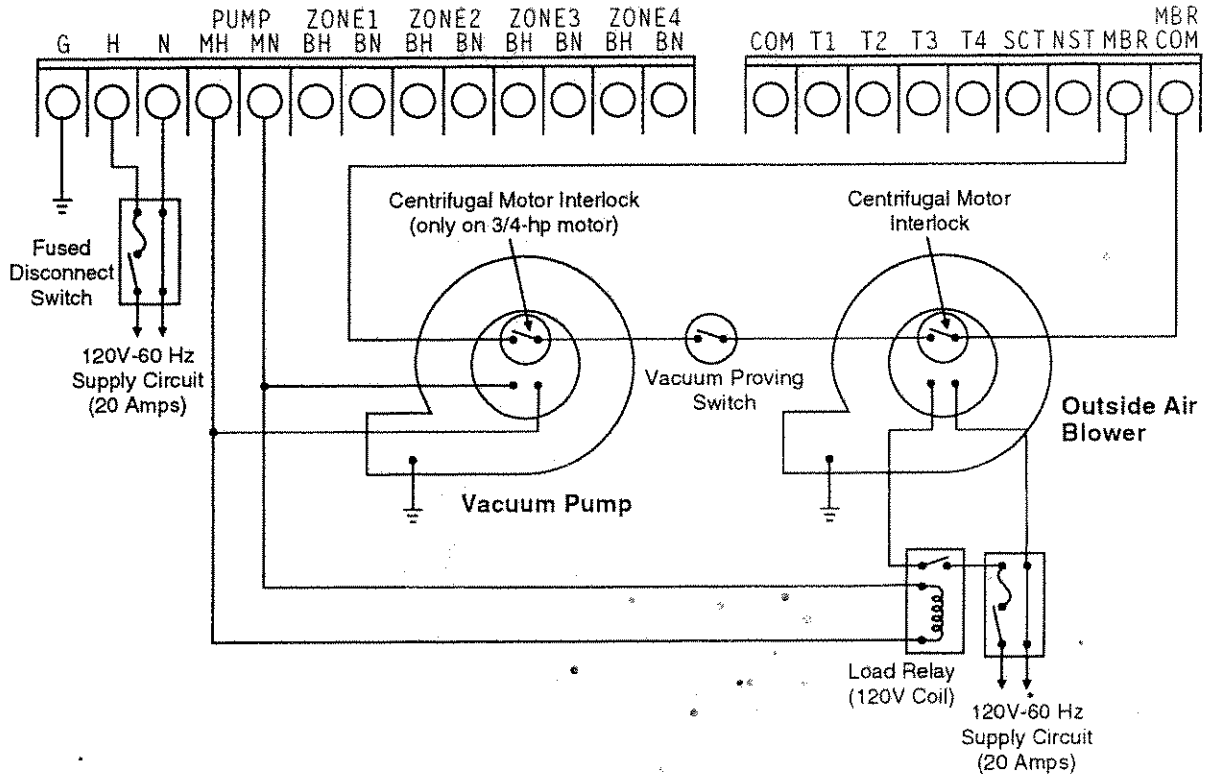


Figure 6: Typical Wiring of Outside Air Supply Blower

The diagram below shows typical wiring for the optional Outside Air Supply Blower (Part No. 90707500). Consult Figure 5 for details concerning the wiring of Load Relays.



Note: Use either Centrifugal Motor Interlock on Vacuum Pump or Vacuum Proving Switch.