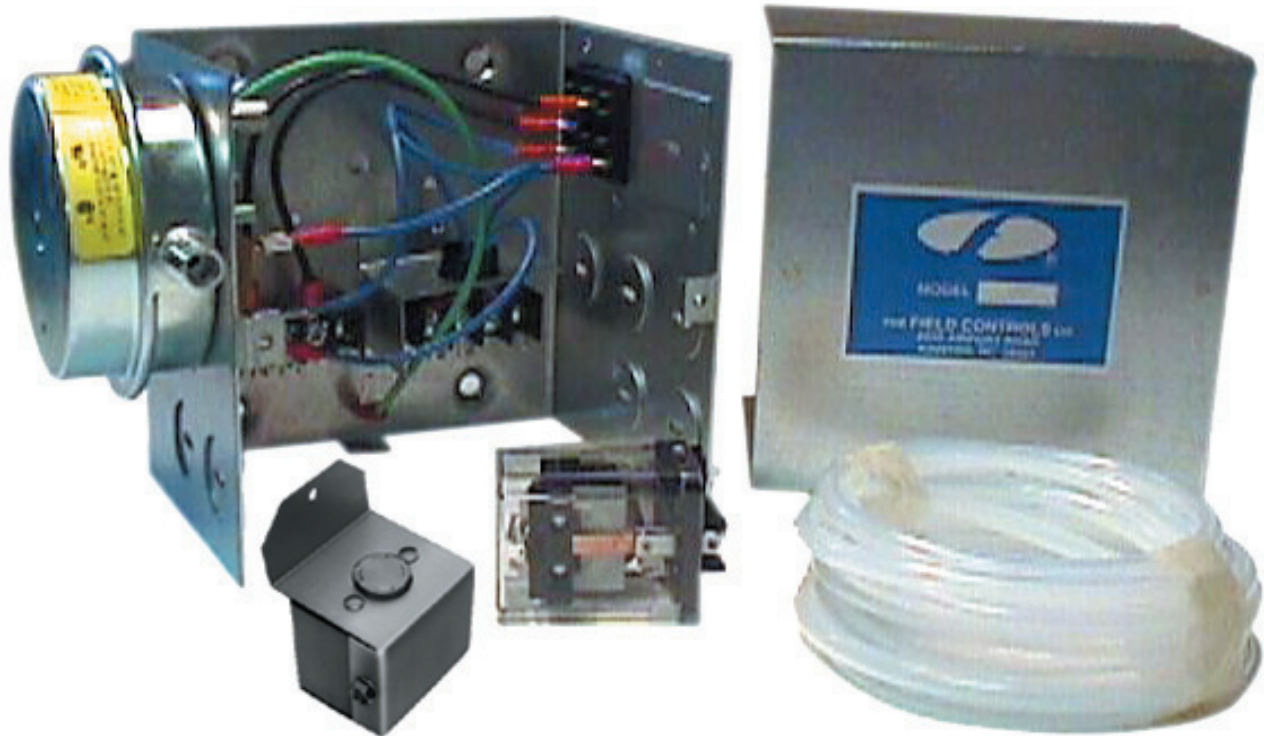


24 VAC SYSTEM CONTROL KIT

Model: CK-51



Designed for use on SWG Series Power Vent Hoods for controlling Natural Gas and L.P. Gas State Industries water heaters.

ITEMS INCLUDED IN KIT

- 1) Junction box with mounted pressure switch and relay base.
- 1) 24 VAC Relay
- 1) Ft. Length of 1/4" aluminum tubing
- 1) 1/4" tubing connector
- 1) Flexible conduit connector
- 1) GSK-3 Spillage Switch

READ THESE INSTRUCTIONS CAREFULLY AND COMPLETELY BEFORE PROCEEDING WITH THE INSTALLATION.

This device **MUST** be installed by a qualified agency in accordance with the manufacturer's installation instructions. The definition of a qualified agency is: any individual, firm, corporation or company which either in person or through a representative is engaged in, and is responsible for, the installation and operation of HVAC appliances, who is experienced in such work, familiar with all the precautions required, and has complied with all the requirements of the authority having jurisdiction.

Please retain these instructions after installation.

Installed By: _____ Phone: _____ Installation Date: _____



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MOUNTING JUNCTION BOX

The junction box can be mounted at the venter or remotely mounted away from the venter. (See Figure 1 & Figure 2)

1. Remove one of the knockouts from the side of the junction box where the pressure switch is mounted. Install the flexible conduit connector onto the CK-51 junction box and secure with fastening nut. If remote mounting the CK-51 junction box, mount the flexible conduit connector onto a 2" x 4" installer supplied junction box.
2. Fasten the flexible conduit from the SWG Venter into the conduit connector. Mount the CK-51 junction box or installer supplied junction box onto the wall or floor joist without straining the flexible conduit. Fasten the CK-51 junction box through the four dimpled locations on the base of the box. (See Figure 3)

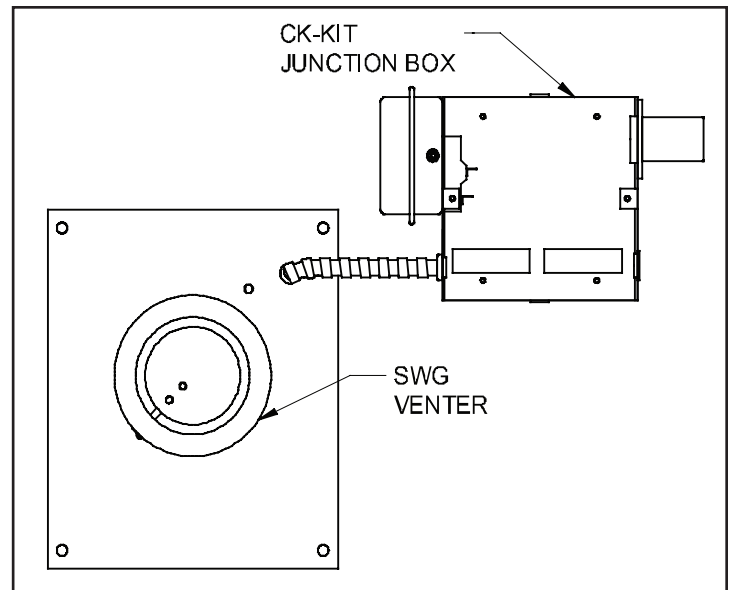


Figure 1

GSK-3 SAFETY SWITCH INSTALLATION

Installation of a secondary SAFETY SWITCH is recommended by LP and Natural gas fired systems with a draft hood. This device is installed to detect flue gas spillage from a blocked flue system and/or inadequate draft.

1. Mount spillage switch on the draft hood. (See Figure 4)
2. Route lead wires along the appliance wall with an accepted wiring enclosure in accordance with the National Electrical Code and applicable local codes, keeping the wires away from any HOT surface area.
3. Wire the safety spillage switch into one side of the thermostat circuit. Refer to unit wiring instructions.
4. After installing the safety spillage switch, check the amperage through the thermostat circuit and adjust the thermostat anticipator accordingly.

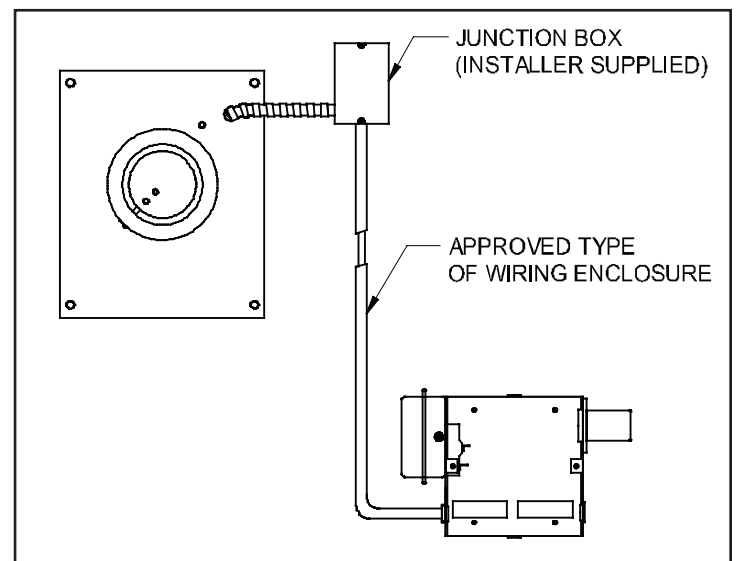


Figure 2

CAUTION: If for any reason the system has shut down during operation, the cause of the system failure should be investigated and corrected before resetting the safety switch and restarting the system.

**PRESSURE SWITCH SENSING TUBE
INSTALLATION**

1. Attach the 1/4" tubing connector to the pressure tube on the SWG Venter.
2. Connect the supplied 1/4" aluminum tubing to the tubing connector. Route the tubing to the CK-51 junction box and connect the tubing to the pressure switch. When routing the tubing, avoid kinking the tubing by bending the tubing too sharply.

For remote mounted CK-51 Junction Box, use a 1/4" OD copper, aluminum or plastic tubing and route the tubing to avoid contact with any heat source.

Refer to the SWG Venter Installation Instructions for setting system airflow.

WIRING (See Diagrams A-C State Industries Water Heaters)

Wire the venter motor and controls in accordance with the National Electrical Code, manufacturer's recommendations and/or applicable local codes. **UNITS MUST BE GROUNDED.** Check ground circuit to make certain that the unit has been properly grounded. The wiring should be protected by an over current circuit device rated at 15 amperes. **CAUTION** must be taken to ensure that the wiring does not come into contact with any heat source. All line voltage and safety control circuits, between the venter and the appliance, **MUST** be wired in accordance with the National Electrical Code for Class I wiring or equivalent methods.

NOTE: Route low voltage wiring through the supplied plastic grommet.

MINIMUM LINE VOLTAGE WIRE NO. 14 AWG

1. You must provide all wiring of the proper size outside of the water heater. You must obey local codes and electric utility requirements when you install this wiring.
2. This water heater must be electrically "grounded" by the installer. Using a screw on the water heater junction box, a wire must be run to connect the water heater to an uninterrupted metallic ground.
3. This appliance must be electrically grounded in accordance with local codes or, in the absence of local codes, with the latest edition of the National Electrical Code ANSI/NFPA No. 70.

NOTE: If any of the original wire as supplied with the water heater must be replaced, it must be replaced with 105°C thermoplastic AWM wire or its equivalent.

MODELS: F75-120, F75-140, F30-150, F80-180, F30-199, F80-199, F100-199ES, F100-199ET, F30-225, F75-250, F100-260ES, F100-260ET, F75-300, F70-360
NATURAL AND PROPANE (LP) MODELS

CAUTION: Label all wires prior to disconnection when servicing controls. Wiring errors can cause improper and dangerous operation. Verify proper operation after servicing.

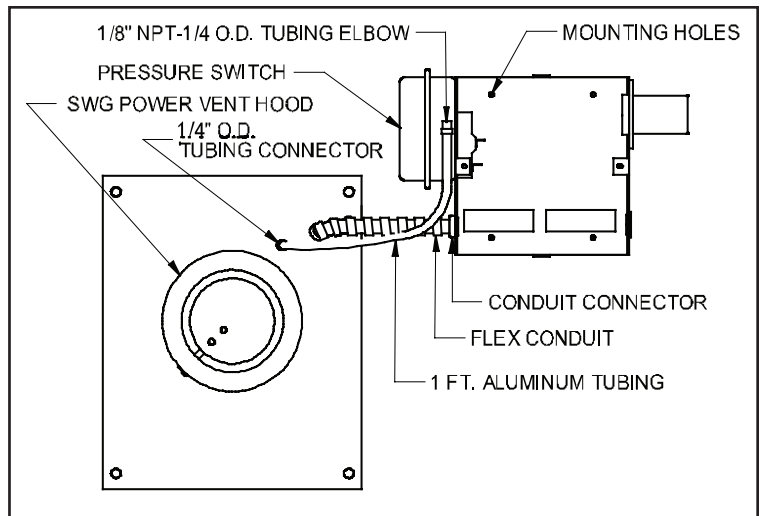


Figure 3

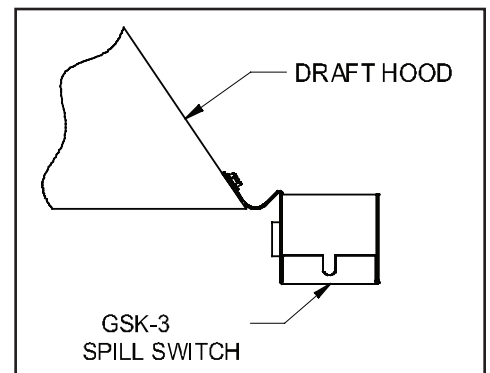


Figure 4

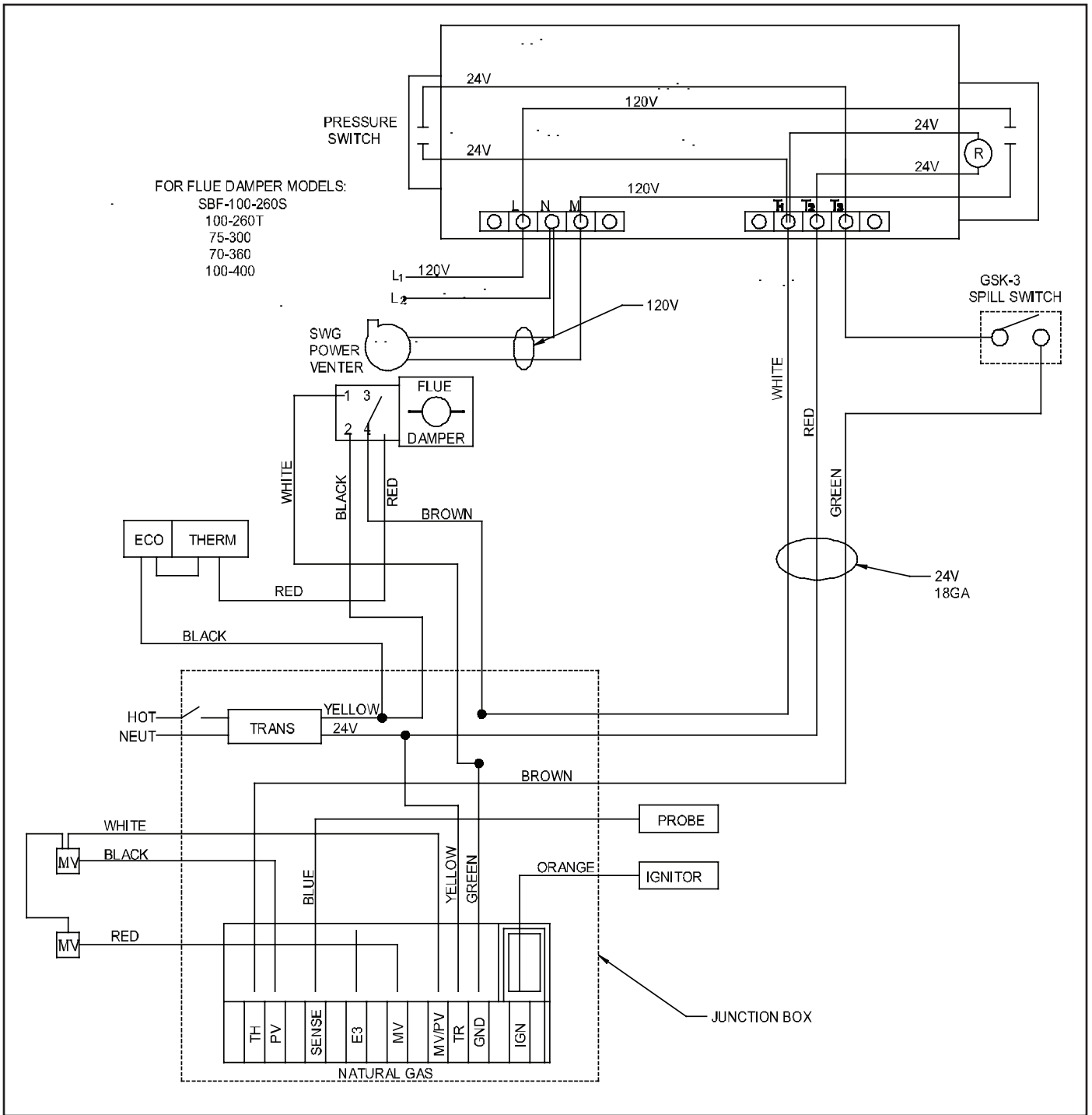
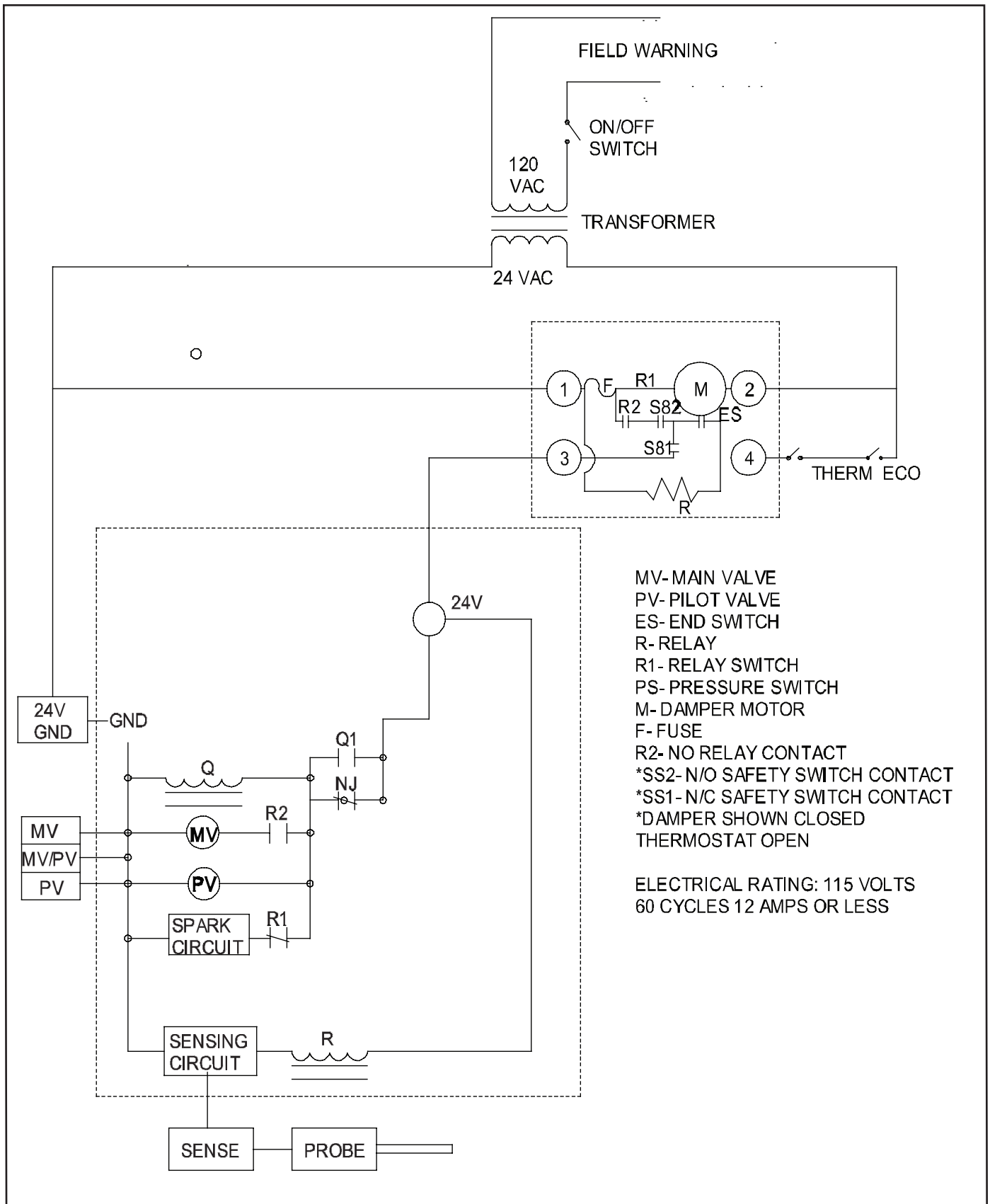


Diagram A



- MV- MAIN VALVE
- PV- PILOT VALVE
- ES- END SWITCH
- R- RELAY
- R1- RELAY SWITCH
- PS- PRESSURE SWITCH
- M- DAMPER MOTOR
- F- FUSE
- R2- NO RELAY CONTACT
- *SS2- N/O SAFETY SWITCH CONTACT
- *SS1- N/C SAFETY SWITCH CONTACT
- *DAMPER SHOWN CLOSED THERMOSTAT OPEN

ELECTRICAL RATING: 115 VOLTS
60 CYCLES 12 AMPS OR LESS

Diagram B

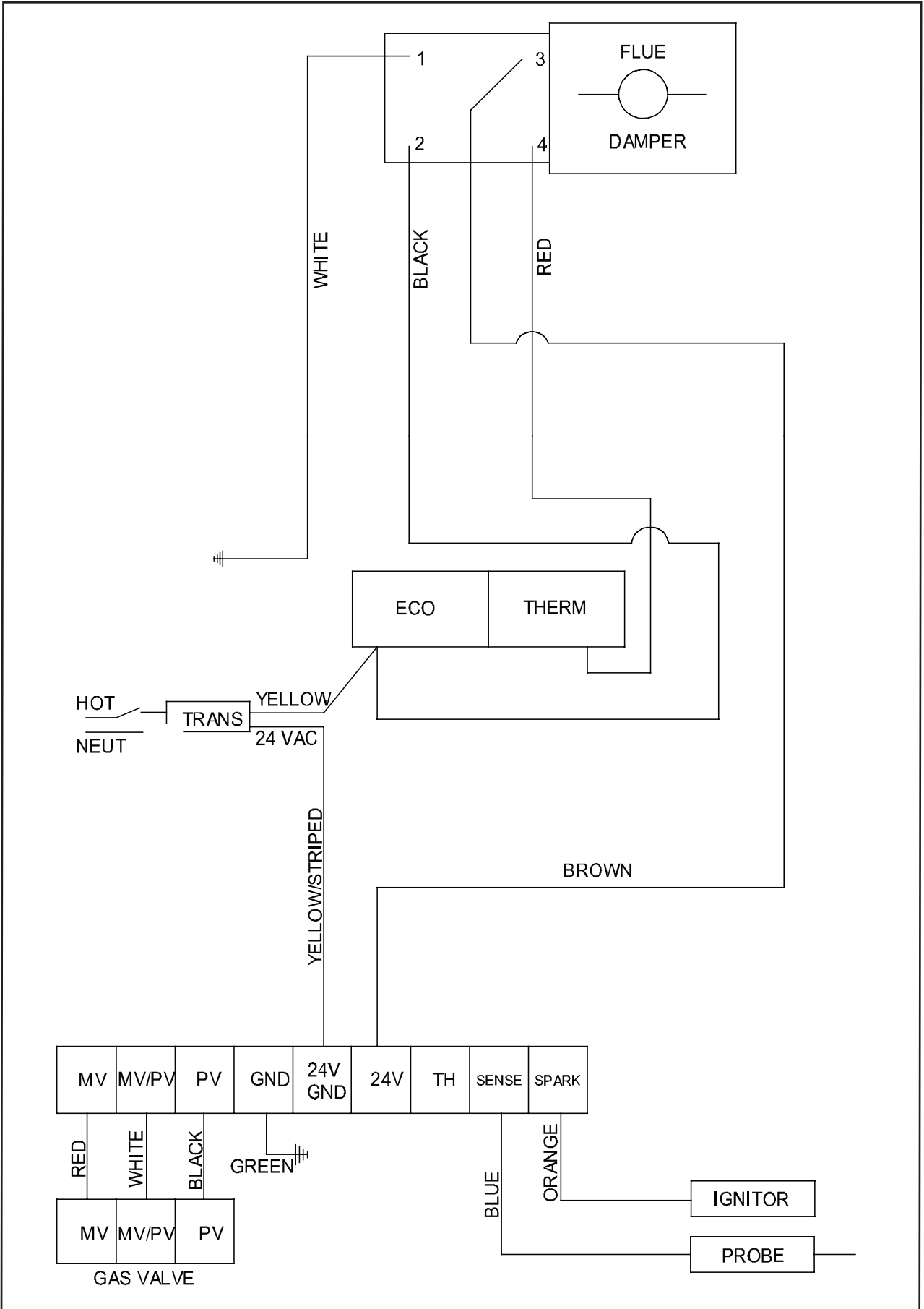


Diagram C

PRESSURE SWITCH ADJUSTMENTS

With the venter airflow set and the appliance operating at the best operating efficiency, adjust the pressure switch by rotating the adjustment screw clockwise until the burner shuts off, then rotate the adjustment screw counterclockwise until the burner fires. Rotate the adjustment screw an additional ¼ turn counterclockwise to ensure proper switch setting. (See Figure 5)

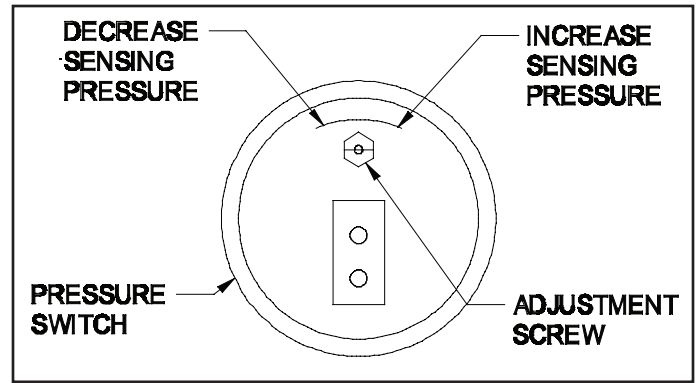


Figure 5

SYSTEM CONTROL CHECK OUT PROCEDURES

1. Adjust the thermostat to call for heat and observe the power venting system for proper operation sequence. (Repeat if necessary).
 - a. Thermostat calls for heat.
 - b. Relay is energized and venter motor starts.
 - c. Pressure switch closes and burner starts.
 - d. Thermostat is satisfied burner and venter motor stop.
2. While system is operating disconnect power to the venter motor. This should open the pressure switch contacts and stop burner operation.
3. (If GSK-3 switch is installed) Allow vent system to cool. Disconnect the vent pipe between the venter inlet and the appliance outlet. Block the vent pipe with a noncombustible material. Activate the heating system with the main burner operating. Allow approximately 2 minutes or less for the secondary safety switch to deactivate the burner. Reset safety switch and repeat.

TROUBLE SHOOTING HINTS

1. Main burner does not fire when thermostat calls for heat with venter operating.
 - a. Check pressure switch adjustment.
 - b. Check wiring connections between pressure switch and burner.
 - c. Check pressure switch for continuity across terminals, during venter operation.
2. Venter does not activate when thermostat calls for heat.
 - a. Check wiring.
 - b. Check relay for proper operation.
3. Flue gas odor.
 - a. Check system draft.
 - b. Check for negative pressure in building.

MAINTENANCE

1. Motor: Inspect motor once a year, the motor should rotate freely.
2. Wheel: Inspect venter wheel annually to clear any soot, ash or coating which inhibits either rotation or air flow. Remove all foreign material before operating.
3. Vent System: Inspect all vent pipe connections annually for looseness and for evidence of flue gas leakage. Seal or tighten pipe connections if necessary.

Warranty

For warranty information about this or any Field Controls product, visit:
www.fieldcontrols.com/warranty



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