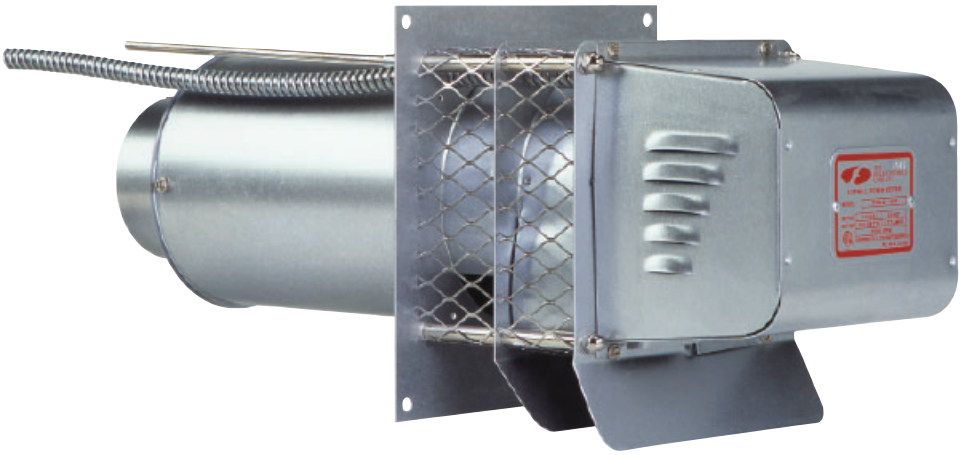
SIDEWALL POWER VENTING KIT

Model: SWG-4G



GENERAL SYSTEM INFORMATION

Designed for operation with natural gas and LP gas.

1. The thermostat calls for heat and energizes a relay which activates the power venter. After the venter motor has come up to speed, the pressure switch closes. This closes the circuit to the burner and allows the burner to fire.
2. After the heating requirement has been satisfied, the thermostat circuit will open and deactivate the burner.
3. The power venter operates for a period of time after the burner has shut off to purge remaining flue gases.

ITEMS INCLUDED IN KIT:

1 - SWGII-4HD Sidewall Power Venter
1 - CK-43F Control Kit (includes 4" MG-1 Barometric Draft Control)
1 - Installation Instructions

OPTIONAL COMPONENTS:

PEK-4HD Extension Kit. For installations in walls over 8" thick.

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: _____

FIELDCONTROLS

WARNING: Bodily injury can result from high voltage electrical components, fast moving fans, and combustible gas. For protection from these inherent hazards during installation and servicing, the electrical supply must be disconnected and the main gas valve must be turned off. If operating checks must be performed with the unit operating, it is the technician's responsibility to recognize these hazards and proceed safely.

INSTALLATION SAFETY INSTRUCTIONS

1. Safety inspection of a venting system should be performed before and after installing a power venting system on an existing or new appliance. Procedures to follow are those recommended by the National Fuel Gas Code, ANSI Z223.1, CGA Standard B149.1-M91 or B149.2-M91, or refer to the General Installation Inspection section of this manual.
2. Plan the vent system layout before installation to avoid the possibility of accidental contact with concealed wiring or plumbing inside walls.
3. Single wall vent pipe (refer to Diagram B) may be used to join the appliance to the power venter. If proper clearances cannot be maintained from combustible material, Type B vent pipe should be used. Refer to national or local codes for guidelines.
4. Disconnect power supply before making wiring connections to prevent electrical shock and equipment damage.
5. This equipment is designed to overcome minor negative pressure conditions. To ensure extreme negative pressure does not exist, follow the General Installation Inspection section of this manual.
6. Air flow adjustment MUST be made to ensure appliance efficiency. This should be done at the appliance exhaust outlet with a velocity meter or draft gauge.
7. On gas-fired furnaces, a barometric draft control must be installed to regulate proper air flow and fluctuations in the system's air flow during operation. Fluctuations may come from wind loads on the outlet of the power venter or house depressurization during windy days.
8. The air pressure switch must be adjusted to assure safe operation. Failure to adjust the air pressure switch as specified later in these instructions, could lead to improper operation of the venting system and furnace which will result in product damage, personal injury, or death.

INSTALLATION OF SWG POWER VENTER

WARNING: Failure to install, maintain and/or operate the power venting system in accordance with the manufacturer's instructions may result in fire, personal injury, or death.

PROCEDURE FOR CALCULATING TOTAL EQUIVALENT PIPE LENGTH IN FEET

1. Calculate the total equivalent feet for each type of fitting used in the venting system from Table 1 below.
2. Calculate the total amount of feet for the straight lengths of vent pipe.
3. Add the equivalent feet for the fittings with the total amount of feet of straight lengths. This will approximate the total equivalent feet of the vent system. The total equivalent feet must be less than the maximum equivalent vent length as shown in OEM instructions.

Table 1

EQUIVALENT LENGTH (FEET) OF VENT PIPE FOR VENT PIPE FITTINGS	
Vent Pipe Fittings	4" Vent Pipe Diameter
90º ELBOW	7
45º ELBOW	4

Example: System Pipe Size = 4"
Step 1 Two 4" 90º Elbows @ 7 feet each = 14 Ft.
Step 2 Ten 2 Foot Lengths of 4" Pipe = 20 Ft.
Step 3 Total Equivalent Feet = 14 Ft. + 20 Ft. = 34 Ft.

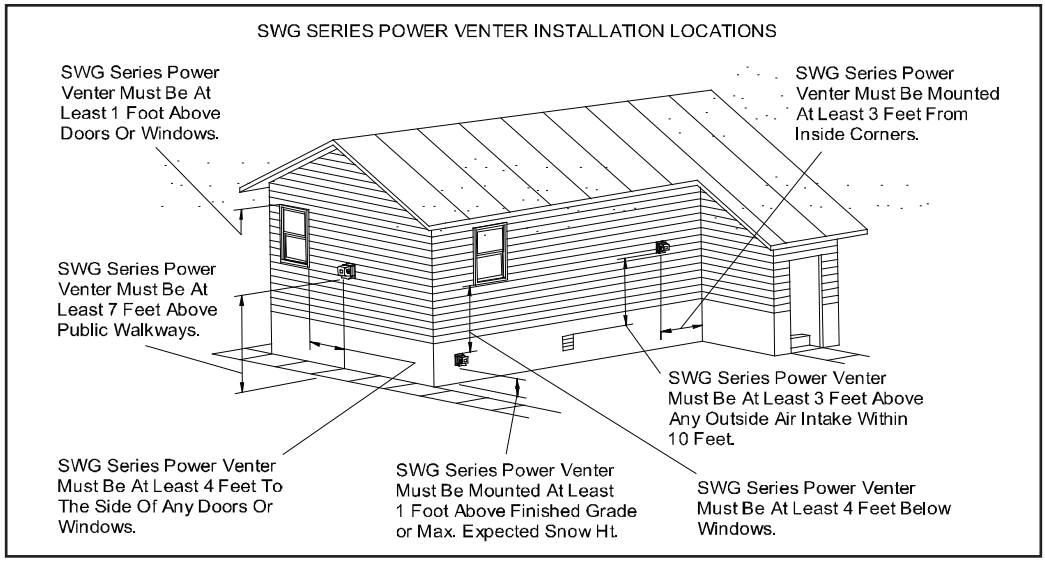


Diagram A

INSTALLATION OF THE SWG POWER VENTER

1. Remove power venter from box and inspect unit for damage. If the carton has been crushed or mutilated, check unit very carefully for damage. Rotate blower wheel to insure that the motor and blower wheel rotate freely. DO NOT install if any damage is apparent.
2. Location of the termination of the venting system should be installed in accordance with the National Fuel Gas Code, ANSI Z223.1, CGA Standards B149.1-M91, B149.2-M91, manufacturer's recommendations, and/or local codes which are applicable. See requirements below or refer to installation location Diagram A for typical locations.
   a. The exit termination of mechanical draft systems shall not be less than 7' above grade when located adjacent to public walkways.
   b. A venting system shall terminate at least 3' above any forced air inlet located within 10'. For Canadian applications, a venting system shall terminate more than 6' away from a mechanical air supply inlet.
   c. The venting system of other than a direct vent appliance shall terminate at least 4' below, 4' horizontally from, or 1' above any door, window or gravity air inlet into the building. For Canadian applications, according to CAN/CGA Standards B149.1-M91 and B149.2-M91, 12" clearance is required for inputs up to and including 100,000 BTU/HR and 3' for inputs exceeding 100,000 BTU/HR.
   d. The vent termination of a direct vent appliance with an input of 50,000 BTUs per hour or less, shall be located at least 9" from any opening through which vented gases could enter the building. With an input over 50,000 BTUs per hour, a 12" termination clearance shall be required.
   e. The vent termination point shall not be installed closer than 3' from an inside corner of an L-shaped structure.

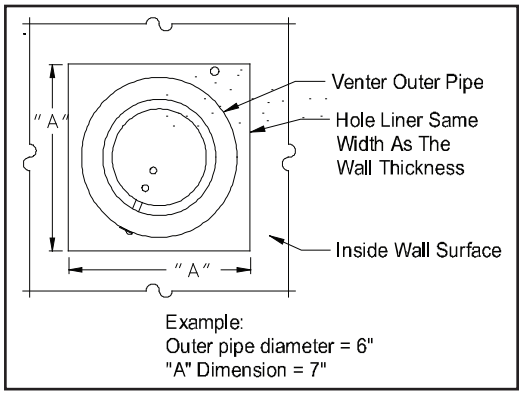


Figure 1

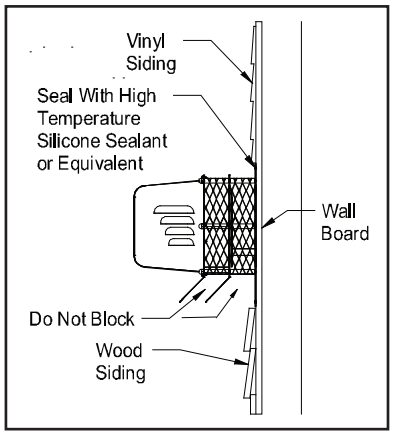


Figure 2

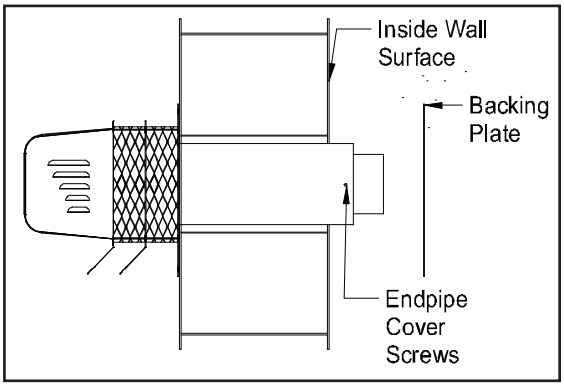


Figure 3

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f. The vent termination should not be mounted directly above, or within 3' horizontally from an oil tank vent or gas meter.

g. The bottom of the vent terminal shall be located at least 12" above finished grade or maximum expected snow height.

3. After determining the location of the venting system termination point (See Diagram A), cut a square hole through the wall 1" larger than the outer pipe diameter of the power venter. (See Figure 1)
4. Seal the back side of the base plate around the outer pipe of the venter and the conduit with a bead of high temperature silicone sealant. (See Figure 3) Mount the power venter through the wall, keeping the outer pipe centered in the hole. (See Figure 1) Fasten the power venter to the outside wall with appropriate fasteners. Seal the edges of the power venter base plate to the wall with a high temperature silicone sealant.

NOTE: If mounting the power venter through a combustible wall material and the flue gas temperature is above 400°F at the power venter inlet, line the square hole with a piece of corrosion resistant sheet metal or non-combustible material. The liner piece should be the same width as the wall section. (See Figure 1) The power venter has a maximum flue gas temperature of 550°F at the venter inlet. For installation through walls over 8" thick, use an SWG Series Extension Kit, Model PEK-4HD.

5. Remove the end pipe cover screws on the sides of the outside pipe and remove end pipe cover. Then mount the backing plate over the outer pipe and route the flexible conduit and pressure switch tube through the holes provided in the backing plate. Fasten the backing plate to the inside wall with appropriate fasteners. (See Figure 3) Re-install cover and end pipe screws.

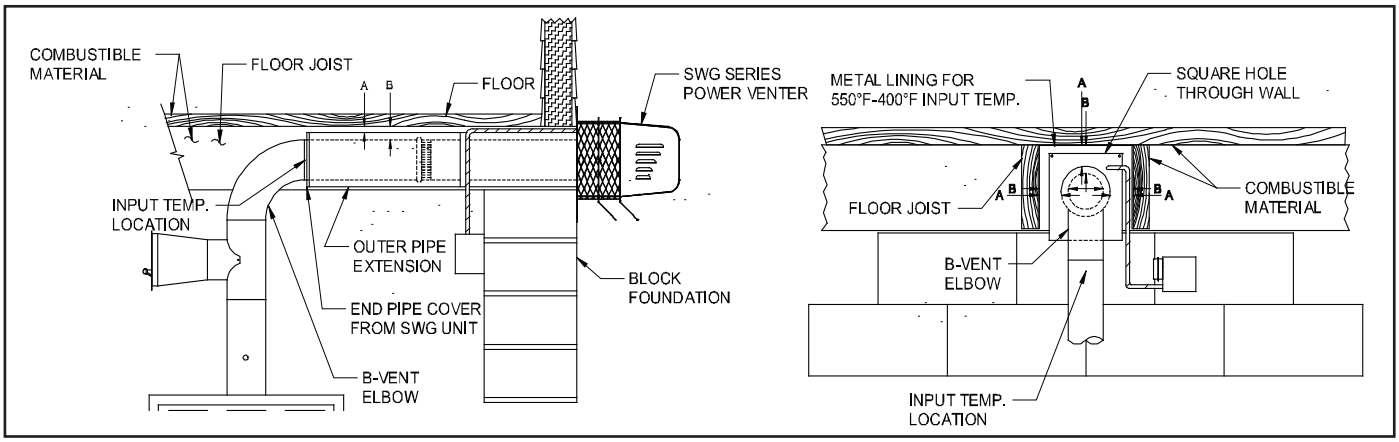


Diagram B

CONNECTING POWER VENTER TO APPLIANCE

The venting system should be installed and supported in accordance with the National Fuel Gas Code, ANSI Z223.1, CGA Standards B149.1-M91, B149.2-M91, or in accordance with any local codes. A vent pipe connector shall be supported for the design and weight of the material employed, to maintain clearances, prevent physical damage and separation of joints.

If mounting venting system near combustible materials, refer to Diagram B for allowable installation clearances. Always check local code requirements for code restrictions.

Route the vent pipe from the appliance to the power venter using the least number of elbows possible. The horizontal section of the vent pipe should have a slight upward slope from the appliance to the power venter. For clearances to combustible materials, multiple appliance venting, and other installation requirements, refer to the National Fuel Gas Code ANSI Z223.1, CGA Standards B149.1-M91, B149.2-M91, and/or any applicable local codes or appliance manufacturer's installation instructions.

Table 3

INSTALLATION CLEARANCE WITH WALL VENT PIPE			
DOUBLE PIPE SYSTEM		SINGLE PIPE VENTING SYSTEM	
Allowable Inlet Temperature	Clearance (A)	Allowable Inlet Temperature	Clearance (B)
400°F Or Less	½" Minimum	400°F Or Less	3" Minimum
400°F To 550°F	1" Minimum	400°F To 550°F	4" Minimum
400°F To 550°F	½" Minimum With Sheet Metal Liner	400°F To 550°F	3" Minimum With Sheet Metal Liner

NOTE: Vent pipe joints should be secured with at least three sheet metal screws. Use a PEK series extension kit or follow installation method below for a double pipe system. When the outer pipe of the SWG is extended over the inner pipe, use the double pipe guidelines for determining clearances.

INSTALLATION USING TYPE B VENT PIPE

1. Using a hand crimper or a like device, crimp the inner pipe of the SWG power venter approximately 1" long. (See Figure 4)
2. Attach the vent pipe over the crimped end of the SWG power venter inner pipe.
3. Secure the vent pipe to the SWG power venter inner pipe with at least three (3) #8 sheet metal screws. Pre-drilling the holes through both pipes will allow easier fastening.

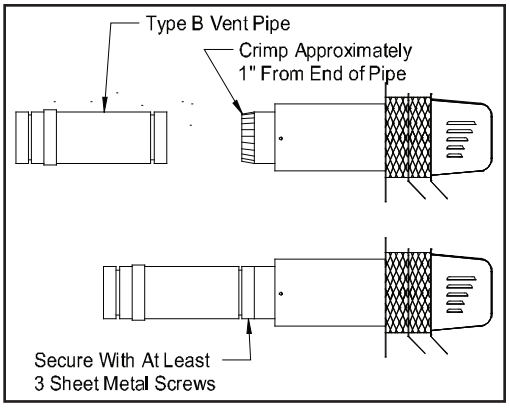


Figure 4

PEK-4HD EXTENSION KIT INSTALLATION INSTRUCTIONS (Optional)

(Includes an air adjustment damper plate)

1. Remove the End pan from the SWG Venter. (See Figure 5)
2. Using a pair of sheet metal cutters, cut the Damper Plate Adjustment Bracket. (See Figure 6) Then remove the Damper Plate and Adjustment Bracket.
3. Install the Extension by starting the inner pipe into the attaching section first, then lightly tap the end of the inner and outer pipe into the attaching section until the rib on the crimped end touches the attaching pipe. The lock seam of the pipe should be on the top of the pipe.

NOTE: The Extension Kit can be added onto the SWG Venter directly or by attaching equal lengths of pipe to the inner and outer pipes, then the Extension Kit can be added closer to the heating unit.

4. Make sure damper plate rotates freely, then fasten the outer pipe with at least three (3) sheet metal screws.

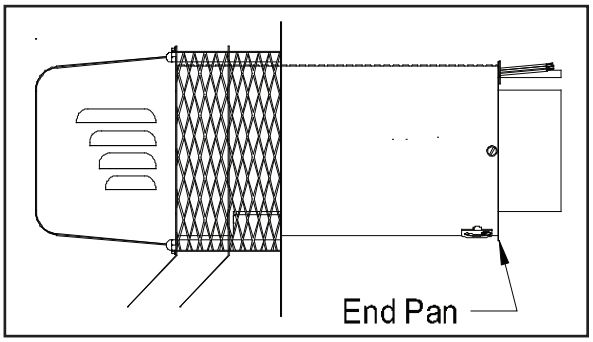


Figure 5

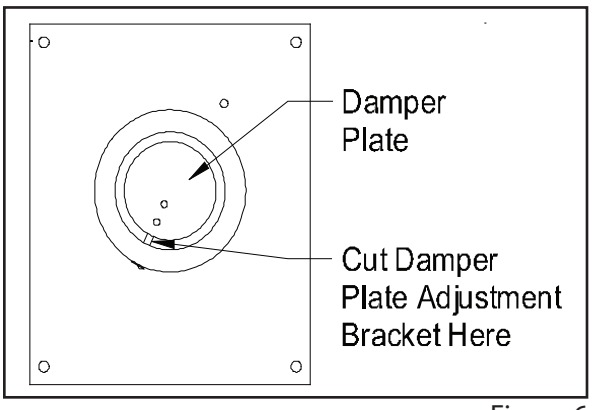


Figure 6

INSTALLATION INSTRUCTIONS FOR CK-43F CONTROL KIT

Designed for use with the SWG Series Power Venter for controlling Natural Gas and LP Gas Draft Induced appliances.

ITEMS INCLUDED IN CK-43F CONTROL KIT:

- 1- Junction box with mounted air pressure switch and post purge relay/timer
- 1- 2' Length of ¼" aluminum tubing
- 1- ¼" tubing connector
- 1- Flexible conduit connector
- 1- 4" MG-1 Barometric Draft Control

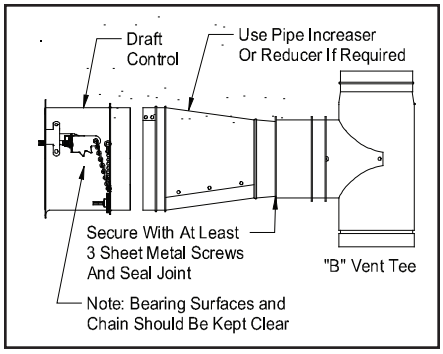


Figure 7

DRAFT CONTROL INSTALLATION

1. Install a vent pipe reducer or increaser, if needed, into the tee and fasten using sheet metal screws. (See Figure 7)
2. If using a Type B Vent Tee, the opening of the Tee, at the draft control mounting location, should be sealed with a high temperature sealant or equivalent.
3. Insert the draft control into the tee. The front face of the control MUST be plumb and the bearing surfaces MUST be level whether the control is on a horizontal, vertical or sloping flue pipe. Use a spirit level and level accurately. Secure the control in tee by using sheet metal screws.

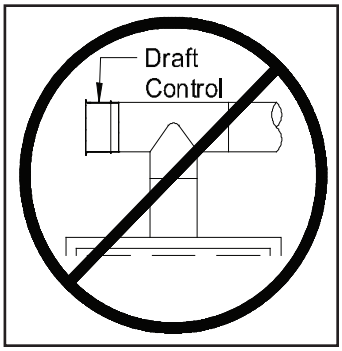


Figure 8

NOTE: Do not install the draft control in a vent pipe tee in the configuration as shown in Figure 8.

MOUNTING JUNCTION BOX

The junction box can be mounted near the venter or remotely mounted up to 100' away from the venter. (See Figures 9 & 10)

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-43F junction box and secure with fastening nut. If remote mounting the CK-43F junction box, mount the flexible conduit connector onto a 2" x 4" installer supplied junction box. (See Figure 10)
2. Fasten the flexible conduit from the SWG Venter into the conduit connector. Mount the CK-43F junction box or installer supplied junction box onto the wall or floor joist without straining the flexible conduit. Fasten the CK-43F junction box to the wall through the four dimpled locations on the base of the box. NOTE: The Control Kit box must be mounted so that the air pressure switch is vertical. If not mounted vertically, the control system will not operate properly.

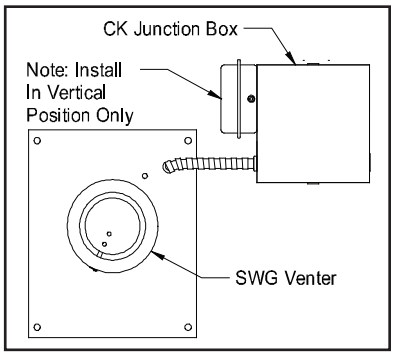


Figure 9

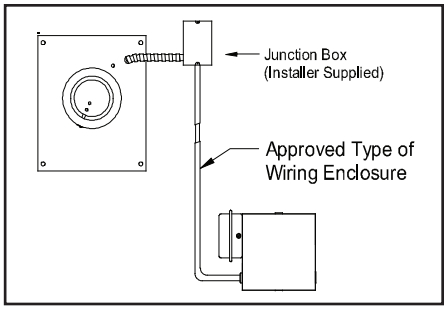


Figure 10

PRESSURE SWITCH SENSING TUBE INSTALLATION

1. Attach the ¼" tubing connector to the pressure tube on the SWG Venter. (See Figure 11)
2. Connect the supplied ¼" aluminum tubing to the tubing connector. Route the tubing to the CK-43F 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-43F Junction Box, use a ¼" OD copper, aluminum or plastic tubing and route the tubing to avoid contact with any heat source.

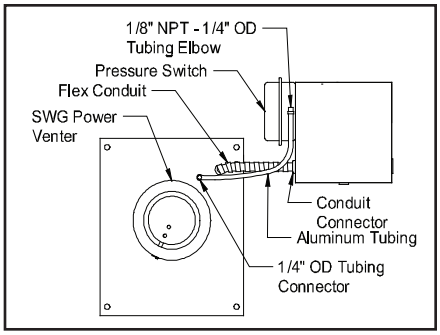


Figure 11

WIRING

WARNING: Disconnect power supply before installation to prevent personal injury or death from electrical shock and equipment damage. Wire the power venter motor and controls in accordance with the National Electrical Code and applicable local codes.

CAUTION: Unit must be grounded. Check ground circuit to make certain that the unit has been properly grounded.

CAUTION: All parts of this product that are capable of conducting electrical current are grounded. If grounding wires, screws, straps, clips, nuts, or washers used to complete a path to ground are removed for service, they must be returned to their original position and properly fastened. The wiring should be protected by an over-current circuit device rated at 15 amperes.

CAUTION: Power venter wiring must not come in contact with any heat source. All line voltage and safety control circuits between the power venter and the appliance MUST be wired in accordance with the National Electrical Code for Class 1 wiring or equivalent.

Refer to Diagram C for guidance in wiring the Power Venter and Control Kit to the appliance.

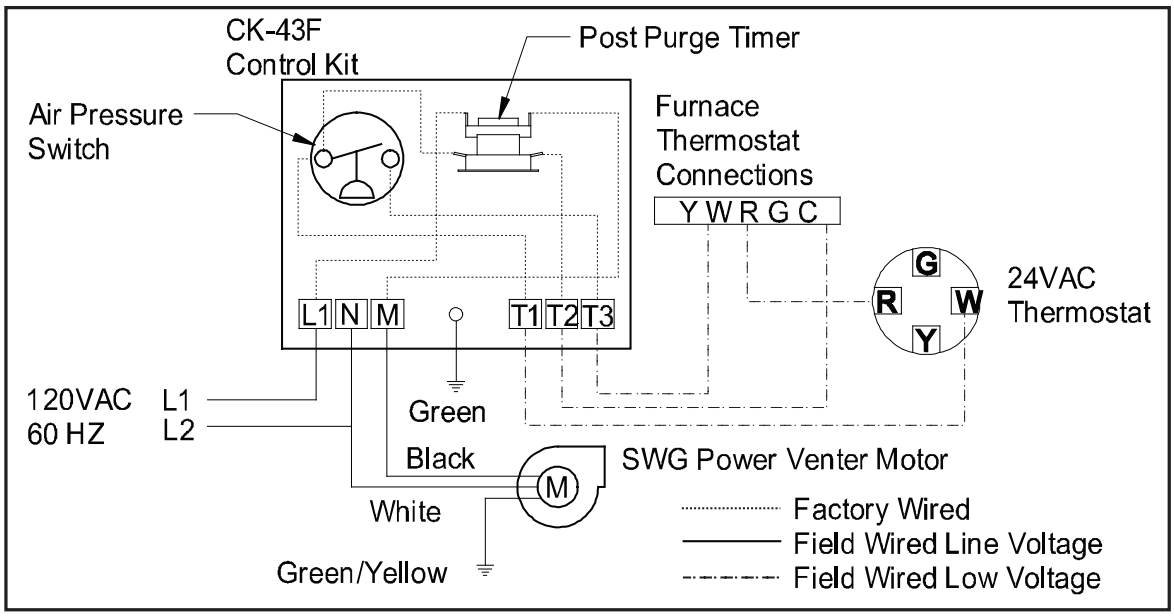


Diagram C

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 in Control Kit is energized and Power Venter motor starts.
   c. Air pressure switch closes and ignition sequence starts.
   d. Thermostat is satisfied, the appliance burner stops.
   e. Power Venter continues to run.
   f. Power Venter stops after the post purge cycle.
2. After verifying the correct operation of the system as stated above, repeat the procedure. While the appliance is operating, disconnect power to the Power Venter motor. As the venter motor slows, the air pressure switch contacts will open and stop the appliance burner operation. This simulates a venter failure and tests the fan proving switch and wiring.

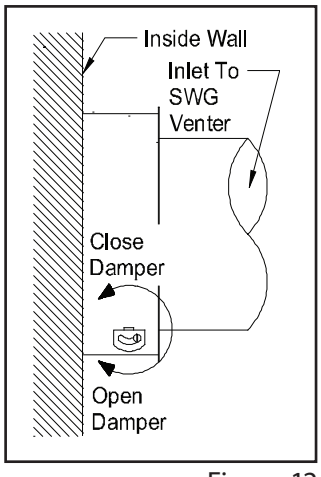


Figure 12

AIR FLOW ADJUSTMENTS

In order to obtain proper system draft, the power venter has an airflow adjustment damper built-in. (See Figure 12) This damper should be used to make coarse draft adjustments while the barometric should be used for finer adjustments. Changes in the adjustment of the 4" MG-1 Draft Control should be made by adding or removing the

washer-like weights (supplied with the control) to or from the weight holder chain assembly. After the control is adjusted, its action will be entirely automatic, the gate will open or close by itself to correct for changes in the draft. The control MUST be adjusted to the desired draft setting by adding or removing the washer-type weights supported by the two chains on the side of the draft control. (See Figure 13) DO NOT move the weight attached directly to the gate, this is used only for balancing at the factory.

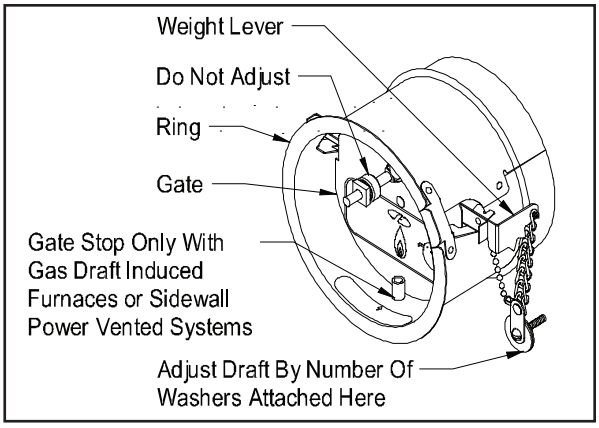


Figure 13

PROPERLY SETTING THE AIRFLOW ADJUSTMENTS ON THE POWER VENTER AND DRAFT CONTROL

1. Set the adjustment damper in the SWG venter to its full open position.
2. Start with no weights on the chain hanger of the MG-1 draft control.
3. Follow the appliance manufacturer's procedures for starting the heating appliance. Then adjust the thermostat to call for HEAT.
4. After the system has operated for at least 10 minutes to stabilize flue gas temperatures, check for negative draft or up-draft at the heating appliance outlet. Use a draft gauge, velocity meter or match test procedure.
5. Loosen the damper locking screw on the underside of the SWG outer pipe and rotate the adjustment damper closed to obtain the minimum air flow required to maintain draft. Then increase air flow slightly (10% over minimum air flow rate) to ensure proper venting. If using a draft gauge, draft settings should typically be -0.02" of water column draft at the appliance outlet. (Check equipment requirement.)
6. Observe the position of the gate on the draft control. It should be set so that during normal operation the gate is in the midpoint of its swing. This will be approximately 30º - 45º from vertical.
7. When first setting up the system the gate on the control will probably be fully open. Add washer weights to the chain hanger until the gate stabilizes at the midpoint of its swing.
8. Changing the weight on the draft control will affect the system draft, therefore repeat steps 5 through 7 as necessary until proper draft is obtained and the draft control gate is in the proper position.
9. Tighten the damper locking screw on the SWG to prevent it from moving during operation and secure the washer weights on the draft control with the provided screw and nut.

WHILE ADJUSTING THE SYSTEM AIRFLOW, TWO THINGS ARE ESSENTIAL

1. The appliance burner must operate for at least 10 minutes prior to setting the draft to stabilize flue gas temperatures.
2. An analysis of the flue gases is necessary to determine the percentage of CO_2 and check for the presence of CO. Refer to the local gas company for the proper CO_2 readings and allowable CO levels.

Refer to the General Installation Inspection section to check for negative pressure problems in the building. If sufficient combustion air for the burner is not provided, a flow reversal during the off cycle could occur within the venting system. This may cause combustion problems as well as condensation that could block the air pressure sensing tube. It may also contribute to premature motor failure. Combustion, and/or makeup air, should be supplied from outside the structure and the air inlet should be on the same wall as the power venter discharge. For example, tightly constructed homes and homes retrofitted from electric heated systems are more likely to experience combustion and/or makeup air problems. For further information consult Form #4199, “The Field Report - Effects of Insufficient Combustion Air” available from Field Controls.

PROVING SWITCH ADJUSTMENTS

Refer to the following for air pressure switch adjustment procedure and system checkout procedures before operating the appliance continuously.

After proper air flow is established, the air pressure switch adjustment is made by turning the adjustment screw clockwise (See Figure 14) until the burner operation stops on the furnace. Slowly turn the adjustment screw counterclockwise until burner ignites. Make notice of the position of the adjustment screw, then turn the adjustment screw an additional ¼ to ½ turn counterclockwise to ensure adequate switch adjustment.

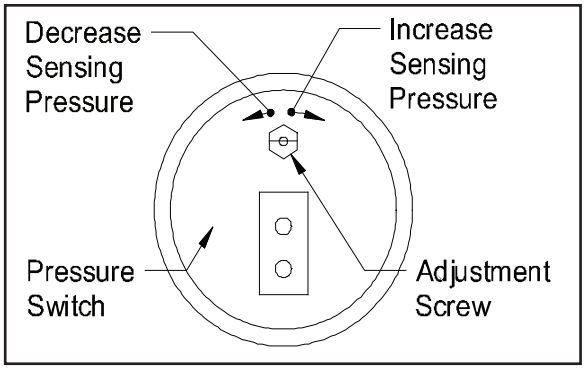


Figure 14

NOTE: Under most circumstances, ¼ turn is typical, however, ½ turn may be necessary to avoid short cycling due to extreme wind fluctuations.

⚠ WARNING: Failure to properly adjust the air pressure switch as specified in the proving switch section could lead to improper operation of the venting system which will result in product damage, personal injury, or death.

POST PURGE TIMER

The CK-43F Control Kit is designed with a non-adjustable purge timer and no adjustment is necessary. The nominal time is 1-3 minutes, and approximately 1.5 minutes is typical.

ADJUSTMENTS FOR THERMOSTATS WITH HEAT ANTICIPATORS

After venting kit installation and checkout, check the amperage current draw through the thermostat circuit and adjust the thermostat anticipator accordingly.

GENERAL INSTALLATION INSPECTION

Recommended procedures for safety inspection of an appliance in accordance with the National Fuel Gas Code, ANSI Z223.1 or CAN/CGA B149.1-M91 or CAN/CGA B149.2-M91. The following procedure will help evaluate the venting system. It is intended as a guide to aid in determining that the venting system is properly installed and is in a safe condition for continuous use. This procedure should be recognized as a generalized procedure which cannot anticipate all situations. Accordingly, in some cases, deviation from this procedure may be necessary to determine safe operation of the equipment. If it is determined that a condition exists which could result in unsafe operation, the appliance should be shut off and the owner advised of the unsafe condition. Corrections must be made before the appliance is put into continuous operation. The following steps should be followed in making a safety inspection. If, after completing Steps 3 through 7, it is believed sufficient combustion air is not available, refer to the National Fuel Gas Code, ANSI Z223.1, CAN/CGA B149.1-M91 or CAN/CGA B149.2-M91, or any applicable local codes for guidance.

1. Visually inspect the venting system for proper size and determine that there is no flue gas spillage, blockage, restriction, leakage, corrosion, or other deficiency which could cause an unsafe operation.
2. Insofar as practical, close all building doors, fireplace dampers, windows, and all doors in area in which the appliance is located. Turn on clothes dryers and exhaust fans, such as range hoods and bathroom exhausters, so they operate at maximum speed. Do not operate a summer exhaust fan.
3. Place in operation the appliance being inspected. Follow the lighting instructions and adjust thermostat so appliance will operate continuously.

4. Determine that the burner is operating properly and that the main burner ignition operates satisfactorily by interrupting and re-establishing the electrical power of the appliance in any convenient manner. Test the pilot or burner safety device to determine if it is operating properly by extinguishing the pilot or disconnecting the flame safety circuit and air pressure switch sensing tube from the pressure switch on the Control Kit.
5. Visually determine that the main burner is burning properly; i.e., no floating, lifting, or flashbacks.
6. Test for spillage at the barometric draft control opening and burner inlet air location after 5 minutes of main burner operation. Use a draft gauge, flame of a match or candle, or smoke from a cigarette, cigar or pipe. If spillage occurs, adequate air is not available. Shut off heating appliance thermostat and check for spillage around the barometric draft control and burner inlet air location after the Power Venter has stopped operation. If a flow reversal is noticed, house depressurization is occurring and make up air is required.
7. Turn on all other fuel burning appliances within the same room so that they will operate at their maximum input. Then repeat Steps 5 and 6.
8. Return doors, windows, exhaust fans, fireplace dampers, and any other fuel burning appliances to their previous condition of use.

TROUBLE SHOOTING HINTS

1. Main burner does not fire when thermostat calls for heat with venter operating.
   a. Check for blocked flue vent.
   b. Check system draft.
   c. Check air pressure switch adjustment.
   d. Check wiring connections between air pressure switch and burner.
   e. Check air pressure switch for continuity across terminals, during venter operation.
2. Venter does not activate when thermostat calls for heat.
   a. Check all appliance and Control Kit internal wiring.
   b. Refer to System Check Out Procedures section to ensure proper sequence of operation.
3. Flue gas odor.
   a. Check system draft.
   b. Check for negative pressure in building.

MAINTENANCE

Motor: Inspect the motor once a year - motor should rotate freely. To prolong the life of the motor, it must be lubricated with six drops of SWG Superlube, Field Controls Part #46226200, annually.

Blower Wheel: Inspect the Power Venter blower wheel annually to clear any soot, ash, or coating which inhibits either rotation or air flow. Remove all foreign materials before operating.

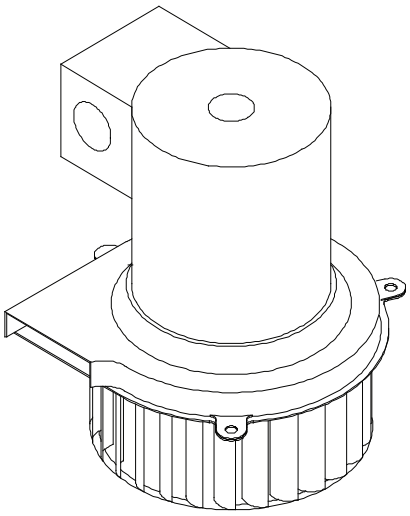
Vent System: Inspect all vent connections annually for looseness, evidence of corrosion, and flue gas leakage. Replace, seal, or tighten pipe connections if necessary. Check the Power Venter choke plate to ensure it is secured in place. Check the barometric draft control to ensure the gate swings freely.

System Safety Devices: With the heating system operating, disconnect the air pressure sensing tube from the air pressure switch on the Control Kit. This will stop the burner operation. Reconnecting the tube should relight the burner.

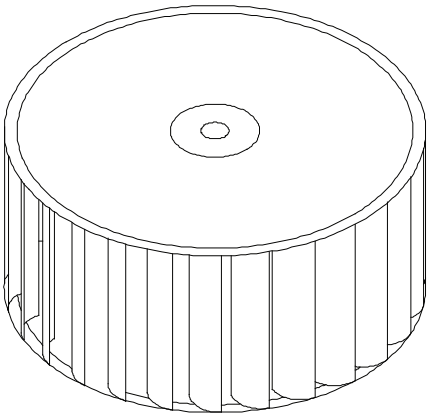
REPLACEMENT PARTS

The following replacement items are available. The Repair Motor Kit contains the Motor and Blower Wheel factory assembled to a mounting bracket.

REPLACEMENT PARTS		
MODEL	COMPONENT	PART NUMBER
SWGII-4HD	REPAIR MOTOR KIT	46234800
	BLOWER WHEEL	46180400
CK-43F	AIR PRESSURE SWITCH	46273100
	POST PURGE TIMER	46282800



Repair Motor Assembly Kit



Blower Wheel

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

Phone: 252.522.3031 • Fax: 252.522.0214
www.fieldcontrols.com

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