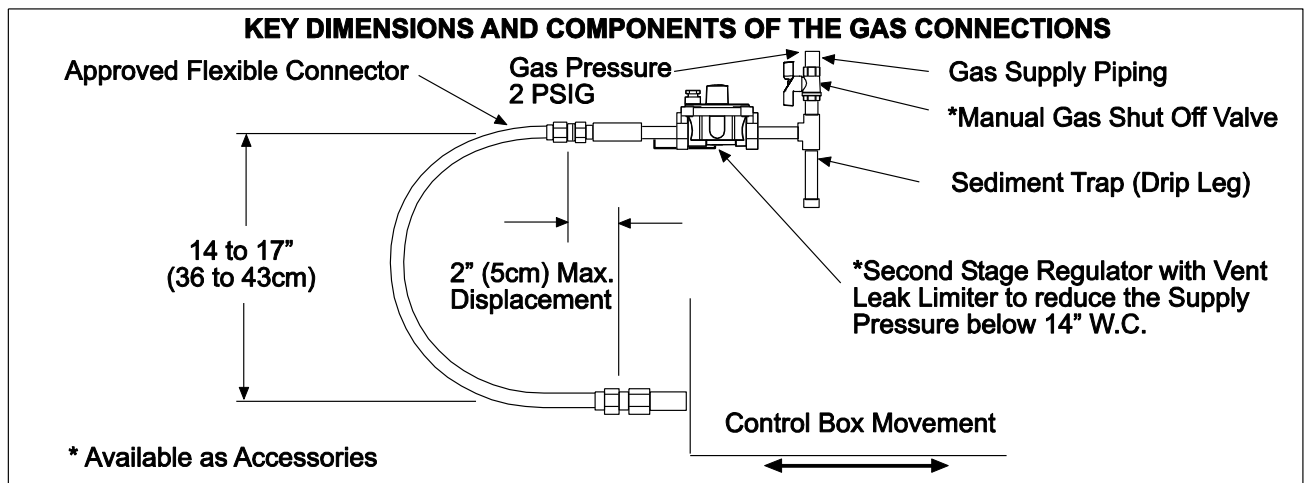
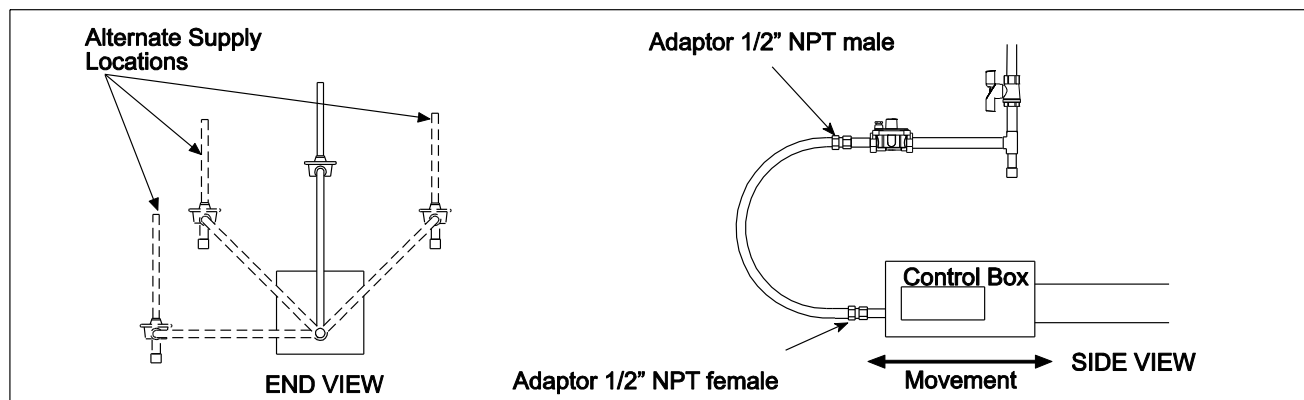
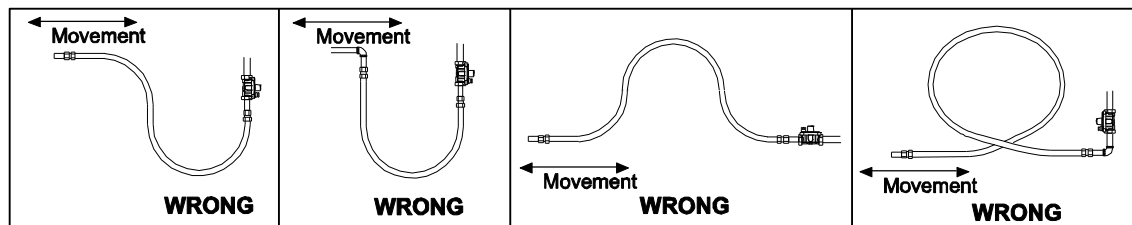




INCORRECT POSITIONS



⚠ WARNING

US ONLY: Connector **MUST** be installed in "U" configuration. Use only the 36" long connector that was furnished with this heater.

US ONLY: A gas connector certified for use on a tubular type Infrared heater per the standard for Connectors for Gas Appliances, ANSI Z21.24/CSA 6.10 is supplied for installation in US only. The gas connector is 36" long and 1/2" nominal ID, and must be installed as shown above, in one plane, and without sharp bends, kinks or twists.

CANADA ONLY: A Type I hose connector should be used that is certified as being in compliance with the Standard for Elastomeric Composite Hose and Hose Couplings for Conducting Propane and Natural Gas (CAN/CGA 8.1) and is of length of 36+/- 6 in (90+/- 15 cm). The gas connector must be installed as shown above, in one plane, and without sharp bends, kinks or twists.

15.0) INSTRUCTIONS FOR PRESSURE TEST GAUGE CONNECTION

SUPPLY PRESSURE

1. The installer will provide a 1/8" N.P.T. tapped plug, accessible for test gauge connection immediately upstream of the gas supply connection to the heater.

OUTLET GAS PRESSURE CHECK AND ADJUSTMENTS

Gauges that measure pressure in pounds per square inch are not accurate enough to measure or set the manifold pressure. All measurements **MUST BE** made when the heater and all other gas burning equipment that are connected to the gas supply system are operating at maximum capacity. The combination gas valve is factory set and should not need adjustment. If gas pressure adjustment is required, follow the instructions:

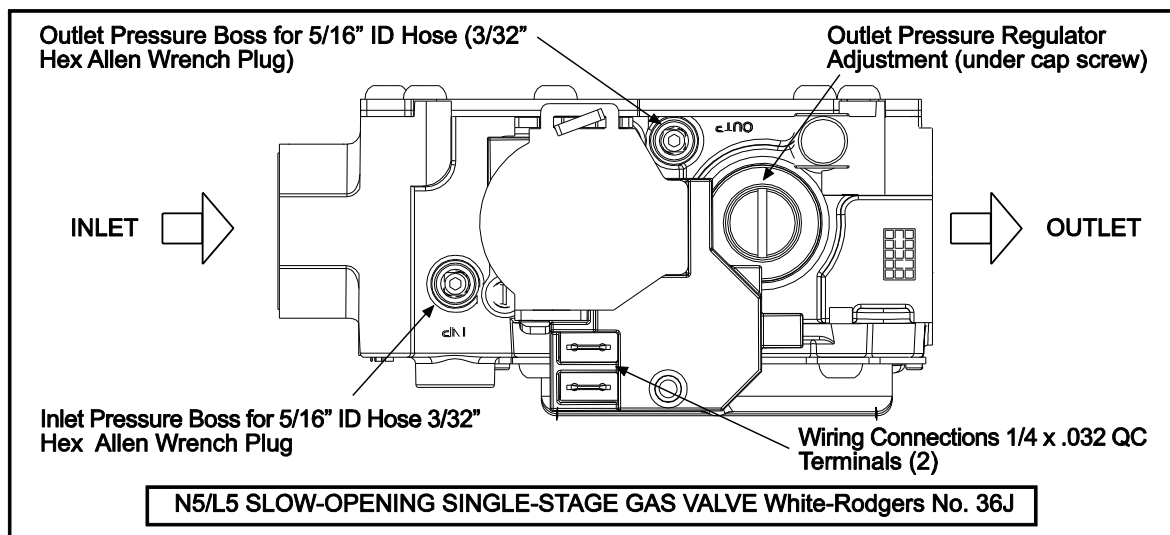
1. Turn off all electrical power to the system to connect manometer hoses.
2. Turn the pressure test screw (3/32" Hex) in the center of the boss **not more than one turn counterclockwise**. Attach a 5/16" hose and manometer over the tapered outlet pressure boss on the valve (see **Figures 1** and **2** below). If regulator needs to be adjusted, see instructions below.

TO ADJUST REGULATOR (single stage gas valves):

1. Turn on power and energize the main gas valve. Remove regulator cover screw (see **Figure 1** below). Turn regulator adjustment screw **clockwise** ↻ to **increase pressure**, or **counterclockwise** ↺ to decrease pressure. Replace regulator cover screw and tighten securely.

DO NOT EXCEED THE PRESSURES SHOWN IN THE GAS PRESSURE TABLE.

2. After testing pressure and adjusting the regulator, turn off all electrical power to the system, remove manometer hoses, turn outlet test screw (3/32" Hex) clockwise to seal pressure port. Tighten to 7 in. lb minimum. Turn on system power.



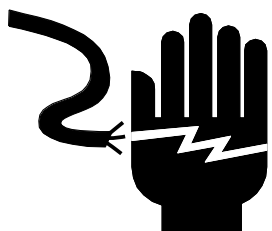
GAS PRESSURE TABLE			
GAS TYPE	MANIFOLD PRESSURE	SUPPLY PRESSURE	
		Minimum*	Maximum
Natural Gas	3.5" W.C.	5" W.C. ¹	14" W.C.
Propane Gas	10.0" W.C.	11" W.C. ²	14" W.C.

* Minimum permissible gas supply pressure for purpose of input adjustment.

¹ 7" W.C. for SIS/U 150-175

16.0) ELECTRICAL CONNECTIONS

⚠ WARNING



ELECTRIC SHOCK HAZARD

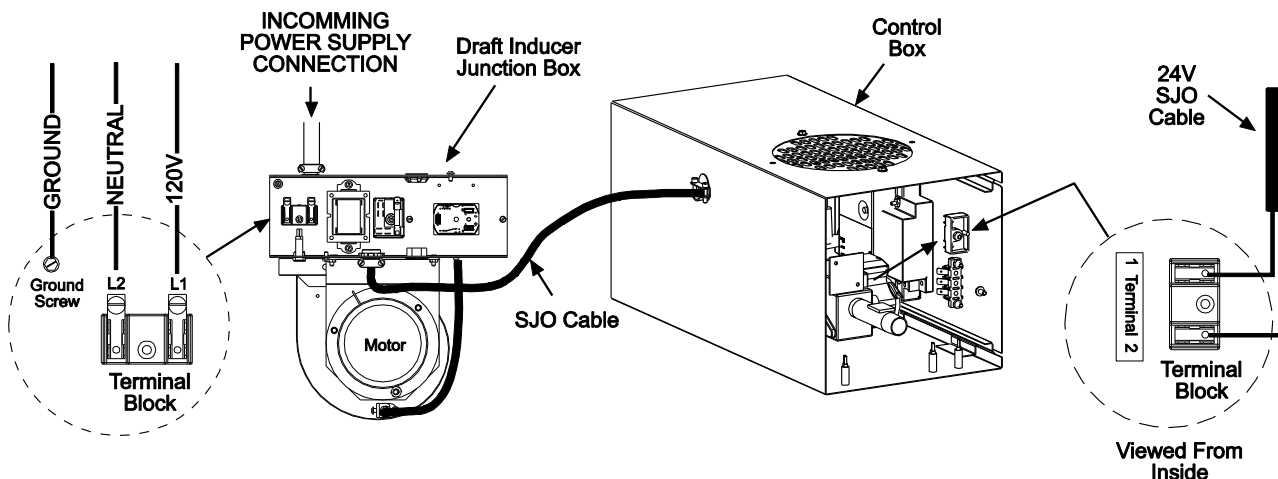
Disconnect electrical power and gas supply before servicing.

This appliance must be connected to a properly grounded electrical source.

Failure to do so may result in death or serious injury.

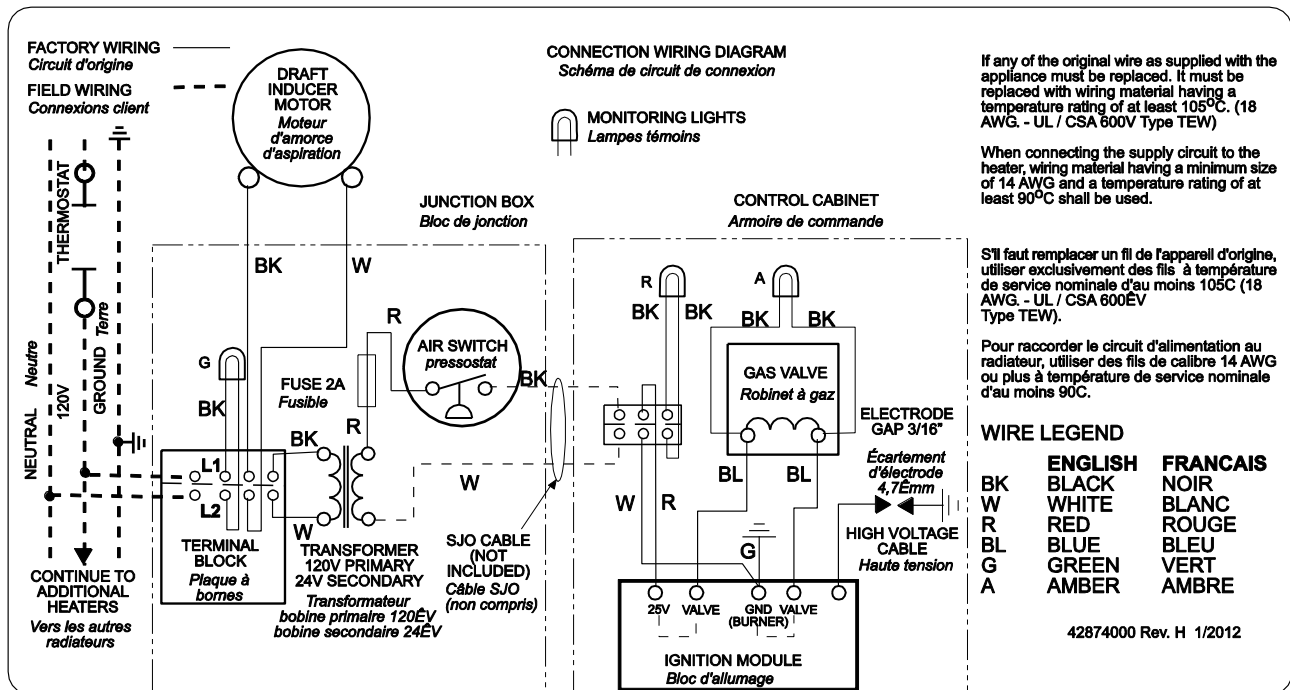
1. All electric wiring shall conform to the latest edition of the National Electrical Code (ANSI/NFPA No. 70), or the code legally authorized in the locality where the installation is made.
2. The unit must be electrically grounded in accordance with the National Electrical Code (ANSI/NFPA No. 70-latest edition). In Canada, refer to current standard C22.1 Canadian Electrical Code Part 1.
3. The wiring providing power to the heater shall be connected to a permanently live electrical circuit, one that is not controlled by a light switch.
4. The power supply to the unit should be protected with a fused disconnect switch or circuit breaker. A service switch, as required by local codes, shall be located in the vicinity of the heater (check local codes for allowable distances) and should be identified as Heater Service Switch. All electrical wiring must be located in accordance with the required Clearances to Combustibles from the heater as listed on the nameplate on the heater.
5. When connecting the **supply circuit** to the heater, wiring material having a minimum size of 14 AWG and a temperature rating of at least 90°C shall be used.
6. If any of the original wire as supplied with the appliance must be replaced, it must be replaced with wiring material having a temperature rating of at least 105°C. (18 Ga. CSA 600V Type TEW)
7. A replaceable 2-amp fuse (1-1/4" long) is fitted to the terminal block located inside the junction box assembly.

16.1) SINGLE STAGE (N5/L5) – INTERNAL AND THERMOSTAT CONNECTIONS

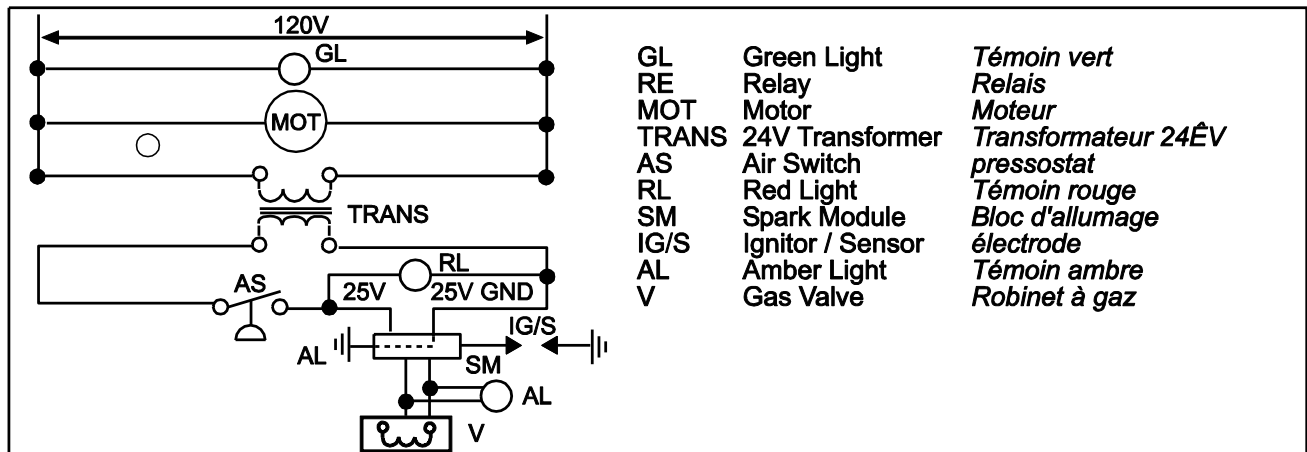


8. **SIS SERIES ONLY:** The installer will provide type SJO wire cable having minimum size of 18 AWG and connect the ends to the draft inducer junction box and the control box. Secure with 3/8" connectors as previously described in the attachment of the control box and draft inducer. Connect wire leads as shown in the Connection Wiring Diagram. The SJO cable should be located and secured to protect it from mechanical damage.

SINGLE STAGE CONTROLS - INTERNAL CONNECTION WIRING DIAGRAM

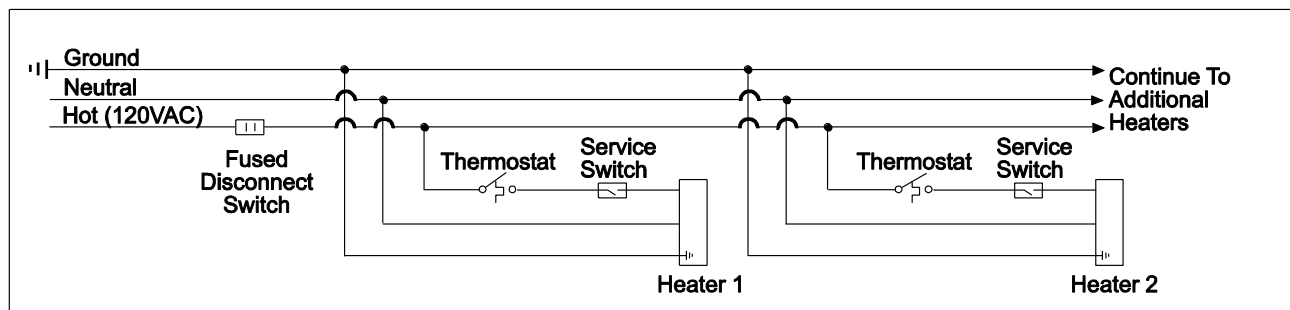


SINGLE STAGE CONTROLS - SCHEMATIC WIRING DIAGRAM

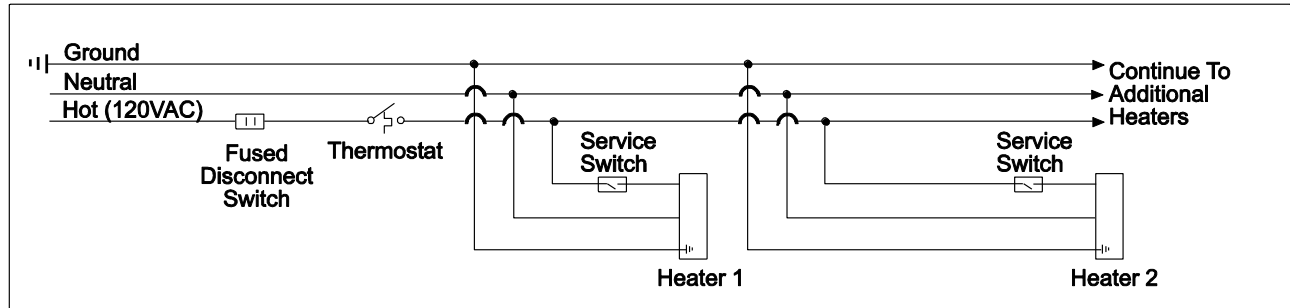


SINGLE STAGE CONTROLS - THERMOSTAT WIRING DIAGRAMS

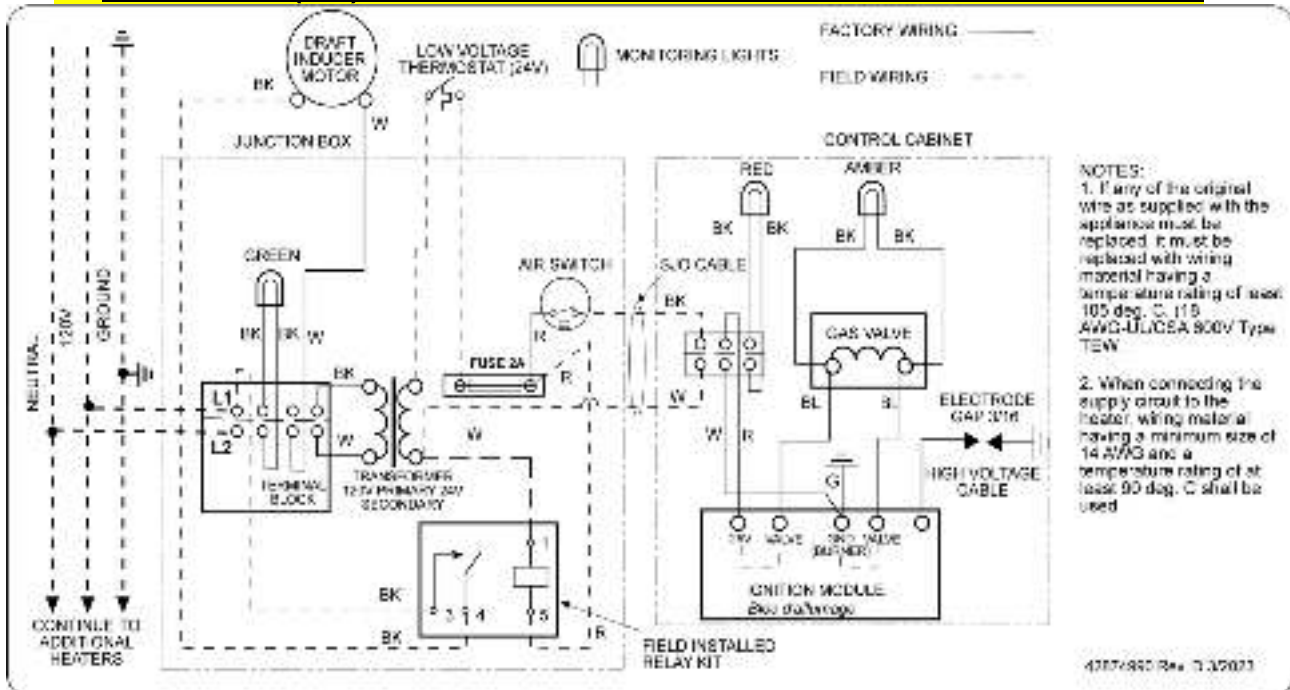
A. LINE VOLTAGE (120V) THERMOSTAT CONNECTIONS – SINGLE HEATER PER THERMOSTAT



B. LINE VOLTAGE (120V) THERMOSTAT CONNECTIONS – MULTIPLE HEATERS PER THERMOSTAT

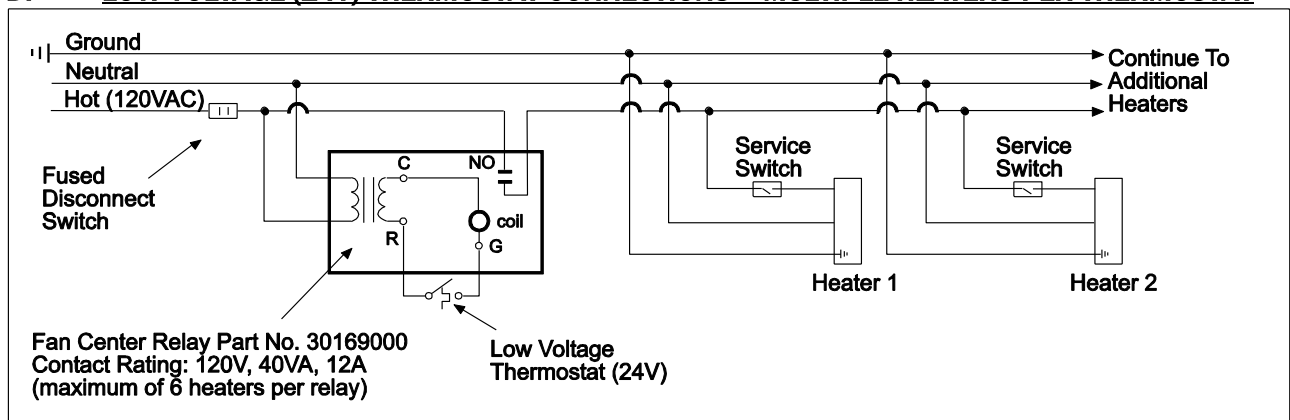


C. LOW VOLTAGE (24V) THERMOSTAT CONNECTIONS – SINGLE HEATER PER THERMOSTAT



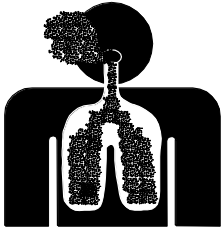
Order 24V Relay Kit (Part No. 43274030) for Low Voltage (24V) thermostat connection.

D. LOW VOLTAGE (24V) THERMOSTAT CONNECTIONS – MULTIPLE HEATERS PER THERMOSTAT



17.0) VENTING

WARNING



CARBON MONOXIDE HAZARD

Heaters installed in an unvented mode require a minimum ventilation flow of 4 CFM per 1,000 Btu/hr of total installed capacity.

In buildings with airborne contamination the heater must be installed with fresh air for combustion.

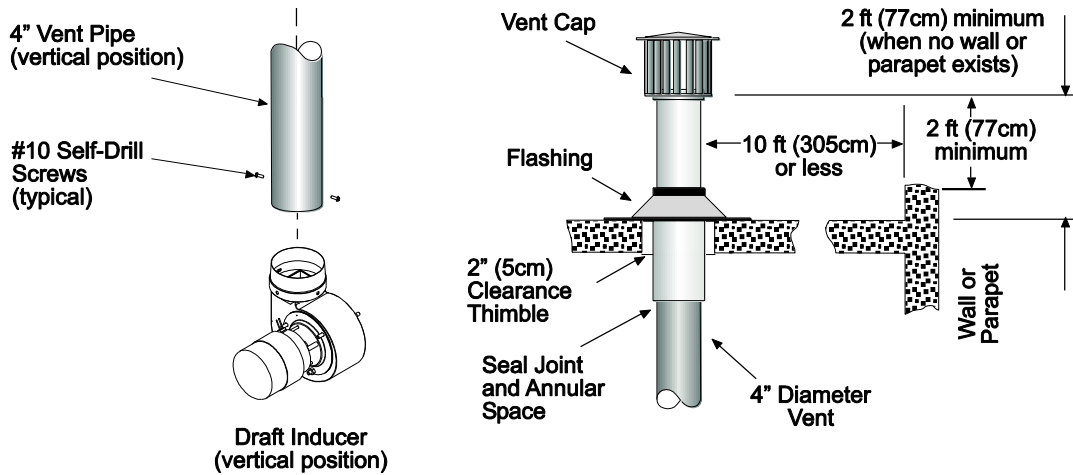
Failure to do so may result in death, serious injury, property damage or illness from Carbon Monoxide poisoning.

This is a category III appliance.

- A. BASIC FLUE VENTING** — Venting must comply with the latest edition of the National Fuel Gas Code (ANSI Z223.1-latest edition) or the authority having jurisdiction. Other venting references are in the equipment volume of the ASHRAE Handbook.

SINGLE HEATER VENTING (VERTICAL THROUGH THE ROOF)

1. When venting the heater to outside of building through a roof, use single-wall metal pipe. This is to be constructed of galvanized sheet metal or other approved noncombustible corrosion-resistant material as allowed by state or local codes.
2. A vent passing through a combustible roof shall extend through an approved clearance roof thimble. Double-wall, Type B vent must be used for the portion of the vent system which passes through the combustible roof. An approved vent cap must be attached to end of the flue.
3. The maximum equivalent length of vent pipe should be carefully observed. A safety switch in the heater is designed to shut the heater off before excessive flue restriction causes bad combustion. Refer to the Vent Sizing Table for vent pipe diameter.
 - Minimum Equivalent Length = 5 ft. of pipe
 - Maximum Equivalent Length = 100 ft. of 4" pipeUse the following correction factors to obtain the equivalent length:
 - Subtract 15 ft. if the run is horizontal. (maximum horizontal length for 4" pipe is 25 ft.)
 - Subtract 10 ft. for an approved vent cap.
 - Subtract 10 ft. for each elbow beyond 15 ft. from the heater.
 - Subtract 15 ft. for each elbow within 15 ft. of the heater.
4. Joints between sections of piping shall be fastened by sheet metal screws or other approved means and should be sealed to prevent leakage of flue gas into building. Aluminum tape rated for 550°F (3M Company tapes 433 or 363) or silicone sealant is recommended.
5. Avoid locating elbows in the first 5' of vent pipe whenever possible. Limit to (2) 90° elbows. When vent pipe is in a horizontal run, it must have 1/4 inch per foot rise.
6. All portions of the vent pipe shall be supported to prevent from sagging (6' spacing is recommended).
7. When the vent pipe passes through areas where the ambient temperature is likely to induce condensation of the flue gases, the vent pipe should be insulated and a condensation drain should be provided.
8. Minimum clearance for single-wall flue pipe to combustible material shall be 6 inches. This may be reduced when the combustible material is protected as specified in the National Fuel Gas Code or the authority having jurisdiction.
9. Single-wall metal pipe shall not originate in any unoccupied attic or concealed space and shall not pass through any attic, inside wall or concealed space, or through any floor. For the installation of a single-wall metal pipe through an exterior combustible wall, refer to latest edition of the National Fuel Gas Code or the authority having jurisdiction.
10. A venting system shall terminate at least 3 ft. above any forced air inlet located within 10 ft.
11. A venting system shall terminate at least 2ft above any possible snow accumulation.



SINGLE HEATER VENTING (HORIZONTAL THROUGH SIDEWALL)

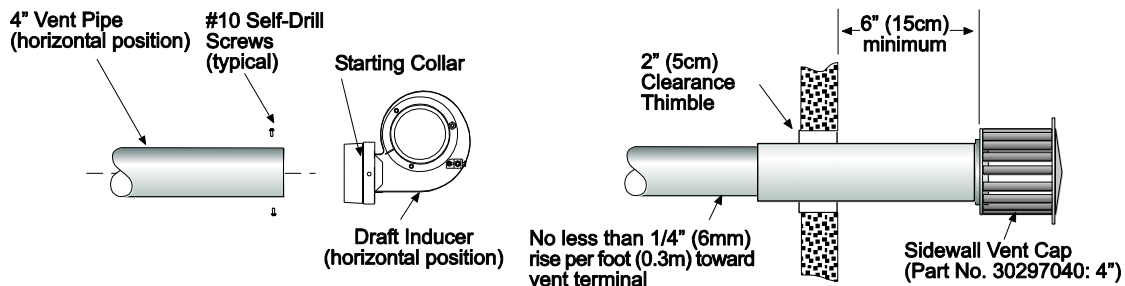
When venting the heater horizontally through a combustible outside sidewall, the same requirements listed previously for venting **Vertical Through The Roof** apply except as follows:

1. A vent passing through a combustible wall must pass through an approved clearance thimble (Air-Jet #4VT or Ameri-Vent #4EWT or other thimbles) that are listed by a nationally recognized testing agency. Double-wall Type B vent must be used for the portion of the vent system which passes through the combustible sidewall.
2. An approved vent cap (Breidert or equal) must be attached to the end of the vent pipe.
 - 4" vent – 25 ft. maximum with one 90° elbow and vent cap
 - 6" vent – 75 ft. maximum with maximum two 90° elbows and vent cap

If other horizontal vent configurations are required, consult the manufacturer.

NOTE: To minimize problems associated with condensation in long horizontal runs, vent pipe can be insulated.

3. When venting through a sidewall, the horizontal vent pipe shall rise not less than 1/4 inch per foot from the start of the vent system to the vent terminal. All portions of the vent pipe shall be supported to prevent sagging. (6' spacing is recommended)
4. A minimum clearance of 6 inches must be maintained between the outside wall and vent cap (18" clearance will provide stability under high wind conditions).
5. The horizontal venting system shall not terminate:
 - Less than 4 ft. (1.2m) below, 4 ft. (1.2m) horizontally from or 1 ft. (30cm) above any door, operable window or gravity air inlet into any building. The bottom of the vent terminal shall be located at least 7 ft. (2.1m) above grade or above snow accumulation level as determined by local codes.
 - Less than 3 ft. (0.9m) from a combustion air inlet.
 - Less than 3 ft. (0.9m) from any other building opening or any gas service regulator.
 - Less than 7 ft. (2.1m) above public walkways.
 - Directly over areas where condensate or vapor could create a nuisance or hazard or be harmful to the operation of gas utility meters, regulators, relief valves, or other equipment. Building materials should be protected from flue gases and condensate.
 - Less than 12" (0.30m) when directly below a combustible overhang.
6. In regions of the country where prevailing winds are consistently higher than 40 mph, it may be necessary to terminate the vent system above the roof level.



Note: Junction Box is not shown.

MULTIPLE HEATER VENTING (CONNECTIONS INTO A COMMON VENT OR MANIFOLD)

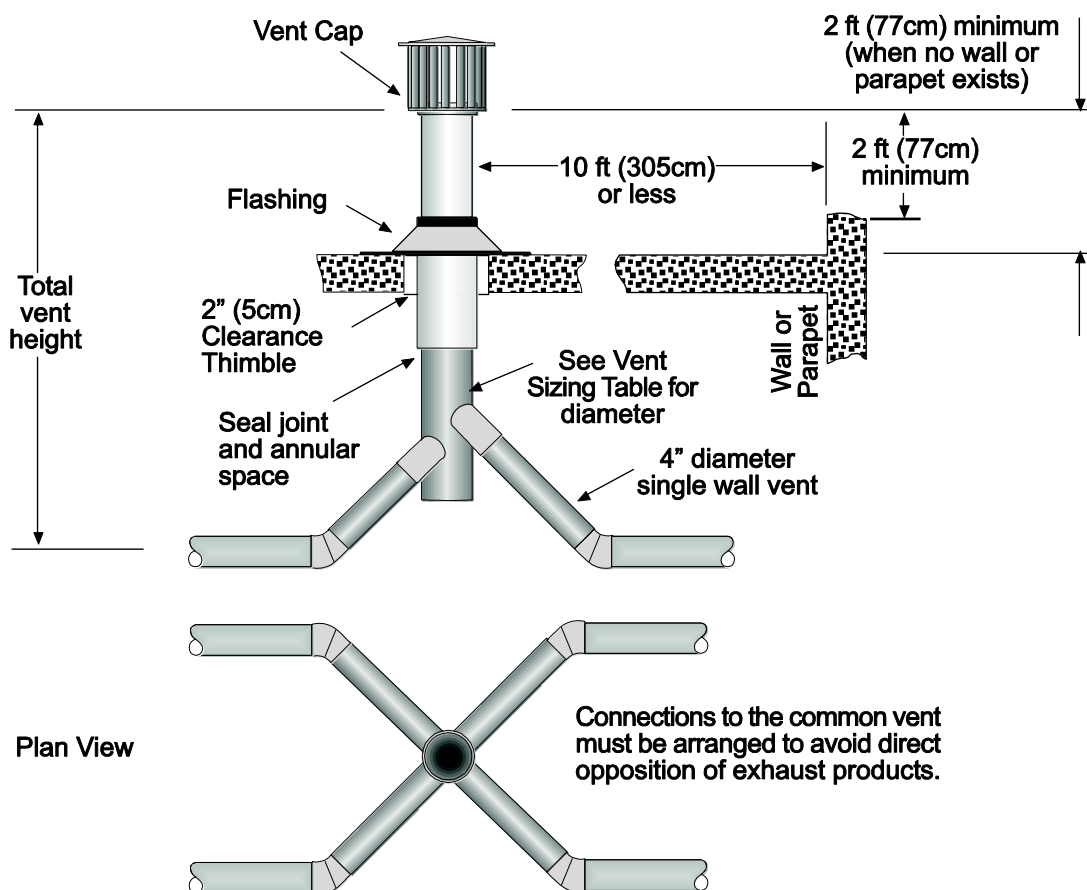
Requirements for venting of multiple heaters are the same as described for **SINGLE HEATER VENTING** except as follows:

1. The common vent size and total vent height is normally determined by the number of heaters per common vent, length of horizontal connector runs, and connector rise. Connector lengths should be as short as possible and have a minimum 1/4 inch per foot rise. Without regard to connector rise and total vent height due to many possible venting configurations, the following should be observed:
 - Common vent pipe & vent connector diameter should be no less than that shown in the following Vent Sizing Table.
 - A Y-connector must be used to the common vent.
2. Material for connectors and Y-connectors should be constructed of galvanized sheet metal or other approved noncombustible corrosion resistant material as allowed by state or local codes. All common vent pipe should be insulated flue pipe or double-wall, Type B vent.
3. Avoid unnecessary bends. Limit to two (2) 90° elbows.
4. The entire length of vent connector shall be readily accessible for inspection, cleaning and replacement.
5. Groups of heaters with a common vent must be controlled by a common thermostat.

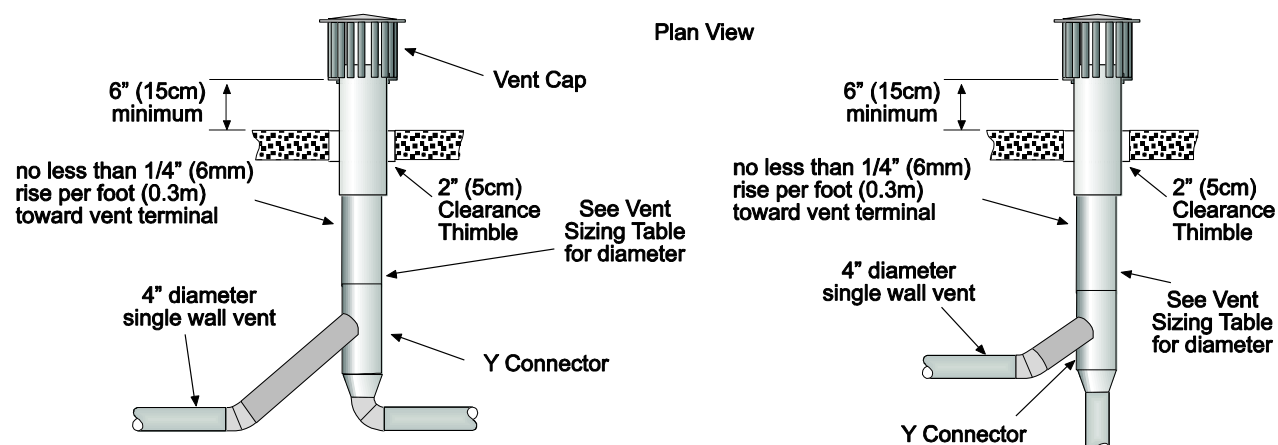
⚠ WARNING

If any heater connected to a common vent system for multiple heaters is found inoperative, the heater should be disconnected from the vent system and its entrance into the vent system capped.

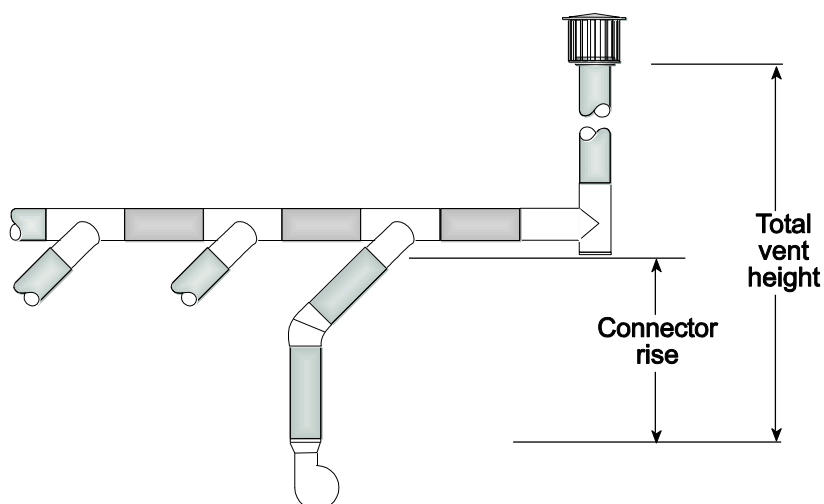
Multiple Heater Vertical Venting Arrangement



Multiple Heater Horizontal Venting Arrangement



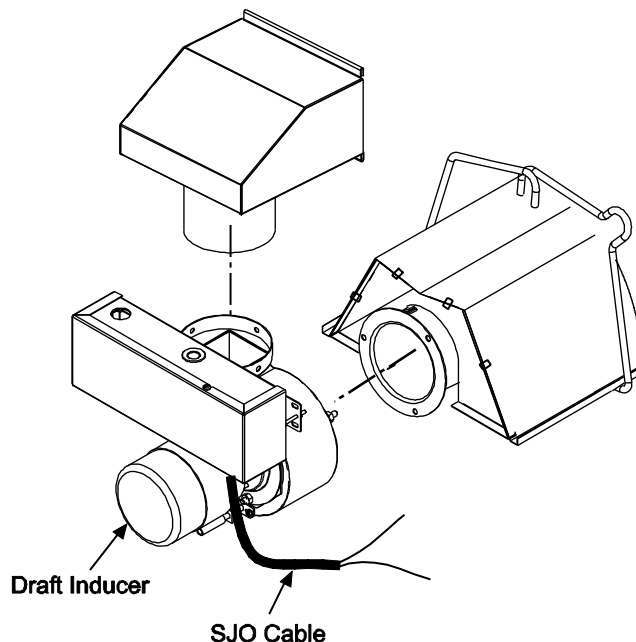
Multiple Heater Venting (Connections into a Manifold)



VENT SIZING TABLE — Multiple Heater Venting					
	Number of Heaters				
	1	2	3	4	5
SIS/U50	4"	4"	5"	5"	6"
SIS/U75	4"	5"	6"	6"	7"
SIS/U100	4"	6"	6"	7"	8"
SIS/U125	4"	6"	7"	8"	9"
SIS/U150-175	4"	6"	8"	9"	10"
COMMON VENT DIAMETER (If a size is not available use the next larger size.)					

THE ABOVE ILLUSTRATIONS AND TABLE OF VENT SIZES FOR COMMON VENTING OF MULTIPLE HEATERS ARE IN ACCORDANCE WITH THE NATIONAL FUEL GAS CODE ANSI Z223.1-LATEST EDITION, NFPA 54-LATEST EDITION, EQUIPMENT VOLUME OF 1988 ASHRAE HANDBOOK, CURRENT CAN/CGA-B149.1/2-M86 INSTALLATION CODE, AND AGA PUBLICATION NO. 10M5.85 2.5-2 ON FUNDAMENTALS OF GAS APPLIANCE VENTING AND VENTILATION-REVISED BUT ARE NOT A PART OF THE CSA CERTIFICATION.

- B. INDIRECT VENTING (UNVENTED HEATERS)** — This heater requires ventilation in the building to dilute the products of combustion and provide fresh air for efficient combustion. Where unvented heaters are used, gravity or mechanical means shall be provided to supply and exhaust at least 4 CFM per 1,000 Btu/hr input of installed heaters. Exhaust vents must be located at the highest point above and in the vicinity of the heaters, and the inlet vents must be located below the level of the heaters. An exhaust hood (Part #42924000) must be placed on the outlet collar of the draft inducer or on the existing 4" starting collar when used unvented and **must be mounted only in an upright position and directed towards the reflector body as shown.**



18.0) AIR FOR COMBUSTION

If indoor combustion air is to be supplied for a tightly enclosed area, one square inch of free area opening shall be provided below the heater for each 1,000 Btu/hr of heater input. When outside air is used, the opening below the heater shall be one square inch of free area for each 4,000 Btu/hr of heater input. In contaminated atmospheres or high humidity areas, optional outside air for combustion is recommended. Adequate clearances around the air inlet screen must be maintained at all times. In larger open areas of buildings, infiltration normally is adequate to provide air for combustion.

18.1) DIRECT OUTSIDE AIR FOR COMBUSTION

Outside combustion air should be supplied directly to the heater when the building is subject to negative pressure, or when contaminants or high humidity are present in the building air. These contaminants include paints, solvents, corrosive vapors or any other foreign particles that may cause damage to the heater or result in poor combustion.

Outside combustion air can be brought directly to the heater by a 6" diameter duct less than 50 ft. long or equivalent. This is attached to the 6" diameter starting collar. The starting collar is fitted to the top of the control box cabinet **after first removing and discarding the perforated cover.** An approved vent cap must be placed directly on the end of the outside combustion air inlet pipe. The combustion air inlet should be not less than 3 ft. (0.9m), either vertically or horizontally, from the flue vent termination. The air intake terminal must be located not less than 1 ft. (30cm) above grade. It is good installation practice to supply combustion air from the same pressure zone as the vent outlet. Avoid bringing combustion air to the heater from an attic space. There is no guarantee that adequate combustion air will be supplied.

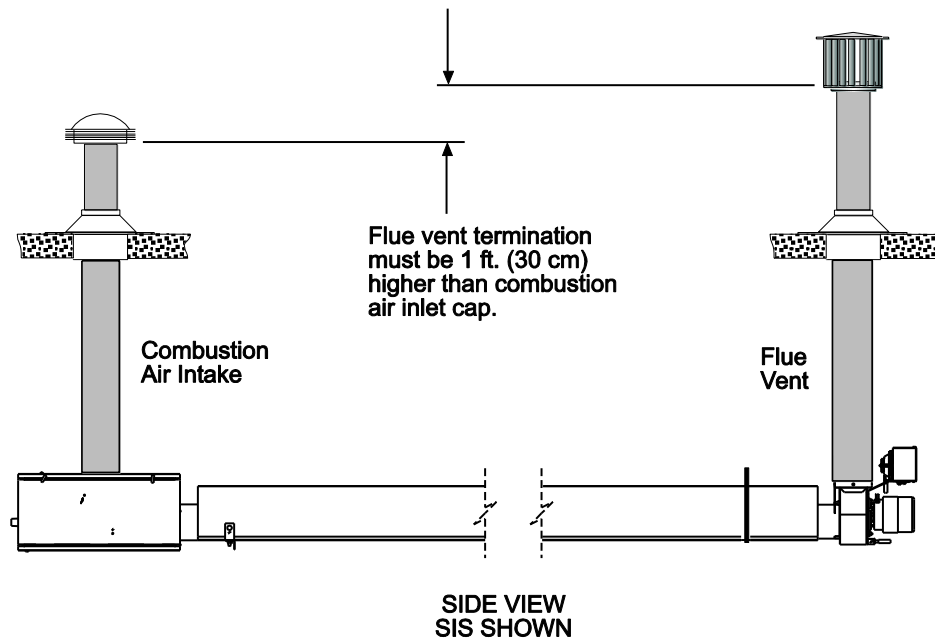
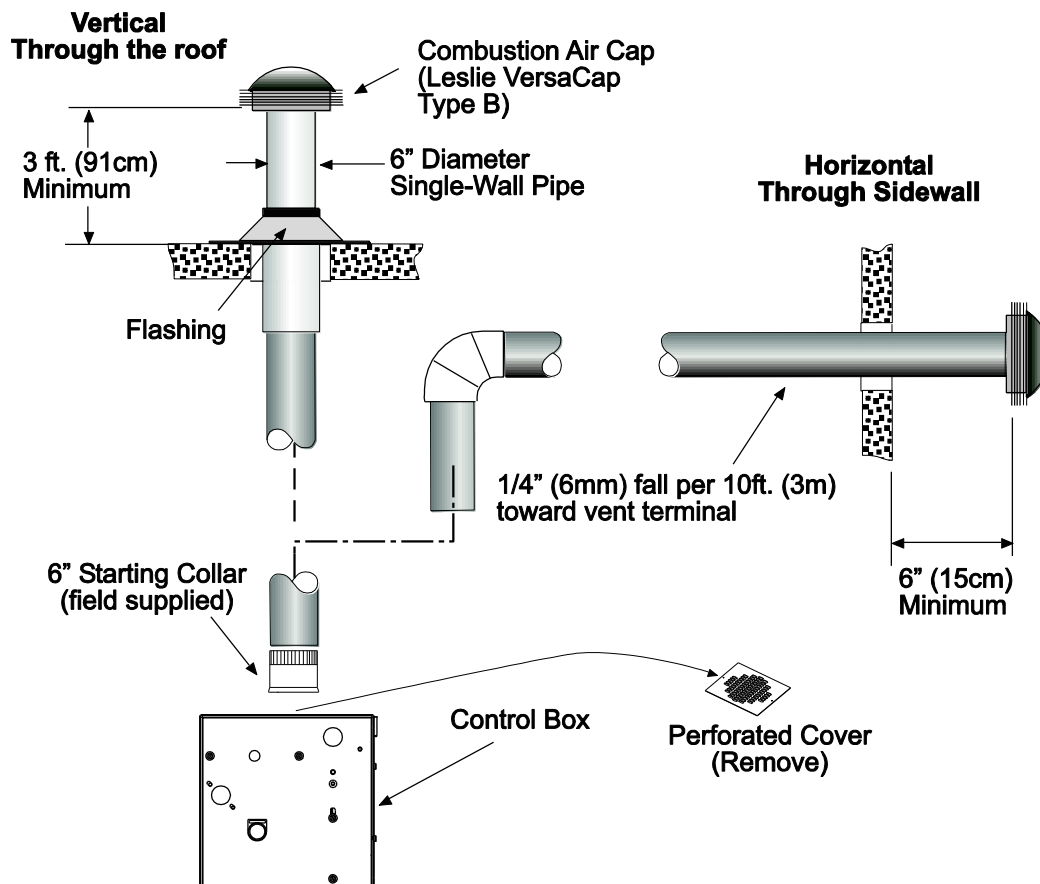
If the heater is installed less than 2 ft. from the ceiling, a flexible transition section (e.g., flexible aluminum duct) must be provided to allow for expansion/contraction of straight tube heaters (SIS Series).

In colder climates, where necessary, insulate the outside combustion air duct. Avoid locating the outside combustion air duct directly above the control box. Provide a capped cleanout T as necessary. In high humidity applications, the control box should be sealed with silicone sealer.

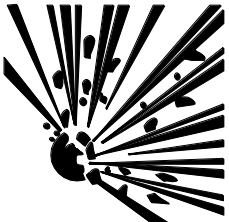
! WARNING

All vent terminations and Combustion Air Intake Terminations must be at least 6" higher than anticipated snow depth.

In **multiple heater applications**, the combustion air intake may be ducted individually or common ducted in the same configuration as shown for venting in Section 17.0). For combustion air intake duct sizing, please refer to the **Vent Sizing Table** and use the diameter indicated, based on the number of heaters per duct.



19.0) LIGHTING AND SHUTDOWN INSTRUCTIONS

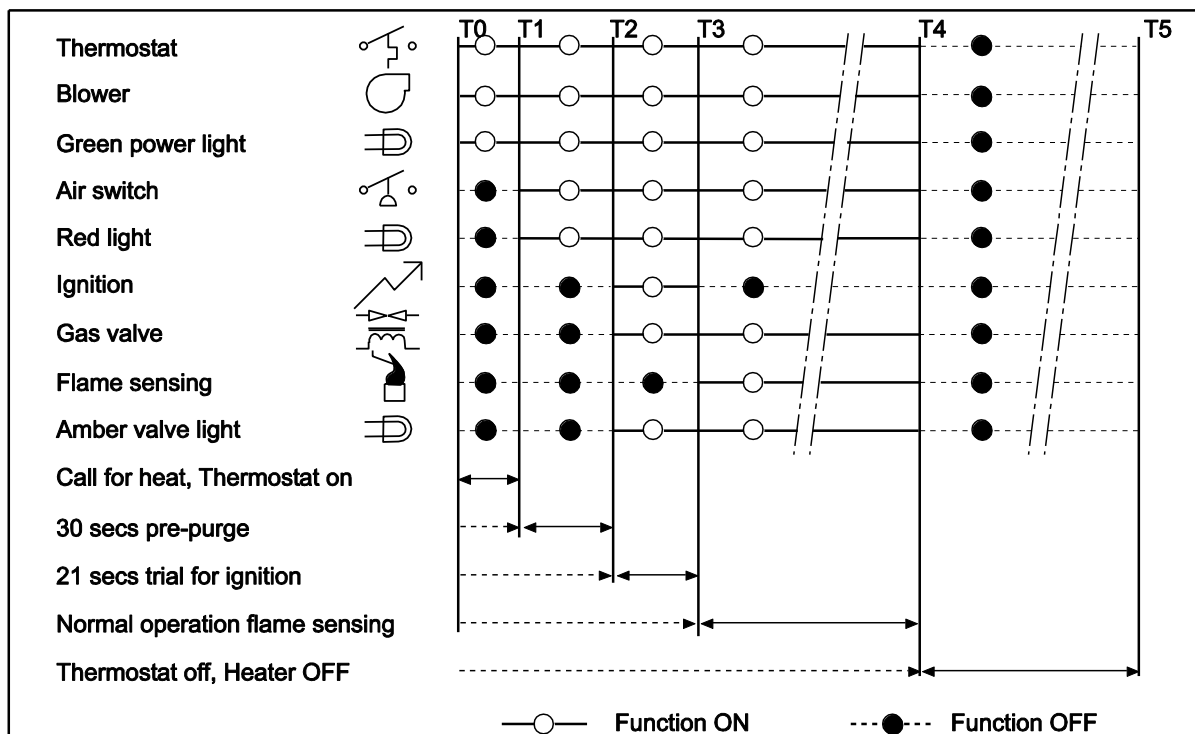
⚠ WARNING		
		<p style="text-align: center;">FIRE AND EXPLOSION HAZARD</p> <p>Never operate the heater with the access panel open or removed.</p> <p>The access panel must be closed tightly during operation.</p> <p>Failure to do so may result in death, serious injury or property damage.</p>

1. Turn on the gas and electrical supply.
2. Set the thermostat to call for heat. The blower motor will energize.
3. Ignition should occur after the 30-second air pre-purge.
4. If ignition fails, the unit will spark for approximately 21 seconds and go into safety lockout. Turn the thermostat (power) off for 60 seconds to take the system out of lockout.
5. If the heater does not light, manually reset the thermostat or shut off power completely for 5 minutes before attempting to relight.
6. To permanently shut down the heater, turn off the gas and electrical supply.

NOTE: The lighting and shutdown instructions are also shown on the permanent nameplate label attached to the heater control box.

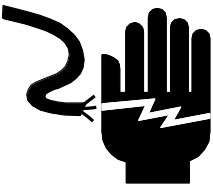
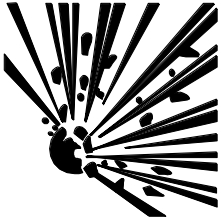
20.0) SEQUENCE OF OPERATION – SINGLE STAGE (N5/L5)

The chart below shows the sequence of operation for the normal operating cycle.



If the flame is not sensed during sequence T3 then the burner will automatically begin ignition sequence T2. If the flame is not re-established the heater will go to lockout.

21.0) CLEANING AND ANNUAL MAINTENANCE

⚠ WARNING		
		ELECTRIC SHOCK & EXPLOSION HAZARD Disconnect electrical power and gas supply before servicing. Failure to do so may result in death or serious injury.

This heater must be cleaned and serviced annually by a qualified contractor before the start of each heating season and at any time excessive accumulation of dust and dirt is observed. Maximum heating efficiency and clean combustion will be maintained by keeping the heater clean.

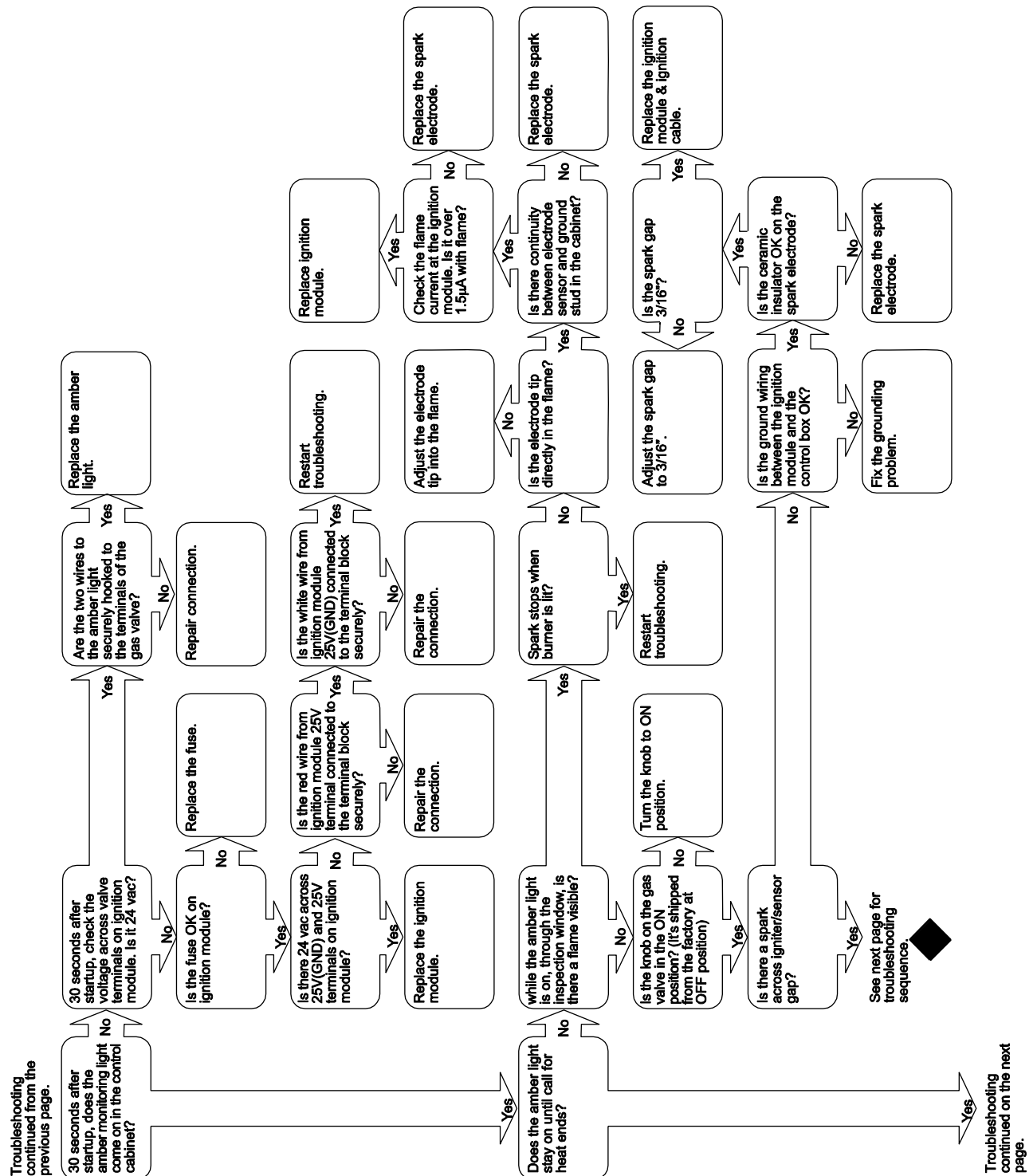
The contractor shall check the following during periodic maintenance.

- **Clearances to combustibles:** Check that clearances are being maintained. Make sure there are no flammable objects, liquids or vapors near the heater. See also Section 4.0).
- **Reflectors:** Reflectors should be kept clean, at a minimum blow off the reflectors. (Dirty reflectors may reduce heat output).
- **Heat exchanger tubes:** Inspect the heat exchanger tubes to make sure they are not cracked, sagging or showing signs of fatigue.
- **Combustion air intake:** Disconnect combustion air intake from the control box and inspect internally using a flashlight to make sure no foreign material has collected in the tubes and that there is no obstruction around the air intake openings. Clean any foreign materials. Inspect any joints to make sure they are completely sealed. See also Section 18.0).
- **Venting System:** Disconnect vent pipe and inspect internally using a flashlight to make sure no foreign material has collected in the pipes. Check the external vent cap and make sure that there is no obstruction around the exhaust openings. Clean any foreign materials. Inspect any joints to make sure they are completely sealed. See also Section 17.0).
- **Gas lines:** Make sure that the gas lines are not leaking. Check the gas connection to the heater for any signs of damage, fatigue or corrosion. If there are any signs of damage to the gas connection or leaks found in the gas piping, immediately stop using the heater until the gas pipe and connections have been repaired or replaced. Check that the gas lines are not bearing the weight of the heater. See also Section 14.0).
- **Control Box:** In order to extend the longevity of the heater, the heat exchanger tube and the burner must be level. Check that the control box is level; use the turnbuckle on the burner suspension eyebolt to adjust the level of the burner. See also Section 9.0).
- **Blower wheel and housing:** Check that the blower wheel spins freely, blow out any dust or dirt with compressed air.
- **Electrode condition:** Visually check that the electrode gap is maintained at 3/16" and that the tips of the spark electrode are free from deposits. Clean off any deposits. Check that the electrode ceramic is free from cracks. See Section 23.1).
- **Suspension system:** Check that the suspension system is holding the heater level. Make sure that the heater is hanging securely, look for any evidence where the heater may have been hit accidentally and tighten any loose hanging points. Check that S hooks are closed. Check that there is no evidence of wear on the chain at the connection to the heater and at the ceiling.
- **Main Burner and Orifice:** Check the Main burner and orifice; remove any dirt or debris including spider webs. See Section 23.1).

22.0) TROUBLESHOOTING GUIDE – SINGLE STAGE (N5/L5)

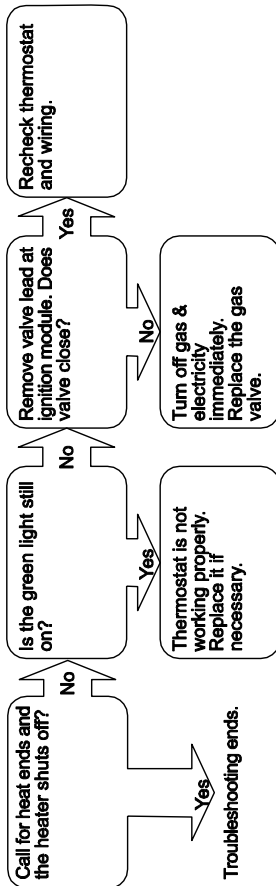


TROUBLESHOOTING GUIDE – SINGLE STAGE (CONTINUED)

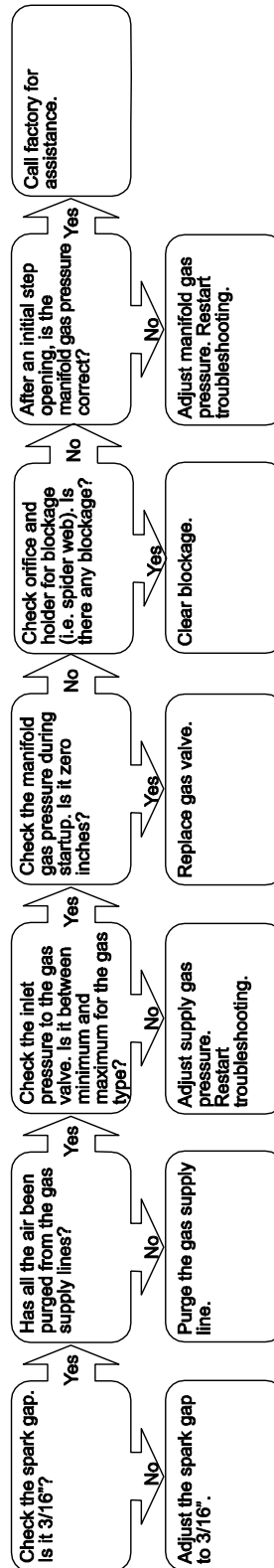


TROUBLESHOOTING GUIDE – SINGLE STAGE (CONTINUED)

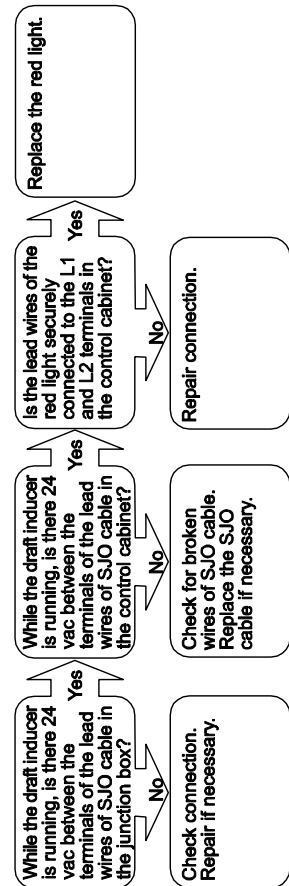
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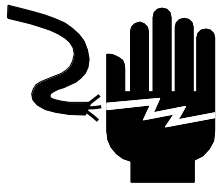
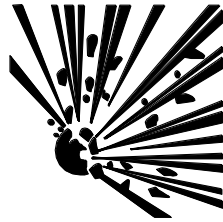


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23.0) REPLACING PARTS

⚠ WARNING



ELECTRIC SHOCK & EXPLOSION HAZARD

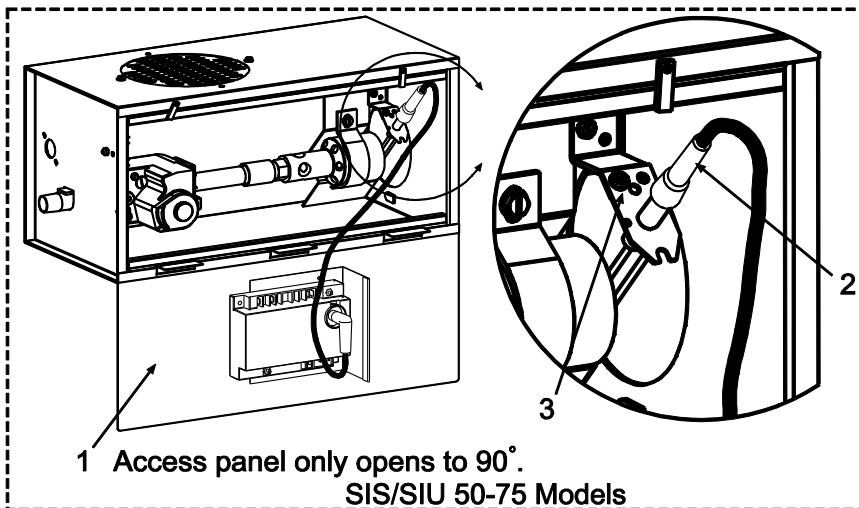
Disconnect electrical power and gas supply before servicing.

Failure to do so may result in death or serious injury.

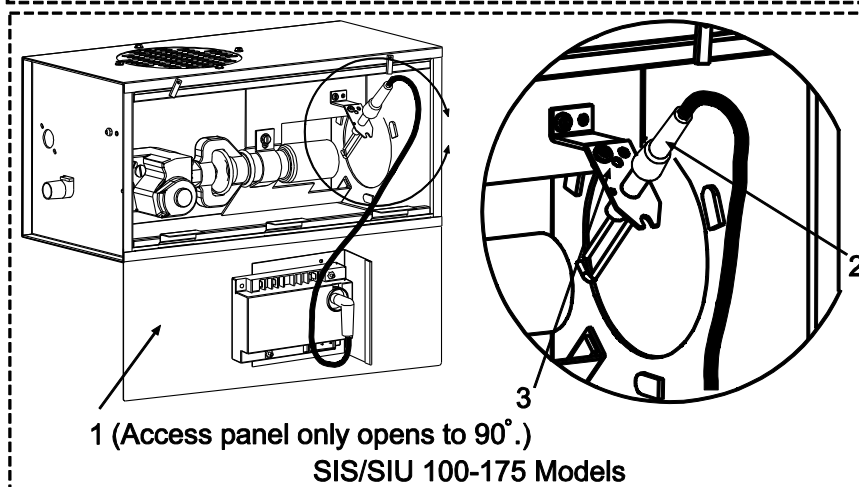
Only use genuine SunStar replacement parts. Parts are available from the factory for replacement by a licensed person. Refer to the Replacement Parts Guide in Section 25.0) for all replacement parts.

23.1) REMOVING SPARK ELECTRODE

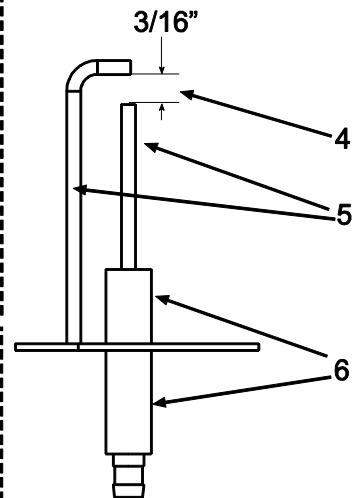
The main burner can be inspected without removing the burner housing from the heat exchanger tube.



1 Access panel only opens to 90°.
SIS/SIU 50-75 Models

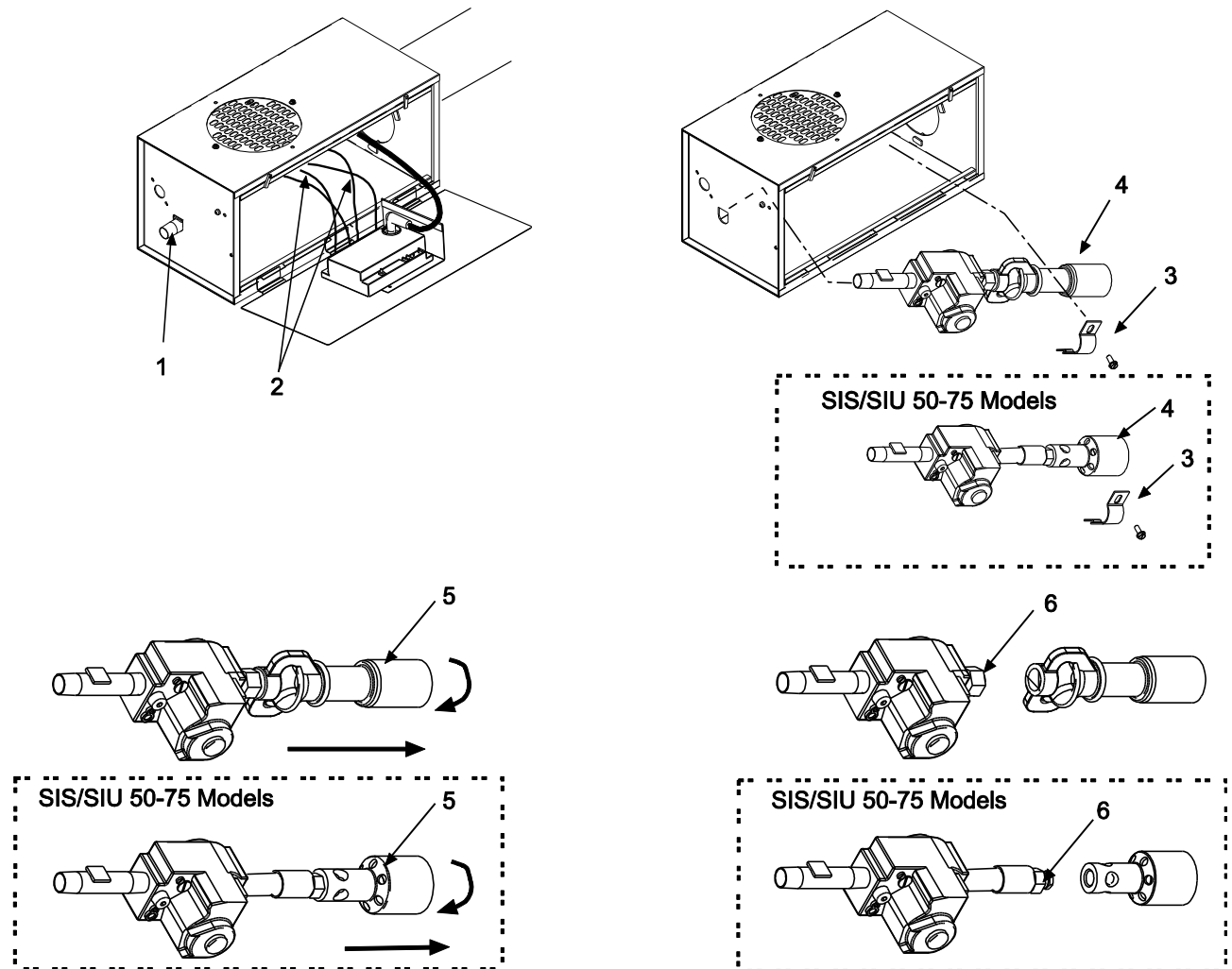


1 (Access panel only opens to 90°.)
SIS/SIU 100-175 Models



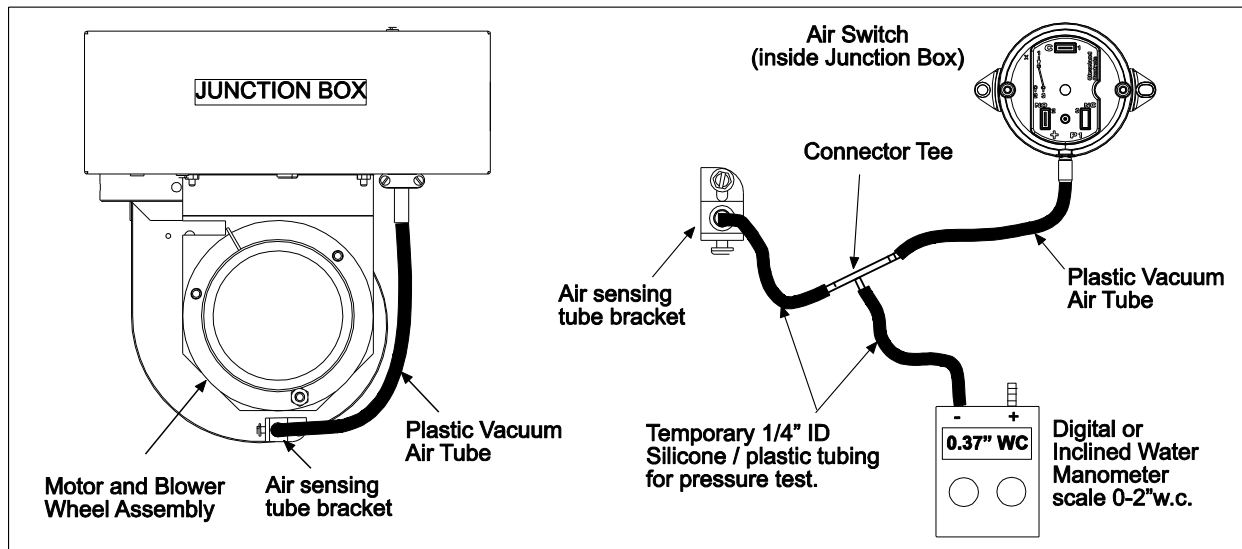
1. Disconnect electrical supply and open access panel.
2. Pull out the ignition cable hooked to spark electrode.
3. Remove two mounting screws.
4. Take out the spark electrode. Check that the spark gap is 3/16".
5. Check spark electrode. Spark electrode should be clean and free from debris.
6. Check ceramic on the spark electrode. It should be free from cracks.

23.2) REMOVING MAIN BURNER AND GAS VALVE



1. Disconnect electrical supply and gas connection at the restrainer nipple.
2. Open the access panel and disconnect the wires from gas valve.
3. Remove the burner clamp and screws.
4. Remove the burner and gas valve assembly from the cabinet.
5. Unscrew the burner from the manifold.
6. Check the orifice. If the gas valve is to be replaced, the pipe joint compounds must be resistant to the action of liquefied petroleum gases.

23.3) AIR SWITCH PRESSURE CHECK



1. Open hinged access panel.
2. Add tubing to connect the air switch with the connector tee and the existing tubing.
3. Connect plastic tubing of a digital or inclined water manometer with a 0-2" scale onto the connector tees.
4. Turn heater on and wait until blower motor is activated.
5. Observe air pressure from manometer. This should be higher than the set point 0.42" W.C. for correct operation.

Model	Operating Pressure
SIS/U 40 - 175	0.42" W.C. Hot
SIS/U 180 - 250	0.57" W.C. Hot

All pressures are with the heater in operation for at least 15 minutes.

23.4) IGNITION SYSTEM CHECKS

TO CHECK IGNITION CABLE.

- a. Make sure that the ignition cable does not touch any metal surface.
- b. Make sure that connections to the stud terminal and the igniter/sensor are clean and tight.
- c. Make sure that the ignition cable provides good electrical continuity.

TO CHECK IGNITION SYSTEM GROUNDING.

(Nuisance shutdowns are often caused by a poor or erratic ground.) A common ground is required for the module, igniter, flame sensor and main burner.

- a. Check for good metal-to-metal contact between the igniter bracket and the main burner.
- b. Check the ground lead from the GND (BURNER) terminal on the module to the igniter bracket. Make sure connections are clean and tight. If the wire is damaged or deteriorated, replace it.
- c. Replace igniter/sensor with factory replacement part if insulator is cracked.

TO CHECK SPARK IGNITION CIRCUIT.

▲ WARNING: The ignition circuit generates a 20,000 Volt open circuit and electrical shock can result.

- a. Check ignition cable.
- b. Check external fuse located inside the draft inducer junction box.
- c. Verify power (24V) at module input terminals and output terminal to gas valve.
- d. Replace spark module if fuse and power are OK.

IGNITION MODULE DIAGNOSTICS (Fenwal #35-6087J1-034 module only)

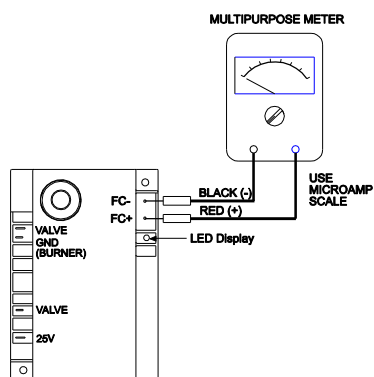
The **LED** located on the ignition module will flash **ON** for $\frac{1}{4}$ second, then **OFF** for $\frac{1}{4}$ second during a fault condition. The pause between fault codes is 3 seconds.

LED Indication	Error Mode
Steady On	Internal Control Fault
2 Flashes	Flame Sense Fault
3 Flashes	Ignition Lockout

TO CHECK FLAME SENSOR CIRCUIT (Fenwal #35-6087J1-034 module only)

The flame current is the current that passes through the flame from the sensor to the ground. The minimum flame current necessary to keep the system from lockout is **0.7** micro-amps.

- To measure the flame current, connect an analog DC micro-ammeter to the **FC-** and **FC+** terminals per diagram. The meter should read **0.7** micro-amps or higher when the burner is running full on.
- If the meter reads below **zero**, the meter leads are reversed. Disconnect power and reconnect the meter leads for proper polarity.
- Remove micro-ammeter. Return system to normal operation.



Ignition Module - Alternate
(Fenwal #35-6087J1-034)

23.5) MOTOR AND BLOWER WHEEL CHECK

If draft inducer motor fails to run:

- Check power supply to junction box.
- Check for loose or broken motor lead wire.
- Check to see that blower wheel turns freely and is not rubbing housing. Blower wheel may have worked loose from shaft and jammed against housing.
- Check for blower wheel damage; replace if necessary. If no damage, readjust blower wheel on shaft & retighten set screw.
- If all above does not correct, replace motor.

24.0) INSTALLATION DATA

Date of Installation: _____ # of Heaters in System: _____

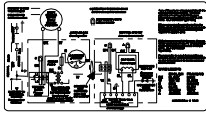
Serial No. _____

Model: **SIS or SIU** _____ N = Natural Gas
L = Propane Gas

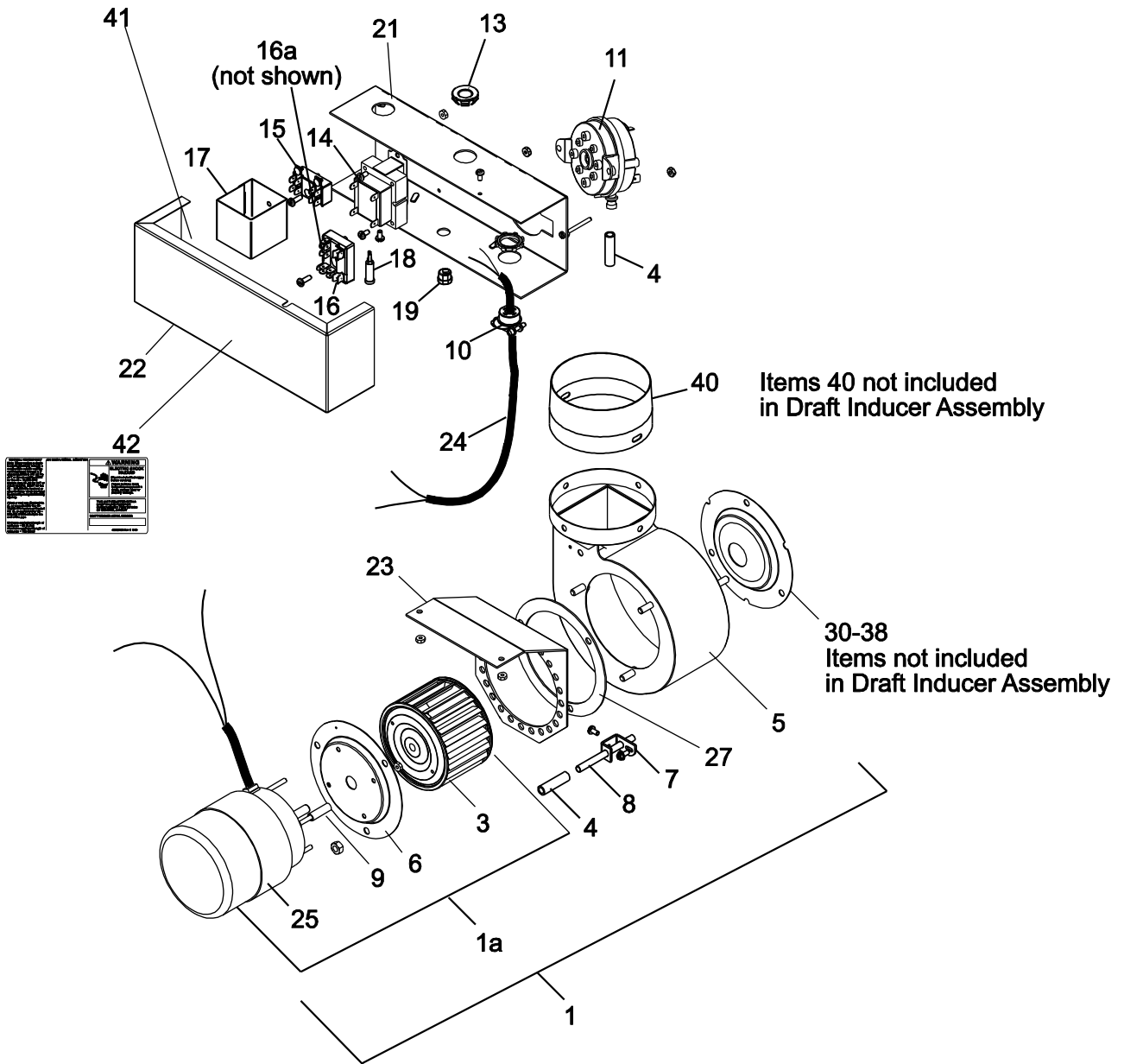
25.0) REPLACEMENT PARTS GUIDE

DRAFT INDUCER COMPONENTS		
Item No.	Part No.	Description
1	42917980	Kit, Draft Inducer Replacement (0.37" W.C.)
1a	42928000	Kit, Motor Replacement
3	03723000	Blower Wheel, Revcor
4	03988120	Plastic Vacuum Air Tube, 12" long
5	42739010	Blower Housing Sub-Assembly
6	42740000	Motor Plate
7	42742000	Sensing Tube Bracket
8	42744000	Sensing Tube, Draft Inducer
9	30347000	Motor Spacer (4 per motor)
10	03868010	3/8" Connector
11	42837050	Kit, Air Switch, set @ 0.37" W.C., #NS2-0306-00
13	30267000	1/2" Knockout Plug
14	30279000	Transformer
15	30281000	Terminal Block, EK-204
16	30713000	Fuse Holder, 1/4 x 1-1/4
16a	30202000	Fuse, 2A 250V
17	42709000	Terminal Block Shield
18	42398040	Monitoring Light, Green
19	02175050	Strain Relief
21	42909000	Junction Box
22	42910000	Junction Box Cover
23	42911000	Junction Box Support Bracket
24	42923000	SJO Cable Assembly
25	03721000	Motor
27	43221000	Draft Inducer Gasket
30	42741030	Restrictor Plate, 1-1/8" I.D. (50M Btu/hr)
32	42741010	Restrictor Plate, 1-7/16" I.D. (75M Btu/hr)
34	42741060	Restrictor Plate, 1-5/8" I.D. (100M Btu/hr)
36	42741080	Restrictor Plate, 1-7/8" I.D. (125M Btu/hr)
37	42741090	Restrictor Plate, 2-1/32" I.D. (150M Btu/hr)
38	42741100	Restrictor Plate, 2-1/4" I.D. (175M Btu/hr)
40	40504020	Starting Collar, 4"

Labels			
Item No.	Part No.	Description	Qty.
41	42874000	Label, Wire Diagram	1
42	42922020	Label, Sidewall Venting	1

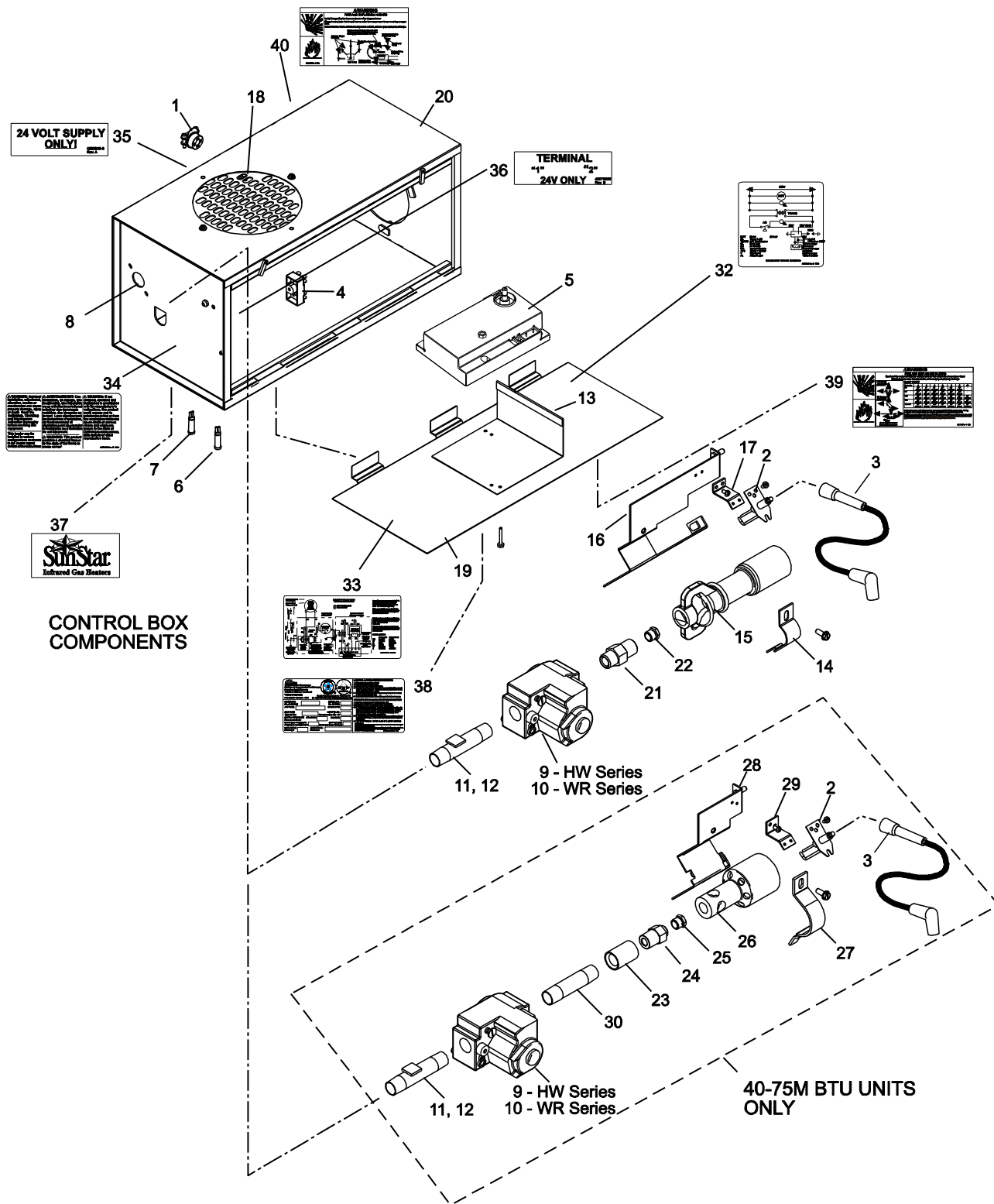


DRAFT INDUCER COMPONENTS

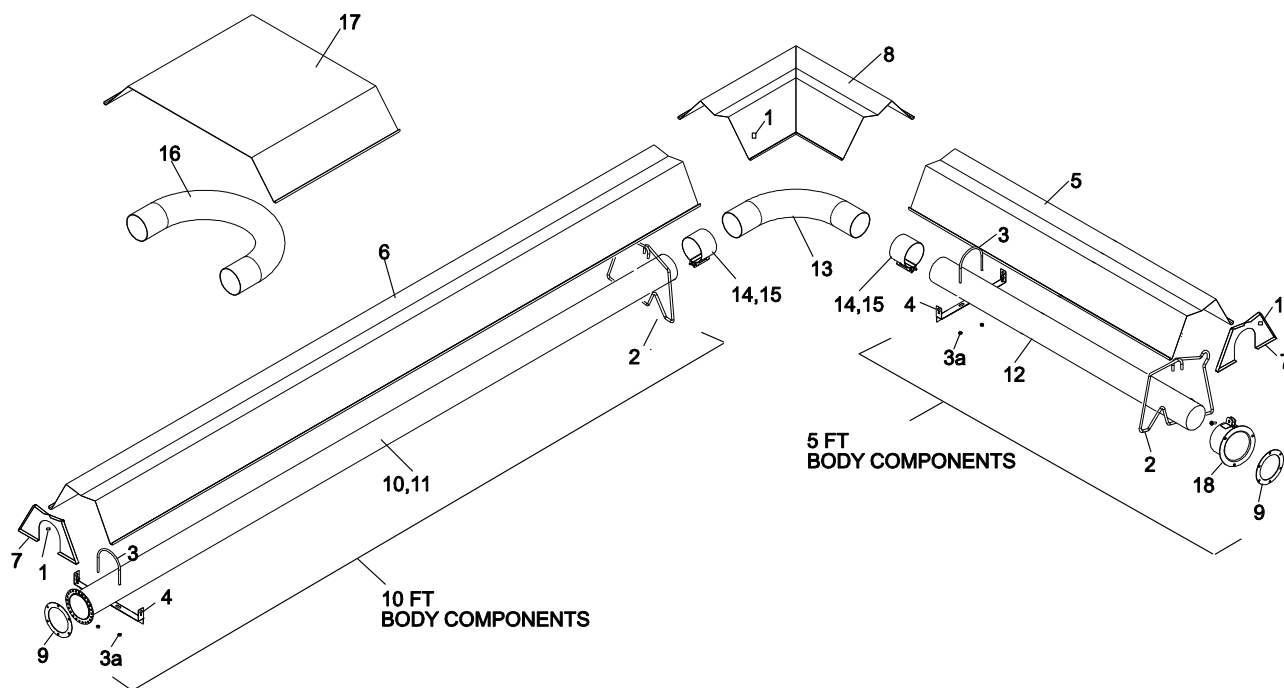


CONTROL COMPONENTS			
Item No.	Part No.	Description	
1	03868010	3/8" Connector	
2	30295000	Electrode PSE-GF1 (Igniter/Sensor)	
3	30314120	Ignition Cable, 14" long	
4	30324000	Terminal Block, EK-104	
5	44010010	Kit, Spark Module - Fenwal #35-6087J1-034	
6	42398060	Monitoring Light, Red	
7	42398050	Monitoring Light, Amber	
8	42447000	Sight Glass	
9			
9a			
10	44010270	Kit, Gas Valve - WR #36J23-203B1 Single Stage (natural gas)	SIS/SIU 100-175
10a	44010280	Kit, Gas Valve - WR #36J23-204B1 Single Stage (propane gas)	SIS/SIU 100-175
10b	44010290	Kit, Gas Valve - WR #36J23-203B1 Single Stage (natural gas)	SIS/SIU 50-75
10c	44010300	Kit, Gas Valve - WR #36J23-204B1 Single Stage (propane gas)	SIS/SIU 50-75
11	42757010	Restrainer Nipple, 4" long	
12	42757020	Restrainer Nipple, 4" Long - with center block (for WR valves only)	
13	42885000	Spark Module Shield	
14	42887100	Burner Clamp	
15	42890010	Burner Assembly	
16	42899100	Burner Bracket Sub-Assembly	
17	42888000	Electrode Bracket	
18	42893000	Air Inlet Plate (Perforated)	
19	42905000	Access Panel	
20	42906100	Cabinet Assembly (for offset burner)	
21	42889000	Orifice Fitting - 1/2" NPT x 9/16-18	
22	03258xxx	Orifice for 100M-175M Btu/hr (State Model & Gas Type for Size)	
23	03540090	Coupling, 1/2"	
24	42701000	Orifice Fitting - 1/2" NPT x 7/16-27	
25	03259xxx	Orifice for 50M-75M Btu/hr (State Model & Gas Type for Size)	
26	42700000	Burner	
27	43169000	Burner Clamp	
28	43172100	Burner Bracket Sub-assembly	
29	43170000	Electrode Bracket	
30	03333140	Nipple, 1/2"x4" long	

Labels / Manual			
Item No.	Part No.	Description	Qty.
31	43343310	Installation and Operation Instructions (not shown)	1
32	42785000	Label, Wire Diagram (ladder)	1
33	42874000	Label, Wire Diagram	1
34	42875000	Label, Warning	1
35	43269000	Label, 24V Supply	1
36	43270000	Label, Terminal ID (terminals 1 & 2) 24V Supply	1
37	42013010	Label, "SunStar" Logo	1
38	42848010	Label, "SunStar" Nameplate	1
39	43344010	Label, Clearance to Combustibles	1
40	43344050	Label, Gas Connector Warning	1



BODY COMPONENTS: SIS/U 50-175			
Item No.	Part No.	Description	
1	02266010	Reflector Speed Clip	
2	43980010	Wire Hanger	
3	42873000	“U” Bolt Clamp, 4” OD Tube	
3a	02127110	5/16-18 Hex Nut (2 per “U” Bolt)	
4	43318000	Tube Support/Hanger Bracket, 13”	
5	43319050	Reflector, 4'-11½” long (5' section only; 1 per 5 ft. body section)	
6	43319100	Reflector, 9'-11½” long (10' section only; 1 per 10 ft. body section)	
7	43320000	End Reflector	
8	43342000	Corner Reflector Package	
9	42921000	Tube Flange Gasket	
10*	44028030	10' Tube Assembly Kit, 4” OD, ALC steel with one 12-radial hole flange (start tube)	
11	44028100	10' Tube Assembly Kit, 4” OD, HR steel without flanges (extension tube & exhaust tube)	
12	44028120	5' Tube Assembly Kit, 4” OD, HR steel without flanges (extension tube & exhaust tube)	
13	43208010	4” O.D. Elbow Package	
14	02189020	#10 x ½” Self-Drilling Screw (2 per coupling)	
15	30462980	4” OD Tube Compression Coupling w/bolts	
16	43208020	4” OD U-Bend (Required for SIU Only)	ALC = Heat Treated, Aluminized Steel HR = Hot Rolled Steel
17	43488000	U-Bend Reflector (SIU Option)	
18	44015251	Tube Flange Assembly (with 1/4-20 x 1” screw)	
* Required on all models for mounting of control box.			



Note:

- 1) Screws, Nuts and Washers are standard hardware items and can be purchased at any local hardware store.
- 2) Please order by PART NUMBER – not by Item Number.
- 3) Replacement Part Prices are available when ordering.
- 4) Please refer to complete Model Number when ordering.

ALL ILLUSTRATIONS ARE INTENDED TO GIVE THE GENERAL IMPRESSION OF UNITS ONLY. OTHER COMBINATIONS OF 5 FT. AND 10 FT. SECTIONS, AND ONES WITH OR WITHOUT THE ELBOW PACKAGE ARE POSSIBLE. PLEASE CONSULT WITH YOUR SUNSTAR SALES REPRESENTATIVE. WE RESERVE THE RIGHT TO ALTER ANY SPECIFICATION WITHOUT NOTICE.

26.0) WARNINGS CARD

Copies of this card may be ordered at no charge under part no. 43344980 for installation near the heater.

- Attach this information card adjacent to the thermostat which controls the SunStar heater(s). ○



Read the Installation and Operating Instructions thoroughly before installation, operation or service.

INSTALLER: Write the clearance distance for the highest BTU model in the building in the blank spaces below using permanent ink. The clearances to combustible materials are based on each individual heater model number. Locate the heater model number on the nameplate affixed to the heater. The clearances to combustibles distances can be located adjacent to the nameplate or in the Installation & Operating (I & O) Instructions. I & O's can also be located on www.sunstarheaters.com.

WARNING



FIRE HAZARD

Combustible material must be located outside the clearance distance listed from heater.

Some objects will catch fire or explode when placed close to heater.

Failure to follow these instructions can result in death, injury or property damage.

Maintain Clearances to Combustibles to Prevent the Risk of Fire.

Clearance to combustibles must be maintained at all times in order to prevent the ignition of combustible materials. In locations used for the storage of combustible materials signs must be posted to specify the maximum permissible stacking height to maintain the required clearances from the heater to the combustibles. Signs must either be posted adjacent to the heater's thermostats or in the absence of such thermostats, in a conspicuous location.

Maintain the following clearances:
_____ to the side, _____ above
and _____ below the heater
from combustible materials.

IF YOU SMELL GAS: _____

FOR YOUR SAFETY

! DO NOT try to light any appliance.

! DO NOT touch any electrical switch; **DO NOT** use any telephone in your building.

! IMMEDIATELY call your gas supplier from a neighbor's telephone. Follow the gas supplier's instructions. If you cannot reach your gas supplier, call the fire department.

Installation Code and Annual Inspections:

Installation and Service of SunStar equipment must be performed by a qualified contractor and conform with all requirements set forth in the SunStar Installation and Operating Instructions and any National and Local codes pertaining to the installation, service and operation of the equipment. Annual inspection is recommended prior to the heating season to ensure proper operation of the heating equipment.

SUNSTAR HEATING PRODUCTS, INC.
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43344980
August 2001 rev B

Scan warranty QR code on the right to register your product.

