INSTALLATION / OWNER'S MANUAL

Schwank
infra-red gas heaters
ISO 9001:2000 REGISTERED

SCHWANK GAS FIRED

STR

SERIES

LOW INTENSITY, TUBE-TYPE INFRA RED HEATERS

FOR YOUR SAFETY:

Do not store or use gasoline or other flammable vapours and liquids in the vicinity of this or any other appliance.
If you smell Gas:
>Extinguish any open flames
>Don't touch electrical switches
>Call your Gas supplier immediately

FIELD CONVERTIBILITY:

"The conversion shall be carried out in accordance with the requirements of the authorities having jurisdiction and in accordance with the requirements of the B149.1 (latest edition) INSTALLATION CODE" in Canada, and the ANSI Z223.1 (latest edition) in the U.S.A

CERTIFIED

FOR YOUR SAFETY
If you smell gas:
(1) Open windows
(2) Don't touch electrical switches
(3) (Extinguish any open flame
Immediately call your gas supplier

DESIGN CERTIFIED

SP-MSTR-AU-05A
STR Manual
RD: NOV, 2003
RL: 5
KH

NOTICE:

Schwank Inc., reserves the right to make changes to equipment and specifications without obligation or notification. All codes are current at the time of printing.

Schwank Inc.
5285 Bradco Boulevard
Mississauga, Ontario,
L4W 2A6
phone: (905) 712-4766
fax: (905) 712-8336

Schwank Inc.
PO Box 988
Waynesboro,
Georgia,USA 30830
Phone: (706) 554-6191
Technical Support: 1-877-446-3727
Fax: (706) 554 9390

e-mail: info@schwankheaters.com

http://www.schwankheaters.com

Schwank
infra-red gas heaters
ISO 9001:2000 REGISTERED

STR GARAGE & WORK SHOP
INFRA-RED GAS TUBE HEATERS

TABLE OF CONTENTS

SP-MSTR-AU-05A
STR Manual
RD: NOV, 2003
RL: 5
KH

SCHWANK GAS INFRA-RED TUBE HEATER
STR SERIES
INSTALLATION INSTRUCTIONS

1. GENERAL

Installation of the **Schwank STR** Series gas-fired tube heaters must be performed by a qualified, licensed gas fitter and conform to all Schwank heating installation design procedures, including ventilation. All local, provincial and national code requirements must be met, ANSI/NFPA No. 88B 1985 (latest edition), which states clearances to combustible construction or material in storage, from heater and vent, must conform to standard NFPA No. 54 (ANSI Z223.1 latest edition), in the U.S.A. In Canada.the current CSA-B149.1-00 installation codes for gas-burning appliances and equipment, as well as the Canadian electrical code CSA C22.1 .

Schwank STR Series heaters may be installed for heating of residential indoor spaces. It is beyond the scope of these instructions to embrace all conditions that will be encountered. All system piping must be supported in accordance with acceptable industry practices, local codes, and applicable standards.

The following tube lengths and corresponding BTU input ratings are available:

TABLE 1

MODEL	BTU/HR INPUT ZERO TO 4,500' * ABOVE SEA LEVEL	TOTAL TUBE LENGTH (FT)**	APPROX NET WEIGHT IN LBS
STR 60-30	60,000	29' 4"	120
STR 60-20	60,000	19' 8"	90
STR 45-20	45,000	19' 8"	90
STR 45-10	45,000	10' 0"	60

* Zero to 2000 ft for the USA (For installations above 2000 ft see orifice Chart on Page 16)

** Manufactured and shipped in 10-ft. lengths

2. INSTALLATION IN GARAGES

Schwank STR Series tube heaters are approved for use in garages. The installation must conform to local building codes or, in the absence of local codes, to the standard NFPA No. 54 (ANSI Z223.1 latest edition), in the U.S.A. and the CSA B149.1-00, and CAN1.2.16-M81 in Canada.

In a garage installation, the minimum clearance from the bottom of an infra-red heater to the upper surface of a vehicle shall not be less than the certified clearance to combustible material as indicated on the heater.

3. PRE-INSTALLATION SURVEY

The **Schwank STR** heating system must have gas piping of correct diameter, length, and arrangement to function properly. For this reason, a layout drawing is necessary.

Carefully survey area to be heated. For best results, whenever possible, place burner and combustion chamber in coldest area.

STR HEATER KIT ASSEMBLY CHART

		STR TUBE KIT PART # & QUANTITY REQUIRED			
		Stand-Alone Kits Only			
		TS-	TS-	TS-	TS-
		4510-	4520-	1420-	1430-
HEATER MODEL	BURNER KIT	AX	AX	AX	AX
STR 45 10	JS-R045-A N/L	1			
STR 45 20	JS-R045-A N/L		1		
STR 60 20	JS-R060-A N/L			1	
STR 60 30	JS-R060-A N/L				1

Stand-Alone Tube Kits require no additional tube kits.
Primary Tube Kits require at least one additional Secondary Tube Kit.
Secondary Tube Kits require a Primary Tube Kit.
Secondary Tube Kit TS-1010-AX can also be used as a 10 ft extension kit. The installer *may* need to remove the turbulator (refer to Turbulator Chart in the I&O Manual).

4. MOUNTING CLEARANCES

Schwank STR Series tube heaters must be mounted with minimum clearances between the reflector surface and combustibles as shown in FIGURE 1, TABLE 2 (page 3).

For recommended heater placement refer to TABLE 3 (page 3).

Heaters should also be located in relation to building construction and equipment, to allowing a minimum clearance of 24 inches from end of burner housing to enable servicing and cleaning of burner, blower and controls.

FIGURE 1 MINIMUM CLEARANCES TO COMBUSTIBLES

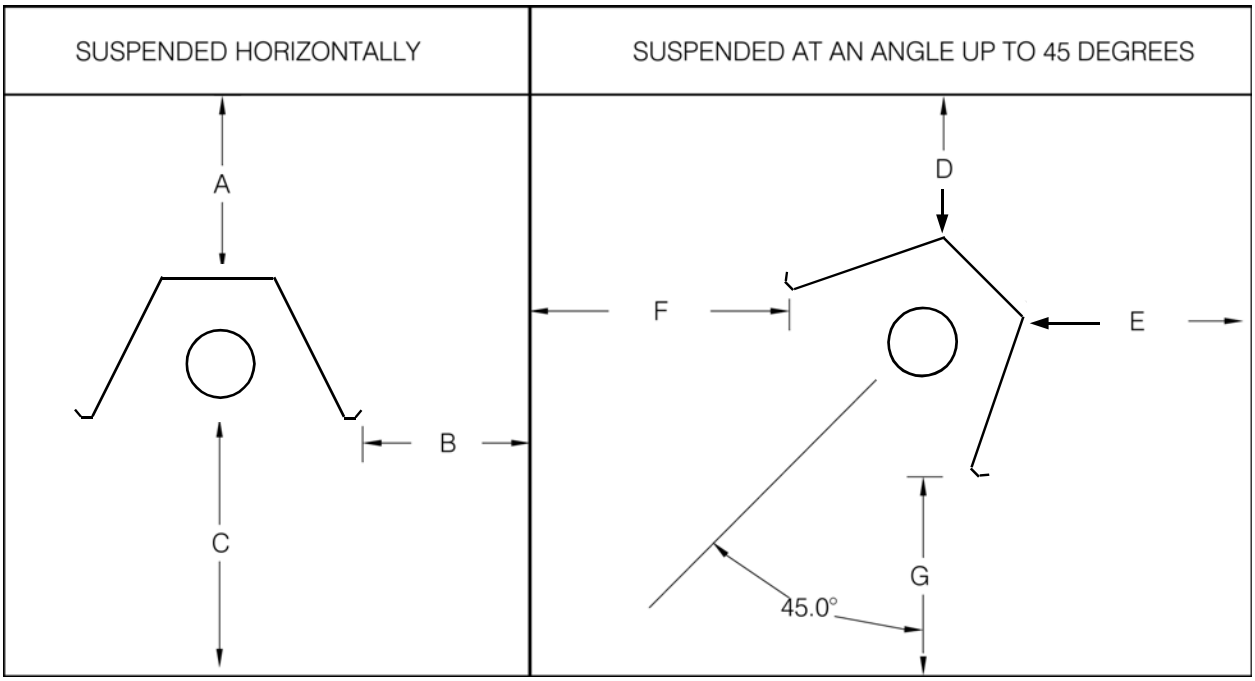


TABLE 2 MINIMUM CLEARANCES TO COMBUSTIBLES

MODEL	SUSPENDED HORIZONTALLY			SUSPENDED AT AN ANGLE UP TO 45 DEGREES			
	A	B	C	D	E	F	G
STR 60	1.5”	5.5”	34”	2.0”	1”	17”	34”
STR 45	4.5”	8.5”	32”	4.5”	1”	29”	32”

TABLE 3 RECOMMENDED HEATER PLACEMENT

MODEL	MOUNTING HEIGHTS (FEET)	MAXIMUM DISTANCE BETWEEN HEATERS (FEET)	DISTANCE – OUTSIDE WALL TO HEATER LONG AXIS PARALLEL TO WALL (FEET)	
			HORIZONTAL	ANGLE
STR 60	8 - 14	25	11 – 15	COMBUSTIBLE CLEARANCE
STR 45	6 - 10	20	8 – 12	

IMPORTANT: Continuous operation of single or multi-heater placement must not cause any combustible material in storage to reach a temperature in excess of 160^{O}F.

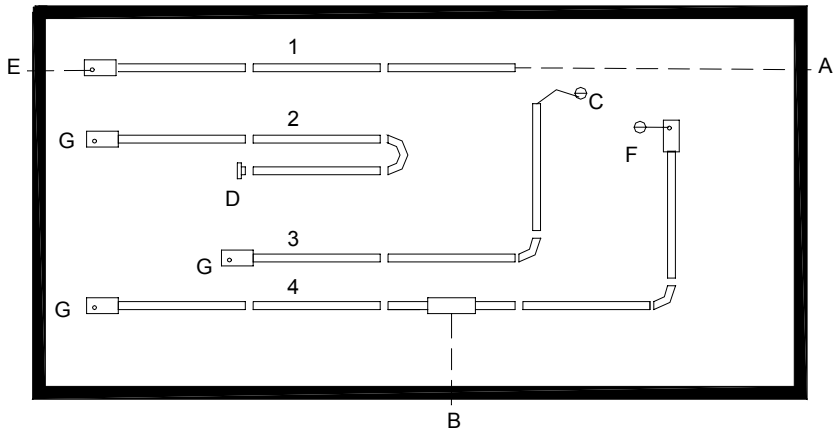
5. SYSTEMS INCORPORATING 90° BENDS AND 180° ELBOWS

The **STR** Series radiant tube heater can be installed in configurations as illustrated in FIG: 2 (below) with a maximum of two 90° or one 180° elbow per heater. The use of radiant elbows reduces the total maximum vent allowable. See SECTION 9 (page 11): **Flue Venting**.

Both the 90° and 180° elbows are shipped as a kit with two end-plate hangers to close off the reflector ends each side of the elbow (s). The reflector must be secured with four screws to each of the end-plate-hangers. SEE FIG: 3 (PAGE 5) and FIG: 6 (PAGE 6).

IMPORTANT: On STR 60 and 45 models, a minimum of 10' of straight radiant tube must be connected to the burner before any elbow.

FIGURE 2 SYSTEM CONFIGURATIONS



System Configuration

1 Straight line
2 "U" tube with 180-degree elbow kit
3 "L" tube with 90-degree elbow kit
4 Twinned tubes into common TEE flue vent

Venting Options

A Flue vent through wall 4"
B Flue vent through wall or roof 6"
C Flue vent through roof
D Flue vent into building, exhaust fan interlocked with heater
E Combustion air intake from outside through wall
F Combustion air intake from outside through roof
G Combustion air intake from inside building

6. GENERAL INSTALLATION INSTRUCTIONS

The following instructions are a guide to installation only, and supplement, but do not replace design instructions given in the Schwank Engineering Manual. Since most installations will differ in many details, these instructions are general. Sound judgment must be exercised and careful supervision is essential to assure that the installation will be made in the best manner possible for trouble-free operation and at the very least cost.

The general procedure for installing the heater system is to install the burner and the system tubing, followed by the reflectors, gas piping, and wiring.

Carefully survey the area to be heated and place the burner end in the coldest area, if possible.

The procedure for installing the tube system is based on structural members of the building and how they can be used to support the tubing system. Before proceeding with the installation of the system, we suggest that you consult with your Schwank distributor for the proper procedure for your particular job.

All system tubing must be supported in accordance with acceptable practice, local codes, and applicable standards.

The heater is suitable for reflector mounting angles up to 45° along the short axis. Each section of shade can be individually angle mounted using the supplied shade end plate hangers Improper angle mounting can result in overheating of controls and combustible material.

Chain is recommended for hanging the heater and connecting the hanger (s) to a beam or other support. This will permit normal expansions and contractions of the pipe system.

NOTE: It is the responsibility of the installer to insure that the chosen suspension system will support the overall weight of the system.

If rigid means such as rods are used in place of chains, swing joints, or other means of sufficient length must be provided to compensate for expansion. IMPORTANT: For either horizontal or angle mounting, the long axis of the tube must be level. Only noncombustible mounting hardware should be used.

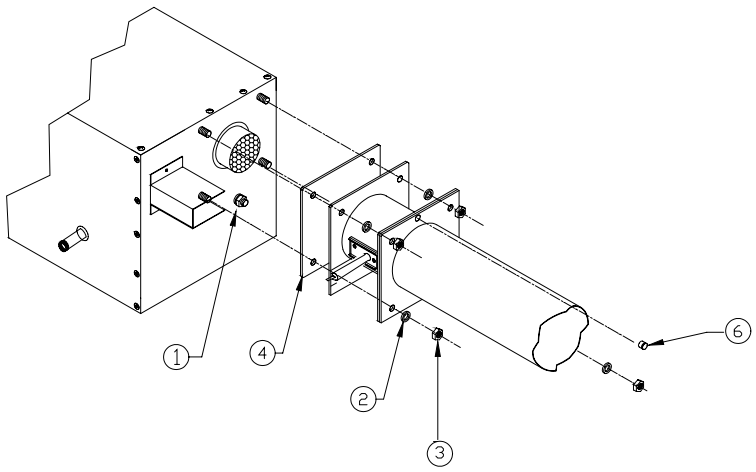
These installation instructions are for the standard straight tube applications only. Call your local distributor for engineered systems differing from the standard series tube kits.

Typical tube arrangements are shown on the following pages and should be reviewed prior to assembling the heater.

7. SUSPENSION SYSTEM

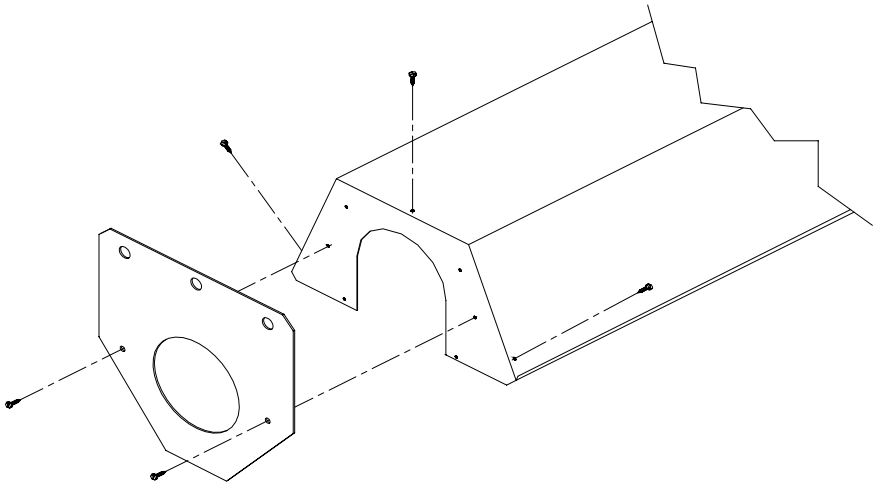
1. **Attach the burner box to the flanged aluminized or alumatherm tube using the bolts, nuts, and washers provided. Ensure that the gasket is sandwiched between the two flanges. See Figure 6.**

FIGURE 6



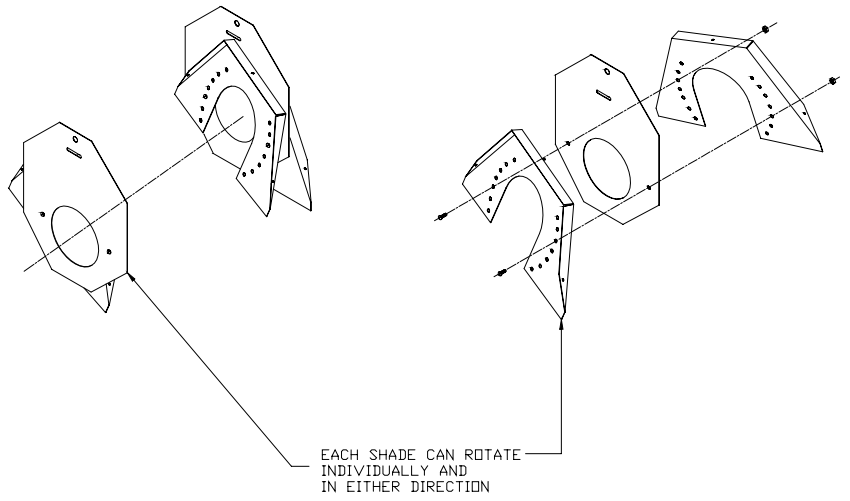
2. **Assemble two shade end plate hangers by attaching 1 of the shade end plates to the hanger plate using the supplied slotted screws and nuts. If the system is longer than 10', additional shade plate hangers must be assembled. To assemble a shade plate hanger, attach 2 of the shade end plates to opposite sides of the hanger plate and screws using the supplied slotted screws and nuts. The shade end plate hangers are used on each end of the total system. The shade plate hanger is used in between shades and allows the shade to be mechanically attached to either side of the hanger. See Figure 7. An alternate method is to place only the hanger plates on the tube and assemble the shade end plates after the system has been fully or partially suspended. The shade end plates can be mounted to the hangers and then install the shades or install the shade end plates on both ends of the shade and attaching the shade to the plate hangers. If this method is used, attach the shade nearest the burner box first and work down toward the opposite end.**

FIGURE 7



3. **If any of the sections of shade need to be angled, this can be accomplished by placing the slotted screw in any of the mounting holes situated in a circular pattern. Each section of shade can be individually adjusted independent of the previous or next shades orientation. See Figure 8.**

FIGURE 8

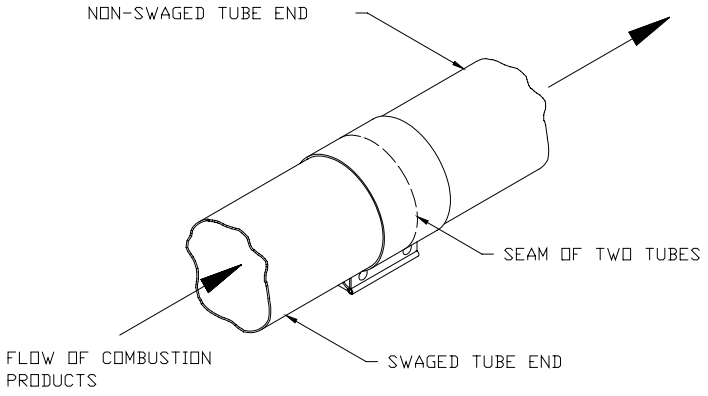


4. **Slide the shade end plate hangers and shade plate hangers on the tubes before as sembling the tubes. See Figure 9 for assembled arrangement of the first and sec ond tubes. For STSp 80, 110, 130, 155, 175 and 200, which will require additional tubes, an additional coupling and shade end plate hanger will be required per tube.**

NOTE: The first and second tubes on the STSp 60, 80, 110, 130, and 155 are aluminized and emissive - coated steel respectfully. On STSp 175 and 200, the first section of pipe is alumatherm, the second is aluminized, and the remaining pipes are emis sive - coated steel.

5. **Slide the swaged end of the tube into the unswaged end of the adjacent tube. Cen ter the tube clamps over the joint between the two tubes and tighten the clamps. See Figure 9.**

Figure 9



6. **After the first two tubes are assembled, the heater can be suspended and the rest of the tubes can be attached one at a time in the air, or they can be completely assembled on the ground and hoisted into position at one time. The shades can be installed at this time using the Philips screws provided with the heater. Always start at the burner box and work in the opposite direction.**

NOTE: Wire hangers are available as an optional accessory . These hangers are com monly used when adequate mounting point distances to match plate hangers dis tance are unavailable or in some case for extra support.

7. **Once all of the tubes have been installed and the shades installed, ensure the plate hanger brace is inserted in the slot on the first shade end plate hanger and place the 1/4" hex head screw in the hole on the end of the plate hanger brace. This brace locks the burner into place when the heater expands and contracts.**

8. **Next, the turbulator needs to be installed. Consult the typical tube arrangements on the following pages concerning turbulator placement. The turbulator is always installed in the last section of tube.**

⚠ WARNING

Installation of the turbulator is imperative to the warranty of the tubes. Install the turbulator in the last section of tubes. If installed in the first section of tube, it will cause tubes to burn out. This will void the warranty. See typical arrangements for turbulator requirements and placement.

ATTENTION: STR 45 INSTALLERS

The STR45 requires a special turbulator that is different than the standard turbulator used on the STR 60 and 80 and found in most kits.

9. **Install the shade braces per Figure 10 and Figure 11. The shade brace should be evenly spaced (3 per shade) under the shade and pliers used to bend the tab on each end of the brace up and over the shade flange on each side of the shade.**

FIGURE 10

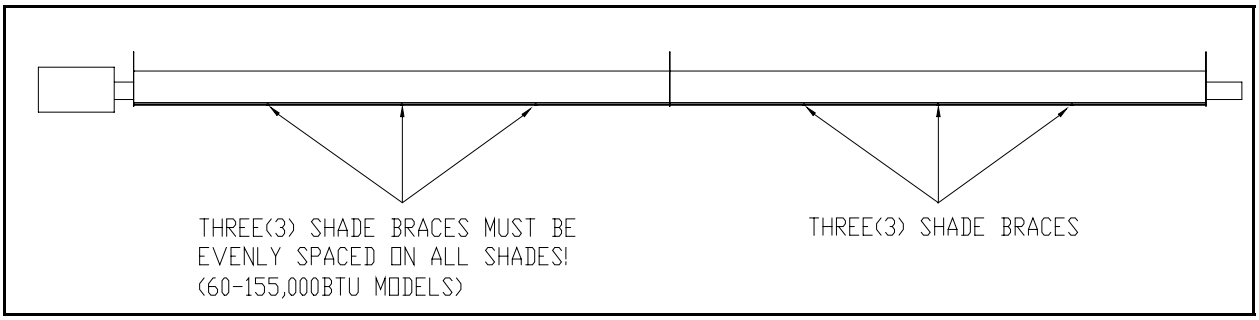
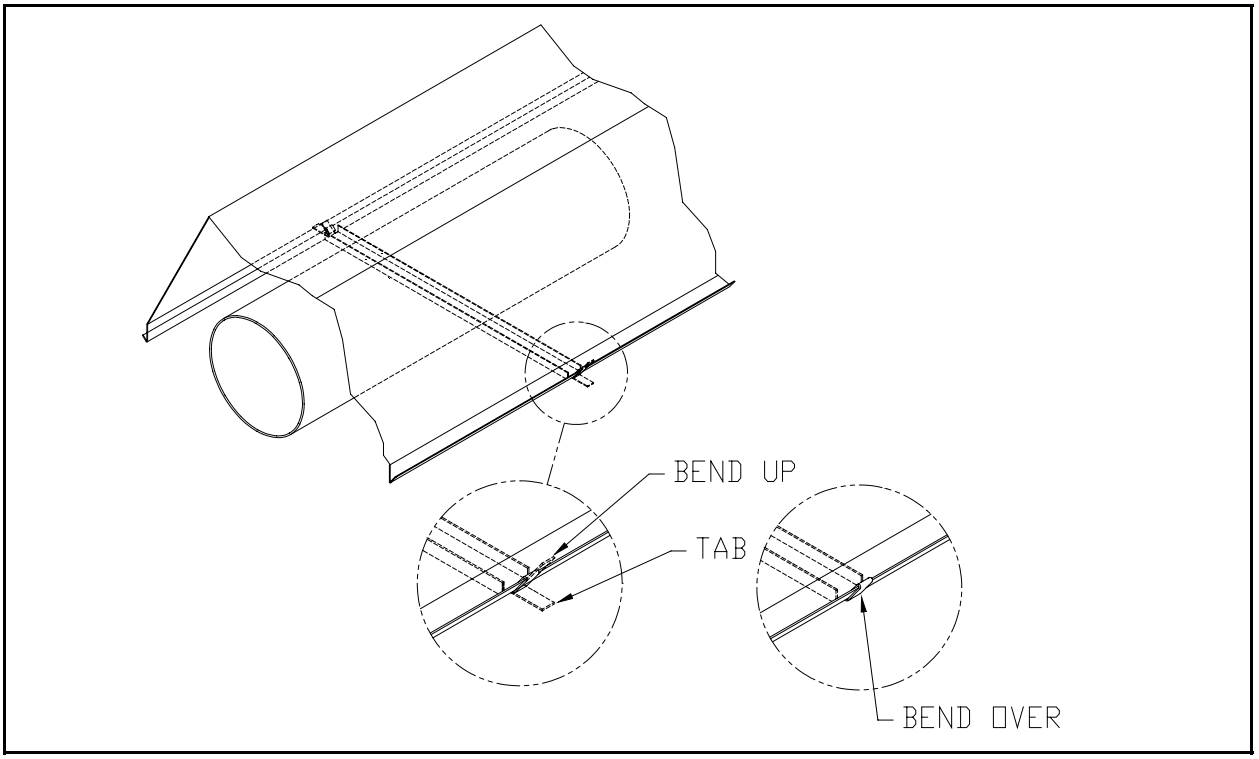
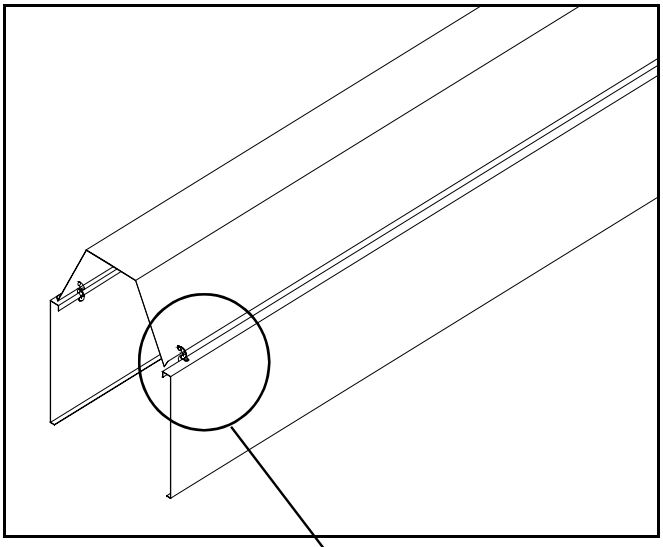


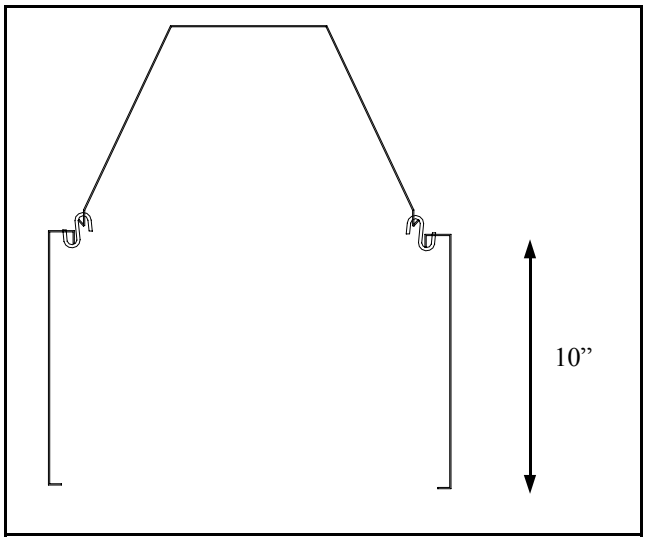
FIGURE 11



10. The Combustion air and vent pipe, if required can be installed at this time. Consult the National Fuel Gas Code, ANSI Z223.1 (current standard), for combustion and ventilation requirements.

11. The control scheme can be installed at this time using a 24 volt thermostat, a Trutemp set back thermostat or a line voltage thermostat.




10”

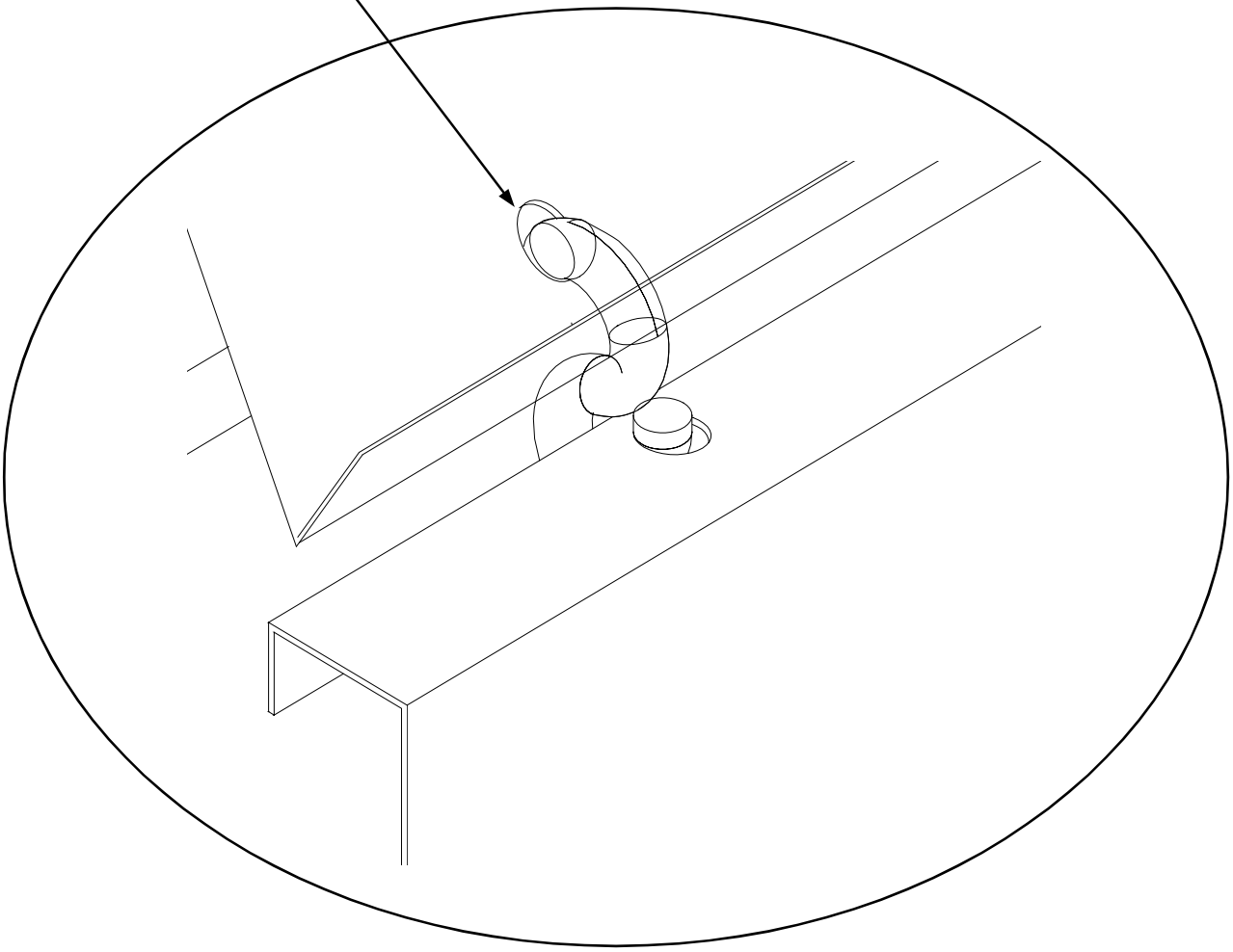


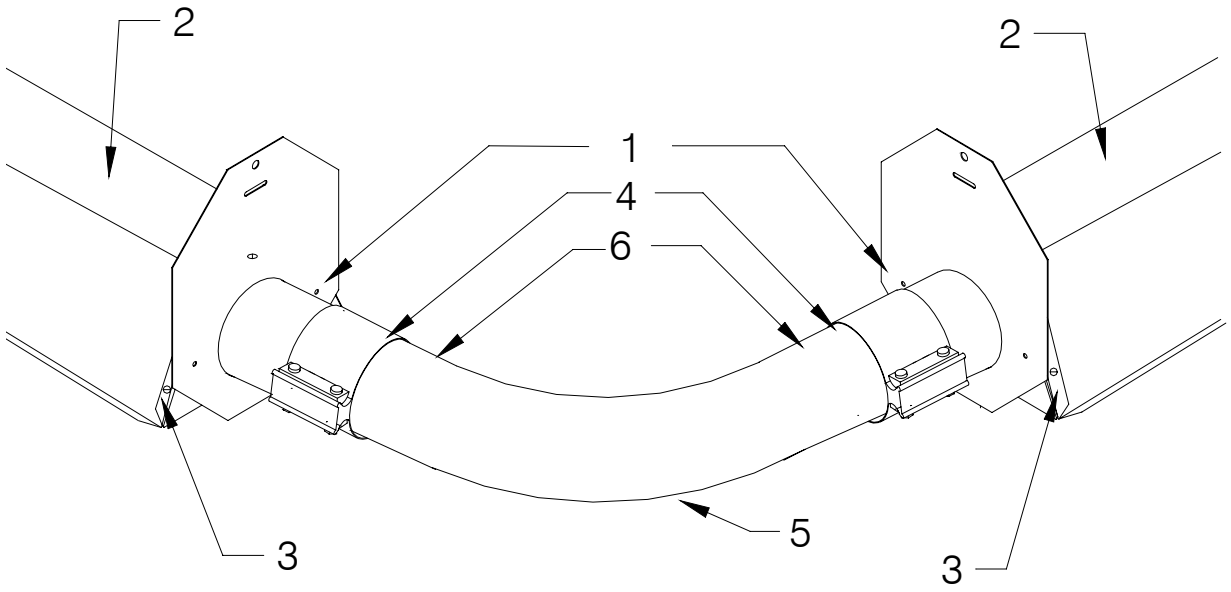
TABLE 4

MODEL	TURBULATOR LENGTH
STR 60-30	14’ 0”
STR 60-20	14’ 0”
STR 45-20	5’ 0”
STR 45-10	5’ 0”

NOTE: Where required, the STR Series Heaters will be supplied with turbulators, factory installed into the **end tube (s)** of the system configuration.

NOTE: Where required the STR Series Heaters will be supplied with the turbulators, factory installed into the end tube(s) of the system configuration.

FIGURE 12 PLATE HANGER/ELBOW INSTALLATION



1 End-Plate-Hanger
2 Reflector
3 Hanger Flange OVER Reflector
4 Tube Coupler
5 90^0 (shown) or 180^0 Elbow
6 Point at which Swaged tube is fully inserted into elbow and Swaged end of elbow is fully inserted into tube.

8. FLUE VENTING

The STR series are approved for direct vent applications.

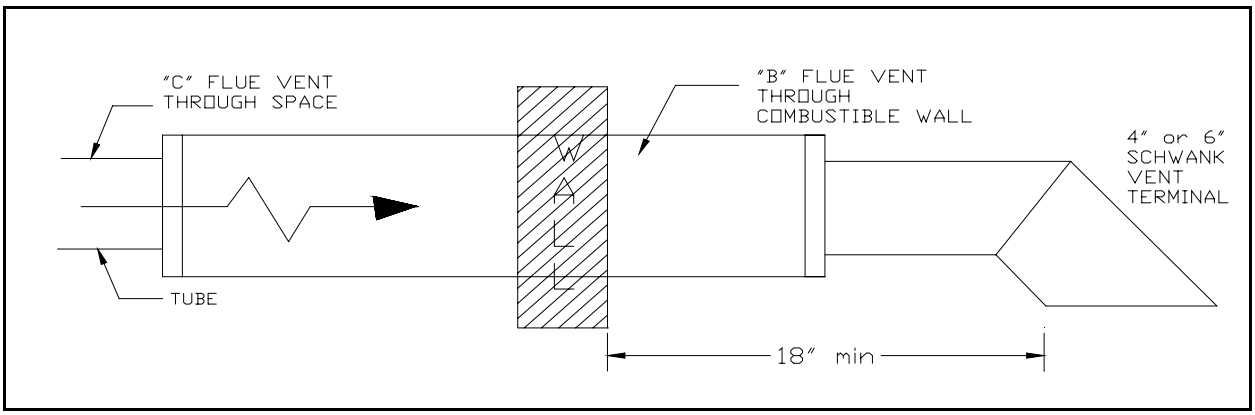
NOTE: The system must not be operated in a negative air condition, unless combustion air is brought in from outside directly to the burner. If a severe negative pressure is experienced or anticipated, order heater requesting custom Air Switch c/w Air Hose from Schwank.

*** Ensure you specify the correct heater model number when ordering.**

VENTED APPLICATION

All venting must be single wall "C" vent except the portion of vent passing through a combustible wall or roof. Type "B" vent may then be used as per CSA requirement.
When venting horizontally the flue vent system should slope downwards approximately 1/4" per foot toward the vent terminal, starting at the termination of the radiant tube.

For horizontal through the wall venting, the approved Schwank 4" or 6" vent terminal should be used. Install the flue vent terminal 18" from the outside wall to the inside end of terminal opening. The flue vent terminal used must be of the approved types supplied by Schwank or supplied by an approved "B" vent manufacturer.



The total maximum allowable combined length of vent and combustion air duct is 50' for STR 60 and 45. Total maximum allowable vent and duct is reduced by ten feet for every 90^{o} elbow installed in the vent or duct. Should the system be installed with a 90^{o} or with a 180^{o} elbow in the radiant tube, 10' or 20' respectively must be deducted from the length of vent and duct.

Neither the flue vent nor the combustion air duct is to exceed 50ft in length. Lengths greater than those allowed may create condensation problems and will void CSA design Certification. The horizontal flue vent shall not terminate less than the following distances:

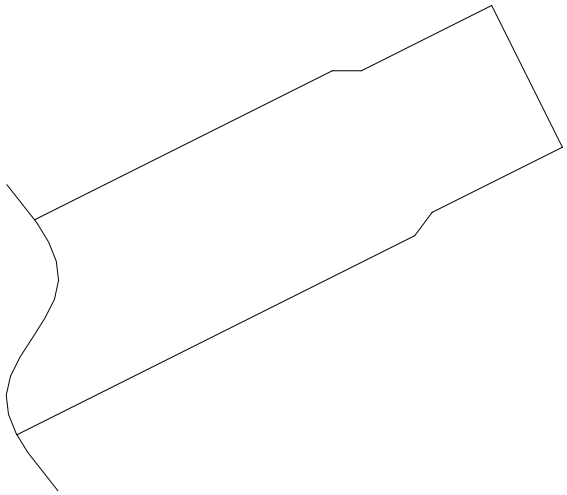
- Three feet above grade level
- Twelve inches from combustion air inlet of any heater with input up to 100,000 Btu/hr.
- Three feet from combustion air inlet of any heater with input over 100,000 Btu's
- Directly above a gas utility meter or service regulator
- Directly below a soffit or overhang
- Twelve inches from sides and bottom and eighteen inches from top when installed close to the corner of a building.

As an option two heaters may be vented through an approved common 4" X 4" X 6" flue Tee, (**Tee supplied by Schwank Ltd**.) with a maximum of two per heaters per Tee. Both of the heaters must then be controlled by one single common thermostat or "ON/ OFF" operating switch.

All vent pipe used with a slip-fit connection must be mechanically secured.

Where the vent pipe passes through areas where the ambient temperature is likely to produce condensation of the flue gases, the vent pipe shall be insulated with a suitable material as approved and specified by the insulation manufacturer. Insulation may be subject to temperatures over 500^0 F.
The vent system must **always** be adequately supported to prevent sagging. (Fig: 4 page 6)

FIGURE 16 FLUE VENT CONNECTION



The end of the Tube is Swaged and will directly accommodate regular "C" Vent and fittings for venting to outside. The "C" Vent connection to the radiant tube end must be secured with sheet metal screws.

9. COMBUSTION AIR DUCT

Where heater is operated in a negative air condition or in contaminated air atmosphere such as woodworking shops, air for combustion must be ducted from outside to intake flange on burner blower. Combined maximum length of combustion air duct and flue vent is 50' for STR 60 and 45. The total maximum vent allowable is reduced by 10' for every 90^{o} vent elbow installed.

For ease of installation, this heater has been provided with a fresh air intake duct hood. It can be used as an outdoor intake hood to bring combustion air to the heater from outside, or when using air from the room, it should be installed over the intake flange on top of burner as a dust cap.
Do not use plastic or cloth flexible duct for fresh air intake.

INSTALLER'S CONVENIENCE KIT: (optional)

- 1 - 10' x 4" Flexible Aluminium Fresh Air Intake Duct.
- 1 - Length of Hanging Chain
- 1 - 4" Horizontal Vent Terminal

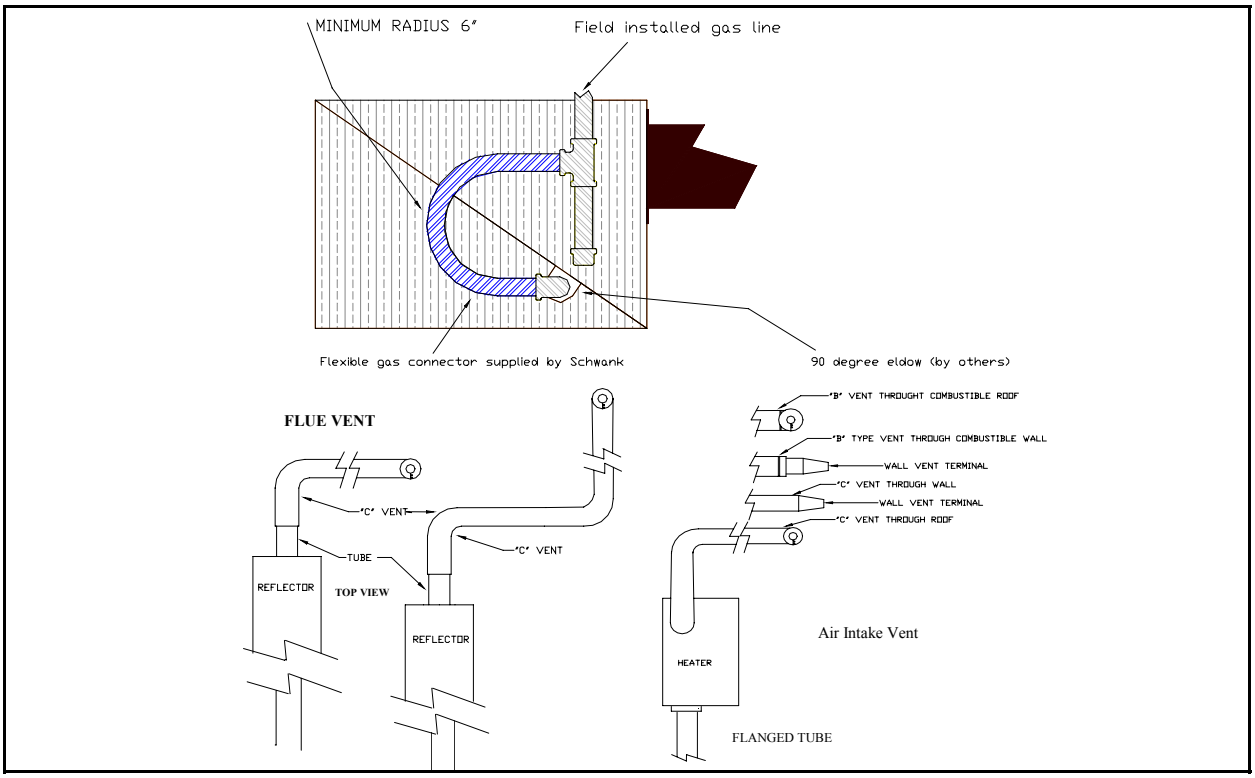
The air intake inlet shall not be located less than the following distances:

- Three feet above grade
- Twelve inches from flue vent terminal of any heaters with input up to 100,000 BTU
- Three feet from flue vent terminal of any heaters with input over 100,000 BTU

CAUTION: **In installations where chlorinated hydrocarbons are in use, such as Trichloroethylene, Chloroethylene Nu or Refrigerants, it is essential that combustion air be brought in from non-contaminated areas. Burning the fumes from these gases will create Hydrochloric Acid fumes, which are detrimental to humans, equipment and buildings.**

10. GAS SUPPLY INSTALLATION

It is recommended that the approved flexible connector supplied by **Schwank** be installed between the heater and gas piping.



CAUTION: If rigid connection is made, compensation for normal gas-supply piping expansion and radiant tube expansion must be provided. All piping must conform to local codes.

During any pressure testing of the gas- supply piping system. The heater must be isolated from the gas-supply piping system by closing its individual manual shutoff valve, supplied by installer.

DO NOT use pressures greater than 1/2 psig. to pressure-check the heater.

*TEST FOR LEAKS: All gas piping and connections must be tested for leaks after the installation is completed, by a*pplying soap suds solution to all connections and joints. If bubbles appear, leaks have been detected and must be fixed.

DO NOT USE A MATCH OR OPEN FLAME OF ANY KIND TO TEST FOR LEAKS. NEVER OPERATE THE HEATER WITH ANY LEAKING CONNECTIONS.

The supply system should be checked first with heater turned "OFF" followed by another check with heater turned "ON".

IMPORTANT:

The minimum supply-line pressure at the inlet to the heater regulator must not, in any instance, be lower than 5.0 inches of water column pressure, for natural gas , and 11.0 inches of water column pressure for propane gas. The supply-line pressure must be checked with all heaters and appliances operating in the building. A sealed regulator is supplied with the heater to maintain the proper manifold pressure when the main burner is operating.

TABLE 5

GAS TYPE	LINE PRESSURE INCH WATER COLUMN MINIMUM	LINE PRESSURE INCH WATER COLUMN MAXIMUM	MANIFOLD PRESSURE INCH WATER COLUMN AT-TAP IN GAS VALVE
Natural Gas	5.0	14.0	3.5
Propane	11.0	14.0	10.0

NOTE: Access to the manifold pressure-test port is on the top of the valve. A 3/16" Allen wrench is necessary to check this. When checking or setting the manifold pressure, a U-tube manometer should be used.

Gauges which measure in ounces per square inch or pounds per square inch are not accurate enough to properly measure or set the pressure. Readings should be made in inches of water column.

11. ELECTRICAL AND THERMOSTAT WIRING

For ease of connection, each heater is supplied with a three prong electrical cord, which is to be connected to a standard 120V receptacle. **Receptacle must be grounded.**

Each tube heater requires 145VA to operate. This heater is supplied with a low voltage thermostat. Set Heat Anticipator to the highest setting.

IMPORTANT: Do not install the thermostat in the direct radiant stream.

11a- HIGH ALTITUDE INSTALLATIONS

In Canada all of the **STR** radiant tube heaters are approved for altitudes zero to 4500 feet above sea level and do not require de-rating.

In the USA if a heater is to be installed at altitudes above 2000 ft, the input must be reduced by 4% per 1000 ft and the orifice must be changed according to the chart below.

ORIFICE - ALTITUDE CONVERSION CHART

MODEL NO	STD ORIFICE (DMS)	FOR USE AT ALTITUDES ABOVE (FEET)						
		2000	3000	4000	5000	6000	7000	8000
STSp-45N	JS-0729-DM	JS-0729-DM	JS-0730-DM	JS-0730-DM	JS-0730-DM	JS-0730-DM	JS-0731-DM	JS-0731-DM
STSp-45L	JS-0746-DM	JS-0746-DM	JS-0746-DM	JS-0748-DM	JS-0748-DM	JS-0748-DM	JS-0749-DM	JS-0749-DM
STSp-60N	JS-0725-DM	JS-0726-DM	JS-0727-DM	JS-0727-DM	JS-0728-DM	JS-0728-DM	JS-0729-DM	JS-0729-DM
STSp-60L	JS-0742-DM	JS-0742-DM	JS-0743-DM	JS-0743-DM	JS-0743-DM	JS-0744-DM	JS-0744-DM	JS-0745-DM

The voltage at the spark ignition control is 24V. Note that proper functioning of the heater will be adversely affected if the input voltage varies by more than +/-10%.

WARNING: The heater must be electrically grounded in accordance with the current Electrical Code.

12. OPERATING SEQUENCE

a) Heat Mode

1. On call for heat, relay is energized closing contacts to power up the combustion air fan motor. When the fan is up to speed, and enough pressure is built up, the pressure switch contacts close, energizing the ignition module. The ignition module incorporates a 30-second pre-purge period. Following pre-purge, the gas valve is energized and spark commences for the trial for ignition period of 21 seconds.
2. When a flame is detected during the trial for ignition, the spark is shut off immediately and the gas valve remains energized. When the thermostat is satisfied and the demand for heat ends, the blower, ignition module and gas valve are all de-energized.

b) Failure To Light – Lockout

1. Should the main burner fail to light or flame is not detected during the trial for ignition period, the control will lockout and the gas valve will immediately be de-energized. The combustion blower will continue to purge the heater.
2. Recovery from lockout requires a manual reset by either resetting the thermostat or setting the line voltage switch power ing the heater to the OFF position for a minimum of 30 seconds. .

c) Flame Failure - Re-ignition

1. If the established flame signal is lost while
   the burner is operating, the control will respond within 0.8 seconds. The high voltage spark will be energized for a trial for ignition period in an attempt to re-light the burner.

If the burner does not light, the control will de-energize the gas valve and the control will go into lockout as noted above in "Failure to Light". If flame is re-established, normal operation resumes.

13. LIGHTING INSTRUCTIONS

Refer to the lighting instructions on the out-side cover of the burner housing. Again, if the unit goes off on safety, turn thermostat OFF for 30 seconds before the heater can be restarted.

NOTE: On initial installation, the unit may lock out on safety owing to the length of time required to purge air from the system.

14. RECOMMENDED MAINTENANCE

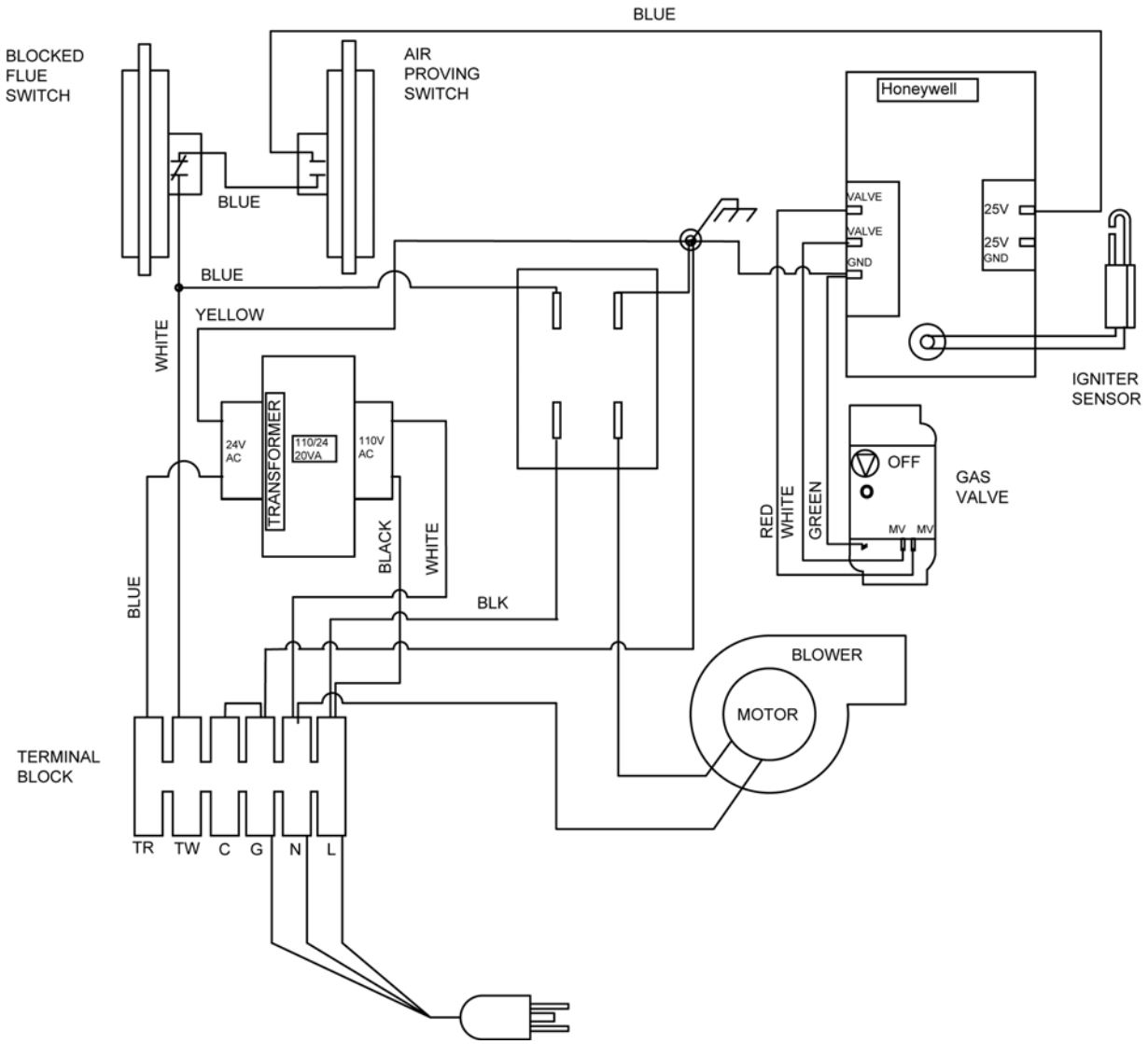
1. Inspect the venting system every heating season and repair or replace worn parts as required.
2. Check the inlet air opening and the blower periodically, and clean off any lint or foreign matter. The flow of combustion and ventilation air must not be obstructed.

In addition, we recommend the entire system be checked once a year by a qualified service technician.

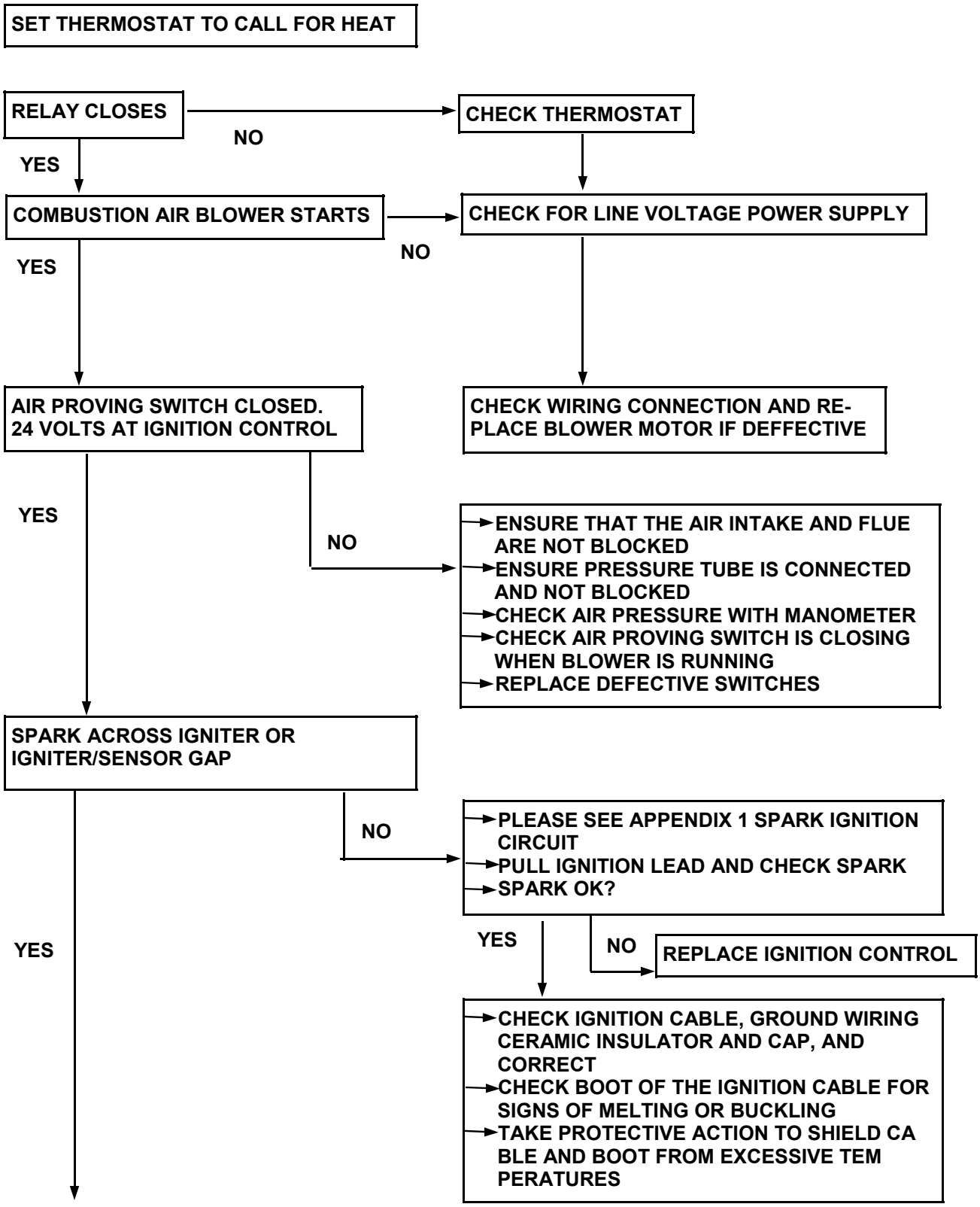
THIS SCHWANK HEATER BURNER IS COMPLETELY FACTORY ASSEMBLED AND TESTED. ANY ALTERATIONS WILL VOID THE CSA CERTIFICATION AND MANUFACTURERS WARRANTY.

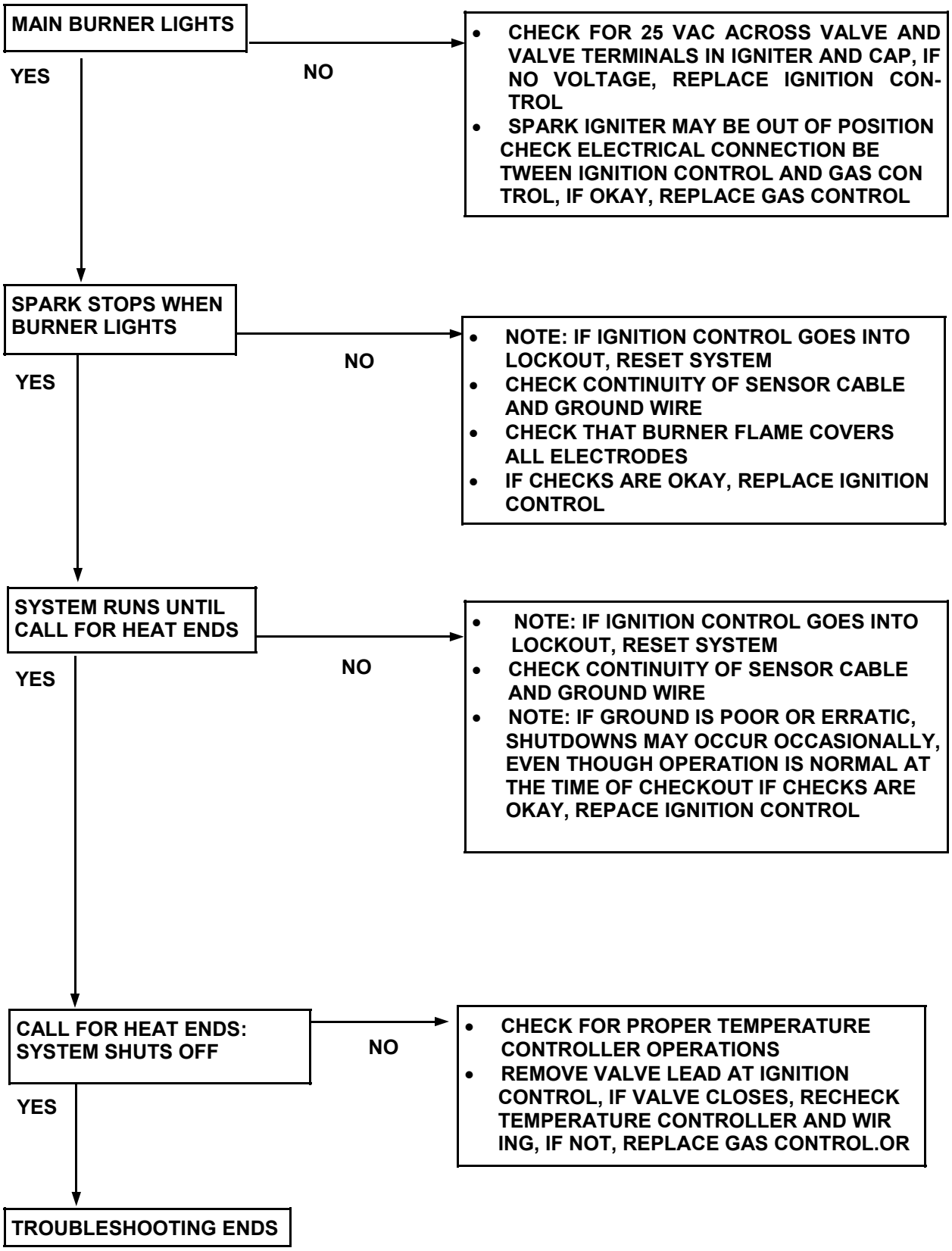
FOR ADDITIONAL INFORMATION, CONTACT YOUR LOCAL DISTRIBUTOR OR SCHWANK LTD.

DIRECT SPARK IGNITION - 24V THERMOSTAT / SWITCH



16. TROUBLE SHOOTING GUIDE for Honeywell S87J-1034 Ignition Control




MAIN BURNER LIGHTS
NO
• CHECK FOR 25 VAC ACROSS VALVE AND VALVE TERMINALS IN IGNITER AND CAP, IF NO VOLTAGE, REPLACE IGNITION CON-TROL
• SPARK IGNITER MAY BE OUT OF POSITION CHECK ELECTRICAL CONNECTION BE TWEEN IGNITION CONTROL AND GAS CON TROL, IF OKAY, REPLACE GAS CONTROL
YES
SPARK STOPS WHEN BURNER LIGHTS
NO
• NOTE: IF IGNITION CONTROL GOES INTO LOCKOUT, RESET SYSTEM
• CHECK CONTINUITY OF SENSOR CABLE AND GROUND WIRE
• CHECK THAT BURNER FLAME COVERS ALL ELECTRODES
• IF CHECKS ARE OKAY, REPLACE IGNITION CONTROL
YES
SYSTEM RUNS UNTIL CALL FOR HEAT ENDS
NO
• NOTE: IF IGNITION CONTROL GOES INTO LOCKOUT, RESET SYSTEM
• CHECK CONTINUITY OF SENSOR CABLE AND GROUND WIRE
• NOTE: IF GROUND IS POOR OR ERRATIC, SHUTDOWNS MAY OCCUR OCCASIONALLY, EVEN THOUGH OPERATION IS NORMAL AT THE TIME OF CHECKOUT IF CHECKS ARE OKAY, REPACE IGNITION CONTROL
YES
CALL FOR HEAT ENDS: SYSTEM SHUTS OFF
NO
• CHECK FOR PROPER TEMPERATURE CONTROLLER OPERATIONS
• REMOVE VALVE LEAD AT IGNITION CONTROL, IF VALVE CLOSES, RECHECK TEMPERATURE CONTROLLER AND WIR ING, IF NOT, REPLACE GAS CONTROL.OR
YES
TROUBLESHOOTING ENDS

17. SPARK IGNITION CIRCUIT:

The step-up transformer in the ignition control provides spark ignition at 30,000 volts (open circuit). To check the spark ignition circuit, proceed as follows.

1 Shut off gas supply to the gas control
2 Disconnect the ignition cable at the ignition control stud terminal to isolate the circuit from the spark ignitor or ignitor/sensor
3 Prepare a short jumper lead, using heavily insulated wire such as ignition cable

CAUTION

In the next step, DO NOT allow fingers to touch either the stripped end of the jumper or the stud terminal. This is a very high voltage circuit and electrical shock can result.

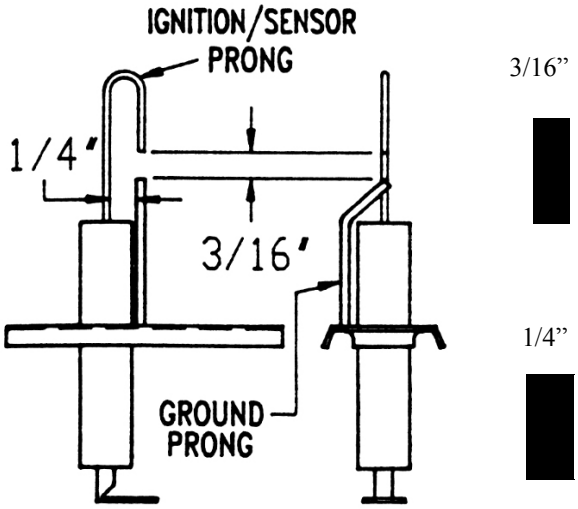
1 Perform this test immediately upon energizing the system before the ignition control goes into safety lockout and interrupts the spark circuit. Touch one end of the jumper firmly to the ignition control GND terminal. (DO NOT remove the existing ground lead.) Slowly move the other end of the jumper wire toward the stud terminal on the ignition control to establish a spark. Pull the wire away from the stud and note the length of gap at which spark discontinues.
2 A spark length of 1/8 in. (3mm) or more indicates satisfactory voltage output. If no arc can be established, or the maximum spark is less than 1/8 in. (3mm), and power to the ignition control input terminals was proved, replace the ignition control.

SPARK IGNITER SET UP

Please use the following diagram for checking the Igniter gap.
If the gap is incorrect all adjustments should be made with the **GROUND PRONG/PIN ONLY!**

DO NOT BEND THE IGNITER PRONG!!!!

The black bars located at the lower right corner can be used as a guide for adjustment.



18. START-UP SHEET

START UP SHEET
INSTALLATION SET-UP
AS PER IOM MANUAL AND LOCAL CODES

CONTRACTOR NAME: .....

ADDRESS:.....

.....

CITY:.....

PHONE:.....

CELL: .....

JOB SITE.....

MODEL NUMBER:.....

SERIAL NUMBER: .....

SCHWANK EQUIPMENT HAS BEEN FACTORY FIRED AND TESTED BEFORE DELIVERY, NEVERTHELESS IT IS NOT A PLUG IN APPLIANCE..... IT DOES REQUIRE START-UP AND FIELD ADJUSTMENTS

TO ENSURE THAT SITE CONDITIONS ARE COMPATIBLE WITH THIS HEATER, AND TO ALLEVIATE NUISANCE CALL BACKS FOR THE CONTRACTOR, THE FOLLOWING START-UP NEEDS TO BE COMPLETED BY THE LICENSED GAS INSTALLER.

IF A CONTRACTOR IS CALLING FOR TECHNICAL SUPPORT, THE FOLLOWING INFORMATION WILL BE REQUIRED FROM HIS COMPLETED START-UP SHEET.

TO BE COMPLETED BY THE LICENSED INSTALLER:

LOW INTENSITY START-UP

TYPE OF GAS:	NG ☐	LP ☐
DOES BUILDING HAVE A NEGATIVE CONDITION:	YES ☐	NO ☐
IS THIS A HIGH ALTITUDE AREA - (OVER 2000 FT ABOVE SEA LEVEL)	YES ☐	NO ☐
IF HIGH ALTITUDE WHAT IS THE ACTUAL ALTITUDE ABOVE SEA LEVEL	☐	FEET
DOES ENVIRONMENT REQUIRE FRESH AIR TO BURNER	YES ☐	NO ☐
IS HEATER EXPOSED TO CHEMICAL OR CORROSIVE ATMOSPHERE:	YES ☐	NO ☐
MINIMUM CLEARANCES ARE AS RECOMMENDED IN TABLE 3	YES ☐	NO ☐
WILL HEATER BE AFFECTED BY OVERHEAD CRANES / VIBRATION	YES ☐	NO ☐
IS GAS SUPPLY LINE ADEQUATELY SIZED FOR SYSTEM VOLUME	YES ☐	NO ☐
GAS LINES AND BRANCHES HAVE BEEN PURGED OF AIR:	YES ☐	NO ☐
THIS HEATER WAS FIELD TEST FIRED WITHOUT ANY MALFUNCTION:	YES ☐	NO ☐
INLET GAS SUPPLY PRESSURE WITH HEATER OPERATING :	☐	WC"
GAS VALVE OUTLET (Manifold) PRESSURE WITH HEATER OPERATING:	☐	WC"
WHAT IS THE LINE VOLTAGE READING AT THE HEATER	☐	VOLTS
WHAT IS THE VOLTAGE READING AT THE IGNITION MODULE	☐	VOLTS
IS IT CONTROLLED BY A THERMOSTAT	YES ☐	NO ☐
IS THE THERMOSTAT STRATEGICALY LOCATED	YES ☐	NO ☐
WHAT IS THE TOTAL LENGTH OF THERMOSTAT WIRE	☐	FEET
WHAT IS THE GAUGE OF THE THERMOSTAT WIRE	☐	GAUGE
WHAT IS THE LENGTH OF THE HEATER (10ft per Tube)	☐	FEET
WHAT TOTAL LENGTH IS THE VENTING SYSTEM (add 10ft for each bend)	☐	FEET
WHAT LENGTH IS THE COMBUSTION AIR SUPPLY(add 10ft for each bend)	☐	FEET
IF REQUIRED....WHAT IS THE LENGTH OF THE TURBULATOR(S)	☐	FEET
IF INSTALLED....IS TURBULATOR AT VENT END OF SYTEM	YES ☐	NO ☐
DOES THE HEATER HAVE GOOD ELECTRICAL GROUNDING	YES ☐	NO ☐

19. OPTIONAL COMPONENTS: FOR SCHWANK STR SERIES TUBE HEATERS

Flue Vent Terminals

4" wall horizontal
6" wall horizontal

JA-0528-XX
JA-0529-XX

Flue Vent Terminals

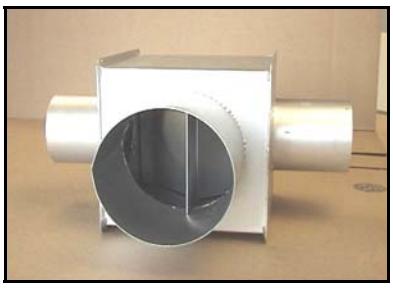
4" roof vertical
6" roof vertical

JA-0530-XX
JA-0531-XX

Torctite Coupler (c/w 2 bolts)

JA-0516-SW

Vent Tee 4" X 4" X 6"
(2 couplers optional)



JA- 0514-XX

90 degree Aluminized Steel Elbow Kit*
(*Kit includes: elbow, coupler, and two end plate hangers)

JS-0508-SW

180 degree Aluminized Steel Elbow Kit*
(*Kit includes: elbow, coupler, and two end plate hangers)

JS-0513-SW

10' Tube & Reflector Extension Kit
(1-10' Steel Tube, l-l0'Reflector, 2 Wire Hangers, 1 Coupler, 1 Reflector Stabilizer, 1 Reflector Slide)

TS-1010-CX

Hanging Chain - (box of 50ft)

JL-0798-XX

Touch Up Paint - High Temp,
369g aerosol can

JA-0587-XX

Tube Protection Screen -5 feet long

JA-0780-XX

Side Reflector Extension -
l0” deep l0ft long Each

JS-0509-XX-P

Schwank
infra-red gas heaters
ISO 9001:2000 REGISTERED

LIMITED WARRANTY CERTIFICATE

FOR GAS-FIRED INFRA-RED LOW INTENSITY TUBE TYPE HEATERS : STSp, STSpWP, STR, STSV SERIES

The Manufacturer warrants that this product is free from defects in material or workmanship under normal use and service subject to the terms of this document.

THREE YEAR WARRANTY

Subject to the conditions and limitations stated herein, during the term of this limited warranty, we will repair or replace (at our option) any component part of the heater as defined below, which the Manufacturer's examination determines to be defective in workmanship or material for a period of three years (3 years) from the date of installation, unless otherwise specified below. This warranty applies to the heater's original owner, and subsequent transferees and only if the unit is installed and operated in accordance with the printed instructions accompanying the unit and in compliance with all applicable installation, building codes and good trade

TEN YEAR WARRANTY

The Manufacturer warrants the burner sub-assembly comprising of ceramic and immediate metal tubing, and the radiating tubes (excluding couplings) for a period of ten years. (10 years)

WHAT IS NOT COVERED

This warranty does not cover heating products improperly installed, misused, exposed to or damaged by negligence, accident, corrosive or contaminating atmosphere, water, excessive thermal shock, impact, abrasion, alteration or operation contrary to the owner's manual or if the serial number has been altered, defaced or removed. This warranty shall not apply if the input to the heating product exceeds by more than 2% of the rated input on the rating plate. The Manufacturer shall not be responsible for any expenses, including service, labor, diagnosis, analysis, material or transportation charges incurred during removal or reinstallation of this product. All labor or service charges shall be paid by the owner. The Manufacturer shall not be liable for any default or delay in performance by its warranty caused by any contingency beyond its control, including war, government restrictions, or restraints, strikes, fire, flood, acts of God, or short or reduced supply of raw materials or products.

WARRANTY PROCEDURE

To establish the installation date for any purpose under this Limited Warranty, you must retain the original records that can establish the installation date of your unit. If you do not provide such documents, the start date of the term of this Limited Warranty will be based upon the date of unit manufacture, plus thirty (30) days. Failure to maintain the equipment through regular annual service maintenance by a qualified service technician shall void the warranty.

LIMITATIONS AND EXCLUSIONS

This document contains all warranties made by the Manufacturer and may not be varied, altered or extended by any person. There are no promises, or agreements extending from the Manufacture other than the statements contained herein. THIS WARRANTY IS IN LIEU OF ALL WARRANTIES EXPRESSED OR IMPLIED, TO THE EXTENT AUTHORIZED BY THE LAWS OF THE JURISDICTION, INCLUDING SPECIFICALLY THE WARRANTIES OR MERCHANTIBILITY OF FITNESS FOR A PARTICULAR PURPOSE.

It is understood and agreed that the Manufacturer's obligation hereunder is limited to repairing or replacing parts determined to be defective as stated above. In no event shall the Manufacturer be responsible for any alleged personal injuries or other special, incidental or consequential damages. As to property damages, contract, tort or other claim the Manufacturer's responsibility shall not exceed the purchase priced paid for the product.

All replacement parts will be warranted for the unused portion of the warranty coverage period remaining on the applicable unit.

Some Authorities do not allow certain warranty exclusions or limitations on how long a warranty lasts or the exclusions or limitations of incidental or consequential damages. In such cases, the above limitations or exclusions may not apply to you and are not intended to do so where prohibited by law. This warranty gives you specific legal rights. You may also have other rights which vary by each jurisdiction.

SCHWANK INC. 5285 BRADCO BLVD. MISSISSAUGA, ON, L4W 2A6 Ph: 905-712-4766