

SV Series - 4" Tube Heater Installation, Operation, Maintenance and Parts Manual*

⚠ WARNING: This heater must be installed and serviced by trained gas installation and service personnel only! Improper installation, adjustment, alteration, service or maintenance can cause property damage, injury or death. Read the installation, operating and maintenance instructions thoroughly before installing or servicing this equipment. Protect yourself and others by observing all safety information. Retain instructions for future reference.

SV Series

*For complete installation instructions, see the General Manual piece was inserted within.
Additional literature on this and other products are available at www.reverberray.com.

Project: _____ Date: _____
Location: _____
City: _____ State: _____ Zip: _____
Contractor: _____
Engineer: _____
Local Representative: _____
Customer Name: _____
Address: _____
City: _____ State: _____ Zip: _____
Phone #: _____ Date of Installation: _____
Notes: _____

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- Warranty 1. Register online at www.reverberray.com/warranty
registration 2. Complete the information above and fax to Detroit Radiant Products Co.
options: 3. Complete the information above and mail to Detroit Radiant Products Co.

Models

Qty.	Model #	Gas Type (circle one)	BTU's	Length	U-Tube Length	Weight	Typical Mount Height	Combustion Chamber	Radiant Emitter Tube	"Type" Tube Pkg #1	"Type" Tube Pkg. #2	Baffle Pieces	Allowable Vent Length	Cert.
	SV-20-50	N or LP	50,000	22'-4"	13'-0"	140 #	9' - 14'	Aluminized	Aluminized	20-4 Alum	N/A	5	25	CSA
	SV-20-60	N or LP	60,000	22'-4"	13'-0"	140 #	10' - 15'	Aluminized	Aluminized	20-4 Alum	N/A	5	25	CSA
	SV-20-75	N or LP	75,000	22'-4"	13'-0"	140 #	11' - 18'	Aluminized	Aluminized	20-4 Alum	N/A	5	30	CSA
	SV-20-100	N or LP	100,000	22'-4"	13'-0"	140 #	12' - 20'	Aluminized	Aluminized	20-4 Alum	N/A	5	35	CSA
	SV-30-50	N or LP	50,000	32'-0"	**17'-10"	140 #	10' - 15'	Aluminized	Aluminized	30-4 Alum	N/A	4	20	CSA
	SV-30-60	N or LP	60,000	32'-0"	**17'-10"	180 #	11' - 18'	Aluminized	Aluminized	30-4 Alum	N/A	4	20	CSA
	SV-30-75	N or LP	75,000	32'-0"	**17'-10"	180 #	12' - 20'	Aluminized	Aluminized	30-4 Alum	N/A	4	25	CSA
	SV-30-100	N or LP	100,000	32'-0"	**17'-10"	180 #	13' - 23'	Aluminized	Aluminized	30-4 Alum	N/A	5	30	CSA
	SV-30-125	N or LP	125,000	32'-0"	**17'-10"	180 #	14' - 25'	Aluminized	Aluminized	30-4 Alum	N/A	5	35	CSA
	SV-40-50	N or LP	50,000	41'-8"	22'-8"	210 #	11' - 18'	Aluminized	Aluminized	40-4 Alum	N/A	2	20	CSA
	SV-40-60	N or LP	60,000	41'-8"	22'-8"	210 #	11' - 18'	Aluminized	Aluminized	40-4 Alum	N/A	2	20	CSA
	SV-40-75	N or LP	75,000	41'-8"	22'-8"	210 #	12' - 20'	Aluminized	Aluminized	40-4 Alum	N/A	2	25	CSA
	SV-40-100	N or LP	100,000	41'-8"	22'-8"	210 #	13' - 23'	Aluminized	Aluminized	40-4 Alum	N/A	4	25	CSA
	SV-40-125	N or LP	125,000	41'-8"	22'-8"	210 #	14' - 25'	Aluminized	Aluminized	40-4 Alum	N/A	4	30	CSA
	SV-40-150	N or LP	150,000	41'-8"	22'-8"	210 #	15' - 27'	Titanium	Aluminized	40-4 Titan	N/A	4	35	CSA
	SV-40-175	N or LP	175,000	41'-8"	22'-8"	210 #	16' - 30'	Titanium	Aluminized	40-4 Titan	N/A	4	35	CSA
	SV-50-100	N or LP	100,000	51'-4"	**27'-6"	255 #	15' - 27'	Aluminized	Aluminized	40-4 Alum	10-4 Alum	2	25	CSA
	SV-50-125	N or LP	125,000	51'-4"	**27'-6"	255 #	15' - 27'	Aluminized	Aluminized	40-4 Alum	10-4 Alum	4	30	CSA
	SV-50-150	N or LP	150,000	51'-4"	**27'-6"	255 #	16' - 30'	Titanium	Aluminized	40-4 Titan	10-4 Alum	4	30	CSA
	SV-50-175	N or LP	175,000	51'-4"	**27'-6"	255 #	17' - 35'	Titanium	Aluminized	40-4 Titan	10-4 Alum	2	35	CSA
	SV-50-200	N or LP	200,000	51'-4"	**27'-6"	255 #	18' - 40'	Titanium	Aluminized	40-4 Titan	10-4 Alum	2	35	CSA
	SV-60-125	N or LP	125,000	61'-0"	32'-4"	285 #	16' - 30'	Aluminized	Aluminized	40-4 Alum	20-4 Alum	2	25	CSA
	SV-60-150	N or LP	150,000	61'-0"	32'-4"	285 #	17' - 35'	Titanium	Aluminized	40-4 Titan	20-4 Alum	2	25	CSA
	SV-60-175	N or LP	175,000	61'-0"	32'-4"	285 #	17' - 35'	Titanium	Aluminized	40-4 Titan	20-4 Alum	2	30	CSA
	SV-60-200	N or LP	200,000	61'-0"	32'-4"	285 #	18' - 40'	Titanium	Aluminized	40-4 Titan	20-4 Alum	2	30	CSA
	SV-70-175	N or LP	175,000	70'-8"	**37'-2"	320 #	19' - 42'	Titanium	Aluminized	40-4 Titan	30-4 Alum	2	25	CSA
	SV-70-200	N or LP	200,000	70'-8"	**37'-2"	320 #	19' - 42'	Titanium	Aluminized	40-4 Titan	30-4 Alum	2	30	CSA
	SV-80-200	N or LP	200,000	80'-4"	42'-0"	350 #	20' - 45'	Titanium	Aluminized	40-4 Titan	40-4 Alum	2	25	CSA

** Models require 5EA-SUB accessory package.



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www.reverberray.com



SV Series

▲ WARNING!

NOT FOR RESIDENTIAL USE!

Do not use in the home, sleeping quarters, attached garages, etc.

▲ WARNING!

This heater must be installed and serviced by trained gas installation and service personnel only. Read and understand these instructions thoroughly before attempting to install, operate or service this heater. Failure to comply could result in personal injury, asphyxiation, death, fire, and/or property damage. Retain these instructions for future reference.

▲ WARNING!

This is not an explosion-proof heater. Where there is the possibility of exposure to flammable vapors, consult the local fire marshal, the fire insurance carrier and other authorities for approval of the proposed installation.

▲ WARNING!

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 thermostats or in the absence of such thermostats in a conspicuous location.

▲ WARNING!

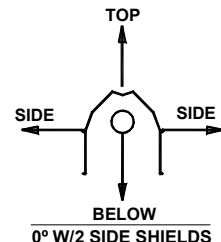
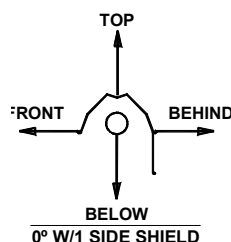
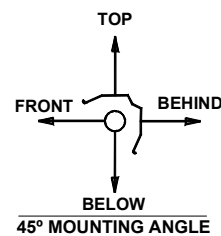
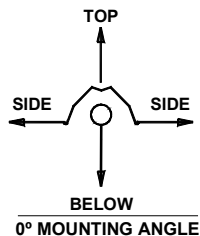
Failure to comply with the stated clearances to combustibles could result in personal injury, death and/or property damage.

▲ WARNING!

This heater should be installed so that the minimum clearances to vehicles, as marked on the heater, will be maintained. If vehicle lifts are present, ensure that these clearances will be maintained from the highest raised vehicle.

CLEARANCES TO COMBUSTIBLES (IN.)

MODEL NO.	MOUNTING ANGLE	SIDE		TOP	BELOW
		FRONT	BEHIND		
SV (20,30,40)-50 [N,P]	0°	9	9	6	47
	45°	39	8	10	47
	0°	29	8	6	47
	0°	9	9	6	47
	0°	7	7	6	30
SV (20,30,40)-60 [N,P]	0°	9	9	6	47
	45°	39	8	10	47
	0°	29	8	6	47
	0°	9	9	6	47
	0°	7	7	6	30
SV (20,30,40)-75 [N,P]	0°	9	9	6	60
	45°	39	8	10	60
	0°	29	8	6	60
	0°	9	9	6	60
	0°	7	7	6	30
SV (20,30,40,50)-100 [N,P]	0°	14	14	6	66
	45°	39	8	10	66
	0°	29	8	6	66
	0°	16	16	6	66
	0°	7	7	6	30
SV (30,40,50,60)-125 [N,P]	0°	20	20	6	76
	45°	58	8	10	76
	0°	42	8	6	76
	0°	20	20	6	76
	0°	7	7	6	30
SV (40,50,60)-150 [N,P]	0°	24	24	6	81
	45°	58	8	10	81
	0°	42	8	6	81
	0°	23	23	6	81
	0°	11	11	6	44
SV (40,50,60,70)-175 [N,P]	0°	34	34	6	92
	45°	63	8	10	92
	0°	50	8	6	92
	0°	30	30	6	92
	0°	11	11	6	44
SV (50,60,70,80)-200 [N,P]	0°	41	41	6	94
	45°	63	8	10	94
	0°	54	8	6	94
	0°	30	30	6	94
	0°	11	11	6	44



SV Series Mechanical Instructions

This supplement is designed to address the specifics of the SV Series - See page 12 for specific product features.

Installation:

Be sure to identify the aluminized (50 - 125 MBTU/H) or titanium (150 - 200 MBTU/H) combustion chamber and place as the first tube section. **Note:** The combustion chamber is labeled with a sticker.

The exhauster control assembly (fig. 1) is mounted to the last exchanger of the tube heater. Be sure the clamp is tightly secured so there is no chance for the exhauster assembly to become loose. See figure 1 for complete installation details.

The discharge on the exhauster assembly (fig. 1) can be pointed in any direction except for downward. Venting is attached to the round discharge of the assembly. Follow the guidelines under the venting section of the generic manual.

If assembling this heater as a U-configuration, be sure to plan ahead to make sure the exhauster assembly and the burner control box do not interfere with each other. If looking at the U-configuration from behind, the burner control box should be on the left and the exhauster assembly should be on the right. See figure 2 for details.

Electrical:

The exhauster assembly (fig. 1) is equipped with a three prong power cord which is plugged into a 120V outlet. The appliance will be turned on and off through the outlet. The outlet is controlled by a thermostat or switch.

There is low voltage output from the exhauster assembly to the burner control box assembly. Use a minimum of 16ga. multistrand wire. This low voltage wire is field supplied. Refer to field wiring schematics on pages 6 and 7 of this manual.

The low voltage wire that connects the exhauster assembly to the burner control box must be mounted a minimum of 18 inches from the reflector. The wire must be installed outside of the clearance to combustibles zone. The wire must allow for several inches of heater expansion.

NOTE: The 24V wire is not where the thermostat is tied into. The thermostat switches the 120V supply voltage.

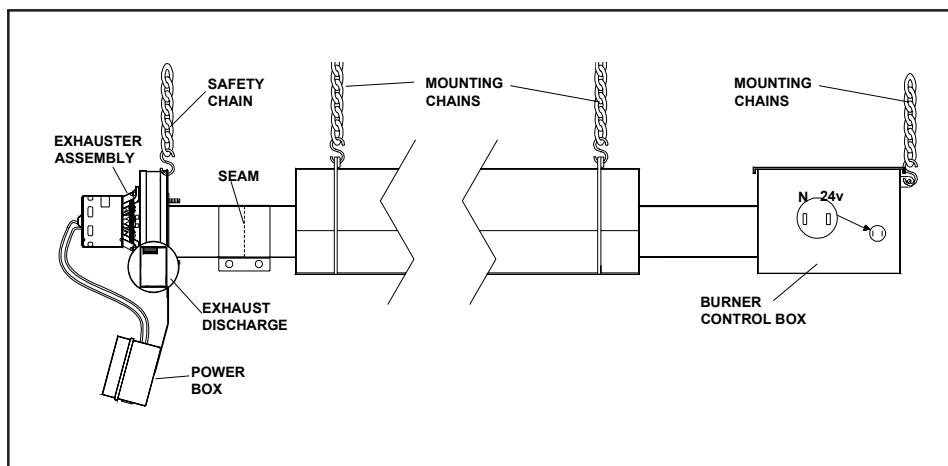


Figure 1 - SV Exhauster Control Assembly Mounting Detail.

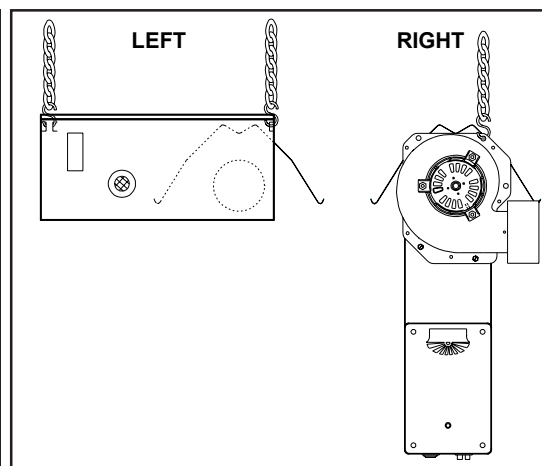


Figure 2 - SV Exhauster End View.



SV Series

Electrical Requirements

- ◆ 120 Volt - 60 Hz GRD, 3-wire to power box.
- ◆ 25V connection from power box to burner control box.
- ◆ Starting Current 3.0 Amps
- ◆ Running Current 2.0 Amps
- ◆ Installations utilizing a 24-volt thermostat will require a relay transformer (part# R8285B).

Gas Requirements

- ◆ Manifold Pressure
 - Nat. 3.5" • LP. 10.0"
- ◆ Minimum Inlet Pressure
 - Nat. 5.5" • LP. 11.0"
- ◆ Maximum Inlet Pressure
 - Nat. 14.0" • LP. 14.0"

Ventilation Requirements

- ◆ Refer to the chart on the front cover for allowable vent lengths.
- ◆ For unvented operation, there must be a positive air displacement of at least 4.0 CFM per 1000 BTU/H for natural gas or 4.5 CFM per 1000 BTU/H for LP gas. WVE-4 termination cap must also be used.
- ◆ Consult the generic supplement for additional venting instructions and unvented operation.

Approved & Required Vent Caps		
MBTU/H Model	4" Single Vent	6" Common Vent
50 - 225 Sidewall	4-DSK SK-4	6-DSK SWD-6
50 - 225 Roof	RTVP-4	RTVP-6

Combustion Air Requirements*

AIR INTAKE DUCT CHART		
MODEL	AIR INTAKE DUCT SIZE (IN.)	MAX. INTAKE LENGTH (FT.)
ALL MODELS	4	30
	5	45
	6	75

*Consult the generic supplement for all other combustion air requirements.

Theory of Operation

Starting Circuit

When voltage is applied to L1 and L2, a circuit is completed from L1 via the exhaust fan and transformer to L2 at the exhaust assembly.

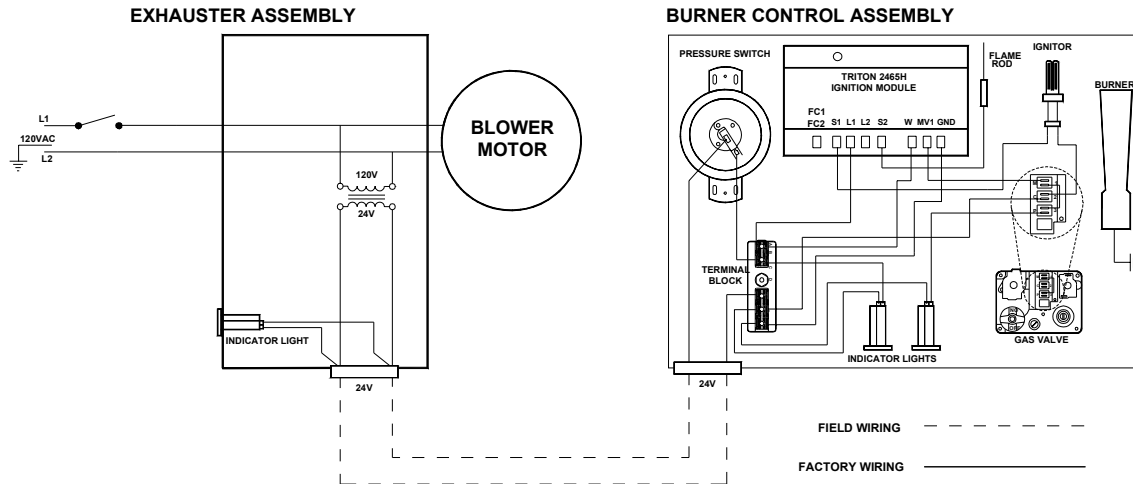
At the burner control box, negative air pressure generated by the exhaust fan will cause the normally open differential pressure switch to close. A low voltage circuit is completed from secondary side of the transformer to the control module. There is a five second delay, then the hot surface ignitor is powered. After the ignitor has been powered for 5 seconds, the control causes the gas valve to open and initiates the ignition trial. Power to the glo-bar is shut off during the last two or three seconds of the ignition trial.

Running Circuit

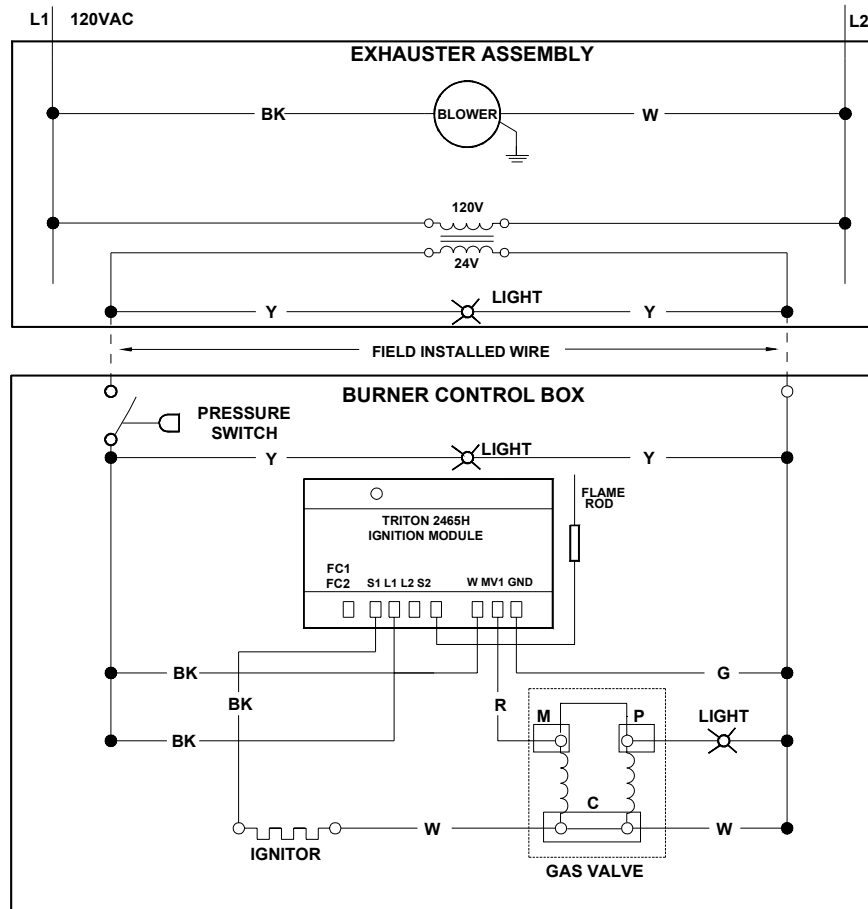
After ignition, the flame rod monitors the flame. As long as a flame is present, the valve is held open. If the flame is lost, the control acts to close the valve within one second, and a new trial sequence identical to that at start-up is initiated. If proof of flame is not established within 15 seconds, the unit will attempt ignition two more times and then lock out. If lockout occurs, the control can be reset by briefly interrupting the power source.

Internal Wiring Diagrams

BLOCK WIRING DIAGRAM

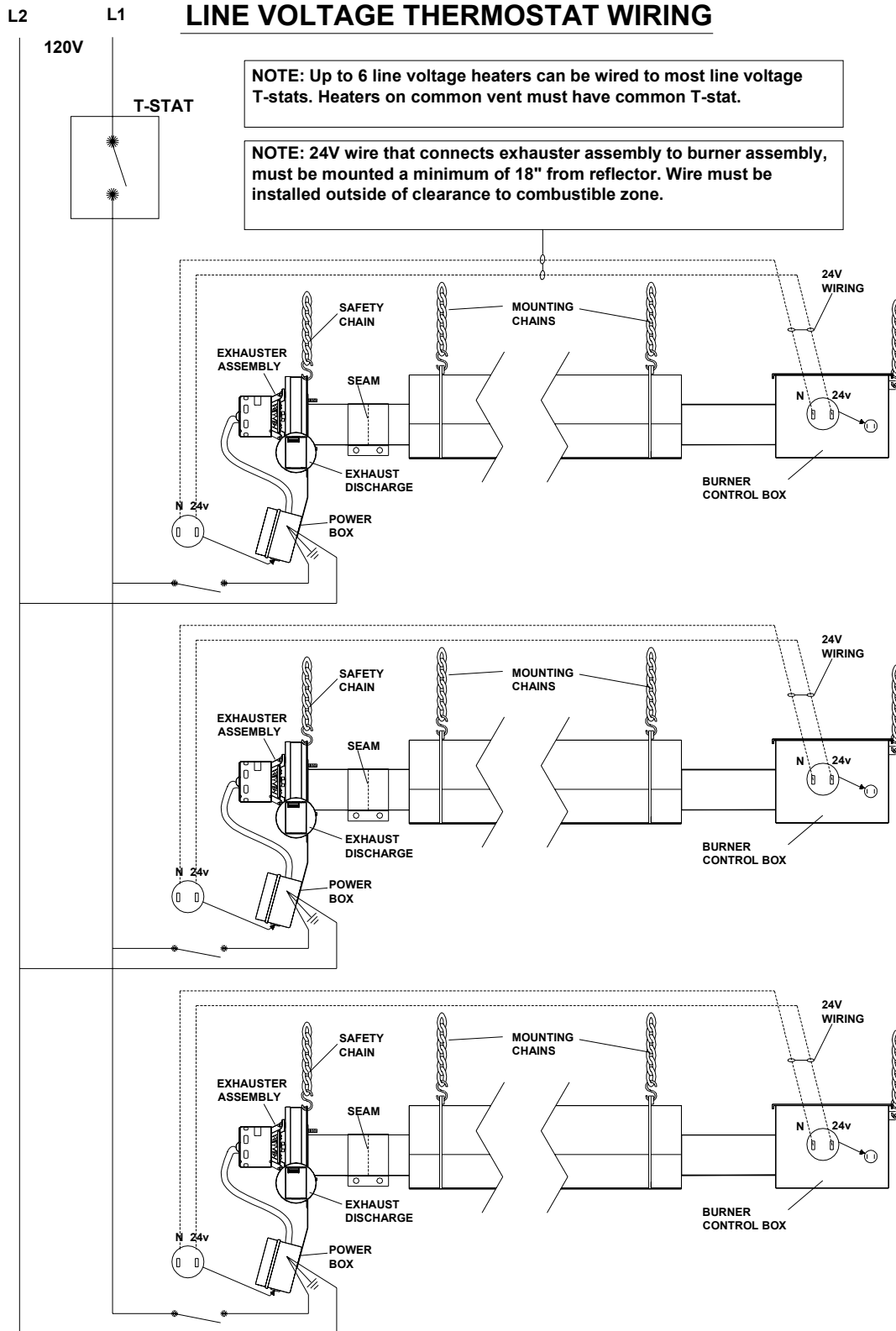


LADDER WIRING DIAGRAM



SV Series

Field Wiring Diagrams with Line Voltage Thermostat



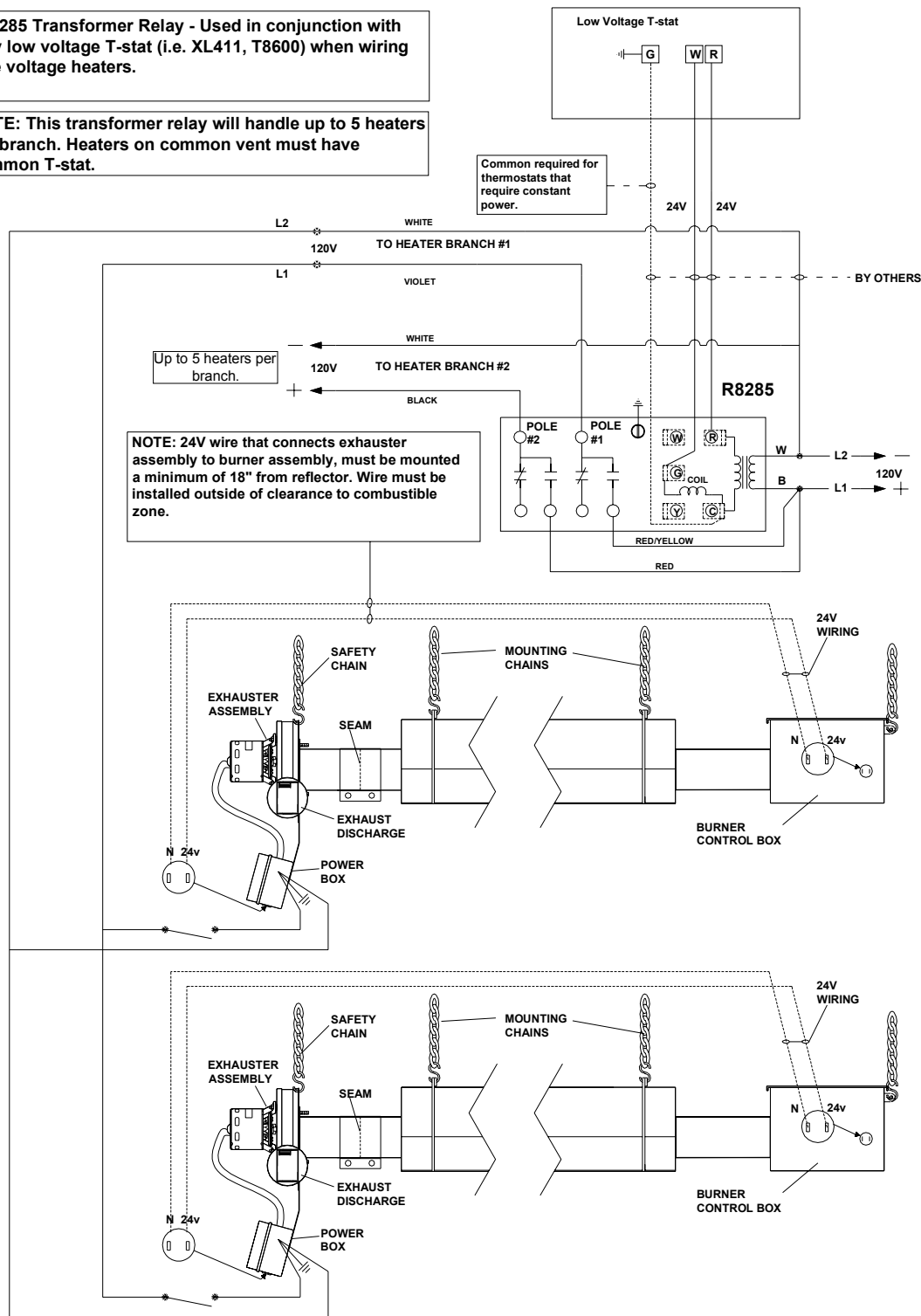
Field Wiring Diagrams with Low Voltage Thermostat

LOW VOLTAGE THERMOSTAT WIRING

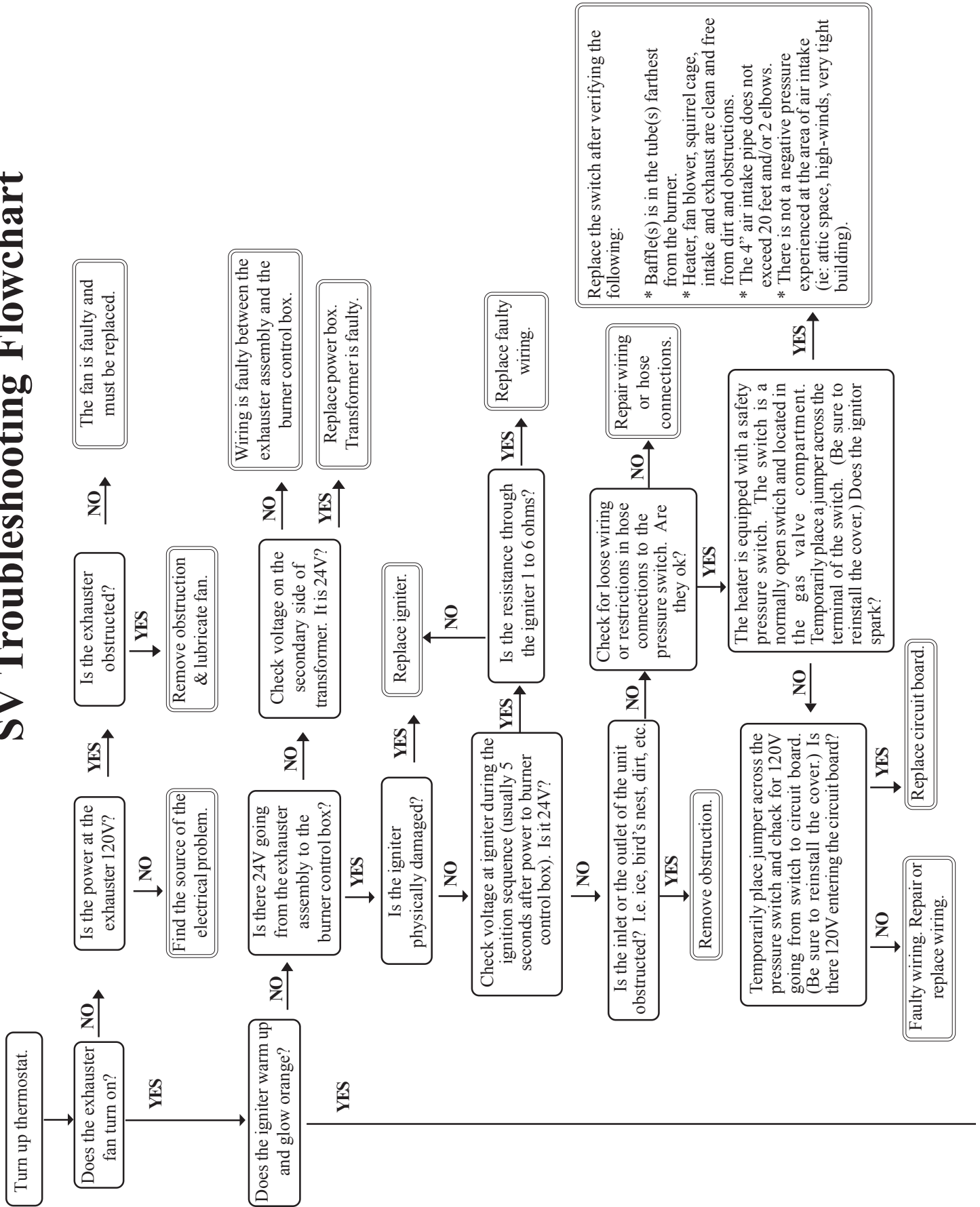
R 8285 Transformer Relay - Used in conjunction with any low voltage T-stat (i.e. XL411, T8600) when wiring line voltage heaters.

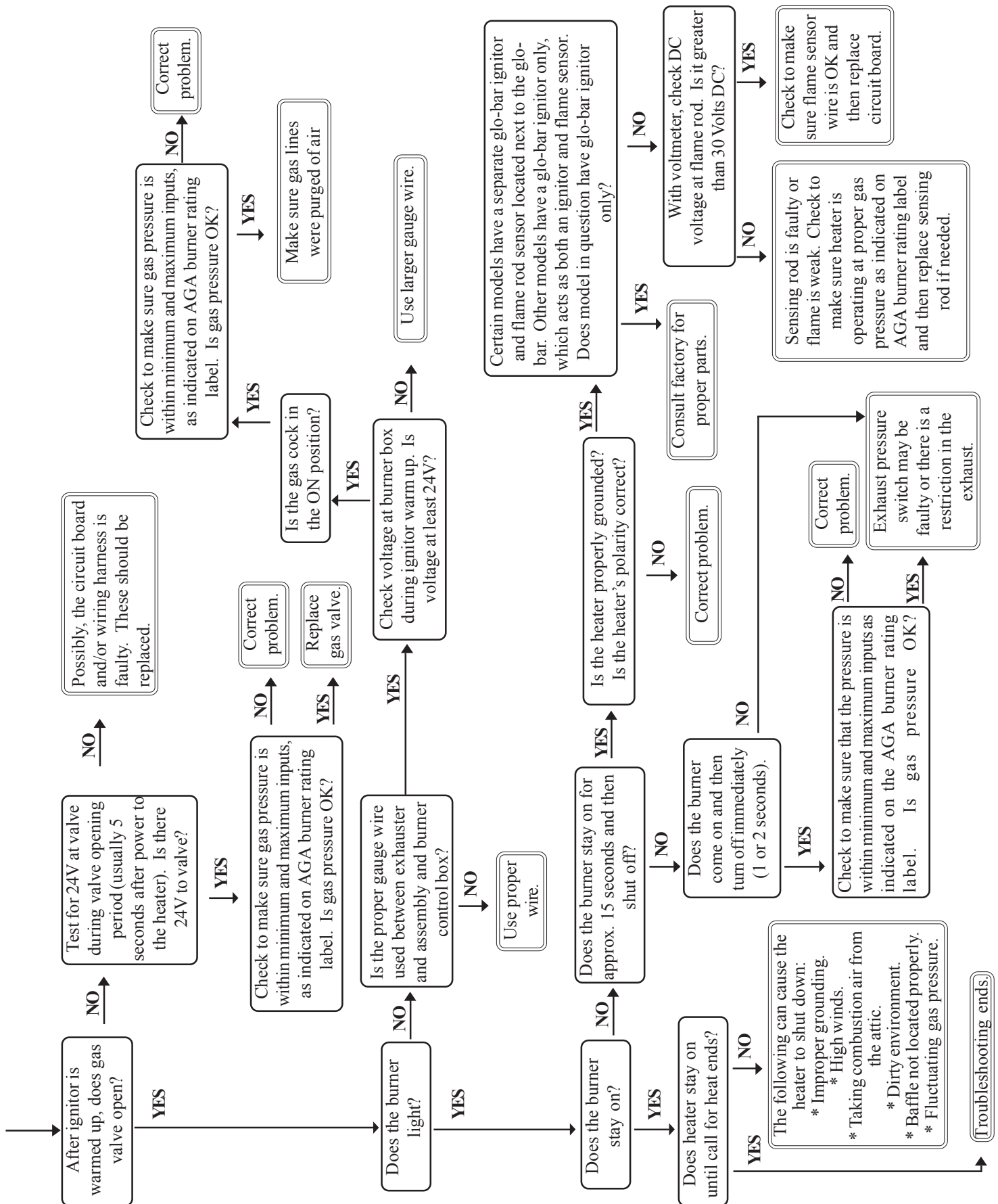
NOTE: This transformer relay will handle up to 5 heaters per branch. Heaters on common vent must have common T-stat.

Common required for thermostats that require constant power.



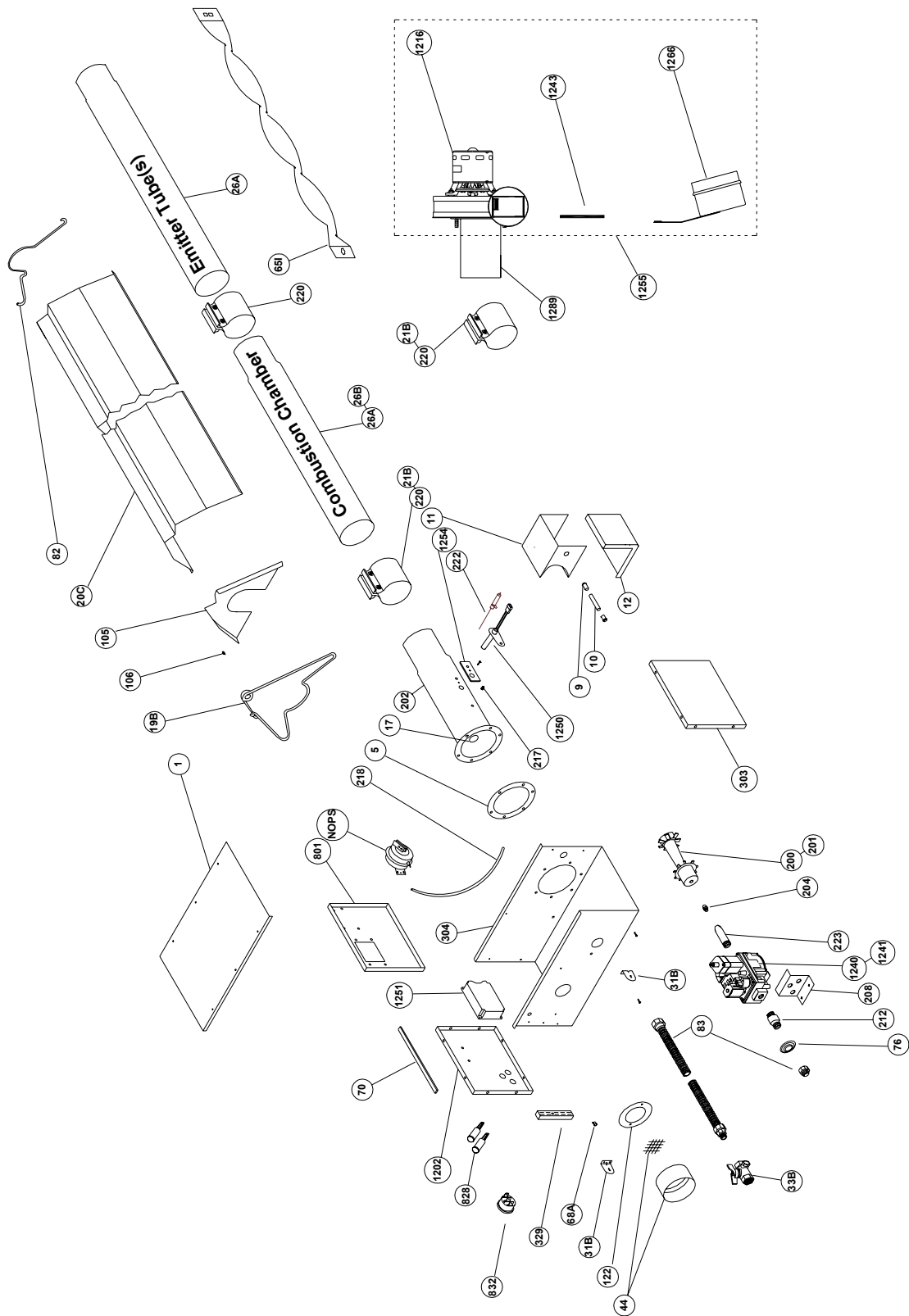
SV Troubleshooting Flowchart





SV Series

Parts Breakdown



Basic Parts List

SV SERIES PARTS LISTING

TP#	ITEM	TP#	ITEM
TP-1	CONTROL BOX COVER	TP-218	EXHAUST PRESSURE TUBE (VINYL)
TP-5	FLANGE GASKET	TP-220	STAIN. STL. TUBE CLAMP (175 & 225 MBTU/H)
TP-9	CONDUIT COUPLING	TP-222	FLAME ROD
TP-10	CONDUIT 4" X 1/2"	TP-222A	FLAME ROD WIRE
TP-11	IGNITOR BOX	TP-223	GAS MANIFOLD
TP-12	IGNITOR BOX COVER	TP-303	RIGHT END PANEL
TP-17	SIGHT GLASS KIT	TP-304	CONTROL BOX
TP-19B	4" TUBE & REFLECTOR HANGER W/ SPRING CLIP	TP-329	1/4" NEUTRAL TERMINAL BLOCK
TP-20C	120" REFLECTOR	TP-801	CENTER PANEL
TP-21B	TUBE CLAMP	TP-828	OPERATIONAL INDICATOR LIGHTS
TP-26A	10 FT. RADIANT TUBE STRAIGHT	TP-832	THERMOSTAT TERMINAL STRIP
TP-26B	10 FT. RADIANT TUBE STRAIGHT (AL-TI)	TP-1202	SV LEFT END PANEL
TP-31B	CONTROL BOX BRACKET	TP-1216	EXHAUSTER PUMP
TP-33B	1/2" GAS COCK	TP-1240	24V GAS VALVE (NATURAL)
TP-44	AIR ORIFICE W/SCREEN - CONSULT FACTORY	TP-1241	24V GAS VALVE (PROPANE)
TP-57A	1/4" PRESSURE TUBE - CONSULT FACTORY	TP-1243	RESTRICTOR PLATE
TP-65I	33" INTERLOCKING BAFFLE	TP-1250	24V IGNITER
TP-68A	STRAIN RELIEF BUSHING	TP-1251	TRITON 2465H CIRCUIT BOARD
TP-70	CONTROL BOX COVER GASKET (PER FOOT**)	TP-1254	IGNITER GASKET
TP-76	RUBBER GROMMET	TP-1255	FULL EXHAUSTER ASSEMBLY - (TP-1215, TP-1266, TP-1243)
TP-82	REFLECTOR CENTER SUPPORT	TP-1266	POWER BOX ASSEMBLY
TP-83	STAINLESS STEEL FLEX CONNECTOR		Power Box Bracket
TP-105	REFLECTOR END CAP		Mounting Tube
TP-106	REFLECTOR CLIP		Power Box Light
TP-122	GASKET FOR AIR ORIFICE & AIR COLLAR		Transformer
TP-200	BURNER (50 TO 100MBTU/H LP GAS)	TP-1289	EXHAUSTER MOUNTING TUBE
TP-201	BURNER (125 TO 225 MBTU/H NAT OR LP GAS)	TP-NOPS	NORM. OPEN DIFFERENTIAL PRESSURE SWITCHES
TP-202	16" BURNER TUBE WITH FLANGE	(TP-61B)	N.O. Differential Pressure Switch (50 TO 75MBTU/H)
TP-204	GAS ORIFICE - CONSULT FACTORY	(TP-61E)	N.O. Differential Pressure Switch (100 TO 125MBTU/H)
TP-208	"Z" MOUNTING BRACKET	(TP-1261A)	N.O. Differential Pressure Switch (150 TO 175MBTU/H)
TP-212	1/2" X 3" PIPE NIPPLE	(TP-1061A)	N.O. Differential Pressure Switch (200 TO 225MBTU/H)
TP-217	PRESSURE BARB FITTING		

**6' TOTAL NEEDED TO COVER OUTER EDGES OF A BURNER BOX.



Kit Contents & Product Features

Kit contents for the SV Series are shown below. Reference the proper column for your particular models length.

FILLED BY:		SV SERIES KIT CONTENTS						
TP#	DESCRIPTION	20 FOOT	30 FOOT	40 FOOT	50 FOOT	60 FOOT	70 FOOT	80 FOOT
TP-19B	4" Hangers	3	4	5	6	7	8	9
TP-21B	4" Tube Clamps	3	4	5	6	7	8	9
TP-33B	1/2" Gas Cock	1	1	1	1	1	1	1
TP-82	4" Refl. Cntr. Sprt.	2	3	4	5	6	7	8
TP-83	24" SS Flex Line	1	1	1	1	1	1	1
TP-105	Refl. End caps	2	2	2	2	2	2	2
TP-106	Refl. End cap Clips	8	8	8	8	8	8	8
THCS	60" Safety Chain	1	1	1	1	1	1	1
IOM	Install / Op Manual	1	1	1	1	1	1	1

 4" Hangers TP-19B	 4" Butt Clamp TP-21B	 1/2" Gas Cock TP-33B	 Reflector End cap Clips TP-106	 Reflector End caps TP-105	 24" SS Flex Connect TP-83
 4" Reflector Center Support TP-82		 60" Safety Chain (THCS)		 General IOM (LIOGT) AND SV Series Insert (LIOSV)	

Product Features

APPROVALS

- CSA.
- Commercial/Industrial Approval.

BURNER

- Sight glass for burner inspection.
- 4" male duct air intake.
- Totally enclosed components.
- Coated enameled steel.

GAS CONNECTION

- 1/2" gas cock attached.
- Male pipe nipple.

CONTROLS

- 100% safety shut off.
- Potted circuit board.
- Differential pressure switch.
- Silicon carbide hot surface igniter.
- Flame rod sensing.
- Pre-purge controls.

EMITTER & COMBUSTION TUBES

- 16ga. 4" O.D. coated aluminized steel radiant tubes.
- All tubes coated with high temperature, corrosion resistant black coating .95 emissivity. Slip fit connection.
- Titanium combustion chamber (150-225 MBTU/H models).

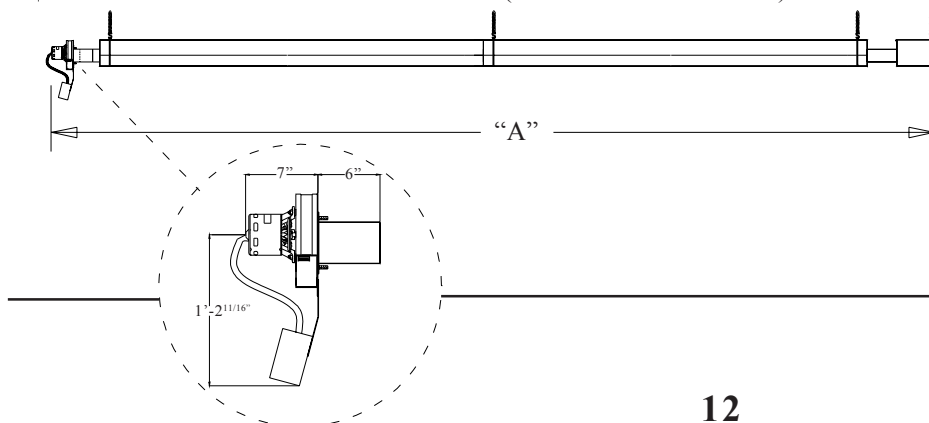
WARRANTY

1 year - Burner box & exhaustor components.
3 years- Combustion and radiant tubes.
5 years- Burner.

*See front cover for warranty registration options.

OTHER

- One reflector center support per reflector.
- Turbulator baffle included.
- Made in U.S.A.
- Visit www.reverberray.com for additional information and parts.



MODEL NO.	DIMENSION "A"
SV-20	268"
SV-30	384"
SV-40	500"
SV-50	616"
SV-60	732"
SV-70	848"
SV-80	964"