

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

Read carefully before attempting to assemble, install, operate or maintain the product described. Protect yourself and others by observing all safety information. Failure to comply with instructions could result in personal injury and/or property damage! Retain instructions for future reference.

*For complete installation instructions, see Generic IOM this piece was accompanied by.

RH Series

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

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Models

Model #	Gas Type (circle one)	BTU's	Tube Length	Combustion Tube	Typical Mounting Height*	Baffle Pieces	Hot Rolled Tube Package			Coated Aluminized Tube Package		
							Tube Package ID	"Type" Tube Package 1	"Type" Tube Package 2	Tube Package ID	"Type" Tube Package 1	"Type" Tube Package 2
RH 50-20B	N or LP	50,000	20'	Aluminized	10' - 16'	5	TPK-B	(B) 20-4 Alum-HRT	N/A	TPK-H	(H) 20-4 Alum	N/A
RH 50-30B	N or LP	50,000	30'	Aluminized	10' - 16'	4	TPK-D	(D) 30-4 Alum-HRT	N/A	TPK-I	(I) 30-4 Alum	N/A
RH 50-40B	N or LP	50,000	40'	Titanium	10' - 16'	2	TPK-F	(F) 40-4 Titan-HRT	N/A	TPK-K	(K) 40-4 Titan	N/A
RH 75-20B	N or LP	75,000	20'	Aluminized	13' - 20'	5	TPK-B	(B) 20-4 Alum-HRT	N/A	TPK-H	(H) 20-4 Alum	N/A
RH 75-30B	N or LP	75,000	30'	Aluminized	13' - 20'	4	TPK-D	(D) 30-4 Alum-HRT	N/A	TPK-I	(I) 30-4 Alum	N/A
RH 75-40B	N or LP	75,000	40'	Titanium	13' - 20'	2	TPK-F	(F) 40-4 Titan-HRT	N/A	TPK-K	(K) 40-4 Titan	N/A
RH 100-30B	N or LP	100,000	30'	Aluminized	15' - 23'	5	TPK-D	(D) 30-4 Alum-HRT	N/A	TPK-I	(I) 30-4 Alum	N/A
RH 100-40B	N or LP	100,000	40'	Titanium	15' - 23'	4	TPK-F	(F) 40-4 Titan-HRT	N/A	TPK-K	(K) 40-4 Titan	N/A
RH 100-50B	N or LP	100,000	50'	Titanium	15' - 23'	2	TPK-F,A	(F) 40-4 Titan-HRT	(A) 10-4 HRT	TPK-K,G	(K) 40-4 Titan	(G) 10-4 Alum
RH 125-40B	N or LP	125,000	40'	Titanium	15' - 25'	4	TPK-F	(F) 40-4 Titan-HRT	N/A	TPK-K	(K) 40-4 Titan	N/A
RH 125-50B	N or LP	125,000	50'	Titanium	15' - 25'	4	TPK-F,A	(F) 40-4 Titan-HRT	(A) 10-4 HRT	TPK-K,G	(K) 40-4 Titan	(G) 10-4 Alum
RH 125-60B	N or LP	125,000	60'	Titanium	15' - 25'	2	TPK-F,C	(F) 40-4 Titan-HRT	(C) 20-4 HRT	TPK-K,H	(K) 40-4 Titan	(H) 20-4 Alum
RH 150-40B	N or LP	150,000	40'	Titanium	16' -30'	4	TPK-F	(F) 40-4 Titan-HRT	N/A	TPK-K	(K) 40-4 Titan	N/A
RH 150-50B	N or LP	150,000	50'	Titanium	16' -30'	4	TPK-F,A	(F) 40-4 Titan-HRT	(A) 10-4 HRT	TPK-K,G	(K) 40-4 Titan	(G) 10-4 Alum
RH 150-60B	N or LP	150,000	60'	Titanium	16' -30'	2	TPK-F,C	(F) 40-4 Titan-HRT	(C) 20-4 HRT	TPK-K,H	(K) 40-4 Titan	(H) 20-4 Alum
RH 175-50B	N or LP	175,000	50'	Titanium	17' - 35'	2	TPK-F,A	(F) 40-4 Titan-HRT	(A) 10-4 HRT	TPK-K,G	(K) 40-4 Titan	(G) 10-4 Alum
RH 175-60B	N or LP	175,000	60'	Titanium	17' - 35'	2	TPK-F,C	(F) 40-4 Titan-HRT	(C) 20-4 HRT	TPK-K,H	(K) 40-4 Titan	(H) 20-4 Alum

Warranty registration options:

1. Complete the information above and fax to Detroit Radiant Products Co.
2. Complete the information above and mail to Detroit Radiant Products Co.



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 21400 Hoover Rd., Warren, MI 48089
 T. (810) 756-0950 F. (810) 756-2626
 DRPSales@aol.com
 Form# LIORH-1M-06/01(MWG)



RH 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!

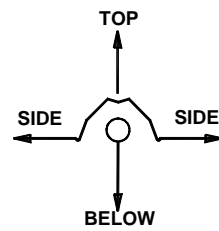
Failure to comply with the stated clearances to combustibles could result in personal injury, death and/or property damage.

⚠ WARNING!

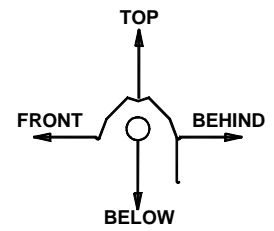
This heater should be installed so that the minimum clearances to vehicles, as marked on the heater, will be maintained. If vehicle lifts are present, ensure that these clearances will be maintained from the highest raised vehicle.

CLEARANCES TO COMBUSTIBLES (IN.)

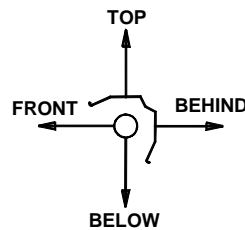
MODEL NO.	MOUNTING ANGLE	SIDE		TOP	BELOW	
		FRONT	BEHIND			
RH 50 (20,30, 40) [N,P]	0°	9	9	6	47	
	45°	39	8	10	47	
	W/1 side shield	0°	29	8	6	47
	W/2 side shields	0°	9	9	6	47
	20 ft from burner	0°	7	7	6	30
RH 75 (20,30,40) [N,P]	0°	9	9	6	60	
	45°	39	8	10	60	
	W/1 side shield	0°	29	8	6	60
	W/2 side shields	0°	9	9	6	60
	20 ft from burner	0°	7	7	6	30
RH 100 (30,40, 50) [N,P]	0°	14	14	6	66	
	45°	39	8	10	66	
	W/1 side shield	0°	29	8	6	66
	W/2 side shields	0°	16	16	6	66
	20 ft from burner	0°	7	7	6	30
RH 125 (40,50, 60) [N,P]	0°	20	20	6	76	
	45°	58	8	10	76	
	W/1 side shield	0°	42	8	6	76
	W/2 side shields	0°	20	20	6	76
	20 ft from burner	0°	7	7	6	30
RH 150 (40,50,60) [N,P]	0°	24	24	6	81	
	45°	58	8	10	81	
	W/1 side shield	0°	42	8	6	81
	W/2 side shields	0°	23	23	6	81
	20 ft from burner	0°	11	11	6	44
RH 175 (40,50,60) [N,P]	0°	34	34	6	92	
	45°	63	8	10	92	
	W/1 side shield	0°	50	8	6	92
	W/2 side shields	0°	30	30	6	92
	20 ft from burner	0°	11	11	6	44



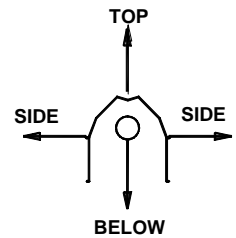
0° MOUNTING ANGLE



0° W/1 SIDE SHIELD



45° MOUNTING ANGLE



0° W/2 SIDE SHIELDS

RH Series Mechanical Instructions

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

Product Summary

RH Series heaters are available from 20 to 60 foot, 50,000 to 175,000 BTU's, natural or LP gas. RH Series are positive pressure, single stage heaters and feature hot rolled or optional coated aluminized steel for it's radiant pipes.

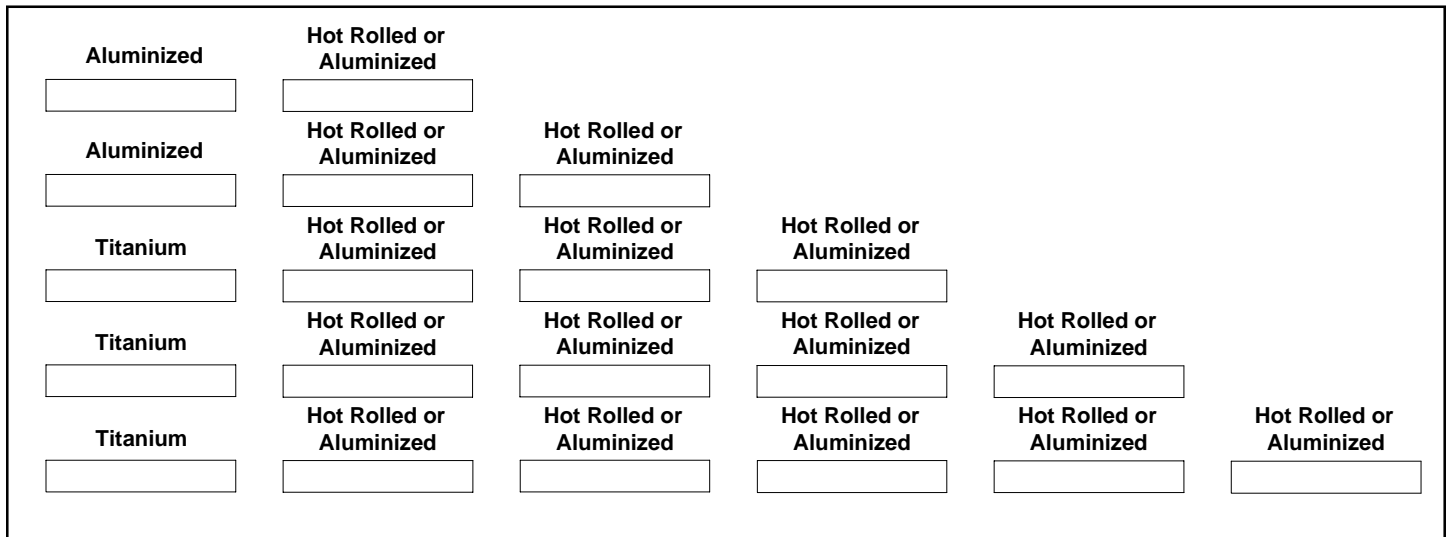
Operational Features

120V AC, 60 Hz., 3-try spark ignition, 1.7 amp startup and operational indicator lights. 24" stainless steel flex connector and 1/2" gas cock included with each unit.

Specific Mechanical Instructions

Be sure to identify the coated aluminized (20'-30' models) or titanium (40'-60' models) combustion chamber and place as the first tube section.

Tube Installation Sequence



RH Series

Electrical Requirements

- ◆ 120 Volt - 60 HZ
- ◆ Starting Current 1.7 Amps
- ◆ Running Current 1.1 Amps
- ◆ 24V Control Voltage

Gas Requirements

- ◆ Manifold Pressure
 - Nat. 3.5" • LP. 10.0"
- ◆ Minimum Inlet Pressure
 - Nat. 5.0" • LP. 11.0"
- ◆ Maximum Inlet
 - Nat. 14.0" • LP. 14.0"

Ventilation Requirements

- ◆ In agricultural applications, these heaters are generally unvented.
- ◆ Consult the generic supplement for venting instructions.
- ◆ 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.

Theory of Operation

- **Starting Circuit** (see internal wiring diagrams)

When voltage is applied to L1 and L2, a circuit is completed from L1 via the blower motor to L2. The blower fan is mounted in the control box and rated to supply sufficient air for combustion.

Air pressure generated by the blower will cause the normally open pressure switch to close. Another circuit is completed from L1 to the spark ignition module and back to L2. After a ten (10) second pre-purge, the spark electrode and gas valve are energized simultaneously. The trial for ignition is fifteen seconds.

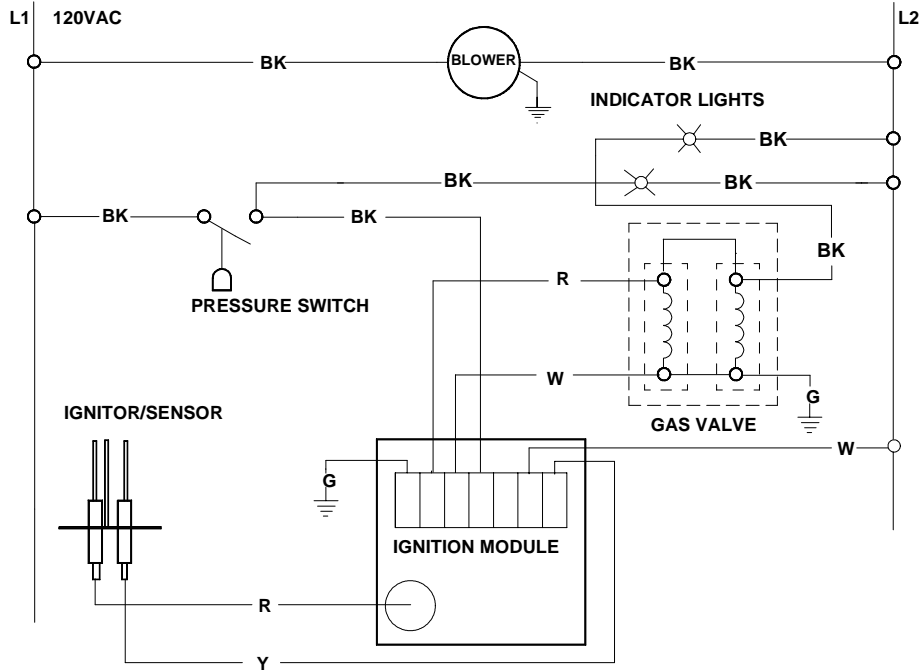
- **Running Circuit**

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 the three (3) tries for ignition, the unit will lock out. If lockout occurs, the control can be reset by briefly interrupting the power source.

If no flame is established, the trial for ignition is repeated two (2) more times before going into lockout.

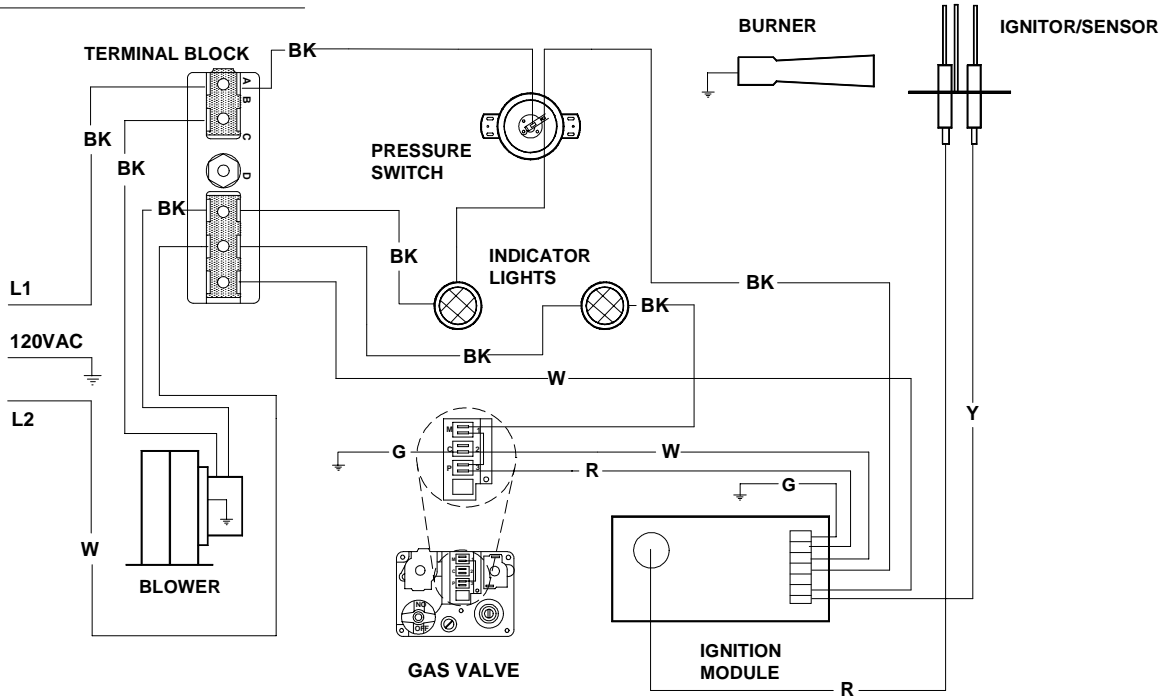
Internal Wiring Diagrams

357290 LADDER DIAGRAM



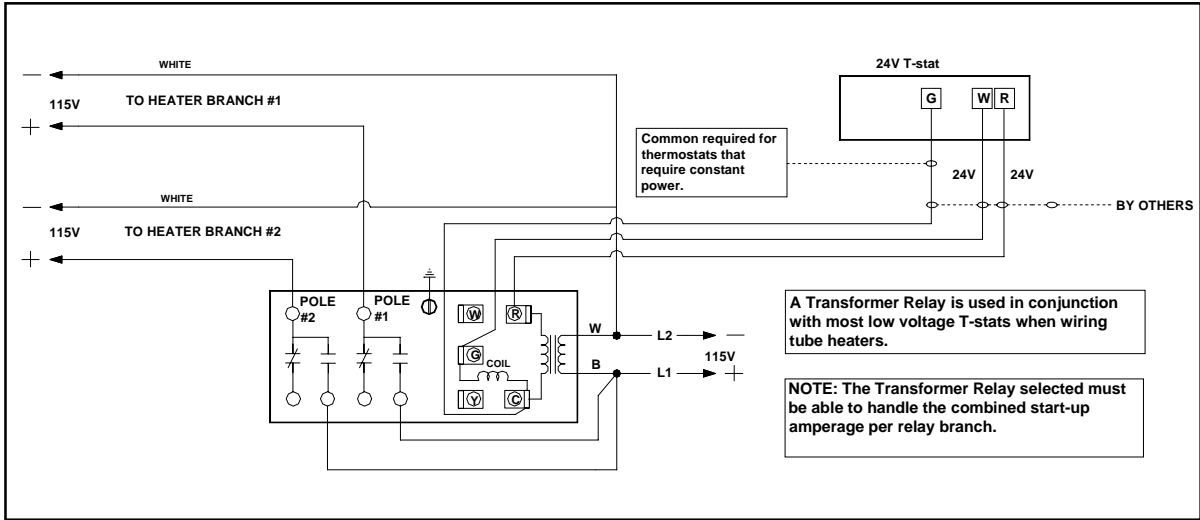
IF ANY OF THE ORIGINAL WIRE AS SUPPLIED WITH THE APPLIANCE MUST BE REPLACED, IT MUST BE REPLACED WITH WIRING MATERIAL HAVING A TEMPERATURE RATING OF AT LEAST 105 C.

357290 BLOCK DIAGRAM

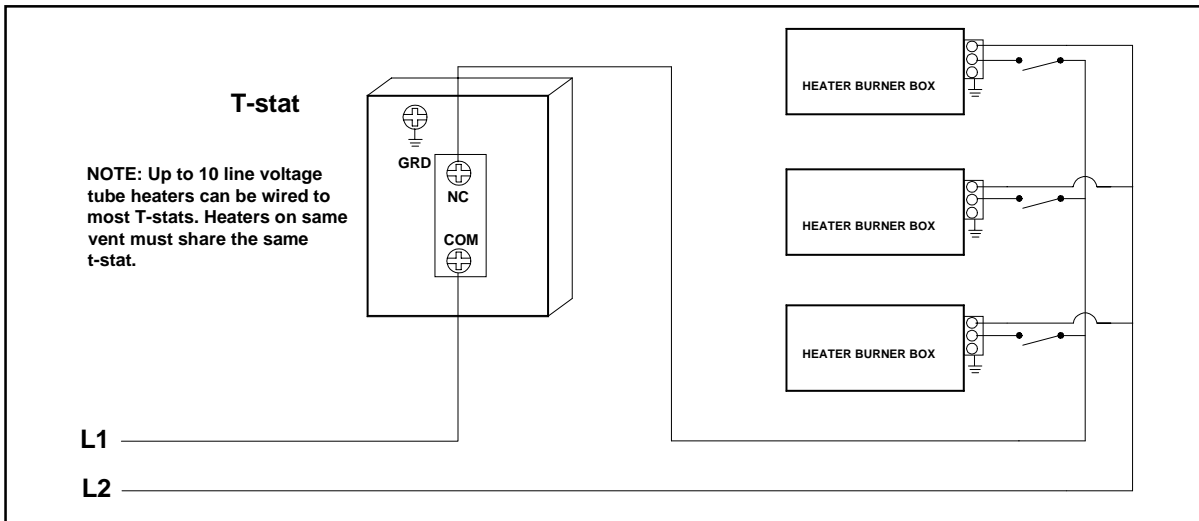


RH Series

Field Wiring Diagrams



24V T-Stat & Connection



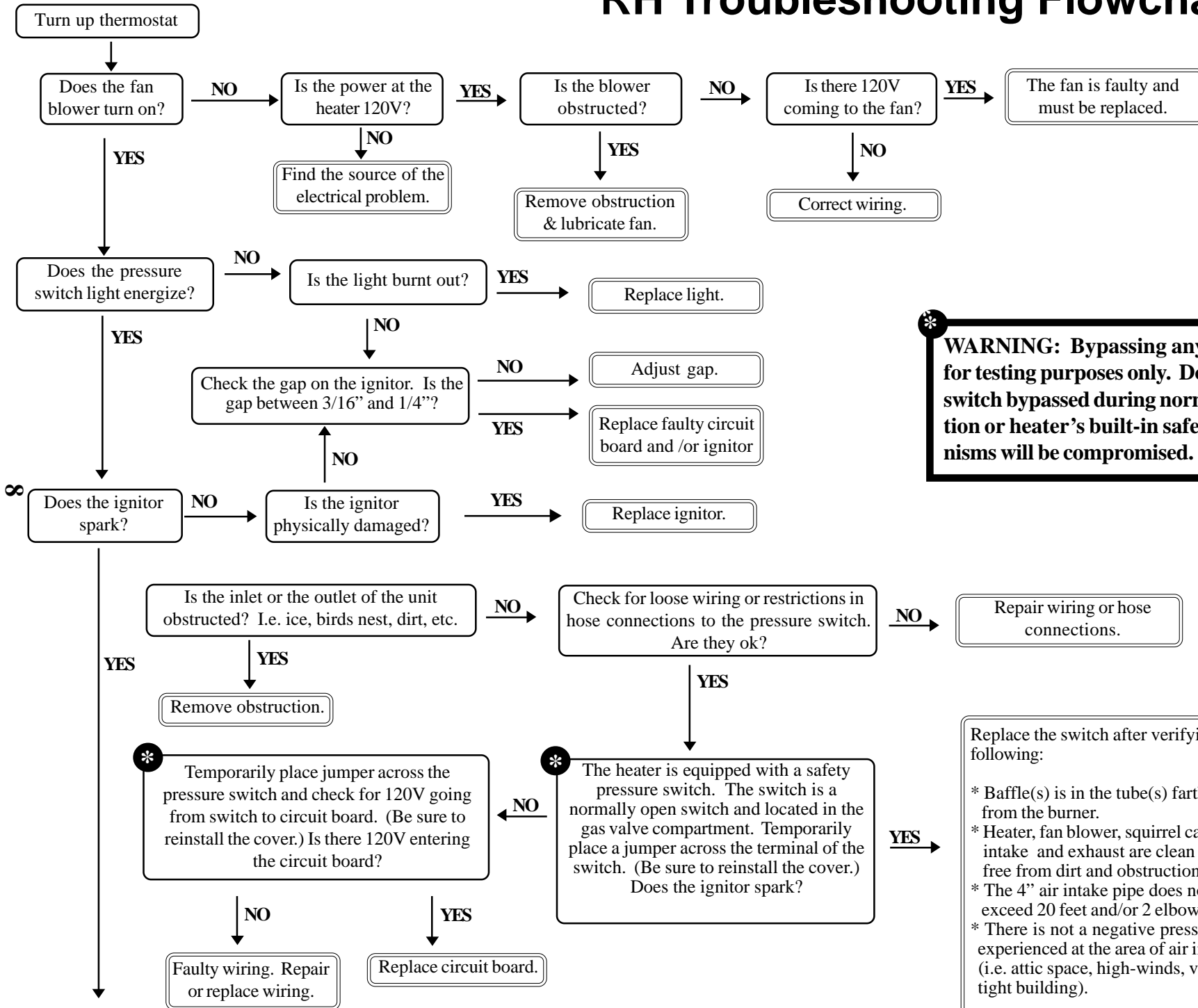
120V Connection(s)

Alternative Wiring Diagrams

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THERE ARE NO ALTERNATIVE WIRING DIAGRAMS FOR THE RH SERIES



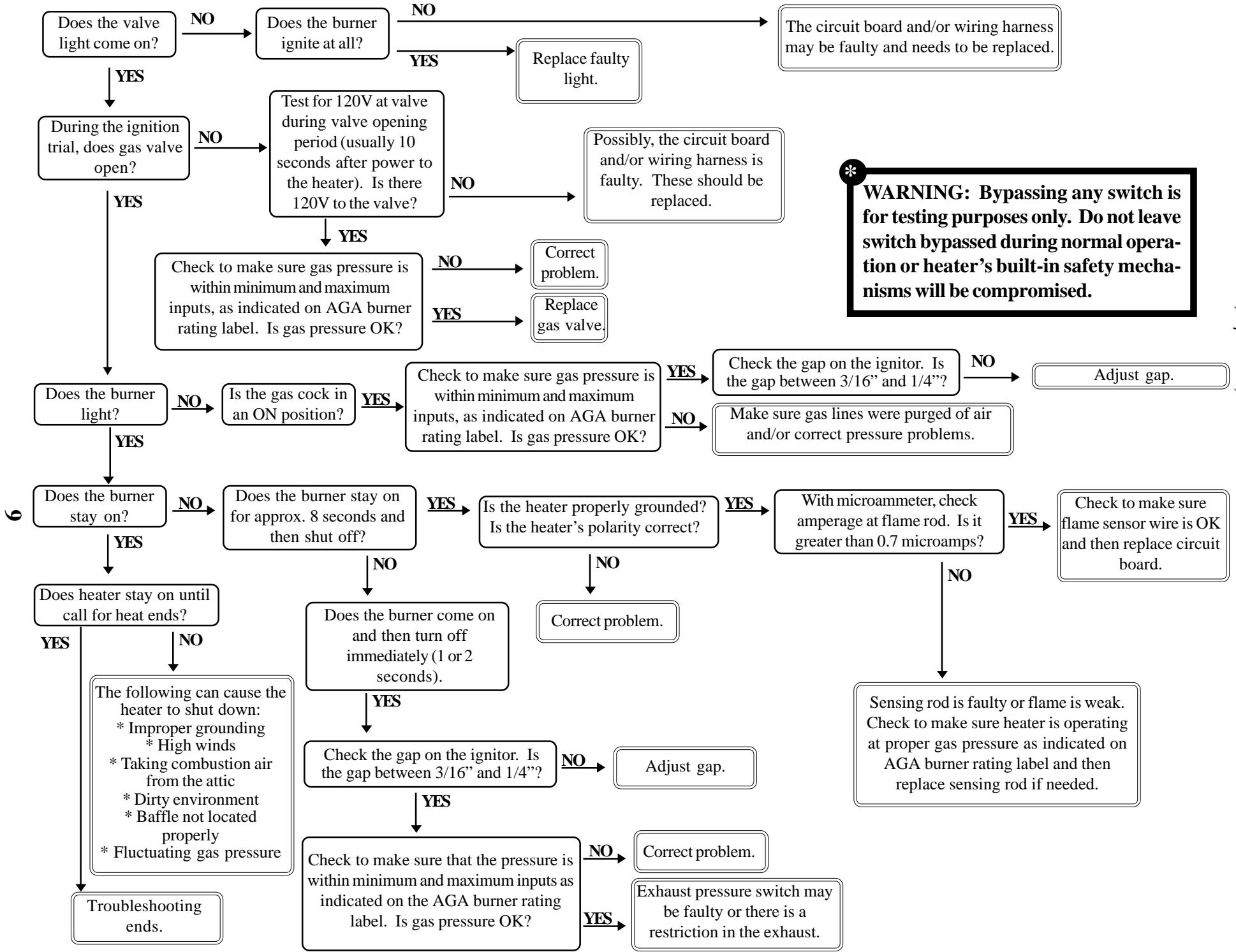
RH Troubleshooting Flowchart



WARNING: Bypassing any switch is for testing purposes only. Do not leave switch bypassed during normal operation or heater's built-in safety mechanisms will be compromised.

Replace the switch after verifying the following:

- * Baffle(s) is in the tube(s) farthest from the burner.
- * Heater, fan blower, squirrel cage, intake and exhaust are clean and free from dirt and obstructions.
- * The 4" air intake pipe does not exceed 20 feet and/or 2 elbows.
- * There is not a negative pressure experienced at the area of air intake (i.e. attic space, high-winds, very tight building).

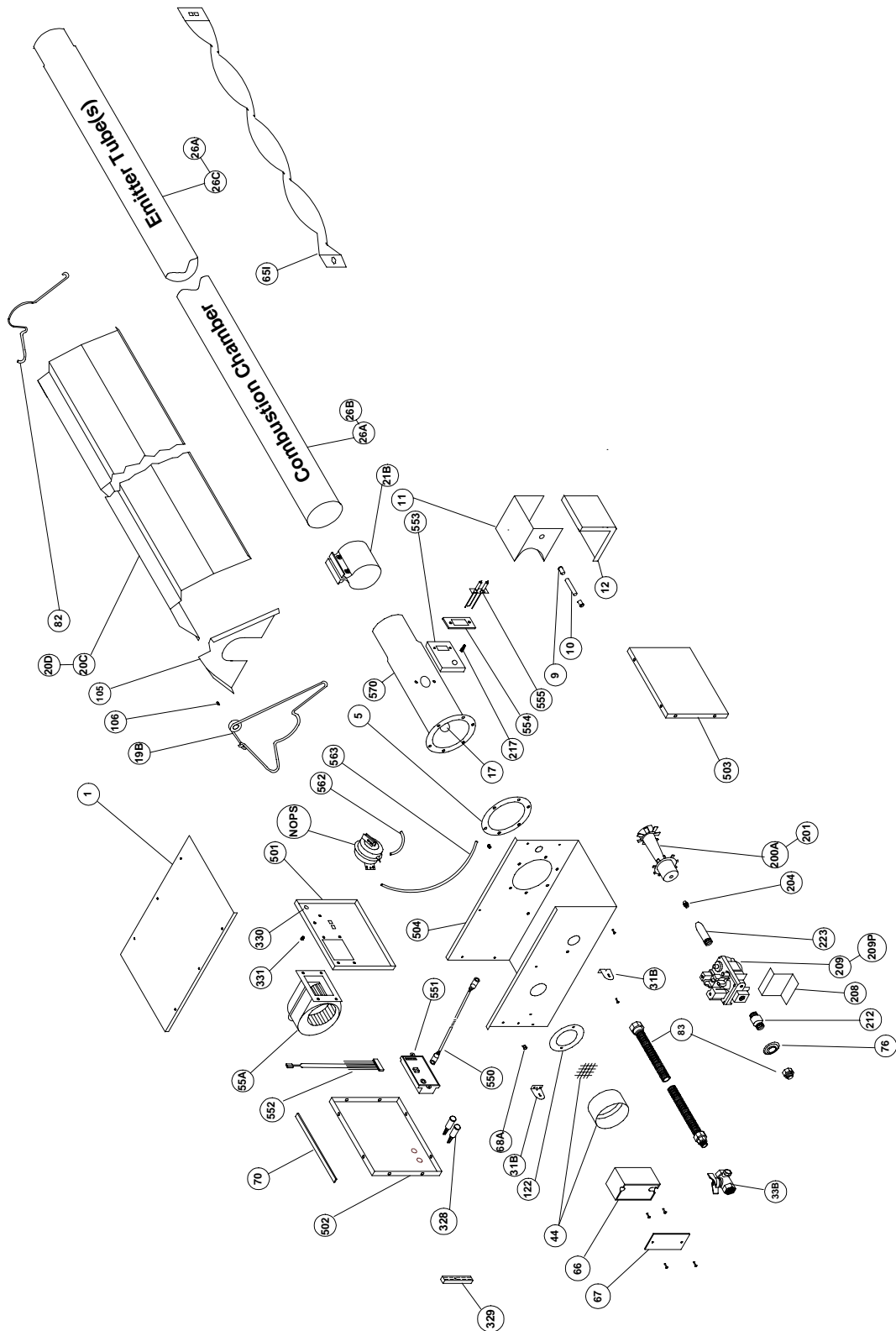


*** WARNING: Bypassing any switch is for testing purposes only. Do not leave switch bypassed during normal operation or heater's built-in safety mechanisms will be compromised.**

- The following can cause the heater to shut down:
- * Improper grounding
 - * High winds
 - * Taking combustion air from the attic
 - * Dirty environment
 - * Baffle not located properly
 - * Fluctuating gas pressure

RH Series

Parts Breakdown










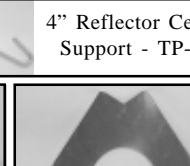
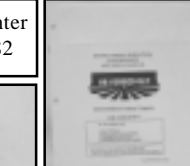
RH SERIES PARTS LISTING

TP#	ITEM	TP#	ITEM
TP-1	CONTROL BOX COVER	TP-200A	BURNER (50 TO 100 MBTU/H)
TP-5	FLANGE GASKET	TP-201	BURNER (125 TO 175 MBTU/H)
TP-9	CONDUIT COUPLING	TP-204	GAS ORIFICE - CONSULT FACTORY
TP-10	CONDUIT 4" X 1/2"	TP-208	"Z" MOUNTING BRACKET
TP-11	IGNITOR BOX	TP-209	36E36A-246 GAS VALVE - NAT GAS ASSY
TP-12	IGNITOR BOX COVER	TP-209P	36E36A-240 GAS VALVE - LP GAS ASSY
TP-17	SIGHT GLASS KIT	TP-212	1/2" X 3" PIPE NIPPLE
TP-19B	WIRE HANGER	TP-217	PRESSURE BARB FITTING
TP-20C	120" ALUMINUM REFLECTOR	TP-223	GAS MANIFOLD
TP-20D	120" STAINLESS STEEL REFLECTOR	TP-328	120V INDICATOR LIGHTS
TP-21B	4" TUBE CLAMP	TP-329	1/4" NEUTRAL TERMINAL BLOCK
TP-26A	10 FT. ALUMINIZED COMBUSTION/RADIANT TUBE	TP-330	DIVIDER GROMMET
TP-26B	10 FT. TITANIUM COMBUSTION TUBE	TP-331	GREEN SELF TAP GROUND SCREW
TP-26C	10FT. UNCOATED HOT ROLLED RADIANT TUBE	TP-501	DIVIDER PANEL
TP-31B	CONTROL BOX MOUNTING BRACKET	TP-502	LEFT END PANEL
TP-33B	1/2" GAS COCK	TP-503	RIGHT END PANELS
TP-44	AIR ORIFICE W/SCREEN - CONSULT FACTORY	TP-504	CONTROL BOX
TP-55A	FAN BLOWER	TP-550	SPARK TRANSFER WIRE - ORANGE
TP-65I	INTERLOCKING 33" BAFFLE SECTION	TP-551	MARK 10DX-117-10 CIRCUIT BOARD W/ PRE-PURGE
TP-66	2" X 4" OUTLET BOX	TP-552	WIRING HARNESS
TP-67	2" X 4" OUTLET BOX COVER	TP-553	IGNITOR MOUNTING BRACKET
TP-68A	STRAIN RELIEF BUSHING	TP-554	SPARK IGNITOR GASKET
TP-70	CONTROL BOX COVER GASKET (PER FOOT**)	TP-555	SPARK IGNITOR ELECTRODE
TP-82	REFLECTOR CENTER SUPPORT	TP-562	1/4" ATMOSPHERIC TUBE (VINYL)
TP-83	STAINLESS STEEL FLEX CONNECTOR	TP-563	1/4" PRESSURE TUBE
TP-105	REFLECTOR END CAP	TP-570	16" BURNER TUBE WITH FLANGE
TP-106	REFLECTOR CLIP	TP-NOPS	NORMALLY OPEN DIFFERENTIAL SWITCH
TP-108	5' AL-TI TUBE, PAINTED WITH ONE CLAMP	(TP-61B)	N.O. Differential Pressure Switch (50 TO 100MBTU/H)
TP-111	5' ALUM. TUBE, PAINTED WITH ONE CLAMP	(TP-61E)	N.O. Differential Pressure Switch (125 TO 150MBTU/H)
TP-112	5' REFLECTOR	(TP-61D)	N.O. Differential Pressure Switch (175MBTU/H)
TP-122	GASKET FOR AIR ORIFICE & AIR COLLAR		

Kit Contents & Product Features

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

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

						
4" Hanger TP-19B	4" Butt Clamp TP-21B	Gas Cock 1/2" TP-33B	Bag of Reflector End Cap Clips. TP-106	4" Reflector Center Support - TP-82	24" SS Flex Connect TP-83	Generic IOM LIOM-Tube AND Series Insert LIOM-DX-2

*Gas cock is installed onto heater at the factory.
 *One 4" stainless steel butt clamp is provided for each 175,000 BTU model. Place as shown in IOM.

Product Features

APPROVALS

- IAS, AGA.
- Commercial approval.

BURNER SIGHT GLASS

- For burner inspection.

COMBUSTION AIR INLET & VENT

- 4" Male duct.

ENAMELED CONTROL BOX

- Outside air collar (4") attached.
- Totally enclosed components.

GAS CONNECTION

- 1/2" gas cock attached.
- 7/8" flare-2' S.S. flex included.

CONTROLS

- 100% safety shut off.
- Moisture and corrosion resistant ignition module.
- Differential pressure switch.
- 3-try spark ignition.
- Flame rod sensing.
- Pre-purge controls.
- Operational indicator lights.

COMBUSTION & EMMITTER TUBES

- Aluminized (20' - 30' models) or titanium (40' - 60' models) combustion chamber.
- 16ga. 4" O.D. hot rolled steel radiant emitter tubes.
- Slip fit connection.

RADIANT SURFACE AREA (SQ. FT.)

- 20' Models – 20.2
- 30' Models – 30.4
- 40' Models – 40.5
- 50' Models – 50.6
- 60' Models – 60.7

WARRANTY

- 1 year - Burner box components.
- 3 years - Combustion and radiant tubes.
- 5 years - Stainless steel burner.

OTHER

- One reflector center support per reflector.
- Turbulator baffle included.
- Optional aluminized steel emitter tubes coated with high temperature, corrosion resistant black coating .95 emissivity.
- Made in U.S.A.