

XTS 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.

XTS Series

* For complete installation instructions, see General IOM this piece was accompanied by. Also available at www.reverberray.com.

Project: _____ Date: _____ Location: _____ City: _____ State: _____ Zip: _____ Contractor: _____ Engineer: _____ Local Representative: _____ Customer Name: _____ Address: _____ City: _____ State: _____ Zip: _____ Serial #: _____ Phone#: _____ Date of Installation: _____ Notes: _____	<h3 style="text-align: center;">Table of Contents</h3> <table style="width: 100%; border-collapse: collapse;"> <thead> <tr> <th style="width: 80%;"></th> <th style="text-align: right; border-bottom: 1px solid black;">Page</th> </tr> </thead> <tbody> <tr><td>Models</td><td style="text-align: right;">1</td></tr> <tr><td>Warnings</td><td style="text-align: right;">2</td></tr> <tr><td>Clearances to Combustibles</td><td style="text-align: right;">2</td></tr> <tr><td>Product Summary</td><td style="text-align: right;">3</td></tr> <tr><td>Mechanical Instructions</td><td style="text-align: right;">3</td></tr> <tr><td>Heater Requirements</td><td style="text-align: right;">4</td></tr> <tr><td>Theory of Operation</td><td style="text-align: right;">4</td></tr> <tr><td>Wiring Diagrams</td><td style="text-align: right;">5-7</td></tr> <tr><td>Flowchart</td><td style="text-align: right;">8-9</td></tr> <tr><td>Parts Listing</td><td style="text-align: right;">10-11</td></tr> <tr><td>Series Kit Contents</td><td style="text-align: right;">12</td></tr> </tbody> </table>		Page	Models	1	Warnings	2	Clearances to Combustibles	2	Product Summary	3	Mechanical Instructions	3	Heater Requirements	4	Theory of Operation	4	Wiring Diagrams	5-7	Flowchart	8-9	Parts Listing	10-11	Series Kit Contents	12
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Models

Qty.	<input type="checkbox"/>	Model #	Gas Type <small>(circle one)</small>	BTU's	Length	Weight	Typical Mount Height	Combustion Tube	Radiant Emitter Tube	"Type" Tube Pkg #1	"Type" Tube Pkg. #2	Baffle Pieces	Cert.
		XTS 20-50	N or LP	50,000	21'-7"	120 #	9' - 14'	Aluminized	4" Hot-rolled	20-4 Alum-HRT	N/A	5	CSA
		XTS 20-60	N or LP	60,000	21'-7"	120 #	10' - 15'	Aluminized	4" Hot-rolled	20-4 Alum-HRT	N/A	5	CSA
		XTS 20-75	N or LP	75,000	21'-7"	120 #	11' - 18'	Aluminized	4" Hot-rolled	20-4 Alum-HRT	N/A	5	CSA
		XTS 30-50	N or LP	50,000	31'-3"	120 #	10' - 15'	Aluminized	4" Hot-rolled	30-4 Alum-HRT	N/A	4	CSA
		XTS 30-60	N or LP	60,000	31'-3"	160 #	11' - 18'	Aluminized	4" Hot-rolled	30-4 Alum-HRT	N/A	4	CSA
		XTS 30-75	N or LP	75,000	31'-3"	160 #	12' - 20'	Aluminized	4" Hot-rolled	30-4 Alum-HRT	N/A	4	CSA
		XTS 30-100	N or LP	100,000	31'-3"	160 #	13' - 23'	Aluminized	4" Hot-rolled	30-4 Alum-HRT	N/A	5	CSA
		XTS 40-50	N or LP	50,000	40'-11"	190 #	11' - 18'	Aluminized	4" Hot-rolled	40-4 Alum-HRT	N/A	2	CSA
		XTS 40-60	N or LP	60,000	40'-11"	190 #	11' - 18'	Aluminized	4" Hot-rolled	40-4 Alum-HRT	N/A	2	CSA
		XTS 40-75	N or LP	75,000	40'-11"	190 #	12' - 20'	Aluminized	4" Hot-rolled	40-4 Alum-HRT	N/A	2	CSA
		XTS 40-100	N or LP	100,000	40'-11"	190 #	13' - 23'	Aluminized	4" Hot-rolled	40-4 Alum-HRT	N/A	4	CSA
		XTS 40-125	N or LP	125,000	40'-11"	190 #	14' - 25'	Aluminized	4" Hot-rolled	40-4 Alum-HRT	N/A	4	CSA
		XTS 40-150	N or LP	150,000	40'-11"	190 #	15' - 27'	Titanium	4" Hot-rolled	40-4 Titan-HRT	N/A	4	CSA
		XTS 50-100	N or LP	100,000	50'-7"	235 #	15' - 27'	Aluminized	4" Hot-rolled	40-4 Alum-HRT	10-4-HRT	2	CSA
		XTS 50-125	N or LP	125,000	50'-7"	235 #	15' - 27'	Aluminized	4" Hot-rolled	40-4 Alum-HRT	10-4-HRT	4	CSA
		XTS 50-150	N or LP	150,000	50'-7"	235 #	16' - 30'	Titanium	4" Hot-rolled	40-4 Titan-HRT	10-4-HRT	4	CSA
		XTS 50-175	N or LP	175,000	50'-7"	235 #	17' - 35'	Titanium	4" Hot-rolled	40-4 Titan-HRT	10-4-HRT	2	CSA
		XTS 60-125	N or LP	125,000	60'-3"	235 #	16' - 30'	Aluminized	4" Hot-rolled	40-4 Alum-HRT	20-4-HRT	2	CSA
		XTS 60-150	N or LP	150,000	60'-3"	235 #	17' - 35'	Titanium	4" Hot-rolled	40-4 Titan-HRT	20-4-HRT	2	CSA
		XTS 60-175	N or LP	175,000	60'-3"	235 #	17' - 35'	Titanium	4" Hot-rolled	40-4 Titan-HRT	20-4-HRT	2	CSA

Warranty registration options:

1. Register online at www.reverberray.com/warranty.
2. Fill out this page and fax to Detroit Radiant Products Co.
3. Fill out this page and mail to Detroit Radiant Products Co.



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 Form# LIOXTS-2M-9/02 (ID)



XTS Series

Warnings and Clearances to Combustibles

▲ 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.

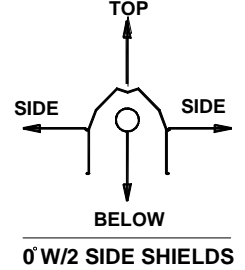
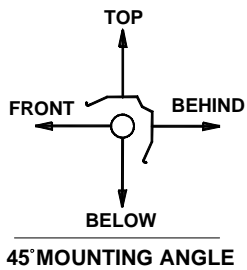
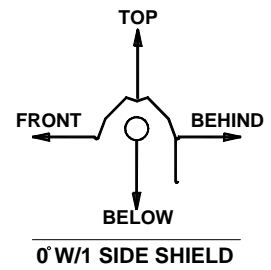
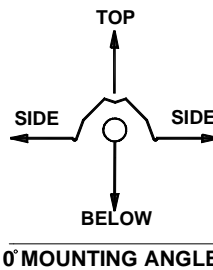
▲ WARNING!

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			
XTS (20,30,40)-50 [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
	XTS (20,30,40)-60 [N,P]	0°	9	9	6	47
XTS (20,30,40)-60 [N,P]	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	
	XTS (20,30,40)-75 [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
XTS (20,30,40,50)-100 [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
	XTS (30,40,50,60)-125 [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	
	XTS (40,50,60)-150 [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
XTS (40,50,60)-175 [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



XTS Series Mechanical Instructions

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

Product Summary

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

Specific Mechanical Instructions

Be sure to identify the aluminized or titanium (150, 175) combustion chamber and place as the first tube section.

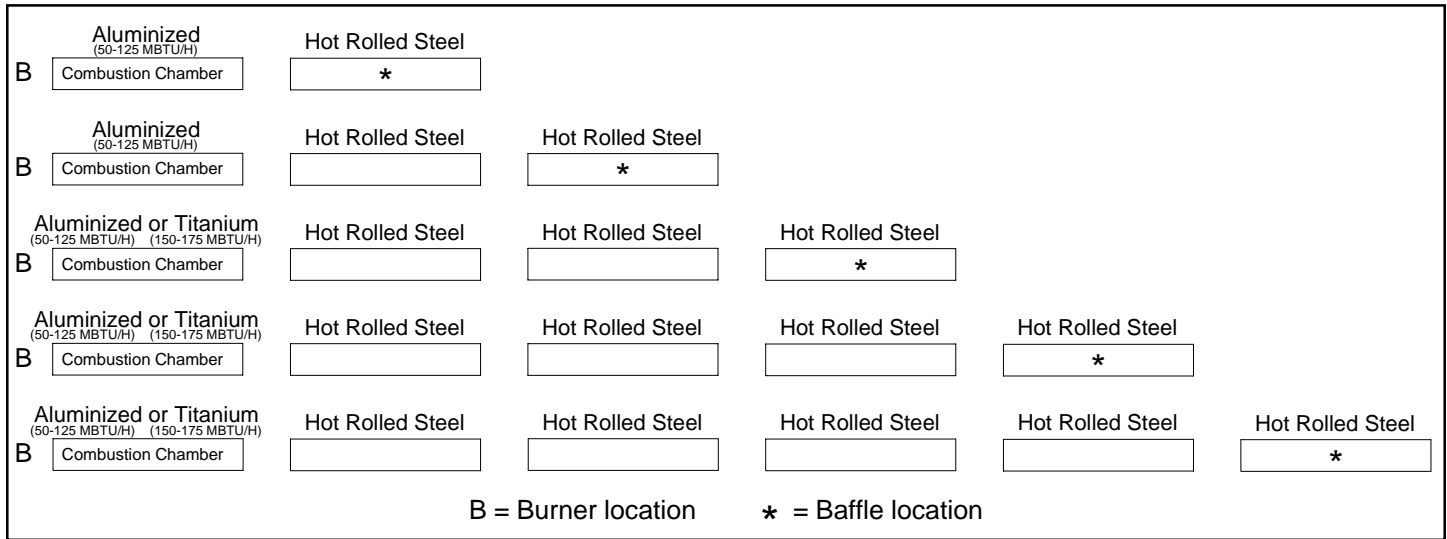
Do not use the hot rolled steel radiant tubing as the first tube (combustion chamber).

Note: Welded seam must be positioned downward.

175,000 BTU/H Models must be installed with a stainless steel tube clamp at the second joint of the exchanger between the first and second radiant tubes.

Note baffle quantities for your model and place baffles in the last tubes (farthest from the burner) as shown below and on pages 13-14 of the generic manual.

Tube Installation Sequence



XTS Series

Electrical Requirements

- ◆ 120 Volt - 60 HZ
- ◆ Starting Current 4.8 Amps
- ◆ Running Current 1.1 Amps

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

- ◆ Consult the generic supplement for venting instructions and unvented operation.
- ◆ 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.
- ◆ Maximum vent length for all models is 20 ft.

Approved & Required Vent Caps

Sidewall Single

- ◆ 4" Duravent sidewall vent kit (4-DSK).
- ◆ 4" Vent terminal (SWD-4).

Sidewall Dual (Sharing common t-stat)

- ◆ 6" Duravent sidewall vent kit (6-DSK).
- ◆ 6" Vent terminal (SWD-6).

Roof Single

- ◆ Approved 4" rooftop raincap (RVC-4).

Roof Dual (Sharing common t-stat)

- ◆ Approved 6" rooftop raincap (RVC-6).

Important: Do not use sidewall caps for roof venting and do not use roof caps for sidewall venting.

Theory of Operation

Starting Circuit

When voltage is applied to L1 and L2 (see diagram on right), 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 burner pressure switch No. 1 to close. Another circuit is completed from L1 to the hot surface ignition control and back to L2. There is a five second delay, then the glo-bar is powered. After the glo-bar has been powered for 45 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.

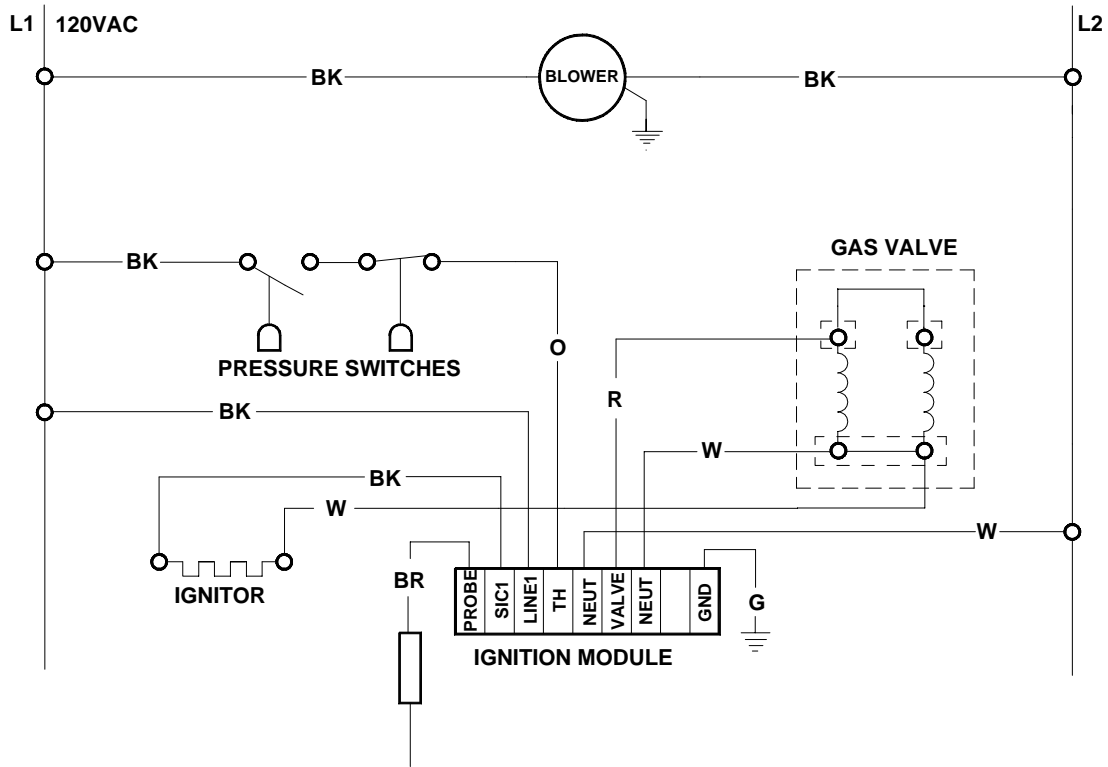
Running Circuit

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 8.5 seconds, the unit will lock out. If lockout occurs, the control can be reset by briefly interrupting the power source.

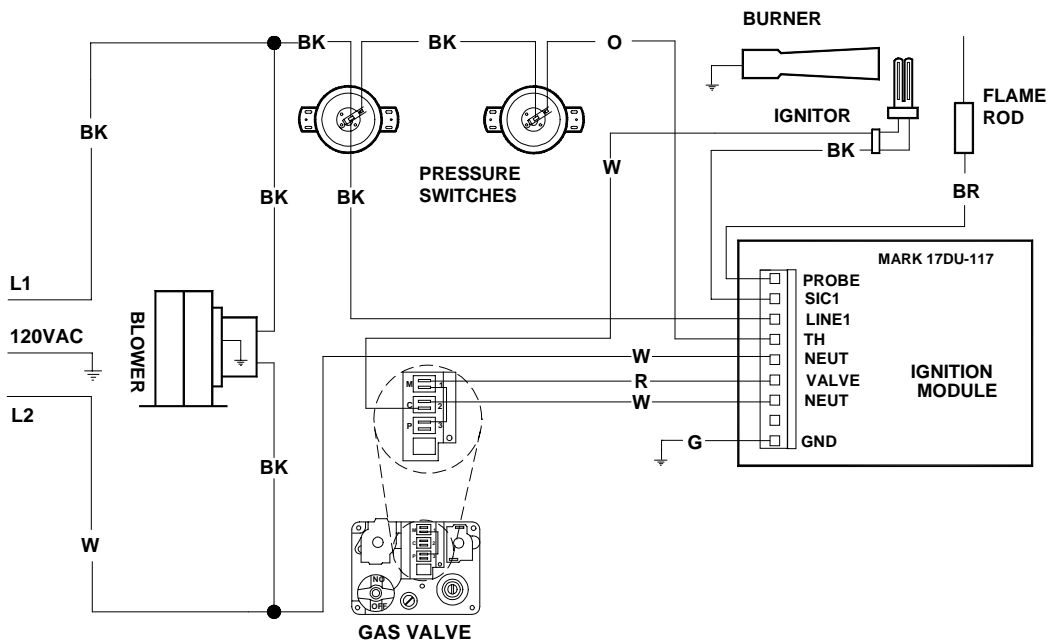
Internal Wiring Diagrams

Standard Wiring

LADDER DIAGRAM - MARK17DU-117 NO LIGHTS



BLOCK DIAGRAM - MARK17DU-117 NO LIGHTS

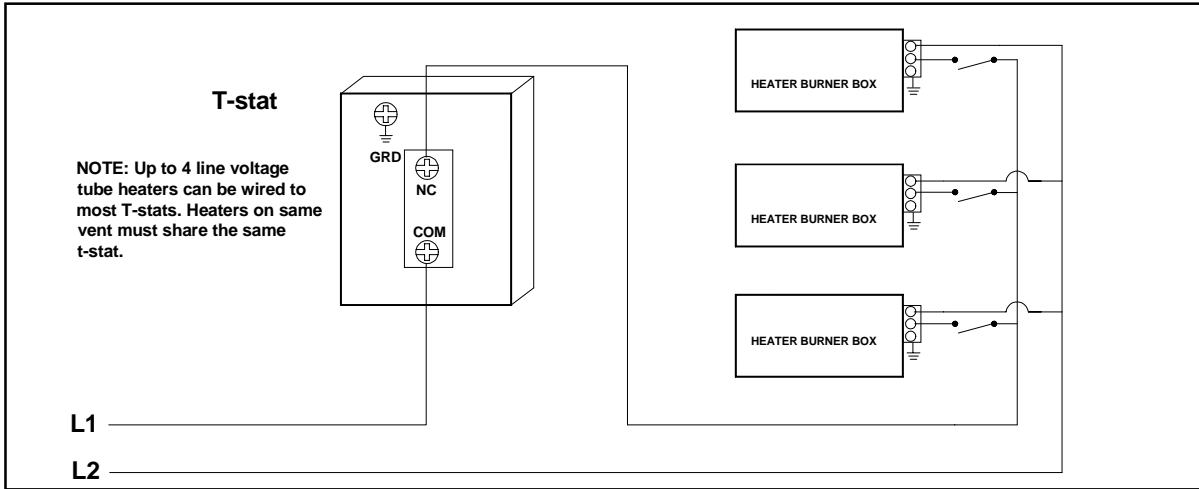


If any of the original wire as supplied with the appliance must be replaced, it must be replaced with wiring material having a temperature rating of at least 105°C.

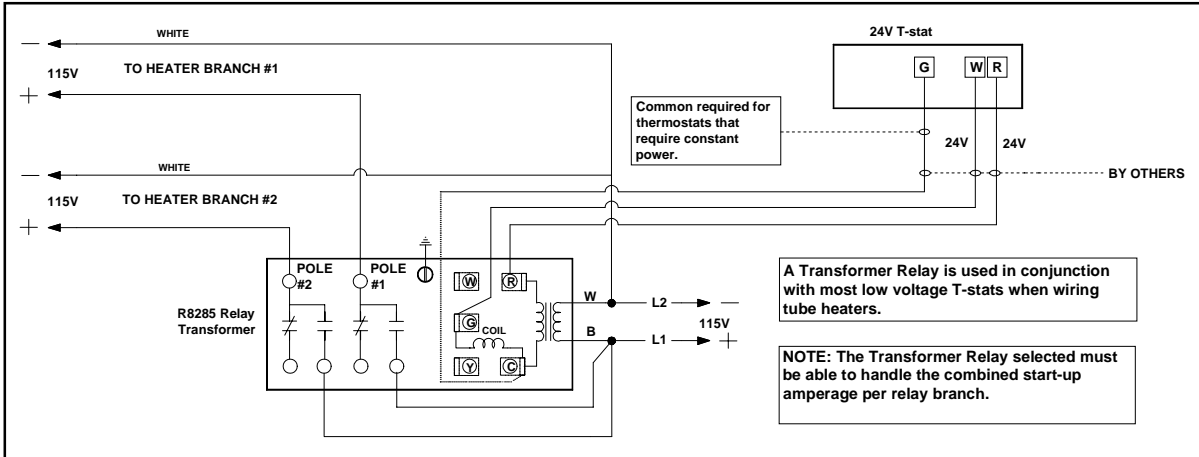


XTS Series

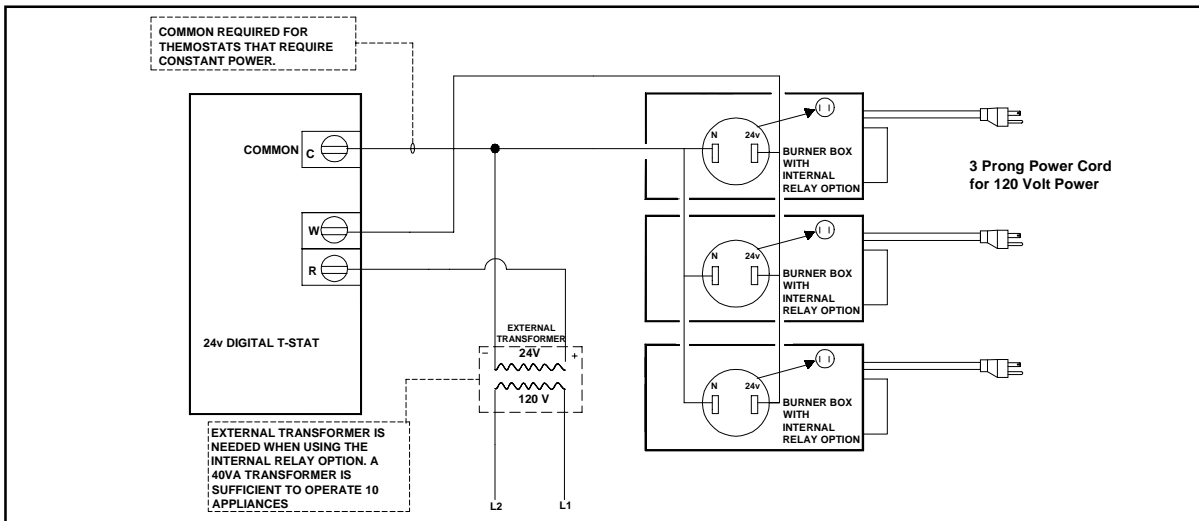
Field Wiring Diagrams



120V Connection(s)



24V T-Stat & Connection

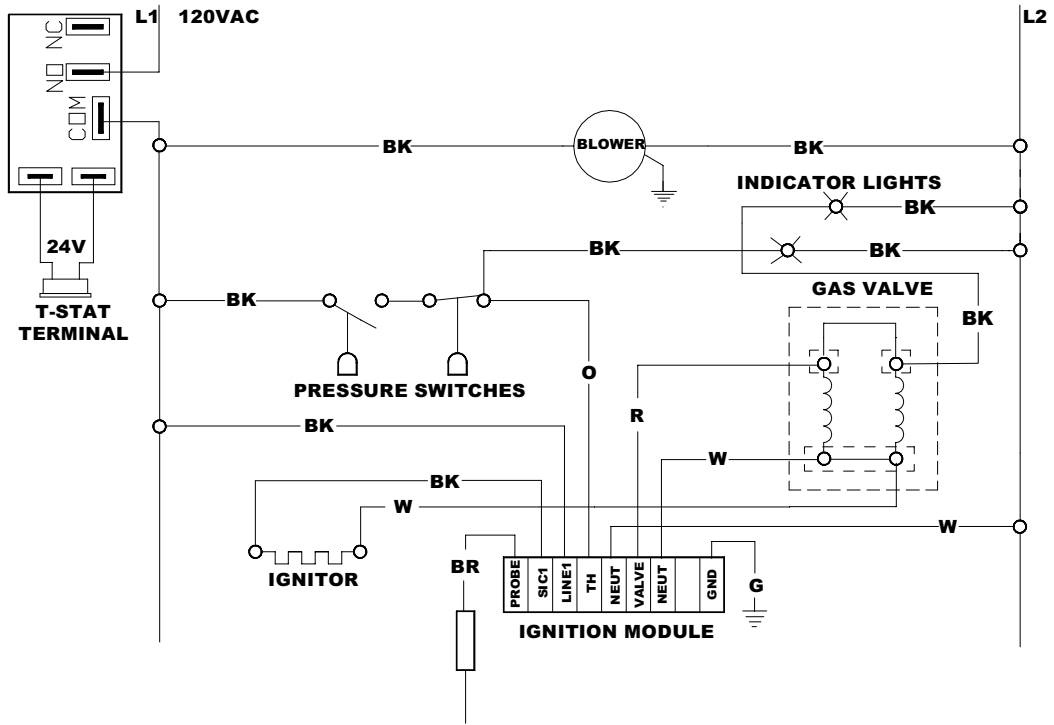


Alternative Field Wiring Diagram for 24VAO (Internal Relay Option).

Alternative Internal Wiring Diagrams

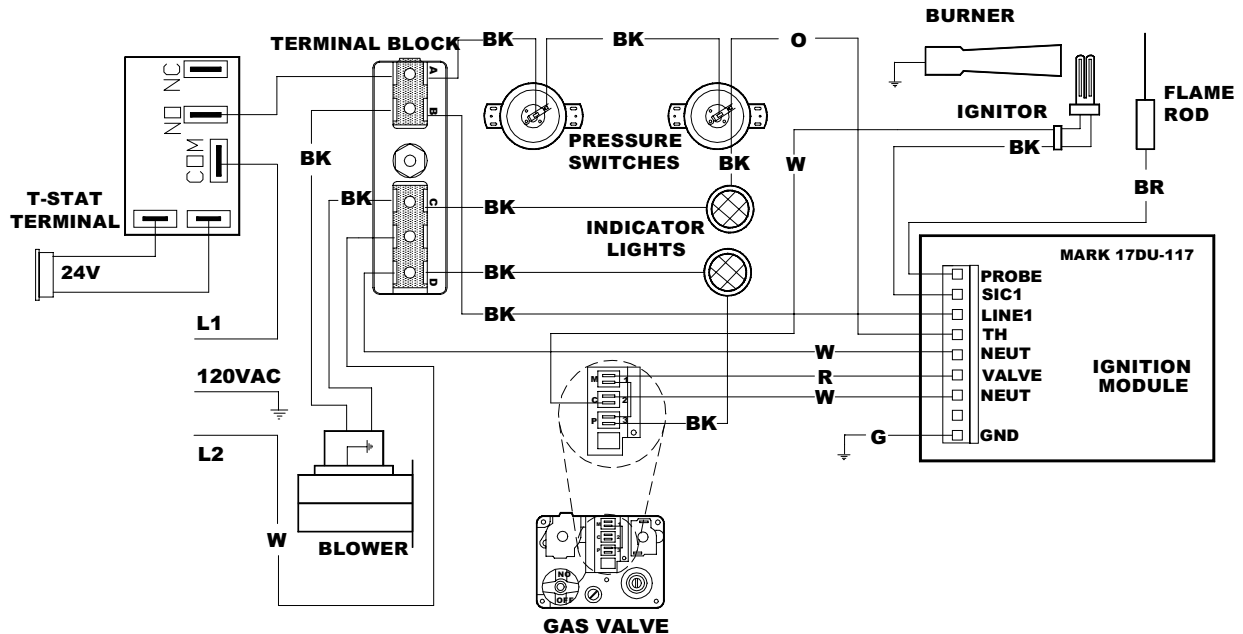
For 24VAO (Internal Relay Option)

LADDER DIAGRAM - MARK17DU-117 WITH LIGHTS

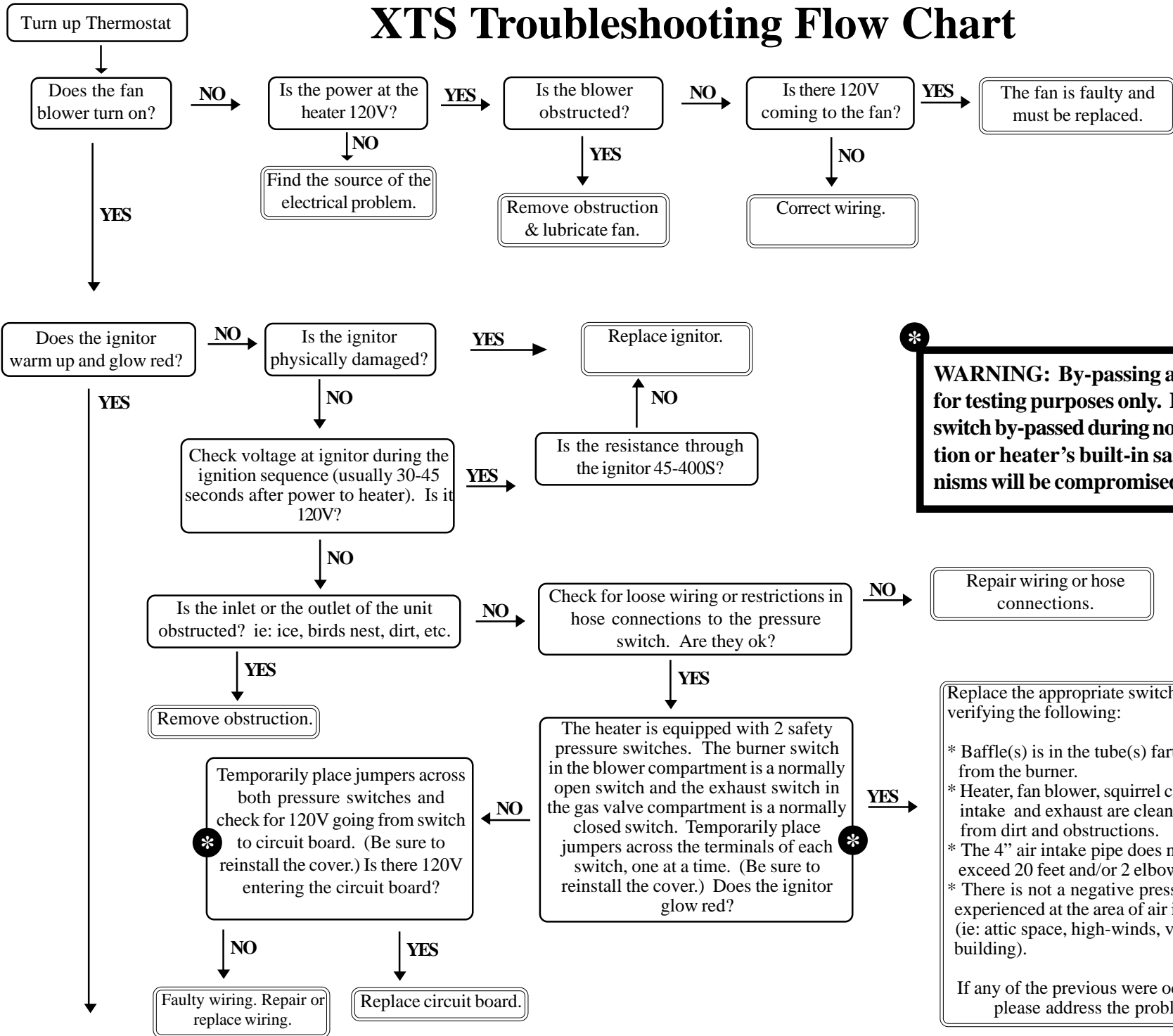


IF ANY OF THE ORIGINAL WIRE AS SUPPLIED WITH THE APPLIANCE MUST BE REPLACED, IT MUST BE REPLACED WITH WIRING MATERIAL HAVING A TEMPERATURE RATING OF AT LEAST 105 C.

BLOCK DIAGRAM - MARK17DU-117 WITH LIGHTS



XTS Troubleshooting Flow Chart

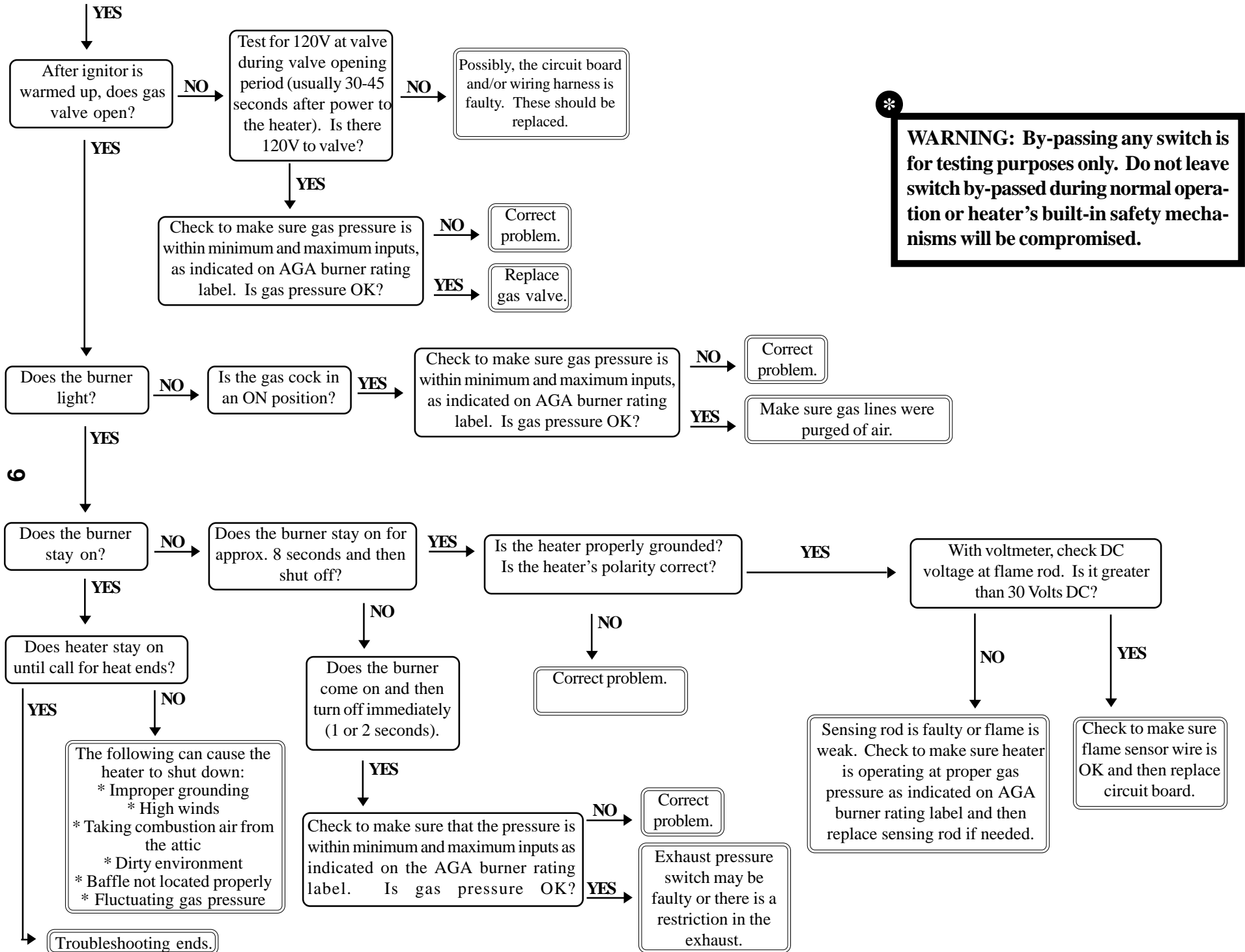


*** WARNING: By-passing any switch is for testing purposes only. Do not leave switch by-passed during normal operation or heater's built-in safety mechanisms will be compromised.**

Replace the appropriate 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 (ie: attic space, high-winds, very tight building).

If any of the previous were occurring, please address the problem.

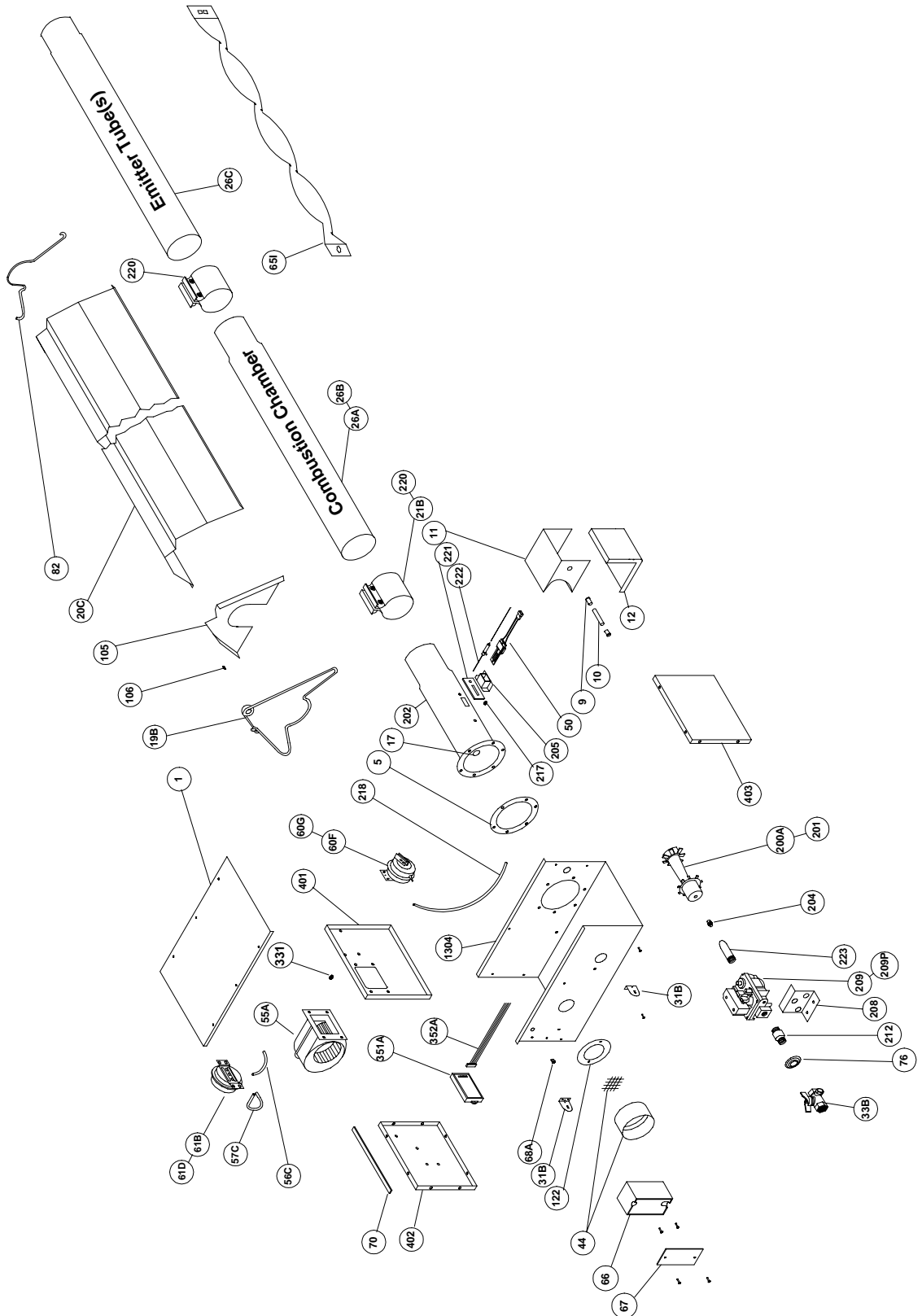


*** WARNING: By-passing any switch is for testing purposes only. Do not leave switch by-passed during normal operation or heater's built-in safety mechanisms will be compromised.**

6

XTS Series

Parts Breakdown





XTS SERIES PARTS LISTING

TP#	ITEM	TP#	ITEM
TP-1	CONTROL BOX COVER	TP-82	REFLECTOR CENTER SUPPORT (one per heater)
TP-5	FLANGE GASKET	TP-105	REFLECTOR END CAP
TP-9	CONDUIT COUPLING	TP-106	REFLECTOR CLIP
TP-10	CONDUIT 4" X 1/2"	TP-108	5' AL-TI TUBE, PAINTED WITH ONE CLAMP
TP-11	GLO-BAR IGNITOR BOX	TP-111	5' ALUM. TUBE, PAINTED WITH ONE CLAMP
TP-12	GLO-BAR IGNITOR BOX COVER	TP-112	5' REFLECTOR
TP-17	SIGHT GLASS KIT	TP-122	GASKET FOR AIR ORIFICE & AIR COLLAR
TP-19B	WIRE HANGER W/ SPRING CLIP	TP-200A	BURNER (50 TO 100 MBTU/H)
TP-20C	120" ALUMINUM REFLECTOR	TP-201	BURNER (125 TO 175 MBTU/H)
TP-20D	120" STAINLESS STEEL REFLECTOR	TP-202	16" BURNER TUBE WITH FLANGE
TP-21B	4" TUBE CLAMP	TP-204	GAS ORIFICE - CONSULT FACTORY
TP-26A	10 FT. ALUM. RADIANT/COMBUSTION TUBE	TP-205	GLO-BAR HOLDER
TP-26B	10 FT. TITANIUM COMBUSTION TUBE	TP-208	"Z" MOUNTING BRACKET
TP-26C	10FT. UNCOATED HOT ROLLED RADIANT TUBE	TP-209	36E36A-246 GAS VALVE - NAT GAS ASSY
TP-31B	CONTROL BOX BRACKET	TP-209P	36E36A-240 GAS VALVE - LP GAS ASSY
TP-33B	1/2" GAS COCK	TP-212	1/2" X 3" PIPE NIPPLE
TP-44	AIR ORIFICE W/SCREEN - CONSULT FACTORY	TP-217	PRESSURE BARB FITTING
TP-50	GLO-BAR IGNITOR	TP-218	EXHAUST PRESSURE TUBE (VINYL)
TP-55A	FAN BLOWER	TP-220	4" STAINLESS STEEL BUTT CLAMP (175,000 BTU/H)
TP-56C	1/4" ATMOSPHERIC TUBE (VINYL)	TP-221	GLO-BAR HOLDER GASKET
TP-57C	1/4" PRESSURE SENSING TUBE (VINYL)	TP-222	FLAME ROD
TP-60F	EXHAUST P.S. (50 TO 150 MBH) #PPS 10070-2553	TP-223	GAS MANIFOLD
TP-60G	EXHAUST P.S. (170 MBH) #PPS 10070-2554	TP-330	DIVIDER GROMMET
TP-61B	BURNER P.S. (50 TO 100MBTH) #PPS 10069-2550	TP-331	GREEN SELF TAP GROUND SCREW
TP-61D	BURNER P.S. (125 to 175 MBTH) #PPS 10069-2551	TP-351A	MARK 17-DU POTTED BOARD
TP-65I	INTERLOCKING 33" BAFFLE SECTION	TP-352A	WIRE HARNESS FOR TP-351A
TP-66	2" X 4" OUTLET BOX	TP-401	DIVIDER PANEL
TP-67	2" X 4" OUTLET BOX COVER	TP-402	LEFT END PANEL
TP-68A	STRAIN RELIEF BUSHING	TP-403	RIGHT END PANEL
TP-70	CONTROL BOX COVER GASKET (PER FOOT**)	TP-404	CONTROL BOX
TP-76	RUBBER GROMMET		







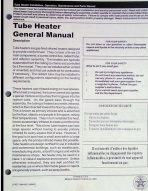
****6' TOTAL NEEDED TO COVER OUTER EDGES OF A BURNER BOX (TP-70).**



KIT CONTENTS AND PRODUCT FEATURES

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

FILLED BY:		XTS SERIES KIT CONTENTS						
XTS SERIES	TP#	DESCRIPTION	20 FOOT	30 FOOT	40 FOOT	50 FOOT	60 FOOT	70 FOOT
	TP-19B	4" Hangers	3	4	5	6	7	N/A
	TP-21B	4" Tube Clamps	2	3	4	5	6	N/A
	TP-33B	1/2" Gas Cock	1^	1^	1^	1^	1^	N/A
	TP-82	4" Refl. Cntr. Sprt.	1	1	1	1	1	N/A
	TP-105	Refl. Endcaps	2	2	2	2	2	N/A
	TP-106	Refl. Endcap Clips	8	8	8	8	8	N/A
	IOM	Install / Op Manual	1	1	1	1	1	N/A

 4" Hanger TP-19B	 4" Butt Clamp TP-21B	 Gas Cock 1/2" TP-33B	 Bag of Reflector endcap clips	 Reflector End Caps	 4" Reflector Center Support - TP-82	 Generic IOM LIOM-Tube AND Series Insert LIOM-XTS
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NOTES:
 ^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, CGA, AGA, CSA.
- Commercial approval.

BURNER SIGHT GLASS

- For burner inspection.

COMBUSTION AIR INLET & VENT

- 4" duct.

ENAMELED CONTROL BOX

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

GAS CONNECTION

- 1/2" gas cock attached.

CONTROLS

- 100% safety shut off.
- Moisture and corrosion resistant ignition module.
- Pressure switch sensing.
- Silicon carbide hot surface igniter.
- Flame rod sensing.
- Pre-purge controls.

EMITTER & COMBUSTION TUBES

- 16ga. 4" O.D. hot rolled steel radiant tubes.
- Coated aluminized combustion chamber (50-125 MBTU/H models).
- Coated titanium combustion chamber (150-175 MBTU/H models).

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.
- * See cover for warranty registration information.

OTHER

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

TF1B Package & Rep Packages

Optional TF1B allows for configuration into a U-shaped heater. Please consult TF1B Spec. Sheet for details. Optional Reflector and 90° elbow Package (REP) are used for "L" shaped system. Please consult accessory list and General Manual for further information.