

# 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 Generic IOM this piece was inserted within. Also available at [www.reverberray.com](http://www.reverberray.com).

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

Table of Contents	
	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

## Models v.6/03

Qty.	Model #	Gas Type (circle one)	BTU's	Straight Length	U-Tube Length	Weight	Typical Mount Height	Combustion Chamber(s)	Radiant Emitter Tube	"Type" Tube Pkg #1	"Type" Tube Pkg. #2	Baffle Pieces
	XTS 20-50	N or LP	50,000	21'-7"	13'-0"	120 #	9' - 14'	Aluminized	4" Hot-rolled	20-4 Alum-HRT	N/A	5
	XTS 20-60	N or LP	60,000	21'-7"	13'-0"	120 #	10' - 15'	Aluminized	4" Hot-rolled	20-4 Alum-HRT	N/A	5
	XTS 20-75	N or LP	75,000	21'-7"	13'-0"	120 #	11' - 18'	Aluminized	4" Hot-rolled	20-4 Alum-HRT	N/A	5
	XTS 30-50	N or LP	50,000	31'-3"	**17'-10"	120 #	10' - 15'	Aluminized	4" Hot-rolled	30-4 Alum-HRT	N/A	4
	XTS 30-60	N or LP	60,000	31'-3"	**17'-10"	160 #	11' - 18'	Aluminized	4" Hot-rolled	30-4 Alum-HRT	N/A	4
	XTS 30-75	N or LP	75,000	31'-3"	**17'-10"	160 #	12' - 20'	Aluminized	4" Hot-rolled	30-4 Alum-HRT	N/A	4
	XTS 30-100	N or LP	100,000	31'-3"	**17'-10"	160 #	13' - 23'	Aluminized	4" Hot-rolled	30-4 Alum-HRT	N/A	5
	XTS 40-50	N or LP	50,000	40'-11"	22'-8"	190 #	11' - 18'	Aluminized	4" Hot-rolled	40-4 Alum-HRT	N/A	2
	XTS 40-60	N or LP	60,000	40'-11"	22'-8"	190 #	11' - 18'	Aluminized	4" Hot-rolled	40-4 Alum-HRT	N/A	2
	XTS 40-75	N or LP	75,000	40'-11"	22'-8"	190 #	12' - 20'	Aluminized	4" Hot-rolled	40-4 Alum-HRT	N/A	2
	XTS 40-100	N or LP	100,000	40'-11"	22'-8"	190 #	13' - 23'	Aluminized	4" Hot-rolled	40-4 Alum-HRT	N/A	4
	XTS 40-125	N or LP	125,000	40'-11"	22'-8"	190 #	14' - 25'	Aluminized	4" Hot-rolled	40-4 Alum-HRT	N/A	4
	XTS 40-150	N or LP	150,000	40'-11"	22'-8"	190 #	15' - 27'	Titan/Alum	4" Hot-rolled	40-4 Ti-Al-HRT	N/A	4
	XTS 50-100	N or LP	100,000	50'-7"	**27'-6"	235 #	15' - 27'	Aluminized	4" Hot-rolled	40-4 Alum-HRT	10-4-HRT	2
	XTS 50-125	N or LP	125,000	50'-7"	**27'-6"	235 #	15' - 27'	Aluminized	4" Hot-rolled	40-4 Alum-HRT	10-4-HRT	4
	XTS 50-150	N or LP	150,000	50'-7"	**27'-6"	235 #	16' - 30'	Titan/Alum	4" Hot-rolled	40-4 Ti-Al-HRT	10-4-HRT	4
	XTS 50-175	N or LP	175,000	50'-7"	**27'-6"	235 #	17' - 35'	Titan/Alum	4" Hot-rolled	40-4 Ti-Al-HRT	10-4-HRT	2
	XTS 50-200	N or LP	200,000	50'-7"	**27'-6"	235#	18' - 40'	Titan/Alum	4" Hot-rolled	40-4 Ti-Al-HRT	10-4-HRT	2
	XTS 60-125	N or LP	125,000	60'-3"	32'-4"	265 #	16' - 30'	Aluminized	4" Hot-rolled	40-4 Alum-HRT	20-4-HRT	2
	XTS 60-150	N or LP	150,000	60'-3"	32'-4"	265 #	17' - 35'	Titan/Alum	4" Hot-rolled	40-4 Ti-Al-HRT	20-4-HRT	2
	XTS 60-175	N or LP	175,000	60'-3"	32'-4"	265 #	17' - 35'	Titan/Alum	4" Hot-rolled	40-4 Ti-Al-HRT	20-4-HRT	2
	XTS 60-200	N or LP	200,000	60'-3"	32'-4"	265 #	18' - 40'	Titan/Alum	4" Hot-rolled	40-4 Ti-Al-HRT	20-4-HRT	2

\*\* Model requires 5EA-Sub Accessory Package.

Warranty registration options:

1. Register online at [www.reverberray.com/warranty](http://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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 21400 Hoover Rd., Warren, MI 48089  
 T. (586) 756-0950 F. (586) 756-2626  
 Form# LIOXTS-3M-3/04 (LES)  
 Replaces Form# LIOXTS-5M-3/03



# XTS Series v.6/03

## 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.

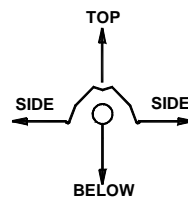
**▲WARNING!**

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

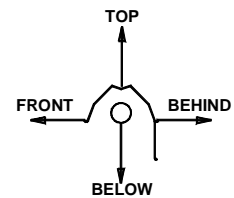
**▲WARNING!**

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.

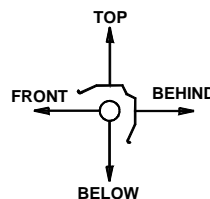
CLEARANCES TO COMBUSTIBLES (IN.)						
MODEL NO.	MOUNTING ANGLE	SIDE		TOP	BELOW	
		FRONT	BEHIND			
XTS (20,30,40)-50 [N,P]	0°	9	9	6	47	
	45°	39	8	10	47	
	W/1 side shield	0°	29	8	6	47
	W/2 side shields	0°	9	9	6	47
20 ft from burner	0°	7	7	6	30	
XTS (20,30,40)-60 [N,P]	0°	9	9	6	47	
	45°	39	8	10	47	
	W/1 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 (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 (50,60)-200 [N,P]	0°	41	41	6	94	
	45°	63	8	10	94	
	W/1 side shield	0°	54	8	6	94
	W/2 side shields	0°	30	30	6	94
20 ft from burner	0°	11	11	6	44	



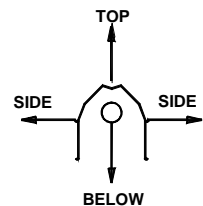
0° MOUNTING ANGLE



0° W/1 SIDE SHIELD



45° MOUNTING ANGLE



0° W/2 SIDE SHIELDS

# 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 200,000 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 (50-125) or titanium (150-200) combustion chamber and place as the first tube section. 150,000-200,000 BTU/H models require the aluminized tube to be placed directly following the first tube section. See Tube Installation Sequence chart at the bottom of this page for an illustration.

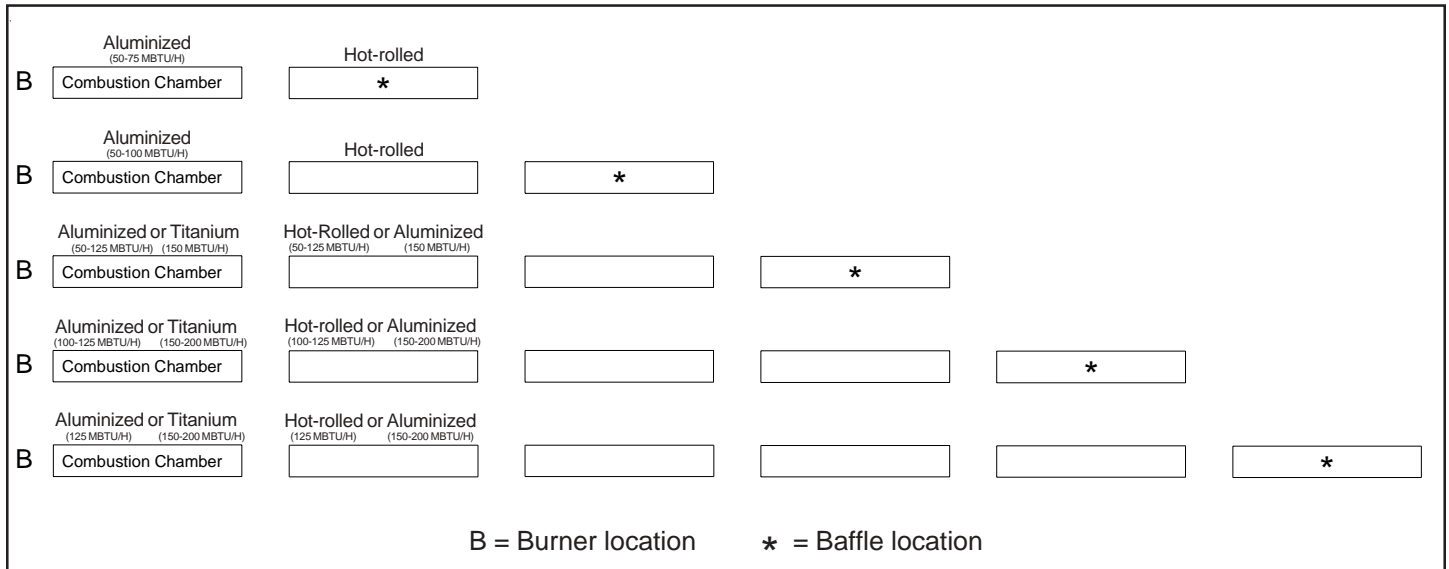
**Do not** use the hot rolled steel radiant tubing as the first tube (combustion chamber).

**Note:** Welded seam must be positioned downward.

175,000 - 200,000 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 v.6/03

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## 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 differential pressure switch 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.

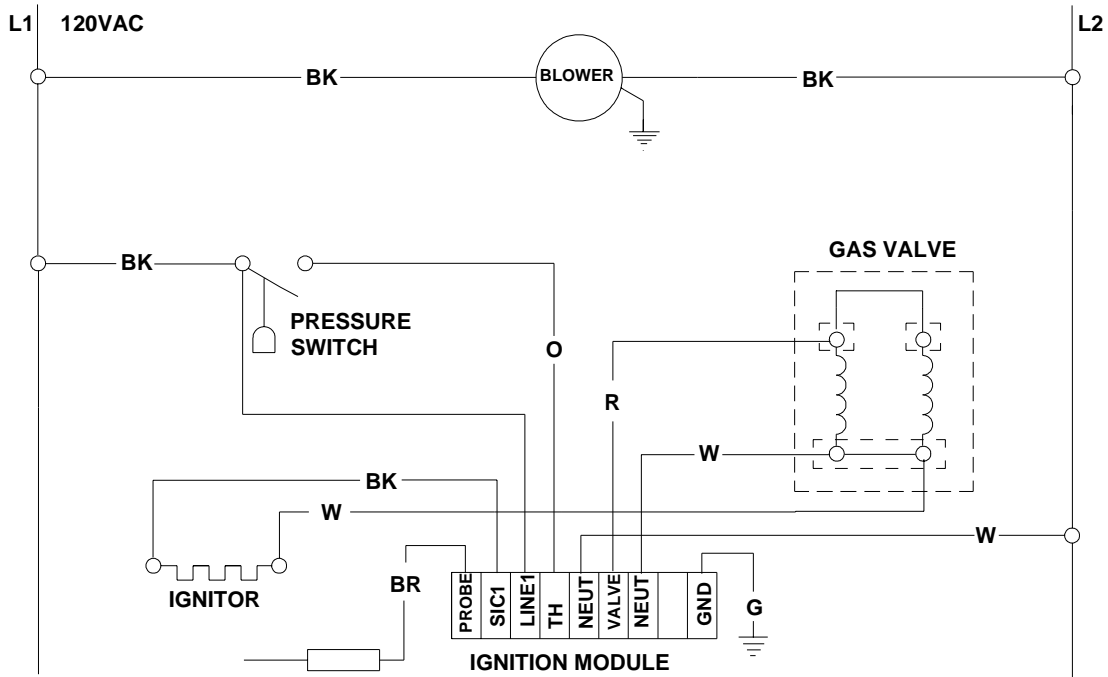
### Running Circuit

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.

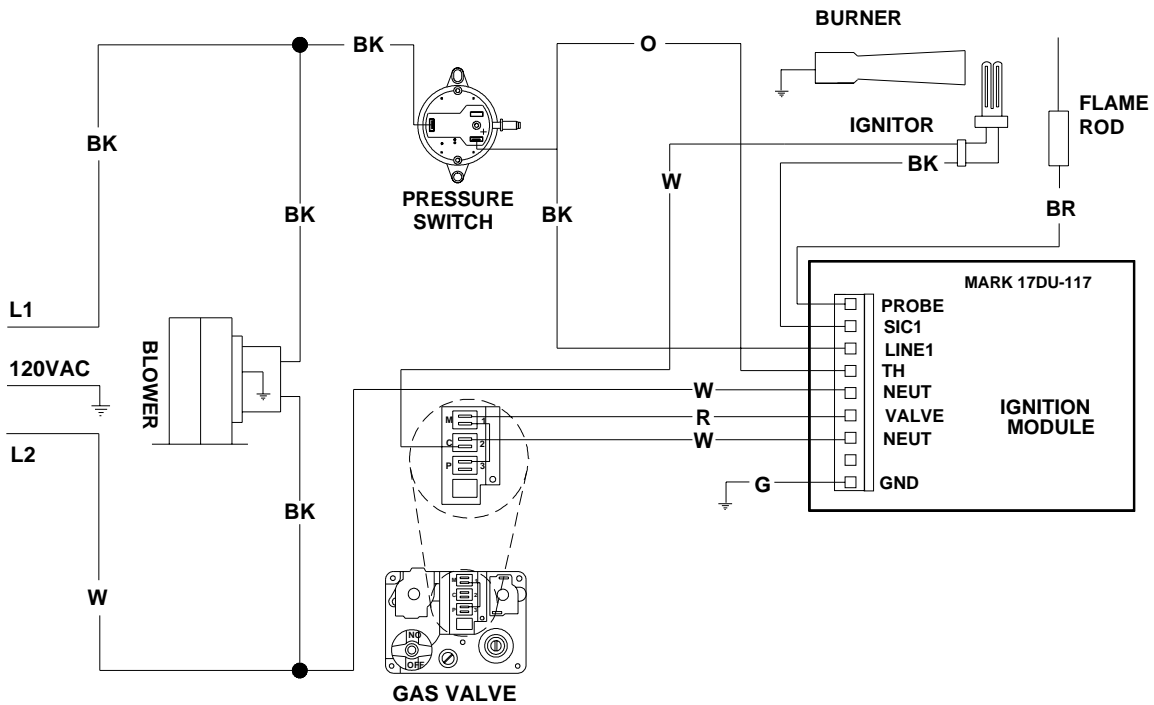
# Internal Wiring Diagrams

## Standard Wiring

**LADDER DIAGRAM - MARK17DU-117 NO LIGHTS S-SW**



**BLOCK DIAGRAM - MARK17DU-117 NO LIGHTS S-SW**

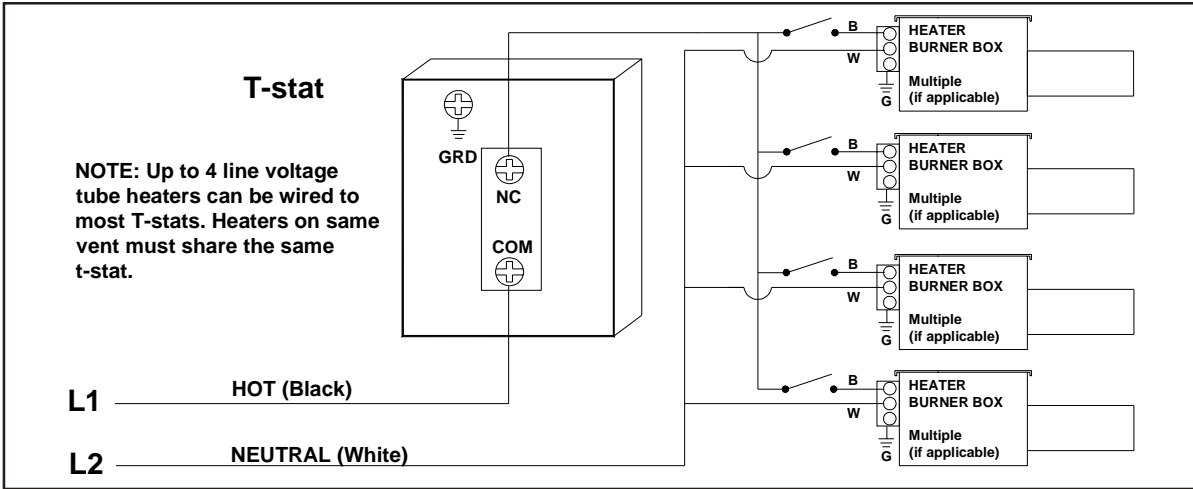


If any of the original wire as supplied with the appliance must be replaced, it must be replaced with wiring material having a temperature rating of at least 105°C.

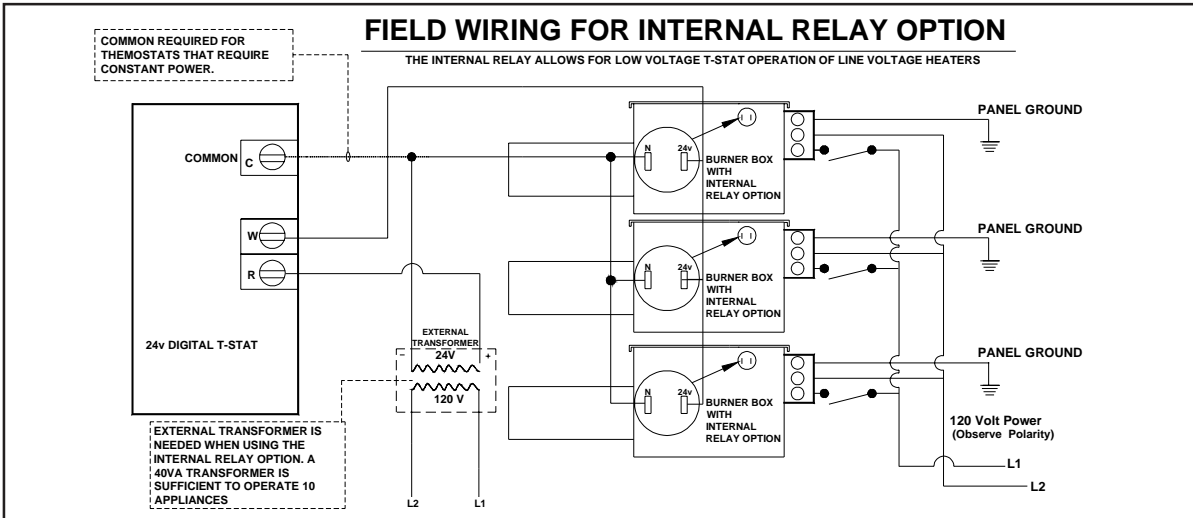


# XTS Series V.6/03

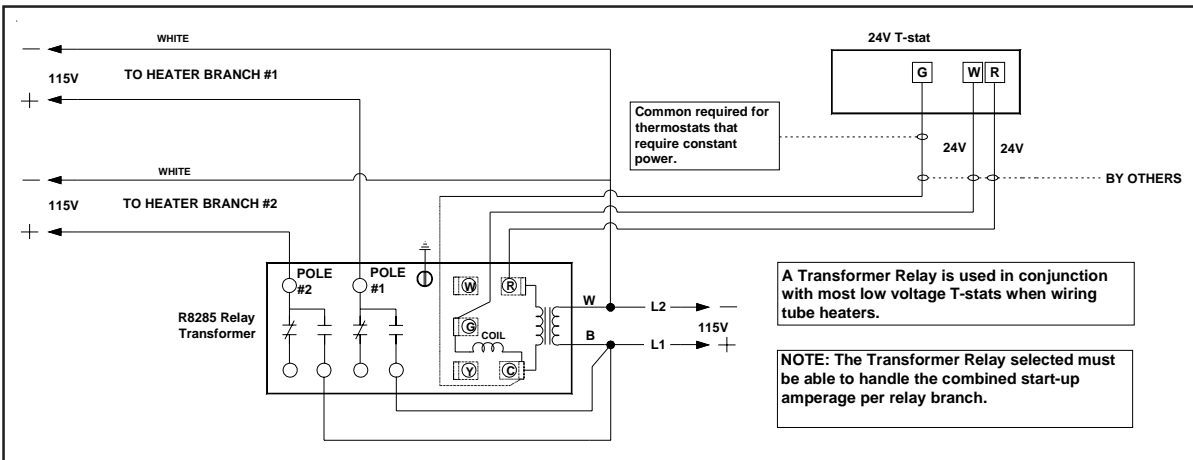
## Field Wiring Diagrams



120V Connection(s) for Single/Multiple Line Voltage Heaters



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

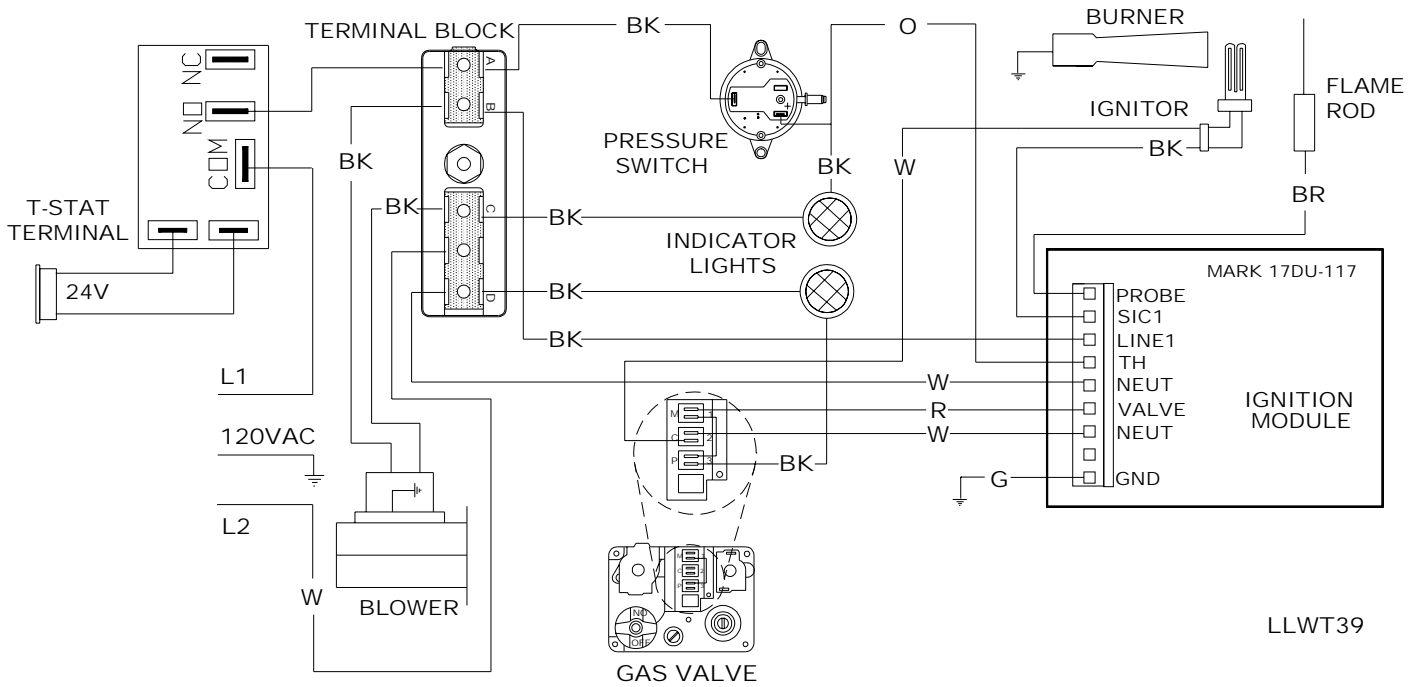


24V T-Stat & Connection

# Alternative Wiring Diagrams

For 24VAO (Internal Relay Option), and Retail Super Centers.

BLOCK DIAGRAM - MARK17DU-117 WITH LIGHTS

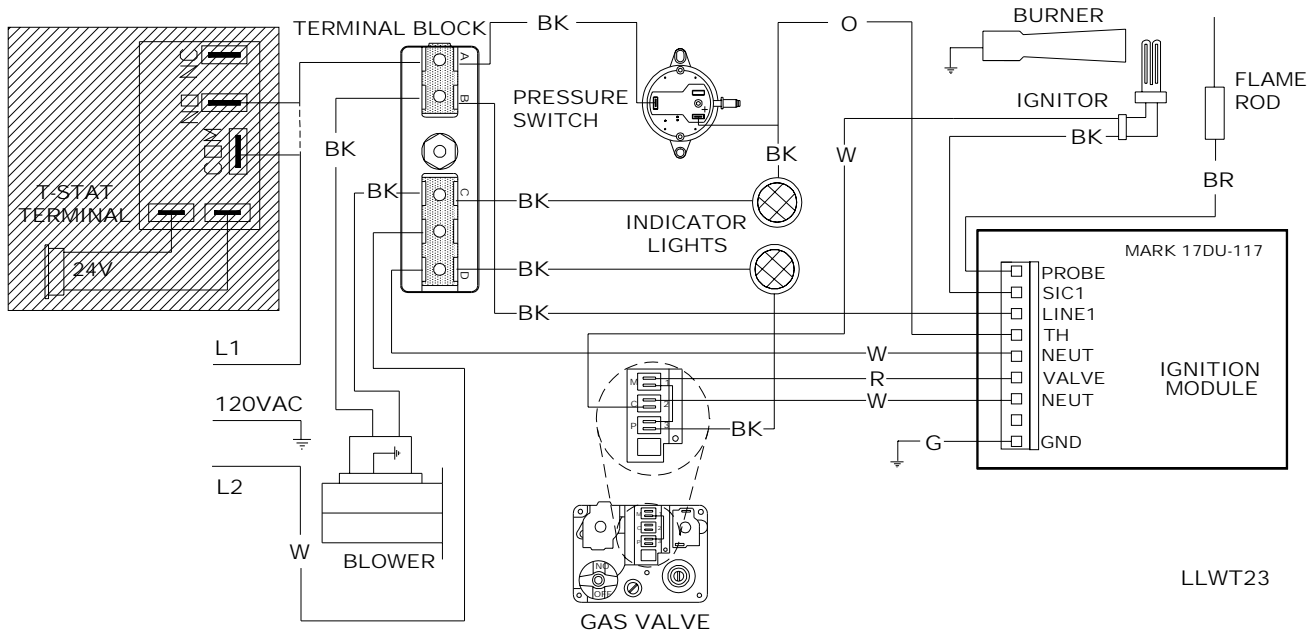


LLWT39

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.

For Obsolete Dual Switch Line Voltage, and 24VAO.

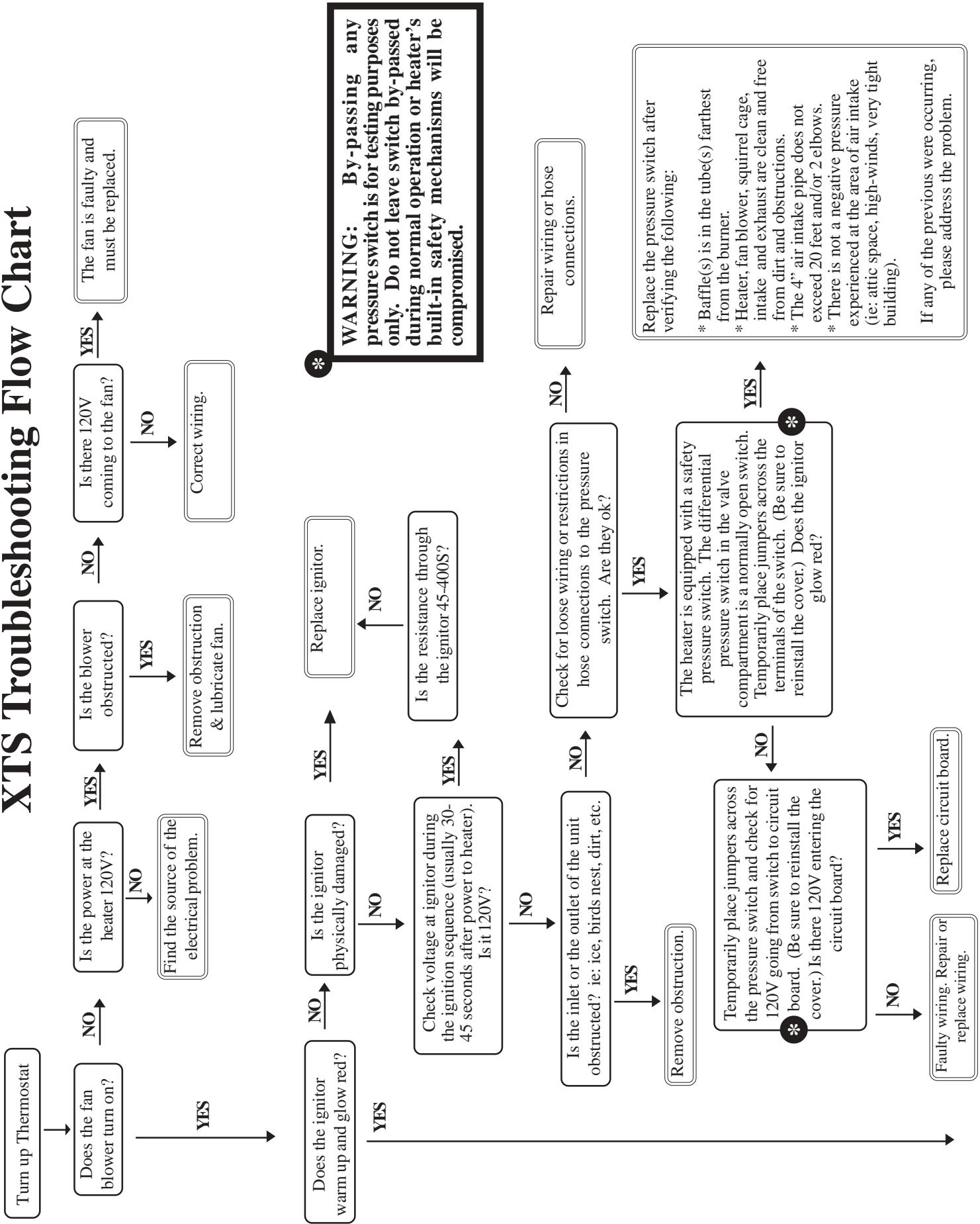
BLOCK DIAGRAM - MARK17DU-117 WITH LIGHTS



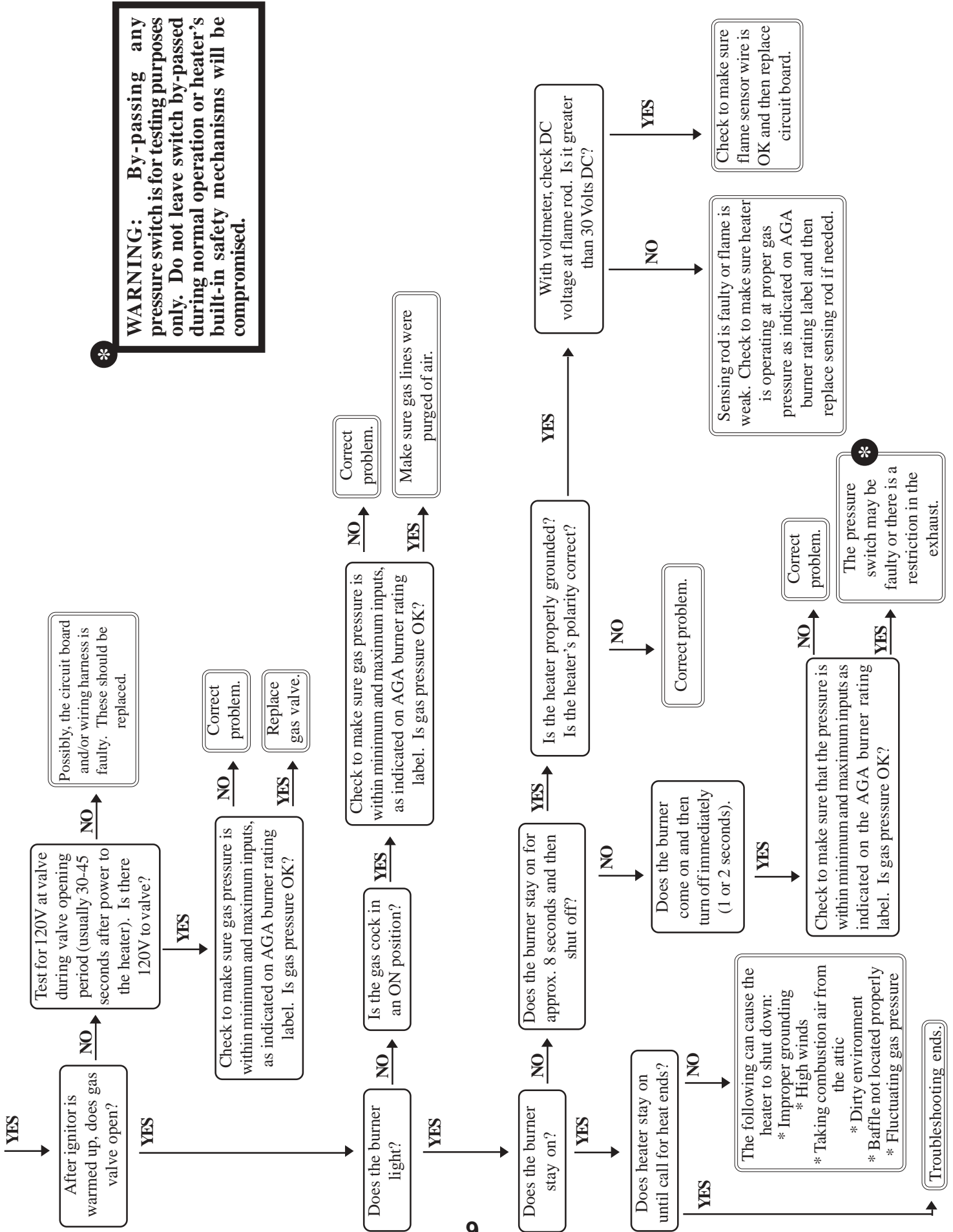
LLWT23



# XTS Troubleshooting Flow Chart

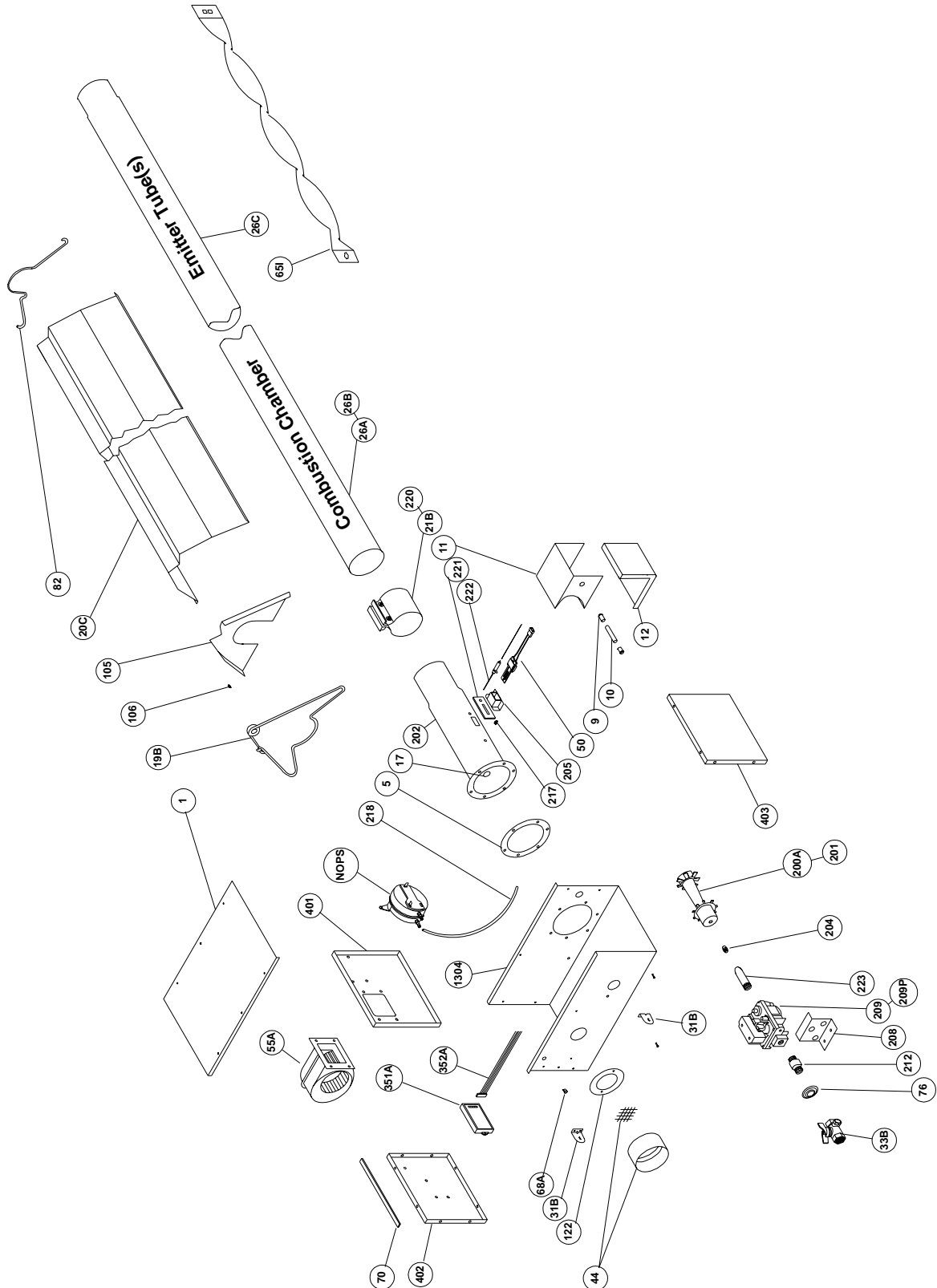






# XTS Series v.6/03

## Parts Breakdown



# Basic Parts List

## XTS 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 200 MBTU/H)
TP-9	CONDUIT COUPLING	TP-202	16" BURNER TUBE WITH FLANGE
TP-10	CONDUIT 4" X 1/2"	TP-204	GAS ORIFICE - CONSULT FACTORY
TP-11	GLO-BAR IGNITOR BOX	TP-205	GLO-BAR HOLDER
TP-12	GLO-BAR IGNITOR BOX COVER	TP-208	"Z" MOUNTING BRACKET
TP-17	SIGHT GLASS KIT	TP-209	36E36A-246 GAS VALVE - NAT GAS ASSY
TP-19B	WIRE HANGER W/ SPRING CLIP	TP-209P	36E36A-240 GAS VALVE - LP GAS ASSY
TP-20C	120" ALUMINUM REFLECTOR	TP-212	1/2" X 3" PIPE NIPPLE
TP-20D	120" STAINLESS STEEL REFLECTOR	TP-217	PRESSURE BARB FITTING
TP-21B	4" TUBE CLAMP	TP-218	EXHAUST PRESSURE SENSE TUBE (VINYL)
TP-26A	10 FT. ALUM. RADIANT/COMBUSTION TUBE	TP-220	4" STAINLESS STEEL BUTT CLAMP
TP-26B	10 FT. TITANIUM COMBUSTION TUBE	TP-221	GLO-BAR HOLDER GASKET
TP-26C	10FT. UNCOATED HOT ROLLED RADIANT TUBE	TP-222	FLAME ROD
TP-31B	CONTROL BOX BRACKET	TP-223	GAS MANIFOLD
TP-33B	1/2" GAS COCK	TP-330	DIVIDER GROMMET
TP-44	AIR ORIFICE W/SCREEN - CONSULT FACTORY	TP-331	GREEN SELF TAP GROUND SCREW
TP-50	GLO-BAR IGNITOR	TP-351A	MARK 17-DU POTTED BOARD
TP-55A	FAN BLOWER	TP-352A	WIRE HARNESS FOR TP-351A
TP-65I	INTERLOCKING 33" BAFFLE SECTION	TP-401	DIVIDER PANEL
TP-66	2" X 4" OUTLET BOX	TP-402	LEFT END PANEL
TP-67	2" X 4" OUTLET BOX COVER	TP-403	RIGHT END PANEL
TP-68A	STRAIN RELIEF BUSHING	TP-404	CONTROL BOX
TP-70	CONTROL BOX COVER GASKET (PER FOOT**)	<b>TP-NOPS</b>	N.O. Pressure Switch (Select switch below <b>BTU Dependent</b> )
TP-76	RUBBER GROMMET	(TP-264B)	DIFFERENTIAL PRESSURE SWITCH - 50 TO 100 MBTU/H
TP-82	REFLECTOR CENTER SUPPORT	(TP-264E)	DIFFERENTIAL PRESSURE SWITCH - 125 TO 150 MBTU/H
TP-105	REFLECTOR END CAP	(TP-264D)	DIFFERENTIAL PRESSURE SWITCH - 175 MBTU/H
TP-106	REFLECTOR CLIP	(TP-264F)	DIFFERENTIAL PRESSURE SWITCH - 200 MBTU/H
TP-111	5' ALUM. TUBE, PAINTED WITH ONE CLAMP		
TP-112	5 REFLECTOR		
TP-122	GASKET FOR AIR ORIFICE & AIR COLLAR		

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






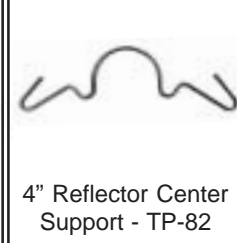



# KIT CONTENTS AND PRODUCT FEATURES

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 4 Reflector endcap clips TP- 106	Reflector End Caps TP-105	4" Reflector Center Support - TP-82	Generic IOM (LIOGT) <b>AND</b> Series Insert (LIOXTS)

**NOTES:**

^Gas cock is installed onto heater at the factory.  
 \*One 4" stainless steel butt clamp is provided for each 175,000 & 200,000 BTU model. Place as shown in IOM.

## Product Features

### APPROVALS

- IAS, CSA, 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.

### CONTROLS

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

### EMMITER & COMBUSTION TUBES

- 16ga. 4" O.D. hot rolled steel radiant tubes.
- Coated aluminized combustion chamber (50-125 MBTU/H models).
- Coated titanium combustion chamber (150-200 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](http://www.reverberray.com)

## 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.