

VANTAGE

Installation, Operation and Service Instructions

GTHS-80 GTH-80 GTH-100
GTH-125 GTH-150

Installer: Please take the time to read and understand these instructions prior to any installation.

Owner: Keep this manual in a safe place to provide your serviceman with information if the situation arises.

W A R N I N G

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.



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Energy Efficient Comfort.

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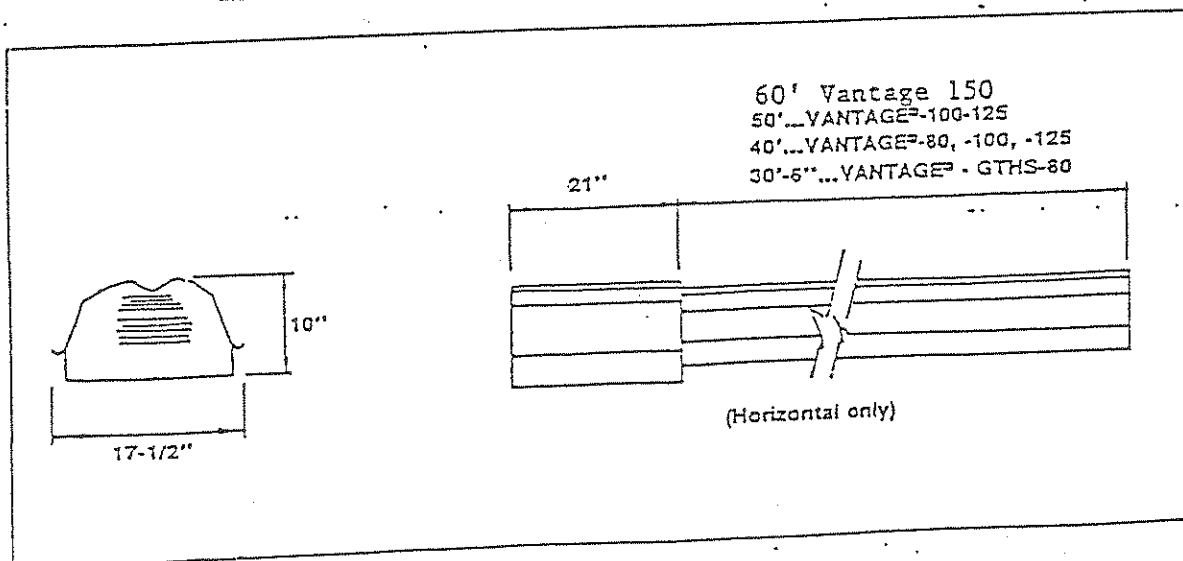
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GENERAL SPECIFICATIONS

MODEL	RATING (0-4500 ft. above sea level)		WEIGHT (lbs.)
	NATURAL GAS(btu/h)	PROPANE(btu/h)	
GTHS-80 (30')	80,000	80,000	145
GTH-80 (40')	80,000	80,000	180
GTH-100 (40')	100,000	100,000	180
GTH-100 (50')	100,000	100,000	215
GTH-125 (40')	125,000	125,000	180
GTH-125 (50')	125,000	125,000	215
GTH-150 (40')	150,000	150,000	180
GTH-150 (50')	150,000	150,000	215
GTH-150 (60')	150,000	150,000	250

	MANIFOLD PRESSURE	GAS INLET PRESSURE	
		MAXIMUM	MINIMUM
Natural Gas	3.5 W.C.	14.0" W.C.	4.5" W.C.
Propane	10.5 W.C.	14.0" W.C.	11.0" W.C.

ELECTRICAL RATING	115V 60 Hz .8 Amps
FLUE CONNECTION SIZE	4" O.D.
GAS CONNECTION	1/2" NPT



TUBING ASSY ATTACHMENT
TO THE CONTROL HOUSING

5/16 LOCKWASHER

5/16-10 HEX NUT

WELDED TUBING ASSY.
P/N C2536000

CONTROL HOUSING
5/16-10 x 1" HEX HEAD SCREW
AND 5/16 LOCKWASHER

5/16-10 WELD NUT (REF.)

GASKET
P/N 02560200

TUBE AND REFLECTOR
HANGER P/N 03080100

REFLECTOR
P/N 77145

REFLECTOR SUPPORT
STRAP (SEE DETAIL
AND NOTE)

MINIMUM
OVERLAP (TYP.)
(SEE FIGURE 4)

Flue baffle model
GT11150 only

TUBE COUPLING ASSY.
P/N 01312700

4" O.D. x 10 FOOT TUBING,
P/N 91403300 OR P/N 91409408 (OPTIONAL)

END CAP P/N 77215
ATTACH WITH "U" CLIPS
P/N 91107720 (TYP.)

WIRE FORM CLAMP
P/N 57110

#8 x 3/4" TYPE "B"
SHEET METAL SCREW

4" O.D. TUBING (REF.)

REFLECTOR SUPPORT STRAP
P/N 03050000

NOTE: BEGINNING AT THE REFLECTOR SUPPORT STRAP NEAREST THE
CONTROL HOUSING TIGHTEN THE REFLECTOR SUPPORT STRAP SCREWS
SECURELY AT EVERY OTHER SUPPORT. THE REFLECTORS MUST BE ALLOWED
TO SLIP AS EXPANSION OCCURS. AT JOINTS THAT ARE NOT SECURELY
ATTACHED THE SCREWS SHOULD BE KEPT APPROXIMATELY 1/16" FROM
CONTACTING THE REFLECTOR.

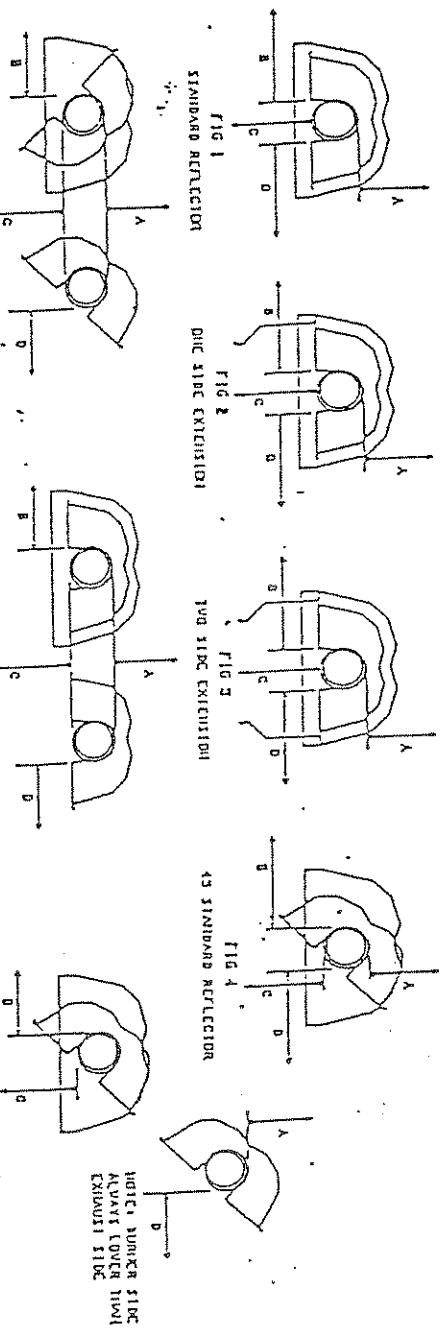
TYPICAL ASSEMBLY OF A MODEL GTH HEATER

CAUTION: CLEARANCES AS SHOWN ARE NOT FOR USE IN FOUR SIDED ENCLOSURES.
 BROODER MINIMUM CLEARANCES TO COMBUSTIBLES (INCHES)

MODEL X	FIGURE 11				FIGURE 12				FIGURE 13				FIGURE 14				FIGURE 15				FIGURE 16				FIGURE 17					
	A	B	C	D	A	B	C	D	A	B	C	D	A	B	C	D	A	B	C	D	A	B	C	D	A	B	C	D		
CHH(S)-80	6	19	38	19	6	14	10	28	6	11	10	11	6	9	30	30	6	28	30	17	6	19	42	19	6	9	30	30	UNVENTED ABOVE END	VENTED END
CHH(S)-100	6	25	40	25	6	20	50	31	6	20	52	20	6	40	40	6	6	48	40	17	6	25	50	25	6	9	40	40	20	21
CHH-100F	6	30	51	30	6	23	55	30	6	14	70	33	6	60	60	6	6	60	60	17	6	33	65	33	6	9	60	48	20	24
CHH-125	6	18	78	18	6	28	70	48	6	14	70	41	6	9	70	78	6	76	70	23	6	48	72	70	6	9	70	50	20	24
CHH-135F	6	18	78	18	6	28	70	48	6	14	70	41	6	9	70	78	6	76	70	23	6	48	72	70	6	9	70	50	20	24

SPACE HEATING MINIMUM CLEARANCES TO COMBUSTIBLES (INCHES)

MODEL X	FIGURE 11				FIGURE 12				FIGURE 13				FIGURE 14				FIGURE 15				FIGURE 16				FIGURE 17					
	A	B	C	D	A	B	C	D	A	B	C	D	A	B	C	D	A	B	C	D	A	B	C	D	A	B	C	D		
CHH(S)-80	6	19	38	19	6	14	10	28	6	11	10	11	6	9	30	30	6	28	30	17	6	19	42	19	6	9	30	30	UNVENTED ABOVE END	VENTED END
CHH-100	6	25	40	25	6	20	50	31	6	20	52	20	6	40	40	6	6	48	40	17	6	25	50	25	6	9	40	40	20	21
CHH-125	6	33	60	33	6	14	70	33	6	14	72	14	6	9	60	60	6	60	60	17	6	33	65	33	6	9	60	48	20	24
CHH-130	6	37	67	37	6	14	74	41	6	14	76	14	6	9	67	67	6	67	67	17	6	37	69	37	6	9	67	53	20	28



NOTES: 1. ALL CLEARANCES ARE TO COMBUSTIBLES AND NOT TO INSULATING MATERIALS. 2. CLEARANCES TO COMBUSTIBLES ARE TO BE MAINTAINED AT ALL TIMES. 3. CLEARANCES TO COMBUSTIBLES ARE TO BE MAINTAINED AT ALL TIMES.

7.50"

5.00"

	SIDE	SIDE	BELOW	TOP
STANDARD REFL.	18	18	28	4
ONE SIDE EXTEN.	8	18	28	4
TWO SIDE EXTEN.	8	8	28	4

DESCRIPTION: CLEARANCE PLATE
 VANTAGE 1
 51425
 ROBERTS GORDON
 CHICKEN BLDG
 92-01

Clearances are reduced 25 feet downstream of burner, as follows: (for space heaters or Brooders).

HANGING THE HEATER - (Horizontal Only)

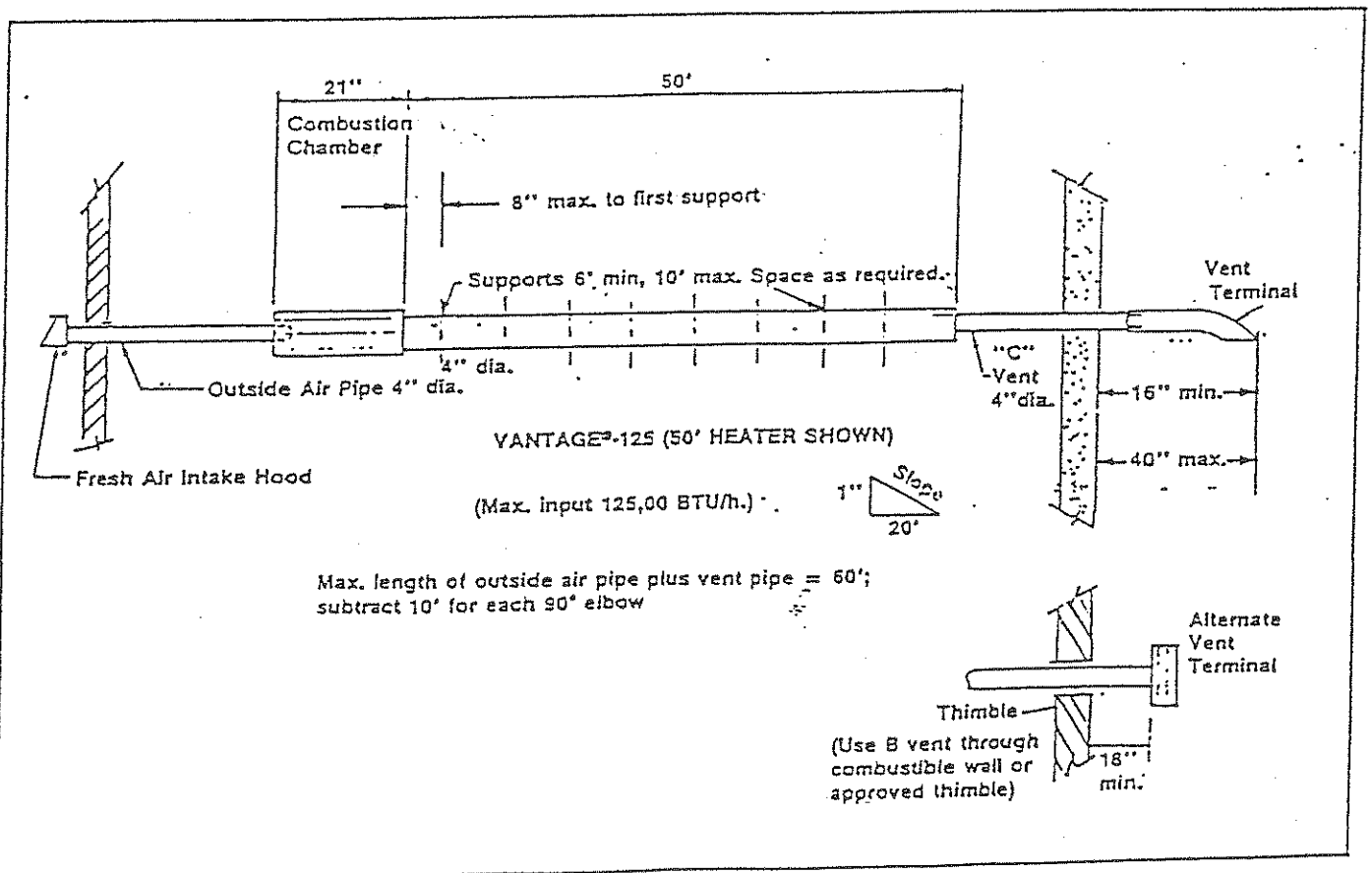
Suspension Chain should be used to support the unit between the ceiling and suspension hangers provided. Chain should have a load rating of at least 400 lbs. at each suspension point. For instructions on mounting height and locations of heaters, refer to installation plans of supplier of equipment. Heater should be pitched down towards vent Horizontal 1" in 20'.

Hang the heater tube sections using the tube and reflector supports supplied. One tube and reflector support must be located with 8" of the burner/control housing assembly (See Fig. 4).

Tube sections are connected by wrap-around couplings which clamp by means of a tapered hammer-driven lock member. The starting ends of the coupling and lock members are identified by 1/4" holes which are put together when starting assembly.

Be sure tubes are in line and tube ends butt against stop pins inside the coupling. The slide bar is to be hammer driven to the point of securing the coupling to the tubes. Over driving will result in distortion of the coupling or slide bar lip decreasing the holding capability of the coupling (see figure 5)

The slide bar has a 2" tolerance in reference to lining it up with the end of the coupling at the point of being secure (Slide bar may tighten coupling when driven 2" short or 2" past the edge of the coupling). See Fig. 5.



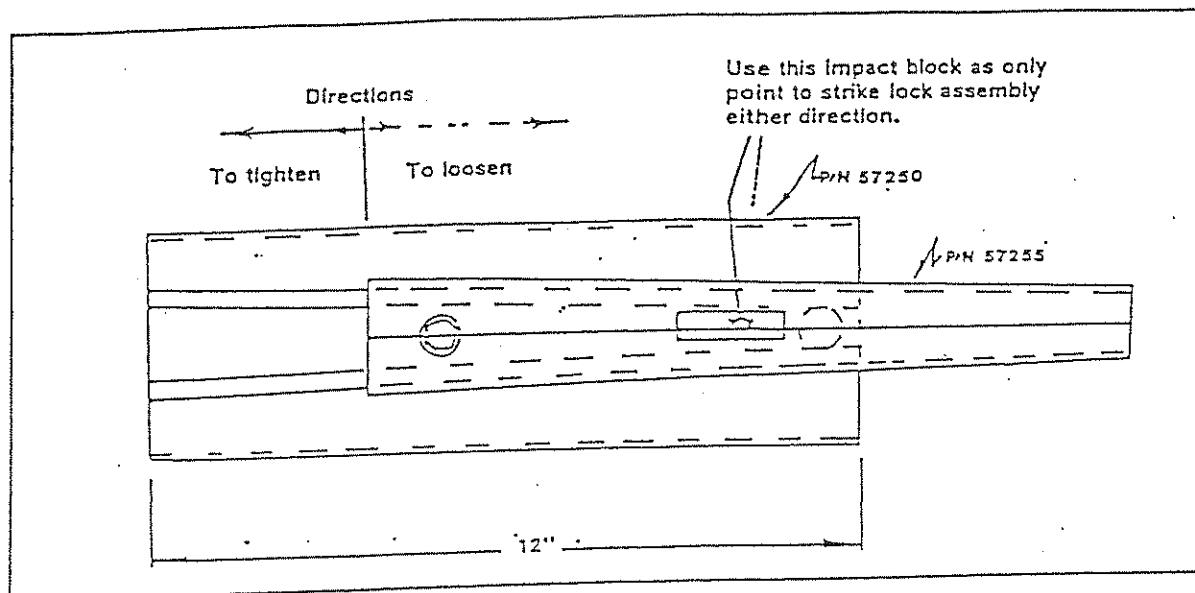


Figure 5

BURNER AND CONTROL HOUSING

Secure the burner/control housing assembly to the reducer tube assembly with the 5/16 - 18 bolts, nut and lockwashers provided.

REFLECTORS

Install the reflectors (Fig. 1) overlapping 9" minimum to allow for expansion. Slide the reflector up to the burner housing and drill holes in reflector and control housing brackets to secure same. Use sheet metal screws (#8 X 3/8") provided.

This is the part of the system that is most apparent and where a neat job marks the installer as a craftsman.

Basic features of reflector installation are:

- Reflectors are locked with "U" clips
- Reflectors not supported by a hanger should rest on a reflector that is supported. Provide at least a 9" overlap to provide for thermal expansion.
- Reflectors should be level side to side.
- Reflector end cap must be used at the flue end of the reflectors.
- Reflectors must be carefully handled to avoid finger marks and dents.
- Finger marks are best removed with window spray cleaner.

VENTING

The venting must be installed in accordance with CAN/CGA-B149.1 and B149.2 Installation Codes. Partial information relating to this Specification is provided in this section with regard to size and configurations for venting arrangements (see following tables and diagrams). However, it is the responsibility of the installer to make the installation in strict accordance with Codes and provide assurance of proper and safe operation.

For best results, Vantage heaters should be vented individually or in groups of heaters with a common vent and controlled by a common thermostat. This reduces condensation and provides a stronger natural draft. The use of vent caps and positioning of the top of the vent with respect to roof structure should be in accordance with Codes. For other situations not covered here, the installer must consult Codes.

VENTING METHODS

1. HORIZONTALLY through outside wall, (See Fig. 4 & 10a). The certified vent terminal, supplied with heater, must be used.

DO NOT INSTALL VENT TERMINAL:

- LESS THAN 3 Feet from any building opening.
- LESS THAN 6 Feet from the combustion air opening of this unit or any other appliance.
- LESS THAN 3 Feet from above grade.
- OVER a gas utility meter or service regulator.
- LESS THAN 18" from the outside wall.

2. VERTICALLY through the roof using double wall type "B": vent (See Fig. 6 & 7).

3. If condensation is a problem, the vent length should be shortened or the pipe insulated.

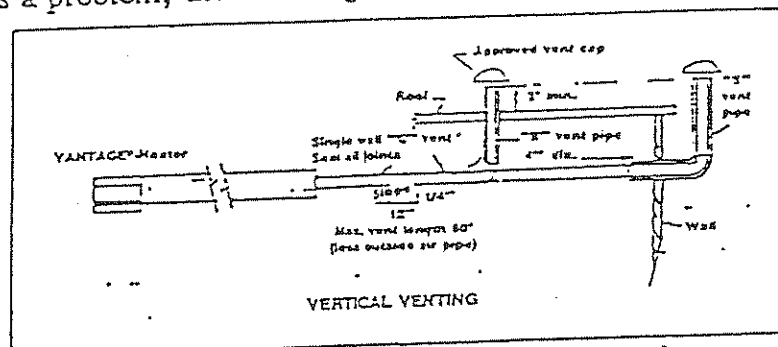
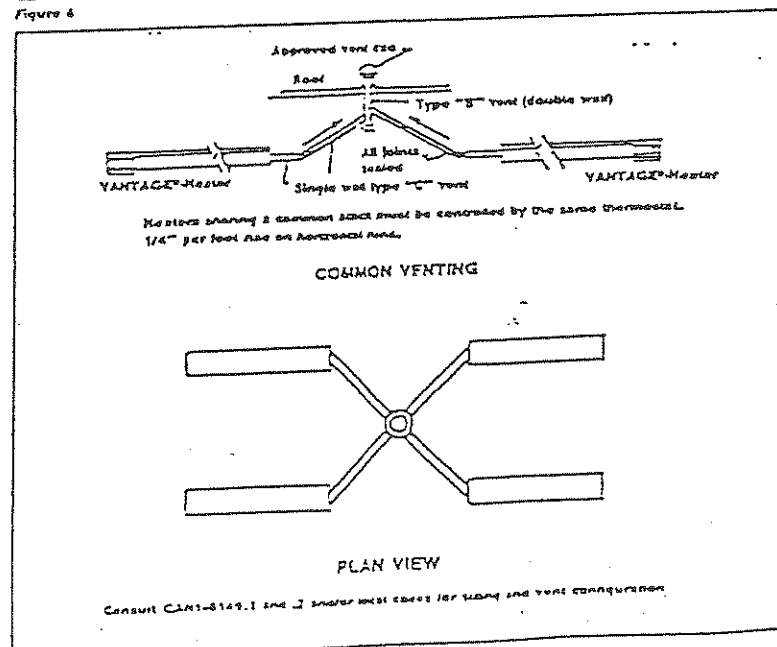


Figure 6



UNVENTED HEATER

The Vantage² is also certified for unvented installations provided the following conditions are met:

1. An interlock must be used with exhaust fans to prevent the heater, or heaters from coming on when the exhaust fans are off. This may be done using an air proving switch as shown in the electrical wiring diagram (Fig.19) in this manual. Capacity of the exhaust fan must be 300 CFM for every 100,000 BTU/hr. of input.
2. The vent terminal must be installed on the unit.
3. When installed in adequately ventilated agricultural buildings used ONLY for brooding purposes, the interlock is not required provided that maximum input does not exceed 30 BTU per cubic foot or the input specified by local codes or authorities.
4. If condensation is a problem, the vent length should be shortened or the flue should be insulated.

GAS PIPING

All piping and connections shall be made in accordance with CAN1-B149.1 and B149.2 - "Installation codes for gas burning appliances" and/or local codes.

A drip leg consisting of a tee, nipple, and pipe cap, which forms a trap for dirt and moisture, must be attached to the gas line as shown in Figure 8. A 1/8" N.P.T. plugged tapping, accessible for a test gauge connection, must be supplied immediately upstream of the gas supply connection of the appliance.

The gas line and meter which feeds the heater(s) must be large enough to supply the required gas. If there is any question, check with the gas company.

CAUTION

For high pressure testing on gas piping, COMPLETELY DISCONNECT ALL BURNER UNITS AND THE SHUT-OFF COCKS SUPPLIED WITH SAME; then install pipe cap on system and conduct test. Failure to follow this procedure will exceed pressure rating of burner gas controls and this will require complete replacement of these parts.

WARNING

There is expansion of the radiant pipe with each firing cycle, and this will cause the burner to move with respect to the gas line. This can cause an unsafe condition if the gas connection is not made strictly in accordance with Figure 4.

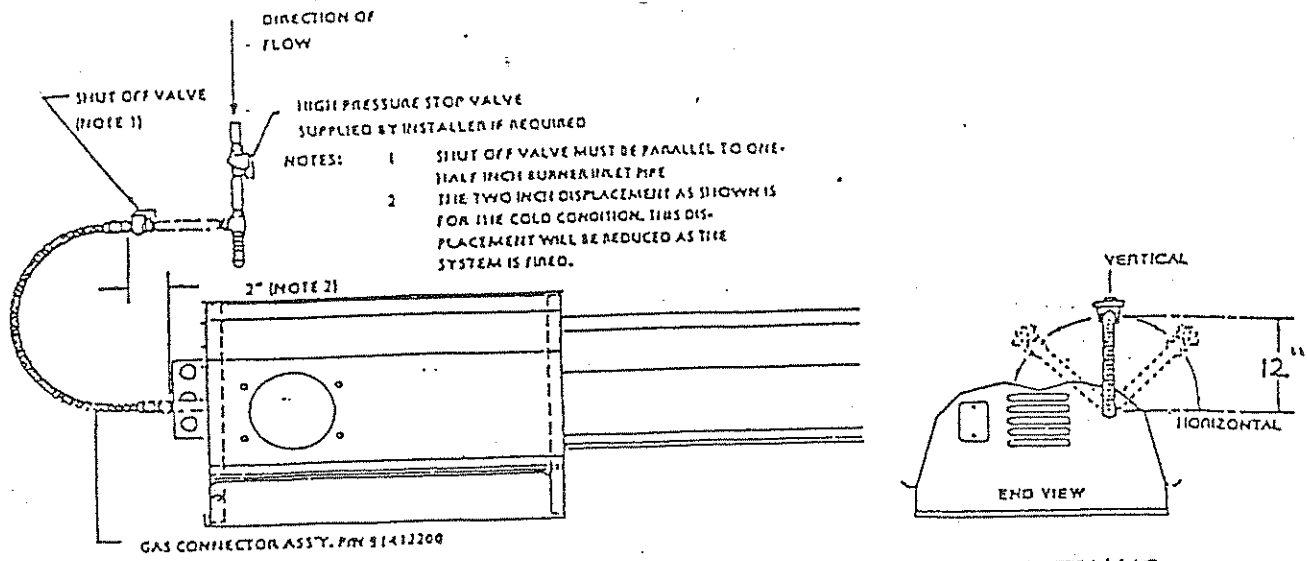


FIGURE 8 GAS LINE CONNECTION TO BURNER WITH FLEXIBLE METALLIC CONNECTOR ASSEMBLY

The purpose of the gas connector from the heater to the gas piping is twofold as follows:

- ✓ To facilitate installation and replacement of the burner
- ✓ To accommodate any movement between the heater and the gas piping. See warning below.

The flexible metallic connector assembly, as supplied, must be installed as shown in Figure 4.

SEQUENCE OF OPERATION MODEL VANTAGE® D.S.I. CONTROL

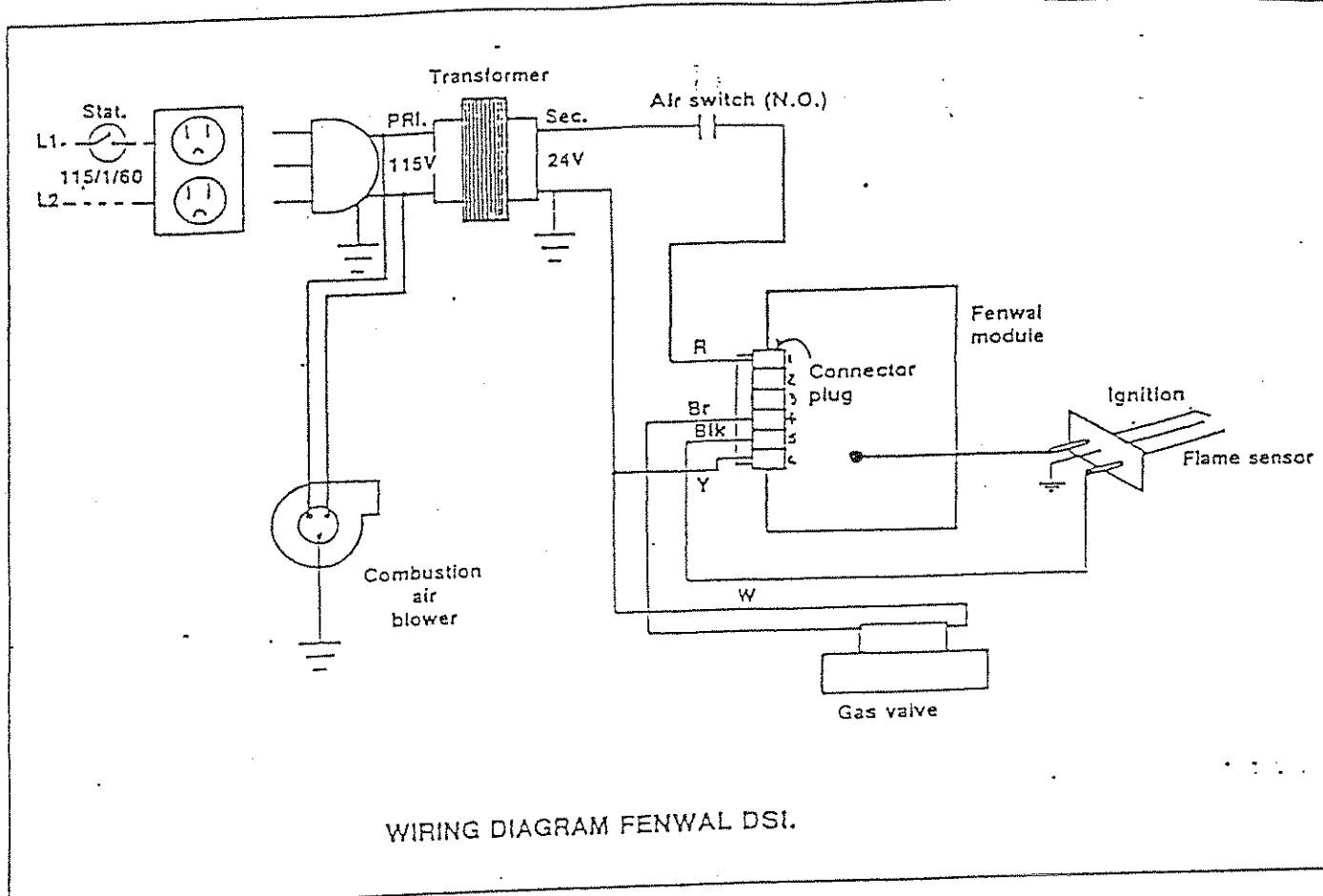
The Vantage® heater is equipped with a direct spark ignition system.

Sequence of Operation:

- ✓ The thermostat on call for heat, energizes blower motor.
- ✓ When motor approaches nominal running R.P.M., the air proving switch closes energizing the ignition module which energizes the spark igniter and opens the redundant gas valve.
- ✓ As the flame is established, the spark ceases.
- ✓ If the flame is not established during the flame establishing period, the system closes the gas valve and locks out.
- ✓ If the flame is extinguished during the duty, the igniter will provide one immediate retry for ignition before going into lockout.
- ✓ After lockout, control must be reset by turning down thermostat for five (5) seconds, and then raising it again to desired temperature, or unplugging appliance cord, and then plugging in again.
- ✓ When thermostat is satisfied all power to the unit is de-energized.

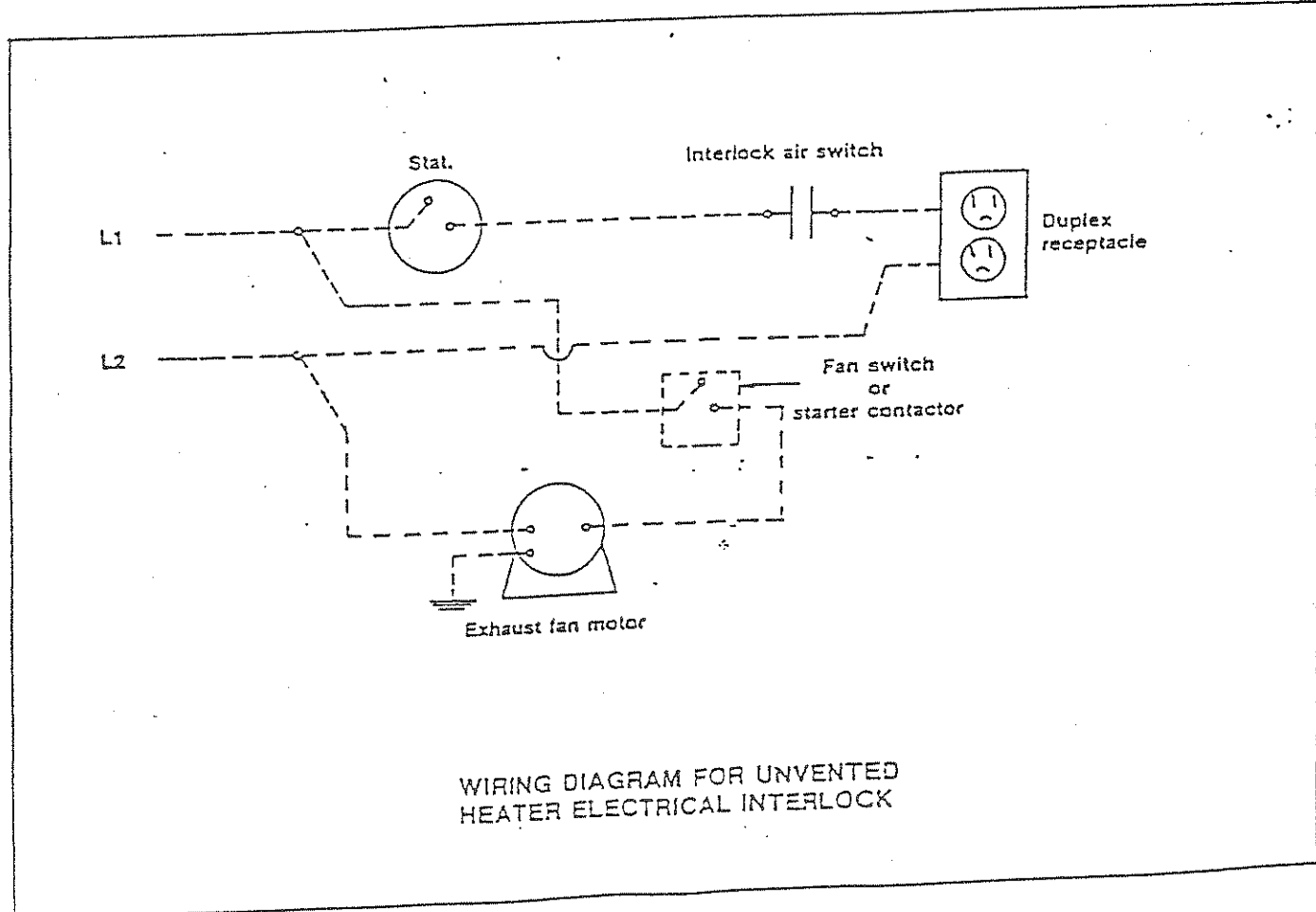
WIRING

All electrical wiring and connections shall be made in accordance with the CSA standard C22.1 Canadian Electrical Code Part 1 and/or local codes.
Refer to wiring diagrams.



WIRING DIAGRAM FENWAL DSI.

Figure 18



WIRING DIAGRAM FOR UNVENTED HEATER ELECTRICAL INTERLOCK

Figure 19

OPTIONAL EQUIPMENT

A REFLECTOR SIDE EXTENSION, used to reduce clearances to combustible construction may be installed on either side of the unit as shown below.

- Attach a reflector side extension support bracket (#77187) to tube as needed. These brackets should be located adjacent to the overlapped joints of the reflector side extension.
- Insert lower edge of reflector side extension in extension support bracket.
- Cut suitable relief notch for each reflector hanger. (#77180)
- Hook top edge of reflector side extension (#77140) over edge of reflector (#77145) (See Detail "A").
- A slip joint must be provided in the reflector side extension at the location of each slip joint in the reflector. The overlap should be the same as the reflector.
- Where severe air movement may be encountered, as at a large door, one (1) or two (2) sheet metal screws should be used, except where a slip joint is required.
- Install at least two brackets #77198 for each reflector side extension.

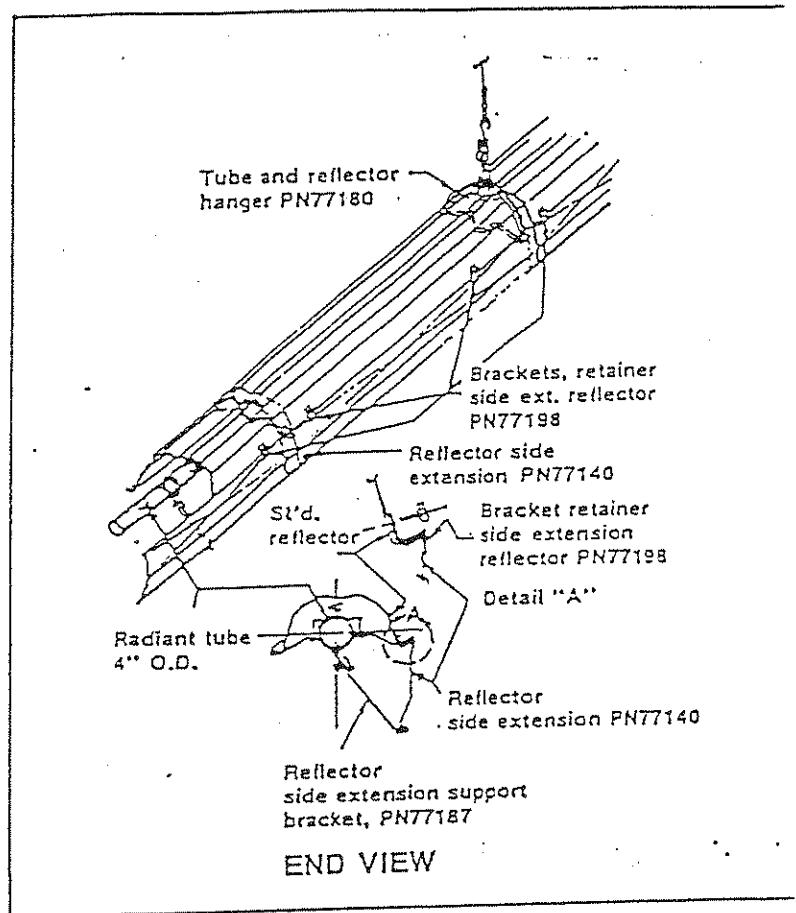


Figure 9

NOTE: TO INSTALL #77198 BRACKETS:

Lay bracket over the reflector side extension and standard reflector at selected location. By using hole as template, drill or punch approximately 3/32" dia. pilot hole in the standard reflector. Install #8 x 3/8" sheet metal screws (see Detail A).

OUTSIDE AIR SUPPLY

If the building has a slight negative pressure or contaminants are present, outside combustion air may be supplied to the heater. See Fig. 10.

4" Dia. duct MAY BE ATTACHED to the heater outside air adaptor. This duct may be up to 60 feet, less the vent pipe, in length. Deduct 10 feet for each elbow in the air supply duct or vent pipe.

NOTE:

The air supply duct may have to be insulated to prevent condensation forming on outer surface.

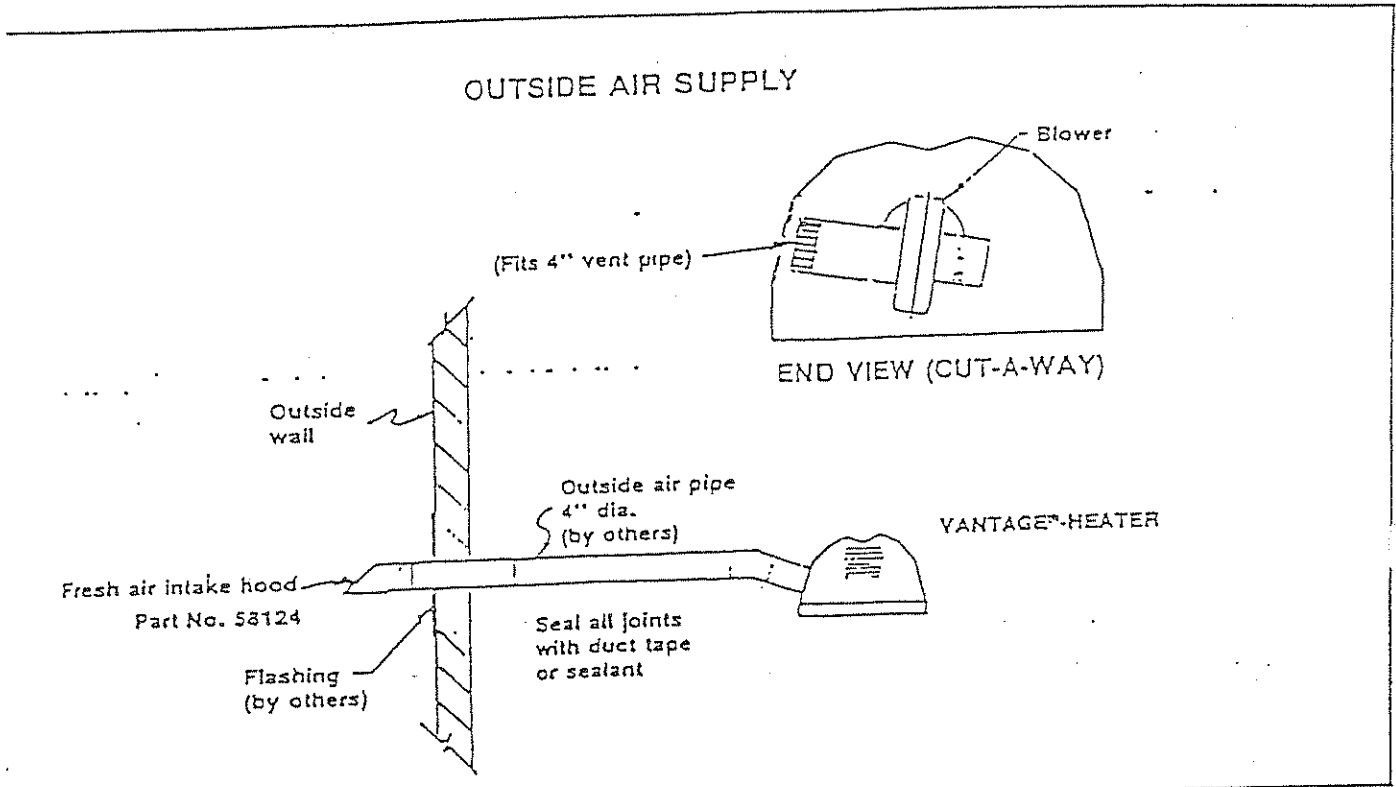


Figure 10

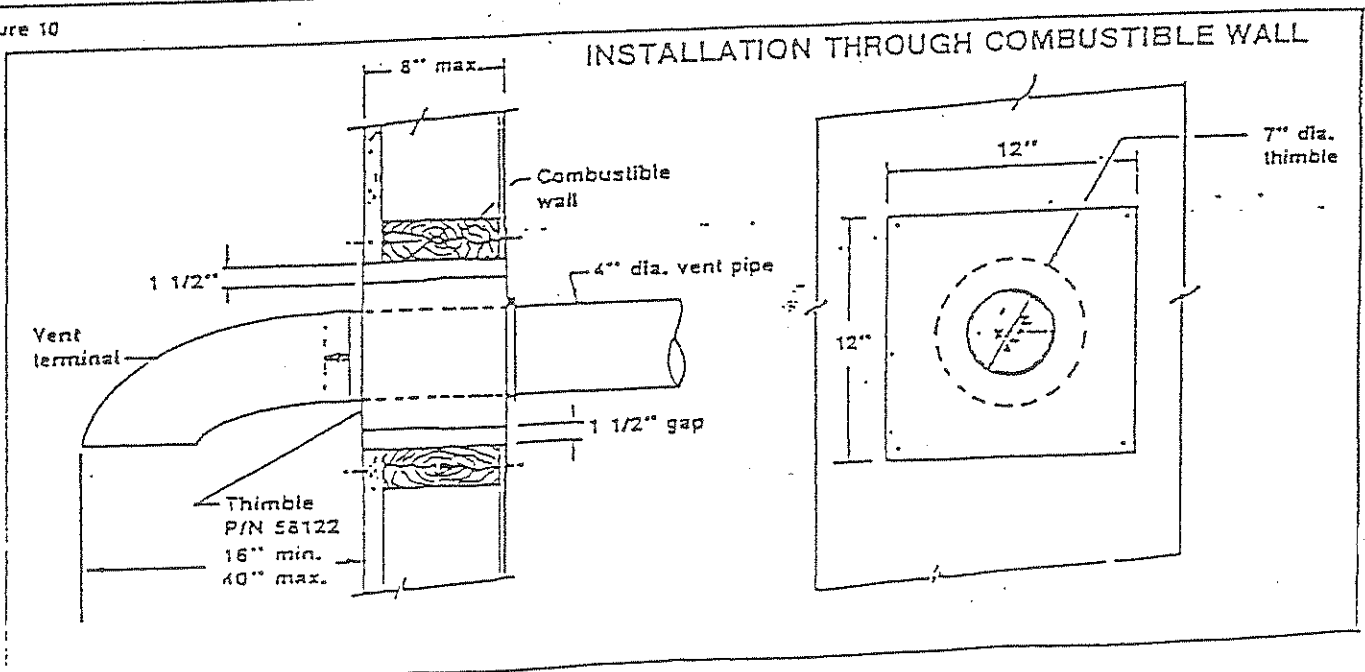
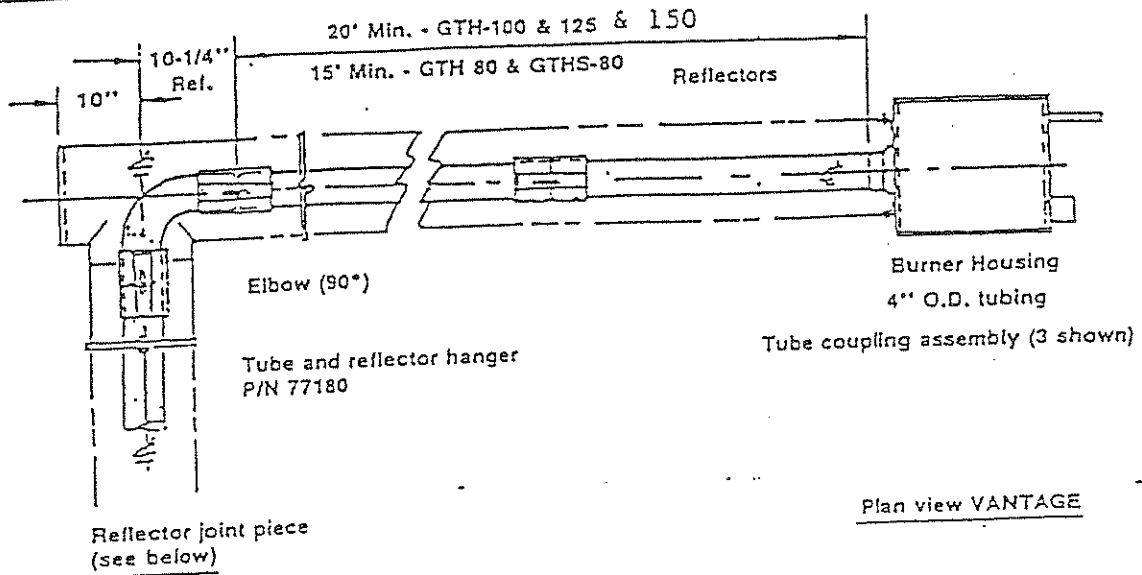


Figure 10a

VANTAGE--HEATER CONFIGURATION



NOTE: Elbow may be installed in either direction.

INSTALLATION OF REFLECTOR JOINT PIECE AND END CAP

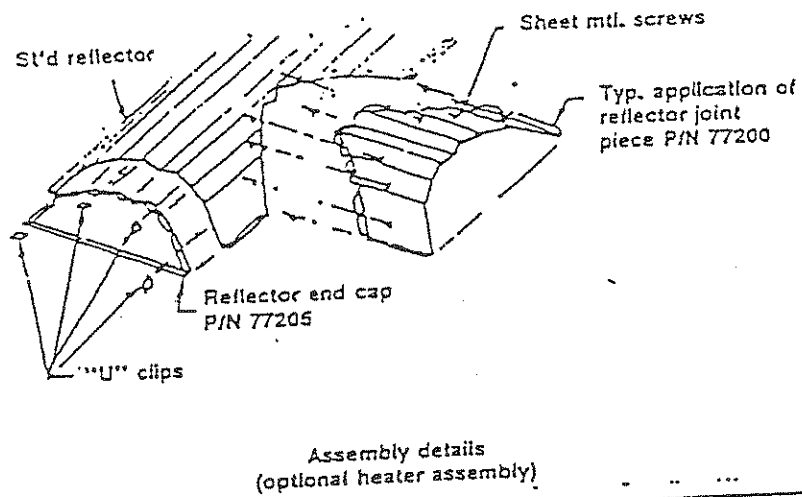
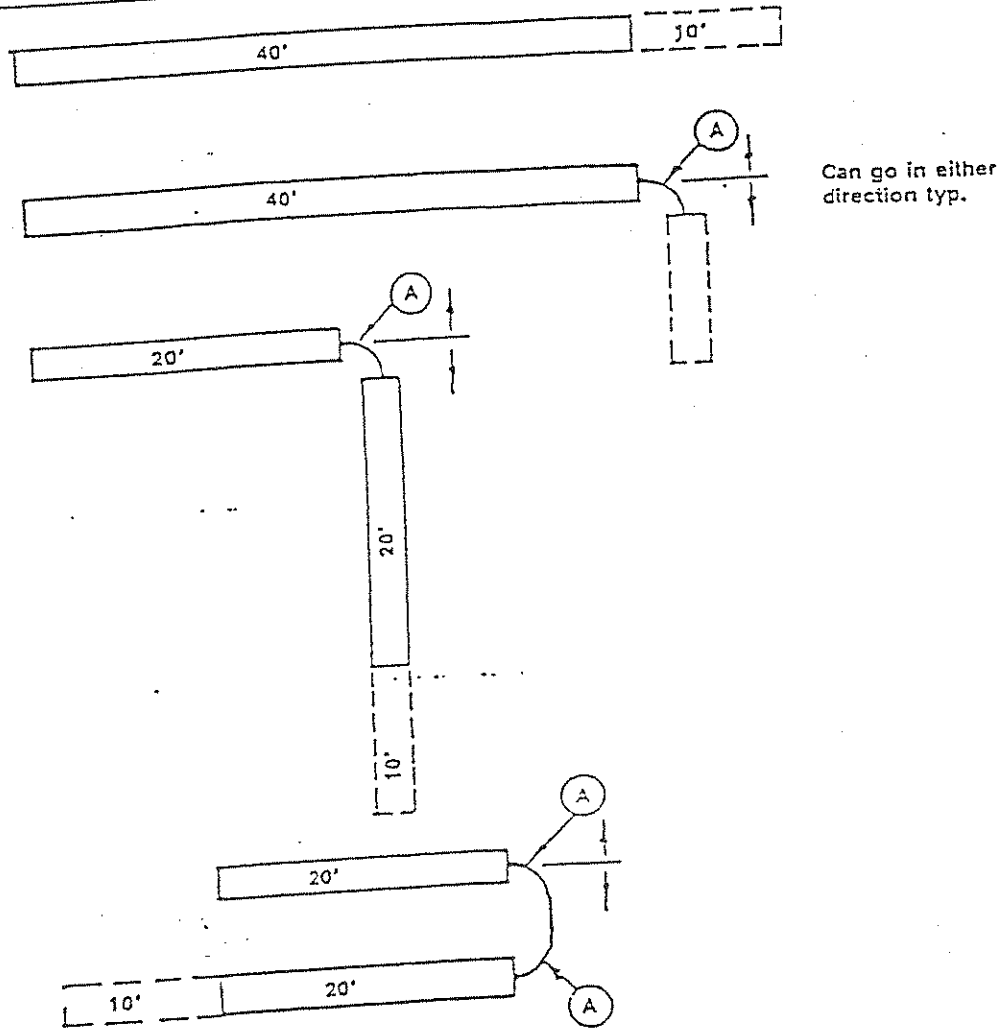


Figure 12

VANTAGE[®]-HEATER CONNECTIONS
 150,000 125,000 BTU/hr
 100,000 BTU/hr 40 and 50' only
 80,000 BTU/hr 60' on 150,000 only



- Legend:**
- 40' length of tubing
 - 20' length of tubing
 - 10' tubing length extension, OPTIONAL (Vantage 100 and 125 only)
 - Optional elbow package P/N 59325
- Standard heater tubing length

Figure 11

GTHS - 80

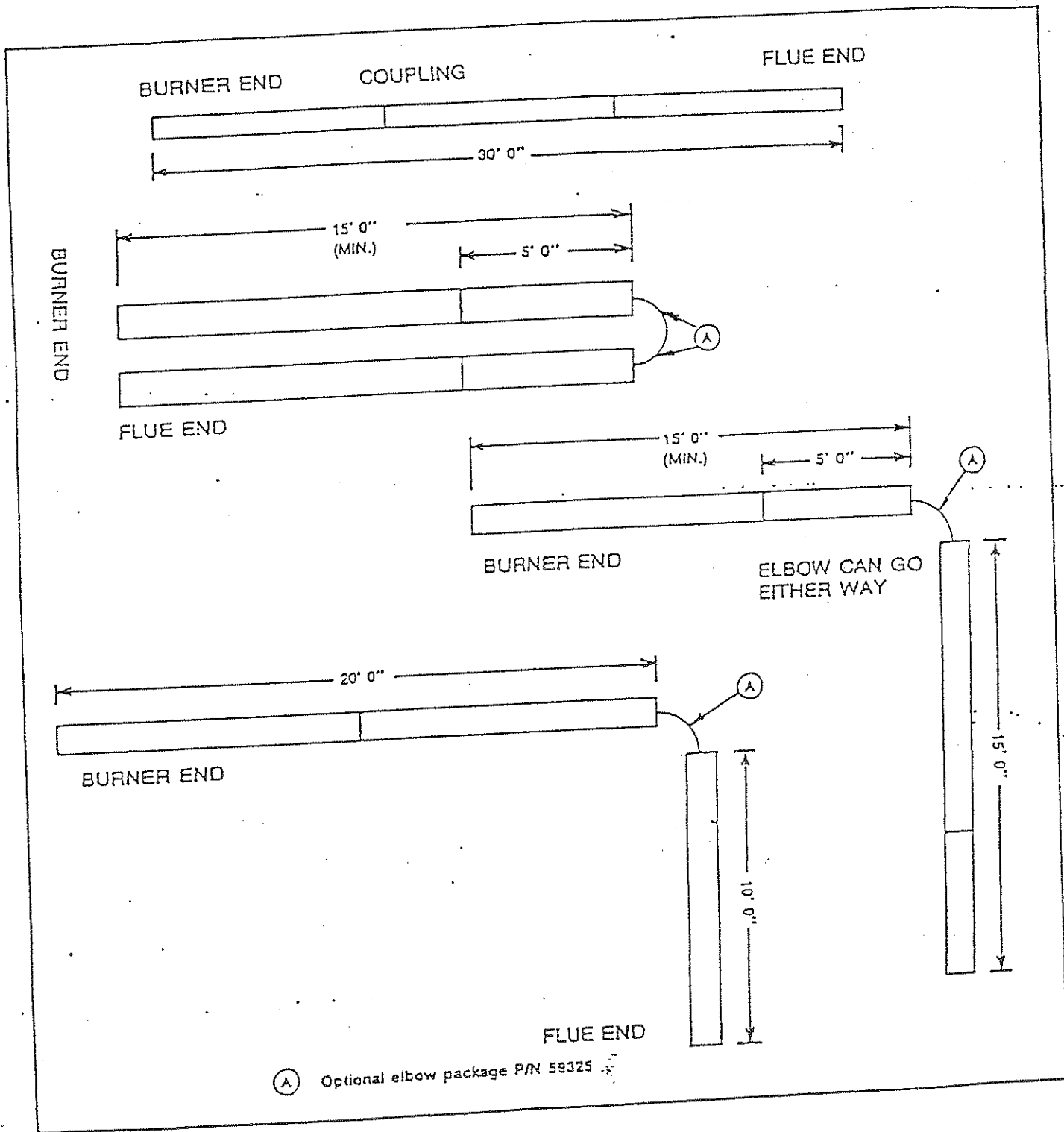


Figure 11a

Note: 5' length field cut from 10' length (supplied) and requires extra coupling (not supplied).

TROUBLE SHOOTING GUIDE

NO GAS PRESENT:

Gas pressure downstream of gas control can be measured by using a manometer and connecting to pressure tap on control.

- ✓ Check to see if manual valve to heater in "ON".
- ✓ Check to see if manual valve knob on heater gas control is "ON".
- ✓ Supply gas pressure can be checked at 1/8" NPT pressure tapping on heater external manual valve (see figure 8).
- ✓ Check to see if gas control is opening: no manifold pressure indicates valve closed.

Trouble could be:

- ✓ Defective gas control
- ✓ Defective ignition module
 - DO NOT DISCONNECT GROUND LEADS ON HEATER
 - DO NOT INTERCHANGE GROUNDED AND UNGROUNDED LEADS ON TRANSFORMER OR IGNITION MODULE.

BURNER LIGHTS AND THEN GOES OUT:

Flame current is the current which passes through the flame from the sensor to ground to complete the primary circuit. A minimum flame generated current, usually about 2.0 MICRO-AMPS is necessary to prevent lockout, (see figure 14) for measuring flame current.

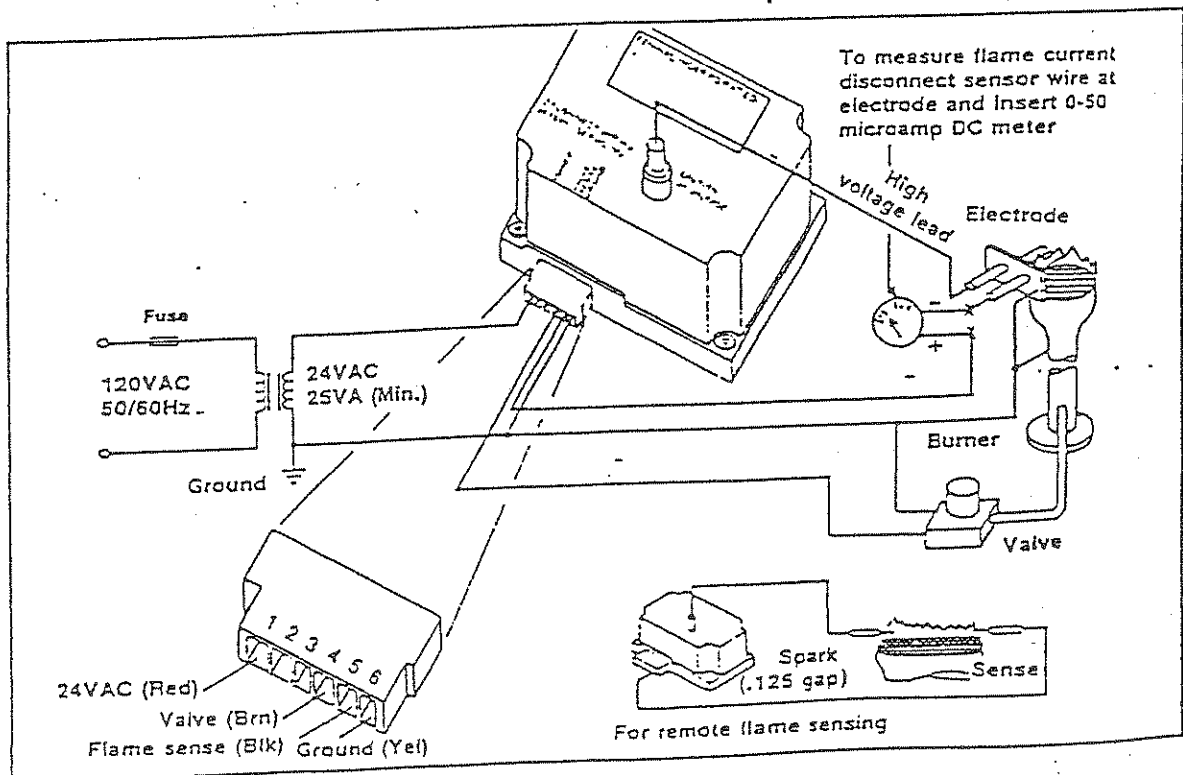


Figure 14

FENWAL CONTROL

D.S.I. CONTROLS

Caution:

Before opening control housing cover for any type of service be sure the GAS has been shut off at the heater, and the ELECTRICAL SUPPLY CORD ON THE HEATER IS UNPLUGGED.

NO POWER (Heater plugged in):

- ✓ Check to see that thermostat is calling for heat.
- ✓ Check fusing in electrical supply to heater.
- ✓ Check for 115V at receptacle.

BLOWER MOTOR FAILS TO RUN

- ✓ Check for broken motor wire.
- ✓ Does blower wheel turn freely? If motor is seized replace same.

NO SPARK

- ✓ Turn off gas and check for spark at the burner observation window.
- ✓ Some modules have a built-in pre-purge (30 sec.)
- ✓ Recycle thermostat or power if no spark appears.
- ✓ Check for loose or broken leads.
- ✓ Is air switch making?
- ✓ Electrode gap should be .125".
- ✓ Check if maximum vent or fresh air pipe has exceeded 60 equivalent feet.
- ✓ Is vent terminal plugged?
- ✓ Check air switch plastic tubing connection.
- ✓ A hole in a line or disconnection of a tube will prevent ignition.
- ✓ Differential pressure can be measured across the air switch and is 0.50" W.C. cold (i.e. burner off).

PROCEDURE TO REMOVE BURNER

- ✓ Remove gas connector from heater.
- ✓ Open housing cover.
- ✓ Disconnect wires between blower, control valve, ignitor/sensor and rear bulkhead.
Disconnect air switch tubes.
- ✓ Remove six (6) screws holding burner control housing shroud to burner tube partition.
- ✓ Remove bulkhead with control components and housing from burner; this exposes the blower and burner.
- ✓ Remove blower from burner tube.
- ✓ Remove burner.
- ✓ To reassemble, reverse above steps.

MAINTENANCE

For best performance, maintenance procedures should be performed each heating season.

- ✓ BE SURE GAS AND ELECTRIC SUPPLY TO HEATER ARE OFF BEFORE PERFORMING ANY SERVICE OR MAINTENANCE.
- ✓ Check condition of blower scroll and motor. Dirt and dust may be blown out with compressed air or a vacuum cleaner may be used.
- ✓ Check condition of burner.
- ✓ Make visual check of electrode. Replace if there is excessive carbon residue, erosion of electrodes or other defects. Gap should be .125".
- ✓ Check inside of firing tube with flashlight. If carbon or scale are present, scrape out deposits with wire brush on a rod, or metal plate attached to wooden pole.
- ✓ Check flue pipe for soot or dirt. After cleaning as necessary, re-attach flue pipe to heater.
- ✓ Outside surfaces of heater reflector may be cleaned by wiping with a damp cloth.
- ✓ A qualified service agency should be contacted for service other than routine maintenance.
- ✓ Check vent terminal and fresh air inlet to see that they have not become blocked during the "OFF" season. If either pipe is restricted, the air switch won't close, resulting in a no heat situation.

FIELD CONVERTIBILITY

This unit has been approved for use with natural gas or propane. A version kit is available to convert this to the alternate fuel.

SPECIAL NOTE

Regulators must be replaced by ones from the same manufacturer. When ordering a conversion kit specify: HONEYWELL OR ROBERSHAW.

THE CONVERSION SHALL BE CARRIED OUT IN ACCORDANCE WITH THE REQUIREMENTS OF THE PROVINCIAL AUTHORITIES HAVING JURISDICTION AND IN ACCORDANCE WITH THE REQUIREMENTS OF THE CAN/CGA AND B149.2 INSTALLATION CODE.

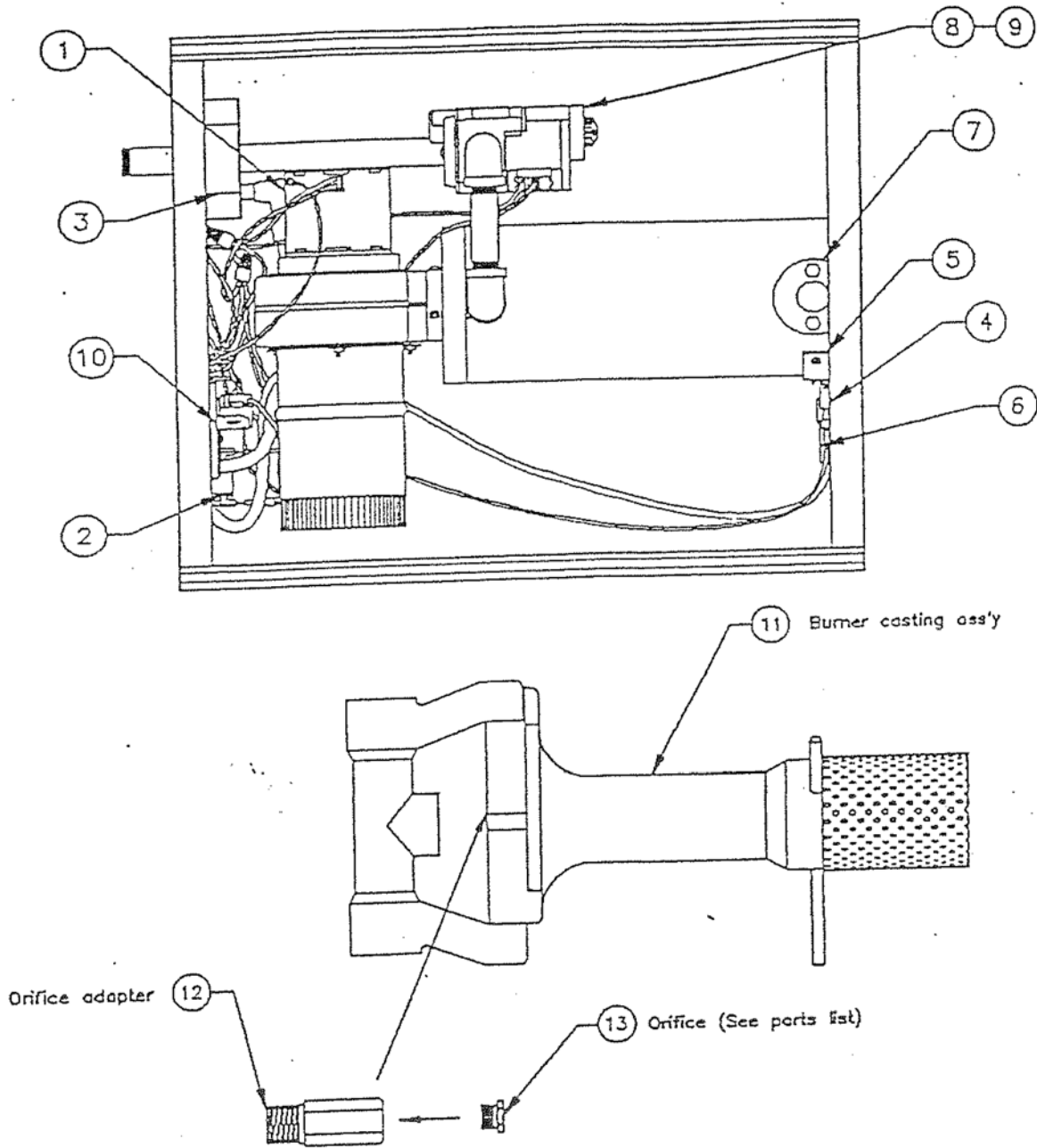
CONVERSION INSTRUCTIONS:

- ✓ Disconnect gas supply line and unplug electrical supply cord.
- ✓ Remove gas connector from heater.
- ✓ Open housing cover.
- ✓ Disconnect wires between blower, valve, igniter/sensor and rear bulkhead.
- ✓ Remove six (6) screws holding burner housing shroud to burner tube partition.
- ✓ Remove bulkhead with control components and housing from burner; this exposes the blower and burner.
- ✓ Remove blower from burner tube.
- ✓ Remove burner.
- ✓ To reassemble, reverse above steps.
- ✓ Remove the brass orifice adapter from the burner.

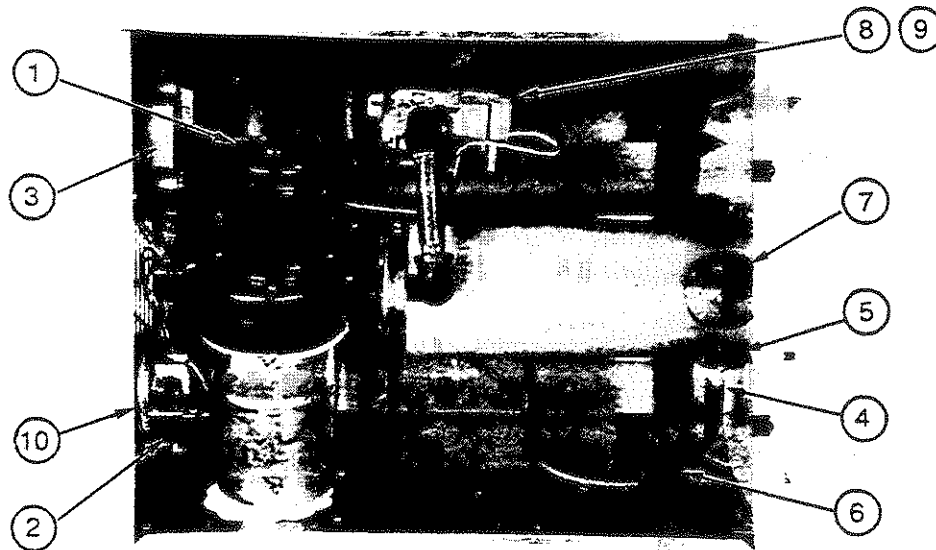
- ✓ Reassemble the heater reversing the above steps.
- ✓ Affix data label supplied in kit.

This appliance has been converted to:
Orifice:
Manifold Pressure:
Input:
Cet appareil a été converti au
Injecteur
Pression à la tubulure d'alimentation
Débit calorifique

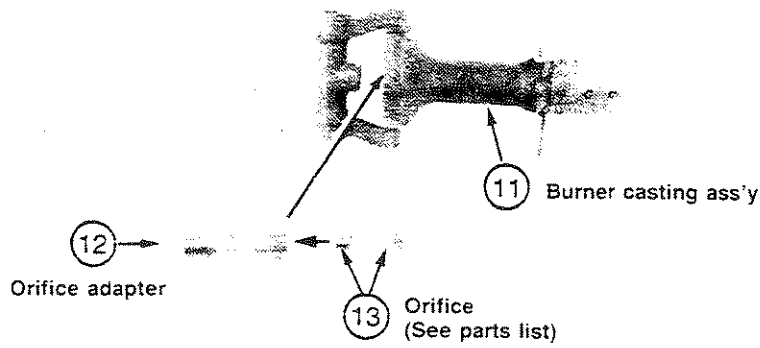
REPLACEMENT PARTS



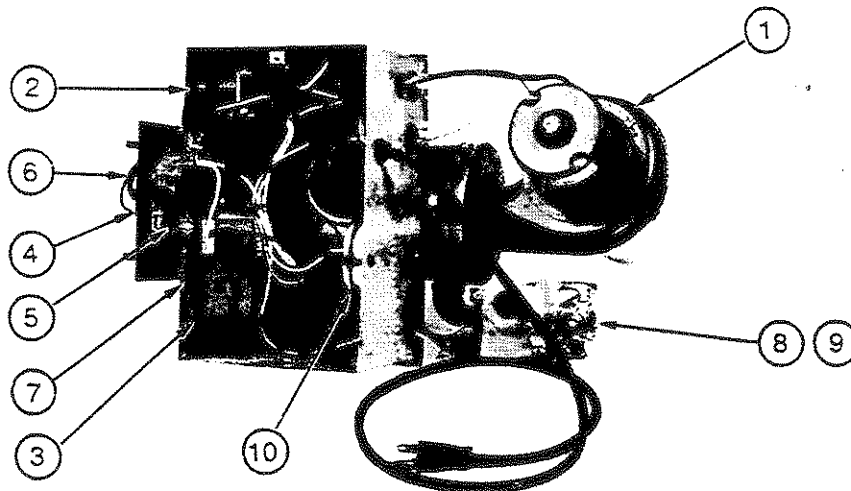
VANTAGE REPLACEMENT PARTS



MODEL GTH-() & GTHS-80 HEATERS



INTERNAL PARTS



MODEL GTHS-80F & GTH-() F HEATERS

FIGURE 20

VANTAGE REPLACEMENT PARTS
(Refer to Figure 20)

<u>Item</u>	<u>Description</u>	<u>Part No.</u>
1.	Motor/Blower Assembly	90708601
2.	Transformer	90435700
3.	Ignition Module Package	02713500
4.	Ignition Electrode Assembly	90427400
5.	Electrode Mounting Package	02516200
6.	Ignition Cable Assembly	90434800
7.	Ring Viewer Package	58087
8.	Gas Valve (LP) - Honeywell	90032501
	- Robertshaw	90031100
9.	Gas Valve (Nat)- Honeywell	90032500
	- Robertshaw	90031200
10.	Air Sensing Switch GTH - 80,100,125	63206
	GTHS-80 (only)	63198
11.	Burner Casting Assembly	02552000
12.	Orifice Adapter	02591800
13.	Orifice - Natural Gas 80,000 BTU/HR	58361
	Orifice - Propane Gas 125,000 BTU/HR	58362
	Orifice - Propane Gas 80,000 BTU/HR	58363
	Orifice - Natural Gas 125,000 BTU/HR	58364
	Orifice - Natural Gas 100,000 BTU/Hr	58366
	Orifice - Propane Gas 100,000 BTU/Hr	63545

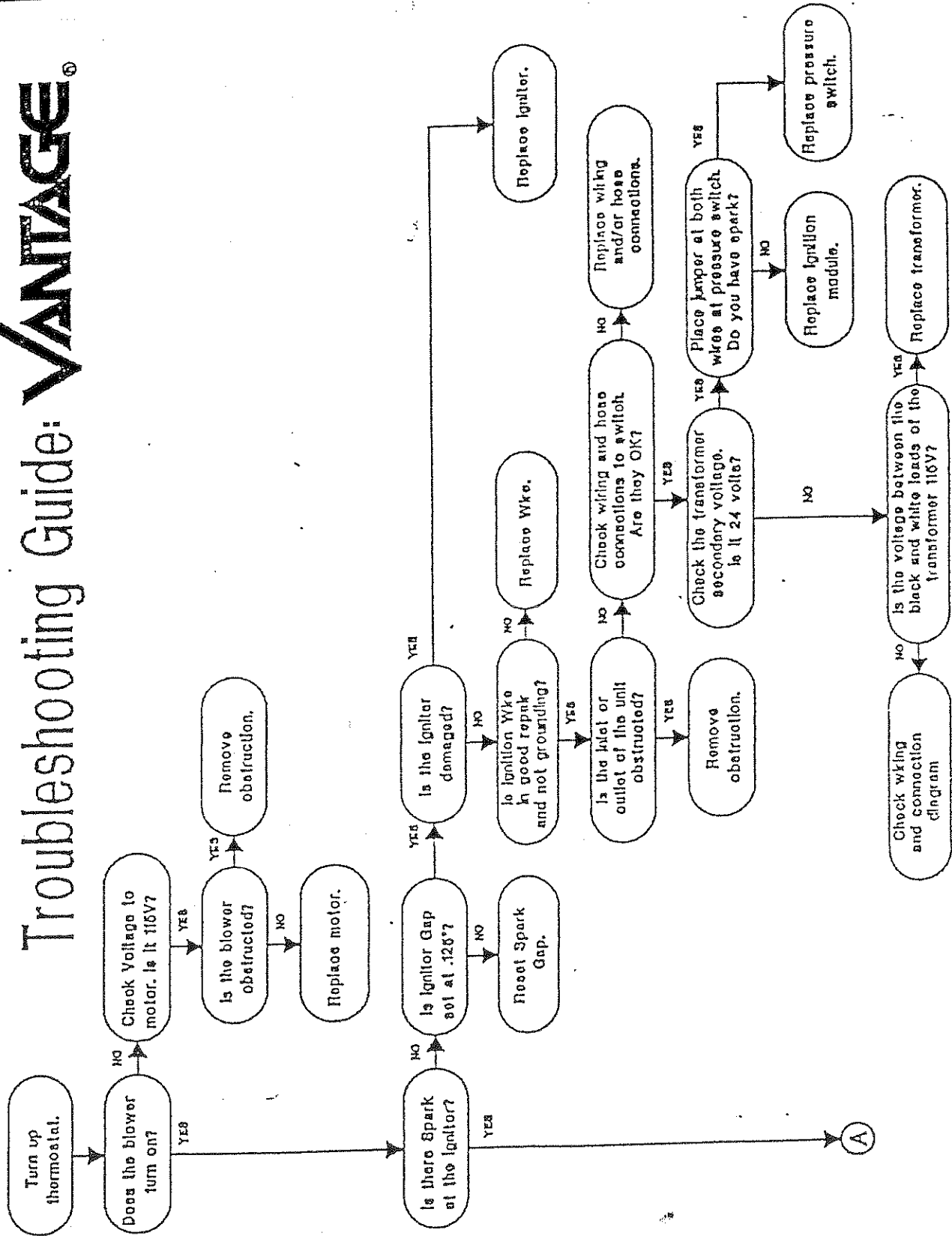
FUEL CONVERSION KITS (ROBERTSHAW GAS VALVE)

Propane to Natural Gas - 125,000 BTU/HR	58377
Natural Gas to Propane - 125,000 BTU/HR	58378
Propane to Natural Gas - 80,000 BTU/HR	58383
Natural Gas to Propane - 80,000 BTU/HR	58384
Natural Gas to Propane - 100,000 BTU/HR	58388
Propane to Natural Gas - 100,000 BTU/HR	58389

FUEL CONVERSION KITS (HONEYWELL GAS VALVE)

Propane to Natural Gas - 80,000 BTU/HR	03012004
Natural Gas to Propane - 80,000 BTU/HR	03012005
Propane to Natural Gas - 100,000 BTU/HR	03012006
Natural Gas to Propane - 100,000 BTU/HR	03012007
Natural Gas to Propane - 125,000 BTU/HR	03012008
Propane to Natural Gas - 125,000 BTU/HR	03012009

Troubleshooting Guide: VANTAGE®



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