GORDON-RAY

VENTED INFRARED
RADIANT TUBE GAS HEATER

SPECIFICATIONS
INSTALLATION, OPERATION, SERVICE
& SPARE PARTS

RTH-R75 and RTH-R100

ENGINEERING FILE
COPY

Roberts Gordon

A LEADER IN HEATING EQUIPMENT FOR OVER 50 YEARS

ROBERTS-GORDON, INC.
Subsidiary of AGT Industries Inc

BUFFALO, NY 14228
Form No. R-RTH-R-48

GRIMSBY, ONTARIO

GORDON-RAY SPECIFICATIONS
INSTALLATION, OPERATION, SERVICE & SPARE PARTS

TABLE OF CONTENTS

INSTALLER — Please take time to read and understand these instructions prior to any installation.

OWNER — Keep this manual in a safe place to provide your serviceman with helpful information if the need arises.

INTRODUCTION

UNPACKING THE HEATER

Remove the heater carefully from the shipping carton so as not to damage any components. The unit is inspected and tested at the factory before shipment and is delivered to the carrier in good condition. Check the heater for possible damage in shipment. In case of damage, the carrier should be contacted immediately.

GENERAL INFORMATION

It is important that these instructions and all applicable specifications be read in their entirety before proceeding.

This heater is intended for heating non-residential indoor spaces. Installation of this heater must comply with local building codes or in the absence of local codes, with the National Fuel Gas Code, ANSI Z223.1-1984 (same as Bulletin No.54). Units must be electrically grounded in accordance with the National Electrical Code, ANSI/NFPA 70-1984. Installation in (1) aircraft hangars must be in accordance with the Standard for Aircraft Hangars, ANSI/NFPA 409-1985 and (2) garages in accordance with the Standard for Parking Structures, NFPA 88A-1985 or the Standard for Repair Garages, NFPA 88B-1985.

For locations where there is the possibility of exposure to combustible airborne materials or vapor, consult the authorities having local jurisdiction to obtain approval for proposed installation. The authorities with local jurisdiction are usually the Fire Marshal and fire insurance carrier.

All heaters and associated gas piping should be installed in accordance with applicable specifications and this installation made only by firms (or individuals) well qualified in this type of work. Local authorities such as Building Inspectors or Fire Marshals should be consulted for guidance in this matter.

GENERAL SPECIFICATIONS

TO THE INSTALLER

This manual provides installation, operation and service information for both the Model RTH-R75 and RTH-R100 units. Sections relating only to the specific units are identified by a solid border for Model RTH-R75 and a broken line border for Model RTH-R100 .

MODEL RTH-R75

RATING:

(Natural & L.P. Gas) — 75,000 BTU/Hr. Input

GAS PRESSURE AT MANIFOLD:

Natural Gas ..... 3.5" W.C.
L.P. Gas ..... 10.5" W.C.
Gas Connection Size ..... 3/8" NPT

GAS INLET PRESSURE

Gas	*Minimum	Maximum
Natural	4.5" W.C.	14.0" W.C.
L.P.	11.0" W.C.	14.0" W.C.

ELECTRICAL RATING:

RTH-R75 — 120V - 60Hz - 2.6 AMP
Flue Connection Size ..... 4" O.D.
Weight of Heater ..... 150 lbs.

MODEL RTH-R100

RATING:

(Natural & L.P. Gas) — 100,000 BTU/Hr. Input

GAS PRESSURE AT MANIFOLD:

Natural Gas ..... 3.5" W.C.
L.P. Gas ..... 10.5" W.C.
Gas Connection Size ..... 3/8" NPT

GAS INLET PRESSURE

Gas	*Minimum	Maximum
Natural	4.5" W.C.	14.0" W.C.
L.P.	11.0" W.C.	14.0" W.C.

ELECTRICAL RATING:

RTH-R100 — 120V - 60Hz - 2.6 AMP
Flue Connection Size ..... 4" O.D.
Weight of Heater ..... 200 lbs.

*Minimum permissible gas supply pressure for purpose of input adjustment.

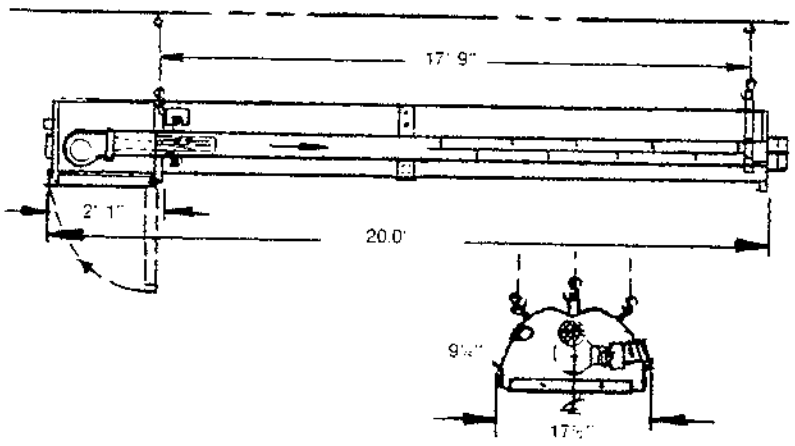
CLEARANCES TO COMBUSTIBLES (From Heater Surfaces)

See Figure 3 on Page 4 of these Installation Instructions.

In all situations, clearances to combustibles must be maintained. (WARNING: Minimum clearance from heater must be maintained from vehicles parked below heater.)

STANDARD EQUIPMENT INCLUDES: Complete heater assembled, consisting of: cast iron burner, aluminized steel heat exchanger, fully automatic DSI ignition, motor with thermal overload switch, balanced air rotor, combustion air proving safety pressure switches, aluminum reflector, manual gas shut-off valve, stainless steel flue baffle and operation indicator lights.

OPTIONAL EQUIPMENT: Thermostat, decorative aluminum grille, reflector side extension, thru the wall vent terminal, outside air adaptor kit, 8-foot radiant tube extension and reflector.



MODEL RTH-R75 DIMENSIONS
Figure 1

CLEARANCES TO COMBUSTIBLES (From Heater Surfaces)

See Figure 3 on Page 4 of these Installation Instructions.

In all situations, clearances to combustibles must be maintained. (WARNING: Minimum clearance from heater must be maintained from vehicles parked below heater.)

STANDARD EQUIPMENT INCLUDES: Cast iron burner, aluminized steel heat exchanger (packaged in 2 sections), fully automatic DSI ignition, motor with thermal overload switch, balanced air rotor, combustion air proving safety pressure switches, aluminum reflector, manual gas shut-off valve, stainless steel flue baffle and operation indicator lights.

OPTIONAL EQUIPMENT: Thermostat, decorative aluminum grille, reflector side extension, thru the wall vent terminal, outside air adaptor kit, 8-foot radiant tube extension and reflector.

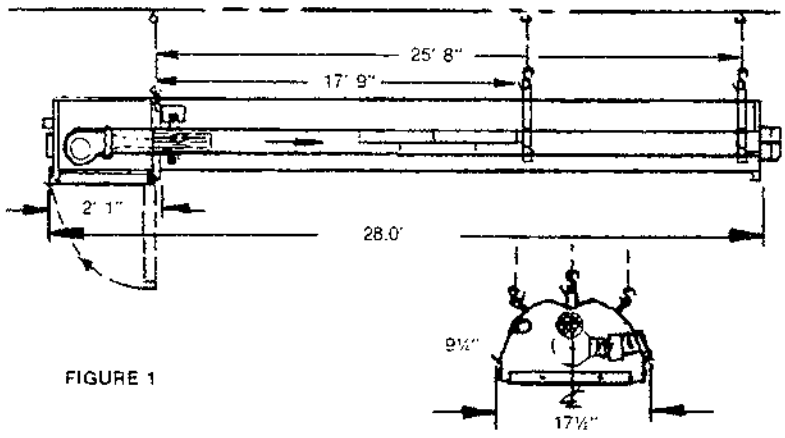
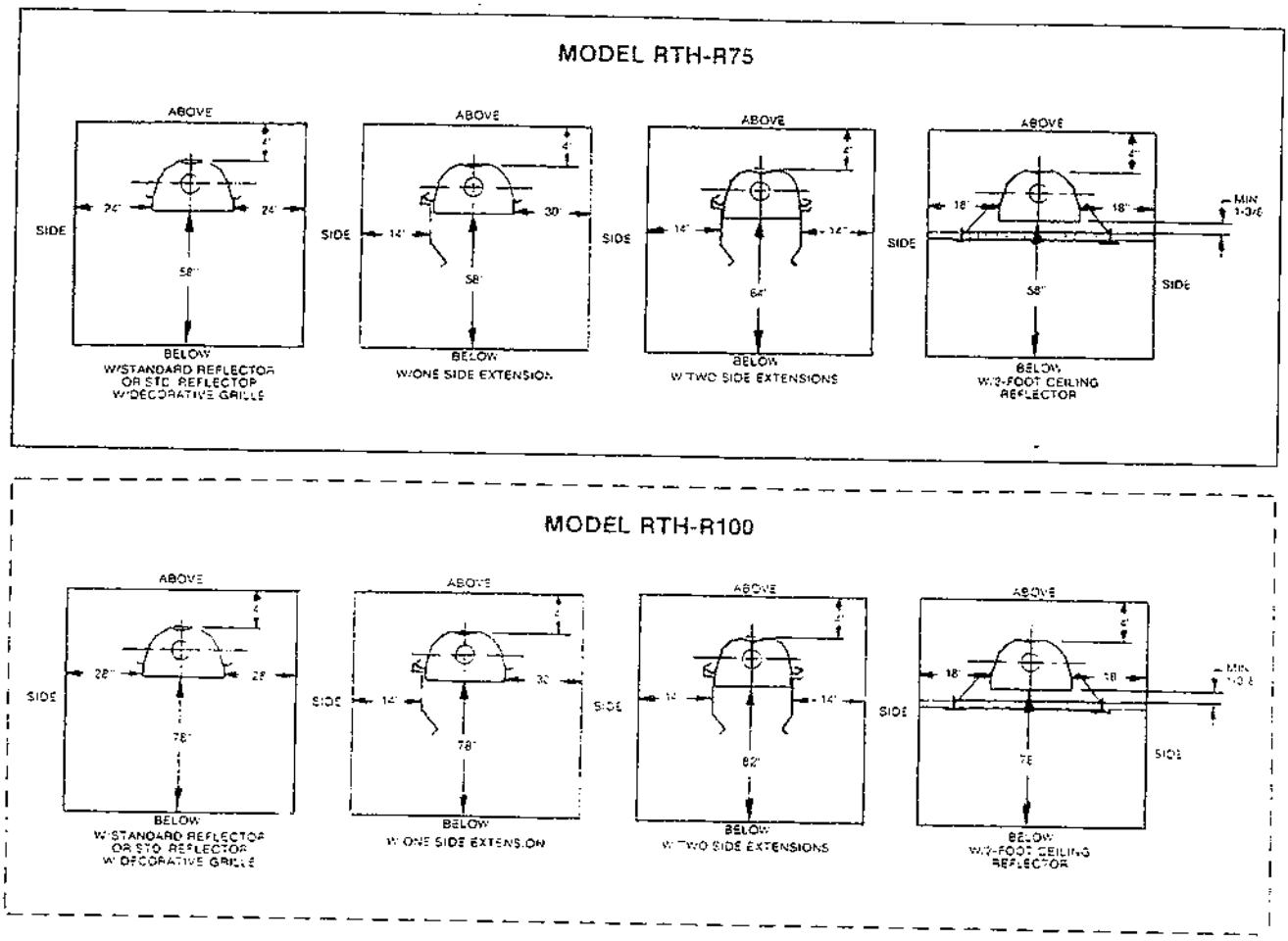


FIGURE 1

MODEL RTH-R100 DIMENSIONS
Figure 2



WARNING: **Minimum clearance from heater must be maintained from vehicles parked below heater.**

NOTE: In all situations, clearances to combustibles must be maintained. Signs should be posted in storage areas to specify **maximum** stacking height to maintain required clearance to combustibles.

CLEARANCE TO COMBUSTIBLES WITH STANDARD REFLECTOR AND OPTIONAL EQUIPMENT
Figure 3

INSTALLATION

IMPORTANT: The type of gas appearing on the heater nameplate must be the type of gas used. Read all accompanying literature carefully before proceeding with installation. Allow for adequate clearances around air openings in heater, clearances to combustible materials, provide for accessibility for service, combustion and ventilating air supply as specified in ANSI Z223.1 National Fuel Gas Code.

SPECIAL CONSIDERATIONS

HANGING THE HEATER

Suspension straps and "S" hooks provided with the heater should be used as the only suspension points. Chain should be used to support the unit between the ceiling and suspension straps provided.

Chain should have a load rating of at least 150 lbs. at each suspension point. For instructions on mounting height and locations of heaters, refer to installation plans or supplier of equipment.

VENTING

The venting must be installed in accordance with specification ANSI Z223.1 (NFPA No. 54). Partial information relating to this specification is provided in this section with regard to size and configurations for venting arrangements. (See Figures 5a, 5b and 5c.) For complete information consult ANSI Z223.1 and local codes.

1. Be sure that method selected for venting heater complies with all codes as required for each particular location.
2. Exhaust end of heater will accept a four-inch flue pipe.
3. Heater may be vented to the outdoors either vertically or horizontally.
4. If heater is to be vented horizontally:
   a.) Vent must exit building not less than seven feet above grade when located adjacent to public walkways.
   b.) Vent must terminate at least three feet above any forced air inlet located within 10 feet.
   c.) Vent shall terminate at least four feet below, four feet horizontally from or one foot above any door, window or gravity air inlet into building.
   d.) Vent terminal shall be located at least 12 inches from any opening through which vent gases could enter a building.
5. Vent terminal opening must be beyond any combustible overhang.
6. Any portion of flue pipe passing through a combustible wall must be dual insulated or an approved thimble must be used (refer to ANSI Z223.1).
7. Maximum flue length may be a total of 50 feet (including optional 8-foot radiant tube extension if used). Do not use more than two 90° elbows.
8. If condensation in the flue is a problem, the flue length should be shortened or insulated.

IN PUBLIC GARAGES

In accordance with the standard for parking structures NFPA 88A-1985 or the standard for repair garages NFPA 88B-1985:

1. Heaters shall be installed in accordance with their listings and not less than eight feet above the floor. Minimum clearances to combustibles must be maintained from vehicles parked below the heater.
2. When installed over hoists, clearance to combustible material must be maintained from top of vehicle on hoist or in elevated position.
3. Clearance between the heater and its vent and adjacent combustible material (which is part of the building or its contents) shall be maintained to conform with National Fuel Gas Code (NFPA No. 54 ANSI Z223.1-1984).

IMPORTANT: Heaters should be placed so they will be readily accessible for maintenance.

IN AIRCRAFT HANGARS

Heaters must be installed in accordance with specification, ANSI/NFPA 409-1985 and with special consideration for the following:

1. Heaters in aircraft storage or service areas shall be installed at a height of at least 10 feet above the upper surface of wings or engine enclosures of the highest aircraft which may be housed in the hangar. (This should be measured from the bottom of the heater to the wing or engine enclosure, whichever is highest from the floor.)
2. In other sections of aircraft hangars, such as shops or offices communicating with airplane storage or servicing area, heaters shall be installed in accordance with their listings and not less than eight feet above the floor.
3. Heaters installed in aircraft hangars shall be so located as not to be subject to damage by aircraft, cranes, moveable scaffolding or other objects. Heaters shall be placed so they will be readily accessible for maintenance purposes.

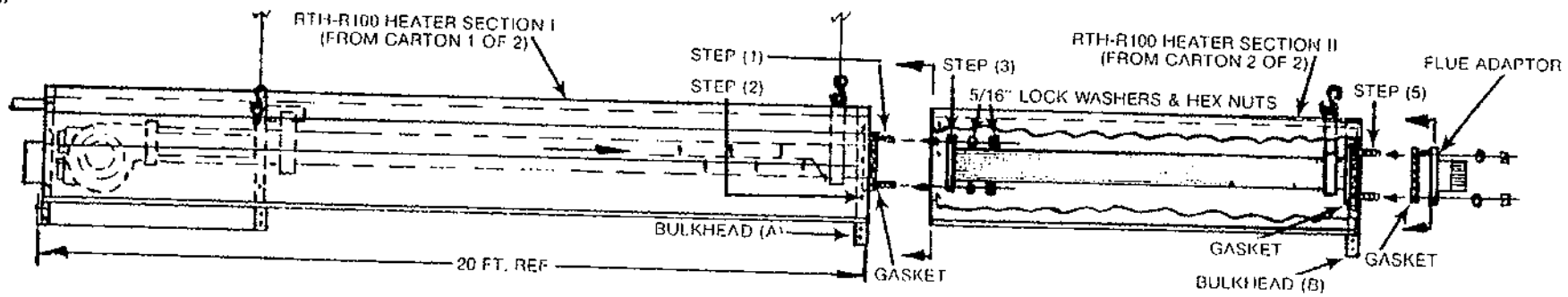


ILLUSTRATION 1

To install RTH-R100 Heater Section II to Section I (illustration 1):

Step (1) — Remove hex nuts and lock washers from studs at discharge end of Section I (leave gasket on studs).

Step (2) — Remove six #12 sheet metal screws holding reflector to Bulkhead (A).

Step (3) — Attach Section II to Section I (using lock washers and hex nuts previously removed) as shown (Illustration 1 or 2).

Step (4) — Overlap Section II reflector over Section I reflector at Bulkhead (A) lining up holes in reflectors and bulkhead and assemble with sheet metal screws previously removed.

Step (5) — Slip gasket and flue adaptor over (4) studs at Bulkhead (B) (Illustration 1) lining up locating pin in flue adaptor flange with clearance hole in Bulkhead (B) and attach using hex nuts and lock washers provided.

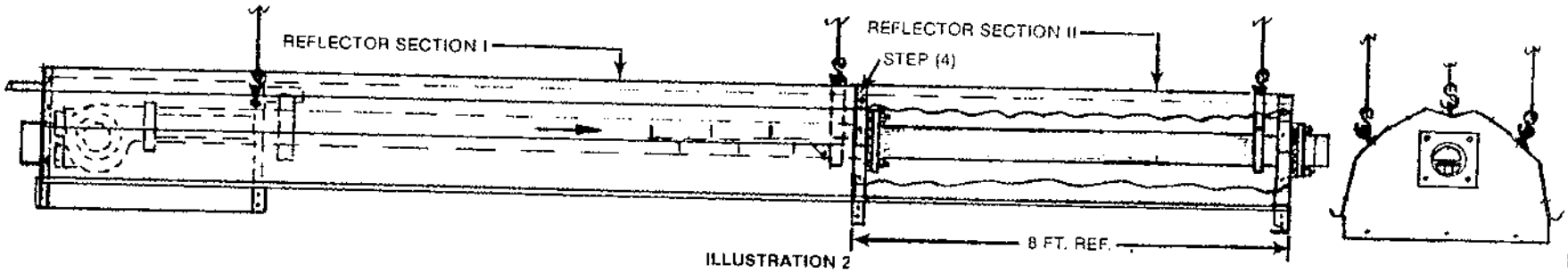


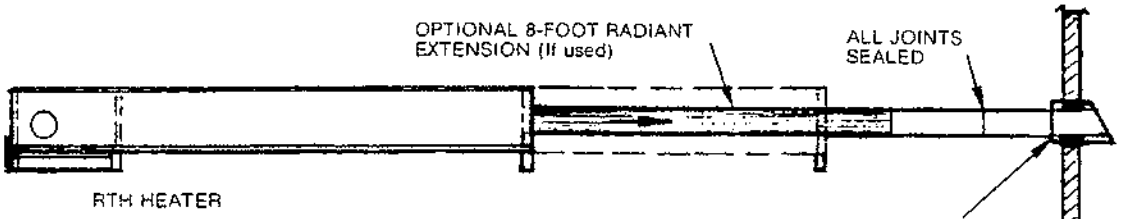
ILLUSTRATION 2

INSTRUCTIONS FOR FIELD ASSEMBLY RTH-R100 HEATER

The RTH-R100 is shipped in two sections (cartons) and must be field assembled.

(For optional heater assembly see page 18 of these instructions.)

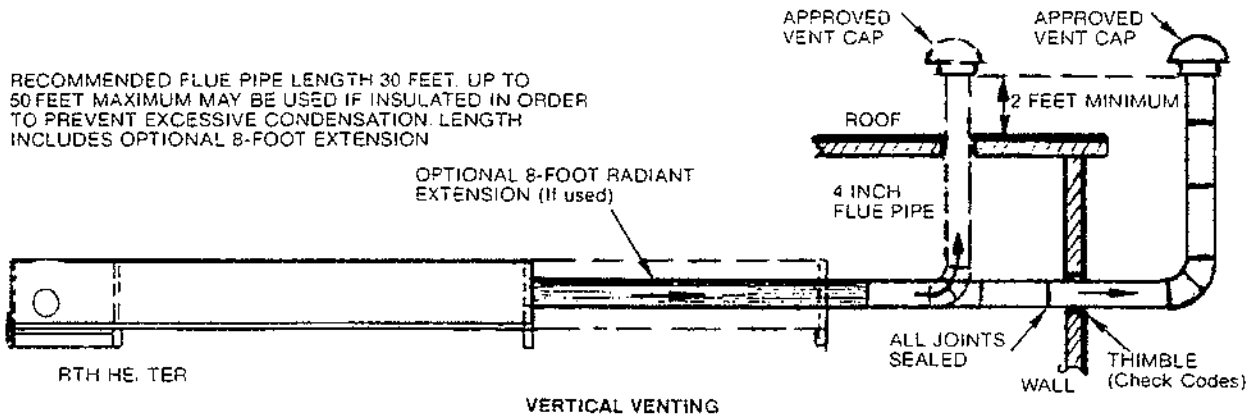
Figure 4



4-INCH O.D. FLUE PIPE RECOMMENDED, LENGTH 30 FEET. UP TO 50 FEET MAXIMUM MAY BE USED IF INSULATED IN ORDER TO PREVENT EXCESSIVE CONDENSATION. LENGTH INCLUDES OPTIONAL 8-FOOT EXTENSION.

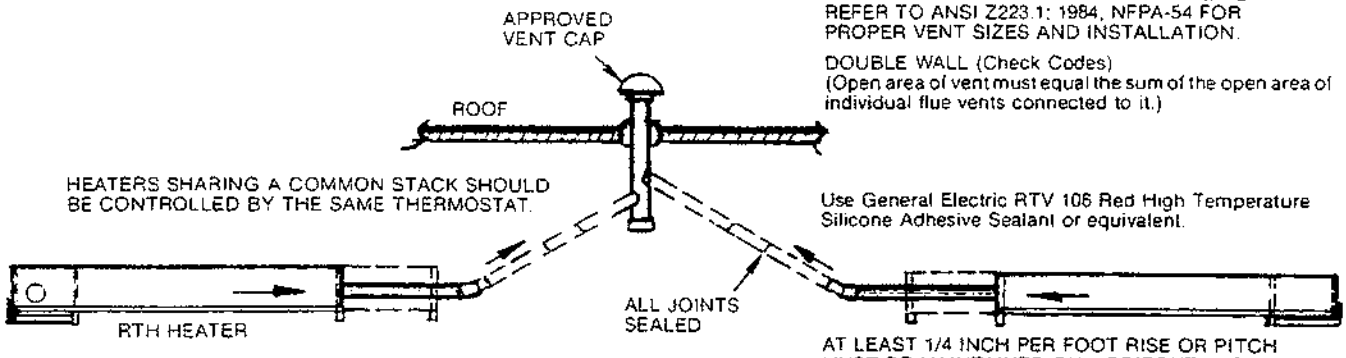
FOLLOW VENT MANUFACTURER'S INSTRUCTIONS FOR PROPER INSTALLATION.

HORIZONTAL VENTING
Figure 5a



RECOMMENDED FLUE PIPE LENGTH 30 FEET. UP TO 50 FEET MAXIMUM MAY BE USED IF INSULATED IN ORDER TO PREVENT EXCESSIVE CONDENSATION. LENGTH INCLUDES OPTIONAL 8-FOOT EXTENSION

VERTICAL VENTING
Figure 5b



HORIZONTAL RUN TO VENT MUST NEVER EXCEED 75% OF THE VERTICAL HEIGHT OF THE VENT. REFER TO ANSI Z223.1: 1984, NFPA-54 FOR PROPER VENT SIZES AND INSTALLATION.

DOUBLE WALL (Check Codes)
(Open area of vent must equal the sum of the open area of individual flue vents connected to it.)

HEATERS SHARING A COMMON STACK SHOULD BE CONTROLLED BY THE SAME THERMOSTAT.

Use General Electric RTV 106 Red High Temperature Silicone Adhesive Sealant or equivalent.

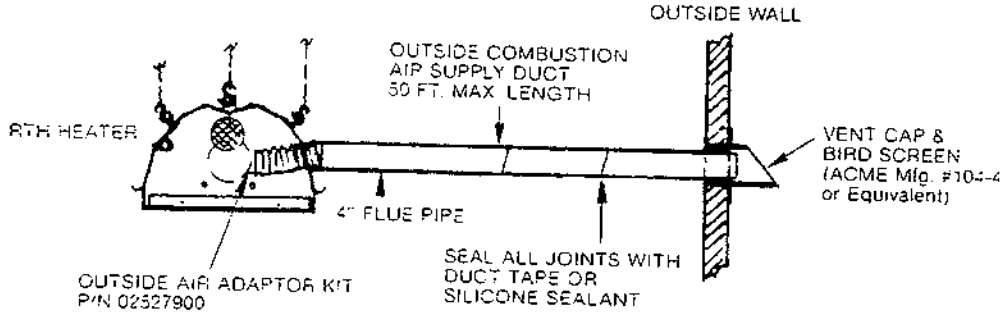
AT LEAST 1/4 INCH PER FOOT RISE OR PITCH MUST BE MAINTAINED ON HORIZONTAL RUNS FROM HEATER TO VENT.

COMMON VENTING
Figure 5c

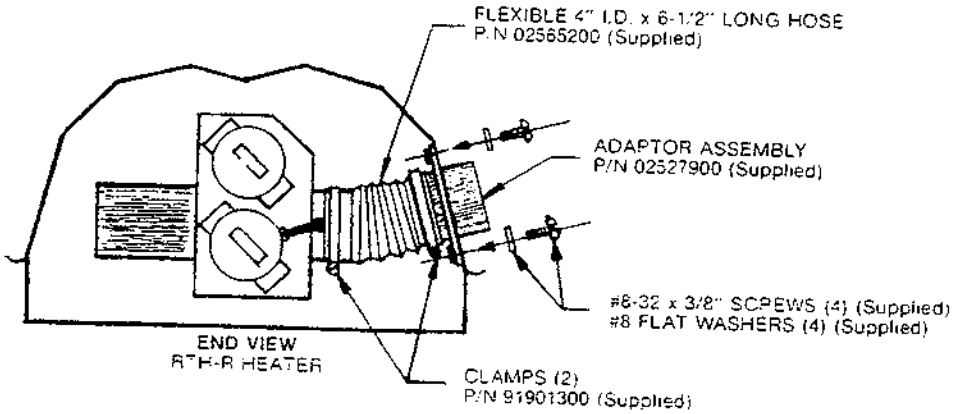
VENTING OPTIONS
MODEL RTH-R75 and MODEL RTH-R100
Figure 5

OUTSIDE COMBUSTION AIR SUPPLY (OPTIONAL)

1. If indoor combustion air is supplied to the heater in a tightly closed room, one square inch of free area opening should be provided for each 1,000 BTU/Hr. of heater input, but not less than 100 square inches. One opening should be within 12 inches of the top and one within 12 inches of the bottom of the enclosure.
2. If the building has a slight negative pressure or contaminants in the air are present, then outside combustion air may be supplied to the heaters using the optional outside air adaptor kit.
3. A duct of four inches O.D. flue pipe may be attached to the heater outside air adaptor. The duct may be up to 50 feet in length maximum with no more than two 90° elbows in its total length.
4. Air supply duct may have to be insulated to prevent condensation on outer surface.
5. Air inlet vent cap should be securely fastened to outside wall by drilling four 1/4" diameter holes in outside flange: wood screws or bolts and expansion sleeves may be used as a fastening means.



OUTSIDE COMBUSTION AIR INSTALLATION
Figure 6



OUTSIDE AIR SUPPLY ADAPTOR PACKAGE
P/N 02527901
Figure 7

GAS PIPING

1. Check meter to be sure it is large enough to handle all the gas appliances on the line, including this heater. If necessary, request gas company to install a larger meter.
2. The gas line which feeds the heater(s) must be large enough to supply the required gas with a maximum pressure drop of 0.5 inches water column. If there is any question, check with the gas company. Use the following capacity table as a guide:

Specific Gravity 0.6 — Pressure Drop — 0.5 Inches Water Column

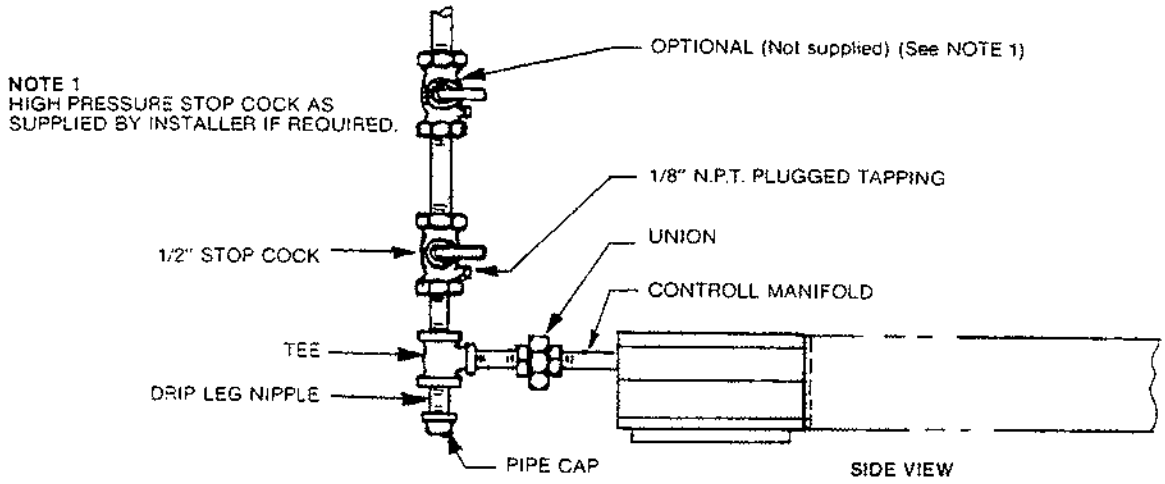
Pipe (Inches)	Length of Straight Pipe (Feet)						
	20	40	60	80	100	150	200
1/2	120	82	66	57	50	40	35
3/4	250	170	138	118	103	84	72
1	465	320	260	220	195	160 -	135

Pipe Capacity Cu. Ft. Hr.

Table 1

3. All pipe should be properly supported by using suitable pipe hanging materials.
4. Wrought iron or wrought steel pipe and malleable iron fittings are recommended. All pipe and fittings should be new and free from defects.
5. Ends of pipes and tubing should be carefully reamed to remove obstructions or burrs.
6. Use a special compound in making all pipe connections. Compound should be of a type that is suitable for L.P. Gas.
7. Install a drip leg ahead of the heater to prevent foreign matter and moisture from entering the heater controls.
8. A 1/8-inch N.P.T. plugged tapping must be installed immediately upstream of the gas supply connected to the heater, accessible for test gage connection.
9. All gas piping must conform with local building codes, or in the absence of local codes, with the National Fuel Gas Code ANSI Z223.1-1984, NFPA-54.
10. All gas piping should be checked for leaks before placing heating equipment into service. In checking for gas leaks use a soap and water solution, NEVER use an open flame.

    CAUTION: For high pressure testing of gas piping, disconnect completely all burner units and 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 both burner gas controls and shut-off cock and will require complete replacement of these parts.



GAS PIPING DETAIL

Figure 8

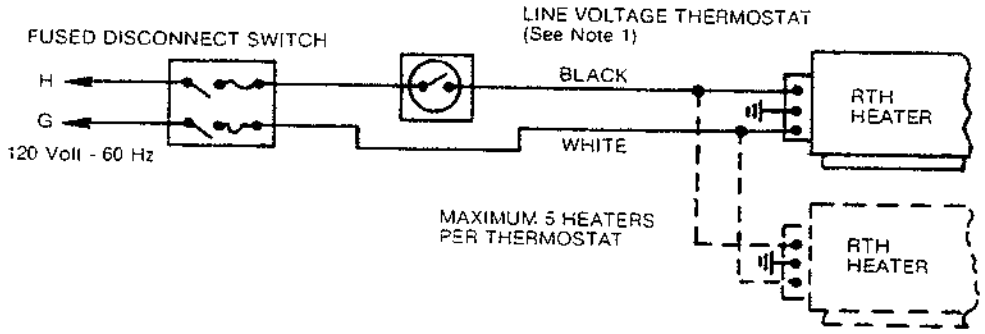
FIELD WIRING

Heaters are normally controlled by thermostats (see Figure 9). Line voltage thermostats are wired directly; the recommended 24-volt thermostats use a relay per Figure 10. Heaters must be grounded in accordance with National Electrical Code ANSI/NFPA 70-1984.

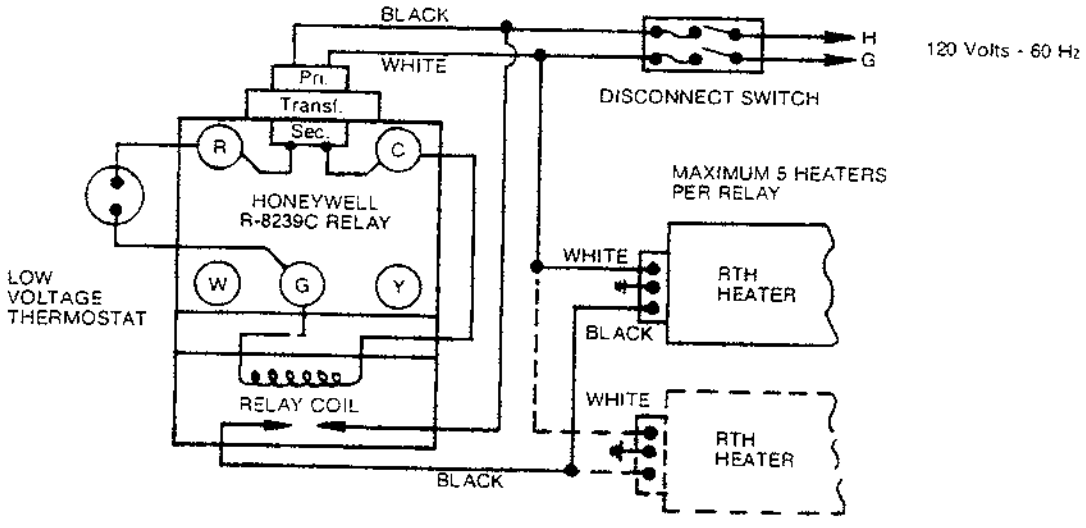
Heaters can also be controlled with a manual line voltage switch or timer switch in place of the thermostat.

NOTES:

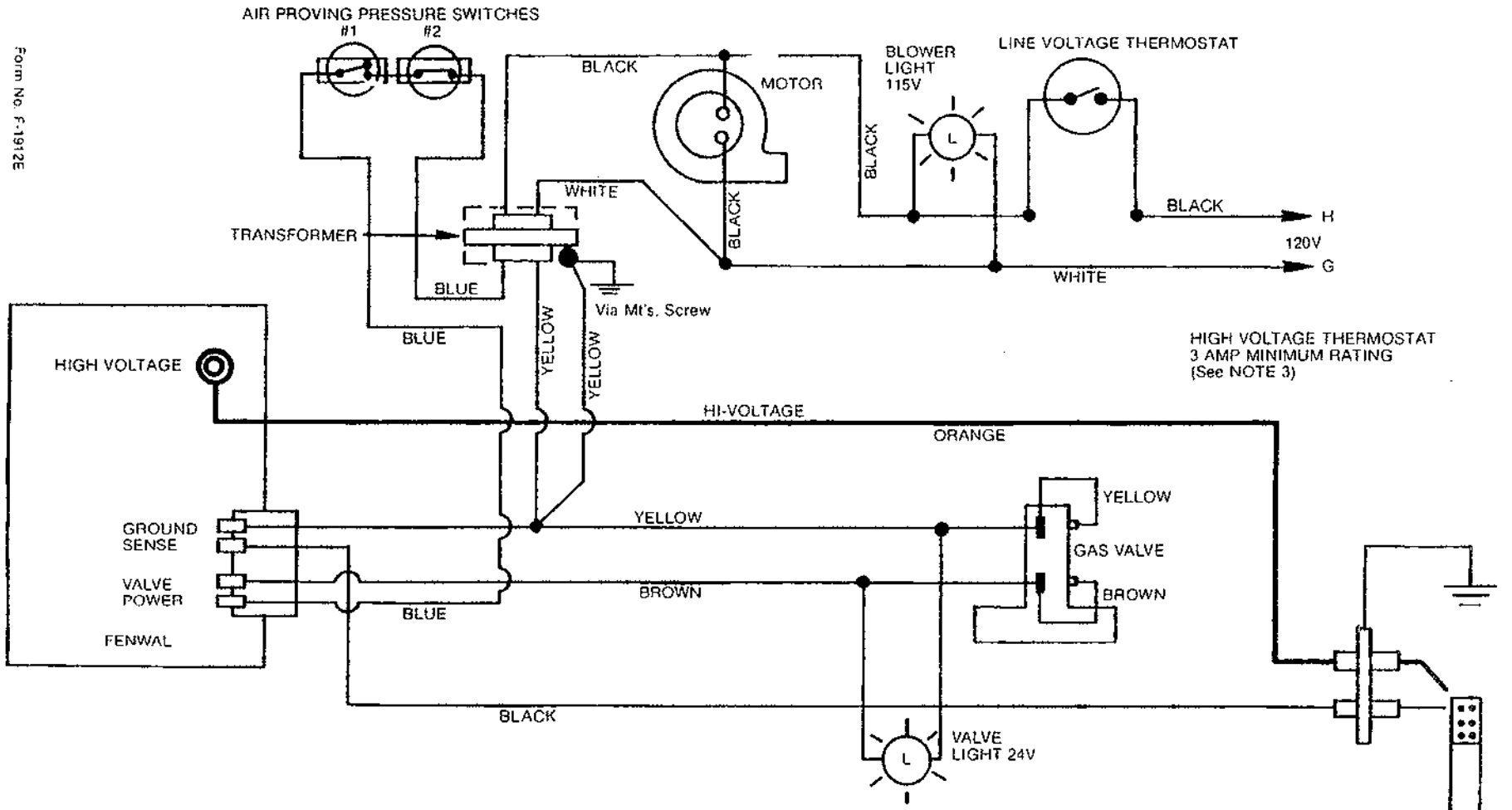
1. If any of the original wire as supplied with the appliance must be replaced, it must be replaced with wiring material having a temperature rating of at least 105° C.
2. For wiring line voltage thermostat White-Rodgers P/N 176-12 (RG 90410300) use terminals "B" and "R" and jumper terminal "W" to "R".



WIRING OF LINE VOLTAGE THERMOSTAT
Figure 9



WIRING OF LOW VOLTAGE THERMOSTAT AND RELAY
Figure 10



NOTES:

1. 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.
2. Each burner must be electrically grounded in accordance with National Electrical Code ANSI/NFPA 70-1984.
3. For low voltage thermostat and/or parallel burner operation see Wiring Diagrams, Figures 9 or 10, Page 10.

WIRING DIAGRAM
Figure 11

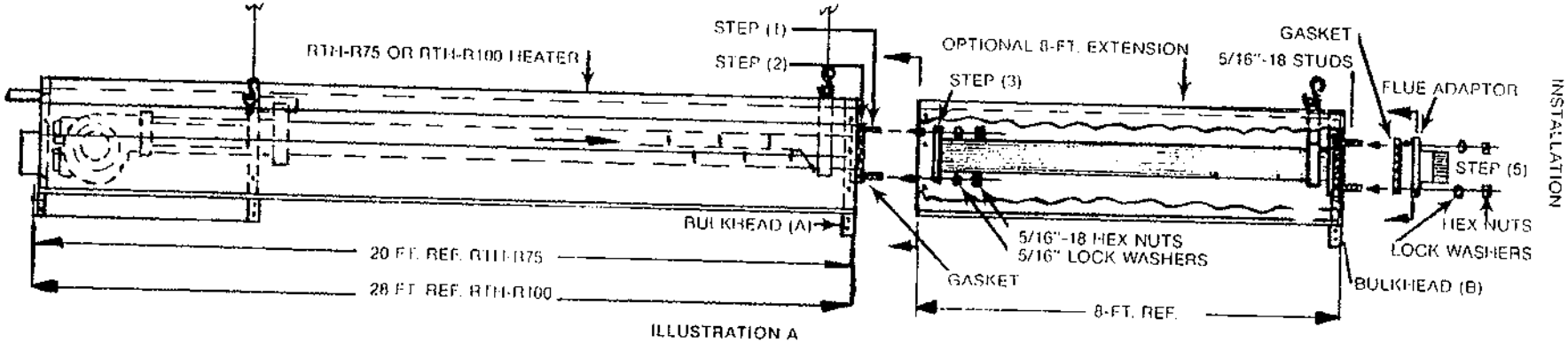


ILLUSTRATION A

Step (1) -- Remove four hex nuts and lock washers at Bulkhead (A) on flue end of heater and remove flue adaptor (if installed) leaving gasket in place.

Step (2) -- Remove six #12 sheet metal screws holding reflector in place at Bulkhead (A).

Step (3) — Slip flange of 8-ft. extension onto the four studs at Bulkhead (A) and attach with four hex nuts and lock washers removed in Step (1) above.

Step (4) — Overlap optional extension reflector over heater reflector at Bulkhead (A) (see Illustration B below). Line up the hole in reflectors and Bulkhead (A) and reassemble using sheet metal screws removed in Step (2) above.

Step (5) -- Slip gasket and flue adaptor over four 5/16"-18 studs at Bulkhead (B) locating pin on flue adaptor with hole in Bulkhead (B) and attach with hex nuts and lock washers provided.

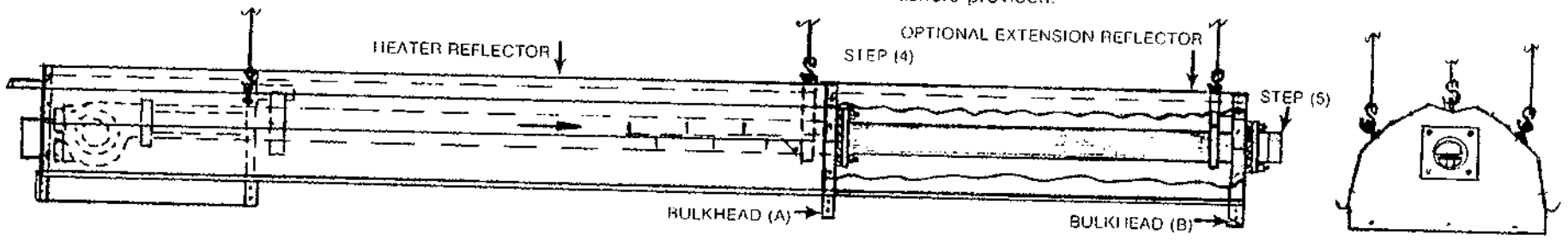
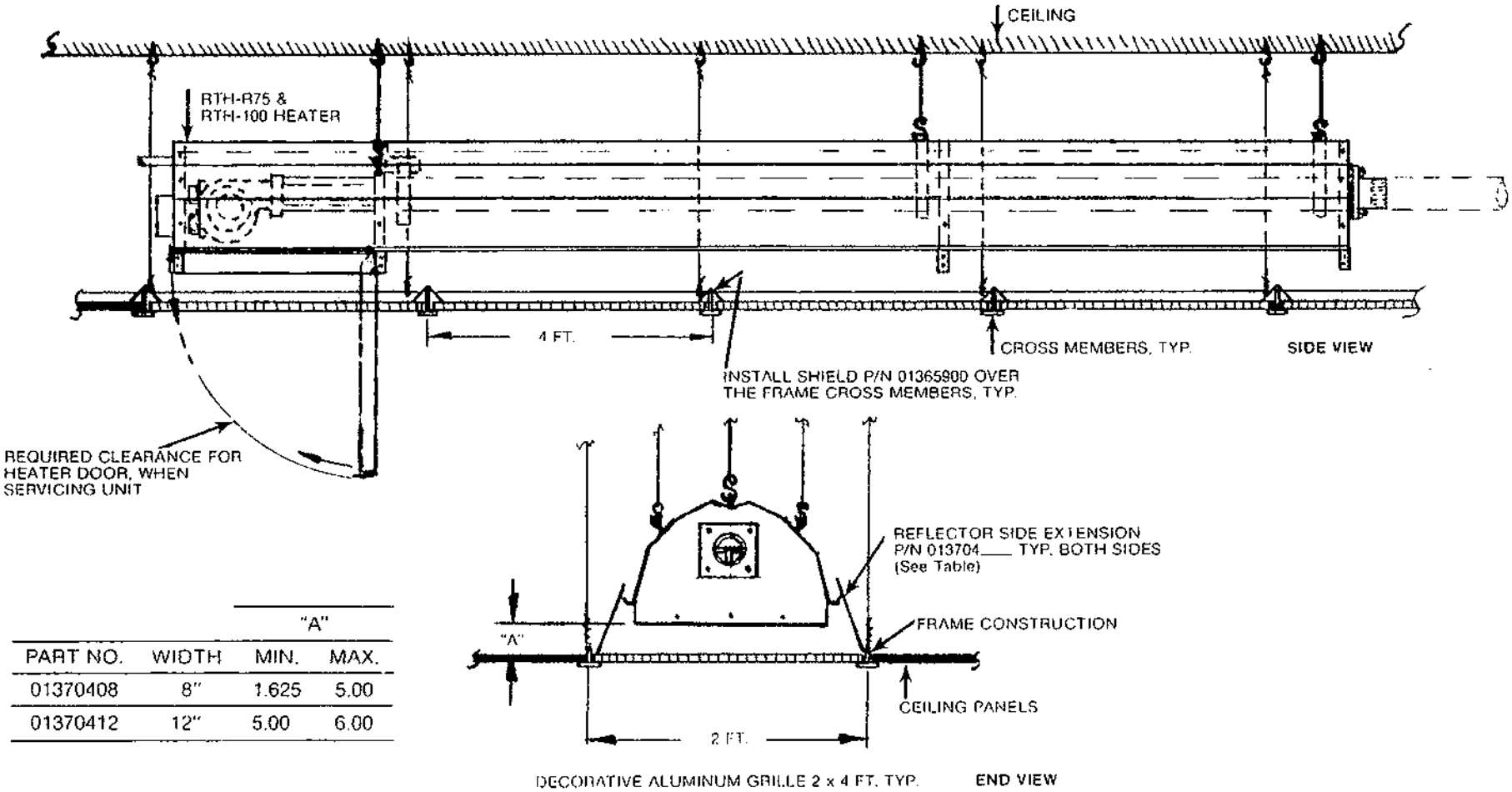


ILLUSTRATION B

INSTALLATIONS INSTRUCTIONS FOR OPTIONAL EXTENSION MODELS RTH-R75 and MODEL RTH-R100

(For optional installation variations see page 22 of these instructions.)

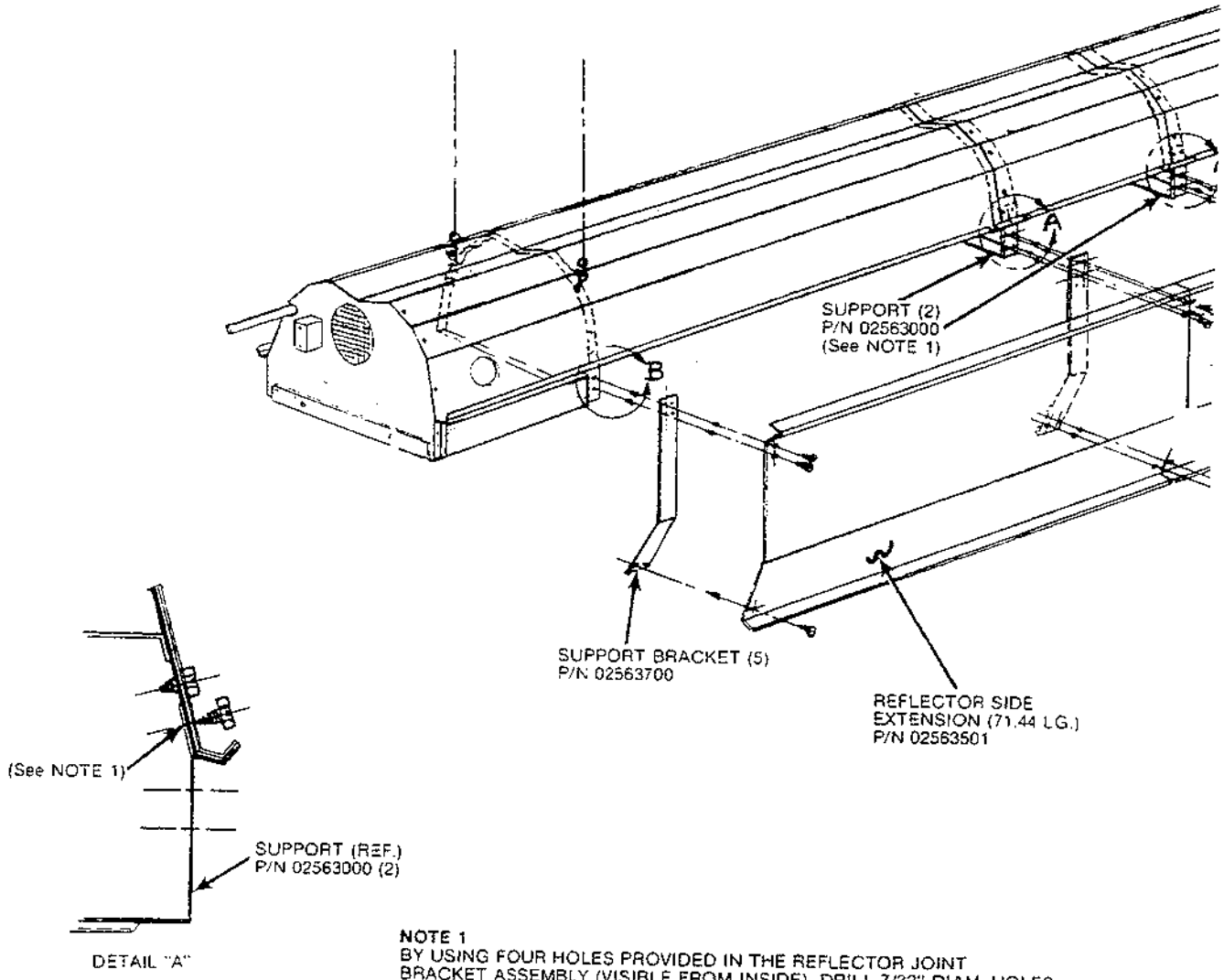
Figure 12



		"A"	
PART NO.	WIDTH	MIN.	MAX.
01370408	8"	1.625	5.00
01370412	12"	5.00	6.00

IMPORTANT: In all cases clearance to combustibles must be maintained. See clearance to combustibles chart (Figure 3) of these instructions.

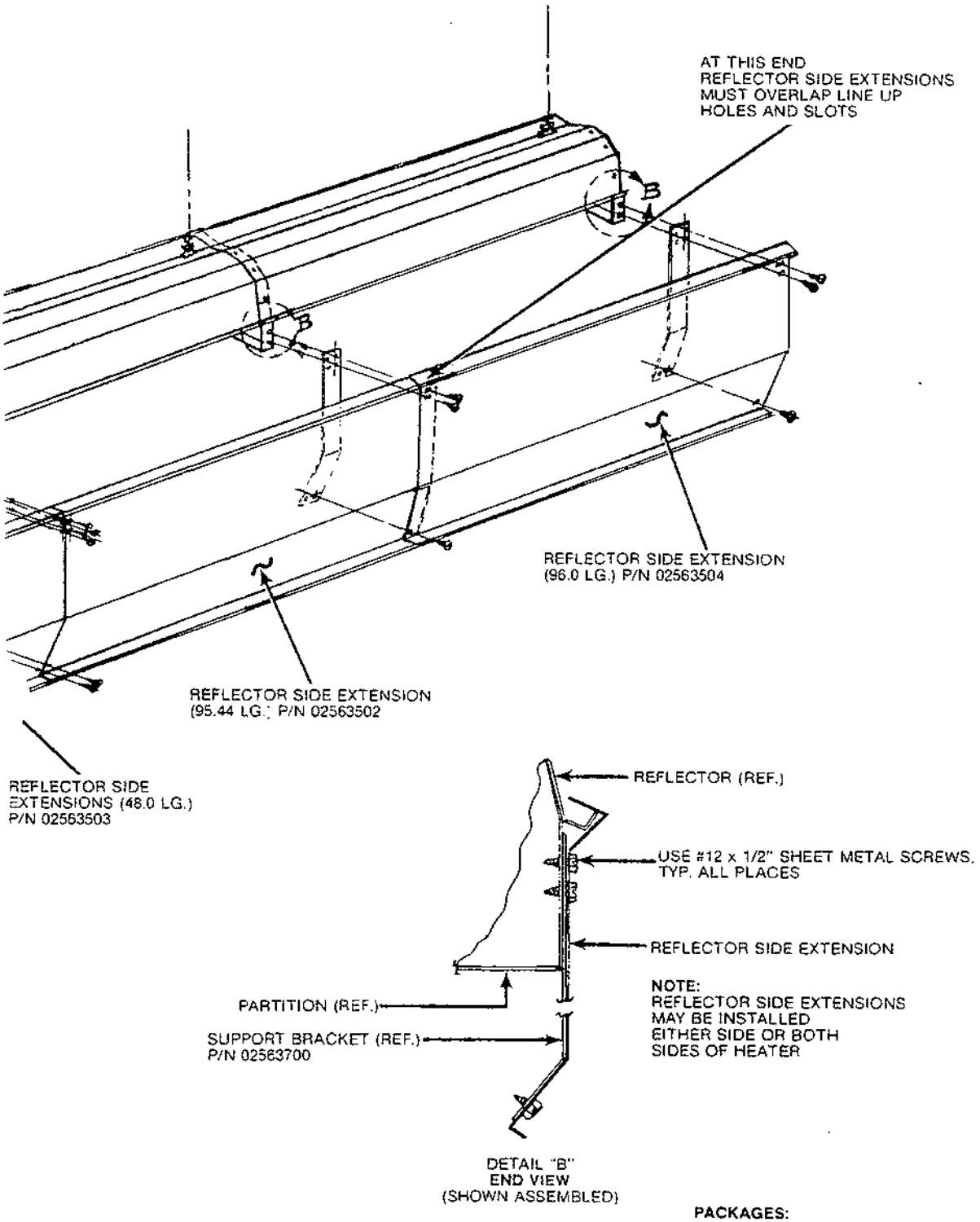
INSTALLATION OF RTH-R75 AND RTH-R100 HEATER WITH 2-FT. WIDE DECORATIVE ALUMINUM GRILLE
Figure 13



NOTE 1
BY USING FOUR HOLES PROVIDED IN THE REFLECTOR JOINT BRACKET ASSEMBLY (VISIBLE FROM INSIDE), DRILL 7/32" DIAM. HOLES THROUGH ASSEMBLED REFLECTORS, THEN INSTALL SUPPORT, P/N 02563000 BY USING #12 x 1/2" SHEET METAL SCREWS AS SHOWN IN DETAIL "A".

INSTALLATION OF OPTIONAL REFLECTOR SIDE EXTENSIONS MODEL RTH-R75 AND MODEL RTH-R100

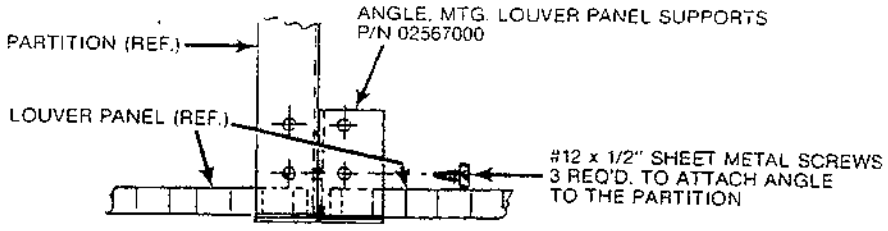
Figure 14



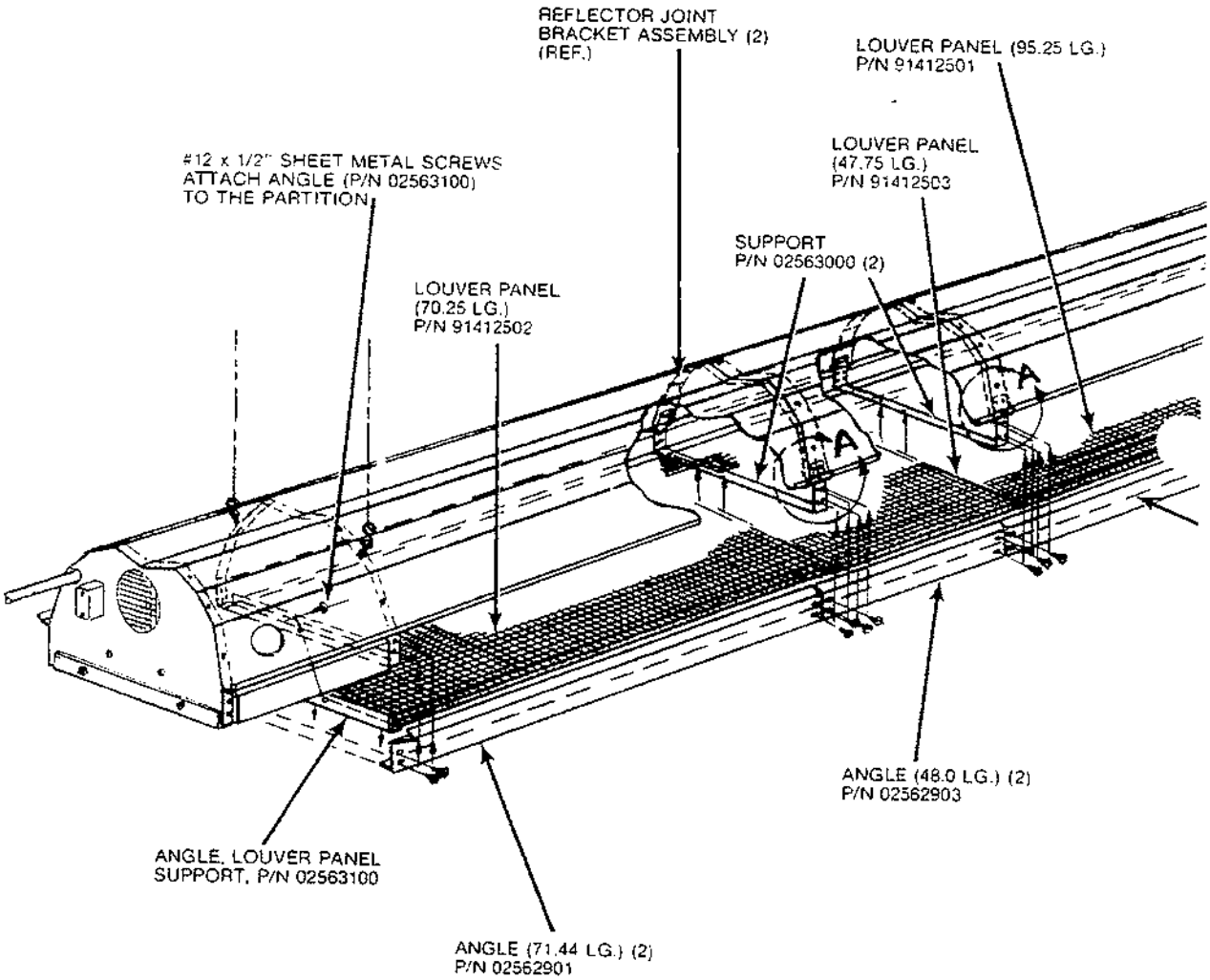
PACKAGES:
P/N 02517801 REFLECTOR SIDE EXTENSION
PACKAGE RTH-R75 & RTH-R100

P/N 02517802 REFLECTOR SIDE EXTENSION
PACKAGE FOR 8-FT. EXTENSION
(See NOTE 2)

IMPORTANT: In all cases clearance to combustibles must be maintained. See Clearance to Combustibles Chart (Figure 3) of these instructions.



DETAIL "C" — SIDE VIEW



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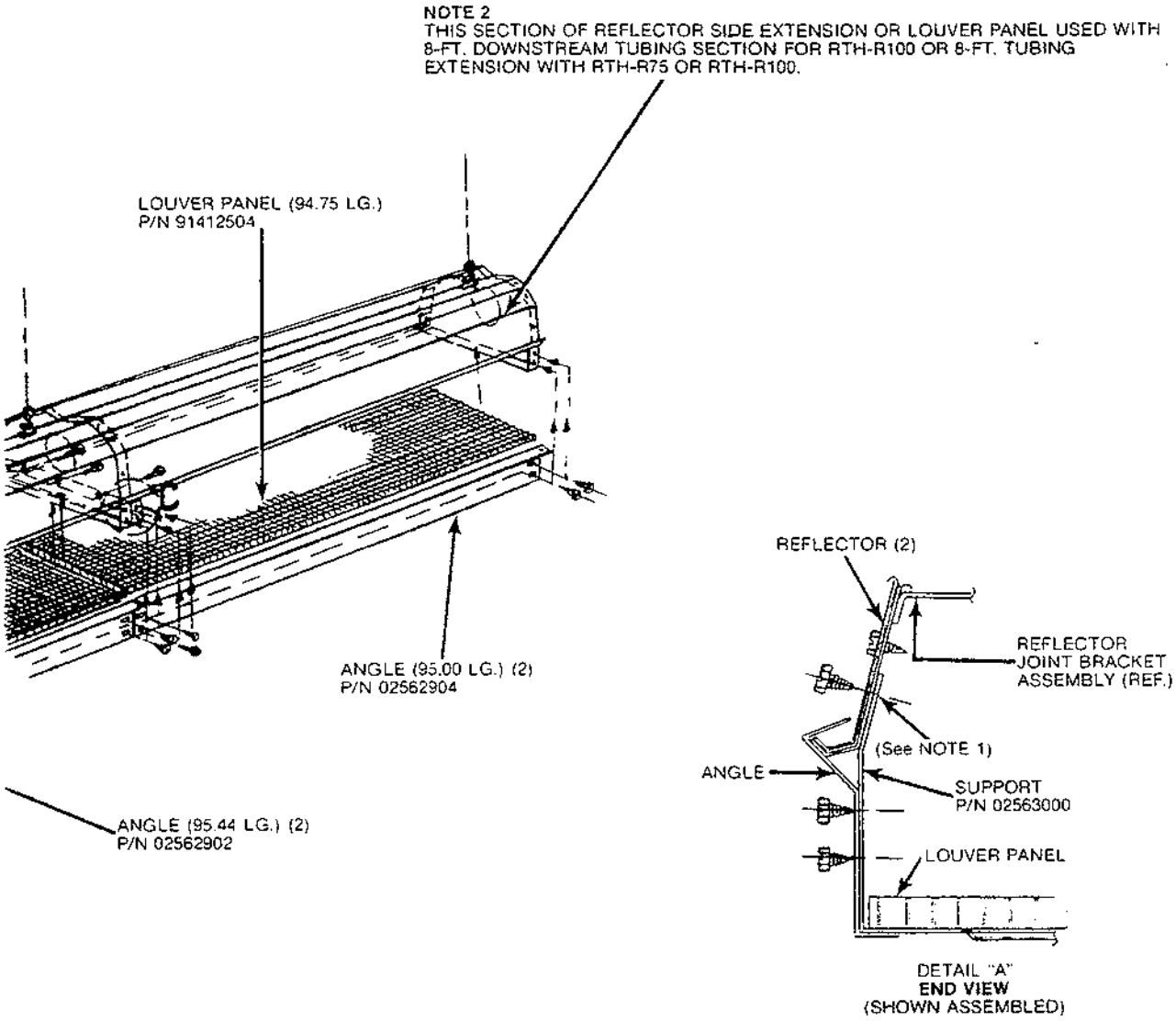

NOTE 1
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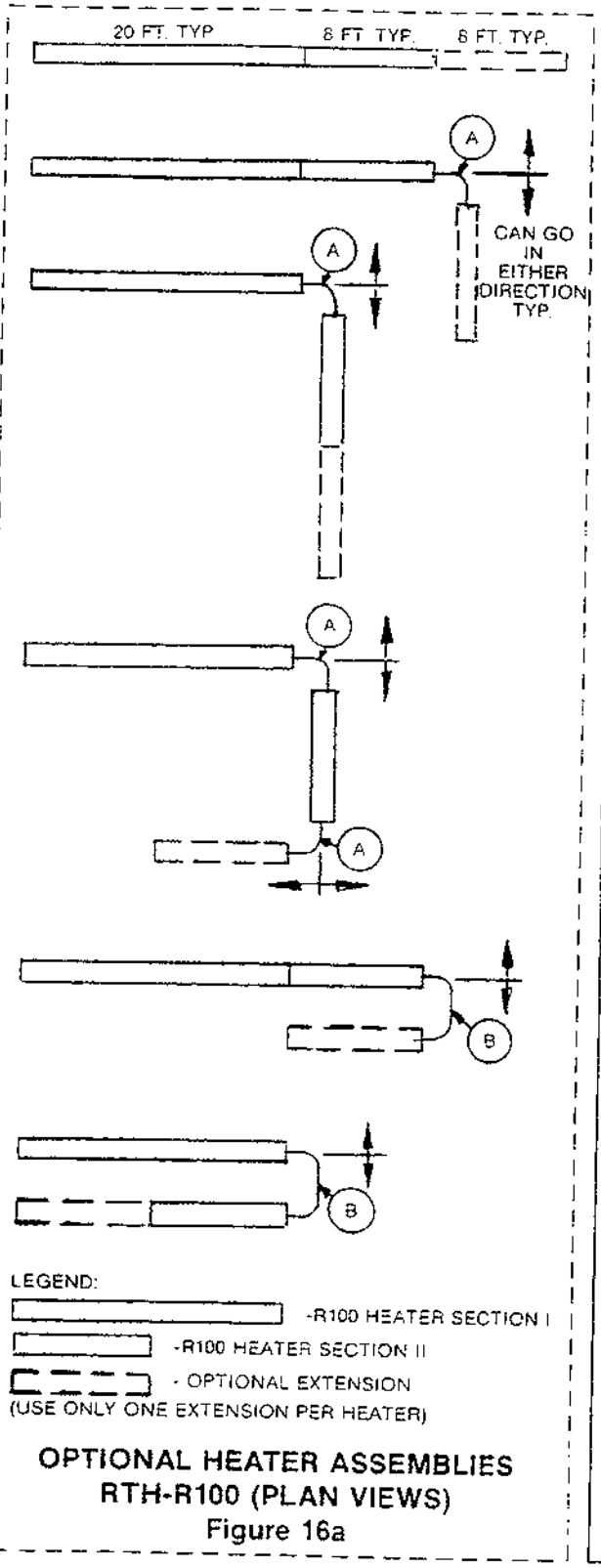
PACKAGES:
P/N 02517701 DECORATIVE GRILLE (LOUVER PANEL)
PACKAGE RTH-R75 & RTH-R100

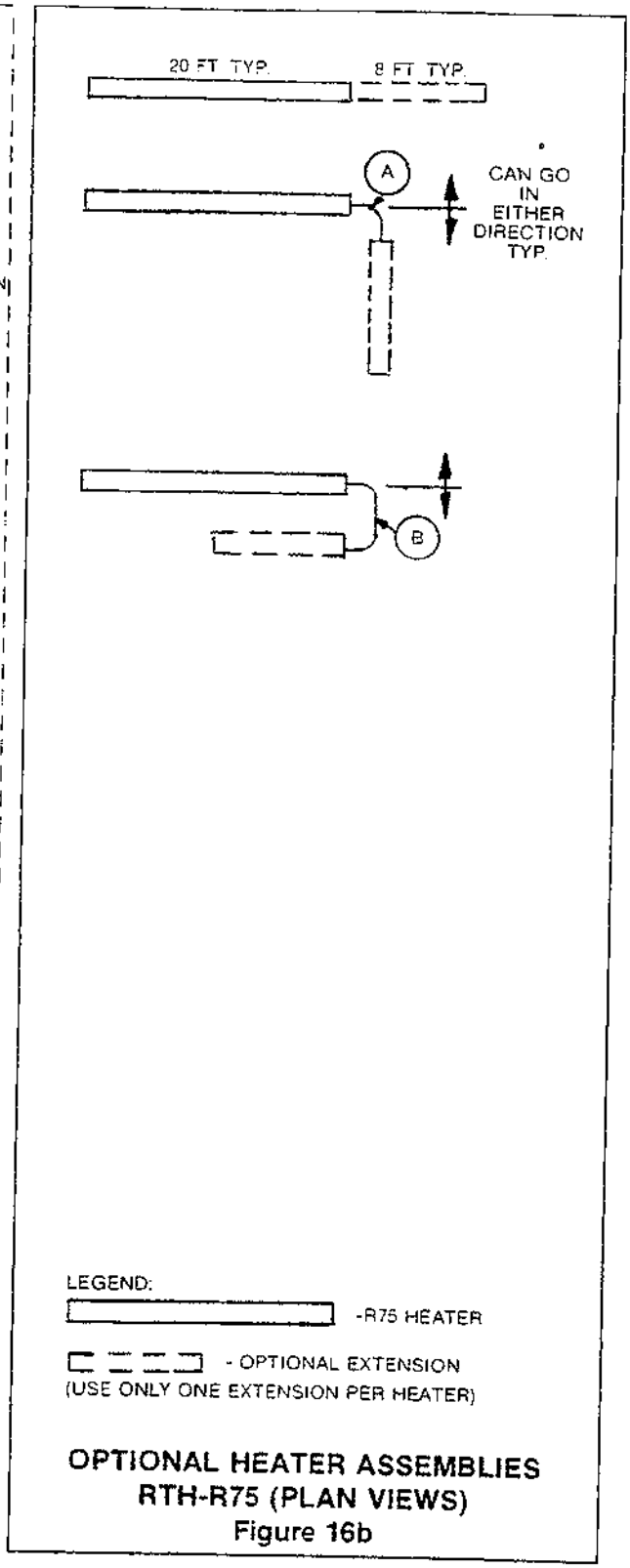
P/N 02517702 DECORATIVE GRILLE (LOUVER PANEL)
PACKAGE FOR 8-FT. EXTENSION
(See NOTE 2) RTH-R75 & RTH-R100

INSTALLATION OF OPTIONAL DECORATIVE GRILLE MODEL RTH-R75 AND MODEL RTH-R100

Figure 15



OPTIONAL HEATER ASSEMBLIES RTH-R100 (PLAN VIEWS)
Figure 16a

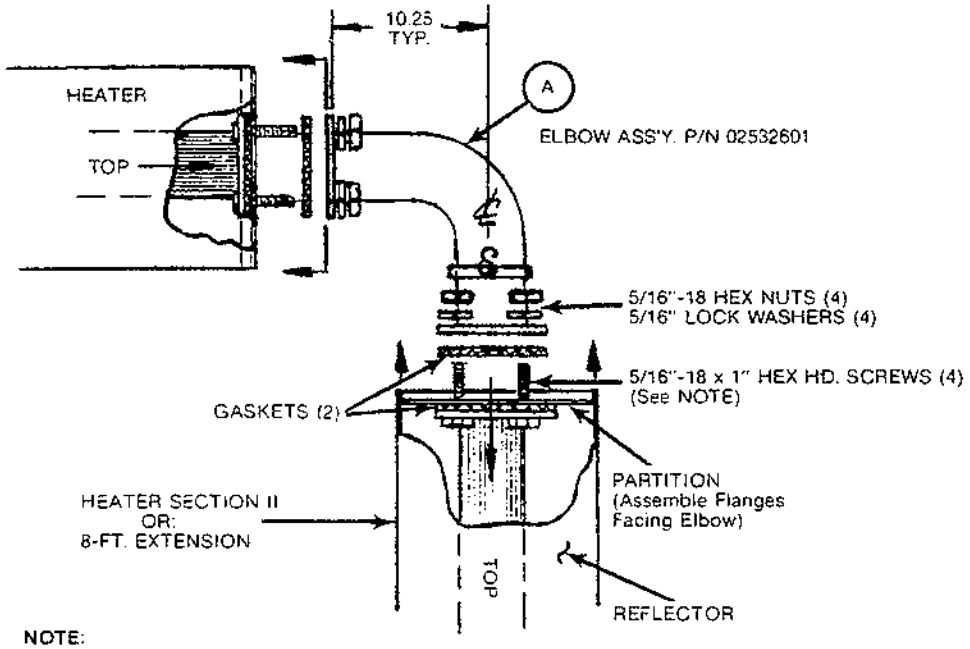


OPTIONAL HEATER ASSEMBLIES RTH-R75 (PLAN VIEWS)
Figure 16b

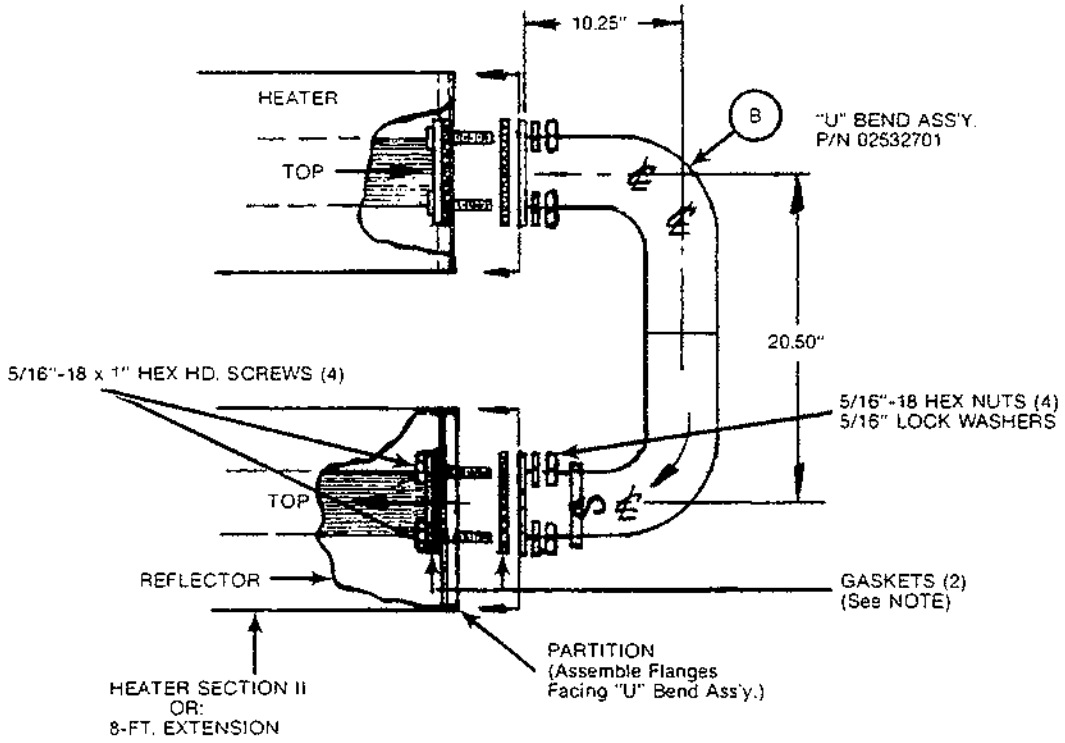
A Optional Elbow Assembly, P/N 02532601

B Optional "U" Bend Assembly, P/N 02532701

NOTE: For Assembly Details see Page 19 of these instructions.



NOTE:
INDICATED 5/16"-18 x 1" HEX HD. SCREWS, HEX NUTS, LOCK WASHERS, GASKETS AND PARTITION SUPPLIED WITH ELBOW ASSEMBLY OR: "U" BEND ASSEMBLY.



ASSEMBLY DETAILS
(OPTIONAL HEATER ASSEMBLY)
MODEL RTH-R75 AND MODEL RTH-R100
Figure 17

SERVICE INSTRUCTIONS

SEQUENCE OF OPERATION

The RTH Gordon-Ray Heater is equipped with a gas direct spark ignition system. This is how it works:

1. Thermostat on a call for heat energizes the blower motor and motor end switch.
2. When motor approaches nominal running RPM, the air proving pressure switch closes, energizing the control board which energizes the spark ignitor and opens the redundant gas valve.
3. With normal operation as the flame is established, the spark ceases.
4. If the flame is not established during the flame establishing period, the system closes the gas valve and locks out.
5. If flame is extinguished during the duty cycle, the ignitor will provide one immediate retry for ignition before going into lockout.
6. After lockout, control must be reset by turning down thermostat for five seconds and then raising it again to desired temperature.
7. When thermostat is satisfied, all power to the unit is de-energized.

SERVICE PROCEDURES

CAUTION: Before removing control housing cover for any type of service to heater, be sure that gas and electric supply to heater are turned OFF.

NO POWER TO HEATER:

1. Check to see that thermostat is calling for heat.
2. Check for blown fuse in electrical supply to heater.
3. Check for power on hot and ground leads entering heater junction box.
4. Check for loose or broken wire at heater junction box.

BLOWER MOTOR FAILS TO RUN:

1. Check for loose or broken wires from motor to hot and ground leads entering heater junction box.
2. Check to see if blower impeller turns freely; it may be hitting blower housing or motor shaft may be seized. Adjust to free impeller or repair or replace blower motor.

NO SPARK:

With gas to heater turned OFF, set the thermostat above room temperature. When blower motor attains running speed the air proving pressure switch energizes the spark module. The spark electrode may be observed by looking through the observation window of the burner control housing. Spark should appear as a bright blue arc across the electrodes. Spark duration is only a few seconds since main flame is not established, so recycling of the thermostat may be necessary for observation purposes. If no spark appears:

1. Check for loose or broken leads from air proving pressure switches.
2. Check for carbon bridge or broken porcelain insulator on spark electrode.
3. Check spark electrode gap; should be .125 inches.
4. Check leads from electrode for loose connections or frayed insulation.
5. Replace direct spark ignition module if defective: module is not field repairable.

NO GAS PRESENT

Set thermostat above room temperature. When blower attains running speed air proving pressure switch energizes main gas valve. If no gas flow or flame is established:

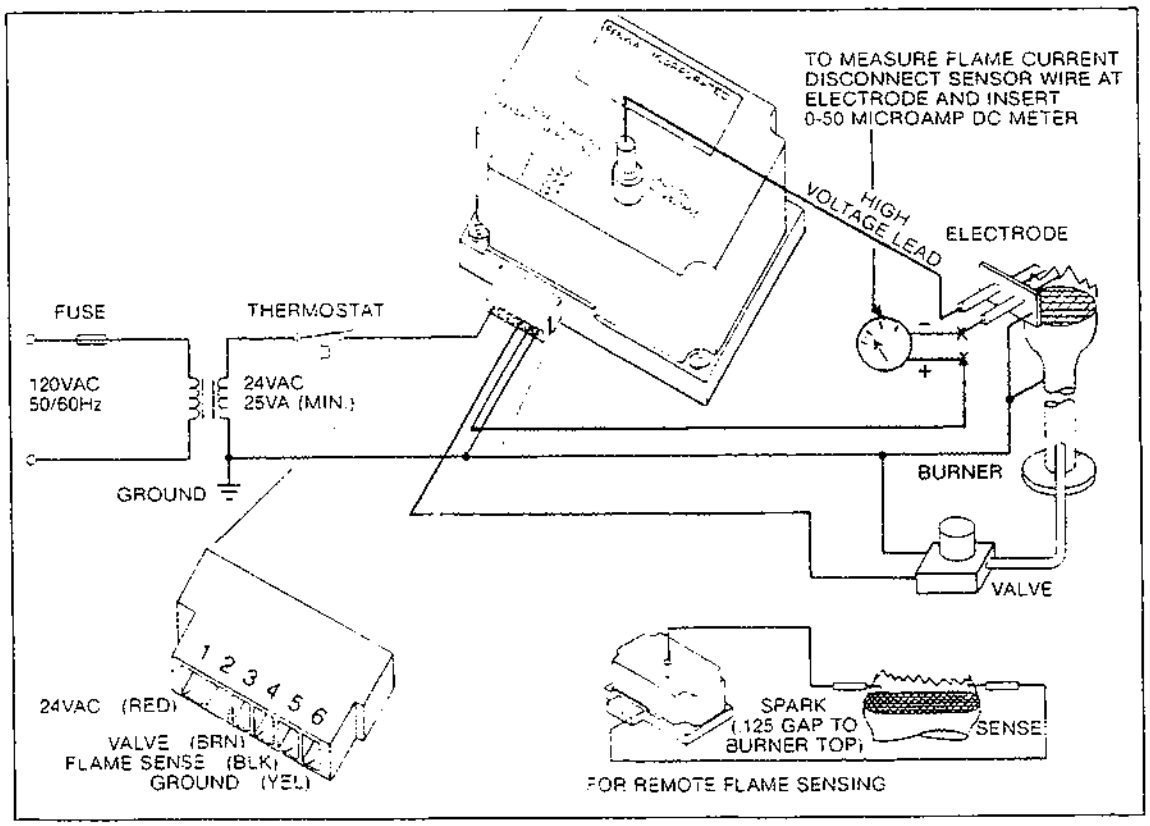
1. Check to see that manual gas supply valve to heater is ON.
2. Check to see that dial knob on redundant valve in control housing is turned to ON.
3. Check for gas pressure at 1/8" NPT Gauge tapping upstream of burner control.
4. Check for loose or broken wire leads from air proving pressure switches.
5. Check for loose or broken wire leads from gas valve to circuit board.
6. Replace defective gas valve.
7. Replace circuit board. Board is not field repairable.

FENWAL CONTROL

Flame current is the current which passes through the flame from the sensor to ground to complete the primary safety circuit. The minimum flame current necessary to keep the ignitor from lockout is five microamps. To measure flame current, DISCONNECT INPUT VOLTAGE then remove low voltage sensing lead wire from electrode terminal and insert a 0-50 DC microamp meter in a series with the sensor probe and sensor wire. Meter reading should be 5 microamps or higher.

If meter reads below "0" on scale, the leads are reversed. Disconnect power and reconnect leads for proper polarity.

If the flame current reading is less than 5 microamps, reposition the electrode in the flame to get a higher reading.

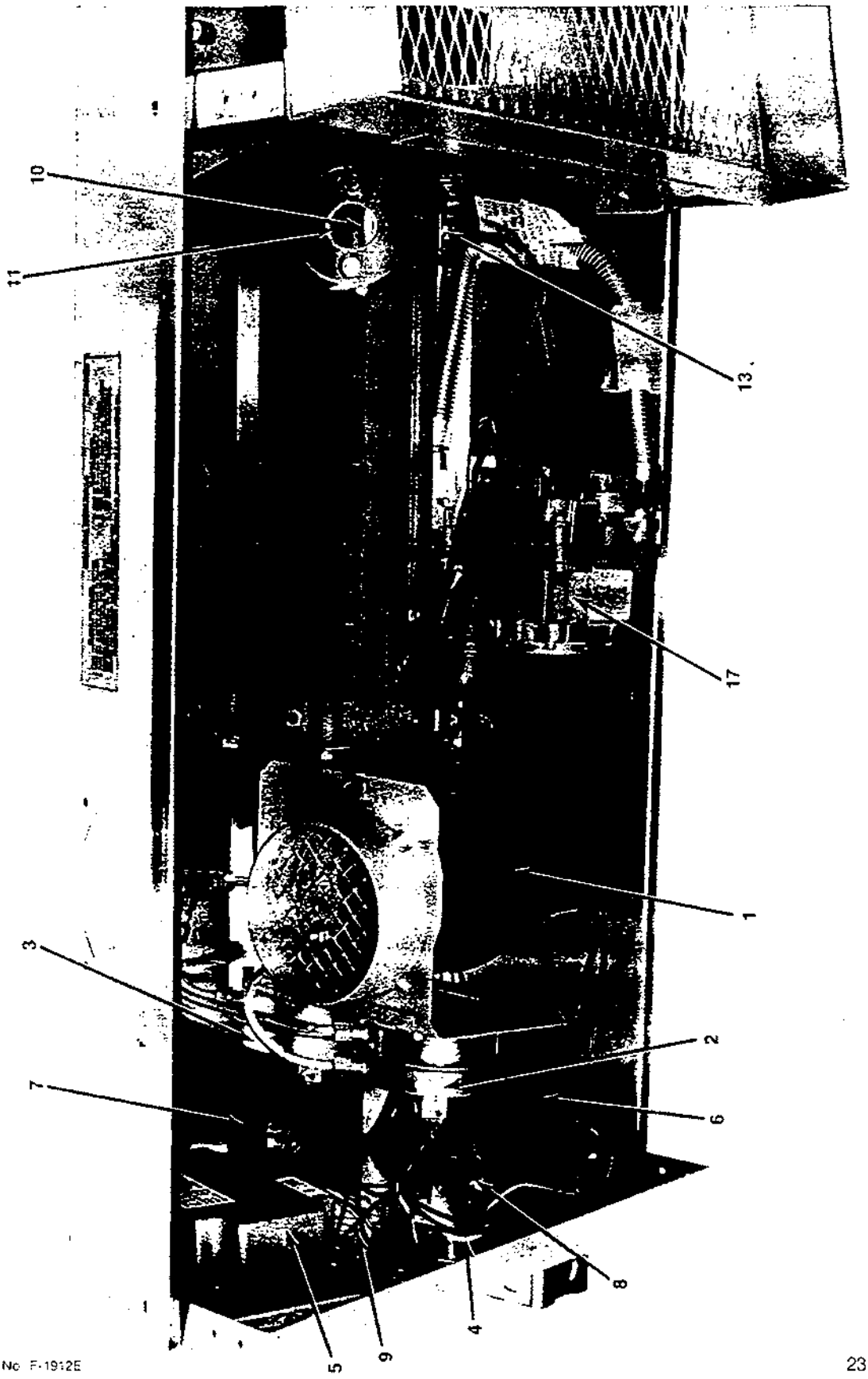


FENWAL CONTROL
Figure 18

MAINTENANCE

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

1. Be sure gas and electric supply to heater are turned OFF before performing any service or maintenance on heater.
2. Open control housing cover.
3. Check condition of blower scroll and motor. Dirt and dust may be blown out with compressed air or a vacuum cleaner may be used.
4. Remove burner and check its condition. Clean or replace as necessary.
5. Make visual check of electrode. Replace if there is excessive carbon residue, erosion of electrodes, or other defects. Gap should be .125 inches.
6. Check to see that burner observation window is clean and free of cracks or holes. Clean or replace as necessary.
7. Remove rear baffle from firing tube. Brush it clean if any scale or soot deposits are found on baffle.
8. With baffle removed, check inside of firing tube with flashlight. If carbon or scale are present, scrape out deposits with wire brush on rod or metal plate attached to wooden pole.
9. Check firing tube inside and out for holes or cracks. Replace firing tube if any cracks are found.
10. Replace rear flue baffle and baffle retaining screw.
11. Check flue pipe for soot or dirt or any obstruction to the outdoors. After cleaning as necessary, reattach flue pipe.
12. Outside surfaces of heater may be cleaned with damp cloth.
13. Check for leaks with soap solution on any pipe joints that were disconnected during maintenance procedure before putting heater back in service.
14. Check performance of heater and visually observe flame for proper flame characteristics.
15. A qualified service agency should be contacted for service other than routine maintenance.


10
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REPLACEMENT PARTS

ITEM	DESCRIPTION	MODEL NO. RTH-R75 PART NO.	RTH-R100 PART NO.
1	Motor/Blower Assembly	02517400	02517400
2	Normally Closed Pressure Switch	90433601	90433601
3	Normally Open Pressure Switch	90433700	90433700
4	Wiring Harness	01327900	01327900
5	Ignition Control Module Fenwal	90427302	90427302
6	Transformer	90424200	90424200
7	Ignition Cable Fenwal	90433800	90433800
8	Indicator Light (Green, 115V)	91316800	91316800
9	Indicator Light (Red, 28V)	91316900	91316900
10	Mica Window	02553200	02553200
11	Mica Window Gasket	02558501	02558501
12	Burner Orifice Adaptor	02591800	02591800
13	Electrode Fenwal	90427402	90427402
14	Orifice Natural	91910418	91910410
15	Orifice L.P.	91910440	91910434
16	Burner Assembly	02531400	02531400
17	Valve Robertshaw Natural Gas	90031200	90031200
17	Valve Robertshaw L.P. Gas	90031100	90031100
18	Fuel Conversion Kit Natural to L.P.	02518301	02518303
19	Fuel Conversion Kit L.P. to Natural	02518302	02518304

ACCESSORIES

DESCRIPTION	RTH-R75 PART NO.	RTH-R100 PART NO.
Decorative Grille Package for 20' of Heater	02517701	02517701
Decorative Grille Package for 8' Extension	02517702	02517702
Side Extension Package for 20' of Heater	02517801	02517801
Side Extension Package for 8' Extension	02517802	02517802
Outside Air Adaptor Package	02527901	02527901
Radiant Tube Extension Package	02531301	02531301
Thru-the-Wall Vent Terminal	90502100	90502100
Elbow Package	02532601	02532601
Return Bend Package	02532701	02532701

WARRANTY CARD

Gordon-Ray Installation Information

Name _____

Address Where Installed _____

_____

Phone No. _____ Person To Contact _____

Installation Date _____ Installer _____

Purchased From _____

DID THESE UNITS REPLACE AN EXISTING HEATING SYSTEM? ☐ YES ☐ NO

Type _____ BTU's Replaced _____

Gordon-Ray Units No. _____ Type _____

Serial No's. _____

Type of Application — Please Indicate

☐ AIRPORT FACILITY
  ☐ Hangar ☐ Warehouse
  ☐ Other _____
☐ AUTO BODY SHOP
☐ AUTO DEALER
☐ AUTO SERVICE SHOP
☐ ASSEMBLY PLANT
☐ BOTTLING PLANT OR WAREHOUSE
☐ CAR WASH
☐ CONSTRUCTION EQUIP. DEALER
☐ FABRICATION PLANT
  TYPE _____
☐ FARM
  ☐ Cattle ☐ Dairy ☐ Horse
  ☐ Pig ☐ Poultry
☐ FARM BULDING
  TYPE _____
☐ FARM IMPLEMENT DEALER
☐ FIRE STATION
☐ GARAGE
  TYPE _____
☐ GREENHOUSE
☐ HOCKEY RINKS
☐ HIGHWAY DEPT. BUILDING
  TYPE _____
☐ LUMBER COMPANY
☐ MANUFACTURING PLANT
  TYPE _____
☐ MACHINE SHOP
☐ PUBLIC BUILDING
  TYPE _____
☐ POST OFFICE
☐ RESTAURANT
  TYPE _____
☐ SCHOOL
  TYPE _____
☐ STORE
  TYPE _____
☐ SWIMMING POOL
☐ TENNIS COURT
☐ TRUCKING COMPANY
☐ UTILITY COMPANY BUILDING
  TYPE _____
  UTILITY _____
☐ WAREHOUSE
☐ WELD SHOP
  TYPE _____
☐ ZOO
☐ OTHER _____

NO POSTAGE
NECESSARY
IF MAILED
IN THE
UNITED STATES

BUSINESS REPLY MAIL

FIRST CLASS PERMIT NO. 7406 BUFFALO, NY

POSTAGE WILL BE PAID BY ADDRESSEE

Roberts-Gordon, Inc.
Subsidiary of A.J. Industries, Inc.
P.O. Box 44
Buffalo, N.Y. 14240

WARRANTY

WARRANTY: ROBERTS-GORDON, INC. ("Seller") manufactures heating components which are designed only to provide predetermined ranges of heat rises in various enclosures when properly used in systems designed by purchaser or others and installed by others. Seller makes no representation or warranty with respect to the effect upon the enclosure, or upon any of the contents of the enclosure, including, without limitation, all plant or animal life, kept or processed in the enclosure. Seller does warrant that heating components manufactured by it, or bearing its nameplate, shall be free from defects in workmanship and material.

WARNING: Seller's warranty shall not apply: (a) to damage to the product when used in an atmosphere containing halogenated hydrocarbons or other corrosive chemicals. Some compounds in the air can be ingested into the equipment and can cause an accelerated rate of corrosion of some of the parts of the heating components. The use of such chemical compounds in or near the enclosure should be avoided where a longer life of the burner, tubing and other parts is desirable; (b) to any heaters or heating components which have been repaired or replaced with other than factory parts, modified in any way, misused or damaged, or which have been used contrary to seller's written instructions.

LIMITATION OF WARRANTY: THIS IS SELLER'S ONLY WARRANTY. THERE ARE NO OTHER WARRANTIES OF ANY KIND WHATSOEVER, EXPRESS OR IMPLIED, AND ALL OTHER EXPRESS AND ALL IMPLIED WARRANTIES OF MERCHANTABILITY AND/OR FITNESS FOR ANY PARTICULAR PURPOSE ARE HEREBY SPECIFICALLY DISCLAIMED.

EXCLUSIVE REMEDY: THE SOLE AND EXCLUSIVE REMEDY FOR ANY LOSS, DAMAGE OR LIABILITY, WHETHER BASED ON CONTRACT, NEGLIGENCE, STRICT LIABILITY, OR OTHERWISE, IS LIMITED TO THE OBLIGATION OF SELLER TO REPAIR OR REPLACE PARTS, AT ITS FACTORY, OF ANY HEATING COMPONENT OWNED BY ORIGINAL BUYER AND RETURNED TO SELLER'S FACTORY WITHIN ONE (1) YEAR AFTER DELIVERY, TRANSPORTATION CHARGES PREPAID, WHICH EXAMINATION REVEALS TO HAVE BEEN DEFECTIVE. UNDER NO CIRCUMSTANCES SHALL SELLER BE LIABLE FOR ANY LOSS, DAMAGE, COSTS, EXPENSES, OR INCIDENTAL OR CONSEQUENTIAL DAMAGES OF ANY KIND, IN CONNECTION WITH THE SALE, INSTALLATION, USE, MAINTENANCE, OR REPAIR, OF ANY OF SELLER'S HEATING COMPONENTS.

BUYER RESPONSIBLE FOR DATA: Seller and its representatives may furnish Buyer, upon Buyer's request, data relating to the function and use of Seller's heating components. Seller shall not be liable for loss, damage, cost, expenses, or incidental or consequential damages of any kind, sustained directly or indirectly, by any person, or to any property, if Buyer adopts and uses such data in whole or in part.

LIMITATIONS ON AUTHORITY OF REPRESENTATIVES: No representative of Seller, other than an officer, has authority to change or extend these provisions. Changes or extensions shall be binding only if confirmed in writing by Seller's duly authorized executive officers.

QUALIFIED ACCEPTANCE OF BUYER'S ORDER: Acceptance of Buyer's form of order is expressly conditioned upon Buyer's assent to these provisions of sale. Any terms and conditions of Buyer's order inconsistent with these provisions shall not be binding on Seller and shall not be considered applicable to the sale or shipment of Seller's heating components. Acceptance of shipment by Buyer shall be conclusively deemed acceptance of these provisions.