

**WARNING: Improper installation, adjustment, alteration, service or maintenance can cause property damage, injury or death. Read the installation, operation, and maintenance instructions thoroughly before installing or servicing this equipment.**

**REZNOR** *Thomas&Betts*

## OPTION DJ HIGH ALTITUDE

INSTALLATION FORM RZ-NA 461-HA-1

APPLIES TO:

Models RA/RAD 235

### Option Description/Application

This field-installed option is designed to allow for the use of Model RA/RAD 235 used oil heaters at altitudes above 3000 feet. There are two option packages. Option DJ1 is for elevations from 3001-7000 feet above sea level. Option DJ2 is for elevations greater than 7000 feet.

The option package includes:

Option No.		DJ1	DJ2
Option Package P/N		113154	113155
Applies to Elevation Range		3001-7000	7000+
Qty	Description	P/N	P/N
1	Gear Pump Motor	112707	111854
1	Air orifice (Size #56) for rotary vane air compressor	39658	39658
1	Air orifice (Size #68) for piston air compressor	121359	121359
1	Label	113144	113145
1	Motor Bracket	None*	113503
4	Isolators, #J-3112-8-11	None*	113498

\*Re-use original motor bracket with isolators attached.

### Installation Requirements/Procedures

**DANGER: This high altitude conversion kit should be installed by a qualified service agency in accordance with these instructions and in compliance with all codes and requirements of authorities having jurisdiction. Failure to follow instructions could result in death, serious injury, and/or property damage. The qualified agency performing this work assumes responsibility for this installation.**

All Model RA/RAD 235 used oil heaters are factory built for operation at sea level to 3000 ft elevation. In order to operate above 3000 ft the gear pump motor in the remote pump assembly and the air manifold orifice on the heater must be replaced with the components in the appropriate option package. **As original parts are removed, keep all hardware to be used in attaching new parts and re-assembly.** Parts removed may not be returned for credit.

Before beginning actual installation, re-verify that the kit selected is appropriate for the elevation. Follow the instructions closely to ensure safe and proper operation.

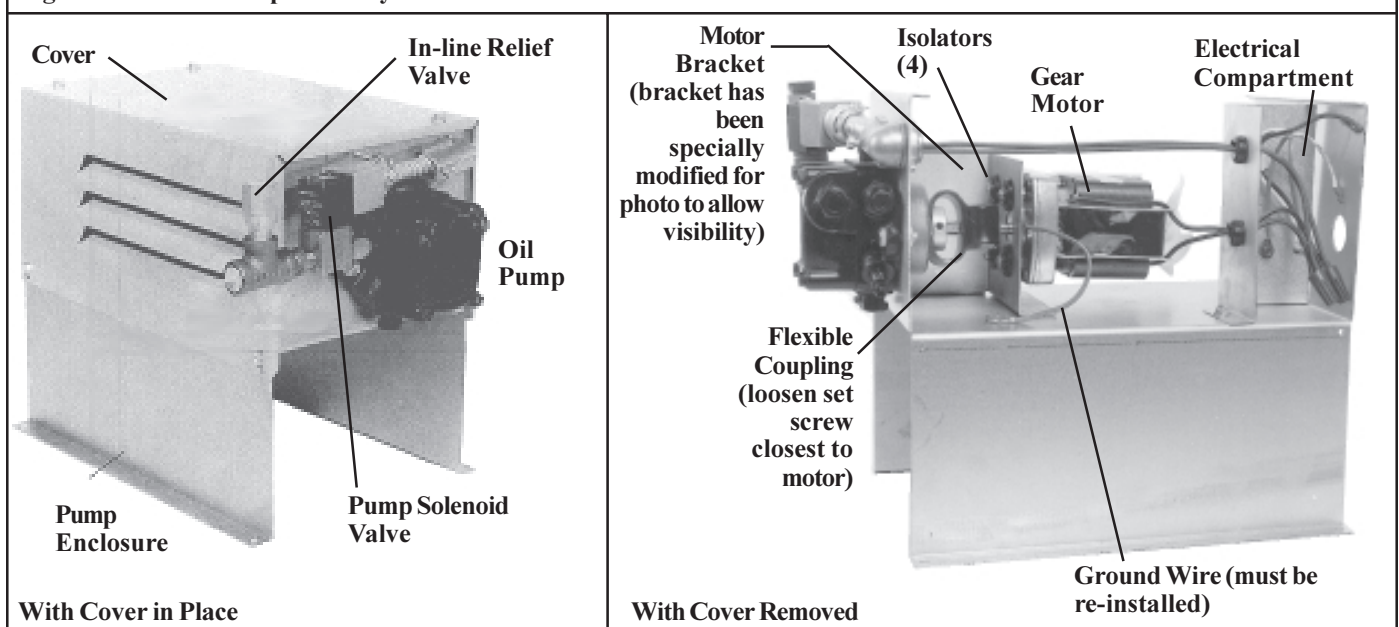
**WARNING: These kits apply to Reznor® Model RA/RAD 235 only. Do not use these option packages on any other heater models or at elevations outside of the specified ranges.**

### Installation Instructions

1. If the heater is installed, turn off the electrical power to both the remote pump and the heater.
2. **Remove the Factory-Installed Standard Gear Pump Motor**

**Remove Remote Pump Assembly Cover** - Remove the sheet metal screws that attach the remote pump assembly cover. Lift off the cover. See Figure 1.

Figure 1 - Remote Pump Assembly



# Installation Instructions (cont'd)

## 2. Remove the Gear Pump Motor (cont'd)

**Disconnect Wiring** - Trace the gear pump motor leads through the bottom entrance hole of the divider into the electrical compartment of the pump enclosure. Disconnect the motor leads from the wire bundle, saving the wire nuts. Remove the strain relief bushing and pull the motor leads through the hole.

**Remove the Motor** - The flexible coupling between the motor and the pump has two set screws. Using an allen wrench, loosen the set screw closest to the motor.

The motor is mounted on a bracket that is attached to the pump enclosure. Do not attempt to remove the motor from the bracket. Remove all of the screws, including the ground wire screw, that holds the motor bracket to the pump enclosure. Slide the motor shaft out of the coupling and remove the assembled motor and bracket.

Dis-assemble the motor and the bracket:

- (1) Remove and save the four screws that attach the motor.
- (2) Do not remove the isolators from the bracket.
- (3) Save the green ground wire.
- (4) **Option DJ1** - Save the motor bracket with isolators in place to be re-used.
- Option DJ2** - This motor bracket will not be re-used; it may be discarded.
- (5) The motor can either be put in stock as a replacement part or discarded.

## 3. Install the New High Altitude Gear Pump Motor

### Assemble Motor, Bracket, and Ground Wire

**Option DJ1** (3001-7000 Ft) - using the four screws (#8-32 x 3/4" long) that were removed from the original motor, attach the green ground wire and the new motor to the original mounting bracket.

**Option DJ2** (over 7000 ft) - Insert the four isolators in the kit into the motor mounting holes in the new mounting bracket. Using the four screws (#8-32 x 3/4" long) that were removed from the original motor, attach the green ground wire and the new motor to the new mounting bracket.

### Install Motor and Bracket Assembly (Refer to Figure 1, page 1)

Position the motor and bracket assembly into the pump enclosure. Carefully slide the motor shaft into the flexible coupling. **DO NOT TIGHTEN COUPLING SET SCREW.**

Attach the bracket to the pump enclosure by re-using the same hardware. Re-attach the green ground wire.

Tighten the set screw on the flexible coupling.

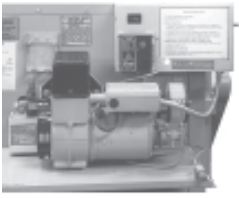


Insert the leads from the new motor through the bottom hole in the divider into the electrical compartment and re-install the strain relief bushing. Make the wire nut connections.

Replacement of the gear motor pump is now complete. Position the pump enclosure cover and secure it with the remaining sheet metal screws.

## 4. Change the Air Bleed Orifice

Each kit includes two air bleed orifices; only one orifice will be used. Selecting the correct orifice to install depends on the type of compressor on your heater. If your heater was manufactured prior to 1/93, it may be equipped with either a standard integral rotary vane compressor or an optional piston-type air compressor (either factory or field installed). Heaters manufactured after 1/93 have a standard factory installed piston-type air compressor.

Both the rotary vane and the piston-type compressor have an air manifold made up of a series of brass fittings. One end of the air

Figure 2 - Type of compressor determines air bleed orifice selection	Use Air Bleed Orifice for High Altitude
<b>Rotary Vane Compressor - on heaters manufactured prior to 1/93</b> 	<b>Orifice Size #56, P/N 39658</b>
<b>Piston Type Compressor - Field installed (prior to 1/93)</b> 	<b>Orifice Size #68, P/N 121359</b>
<b>Piston Type Compressor - Factory installed</b> 	<b>Orifice Size #68, P/N 121359</b>

manifold is connected to the compressor outlet and the other end to two pieces of red silicon tubing. Locate the air manifold. Determine which fitting is the bleed orifice (compare to the orifice in the kit). Unscrew the orifice and discard. Install the air orifice selected for high altitude application. (Discard the other orifice in the kit.)

NOTE: Do not use either TEFLON® tape or sealant on orifice plug threads. (TEFLON® is an registered trade name of DuPont Chemical Corporation.)

## 5. Affix Field Modification label

Refer to Figure 3 and determine the recommended location for this label. Be sure that the surface is clean and dry. Peel off the backing and affix the label.

**REZNOR**  
MERCER, PA. 16137

MULTI-OIL-FIRED UNIT HEATER  
FOR INDUSTRIAL/COMMERCIAL USE ONLY  
MODEL (RA-235 ) ( - ) HP

SERIAL # \_\_\_\_\_

115 VOLTS 1PH SER. 1180 AMP  
MINIMUM CIRCUIT CAPACITY 23 AMP  
MAXIMUM UNIT FUSE 30 AMP  
FIRING RATE 1.30 BTU/HR  
INPUT ( 235,000 ) BTU/HR  
OUTPUT DEPENDS ON BTU CONTENT OF OIL USED.

THIS UNIT IS FOR INSTALLATION SUSCEPTIBLE FROM A GELING WITH CLEARANCE TO COMBUSTIBLE MATERIALS NOT LESS THAN...  
TOP - ( 2" ) BOTTOM - 6" SIDES - 6"  
REAR - ( 2" ) FRONT - 48" FUEL PIPE - 18"  
SUITABLE FOR NO. 2 FUEL OIL AND USED OIL RANGING FROM API TO SAE 50.

\*\*\*NOTICE\*\*\*

THIS HEATER HAS BEEN FIELD EQUIPPED WITH AN ATOMIZING AIR METERING ORIFICE AND FUEL PUMP MOTOR SPECIFICALLY DESIGNED FOR USE AT ELEVATIONS BETWEEN 3,000 AND 7,000 FT.

THIS UNIT HAS BEEN DERATED FOR OPERATION AT THE SPECIFIED ELEVATIONS.

ELEVATION FT.	FIRING RATE BTU/HR	INPUT BTU/HR
3,001-7,000	1.45	200,000

**Option DJ1**

\*\*\*NOTICE\*\*\*

THIS HEATER HAS BEEN FIELD EQUIPPED WITH AN ATOMIZING AIR METERING ORIFICE AND FUEL PUMP MOTOR SPECIFICALLY DESIGNED FOR USE AT ELEVATIONS ABOVE 7,000 FT.

THIS UNIT HAS BEEN DERATED FOR OPERATION AT THE SPECIFIED ELEVATIONS.

ELEVATION FT.	FIRING RATE BTU/HR	INPUT BTU/HR
ABOVE 7,000	1.24	174,000

**Option DJ2**

**RA/RAD 235 Rating Plate**

**Figure 3 - Recommended Location for High Altitude Field Modification Label**

6. Installation of the high altitude option package is complete. Follow the instructions in the manual supplied with the heater for installation and operation. If the heater is installed, re-connect the power and follow the start-up instructions in the manual. CHECK FOR PROPER AND SAFE OPERATION.