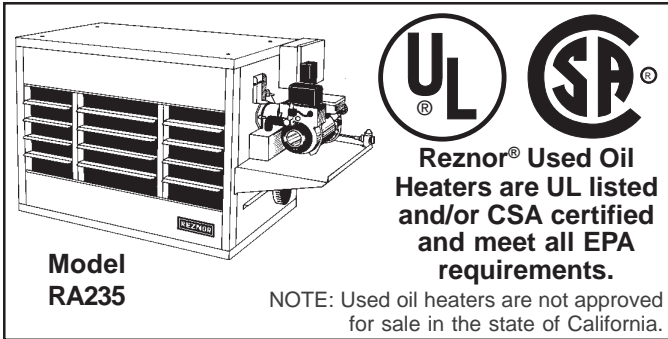




**INDOOR, OIL-FIRED, BLOWER AND FAN-TYPE  
USED OIL UNIT HEATERS  
FOR COMMERCIAL/INDUSTRIAL USE**

# MODELS RA/RAD



**DESCRIPTION**

Reznor® Model RA/RAD Series Used Oil Unit Heaters are available in four sizes with BTUH inputs from 140,000 to 500,000 with either a propeller fan or blower for air delivery. These oil-fired heaters are designed to burn used oil but will also burn No. 2 fuel oil. The used oil must be no heavier than 50 weight and not lighter than No. 2 fuel oil.

Model RA is a fan-type unit heater with a propeller fan designed for air delivery to open areas. Model RAD is a blower-type unit heater with a centrifugal blower and adjustable belt drive. All blower-type Model RAD heaters may be connected to ductwork and are capable of handling up to .25" w.c. of external static pressure. Size RAD500 will handle up to .5" w.c. of external static pressure. All units are equipped with either a full fan guard or blower and belt guards.

Model RA/RAD units feature a low-stress heat exchanger and a heavy gauge combustion chamber with large, easily accessible service panels. The air atomizing burner provides excellent flame retention. Air for atomization of the oil is provided by an onboard piston-type compressor. An oil preheating system (U.S. Patent No. 5,080,579) heats the oil, maintaining it at a temperature required for atomization but preventing nozzle after-drip. The burner has electric spark ignition and an electronic cad-cell flame safety system with manual reset. The fan control prevents cold air discharge at start-up and provides continued warm air while the unit is hot after burner shutdown. The safety limit control protects the heater from high temperatures caused by an airflow restriction or motor failure. Size 140, 235 and 350 heaters are wired for a 115 volt, 60 Hz power supply. Size 500 heaters are wired for a 230 volt, 60 Hz power supply. A 24-volt thermostat is supplied with each heater. The remote fuel pump mounted on or near the oil supply tank is part of a positive pressure supply system providing a precisely metered flow of oil to the heater. This positive displacement pump produces a stable flame under a wide range of operating parameters. The supply tank

must be no closer than 5 ft and no farther than 50 ft from the heater. It is recommended that used oil be at a temperature of 50°F or above when it enters the pump. A fuel line filter, with a disposable strainer and vacuum gauge, and a foot valve are provided for installation in the field-supplied suction line that runs from the supply tank to the fuel pump.

Reznor® used oil unit heaters are engineered to facilitate installation and required maintenance procedures.

Model RA and RAD unit heaters are UL listed and/or CSA certified and meet EPA requirements for disposal of used oil.

**STANDARD FEATURES**

- Automatic, thermostat controlled operation
- 10-year combustion chamber/heat exchanger limited warranty
- Remote pump system provides a metered flow of fuel
- Oil preheating system (U.S. Patent No. 5,080,579)
- Air atomizing burner
- Electric spark ignition with electronic cad-cell flame safety system
- Piston air compressor with replaceable filter
- Fan and limit controls
- High temperature limit control
- Terminal block wiring
- Built-in disconnect switches (pump and heater)
- Permanently lubricated fan or blower motor with internal overload protection
- Operation hour meter
- 24-volt thermostat
- Barometric draft regulator
- Flexible fuel line and built-in tray for service to the burner and nozzle (without disconnecting the fuel line)
- Backflow sensor - CSA certified models
- Large, easily accessible service panels designed to facilitate combustion chamber/ heat exchanger maintenance
- Observation and overfire draft sampling ports
- Supply line filter system with a disposable strainer and dirty filter indicator gauge
- Individually adjustable horizontal louvers
- Full safety fan guard or blower inlet and belt guards
- Baked-on enamel finish
- 4-point threaded hanger connectors

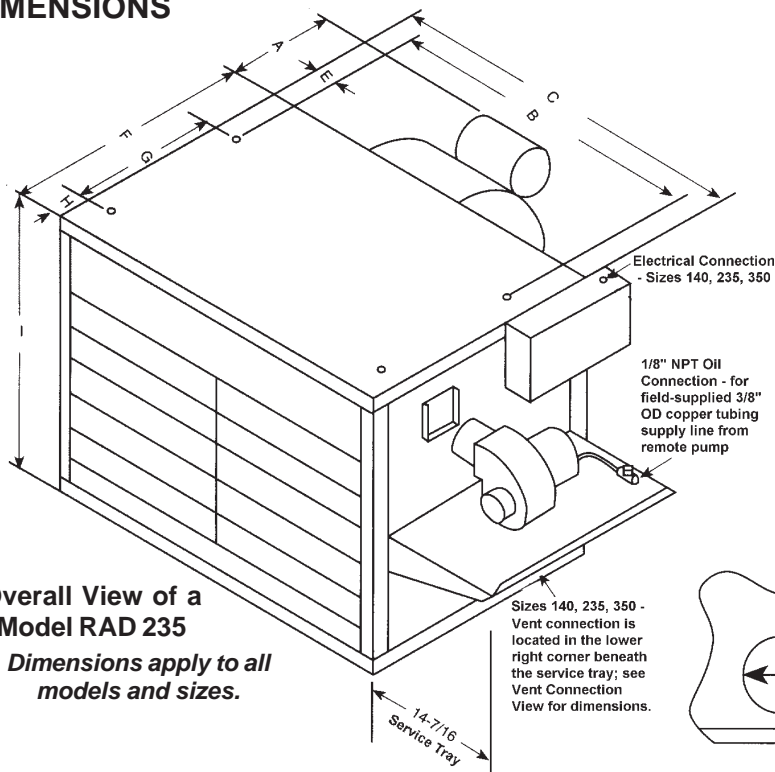
**OPTIONAL FEATURES - Factory Installed**

- High altitude operation
- ACCESSORIES - Field Installed**
- Vertical louvers (Sizes 140, 235 and 350)
  - High altitude conversion kits (Sizes 235 and 350)
  - 250-gallon workbench oil tank with or without heater stand (stand available for RA 140 and 235 only)
  - Hanger kit
  - Vent cap

| TECHNICAL DATA              | Model RA (Fan-Type Unit Heater) |         |           |           | Model RAD (Blower-Type Unit Heater) |         |          |          |
|-----------------------------|---------------------------------|---------|-----------|-----------|-------------------------------------|---------|----------|----------|
|                             | 140                             | 235     | 350       | 500       | 140                                 | 235     | 350      | 500      |
| Size                        |                                 |         |           |           |                                     |         |          |          |
| BTUH Input                  | 140,000                         | 235,000 | 350,000   | 500,000   | 140,000                             | 235,000 | 350,000  | 500,000  |
| BTUH Thermal Output         | 112,000                         | 188,000 | 275,000   | 400,000   | 112,000                             | 188,000 | 275,000  | 400,000  |
| Nozzle Input (GPH)          | 1.0                             | 1.7     | 2.5       | 3.57      | 1.0                                 | 1.7     | 2.5      | 3.57     |
| Motor RPM                   | 1,050                           | 850     | 850       | 1,050     | 1,750                               | 1,750   | 1,725    | 1,725    |
| Motor HP                    | 1/8                             | 1/4     | (2) 1/4   | (2) 3/4   | UL 1/2-CSA 3/4                      | 3/4     | 1-1/2    | 3        |
| AMPS Full Load              | 115V-13                         | 115V-14 | 115V-22   | 230V-17   | 115V-UL19/CSA14                     | 115V-24 | 115V-29  | 230V-20  |
| CFM (free air)              | 2,000                           | 3,200   | 5,000     | 6,400     | 2,000                               | 3,200   | 5,000    | 6,400    |
| CFM .25" ESP - RAD only     | --                              | --      | --        | --        | 1,425                               | 2,140   | 3,500    | 5,900    |
| CFM .5" ESP - RAD500 only   | --                              | --      | --        | --        | --                                  | --      | --       | 5,600    |
| Air Throw (9-ft suspension) | 50 ft                           | 65 ft   | 80 ft     | 90 ft     | 50 ft                               | 65 ft   | 80 ft    | 90 ft    |
| Fan Ø /Pitch & Blower Size  | 18-33°                          | 22-36°  | (2)22-36° | (2)24-34° | 12-9                                | 15-11   | (2)15-11 | (2)15-11 |
| Flue Size (inches)          | 8                               | 8       | 8         | 10        | 8                                   | 8       | 8        | 10       |
| Approximate Net Wt (lbs)    | 290                             | 343     | 525       | 750       | 352                                 | 410     | 650      | 850      |
| Approximate Shipping Wt     | 340                             | 405     | 685       | 925       | 417                                 | 495     | 810      | 1,025    |

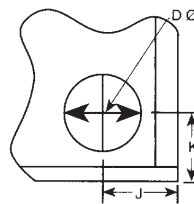
# DIMENSIONS

| Size  | 140      | 235     | 350    | 500     |
|-------|----------|---------|--------|---------|
| A-RA  | 8        | 9-1/2   | 11     | 10      |
| A-RAD | 18-11/16 | 22      | 23     | 23      |
| B     | 27-3/8   | 37-3/8  | 38     | 44      |
| C     | 33       | 43      | 58-3/8 | 61-5/16 |
| D     | 8        | 8       | 8      | 10      |
| E     | 2-9/16   | 2-9/16  | 12-1/2 | 11-3/8  |
| F     | 29-1/16  | 29-1/16 | 37-1/4 | 51      |
| G     | 17       | 17      | 16-1/2 | 37-1/2  |
| H     | 4-7/32   | 4-7/32  | 7-1/4  | 6-1/4   |
| I     | 32-1/8   | 32-1/8  | 41-3/8 | 34-3/8  |
| J     | 7-19/32  | 7-19/32 | 12-1/2 | 12-3/16 |
| K     | 7        | 7       | 9-1/2  | 8-3/8   |

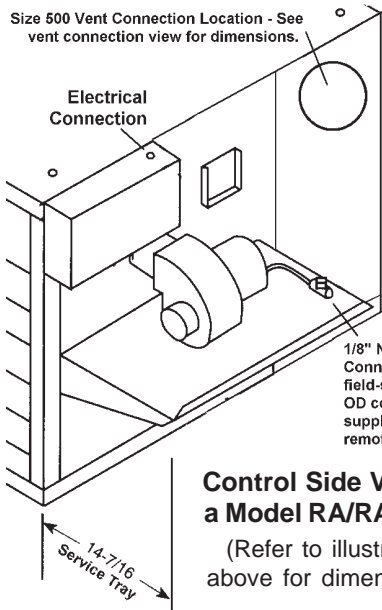


**Overall View of a Model RAD 235**  
 Dimensions apply to all models and sizes.

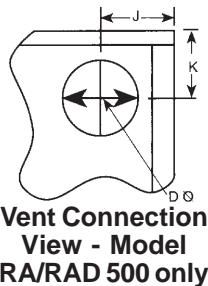
| Discharge Duct Opening Dimensions (inches) Model RAD |         |         |
|--|---------|---------|
| Size   | Width   | Height  |
| 140  | 30      | 16-1/4  |
| 235  | 40      | 16-1/4  |
| 350  | 54      | 24-1/4  |
| 500  | 57-5/16 | 20-7/16 |



**Vent Connection View - Model RA/RAD Sizes 140, 235, 350**



**Control Side View of a Model RA/RAD 500**  
 (Refer to illustration above for dimensions.)



**Vent Connection View - Model RA/RAD 500 only**

**INSTALLATION NOTES:**

A barometric draft regulator is factory-supplied with all heaters. The draft regulator must be included in the installation.

An 18" clearance is required from the top of the draft regulator to a combustible ceiling.

**CAUTION:** These heaters are designed to provide economical disposal of used oil. Due to the nature of the fuel being burned, this unit should not be depended on as the only source of heat. Any water or foreign material in the oil may cause the unit to shutdown. A secondary source of heat should always be provided to the building. This will prevent any building damage if the used oil heater is to become inoperative during subfreezing weather.

**Reference:** For information about Reznor® Model OT-250 Workbench Fuel Tank, see Submittal Form RGM S-OT.

| Clearances from Combustibles (inches) | RA (Fan Models) |     |     |     | RAD (Blower Models) |     |     |     |
|---------------------------------------|-----------------|-----|-----|-----|---------------------|-----|-----|-----|
|                                       | 140             | 235 | 350 | 500 | 140                 | 235 | 350 | 500 |
| Top                                   | 2               | 2   | 6   | 6   | 6                   | 6   | 6   | 6   |
| Front                                 | 48              | 48  | 48  | 48  | 48                  | 48  | 48  | 48  |
| Side (Burner )*                       | UL Listed       | 18  | 18  | --  | 18                  | 18  | --  | --  |
|                                       | CSA Certified   | 6   | 6   | 18  | 18                  | 6   | 6   | 18  |
| Side (Opposite Burner )*              | UL Listed       | 18  | 18  | --  | 18                  | 18  | --  | --  |
|                                       | CSA Certified   | 6   | 6   | 18  | 18                  | 6   | 6   | 18  |
| Rear                                  | 24              | 24  | 24  | 24  | 6                   | 6   | 6   | 6   |
| Bottom                                | 6               | 6   | 18  | 18  | 6                   | 6   | 18  | 18  |
| Flue Pipe                             | UL Listed       | 18  | 18  | --  | 18                  | 18  | --  | --  |
|                                       | CSA Certified   | 9   | 9   | 18  | 18                  | 9   | 9   | 18  |