



# LD3 SERIES TUBE HEATERS

## SUBMITTAL DATA – TWO-STAGE LOW INTENSITY GAS-FIRED INFRARED TUBE HEATERS & ACCESSORIES

SUBMITTED BY: \_\_\_\_\_

DATE: \_\_\_\_\_

JOB TITLE: \_\_\_\_\_

CONTRACTOR: \_\_\_\_\_

ADDRESS: \_\_\_\_\_

PHONE #: \_\_\_\_\_

CITY: \_\_\_\_\_

ADDRESS: \_\_\_\_\_

STATE: \_\_\_\_\_ ZIP: \_\_\_\_\_

CITY: \_\_\_\_\_

STATE: \_\_\_\_\_ ZIP: \_\_\_\_\_

ENGINEER: \_\_\_\_\_

LOCAL REPRESENTATIVE: \_\_\_\_\_

NOTES: \_\_\_\_\_

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\_\_\_\_\_

QTY.	MODEL #	TAG	INDICATE GAS TYPE	BTU/h Input High Fire	BTU/h Input Low Fire	STRAIGHT LENGTH	U-TUBE LENGTH	STANDARD WEIGHT	TYP. OR RCMD. MOUNTING HEIGHTS <sup>4</sup>	FIELD USE ONLY <sup>3</sup>
										"TYPE" TUBE PKG #1
	LD3-15-40 <sup>1</sup>		Nat. or Prop.	40,000	28,000	16' - 10"	N/A	85 lbs.	8' to 13'	TPK-DC
	LD3-15-50		Nat. or Prop.	50,000	35,000	16' - 10"	N/A	85 lbs.	10' to 15'	TPK-CZ
	LD3-20-40 <sup>1</sup>		Nat. or Prop.	40,000	28,000	21' - 10"	13' - 0"	100 lbs.	8' to 13'	TPK-DD
	LD3-20-50		Nat. or Prop.	50,000	35,000	21' - 10"	13' - 0"	100 lbs.	9' to 15'	TPK-DA
	LD3-30-50 <sup>1</sup>		Nat. or Prop.	50,000	35,000	31' - 7"	17' - 8" <sup>2</sup>	120 lbs.	9' to 14'	TPK-DE

<sup>1</sup> Models may be installed in attached residential garages/workshops.

<sup>2</sup> Model requires LV3-5EA-SUB accessory package when installing in a 'U' configuration.

<sup>3</sup> Type packages refer to the tube package that will ship with models (length, diameter, combustion tube type and radiant tubes).

<sup>4</sup> Typical or recommended mounting heights are provided as a guideline. Actual conditions may dictate variations from this data.

**N/A:** Not Available or Not Applicable.

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- Parts Support
- Dealer Locator
- Applications
- CAD/Revit Library
- Design Guidelines
- Theory of Infrared
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# LD3 SPECIFICATIONS

## APPROVALS

- ANSI Z83.20 and CSA 2.34.
- Select models are residentially certified to CSA No. 7-89.
- Outdoor approval with OD-Kit.

## BURNER CONTROL BOX

- Sight glass for burner inspection.
- Totally enclosed components.
- Coated enameled steel.
- Operational indicator lights.

## GAS CONNECTION

- 5/8 in. flare connecting to 1/2" NPT adapter to 1/2 in. x 24 in. (304) SS flex connector provided.
- 1/8" F NPT ball valve & inlet tap included.

## GAS SUPPLY (Inches W.C.)

- Manifold pressure: Nat 3.5; Prop. 10.0
- Min. inlet pressure: Nat 5.0; Prop. 11.0
- Max. inlet pressure: Nat 14.0; Prop. 14.0

## POWER SUPPLY

- 120 VAC, 60 Hz GRD, 1 Ph., 3-wire.
- 60 in. grounded power cord.
- Ignition current - 4.8 amps.
- Running current - 1.1 amps.

## CONTROLS

- 24V thermostatic control.
- Two-stage gas valve (at 100% and 65%).
- Silicon carbide hot surface ignition.
- Safety pressure switches.
- Pre and post purge controls.
- Flame rod sensing.
- Self-diagnostic - LED "soft lockout".

## REFLECTOR

- Highly polished aluminum.
- Continuous overlap design.
- Two end caps included.
- Anti-rattle tension springs.
- One center support per reflector.

## COMBUSTION & RADIANT TUBES

- 16ga. 4" to 3" O.D. tapered titanium stabilized combustion chamber.
- 16ga. 3" O.D. aluminized coated steel radiant emitter tubes.
- All tubes coated with high temperature, corrosion resistant black coating, .95 emissivity.
- Slip-fit swaged tube connection.
- Patent pending "Dimpled-Baffle MAX". No need for site installed baffles.

## COMBUSTION AIR INLET & VENTING

- Preset 4 in. combustion air inlet collar.
- Sidewall or roof venting.
- Venting is required for residential applications.

## LIMITED WARRANTY

- 1 year - Burner box components.
- 3 years - Combustion and radiant tubes.
- 5 years - Burner.

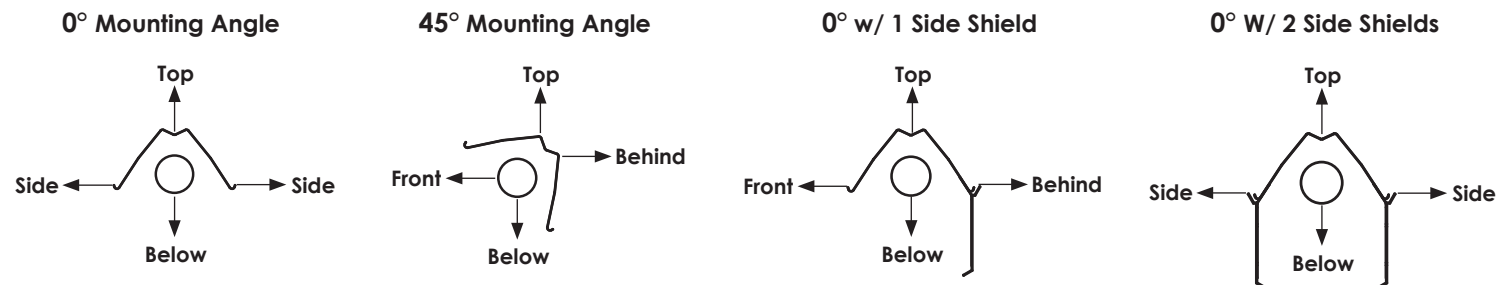
# CLEARANCES TO COMBUSTIBLES (IN INCHES)

MODEL NO.	MOUNTING ANGLE <sup>5</sup>	SIDE		TOP	BELOW
		FRONT	BEHIND		
LD3 (15, 20) - 40 [N,P]	0°	15	15	6	45
	45°	58	8	10	45
W/1 side shield	0°	42	8	6	45
W/2 side shields	0°	20	20	6	45
LD3 (15, 20, 30) - 50 [N,P]	0°	11	11	6	48
	45°	39	8	10	48
W/1 side shield	0°	29	8	6	48
W/2 side shields	0°	16	16	6	48
20 ft. from burner	0°	7	7	6	30

**NOTE:** The minimum end clearance is 12 inches.

**NOTE:** Use high BTU output when determining clearances.

<sup>5</sup> Heaters mounted on an angle between 0° and 45° must maintain clearances posted for 0° or 45°; whichever is greater.

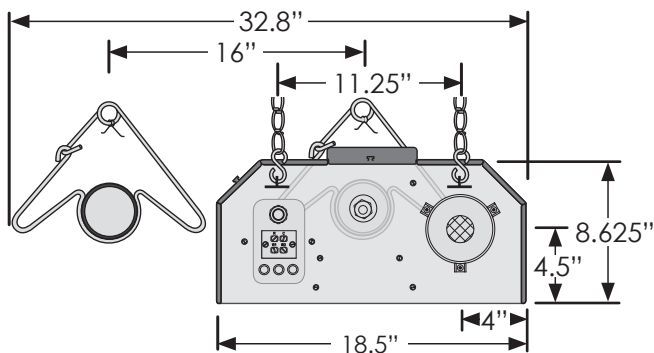


Read and understand the installation, operation and maintenance manual prior to installing or servicing this unit.

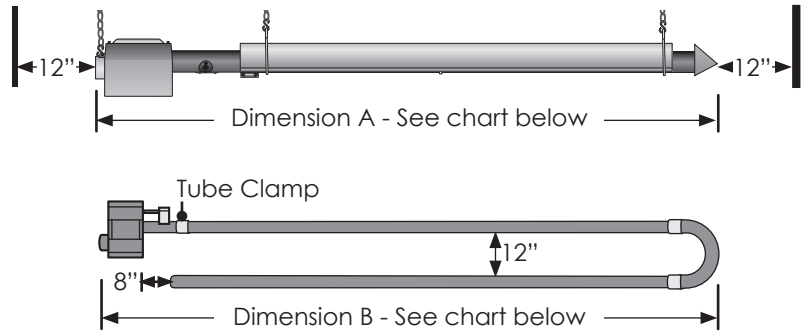
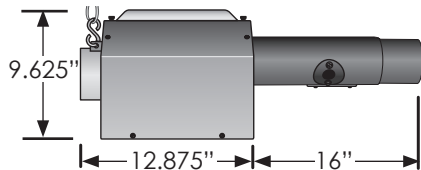
In locations used for the storage of combustible materials, signs must be posted adjacent to the heater's thermostat specifying stacking heights.

# FIELD DATA

Burner Control Box with 'U' Bend - End View



Side View



MODEL NUMBER	DIMENSION A STRAIGHT	DIMENSION B 'U' TUBE
LD3-15	16' - 10"	N/A
LD3-20	21' - 10"	13' - 0"
LD3-30	31' - 7"	17' - 8" <sup>6</sup>

<sup>6</sup>with LV3-5EA-SUB

## OPTIONAL ACCESSORIES<sup>7</sup>

QTY.	PART #	DESCRIPTION	NOTES
	4-DSK	4" Sidewall Vent Kit	Required for all dual sidewall vents. No roof venting.
	BK	Angle Mounting Bracket	Rotates unit to preset 15, 30 or 45 degree mounting angles.
	DB-DSK	3" Sidewall Vent Kit	Required for all single sidewall vents. No roof venting.
	DB-E6	3" Radiant Elbow, 90 Degree	Used for making an 'L' tube shaped heater.
	DB-REP	3" Reflector & Elbow Package	Reflector and accessories used to configure heater in an 'L' shape.
	DB-RTVP	3" Rooftop Vent Package	Used to singly vent through the roof.
	DB-RUP	3" Reflector & 'U' Bend Package	Reflector and accessories used to configure heater in a 'U' shape.
	DB-TF1B	3" Radiant 'U' Bend, 180 Degree	Used for making a 'U' shaped heater. Max. one per unit.
	DB-YSM	3" x 4" x 3" Dual Exhaust Assembly (galv)	Used for joining two heaters on one vent. Same thermostat required.
	E6	4" Radiant Elbow, 90 Degree	Used for making an 'L' tube shaped heater.
	PG	Protective Guard	Protects heat exchanger from contact or objects. Each 5' in length.
	PLQ	Warning Plaque	Hung below heater, restates clearance to combustible warnings.
	RTVP-4	4" Rooftop Vent Package	Used to dual vent through the roof.
	SMB	Single Mount Bracket	Provides units with 'U' bend uniform mounting points. One per 10'.
	SSE	Side Shield Extension	Reflector side guard used to lower side clearances. Each 5' in length.
	TF1B	4" Radiant 'U' Bend, 180 Degree	Used for making a 'U' shaped heater. Max. one per unit.
	THCS	Tube Heater Chain Set	5 ft. chain set with two S-hooks used for hanging heater.
	THCS-LS	Tube Heater Chain Set	12 in. chain set with two S-hooks used for hanging heater.
	WIV-4	4" Combustion Air Intake - Sidewall Cap	Used to duct fresh (cold) air 0-30 ft. to a heater. Sidewall only.
	WVE-3	3" Unvented Exhaust Termination Cap	Required when operating unvented. Flapper ensures proper operation.

<sup>7</sup>DB extension packages are not approved for LD3 Series heaters.

### OPTIONAL UPGRADES

- SILSEAL** Protects internal burner box components against contaminants.
- OD-KIT** Required for use when applying heaters outdoors.
- LV3-5EA SUB** Substitute (1) 10 ft. 4" to 3" tapered aluminized steel radiant tube and (1) 10 ft. reflector for (1) 5 ft. 4" to 3" tapered tube, (1) 3" aluminized radiant tube exchanger and (2) 5 ft. reflector sections. This is ideal for making 'U' heaters from 30 ft. models. Maximum of one per heater.

### STAINLESS STEEL UPGRADES

- SSRAO - 10 ft.** Reflector Section.
- SSRAO-5 - 5 ft.** Reflector Section.
- SSE-SS - Side Shield Extension.**

**NOTE:** Refer to the Tube Heater Accessory List for detailed specifications and limitations on any of the above options. Visit [www.reverberray.com/technical](http://www.reverberray.com/technical) for wiring schematics.

# WRITTEN SPECIFICATIONS

## PRODUCTS

1. TUBULAR INFRARED HEATERS
  - A. Basis-of-design product: Subject to compliance with requirements, provide Detroit Radiant Products Company; **Re-Verber-Ray® LD3 Series**.
  - B. Fuel type: Burner shall be designed for [natural] [propane] gas having characteristics same as those of gas available at project site.
  - C. Gas control: Operation shall include a defined input differential. Heater must be CSA Design Certified to operate at an input differential of at least 30% between the low and nominal rated input modes.
    1. The heater's control system shall be designed to shut off the gas flow to the main burner in the event either a gas supply or power supply interruption occurs.
  - D. Combustion chamber: Shall be 16ga. titanium stabilized aluminized steel (to allow for the operating temperature to exceed the 1030°F as set forth in the ANSI Z83.20 Standard), finished with a high emissivity rated, corrosion resistant, black coating with an emissivity level documented at .92 or higher.
  - E. Radiant emitter tube: Shall be 16ga. aluminized steel finished with a high emissivity rated, corrosion resistant, black coating with an emissivity level documented at .92 or higher.
  - F. Burner type: Unit shall be a positive pressure power burner with a combustion fan upstream of the burner and exhaust gases for component longevity, maximum combustion efficiency, and energy transfer. Negative pressure (pull through) type appliances will not be allowed.
  - G. Fan enclosure: Combustion fan shall be totally housed inside burner control box and not exposed. Appliances with exposed combustion/exhauster fans shall not be permitted.
  - H. Burner: Aluminized-steel venturi burner.
  - I. Tube connections: The heater's combustion chamber and radiant emitter tube shall incorporate a slip-fit, interlocking connection in which the upstream tube slides into the next tube and is held by a bolted clamp. A butted tube connection system shall not be permitted.
  - J. Ignition system: Hot surface silicon carbide capable of temperatures achieving 2400°F. Igniter shall be readily accessible and serviceable without the use of tools. Spark ignition systems shall not be permitted.
  - K. Reflectors: Shall be .025 polished aluminum with a multi-faceted design which includes reflector end caps. Reflector shall have a polished bright finish with clear visual reflection ability. (A sample will be required at time of submittal). Reflector shall have a minimum of 7 sheet metal bends in its fabrication to optimize downward radiation. Reflectors shall be rotatable from 0 to 45 degrees when required. The heater's reflector hanging system shall be designed to permit expansion while minimizing noise and/or rattles.
  - L. Control box: Heater's exterior control chassis shall be constructed of corrosion resistant enameled steel.
    1. Air intake: An air intake collar shall be supplied as part of the burner control assembly to accept a 4 inch O.D. supply duct.
    2. The heater's control compartment shall be easily serviceable by removing one (1) panel.
  - M. Heaters shall be equipped with a sight glass allowing a visual inspection of igniter and burner operation from the floor. Sight glass visible only at appliance level shall not be permitted.
  - N. The heaters shall utilize a downstream Dimpled Baffle-MAX. emitter tube for maximum heat transfer.
  - O. Heater shall be supplied with a stainless steel flexible gas connector.
  - P. Burner Safety Controls:
    1. Heater controls shall include a safety differential pressure switch to monitor combustion air flow, as to provide complete burner shutdown due to insufficient combustion air or flue blockage.
    2. The heater shall incorporate a self-diagnostic ignition module, include an external LED readout display, and recycle the heater after an inadvertent shutdown.
    3. The heater's control system shall be designed to shut off the gas flow to the main burner in the event either a gas supply or power supply interruption occurs.
    4. The heater's blower motor shall be thermally protected and the motor's impeller shall be balanced.
    5. Heater control assembly shall include three indicator lights that define the units operating input ranges. One indicator shall validate air flow. Two indicator lights shall indicate low and high firing stages.
    6. The heater's air flow control system shall provide a 45 second pre-purge prior to initiating burner operation and a post-purge upon completion, effectively removing all products of combustion from heat exchanger and/or radiant tubes.
    7. No condensation shall form as a result of combustion in the combustion chamber or radiant tubes while at operating temperatures.
  - Q. Venting: Shall be per manufacturer approval and specifications.
  - R. Thermostat: Devices and wiring are specified in Division 23 Section "Instrumentation and Control for HVAC."
    1. Thermostat: 2-stage, digital programmable wall-mounting type with 50 to 90 deg F (10 to 32 deg C) operating range.
    2. Control Transformer: Internally mounted.
    3. No external transformer shall be required, except in multiple heater scenarios.