

LS SERIES TUBE HEATERS

SUBMITTAL DATA – 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: _____

									FIELD USE ONLY***
QTY.	MODEL #	TAG	GAS TYPE (Circle One)	BTU/h INPUT	STRAIGHT LENGTH	U-TUBE LENGTH	STANDARD WEIGHT	RCMD. MOUNTING HEIGHTS ^	"TYPE" TUBE PKG #1
	LS-10-25*		N or LP	25,000	12' - 1"	N/A	70 lbs.	7' to 11'	10-3 Titanium
	LS-10-30*		N or LP	30,000	12' - 1"	N/A	70 lbs.	8' to 11'	10-3 Titanium
	LS-10-40		N or LP	40,000	12' - 1"	N/A	70 lbs.	10' to 14'	10-3 Titanium
	LS-15-40*		N or LP	40,000	16' - 10"	N/A	85 lbs.	8' to 13'	15-3 Titanium
	LS-15-50		N or LP	50,000	16' - 10"	N/A	85 lbs.	10' to 15'	15-3 Titanium
	LS-20-40*		N or LP	40,000	21' - 10"	13' - 0"	100 lbs.	8' to 13'	20-3 Titanium
	LS-20-50		N or LP	50,000	21' - 10"	13' - 0"	100 lbs.	9' to 15'	20-3 Titanium
	LS-30-50*		N or LP	50,000	31' - 7"	**17' - 8"	120 lbs.	9' to 14'	30-3 Titanium

* CSA Design Certified for installation in residential applications.

** Model requires DB-5EA SUB accessory package when installing in a 'U' configuration.

*** Type packages refer to the tube package that will ship with models (length, diameter, combustion tube type and radiant tubes).

^ Recommended mounting heights are provided as a guideline. Actual conditions may dictate variations from this data. Protective Guards (P/N: PG) are required when mounting below 8 ft.

N/A: Not Available or Not Applicable.

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VISIT OUR WEBSITE FOR:

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- Parts Support
- Dealer Locator
- Applications
- C.A.D. Library
- Design Guidelines
- Theory of Infrared
- and More!

LS SPECIFICATIONS

APPROVALS

- CSA Design Certified.
- Select models are residentially certified to CSA No. 7-89.

BURNER CONTROL BOX

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

GAS CONNECTION

- 7/8 in. flare-M FPT connection to 1/2 in. x 24 in. (304) SS flex connector provided.
- 1/2" F NPT ball valve & inlet tap included.

GAS SUPPLY (Inches W.C.)

- Manifold pressure Nat 3.5; LP 10.0
- Min. Inlet pressure Nat 5.0; LP 11.0
- Max. Inlet pressure Nat 14.0; LP 14.0

POWER SUPPLY

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

CONTROLS

- 100% safety shut-off
- Silicon carbide hot surface ignition.
- Dual safety pressure switches.
- Pre-purge controls.
- Flame rod sensing.
- 120V thermostatic control.
- Moisture and corrosion resistant ignition module.

REFLECTOR

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

COMBUSTION & RADIANT TUBES

- 16ga. 3" O.D. 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.
- Stainless steel turbulator baffle.

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.

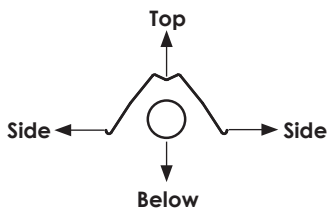
CLEARANCES TO COMBUSTIBLES (IN.)

MODEL NO.	MOUNTING ANGLE*	SIDE		TOP	BELOW	
		FRONT	BEHIND			
LS 10 - (25, 30) [N,P]	0°	8	8	4	36	
	45°	39	8	10	36	
	W/1 side shield	0°	29	8	4	36
	W/2 side shields	0°	9	9	4	36
	20 ft. from burner	0°	N/A	N/A	N/A	N/A
LS (10, 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
	20 ft. from burner	0°	N/A	N/A	N/A	N/A
LS (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

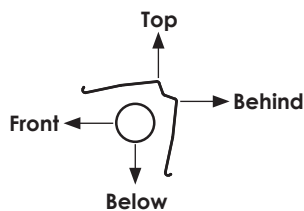
NOTE: The minimum end clearance is 12 inches.

* Heaters mounted on an angle between 0° and 45° must maintain clearances posted for 0° or 45°; whichever is greater.

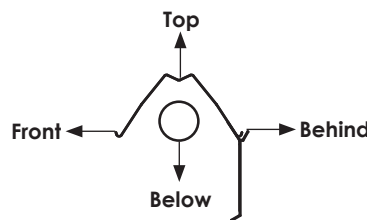
0° Mounting Angle



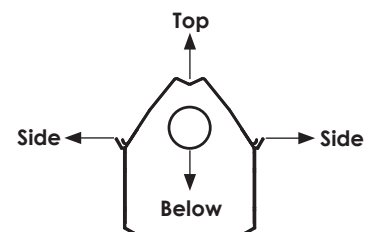
45° Mounting Angle



0° w/ 1 Side Shield



0° W/ 2 Side Shields

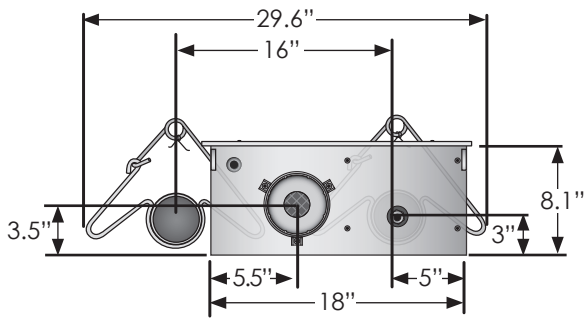


Read and understand the installation, operation and maintenance manual prior to installing or servicing this unit.

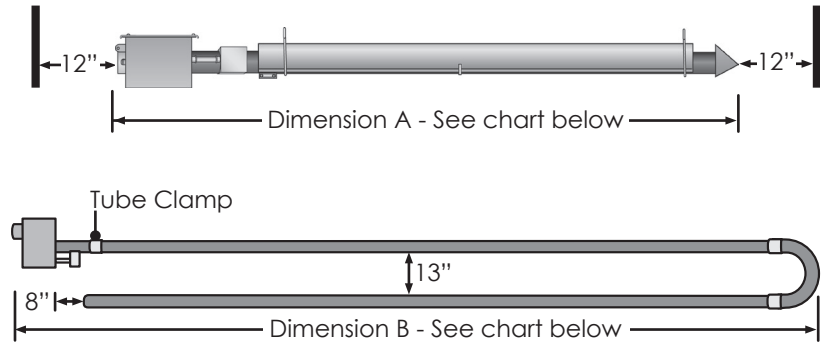
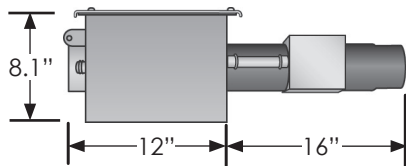
In locations used for the storage of combustible materials, signs must be posted adjacent to the heater's thermostat specifying stacking heights.

FIELD DATA

Burner Control Box with U-Bend - End View



Side View



MODEL NUMBER	DIMENSION A STRAIGHT	DIMENSION B U-TUBE
LS-10	12'- 1"	N/A
LS-15	16'- 10"	N/A
LS-20	21'- 10"	13' - 0"
LS-30	31'- 7"	*17' - 8"

Visit www.reverberray.com/technical for wiring schematics.

*with DB-5EA SUB

OPTIONAL ACCESSORIES

QTY.	PART #	DESCRIPTION	NOTES
	DB-10EA	10' X 3" Tube & Reflector Extension	Optional 10 ft. extension package. Max. one per unit.
	DB-DSK	3" Sidewall Vent Kit	Required for all single sidewall vents. No roof venting.
	DB-E6	90 Degree, 3" Radiant Elbow	Used for making an 'L' tube shaped heater. Max. two per unit.
	DB-REP	Reflector & Elbow Package	Reflector and accessories used to configure heater in an 'L' shape.
	DB-RUP	Reflector & 'U' Bend Package	Reflector and accessories used to configure heater in a 'U' shape.
	DB-TF1B	180 Degree, 3" Radiant 'U' Bend	Used for making a 'U' shaped heater. Max. one per unit.
	DB-TR60	5' x 3" Tube & Reflector Extension	Optional 5' extension package. Max two per unit.
	DB-Y	3" x 4" x 3" Dual Exhaust Assembly (alum)	Used for joining two heaters on one vent. Same thermostat required.
	DB-YSM	3" x 4" x 3" Dual Exhaust Assembly (galv)	Used for joining two heaters on one vent. Same thermostat required.
	4-DSK	4" Sidewall Vent Kit	Required for all dual sidewall vents. No roof venting.
	BK	Angle Mounting Bracket	Rotates unit to preset 15-30-45 degree mounting angles.
	PG	Protective Guard	Protects heat exchanger from contact or objects. Each 5' in length.
	PLQ	Warning Plaque	Hung below heater, restates the clearance to combustible warning.
	RTVP-3	3" Rooftop Vent Package	Used to singly vent through the roof.
	RTVP-4	4" Rooftop Vent Package	Used to dual vent vertically 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.
	THCS	Tube Heater Chain Set	5 ft. 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.

NOTE: Refer to the Tube Heater Accessory List for detailed specifications and limitations on any of the above options.

OPTIONAL UPGRADES

- SILSEAL** Protects internal burner box components against contaminants.
- OD-KIT** Required for use when applying heaters outdoors.
- 24VAO** Internally mounted 24V controlled relay with power cord and terminal plug. Allows for separate circuit operation.
- DB-5EA SUB** Substitute one 10' radiant tube and reflector for two 5' pieces. This is ideal for making "U" heaters from 30' models. Maximum of one per heater.

STAINLESS STEEL UPGRADES

- SSCBAO** - Control Box
- SSRAO** - Reflectors
- SSE-SAO** - Side Shield Extension

NOTE: Refer to the Tube Heater Accessory List for detailed specifications and limitations on any of the above options.

WRITTEN SPECIFICATIONS

HEATER PARAMETER/SPECIFICATIONS

- Gas fired radiant tube heaters shall be furnished and installed in accordance with governing codes and as shown per drawing(s) provided. Radiant tube heaters shall be **RE-VERBER-RAY LS SERIES** of the model numbers and inputs(s) in BTU/H as manufactured by Detroit Radiant Products Company, Warren, MI 48089.
- Radiant tube heaters shall be Design Certified by CSA and comply with current Occupational Safety and Health Act (OSHA) Requirements. The supplier shall provide the CSA Certification Number and the heaters shall bear the CSA Seal of Certification.
- The supplier shall provide a manufacturer's published warranty covering the heater's stainless steel burner for a period of five (5) years, combustion and radiant emitter tube assembly for a period of three (3) years, and all components utilized in the heater control assembly for a period of one (1) year.
- The supplier shall furnish the owner/contractor with _____ copies of the engineering specification forms, showing physical dimensions, installation detail, recommendations, control wiring diagrams, and spare parts list.
- Radiant tube heaters shall be designed to satisfactorily operate at a minimum inlet pressure of _____ inches W.C. to a maximum inlet pressure of _____ inches W.C.
- Radiant tube heaters shall be designed to operate without adjustments when burning natural gas having a heat value of _____ BTU per cubic foot with a specific gravity of _____, or when burning propane gas have a heat value of 2500 BTU per cubic foot with a specific gravity of 1.53.
- An Installation, Operation, and Maintenance Manual shall be supplied with each heater.

RADIANT TUBE HEATER BURNER CONTROLS

- Heaters shall be equipped with a direct silicon carbide ignition system with a three (3)-time ignition trial to sensing mode and an infinite trial after sensing mode. Power supplied to each burner shall be 120 VAC, 60 Hz. via a 60-inch power cord connection. Flame sensing shall be via an independent sensing rod and circuit.
- Heater shall incorporate a moisture and corrosion resistant potted circuit board.
- The main burner shall be constructed of stainless steel.
- The control assembly shall be Design Certified by CSA, shall provide main burner regulation, and shall be of the redundant type.
- Heater controls shall include two safety differential pressure switches: one to monitor exhaust back pressure and one to monitor combustion fan air flow, so as to provide complete burner shutdown due to insufficient combustion air or flue blockage.
- The heater's control system shall be designed to shutoff the gas flow to the main burner in the event either a gas supply or power supply interruption occurs.
- The heater's air flow control system shall provide a 45 second pre-purge prior to initiating burner operation.

- No condensation shall form as a result of combustion in the combustion chamber or radiant tubes while at operating temperatures.
- The heater shall incorporate moisture and corrosion resistant circuitry.
- Soft lockout shall occur in the event of three failed tries for ignition. Soft lockout shall retry after one (1) hour or an interruption of power (reset thermostat) will restart the firing sequence.

RADIANT TUBE HEATER CONSTRUCTION

- The heater's control housing shall be totally enclosed with a corrosion resistant enameled steel exterior. The controls shall be easily serviceable by removing one (1) panel.
- The heater's combustion chamber shall be 3" O.D. 16ga. stabilized titanium alloy with a high emissivity rated, corrosion resistant, black coating.
- The heater's radiant emitter tube shall be 3" O.D. 16ga. aluminized treated steel finished with a high emissivity rated, corrosion resistant, black coating.
- The heater's combustion chamber and radiant emitter tube shall incorporate a 3" slip fit connection in which the upstream tube slides into the next tube and is held by a bolted clamp.
- Safety pressure switches shall incorporate atmospheric sensing termination fittings designed to eliminate blockage due to moisture or foreign matter.
- The silicon carbide ignitor shall be readily accessible and serviceable without the use of tools.
- Reflectors shall be .025 polished aluminum with a multi-faceted design which includes reflector end caps. 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. Reflectors shall be assembled to the heater without the use of tools.
- The heaters shall include a downstream stainless steel turbulator baffle for maximum thermal efficiency, 2' stainless steel flex connector, hanging kit, and 1/2" gas cock shut-off.
- Heaters shall be equipped with a sight glass allowing a visual inspection of ignitor and burner operation from the floor.
- Heater shall be equipped with a combustion fan.
- The radiant tube heaters shall be designed such that, at the customer's option, outside combustion air may be supplied without the use of additional supply fans. An air intake collar shall be supplied as part of the burner control assembly to accept a 4" O.D. supply duct.
- Only the heater's burner box and reflector may be upgraded to 304 series stainless steel.