

LS SERIES TUBE HEATERS

ENGINEERING SUBMITTAL DATA – LOW INTENSITY GAS FIRED INFRA-RED 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 #	GAS TYPE (Circle One)	BTU/H	STRAIGHT LENGTH	U-TUBE LENGTH	STANDARD WEIGHT	RECOMMENDED MOUNTING HEIGHTS ^	"TYPE" TUBE PKG #1
	LS-10-25*	N or LP	25,000	12' - 3"	N/A	70 lbs.	8' to 11'	10-3 Titanium
	LS-10-30*	N or LP	30,000	12' - 3"	N/A	70 lbs.	8' to 11'	10-3 Titanium
	LS-10-40	N or LP	40,000	12' - 3"	N/A	70 lbs.	10' to 14'	10-3 Titanium
	LS-15-40*	N or LP	40,000	17' - 0"	N/A	85 lbs.	8' to 13'	15-3 Titanium
	LS-15-50	N or LP	50,000	17' - 0"	N/A	85 lbs.	10' to 15'	15-3 Titanium
	LS-20-40*	N or LP	40,000	21' - 7"	13' - 0"	100 lbs.	8' to 13'	20-3 Titanium
	LS-20-50	N or LP	50,000	21' - 7"	13' - 0"	100 lbs.	9' to 15'	20-3 Titanium
	LS-30-50*	N or LP	50,000	31' - 3"	**17' - 8"	120 lbs.	10' 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.

N/A: Not Available or Not Applicable.

DETROIT RADIANT PRODUCTS CO.



21400 Hoover Rd.
Warren, MI 48089-3162

Phone: (586) 756-0950
Toll Free: 800-222-1100
Fax: (586) 756-2626
Email: sales@detroitradiant.com
Website: www.detroitradiant.com

VISIT OUR WEBSITE FOR:

- Product Specs
- Parts Support
- Dealer Locator
- Applications
- C.A.D. Library
- Design Guidelines
- Theory of Infra-red
- and More!

FORM#LSLS-2M-12/06 (ID)

LS SPECIFICATIONS

APPROVALS

- IAS, CGA, CSA.
- 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 & self-diagnostic indicator lights.

GAS CONNECTION

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

COMBUSTION AIR INLET & VENTING

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

GAS SUPPLY – W.C.P. NAT LP

- Manifold pressure 3.5" 10.0"
- Min. Inlet pressure 5.0" 11.0"
- Max. Inlet pressure 14.0" 14.0"

POWER SUPPLY

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

CONTROLS

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

EMITTER & COMBUSTION TUBES

- 16 ga. 3" O.D. titanium alloy treated steel combustion chamber.
- 16 ga. 3" O.D. aluminized coated steel radiant emitter tubes.
- All tubes coated with high temperature, corrosion resistant black coating, .95 emissivity. Slip-fit swaged connection.
- Stainless steel turbulator baffle.

REFLECTOR

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

LIMITED WARRANTY

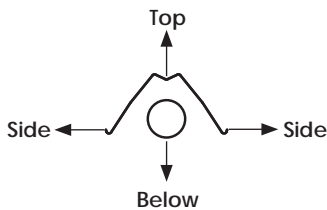
- 1 year - Burner box components.
- 3 years - Combustion and radiant tubes.
- 5 years - Stainless steel burner.

CLEARANCES TO COMBUSTIBLES (IN.)

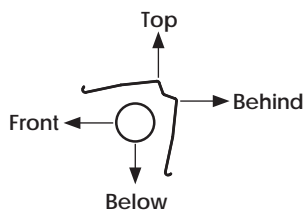
MODEL NO.	MOUNTING ANGLE*	SIDE			
		FRONT	BEHIND	TOP	BELOW
LS 10 - (25, 30) [N,P]	0°	8	8	4	36
	45°	39	8	10	36
	W/1 side shield	29	8	4	36
	W/2 side shields	9	9	4	36
	20 ft. from burner	N/A	N/A	N/A	N/A
LS (10, 15, 20) - 40 [N,P]	0°	15	15	6	45
	45°	58	8	10	45
	W/1 side shield	42	8	6	45
	W/2 side shields	20	20	6	45
	20 ft. from burner	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	29	8	6	48
	W/2 side shields	16	16	6	48
	20 ft. from burner	7	7	6	30

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

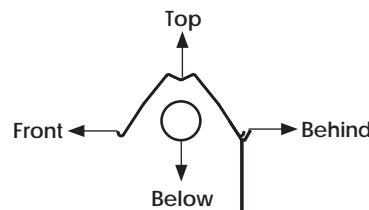
0° Mounting Angle



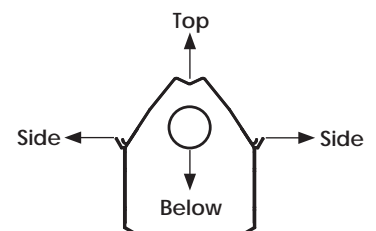
45° Mounting Angle



0° w/ 1 Side Shield



0° W/ 2 Side Shields

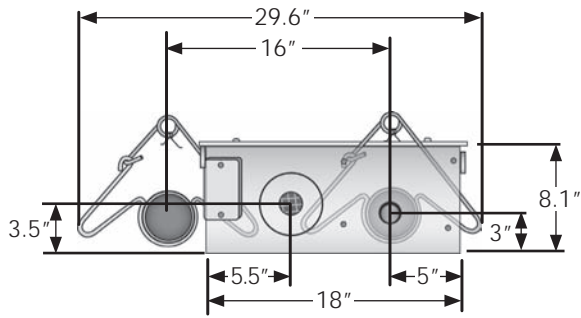


Read and understand the installation, operation and maintenance manual prior to installing or servicing this unit.

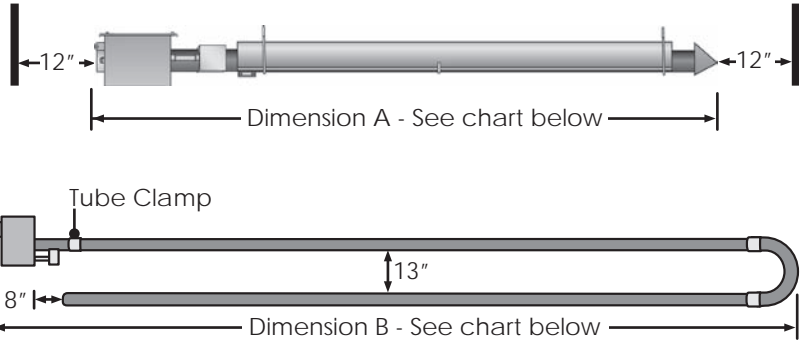
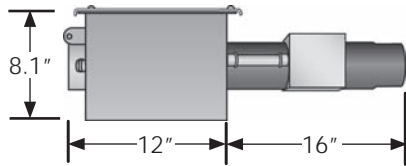
In locations used for the storage of combustible materials, signs must be posted adjacent to the heater's thermostat specifying stacking heights.

FIELD DATA

Burner Control Box with U-Bend • End View



Side View



MODEL NUMBER	DIMENSION A STRAIGHT	DIMENSION B U-TUBE
LS-10	12' - 3"	N/A
LS-15	17' - 0"	N/A
LS-20	21' - 7"	13' - 0"
LS-30	31' - 3"	*17' - 10"

*with DB-5EA SUB

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

OPTIONAL ACCESSORIES

QTY	PART #	DESCRIPTION	NOTES
	DB-10EA	10' X 3" Tube & Reflector Extension	Optional 10' 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-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 15-30-45 Deg.	Rotates unit to preset 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.
	DB-TR60	5' x 3" Tube & Reflector Extension	Optional 5' extension package. Max two per unit.
	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.

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
- SSFVAO** - Fan Wheel
- SSE-SS** - 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.P. to a maximum inlet pressure of _____ inches W.C.P.
- 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 one (1)-time ignition trial to sensing mode and an infinite trial after sensing mode. Power supplied to each burner shall be 120 VAC, 60 Hz. 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.
- Total heater shutdown shall occur in the event of circuit control lockout. 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. treated titanium alloy with a high emissivity rated, corrosion resistant, black coating.
- The heater's radiant emitter tube shall be 3" O.D. 16ga. aluminized 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.