

HLV SERIES TUBE HEATERS

ENGINEERING SUBMITTAL DATA – ENGINEERED LOW INTENSITY GAS FIRED INFRA-RED TUBE HEATER VACUUM SYSTEM & ACCESSORIES

SUBMITTED BY: _____

DATE: _____

JOB TITLE: _____

CONTRACTOR: _____

ADDRESS: _____

PHONE #: _____

CITY: _____

ADDRESS: _____

STATE: _____ ZIP: _____

CITY: _____

STATE: _____ ZIP: _____

ENGINEER: _____

LOCAL REPRESENTATIVE: _____

NOTES: _____

APPROXIMATE SYSTEM HANGING WEIGHTS

QTY.	BURNER PACKAGE	GAS TYPE (Circle One)	BTU INPUT HIGH FIRE	BTU INPUT LOW FIRE	PER BURNER HEAD	PER 10FT. RADIANT PIPE & REFLECTOR SECTION	PER 10FT. TAILPIPE & REFLECTOR SECTION	RECOMMENDED MOUNTING HEIGHTS**
	HLV-50*	Natural or Propane	50,000	50,000	35 lbs.	35 lbs.	45 lbs.	9' to 14'
	HLV-60	Natural or Propane	60,000	50,000	35 lbs.	35 lbs.	45 lbs.	10' to 15'
	HLV-75	Natural or Propane	75,000	60,000	35 lbs.	35 lbs.	45 lbs.	11' to 18'
	HLV-80	Natural or Propane	80,000	64,000	35 lbs.	35 lbs.	45 lbs.	10' to 15'
	HLV-90	Natural or Propane	90,000	72,000	35 lbs.	35 lbs.	45 lbs.	11' to 18'
	HLV-100	Natural or Propane	100,000	80,000	35 lbs.	35 lbs.	45 lbs.	12' to 20'
	HLV-110	Natural or Propane	110,000	88,000	35 lbs.	35 lbs.	45 lbs.	13' to 23'
	HLV-120	Natural or Propane	120,000	96,000	35 lbs.	35 lbs.	45 lbs.	11' to 18'
	HLV-125	Natural or Propane	125,000	100,000	35 lbs.	35 lbs.	45 lbs.	11' to 18'
	HLV-140	Natural or Propane	140,000	112,000	35 lbs.	35 lbs.	45 lbs.	12' to 20'
	HLV-150	Natural or Propane	150,000	120,000	35 lbs.	35 lbs.	45 lbs.	13' to 23'
	HLV-170	Natural or Propane	170,000	136,000	35 lbs.	35 lbs.	45 lbs.	14' to 25'
	HLV-175	Natural or Propane	175,000	140,000	35 lbs.	35 lbs.	45 lbs.	15' to 27'
	HLV-180	Natural or Propane	180,000	144,000	35 lbs.	35 lbs.	45 lbs.	15' to 27'
	HLV-200	Natural or Propane	200,000	160,000	35 lbs.	35 lbs.	45 lbs.	15' to 27'

* The HLV-50 does not have a reduction for low fire.

** Recommended mounting heights are provided as a guideline. Actual conditions may dictate variations from this data.

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HLV SPECIFICATIONS

APPROVALS

- CSA Design Certified.
- Commercial/Industrial Approval.

GAS CONNECTION

- 7/8" flare-M FPT Connection to 1/2" x 24" (304) SS flex connector provided.
- 1/2" threaded gas pipe connection.

COMBUSTION AIR INLET & VENTING

- Preset 4" combustion air inlet collar.
- Sidewall or roof venting.

ELECTRICAL REQUIREMENTS

- 120 V.A.C., 60 Hz GRD, 1 Ph., 3-wire.
- 24V thermostat connection.
- Ignition current - 0.7 amps per burner.
- Running current - 0.2 amps per burner.
- Refer to Vacuum Pump Electrical Data chart.

CONTROLS

- 100% safety shut-off.
- Self-diagnostic circuitry.
- Air proving safety switch.
- Silicone carbide hot surface ignition.
- Flame rod sensing.
- Three-try ignition.

GAS SUPPLY – W.C.P.

	<u>NAT</u>	<u>LP</u>
• Manifold pressure	3.5"	10.0"
• Min. Inlet pressure	5.5"	11.0"
• Max. Inlet pressure	14.0"	14.0"

INDICATOR LIGHTS

- Light #1 - Indicates pressure switch operation.
- Light #2 - Indicates gas valve power (low fire).
- Light #3 - Indicates gas valve power (high fire).

BURNER CONTROL BOX

- Sight glass for burner inspection.
- Totally enclosed components.
- Coated enameled steel.
- Optional stainless steel available (SSCBAO).

COMBUSTION TUBES & EMITTER TUBES

- Titanium alloy treated steel combustion chamber (TR-C) on all models unless noted otherwise.
- 16 ga. 4" O.D. coated aluminized steel radiant tubes, with .95 emissive, corrosion resistant black coating.
- Alternate 16 ga. 4" O.D. uncoated hot-rolled steel emitter tubes.
- Slip-fit swaged tube connection.

REFLECTOR

- Highly polished aluminum or stainless steel.
- Continuous overlap design.
- Anti-rattle tension springs.
- One center support per reflector.

CONDENSING TUBE/TAILOPIPE

- 304 Series stainless steel, 16 ga. 4" O.D.
- Stainless steel clamps.
- Required when condensing design option is chosen.

LIMITED WARRANTY*

- 1 year - Burner box & exhauster pump components.
- 1 year - Vacuum pump.
- 3 years - Combustion and hot-rolled radiant tubes.
- 5 years - Combustion and aluminized radiant tubes.
- 10 years - Burner.

Note: DRP offers a full, non-prorated limited warranty.
*Extended warranty available.

VACUUM PUMP DATA

VACUUM PUMP DIMENSIONAL DATA

PUMP QTY.	PUMP MODEL	A	B	C	Weight
	NC-7	10.0"	16.0"	18.5"	15 lbs.
	PB-8	12.0"	16.0"	15.5"	60 lbs.
	PB-9	14.5"	16.0"	17.0"	65 lbs.
	PB-10A	17.0"	17.5"	18.0"	70 lbs.

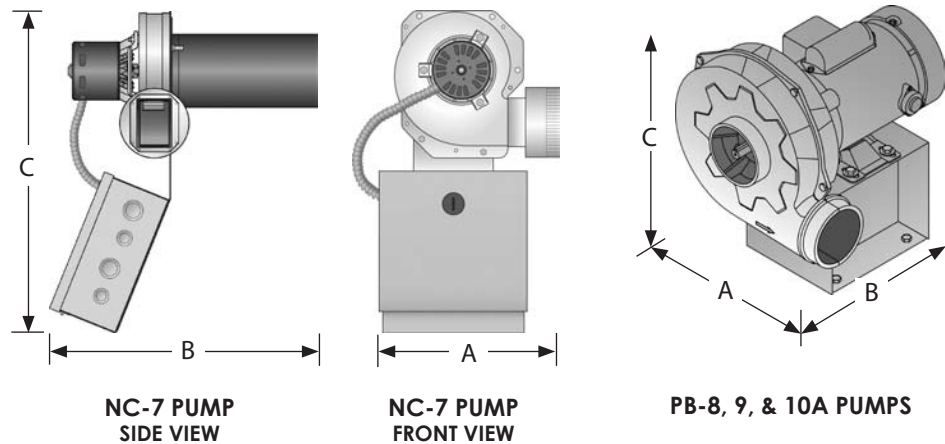
VACUUM PUMP ELECTRICAL DATA

PUMP QTY.	PUMP MODEL	RUNNING CIRCUIT (AMPS)	HP	SYSTEM MBH
	NC-7	2.2	1/15	50-150
	PB-8	7.6	1/2	50-275
	PB-9	9.6	3/4	280-545
	PB-10A	11.6	1	550-750

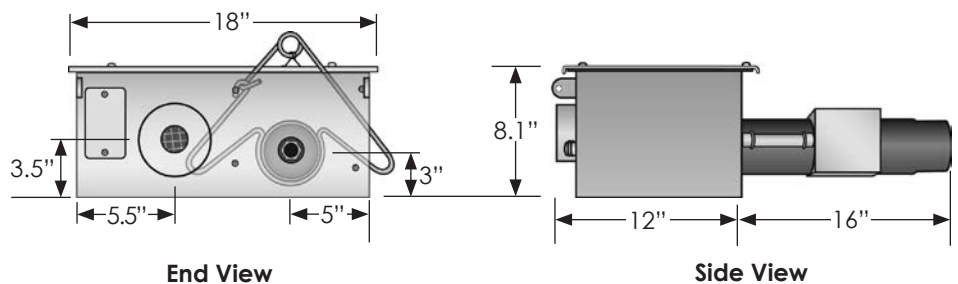
NOTE: The average sound level of the PB Series vacuum pumps is between 60 and 63 DBA. If the application requires a lower decible level, relocation of the vacuum pump or a sound-deadening enclosure may be necessary. Contact factory.

VACUUM PUMP

- Spark resistant cast aluminum housing.
- TEFC motor.
- Heat slinger on motor shaft for cool operation.
- Wheel with taper lock hub.



BURNER BOX DIMENSIONAL DATA



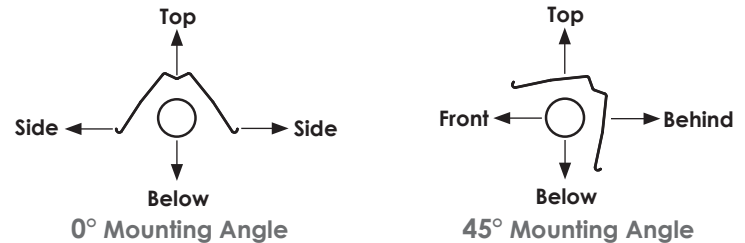
Read and understand the installation, operation and maintenance manual prior to installing or servicing this unit.

CLEARANCES TO COMBUSTIBLES (in inches)

MODEL NO.	MOUNTING ANGLE*	SIDE		TOP	BELOW	
		FRONT	BEHIND			
HLV 50 [N,P]	0°	9	9	4	47	
	45°	39	8	10	47	
	w/1 side shield	0°	29	8	4	47
	w/2 side shields	0°	9	9	4	47
	20 ft. from burner	0°	7	7	4	30
HLV 60, 75 [N,P]	0°	9	9	4	48	
	45°	39	8	10	48	
	w/1 side shield	0°	29	8	4	48
	w/2 side shields	0°	9	9	4	48
	20 ft. from burner	0°	7	7	4	30
HLV 80 [N,P]	0°	11	11	4	48	
	45°	39	8	10	48	
	w/1 side shield	0°	29	8	4	48
	w/2 side shields	0°	16	16	4	48
	20 ft. from burner	0°	7	7	4	30
HLV 90 [N,P]	0°	12	12	4	54	
	45°	39	8	10	54	
	w/1 side shield	0°	29	8	4	54
	w/2 side shields	0°	16	16	4	54
	20 ft. from burner	0°	7	7	4	30
HLV 100 [N,P]	0°	14	14	4	66	
	45°	39	8	10	66	
	w/1 side shield	0°	29	8	4	66
	w/2 side shields	0°	16	16	4	66
	20 ft. from burner	0°	7	7	4	30

MODEL NO.	MOUNTING ANGLE*	SIDE		TOP	BELOW	
		FRONT	BEHIND			
HLV 110, 125 [N,P]	0°	18	18	4	72	
	45°	58	8	10	72	
	w/1 side shield	0°	42	8	4	72
	w/2 side shields	0°	20	20	4	72
	20 ft. from burner	0°	7	7	4	30
HLV 140, 150 [N,P]	0°	24	24	6	81	
	45°	58	8	10	81	
	w/1 side shield	0°	42	8	6	81
	w/2 side shields	0°	30	30	6	81
	20 ft. from burner	0°	11	11	6	44
HLV 170, 175 [N,P]	0°	34	34	6	92	
	45°	63	8	10	92	
	w/1 side shield	0°	50	8	6	92
	w/2 side shields	0°	30	30	6	92
	20 ft. from burner	0°	11	11	6	44
HLV 180, 200 [N,P]	0°	41	41	6	94	
	45°	63	8	10	94	
	w/1 side shield	0°	54	8	6	94
	w/2 side shields	0°	30	30	6	94
	20 ft. from burner	0°	11	11	6	44

* Heaters mounted on an angle between 0° and 45° must maintain clearances posted for 0° or 45°; whichever is greater.
NOTE: Consult manual for side shield clearance diagrams.



HLV SERIES VACUUM SYSTEM PACKAGES & ACCESSORIES

QTY	PART #	DESCRIPTION
_____	V-D	16 ga. aluminized steel 16" damper.
_____	V-DKIT	V-D damper and 18" reflector package.
_____	E6	90° bend 4" O.D. 16 ga. coated aluminized steel elbow.
_____	REP	E6 elbow and reflector package.
_____	TF1B	180°, 4" O.D. coated aluminized steel 'U' bend.
_____	RUP	TF1B U-bend and reflector package.
_____	45E	45° bend, 4" O.D. 16 ga. coated aluminized steel bend.
_____	V-T	Tee fitting used to join two branches of a system.
_____	V-RTE	Highly polished reflector hood used to cover V-T or V-TI.
_____	V-TER	V-T tee fitting with V-RTE reflector package.
_____	V-TI	In-line tee fitting used to join two branches of a system.
_____	V-TERI	V-TI in-line tee fitting with V-RTE reflector package.
_____	V-CR	Cross fitting used to join three branches of a system.
_____	V-RCR	V-TI in-line tee fitting with V-RTE reflector package.
_____	V-CRP	Vacuum cross (V-CR) and reflector (V-RCR) pkg.
_____	V-TTS	Tandem tee set. Emulates in-series burners.

QTY	PART #	DESCRIPTION
_____	V-TB	Turnbuckle for sloping condensing tailpipe.
_____	V-SMK	PB Series vacuum pump sidewall mounting kit.
_____	WVE-ALUM	4" O.D. aluminum sidewall vent cap with flapper.
_____	V-PAI	Powered air inlet for outside combustion air.
_____	V-CT	Condensate trap and 26 ga. venting tee.
_____	V-D-SS	304 stainless steel 16" damper and tube clamp.
_____	V-DSKIT	V-D-SS and 18" aluminum reflector package.
_____	E6-SS	304 stainless steel 90° bend, 4" O.D., 16 ga. elbow.
_____	RE-SS	304 stainless steel 90° bend reflector.
_____	TF1B-SS	304 stainless steel 180°, 4" O.D. 'U' bend.
_____	RU-SS	304 stainless steel reflector 180° 'U' and RCS.
_____	V-T-SS	304 stainless steel tee fitting.
_____	V-TI-SS	304 stainless steel in-line tee fitting.
_____	V-RTE-SS	304 stainless steel reflector to cover V-T-SS or V-TI-SS.
_____	C-CR-SS	304 stainless steel cross fitting.
_____	V-RCR-SS	304 stainless steel reflector to cover a V-CR-SS.

TUBE & REFLECTOR PACKAGE ITEM**	QTY.	COATED TITANIUM COMBUSTION TUBE	QTY.	COATED ALUMINIZED STEEL TUBE	QTY.	UNCOATED HOT-ROLLED TUBE	QTY.	304 STAINLESS STEEL TAILPIPE
5-ft. tube & reflector package	_____	N/A	_____	TR-60	_____	HRE-60	_____	STP-60
10-ft. tube & reflector package	_____	TR-C	_____	10EA	_____	10HRE	_____	10STP
20-ft. tube & reflector package	_____	TR-C2	_____	20EA	_____	20HRE	_____	20STP
30-ft. tube & reflector package	_____	TR-C3	_____	30EA	_____	30HRE	_____	30STP
40-ft. tube & reflector package	_____	TR-C4	_____	40EA	_____	40HRE	_____	40STP

** Tube & reflector packages contain all applicable tubes, reflectors, tube clamps, hangers and reflector center supports.

NOTE: Refer to the HLV Vacuum System 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 HLV 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 the Canadian Standards Association (CSA) and comply with current Occupational Safety and Health Act (OSHA) Requirements.
- The supplier shall provide a manufacturer's published warranty covering the heater's stainless steel burner for a period of ten (10) years, combustion and aluminized radiant emitter tube(s) assembly for a period of five (5) years, combustion and hot-rolled radiant emitter tube(s) assembly for a period of three (3) years, vacuum pump for a period of one (1) year, 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

- System shall be a negative pressure operation with a power exhauster assembly at the exhaust end.
- Heater's power exhauster (PB Series) shall have a steel shaft and a cast aluminum housing.
- Heater shall have a self-diagnostic ignition control module.
- Heater shall be equipped with a hot surface ignitor with a three (3) time ignition trial to sensing mode.
- Power supplied to each exhauster assembly shall be 120VAC, 60HZ.
- Flame sensing shall be via an independent sensing rod and circuit.
- 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 a safety differential pressure switch.
- 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.
- The heater's air flow control system shall provide a 4 second pre-purge prior to initiating burner operation.

RADIANT TUBE HEATER CONSTRUCTION

- Total heater shutdown shall occur in the event of circuit control lockout. An interruption of power (reset thermostat) will restart the firing sequence.
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- 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.
- Heater's combustion chamber shall be 4" O.D. 16ga. titanium alloy treated steel finished with a high emissivity rated, corrosion resistant, black coating (unless noted otherwise).
- Heater's radiant emitter tube shall be 4" O.D. 16ga. aluminized steel finished with a high emissivity rated, corrosion resistant, black coating. Optional hot rolled, uncoated steel shall be made available upon request.
- The heater's combustion chamber and radiant emitter tube shall incorporate a 4" slip fit connection in which the upstream tube slides into the next tube and is held by a bolted clamp.
- Heater's condensing tubes shall be 16ga. 304 stainless steel.
- The hot surface igniter shall be readily accessible and serviceable.
- 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 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.
- The radiant tube heaters shall be designed such that, at the customers 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.
- All reflectors may be upgraded to 304 Series stainless steel.
- System design shall allow for condensing operation as stated in the HLV Design Guide. Condensing areas shall be provided with 304 Series stainless steel tubes, clamps, and in-line accessories.