HLV SERIES TUBE HEATERS

SUBMITTAL DATA – ENGINEERED LOW INTENSITY GAS-FIRED INFRARED TUBE HEATER VACUUM SYSTEM & ACCESSORIES

SUBMITTED BY: DATE:

JOB TITLE: CONTRACTOR:

ADDRESS: PHONE #:

CITY: ADDRESS:

PROVINCE: POSTAL CODE: CITY:

PROVINCE: POSTAL CODE:

ENGINEER:

LOCAL REPRESENTATIVE:

NOTES:

QTY.	BURNER PACKAGE	TAG	GAS TYPE (Circle One)	BTU INPUT HIGH FIRE	BTU INPUT LOW FIRE	APPROXIMATE SYSTEM HANGING WEIGHTS			RCMD. MOUNTING HEIGHTS**
						PER BURNER HEAD	PER 10FT. RADIANT PIPE & REFLECTOR SECTION	PER 10FT. TAILPIPE & REFLECTOR SECTION	
	HLV-40*		N or LP	40,000	N/A	35 lbs.	35 lbs.	45 lbs.	9' to 14'
	HLV-50*		N or LP	50,000	N/A	35 lbs.	35 lbs.	45 lbs.	9' to 14'
	HLV-60		N or LP	60,000	50,000	35 lbs.	35 lbs.	45 lbs.	10' to 15'
	HLV-75		N or LP	75,000	60,000	35 lbs.	35 lbs.	45 lbs.	11' to 18'
	HLV-80		N or LP	80,000	64,000	35 lbs.	35 lbs.	45 lbs.	11' to 18'
	HLV-90		N or LP	90,000	72,000	35 lbs.	35 lbs.	45 lbs.	12' to 20'
	HLV-100		N or LP	100,000	80,000	35 lbs.	35 lbs.	45 lbs.	12' to 20'
	HLV-110		N or LP	110,000	88,000	35 lbs.	35 lbs.	45 lbs.	13' to 23'
	HLV-120		N or LP	120,000	96,000	35 lbs.	35 lbs.	45 lbs.	13' to 25'
	HLV-125		N or LP	125,000	100,000	35 lbs.	35 lbs.	45 lbs.	14' to 27'
	HLV-140		N or LP	140,000	112,000	35 lbs.	35 lbs.	45 lbs.	15' to 30'
	HLV-150		N or LP	150,000	120,000	35 lbs.	35 lbs.	45 lbs.	15' to 30'
	HLV-170		N or LP	170,000	136,000	35 lbs.	35 lbs.	45 lbs.	16' to 40'
	HLV-175		N or LP	175,000	140,000	35 lbs.	35 lbs.	45 lbs.	17' to 42'
	HLV-180		N or LP	180,000	144,000	35 lbs.	35 lbs.	45 lbs.	18' to 47'
	HLV-200		N or LP	200,000	160,000	35 lbs.	35 lbs.	45 lbs.	19' to 50'

* The HLV-40 and HLV-50 do not have a reduction for low fire.

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

BRANT RADIANT HEATERS LIMITED

RE-VERBER-RAY® INFRARED RADIANT HEATERS

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Paris, ON N3L 3R1

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HLV SPECIFICATIONS

APPROVALS
- CSA Design Certified.
- Commercial/Industrial Approval.

GAS CONNECTION
- ½ or ¾ Type 1 Rubber Hose

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.

	NAT	LP
• Manifold pressure	3.5″	10.0″
• Min. Inlet pressure	5.0″	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/TAILPIPE
- Required when condensing design option is chosen.
- 304 Series stainless steel,16 ga. 4"O.D.
- Stainless steel clamps.

LIMITED WARRANTY*
- 1 year - Burner control box & exhauster pump components.
- 1 year - Vacuum pump.
- 3 years - Hot-rolled and stainless steel tubes.
- 5 years - Aluminized treated and titanium stabilized tubes.
- 10 years - Burner.

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

VACUUM PUMP DATA

VACUUM PUMP DIMENSIONAL DATA

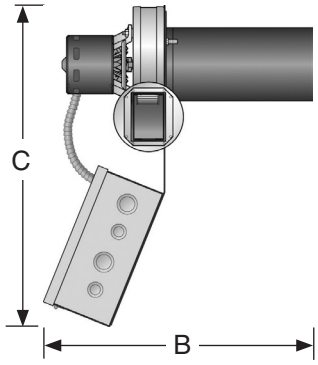
QTY.	PUMP MODEL	A	B	C	Weight
	NC-7	10.0"	16.0"	18.5"	20 lbs.
	PB-8	11.0"	19.75"	16.5"	60 lbs.
	PB-9	14.5"	19.75"	16.5"	67 lbs.
	PB-10A	17.5"	21.0"	20.0"	73 lbs.

VACUUM PUMP ELECTRICAL DATA

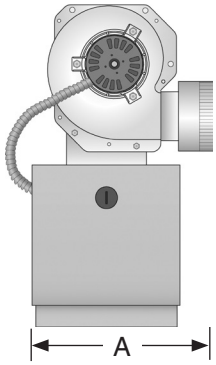
PUMP MODEL	SYSTEM MBH	RUNNING CIRCUIT (AMPS)	HP	RPM's	SYSTEM MBH
NC-7	40-150	1.95	1/15	3000	40-150
PB-8	40-275	7.4	1/2	3450	40-275
PB-9	240-545	9.6	3/4	3450	240-545
PB-10A	550-750	11.6	1	3450	550-750

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

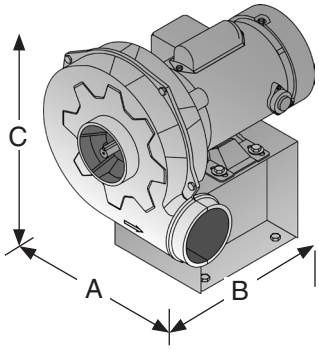
VACUUM PUMP
- Spark resistant cast aluminum housing.
- TEFC motor.
- Heat slinger on motor shaft for cool operation.
- Wheel with taper lock hub.
- Primary damper included.



NC-7 PUMP SIDE VIEW

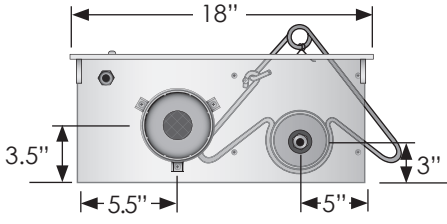


NC-7 PUMP FRONT VIEW

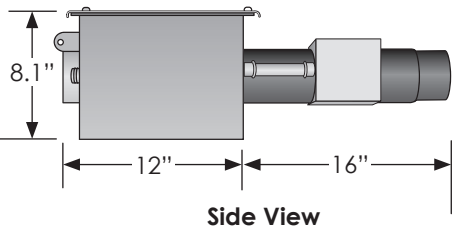


PB-8, 9, & 10A PUMPS

BURNER BOX DIMENSIONAL DATA



End View



Side View

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

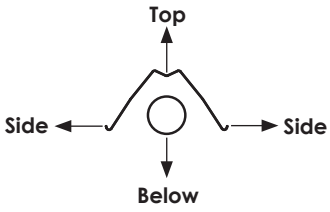
CLEARANCES TO COMBUSTIBLES (IN INCHES)

MODEL NO.	MTG. ANGLE*	SIDE FRONT	SIDE BEHIND	TOP	BELOW
HLV 40, 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

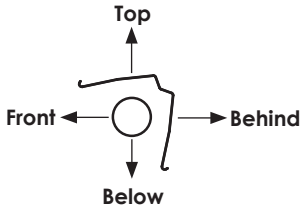
MODEL NO.	MTG. ANGLE*	SIDE FRONT	SIDE BEHIND	TOP	BELOW
HLV 110, 125 [N,P]	0°	18	18	4	72
	45°	58	8	10	72
w/1 side shield	0°	42	8	4	72
w/2 side shields	0°	20	20	4	72
20 ft. from burner	0°	7	7	4	30
HLV 140, 150 [N,P]	0°	24	24	6	81
	45°	58	8	10	81
w/1 side shield	0°	42	8	6	81
w/2 side shields	0°	30	30	6	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.



0° Mounting Angle



45° Mounting Angle

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**	Highly polished reflector hood used to cover V-CR.
_____	**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 TITAN. STABILIZED 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

PRODUCTS

1. TUBULAR INFRARED HEATERS(Multiple-Burner Engineered Vacuum System Type)
   A. Basis-of-design product: Subject to compliance with requirements, provide Detroit Radiant Products Company; Re-Verber-Ray HLV Series Engineered Negative Pressure Multiple Burner Vacuum System.
   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 20% 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.
      2. The heater's air flow control system shall provide a 7 second pre-purge prior to initiating burner operation.
   D. Combustion chamber: Shall be 4 inch O.D. 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. Emitter Tube: Shall be 4 inch O.D. 16ga. aluminized steel finished with a high emissivity rated, corrosion resistant, black coating with an emissivity level documented at .92 or higher.
   F. Condensate tail pipe: Shall be 4 inch O.D. 16ga. 304 stainless steel. Pipe shall be able to be cut to any length without having raw carbon steel exposed at the edges. Glass lined, porcelain lined, or other material prone to chipping and cracking shall not be permitted.
   G. Burner type: Units shall operate under a negative pressure with exhaust gases pulled through the exchanger pipe to a common exhauster pump. Each burner shall receive its combustion air independently. Burners that have exhaust gases from upstream burners passing over them shall not be permitted. Burners shall operate at a minimum of 3.5" W.C. manifold pressure to achieve proper air-gas mixing. Burners that require air filters shall not be permitted.
   H. Burner: Stainless-steel venturi burner. The flame anchoring screen shall have a minimum temperature rating equivalent to 304 grade stainless steel. Non stainless steel burners shall not be permitted.
   I. Tube connections: The heater's combustion chamber and radiant emitter tube shall incorporate a 4 inch 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. Exhauster Pumps:
      1. Systems designed for condensing shall have a cast aluminum housing for corrosion resistance. Cast iron housings shall not be permitted.
      2. Motors ½ hp and higher shall be TEFC type standard efficiency. Motors shall be equipped with thermal protection and capacitor starters.
   K. Ignition system: Hot surface silicon carbide composition. Igniter shall be readily accessible and serviceable without having to remove the burner. Spark ignition systems shall not be permitted.
   L. 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.
   M. 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.
   N. 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.
   O. Heater shall be supplied with a Type 1 rubber gas connector.
   P. System Operation and Safety Controls:
      1. Each burner assembly 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. A single differential pressure switch at the exhauster assembly shall not be permitted.
      2. The system exhauster shall have a minimum of a 90-second post purge to aid in the removal of exhaust gases and condensate in the exchanger pipes.
      3. The heater shall incorporate a self-diagnostic ignition module, and recycle the heater after an inadvertent shutdown.
      4. 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.
      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 stages.
   Q. Thermostat control shall be two-stage operating on 24 volts.
   R. Venting: Shall be per manufacturer approval and specifications.
   S. 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: Integrally mounted.