

Laboratory Claw Vacuum System

Rev. 06/14/13

GENERAL

The Powerex laboratory vacuum system is designed to create a suction system to remove unwanted fluids or gases from laboratory working areas. The laboratory vacuum system package is compliant with the NFPA 99 requirements for Risk Category 3 laboratory systems. Each system is completely tested before shipment and includes:

- Multiple vacuum pumps and associated equipment
- ASME air receiver
- NEMA 12 multiplex control panel

Each pump is factory piped to a common intake manifold. Vibration isolation pads are included with the system.

CLAW VACUUM PUMP

Each pump shall be a rotary claw type vacuum pump, and shall be direct-driven through a shaft coupling by a C-face, TEFC electric motor.

- Each vacuum pump shall be dry-running, featuring two claw-type, non-contacting rotors and shall not require any sealing fluid in the pumping chamber, assuring virtually maintenance-free operation.
- 7.0-15HP vacuum pumps shall include an internal relief valve; pumps 6.4 HP and below do not
- Each vacuum pump includes a built-in, anti-suck-back valve mounted at the pump inlet.
- Each pump within the system shall include a check valve, inlet and discharge flex connectors, an inlet filter and a pump isolation valve.

MOTOR

The motor is continuous duty, C-face, TEFC, suitable for 208-230, or 460V, 3 phase, 60 hertz electrical operation.

AIR RECEIVER

The system shall include an ASME rated air receiver. The tank shall be internally lined and come with a manual drain and sight gauge. Systems with Basic Controls are also equipped with a vacuum gauge. Receiver is plumbed so that system vacuum must pass through the air receiver prior to the pumps to provide additional protection for the pumps.

STANDARD HMI CONTROL PANEL

The control system provides automatic lead/lag sequencing and automatic alternation of all pumps in order to equalize the amount of usage among the available vacuum pumps. The HMI control system shall include:

- PLC controller and a 6" color touch screen HMI (Human Machine Interface) panel which displays the operating status of the unit.
- UL508A listed control panel in a NEMA 12 enclosure. The panel door will include: the HMI touch screen, audible and visual alarms with an acknowledge button, and an HOA switch for each pump
- Magnetic starters
- Vacuum transducer for process control
- Single point power connection
- Redundant 120Vac control transformers with fused primary and secondary protection
- System overload trip, high temperature conditions, low vacuum or maintenance intervals for the pump will result in visual and audible alarms.

OPTIONAL PBMI CONTROL PANEL

The PBMI control system shall include all features of the standard HMI control panel with the addition of a gateway server card. The control system provides automatic lead/lag sequencing and automatic alternation of all pumps in order to equalize the amount of usage among the available vacuum pumps. The PBMI control system shall include all features of the standard HMI control panel listed above and the following:

- Building automation communication gateway with BacNet[®] protocol and Web server features. Web server features include email notifications in case the system is in alarm or has achieved one its maintenance intervals and requires service.
- Ethernet port for connection to BacNet[®] server or direct connection to facility Ethernet for viewing of system operations and status via device IP-address

OPTIONAL AUTO PURGE

NOTE: This option is available with our standard HMI control panel or the optional PBMI control panel. It is not available on systems with Basic controls.

Systems with the auto purge feature will include:

- Control and operation of air actuated and/or electric isolation and purge valves
- 3-position mode switch (Auto-Off-Manual)
- Pump Status (PUMP ON, PUMP READY, PUMP OFF, PUMP PURGING)

Pumps will run through an automatic purge cycle every 24 hours (after alternation phase), to purge any gases from the pump to atmosphere. A 3-position switch is provided to select automatic purge, manual



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purge, or purge off modes. (**NOTE:** Pneumatic purge isolation valves require 80 psi compressed air to be field supplied.)

OPTIONAL BASIC CONTROL PANEL

The control system provides automatic lead/lag sequencing and automatic alternation of all pumps in order to equalize the amount of usage among the available vacuum pumps. The Basic control system shall include:

- UL508A listed control panel in a NEMA 12 enclosure with the following accessories for each pump: Externally operable disconnect, magnetic starter with 3-leg overload protection, Hand/Off/Auto lighted selector switch, minimum run timer to prevent short cycling of the pump, and hour meter.
- Main power on light, timed lead/lag pump alternation, a low vacuum alarm with visual indication, and single control circuit transformer with fused primary and secondary protection.
- Dry contacts on a labeled terminal strip for remote alarm monitoring and an acknowledge pushbutton for horn silencing.
- Control logic to start the lag pump automatically if the lead vacuum pump fails to operate.
- Single point power connection
- Vacuum switches for process control
- System overload trip, high temperature conditions or low vacuum will result in visual alarm

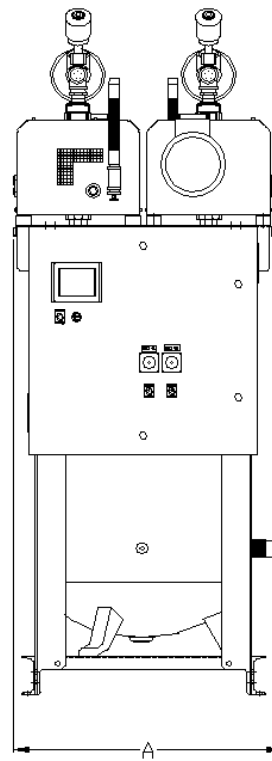
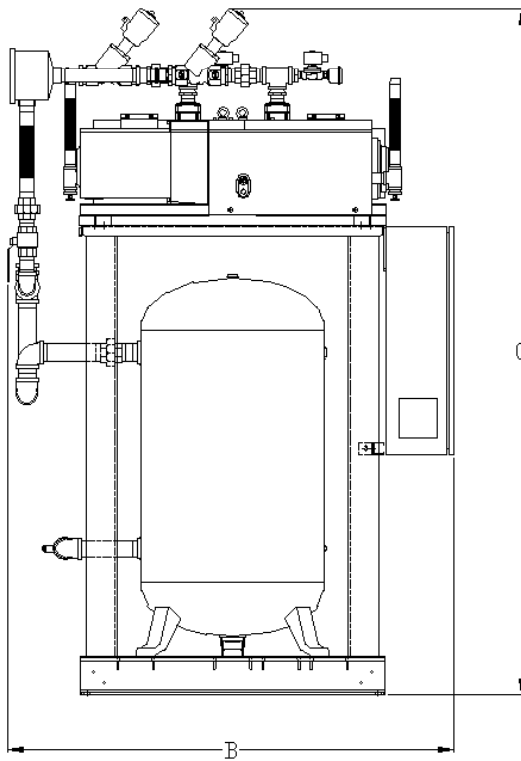
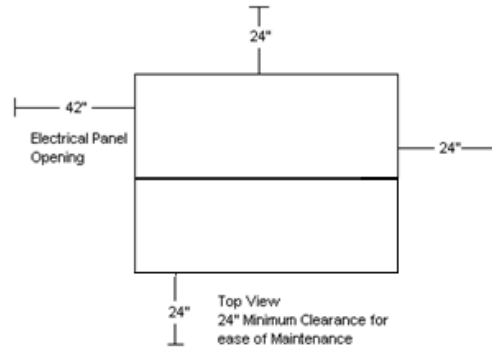
A high discharge air temperature shutdown alarm with visual and audible indicators and dry contacts is standard.



Laboratory Vertical Duplex Claw Vacuum Package with HMI/PBMI

DIMENSIONS					
MODEL	DIM. A	DIM. B	DIM. C	Inlet	Outlet (X2)
LCVD0203	39"	59"	91"	2"	1"
LCVD0303	39"	59"	91"	2"	1"

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Laboratory Claw Vacuum Package with HMI/PBMI										
MODEL	Old HP	New HP	Tank Size (Gal.)	SCFM @ 19" Hg ²	BTU/HR ²	dB(A) LEVEL ²	SYSTEM F.L.A. ²			SYSTEM WEIGHT (LBS.)
							208V	230V	460V	
LCVD0203	2 (2)	2.3 (2)	80 V	32	7,804	73	19.0	15.4	8.7	1,300
LCVD0303	3 (2)	3.2 (2)	80 V	42	9,104	73	19.0	20.5	11.2	1,550

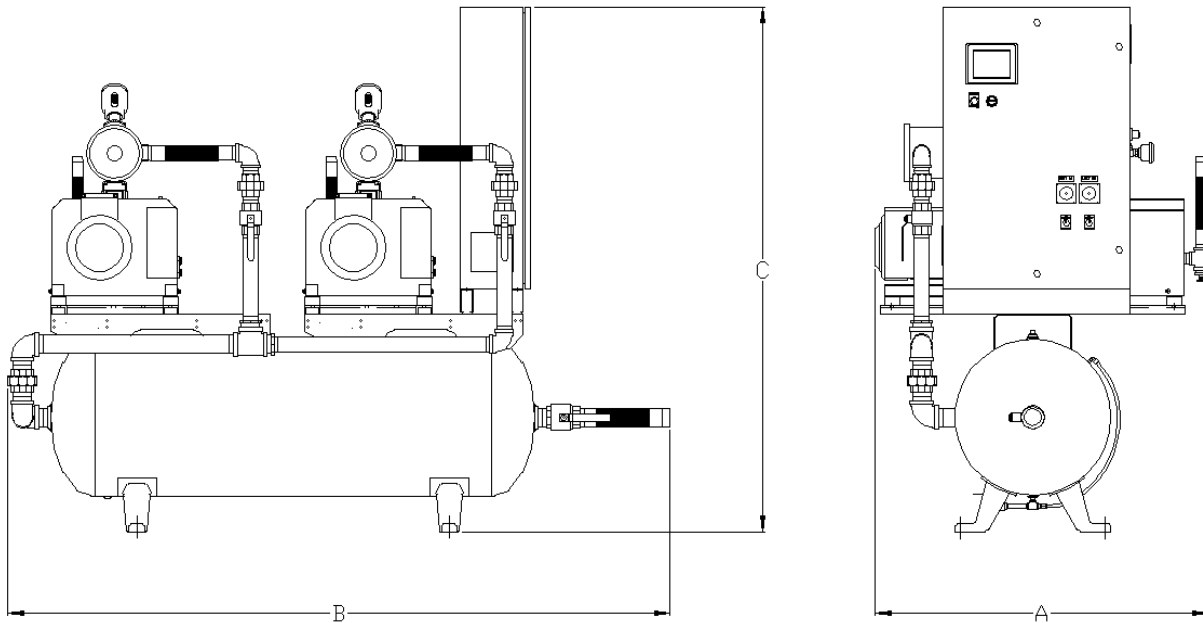
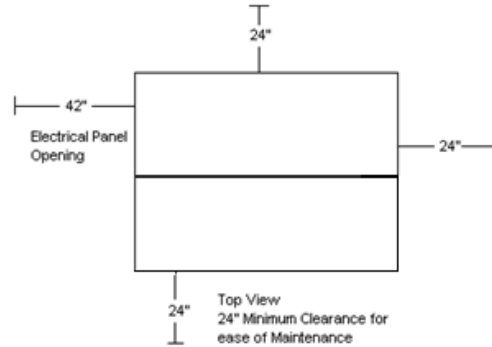
Notes: 1- 3 Year Limited Warranty
2 - SCFM, BTU and FLA values listed are with all pumps running



Duplex Horizontal Laboratory Claw Vacuum Package with HMI/PBMI

Rev. 01/09/13

DIMENSIONS					
MODEL	DIM. A	DIM. B	DIM. C	Inlet	Outlet (X2)
LCD0203	42"	85"	65"	2"	1"
LCD0303	42"	85"	65"	2"	1"
LCD0503	42"	85"	65"	2"	1"
LCD0603	43"	85"	65"	2"	1"



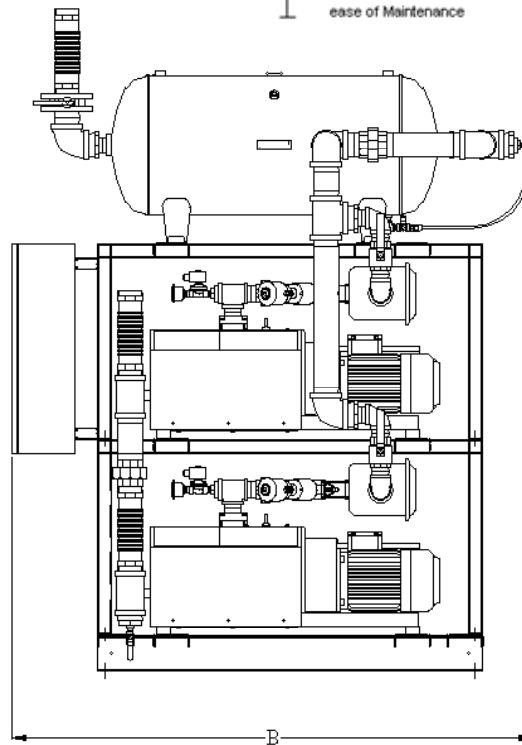
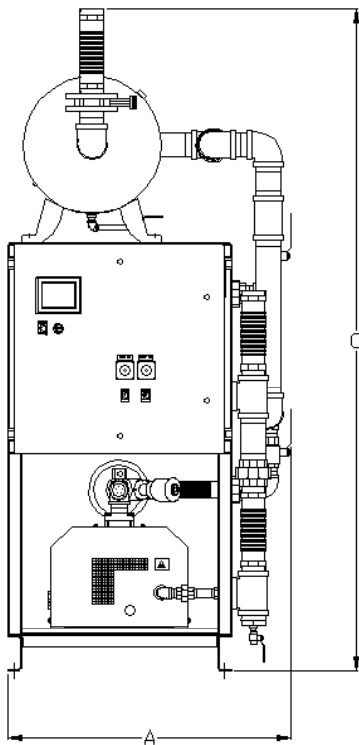
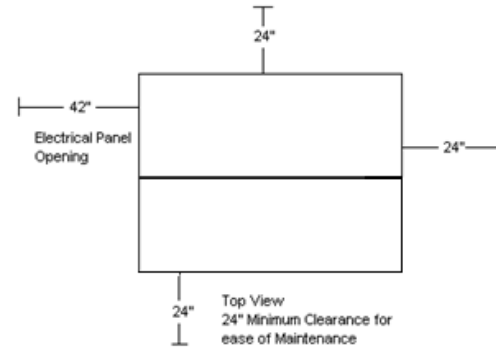
Laboratory Claw Vacuum Package with HMI/PBMI										
MODEL	Old HP	HP	Tank Size (Gal.)	SCFM @ 19" Hg ²	BTU/HR ²	dB(A) LEVEL ²	SYSTEM F.L.A. ²			SYSTEM WEIGHT (LBS.)
							208V	230V	460V	
LCD0203	2 (2)	2.3 (2)	80 H	32	7,804	73	19.0	15.4	8.7	1,200
LCD0303	3 (2)	3.2 (2)	80 H	42	9,104	73	19.0	20.5	11.2	1,250
LCD0503	5 (2)	5 (2)	80 H	58	17,340	82	27.2	26.0	14.0	1,275
LCD0603	5.4 (2)	6.4 (2)	80 H	76	22,542	82	27.2	34.4	18.2	1,300

Notes:
 1- 3 Year Limited Warranty
 2- SCFM, BTU and FLA values listed are with all pumps running

Duplex Laboratory Claw Vacuum Package with HMI/PBMI

Rev. 01/09/13

DIMENSIONS					
MODEL	DIM. A	DIM. B	DIM. C	Inlet	Outlet
LCPDT0502	39"	68"	95"	2"	2"
LCPDT0602	39"	68"	95"	2"	2"
LCPDT0702	41"	68"	95"	3"	3"
LCPDT0902	41"	68"	95"	3"	3"



Laboratory Claw Vacuum Package with HMI/PBMI										
MODEL	Old HP	New HP	Tank Size (Gal.)	SCFM @ 19" Hg ²	BTU/HR ²	dB(A) LEVEL ²	SYSTEM F.L.A. ²			SYSTEM WEIGHT (LBS.)
							208V	230V	460V	
LCPDT0502	5 (2)	5 (2)	60 H*	58	17340	82	27.2	26.0	14.0	1,900
LCPDT0602	5.4 (2)	6.4 (2)	60 H*	76	22,542	82	27.2	34.4	18.2	1,950
LCPDT0702	6.4 (2)	7.0 (2)	60 H*	104	25,144	82	40.0	37.4	19.7	2,200
LCPDT0902	7.4 (2)	9.1 (2)	60 H*	130	30,346	82	40.0	47.2	24.6	2,200

Notes:

1- 3 Year Limited Warranty

2 - SCFM, BTU and FLA values listed are with all pumps running

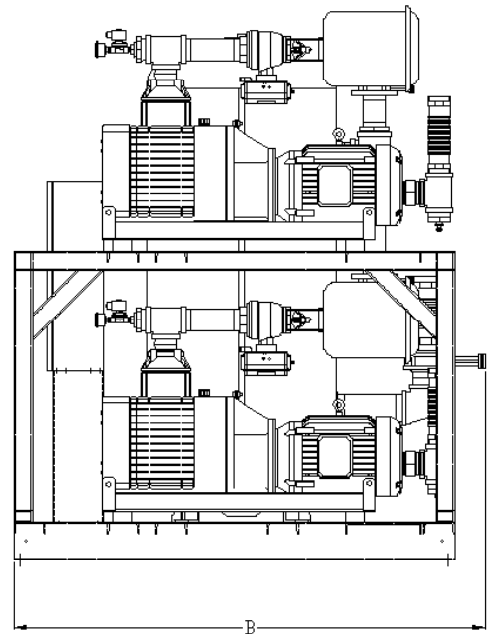
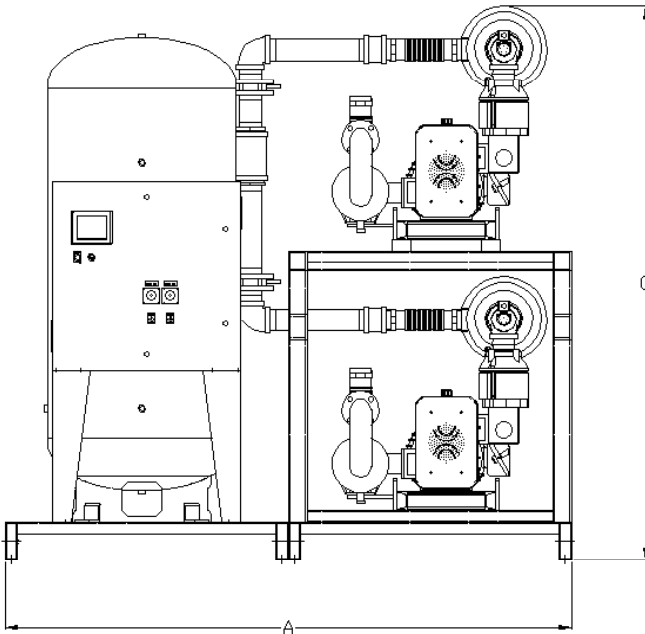
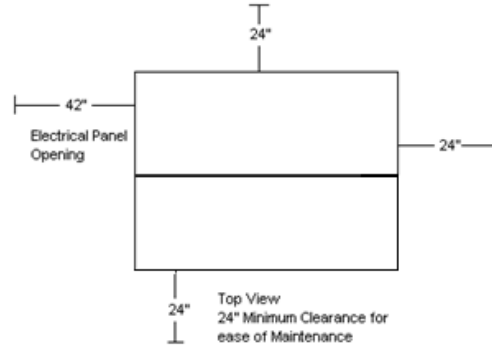
* Receiver is frame mounted on top of the two pumps.



Duplex Laboratory Claw Vacuum Package with HMI/PBMI

Rev. 03/22/13

DIMENSIONS					
MODEL	DIM. A	DIM. B	DIM. C	Inlet	Outlet (X2)
LCPD1005	66"	59"	83"	3"	2"
LCPD1505	90"	75"	89"	4"	3"



Laboratory Claw Vacuum Package with HMI/PBMI										
MODEL	Old HP	New HP	Tank Size (Gal.)	SCFM @ 19" Hg ²	BTU/HR ²	dB(A) LEVEL	SYSTEM F.L.A. ²			SYSTEM WEIGHT (LBS.)
							208V	230V	460V	
LCPD1005	8.7 (2)	10 (2)	200 V	174	43,350	86	54.8	49.6	25.8	3,100
LCPD1505	15 (2)	15 (2)	200 V	258	60,690	88	82.0	72.0	37.0	3,400

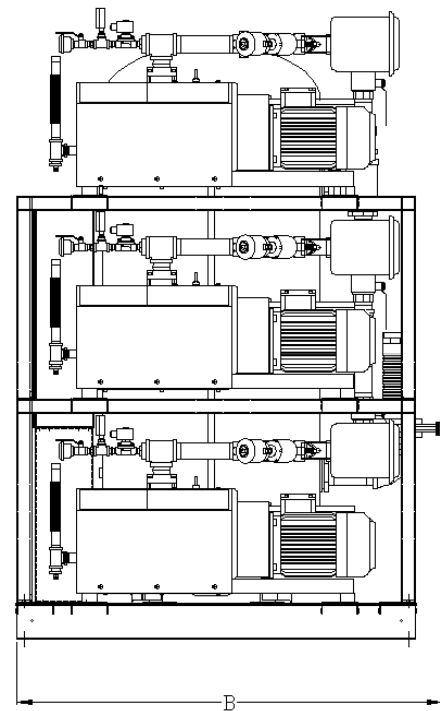
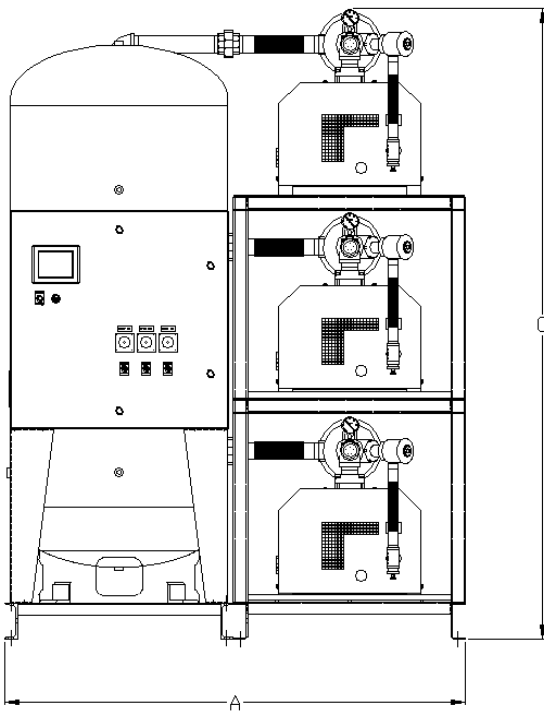
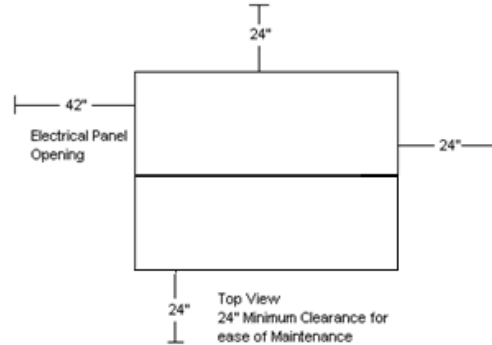
Notes: 1 - 3 Year Limited Warranty
2 - SCFM, BTU and FLA values listed are with all pumps running



Triplex Laboratory Claw Vacuum Package 5-9.1 HP with HMI/PBMI

Rev. 03/22/13

DIMENSIONS					
MODEL	DIM. A	DIM. B	DIM. C	Inlet	Outlet (X3)
LCPT0505	66"	59"	85"	3"	1"
LCPT0605	66"	59"	85"	3"	1"
LCPT0705	66"	59"	88"	3"	1"
LCPT0905	66"	59"	89"	3"	1"



Laboratory Claw Vacuum Package with HMI/PBMI										
MODEL	Old HP	New HP	Tank Size (Gal.)	SCFM @ 19" Hg ²	BTU/HR ²	dB(A) LEVEL	SYSTEM F.L.A. ²			SYSTEM WEIGHT (LBS.)
							208V	230V	460V	
LCPT0505	5 (3)	5 (3)	120 V	87	26010	84	39.8	38.0	20.0	3,050
LCPT0605	5.4 (3)	6.4 (3)	120 V	114	33,813	84	39.8	50.6	26.3	3,200
LCPT0705	6.4 (3)	7.0 (3)	120 V	156	37,716	84	59.0	55.1	28.6	3,650
LCPT0905	7.4 (3)	9.1 (3)	120 V	195	45,519	84	59.0	69.8	35.9	3,850

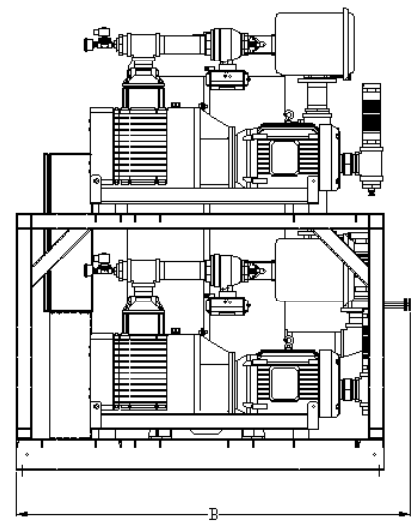
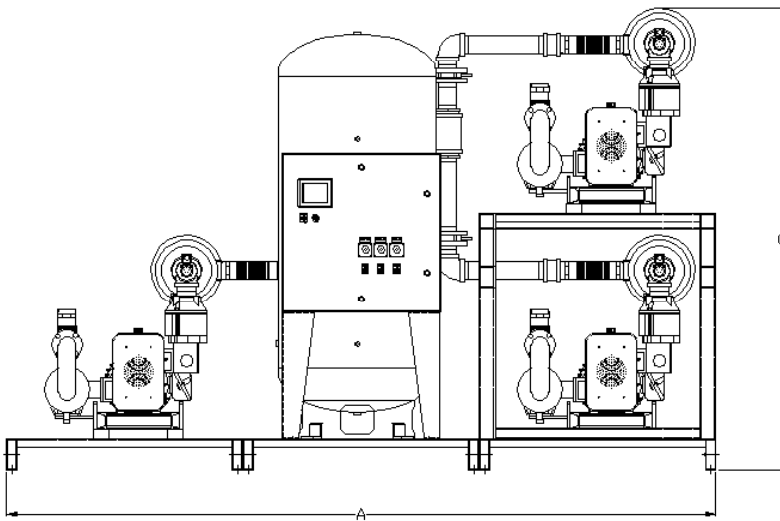
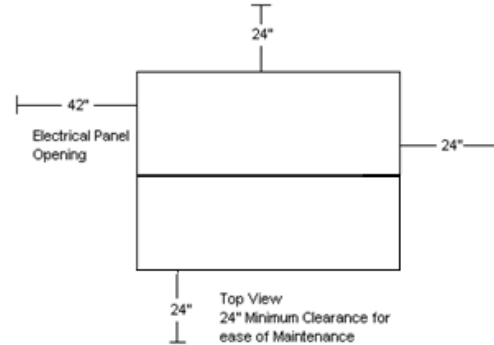
Notes: 1- 3 Year Limited Warranty
2 - SCFM, BTU and FLA values listed are with all pumps running



Triplex Laboratory Claw Vacuum Package with HMI/PBMI

Rev. 03/22/13

DIMENSIONS					
MODEL	DIM. A	DIM. B	DIM. C	Inlet	Outlet (X3)
LCPT1005	98"	59"	83"	4"	2"
LCPT1505	135"	75"	89"	4"	3"



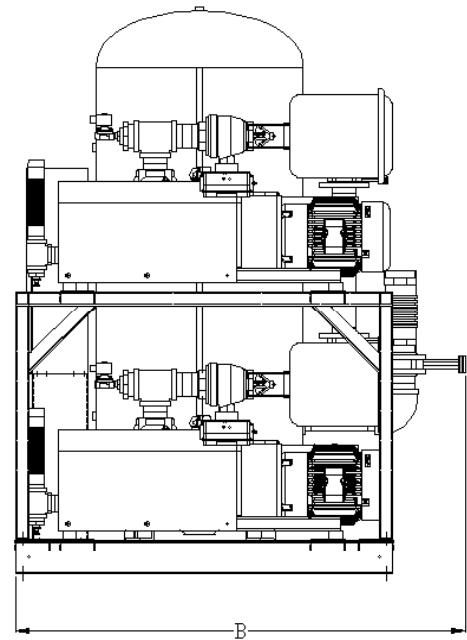
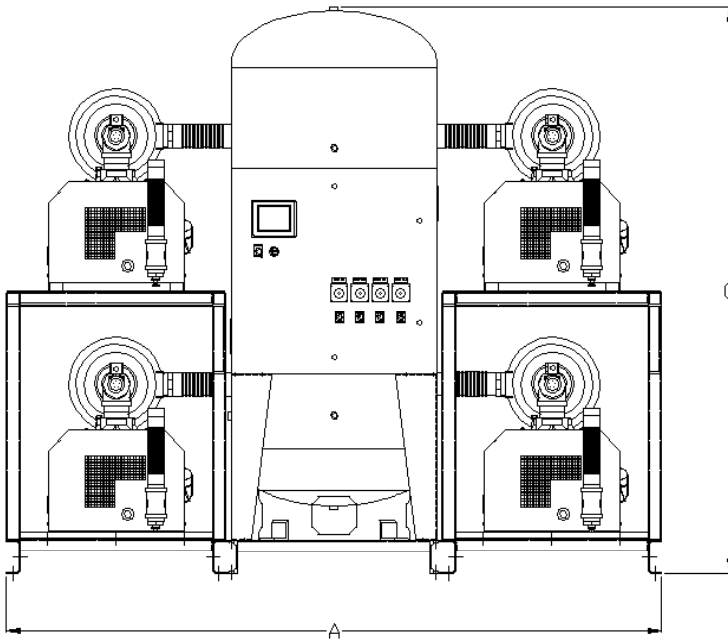
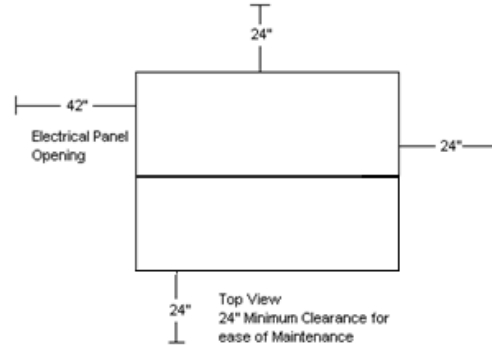
Laboratory Claw Vacuum Package with HMI/PBMI										
MODEL	Old HP	New HP	Tank Size (Gal.)	SCFM @ 19" Hg ²	BTU/HR ²	dB(A) LEVEL	SYSTEM F.L.A. ²			SYSTEM WEIGHT (LBS.)
							208V	230V	460V	
LCPT1005	8.7 (3)	10 (3)	200 V	261	65,025	88	81.2	73.4	37.7	4,150
LCPT1505	15 (3)	15 (3)	200 V	387	91,035	90	122.0	107.0	54.5	4,550

Notes:
 1- 3 Year Limited Warranty
 2 - SCFM, BTU and FLA values listed are with all pumps running

Quadplex Laboratory Claw Vacuum Package with HMI/PBMI

Rev. 03/22/13

DIMENSIONS					
MODEL	DIM. A	DIM. B	DIM. C	Inlet	Outlet (X4)
LCPQ0505	98"	59"	83"	3"	1"
LCPQ0605	98"	59"	83"	3"	1"
LCPQ0705	98"	59"	83"	3"	1"
LCPQ0905	98"	66"	83"	4"	1"
LCPQ1005	98"	66"	83"	4"	2"



Laboratory Claw Vacuum Package with HMI/PBMI										
MODEL	Old HP	New HP	Tank Size (Gal.)	SCFM @ 19" Hg ²	BTU/HR ²	dB(A) LEVEL	SYSTEM F.L.A. ²			SYSTEM WEIGHT (LBS.)
							208V	230V	460V	
LCPQ0505	5 (4)	5 (4)	200 V	116	34,680	85	52.4	50.0	26.0	3,500
LCPQ0605	5.4 (4)	6.4 (4)	200 V	152	45,084	85	52.4	66.8	34.4	3,600
LCPQ0705	6.4 (4)	7.0 (4)	200 V	208	50,288	85	78.0	72.8	37.4	4,300
LCPQ0905	7.4 (4)	9.1 (4)	200 V	260	60,692	85	78.0	92.4	47.2	4,500
LCPQ1005	8.7 (4)	10 (4)	200 V	348	86,700	89	107.6	97.2	49.6	5,000

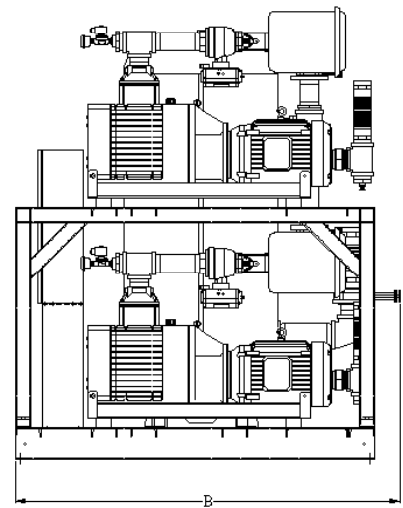
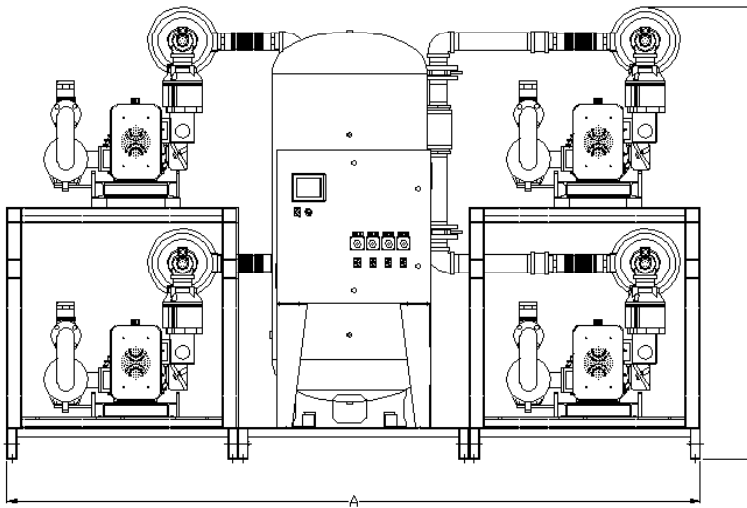
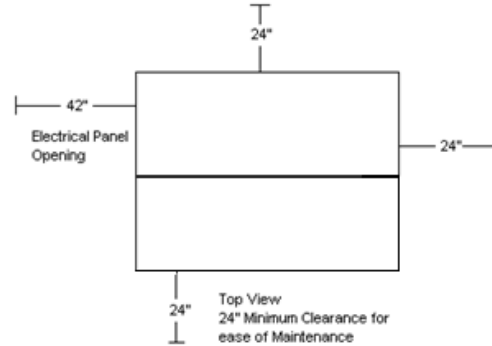
Notes:
 1 - 3 Year Limited Warranty
 2 - SCFM, BTU and FLA values listed are with all pumps running



Quadplex Laboratory Claw Vacuum Package with HMI/PBMI

Rev. 02/22/13

DIMENSIONS					
MODEL	DIM. A	DIM. B	DIM. C	Inlet	Outlet (X4)
LCPQ1505	135"	75"	89"	4"	3"



Laboratory Claw Vacuum Package with HMI/PBMI										
MODEL	Old HP	New HP	Tank Size (Gal.)	SCFM @ 19" Hg ²	BTU/HR ²	dB(A) LEVEL	SYSTEM F.L.A. ²			SYSTEM WEIGHT (LBS.)
							208V	230V	460V	
LCPQ1505	15 (4)	15 (4)	200 V	516	121,380	91	162.0	142.0	72.0	5,400

Notes: 1- 3 Year Limited Warranty
2 - SCFM, BTU and FLA values listed are with all pumps running