

**LifeLine® “Oil-Less” Claw Medical Vacuum  
Base Mount Modular  
Duplex System (5.4 HP) 50 Hz  
SPECIFICATION**

### **Modular System Design**

The LifeLine® Oil-Less Claw Medical vacuum package is fully compliant with NFPA 99. Each pump module has a common intake connection point and a common discharge connection point. Each module can fit through a standard 34.5" doorway. Designed and manufactured with ISO 13485 processes, each system is completely tested before shipment and includes:

- Two "oil-less" claw rotary vacuum pumps with two motors
- Integral pre-wired control panel
- Vertical air receiver with full-size three-valve bypass system sized for appropriate demand

### **Vacuum Pump**

Each pump is a direct driven, non-contacting claw type, capable of operating continuous duty at 28.4" Hg (sea level).

The pumping chamber is oil free. The pump is completely air-cooled with no water requirements. Each pump contains:

- 5 micron inlet air filter
- Vacuum relief valve
- Check valve to prevent backflow through off-cycle units
- Flexible connector and isolation valve
- High discharge temperature sensor
- Oil drain valve and oil sight glass

### **Vacuum Pump Motor**

Motors are continuous duty, C-face, TEFC, 2875 RPM, suitable for 380V, 50 hertz, 3-phase electrical service.

### **Intake Piping**

Each vacuum pump has a factory piped intake with integral flex connector, isolation valve, and check valve. Interconnecting piping consists of powder-coated steel tubing and flanges.

### **Vacuum Receiver**

The vacuum receiver is ASME Code stamped, and rated for a minimum 150 PSIG design pressure.

The receiver has a full-size three-valve bypass system to allow for draining of the receiver without interrupting the vacuum service. A manual drain is provided on the receiver.

### **Exhaust Piping**

Each vacuum pump module is factory piped to an exhaust manifold with integral flex connector and drip leg with ball valve and condensate drain. Interconnecting piping consists of powder-coated steel tubing and flanges. An exhaust muffler is shipped loose.

### **TotalAlert Embedded Control System**

The duplex mounted and wired TotalAlert Embedded control system is U.L. labeled. The control system provides automatic lead/lag sequencing and automatic alternation of vacuum pumps based on first-on/first-off principle with provision for simultaneous operation if required. Automatic activation of reserve unit, if required, will activate an audible alarm as well as a visual alarm on the display screen.

Additional components include:

- NEMA 12 control panel enclosure
- Circuit breaker disconnects for each motor with external operators
- Full voltage motor starters with overload protection
- 24V control circuit

The touch screen controls feature one 5.7" master screen and a 3.5" operating screen for each vacuum pump. Screen displays and functions include:

- Service alerts, runtime hourmeters for each pump, system status, system vacuum level
- Visual/audible alarm indications with isolated contacts for all standard remote alarms
- Event log recording alarms and system activity
- Event log recording service warnings and service history
- Trend graphs for vacuum level, pump operations, and ambient temperature
- Ethernet connectivity and embedded web page for remote monitoring
- Electronic notifications of alarms and warnings
- Integral connectivity to the TotalAlert medical gas network via Ethernet

### **Installation**

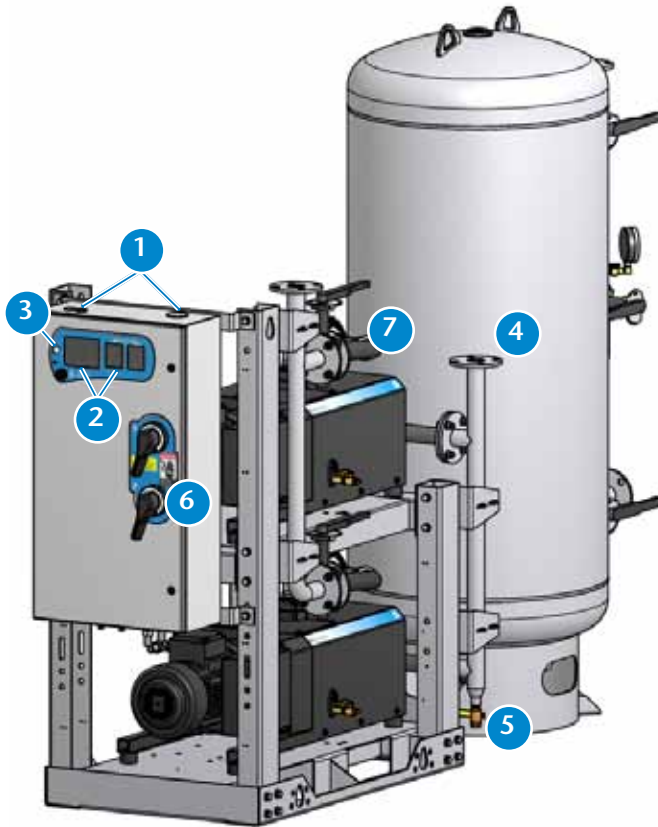
The installation of this vacuum technology is limited to 6,000 feet elevation above sea level.

For installation of this equipment above this elevation, please contact the factory.



## Standard Configuration

5.4 HP Duplex - 50 Hz



- 1 Control panel pre-drilled for power, alarms, and Ethernet connections for easy electrical installation.
- 2 TotalAlert Embedded touch screen controls featuring 5.7" master screen and (2) 3.5" operating screens with exceptional clarity and visibility.
- 3 Motion sensor to activate touch screen displays, preserving screen life.
- 4 Discharge manifold with a single point connection to the exhaust piping, with flex hoses factory installed.
- 5 Factory installed exhaust drip leg with ball valve and condensate drain.
- 6 Through the door disconnects for pumps add to safety during service.
- 7 Flex connectors on vacuum inlet and discharge to isolate pump vibration from facility pipeline.

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Hospital connection and receiver inlet positioned below receiver exit and piping to the pumps - extra protection against liquids/debris entering pumps.

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Full-size 3-valve receiver bypass with flanged valves reduce potential leak points over NPT fittings.

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Vacuum switch as backup to vacuum transducer. In case of transducer failure, system operates effectively.

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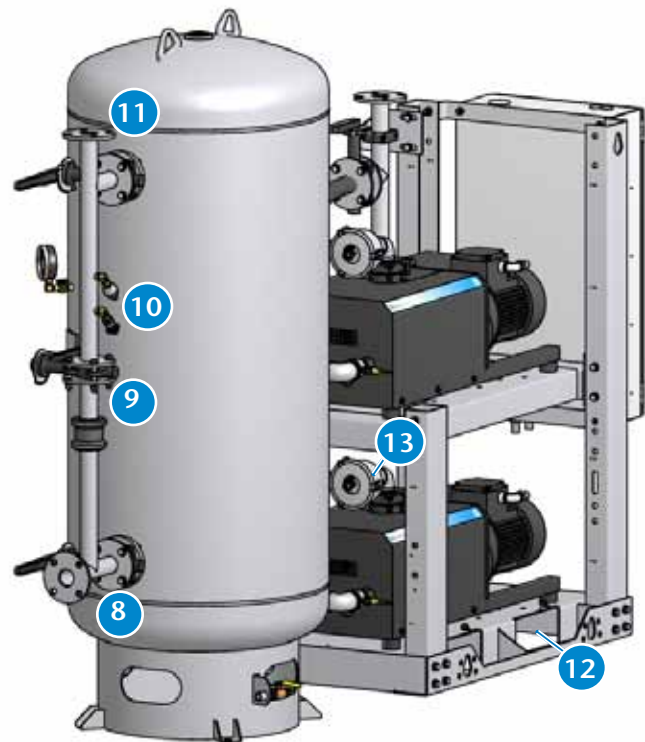
Flanges reduce piping connection time between modules.

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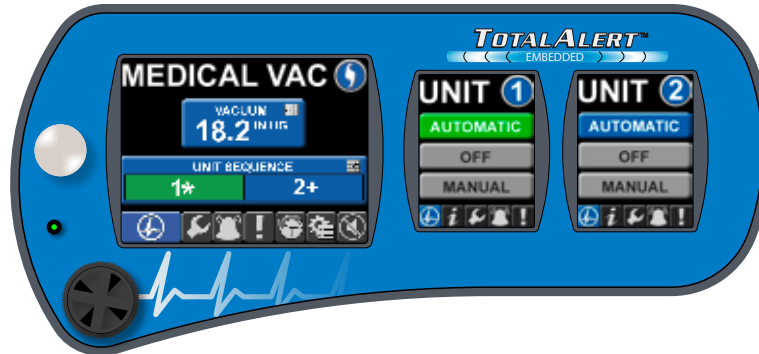
Openings in base frame to allow access underneath pumps for pump maintenance.

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Individual 5 micron air inlet filter per vacuum pump to protect pump from incoming particulates.



## TotalAlert Embedded Control System



### Touch Screen Control

- Master screen is 5.7" high resolution LCD with 640x480 pixel display and Unit screens are 3.5" high resolution LCD with 240x320 pixel display for exceptional clarity and visibility
- Toolbars on all screens with easy access navigation icons that enable full access with minimal touches
- Passive InfraRed (PIR) motion sensor activates screen display (under alarm conditions screen is active continuously)

### Ethernet Connectivity with Embedded Web Page

- Built-in web server allows remote operator to view system controls and display information
- Ethernet communication compatible with TotalAlert and TotalAlert<sup>2</sup> alarm systems
- Web page provided to show links to other devices on the TotalAlert Embedded network, including alarms and other source equipment
- Electronic notification
  - » Accessible through any SMTP gateway
  - » Allows for remote alerts of alarm and warning conditions
  - » Allows for remote alerts of routine maintenance
- All printed circuit boards have an Ethernet port that allows reprogramming with a standard computer for software updates
- Dual Ethernet configuration with separate Ethernet subnets to separate the facility Ethernet from internal TotalAlert Embedded communications

### Control Cabinet Safety

- Volt free relay contacts for all standard alarms
- Low voltage (24V) control circuit
- Full voltage motor starters with overload protection
- Circuit breaker disconnects for each vacuum pump
- Backup vacuum switch
- In case of power failure at source, all remote alarm contacts open in alarm condition.

### Redundancy

- In unlikely event of display boards or displays becoming disabled, unit will function normally and activate alarm
- If master board is disabled, system goes to failsafe operation with backup pressure switch
- Each vacuum pump has independent board for control allowing unit to function independently

### Master Display Screen (5.7")

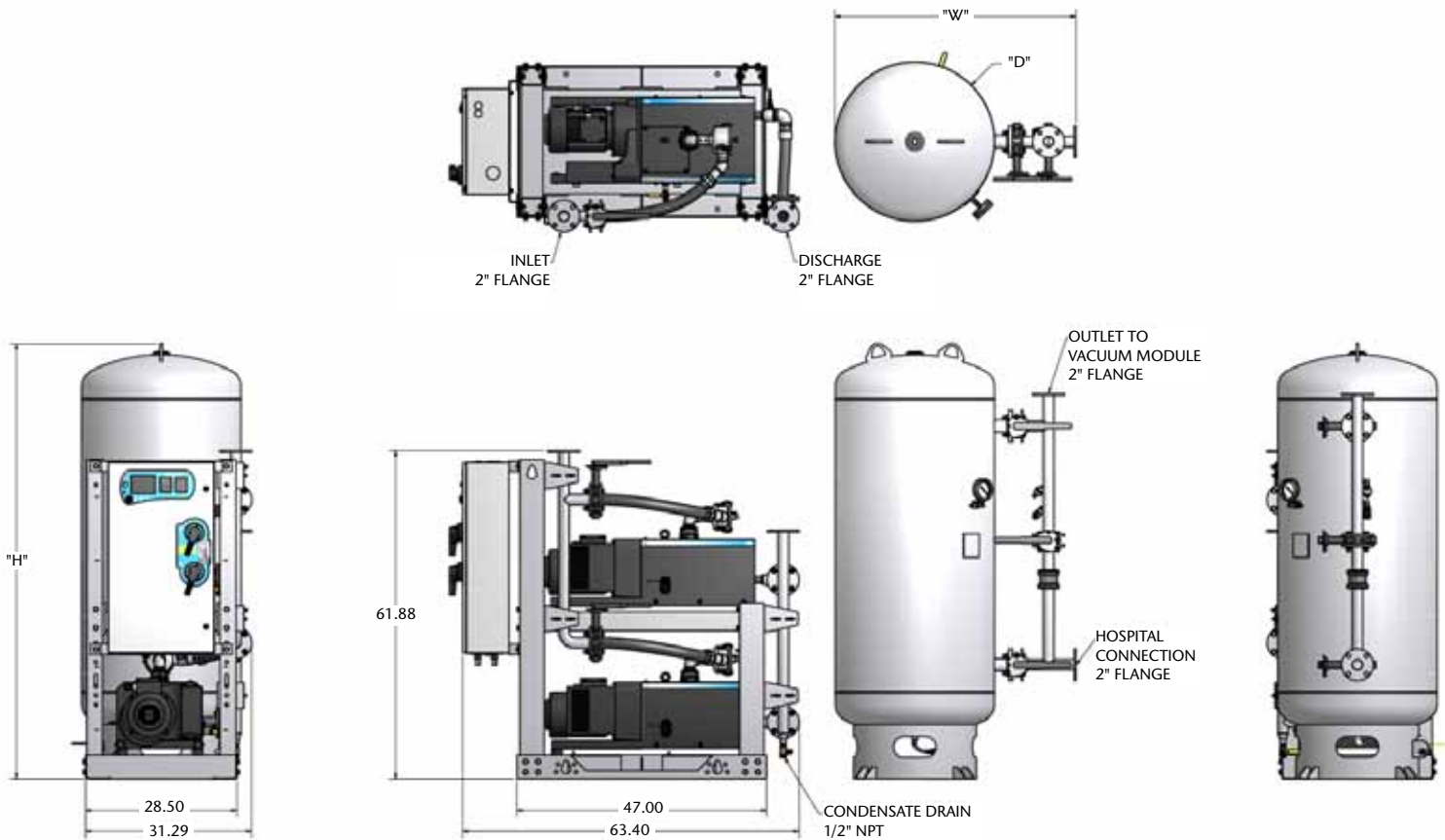
- Main Screen
  - » Displays the system operating conditions, including Vacuum level
  - » Displays the vacuum pump sequence, including status of all pumps (running, available, off) and next to start
- Trends & Graphs
  - » Shows measured values of the system operating conditions over a period of time (vacuum level, ambient temperature)
  - » Selectable time periods consist of 60 min, 4 hrs, 24 hrs, and 6 days
- Service
  - » Displays ambient temperature in the room
  - » Maintenance screen shows suggested and required maintenance items with resettable timers
  - » Historical event log records all service activities
- Alarms and Shutdowns
  - » All System Alarms and Shutdowns displayed with visual indication (Green or Red)
  - » Testing mode enables operator to test all alarm events (password protected)
  - » Event History Log records all system event history excluding service/maintenance history
- System Settings
  - » Allows the adjustment of system vacuum operating range (password protected)
  - » Displays pertinent system model information

### Unit Screens (3.5") - One per Vacuum Pump

- Main Screen shows the operation mode of the unit along with the automatic or manual mode setting
- Unit status screen displays the running hour meter values
- Pump rotation allows the unit to run for a short period to check pump rotation
- All Unit Alarms and Shutdowns displayed with visual indication (Green or Red)
- Audible indication for unit Shutdown Alarms
- Testing mode enables operator to test all shutdown events (password protected)

### Standard Configuration

5.4 Hp Duplex - 50 Hz



- Notes:**
- Discharge muffler ships loose
  - Allow 36 inches in front of control panel for maintenance and ventilation, all other sides require 24 inches of clearance.
  - Additional drawings/diagrams available for download at [www.beaconmedaes.com](http://www.beaconmedaes.com).

Vacuum System Specifications <sup>1</sup>												
System Model No.	HP	Capacity <sup>2</sup> @19" Hg (scfm)		System <sup>3</sup> BTU/HR	Receiver (gallons)	Noise <sup>4</sup> Level	System FLA 380V	System Weight (lbs.)		Dimensions (in.)		
		Pump	System					Vacuum Module <sup>5</sup>	Receiver Module	H	D	W
VHM05D-120V-D	5.4	32	32	10,994	120	79	18.6	1,380	393	78.9	24	40.4
VHM05D-200V-D	5.4	32	32	10,994	200	79	18.6	1,380	618	82.1	30	45.4
VHM05D-240V-D	5.4	32	32	10,994	240	79	18.6	1,380	693	94.1	30	45.4

- Notes:**
1. Normal operating conditions at a maximum ambient of 105° F. Consult factory for higher ambient conditions.
  2. All capacities are shown as NFPA system capacities (reserve vacuum pump on standby). All capacities reflect 50 Hz operation.
  3. All system BTU/HR are shown with reserve vacuum pump on standby.
  4. All noise levels are shown in dB(A) and reflect reserve pump on standby.
  5. Total weight for a duplex module with duplex control panel.
  6. Medical Vacuum System is not to be used in non-medical laboratory applications.