Lifeline® "Oil-Less" Claw Medical Vacuum Base Mount Single Point Connection (SPC) Pentaplex / Hexaplex System with Variable Speed Drive (15 Hp)

SPECIFICATION

Single Point Connection (SPC) System Design

The LifeLine® Oil-Less Claw Medical vacuum package is fully compliant with NFPA 99 and features a common base with single point connections for the electrical panel, intake, and discharge. Each pump and the receiver are connected to a common intake manifold. Each pump is connected to a common discharge manifold. The common base is separable for transport through standard 34.5" doorway. Designed and manufactured with ISO 13485 processes, each system is completely tested before shipment and includes:

- Five or six "oil-less" claw rotary vacuum pumps with five or six motors
- Integral pre-wired control panel with variable speed drive inverter
- 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 the following levels:

- 15 Hp at 24" Hg (sea level)

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

- 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, suitable for 230/460 or 208V, 60 hertz, 3-phase electrical service and 380V, 50 hertz, 3-phase electrical service.

HEPA Filter

A HEPA inlet air filter, 0.3 micron, 99.97% efficiency, is mounted before each vacuum pump. A clear, glass collection canister is mounted below each HEPA filter, with quarter turn valve to isolate canister from filter during service. The inlet filter canister contains a bleed valve to relieve vacuum before servicing.

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 is factory piped to an exhaust manifold with integral flex connector and drip leg with ball valve and condensate drain. Interconnecting piping consists of powdercoated steel tubing and flanges. An exhaust muffler is shipped loose.

TotalAlert Embedded Control System

The pentaplex or hexaplex 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
- Single variable speed drive inverter
- Circuit breaker disconnects for each motor with external operators
- Full voltage motor starters with overload protection
- 24V control circuit
- 65kAIC SCCR rating

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:

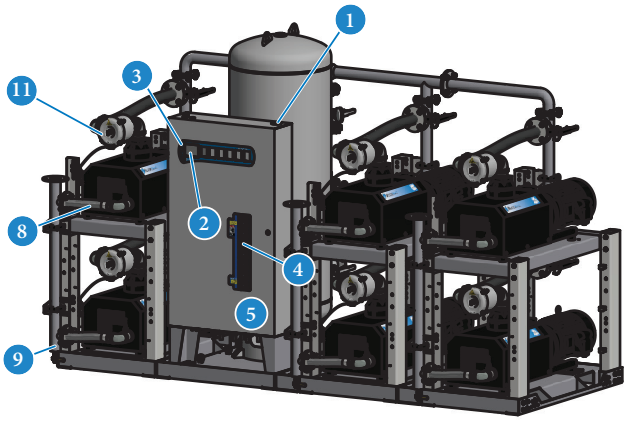
- Service alerts, runtime hourmeters for each pump, system status, system vacuum level
- Visual/audible alarm indications with isolated contacts for all standard remote alarms
- Event log recording alarms and system activity
- Event log recording service warnings and service history
- Trend graphs for vacuum level, pump operations, VSD motor speed, 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
- Optional BACnet communication with TCP/IP protocol

Installation

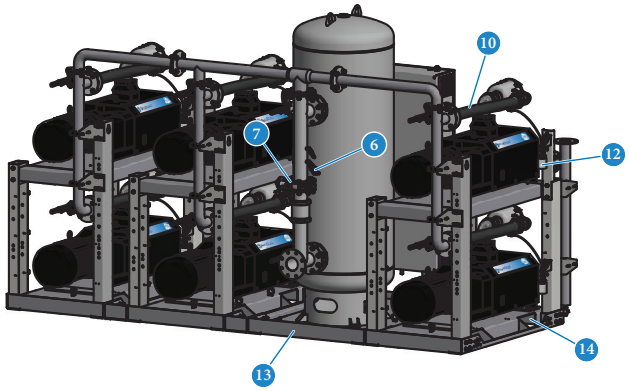
The installation of this vacuum technology is limited to 4,000 feet elevation above sea level. For installation of this equipment above this elevation, please contact the factory.

Standard Configuration

15 Hp Hexaplex

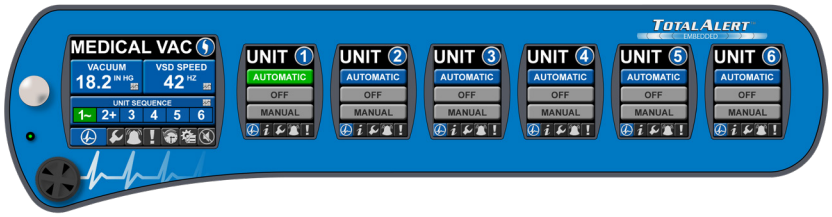


1. *Control panel pre-drilled for power, alarms, and Ethernet connections for easy electrical installation. Ethernet connection on panel top for easy installation.*
2. *TotalAlert Embedded touch screen controls featuring 5.7" master screen and 3.5" operating screens with exceptional clarity and visibility.*
3. *Motion sensor to activate touch screen displays, preserving screen life.*
4. *Through the door disconnects for pumps and VSD inverter add to safety during service.*
5. *Control cabinet components achieve rating of 65kAIC SCCR.*
6. *Vacuum switch as backup to vacuum transducer. In case of transducer failure, system operates effectively.*
7. *Full-size 3-valve receiver bypass with flanged valves reduce potential leak points over NPT fittings.*



8. *Discharge manifold with a single point connection to the exhaust piping, with flex hoses factory installed.*
9. *Factory installed exhaust drip leg with ball valve and condensate drain.*
10. *Flex connectors on vacuum inlet and discharge to isolate pump vibration from facility pipeline.*
11. *Individual HEPA air inlet filter per vacuum pump to prevent contaminants from entering vacuum pump, ensuring safety during servicing. Housing bleed valve to remove vacuum for filter replacement.*
12. *Glass collection canister mounted below HEPA filter, with isolation valve to allow for easy changeout.*
13. *Easy to disassemble for transport through doorways and reassemble as Single Point Connection for installation.*
14. *Openings in base frame to allow access underneath pumps for pump maintenance.*

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 TotalAlert2 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
- TCP/IP protocol for optional BACnet activation – part number 4107 5590 10

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.
- 65kAIC SCCR rating

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 and VSD motor speed
  - » 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, VSD/pump operation, ambient temperature)
  - » Selectable time periods consist of 60 min, 4 hrs, 24 hrs, and 6 days
- Service
  - » Displays ambient temperature in the room and within the control cabinet
  - » 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)

SPECFICATION TABLE

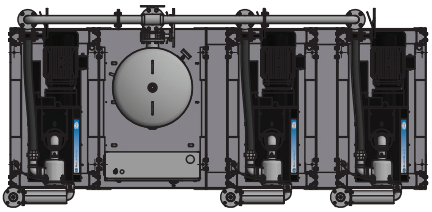
Vacuum System Specifications[1]										
System Model No.	HP	Capacity[2] @19" Hg (scfm)		System[3] BTU/Hr	Receiver (gallons)	Noise[4] Level	System FLA			System Weight (lbs)
		Pump	System				208V	230V	460V	
SPC Pentaplex - 60 Hz										
VHS15P-200V-P_V	15	128	512	122,160	200	94	206.0	178.2	89.6	7,114
VHS15P-240V-P_V	15	128	512	122,160	240	94	206.0	178.2	89.6	7,183
SPC Hexaplex - 60 Hz							**208V**	**230V**	**460V**	
VHS15H-200V-H_V	15	128	640	152,700	200	96	247.2	213.8	107.5	8,074
VHS15H-240V-H_V	15	128	640	152,700	240	96	247.2	213.8	107.5	8,128
SPC Pentaplex - 50 Hz							**380V**			
VHS15P-200V-PEV	15	107	428	122,160	200	94	75.0			7,114
VHS15P-240V-PEV	15	107	428	122,160	240	94	75.0			7,183
SPC Hexaplex - 50 Hz							**380V**			
VHS15H-200V-HEV	15	107	535	152,700	200	96	90.0			8,074
VHS15H-240V-HEV	15	107	535	152,700	240	96	90.0			8,128

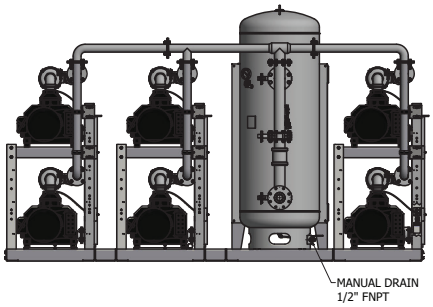
Specification Table Notes:

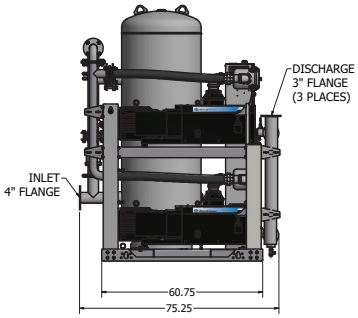
1. Normal operating conditions at a maximum ambient of 105^{O} F. Consult factory for higher ambient conditions.
2. All capacities are shown as NFPA 99 system capacities (reserve vacuum pump on standby).
3. All system BTU/HR are shown with reserve vacuum pump on standby.
4. All noise levels are shown in dB(A) and reflect reserve pump on standby.

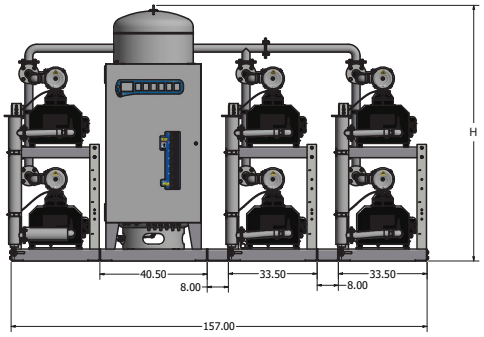
Standard Configuration

15 Hp Hexaplex









System Model No.	HP	Dimensions
		H (Height)
VHS15P-200V-P_V	15	84.39
VHS15P-240V-P_V	15	96.48
VHS15H-200V-H_V	15	84.48
VHS15H-240V-H_V	15	96.48

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.

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