



## **LifeLine® "Oil-Less" Medical Rotary Vacuum Tank Mount Duplex System (3 - 5 HP) with TotalAlert Embedded**

### **SPECIFICATION**

#### **Vacuum System Design**

The LifeLine® "Oil-Less" Rotary Vane Medical vacuum package is fully compliant with NFPA 99 and features single point connections for the electrical panel and intake. Each pump and the receiver are connected to a common intake manifold. The system is capable of access 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" rotary vane vacuum pumps with two motors
- Integral pre-wired control panel
- Horizontal air receiver with full-size three-valve bypass system sized for appropriate demand

#### **Vacuum Pump**

Each pump is a direct driven, oil-less rotary vane vacuum pump that operates completely dry. Each pump is completely air-cooled with no water requirements. Each pump contains:

- Self-lubricating carbon/graphite vanes
- Permanently lubricated and sealed bearings
- Inlet filter for removal of particulates
- Equipped with a vacuum relief valve, check valve to prevent backflow through off-cycle units, flexible connector, and isolation valve
- Mounting on vibration isolators

#### **Vacuum Pump Drive**

Each pump is direct driven. Torque is transmitted from the motor to the pump through a shaft coupling.

#### **Vacuum Pump Motor**

Motors are continuous duty, IEC rated, C-face mounted, TEFC, 1800 RPM, suitable for 230/460 or 208V, 60 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 galvanized pipe and fittings.

#### **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.

#### **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

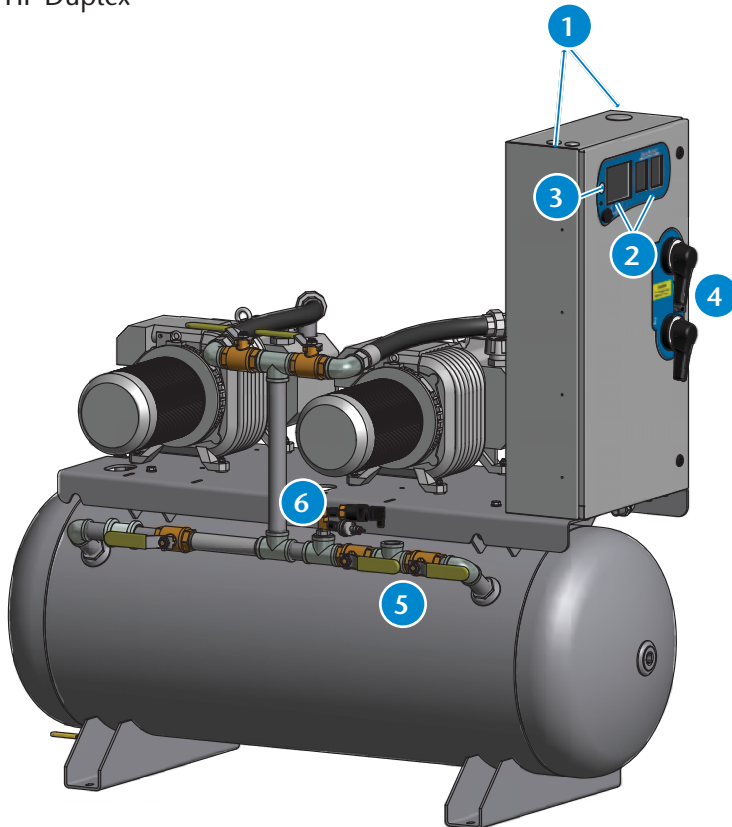
#### **Installation**

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



## Standard Configuration

5 HP Duplex



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

Through the door disconnects for pumps add to safety during service.

5

Full-size 3-valve receiver bypass allows for receiver service without taking the system off-line.

6

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

7

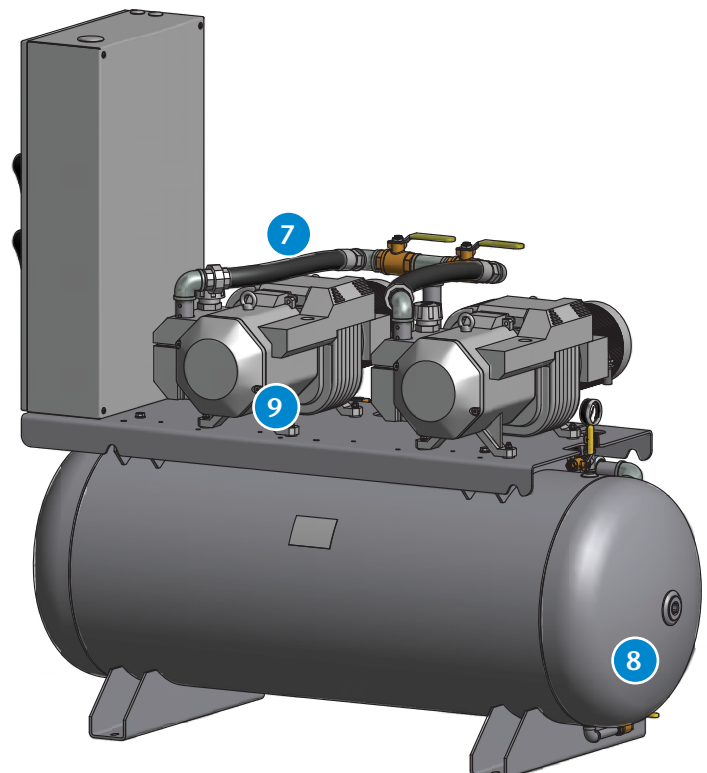
Flex connectors on vacuum inlet to isolate pump vibration from facility pipeline.

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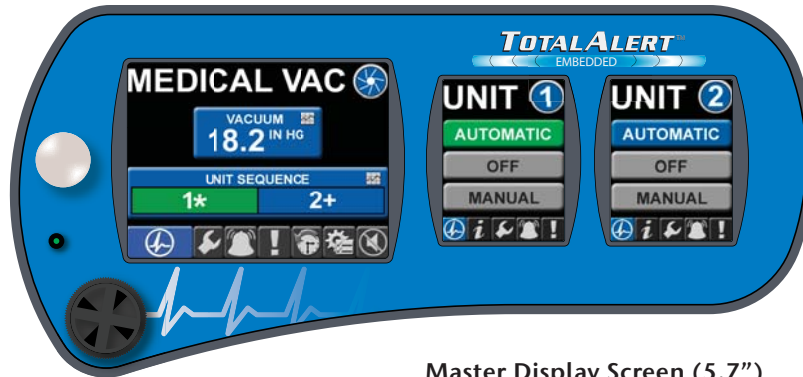
Small size enables ease of transport through doorways.

9

Ease of access to the pump for servicing vanes.



## 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")

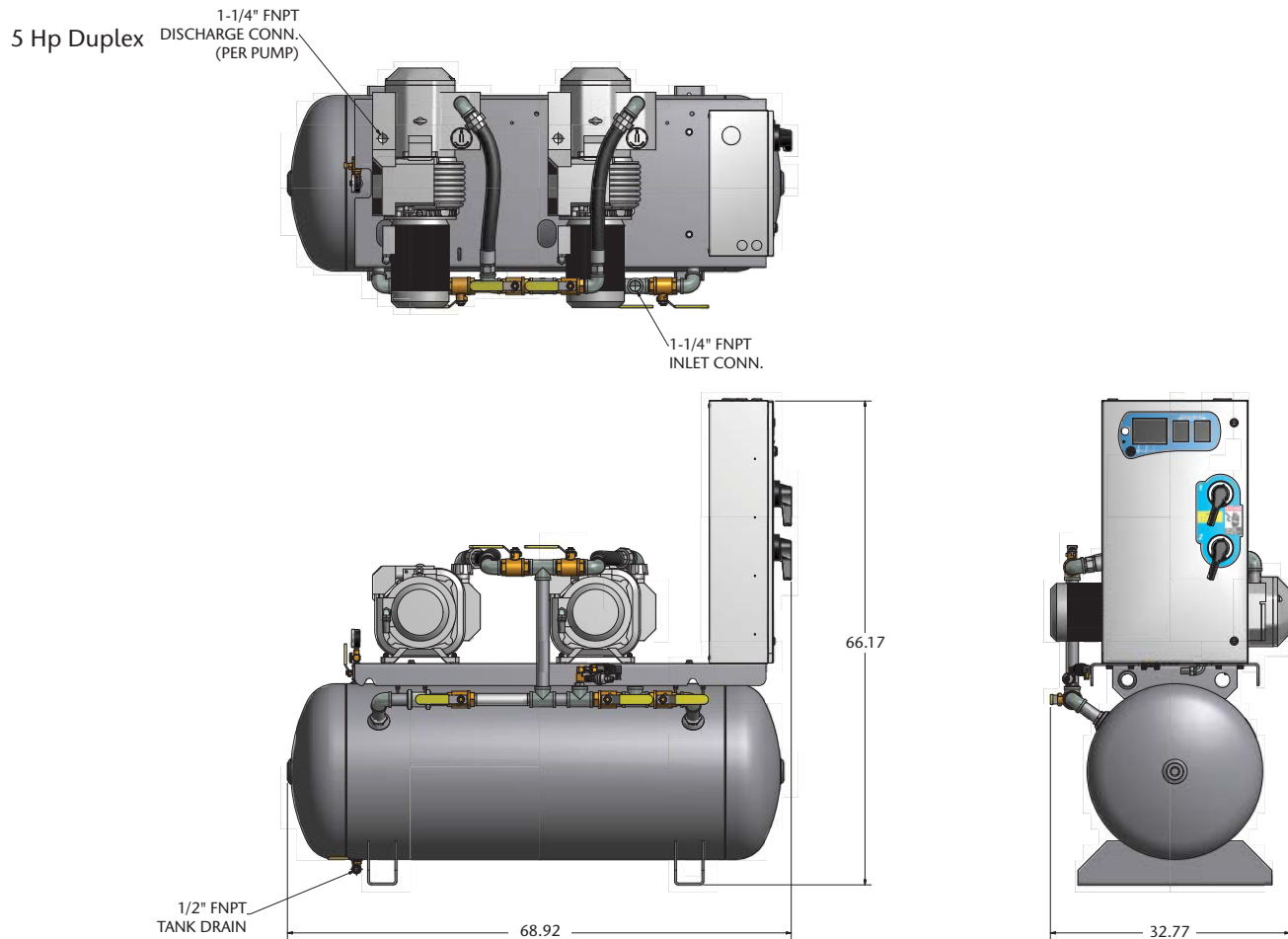
- Main Screen
  - » Displays the system operating conditions, including Vacuum level
  - » Displays the vacuum pump sequence, including status of all pumps (running, available, off) and next to start
- Trends & Graphs
  - » Shows measured values of the system operating conditions over a period of time (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



- Notes:**
- Allow 36 inches in front of control panel for maintenance and ventilation, all other sides require 24 inches of clearance.
  - Discharge flex hoses (2) ship loose.
  - 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 |      |      | System Weight (lbs.) |
|   |    | Pump                                 | System |                            |                    |                          | 208V       | 230V | 460V |                      |
| VDT03D-120H-D                             | 3  | 13                                   | 13     | 6,108                      | 120                | 70                       | 21         | 20.1 | 10.2 | 953                  |
| VDT05D-120H-D                             | 5  | 21                                   | 21     | 10,178                     | 120                | 76                       | 36         | 34.9 | 17.6 | 1,145                |

- 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).
  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.