DUPLEX 5 - 7.5
MOD BASE MOUNT

LifeLine® Lubricated Rotary Vane Medical Vacuum Modular Duplex System (5 - 7.5 HP), 50 Hz

SPECIFICATION

Modular System Design

The LifeLine® Lubricated Rotary Vane Medical vacuum package is fully compliant with NFPA 99. Each pump module has a common intake connection point and a common discharge connection point. The system modules are capable for transport through a standard 34.5" doorway. Designed and manufactured with ISO 13485 processes, each system is completely tested before shipment and includes:

- Two oil-sealed rotary vane 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, oil-sealed rotary vane vacuum pump, with an end (ultimate) vacuum of 29.3" Hg. Each pump is completely air-cooled with no water requirements. Each pump contains:

- Integral, fully recirculating oil supply to provide lubrication
- An automotive-type, spin-on oil filter for oil filtration
- High-discharge temperature switch
- Oil drain valve assembly with temperature gauge

The oil seperation system is integral and consists of the following:

- No less than three stages of internally installed oil and smoke eliminators through which the exhaust gas stream must pass
- Bulk separation, oil mist elimination, and smoke elimination
- Capability to remove 99.9+ percent of all oil and smoke particles from the exhaust gas stream

Each vacuum pump includes the following:

- Built-in, anti-suck-back valve mounted at the pump inlet
- Three non-metallic, non-asbestos vanes, each having a minimum life of 30,000 hours
- 5 micron inlet filter for removal of particulates
- Mounting on vibration isolators
- Flexible connector and isolation valve

Vacuum Pump Drive

The pump shall be direct driven. Torque is transmitted from the motor to the pump through a shaft coupling.

Vacuum Pump Motor

Motors are continuous duty, NEMA rated, C-face, foot-mounted, TEFC, 1800 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 is factory piped with an integral flex connector to an exhaust manifold with a drip leg and ball valve for condensate drain. Interconnecting piping consists of powder-coated steel tubing and flanges.

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:

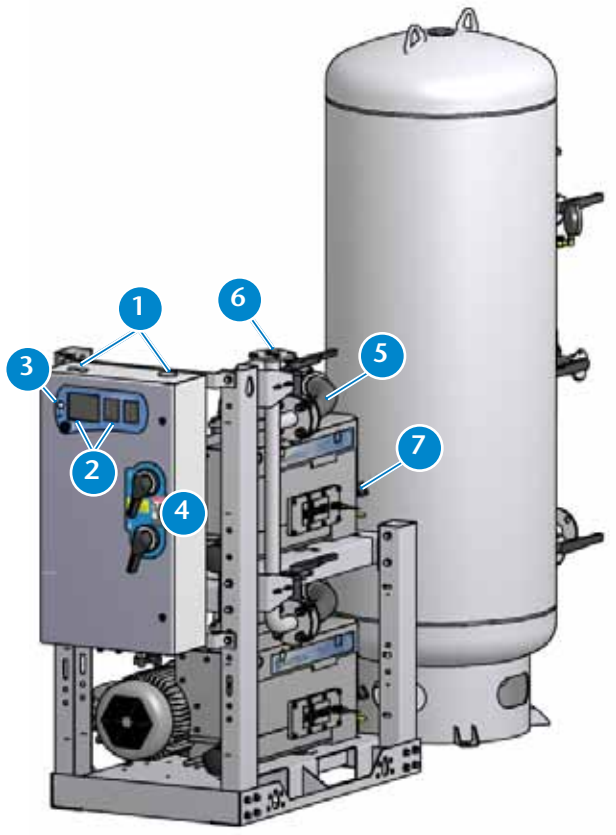
- NEMA 12 control panel enclosure
- Circuit breaker disconnects for each motor with external operators
- Full voltage motor starters with overload protection
- 24V control circuit

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

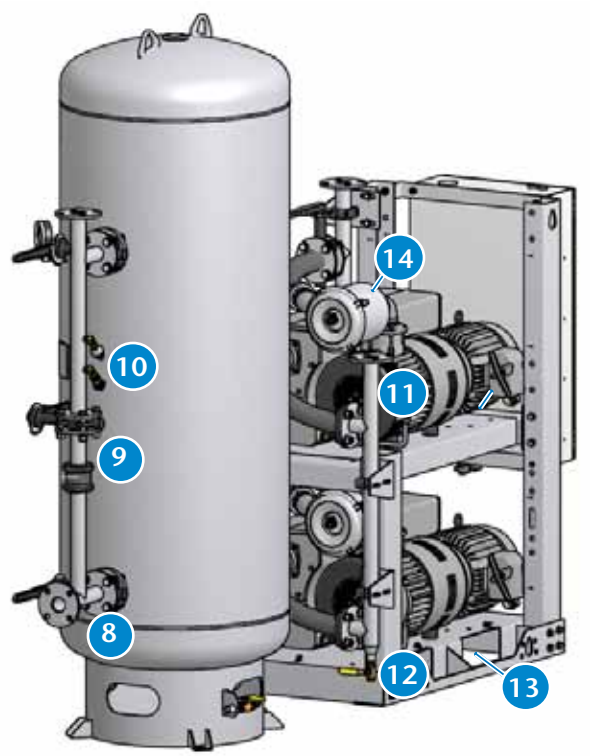
Standard Configuration

7.5 HP Duplex

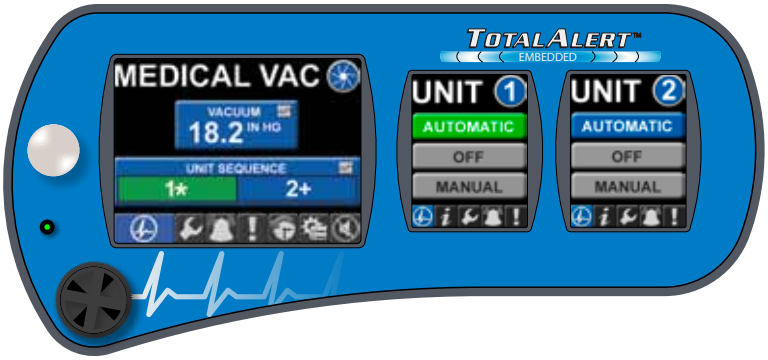


1. *Control panel pre-drilled for power, alarms, and Ethernet connections for easy electrical installation.*
2. *TotalAlert Embedded touch screen controls featuring 5.7" master screen and (2) 3.5" operating screens with exceptional clarity and visibility.*
3. *Motion sensor to activate touch screen displays, preserving screen life.*
4. *Through the door disconnects for pumps add to safety during service.*
5. *Flex connectors on vacuum inlet and discharge to isolate pump vibration from facility pipeline.*
6. *Flanges reduce piping connection time between modules.*
7. *Oil sight glass and filler plug with ease of access for oil changes.*

8. *Hospital connection and receiver inlet positioned below receiver exit and piping to the pumps - extra protection against liquids/debris entering pumps.*
9. *Full-size 3-valve receiver bypass with flanged valves reduce potential leak points over NPT fittings.*
10. *Vacuum switch as backup to vacuum transducer. In case of transducer failure, system operates effectively.*
11. *Discharge manifold with a single point connection to the exhaust piping, with flex hoses factory installed.*
12. *Factory installed exhaust drip leg with ball valve and condensate drain.*
13. *Openings in base frame to allow access underneath pumps for pump maintenance.*
14. *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 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

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")

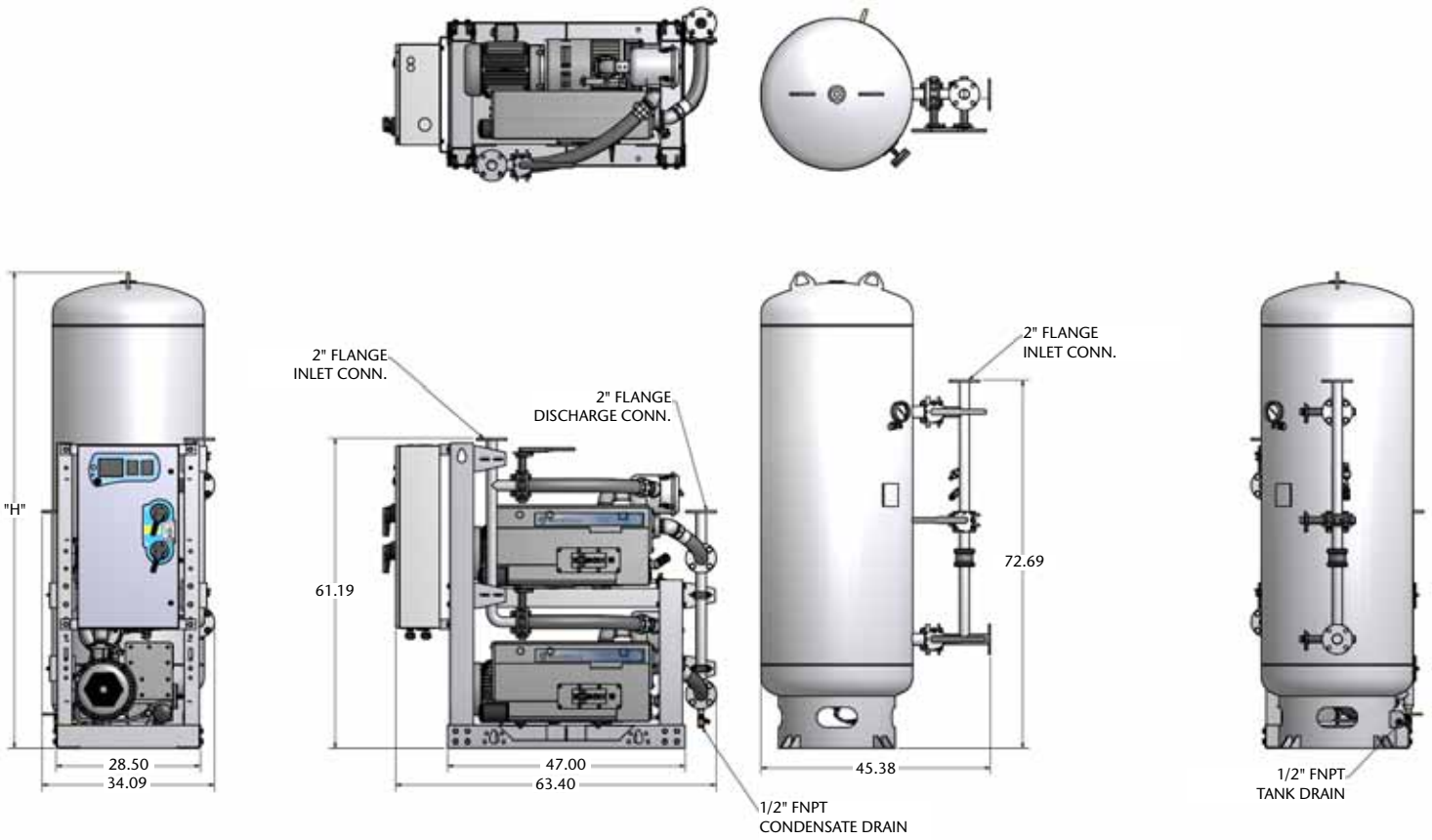
- Main Screen
  - » Displays the system operating conditions, including Vacuum level
  - » Displays the vacuum pump sequence, including status of all pumps (running, available, off) and next to start
- Trends & Graphs
  - » Shows measured values of the system operating conditions over a period of time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

7.5 Hp Duplex



Notes:
- 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.

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.)		Dimensions (in.)
		Pump	System				380V	Vacuum Module[5]	Receiver Module	H
VLM05D-120V-D	5	31	31	10,180	120	71	19.0	1,273	393	78.90
VLM05D-200V-D	5	31	31	10,180	200	71	19.0	1,273	618	82.10
VLM05D-240V-D	5	31	31	10,180	240	71	19.0	1,273	693	94.10
VLM07D-120V-D	7.5	43	43	15,270	120	79	27.0	1,419	393	78.90
VLM07D-200V-D	7.5	43	43	15,270	200	79	27.0	1,419	618	82.10
VLM07D-240V-D	7.5	43	43	15,270	240	79	27.0	1,419	693	94.10

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 a duplex control panel.
6. Medical Vacuum System is not to be used in non-medical laboratory applications.

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