

## Lubricated Rotary Screw Medical Vacuum Quadruplex Modular System with Variable Speed Drive (30 - 50 HP)

### SPECIFICATION

#### Modular System Design

The BeaconMedæS Rotary Screw Medical Vacuum package is fully compliant with NFPA 99. Each system includes:

- Four direct driven, oil-lubricated, single stage, air cooled rotary screw vacuum pump modules, fully enclosed, each with a variable speed drive
- Vertical air receiver module
- Master control module

#### Vacuum Pump

Each pump is a direct driven, oil lubricated, single-stage, variable speed, air cooled rotary screw pump with a maximum base pressure capability of 29.9" HgV and capable of continuous duty operation.

**Airend:** The compression profile is of an asymmetric profile design with four lobes on the male rotor and six lobes on the femal rotor.

- The male and female rotors are the same in diameter.
- The element housing is of cast iron construction.

**Drive Motor:** The vertical proprietary drive motor is totally enclosed, oil-cooled design and inverter duty rated. The motor meets NEMA Premium Efficiency rating and is 100% maintenance free.

**Motor/Airend Connection:** The drive arrangement is direct driven design, fully enclosed to protect against dirt and dust intrusion. The vertical drive arrangement does not include gear box reduction.

**Cooling System:** The vacuum package is fitted with an aluminum, air-cooled, oil cooler. The cooling system includes a temperature controlled axial fan.

**Inlet Air Filter:** The filter is a polyester cartridge type and is factory installed inside the vacuum enclosure.

- The filter has 99%+ removal efficiency standard to 5 micron.
- The service interval of the filter is at least 4,000 hours under normal operating conditions.

**Oil System:** The oil system includes an air/oil separator with oil level indicator.

- The service interval of the separator element is at least 4,000 hours under normal operating conditions.
- The oil filter is a spin-on type with an integrated bypass valve.
- The oil filter element has a 12 micron beta 75 rating and the service interval is at least 4,000 hours under normal operating conditions.
- The oil temperature is regulated by means of a thermostatic bypass valve, and oil circulation is achieved through differential pressure.
- The oil is synthetic and rated for a change interval of 8,000 hours under normal operating conditions.
- The oil separation system has a discharge oil carry over rating of less than 3 PPM across the entire operating range (1013 to .35 mbar).
- Oil separator design is of multiple vertical elements, easily replaceable by one person.
- Separator discharge includes a drip leg internal to the enclosure with drain piped to outside of enclosure.



#### Enclosure

The enclosure of each vacuum unit is a steel sound attenuating canopy with removable panels. The sound attenuating material is flame retardant polyurethane foam. The vacuum canopy has a hot-cold design, that isolates all heat producing components from all other components.

#### Vacuum Pump Controls

Each pump contains a control cubicle designed to NEMA 1 standards, with an EMC filter installed and a line reactor (choke) installed.

**Regulating and Control System:** Each unit has a regulating system which is of the variable-speed design, controlled by a vacuum inlet pressure sensor which senses the pressure variations at the vacuum inlet and adjusts the speed of the vacuum to maintain a stable inlet pressure.

- Full variable-speed drive regulation is combined with start/stop regulation to automatically stop the vacuum as required during low demand periods without idling.
- Variable speed drive regulation is capable of 83% turn down from atmospheric pressure to 0.5 mbar.
- Equipped with an onboard microprocessor controller which will control, monitor, and protect the operation and condition of the vacuum unit.
- Controller has a color touchscreen display.
- Controller automatically restarts the vacuum in the event of a voltage failure.
- Controller is capable of graphing any of the measured temperature or pressure inputs on the display, with an adjustable time frame from four minutes to ten days.



The control system monitors the following items:

- Discharge air pressure
- Element outlet temperature and ambient temperature
- Vacuum status
- Motor overload status
- Running hours, loaded hours, and regulated hours

Vacuum protective functions include:

- Emergency stop
- Element outlet temperature
- Service warnings
- Drive and cooling fan motor overload

### **Vacuum Receiver**

The vacuum receiver is ASME Code stamped, and rated for full vacuum. A manual drain and vacuum gauge are provided on the receiver.

### **Master Control System**

The NFPA Vacuum pump control panel is rated for 115V single phase electrical service. The control system controls multiple vacuum pumps and regulates the net pressure within programmable limits by starting and stopping or controlling the speed of the vacuum pumps.

- Automatic lead/lag sequencing and alternation
- Visual and audible reserve unit alarm with isolated contacts for remote alarm
- Automatic alternation of all vacuum pumps with provisions for simultaneous operation if required, automatic activation of reserve unit if required.
- Equalization of run hours for all vacuum pumps, with the start of the pump with the least hours first, and the stopping of the pump with the most hours first.
- Visual and audible alarm indication for high discharge air temperature shutdown with isolated contacts for remote alarm.

<b>Medical Vacuum Specifications<sup>1</sup></b>									
<b>System Model No.</b>	<b>HP</b>	<b>Capacity<sup>2</sup> @ 19" HgV</b>		<b>System BTU/HR Per Pump</b>	<b>Receiver (gallons)</b>	<b>Noise<sup>3</sup> Level (dBA)</b>	<b>Control FLA 120/1/60</b>	<b>Pump FLA (each) 460/3/60</b>	<b>Pump Module Weight<sup>4</sup> (lbs.)</b>
		<b>Pump</b>	<b>System</b>						
MSV030Q-400V-QCV	30	231	693	76,332	400	58-74	2	38.4	2,601
MSV040Q-400V-QCV	40	273	819	101,772	400	58-77	2	49.6	2,623
MSV050Q-400V-QCV	50	309	927	127,222	400	58-78	2	61.6	2,645

Notes:

1. Normal operating conditions at a maximum ambient of 105°F. Consult factory for higher ambient conditions.
2. All capacities are shown as pump capacities, not system capacities.
3. All noise levels are shown in dB(A) and reflect one vacuum pump running.
4. Module weight represents one vacuum pump.

<b>Medical Vacuum System Components</b>					
<b>System Model No.</b>	<b>Vacuum Pump</b>	<b>Receiver</b>	<b>Central Control</b>	<b>Ship Loose Accessory</b>	<b>Accessory Contents</b>
MSV030Q-400V-QCV	(4) MSV030	(1) 400g	(1) Central Controller	(1) Quadruplex Accessory	(4) 6" Flange Flex Hoses (4) 4" MPT Flex Hoses (4) 5" Flange/4" NPT (7) 6" Butterfly Valves (1) Vacuum Gauge
MSV040Q-400V-QCV	(4) MSV040	(1) 400g	(1) Central Controller	(1) Quadruplex Accessory	
MSV050Q-400V-QCV	(4) MSV050	(1) 400g	(1) Central Controller	(1) Quadruplex Accessory	

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