



## Medical Vacuum Systems Product Selection Guide



Non-contacting Dry Claw...

Dry Rotary Vane...

Lubricated Rotary Vane...

# Medical Vacuum System Design

## General Description

The Powerex medical vacuum system is fully compliant with the latest edition of NFPA99 and includes multiple vacuum pumps, ASME receiver, and control panel. Single point connections are provided for system intake and electrical. All interconnecting piping and wiring is included and operationally tested prior to shipment. Vibration isolation pads and flex connectors are included with the system. Powerex manufactures all systems in ISO9001 UL certified facilities to ensure the highest quality. Systems are available in three configuration types: Modular skid mount, Vertical tank mount, and Horizontal tank mount.



**Modular Skid Mount Configuration**

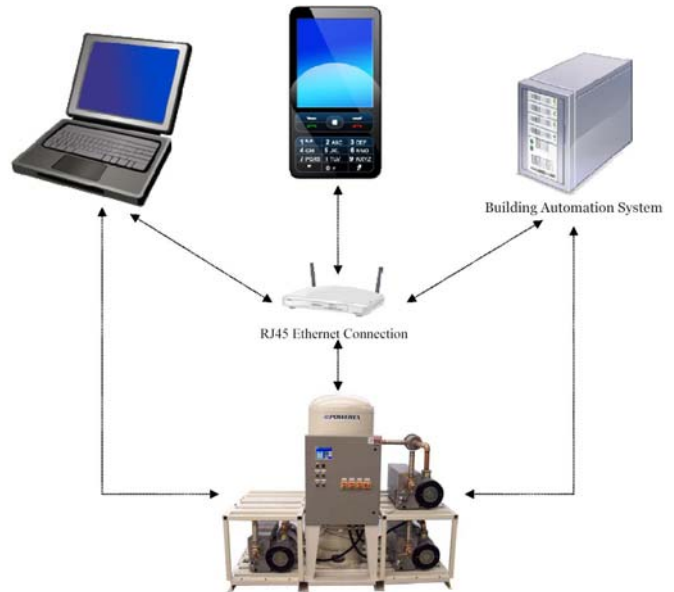
## Control Panel Standard Features:

The control panel is fully compliant with the latest edition of NFPA99 and is UL508A listed and labeled. The panel is provided in a NEMA 12 enclosure with a main power on light, timed automatic lead/lag pump alternation, reserve pump in-use alarm with visual and audible indicators, and redundant control circuit transformers. Each pump is provided with an externally operable motor circuit breaker, Hand/Off/Auto selector switch, minimum run timer (to prevent short cycling of the pump), run hour meter, and run light. Dry contacts are provided on a labeled terminal strip for remote alarm monitoring. Horn silence and lamp test pushbuttons are standard. The lag vacuum pump(s) will start automatically if the lead vacuum pump fails to operate.



**Horizontal Tank Mount Configuration**

## Powerex Building Management Integrator (PBMI)



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Our state of the art human machine interface (HMI) touch screen panel provides hospital personnel with vital system information at the touch of a button. A built-in webpage with email notification ensures that staff can always be in touch with the medical system's information and alerts. PBMI utilizes BacNet® protocol for the communication gateway to the building automation system which can support hundreds of pre-configured, labeled, and listed individual data points.



**Vertical Tank Mount Configuration**

## Receiver

The system shall include an ASME stamped receiver rated for full vacuum. The tank shall be equipped with a vacuum gauge, block and by-pass valves, and a manual drain valve.

## Oil-less Rotary Vane Technology

Oil-less rotary vane pumps are a cost effective solution for applications where oil in the pumping chamber or oil mist in the exhaust may not be desirable. This simple design requires less routine maintenance than an oil flooded type pump, but does require periodic vane replacement. This pump type is suitable for use in dedicated waste anesthesia gas disposal systems.

Model	SCFM @ 19" Hg	HP Each	Tank	L	W	H
Duplex tank mounted horizontal						
VOTD0404	15.4	5	120	76"	29"	59"
VOTD0504	22.1	5	120	76"	34"	60"
VOTD0755	30.4	7.5	200	85"	38"	66"
VOTD1006	55	10	240	90"	48"	72"
Duplex tank mounted vertical						
VVOTD0153	5.3	1.5	80	28"	40"	71"
VVOTD0203	8.2	2	80	28"	40"	71"
VVOTD0303	12.5	3	80	34"	42"	80"
VVOTD0404	15.4	5	120	52"	43"	82"
VVOTD0504	22.1	5	120	53"	44"	84"

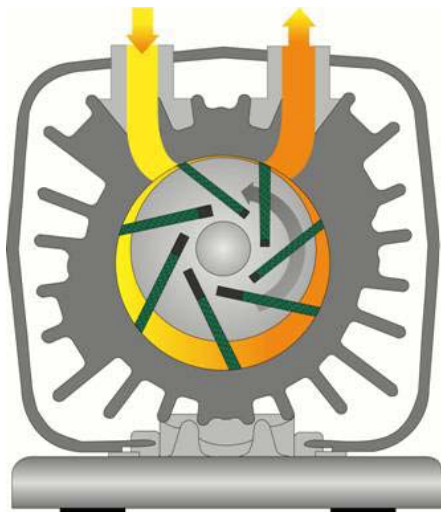
Model	SCFM @ 19" Hg	HP Each	Tank	L	W	H
Duplex modular skid mount						
VOPD0403	15.4	5	80	64"	55"	60"
VOPD0503	22.1	5	80	64"	55"	61"
VOPD0754	30.4	7.5	120	64"	55"	76"
VOPD1004	55	10	120	64"	55"	76"
Triplex modular skid mount						
VOPT0503	44.2	5	80	64"	55"	88"
VOPT0754	60.8	7.5	120	64"	55"	88"
VOPT1004	110	10	120	96"	55"	75"
Quadplex modular skid mount						
VOPQ0505	66.3	5	200	96"	55"	83"
VOPQ0755	91.2	7.5	200	96"	55"	83"
VOPQ1005	165	10	200	96"	55"	83"

### Available Options:

- PBMI
- High temperature alarm
- Internal tank lining
- Tank sight gauge

### How it works:

A rotor is mounted eccentrically in the pump cylinder and contains several sliding vanes. As the rotor turns, centrifugal force causes the vanes to slide outward creating a seal against the cylinder wall. The vanes are constructed of a self-lubricating graphite composite material which allows them to operate against the cylinder wall without the need for any other sealing or lubricating fluid. As a result of the offset rotor, a succession of variable volumes are formed in the cylinder housing creating the flow of vapor through the pump. Vapor is pulled into the pump inlet which is then compressed and discharged through the exhaust to atmosphere.



#### Pros:

- Suitable for dedicated waste anesthesia (WAGD) systems
- No water and sewage costs
- Less routine maintenance (no oil changes)
- Lower initial cost compared to other dry pump designs

#### Cons:

- Short vane life
- Cannot ingest liquids
- Lower ultimate vacuum levels than some other types
- Lower efficiency than some other technologies

## WHY POWEREX?

Powerex is a highly integrated operation where we not only assemble systems but we also manufacture many of the major components. From pumps, UL control panels, desiccant dryers, and monitors, to air receivers, we control quality at every stage of design and manufacturing. All of our facilities are ISO 9001 certified.

Powerex combines design, performance, quality, and service to fulfill its commitment to its customers to provide the best value in compressed air and vacuum systems.

Powerex has an extensive network of trained sales and service dealers — over 220 authorized service centers throughout the USA and Canada.

Powerex ensures complete NFPA99 compliance. We have been building medical systems since 1988 and assume all liability for NFPA99 compliance.

## **ACCESSORIES AND OPTIONS**

- **Powerex Building Management Integrator (PBMI)**
- Receiver sizes 20— 600 Gallon
- Corrosion resistant tank lining
- Exhaust silencers
- Synthetic oil
- High temperature alarm
- Oil temperature gauges
- Laboratory system packaging
- Auto purge systems for laboratories
- Activated carbon filters
- Bacterial filters
- Knock out separators
- Variable frequency drive (claw only)



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