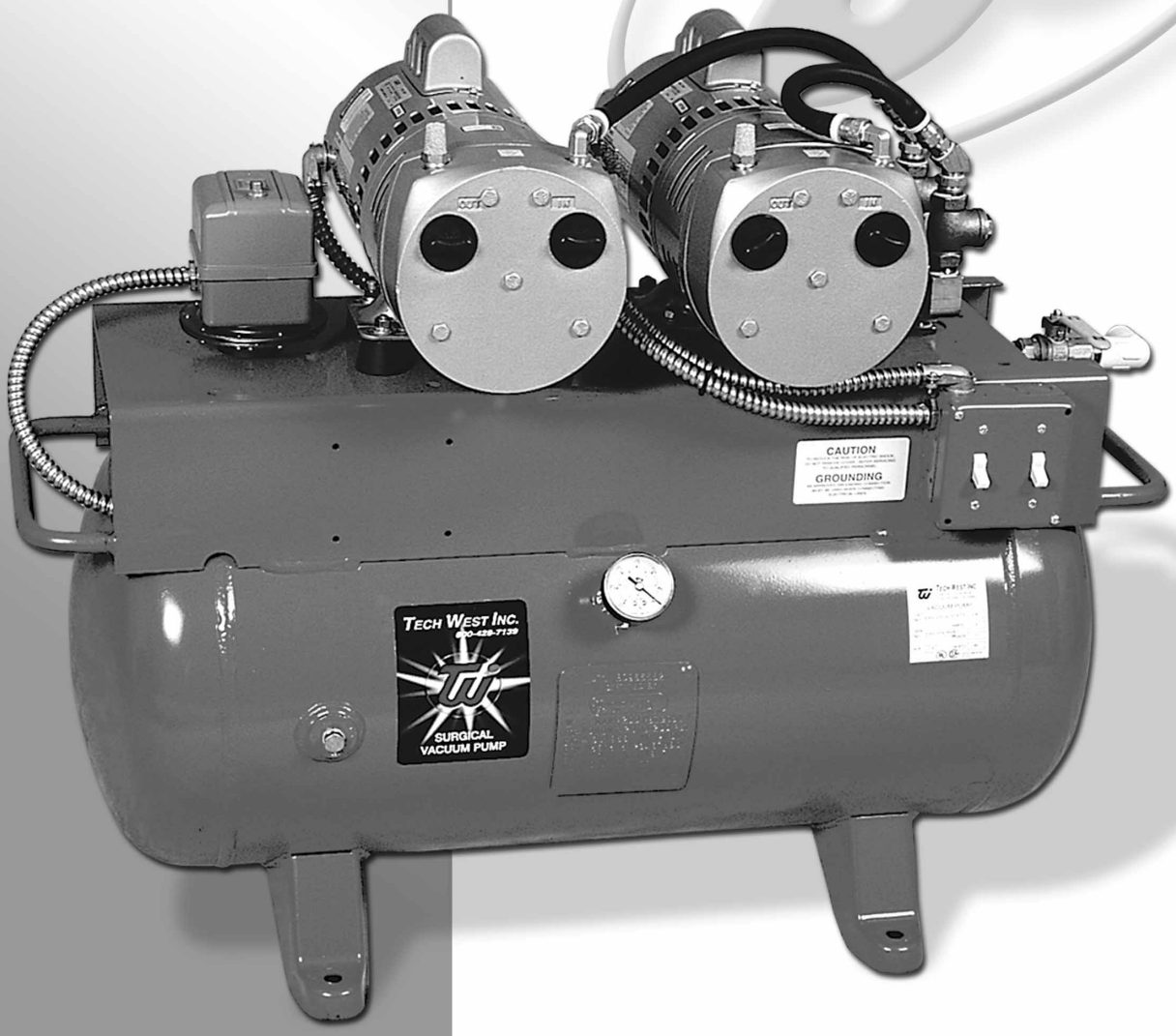
ULTRA CLEAN SURGICAL VACUUM



INSTALLATION AND SERVICE MANUAL

Revised 8-08

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ULTRA CLEAN SURGICAL VACUUM

INSTALLATION AND SERVICE MANUAL

This manual is for the installation and service of Tech West's Ultra Clean Surgical Vacuum.

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INSTALLATION

1. SURGICAL VACUUM LOCATION REQUIREMENTS

The Ultra Clean Surgical Vacuum location should be level, accessible and well ventilated.

If the Ultra Clean Surgical Vacuum will be located in a confined space, provide adequate ventilation.

Electrical

(1) Line voltage must be within the limits of Figure 1 below. (Install a “buck-boost transformer” if line voltage is not between these values.) Provide a separate line for each motor. Circuit breaker switches must be 20 - 30 amp depending on model and voltage necessary.

(2) Local code may require you to provide one quick disconnect (safety switch) for each compressor motor.

(3) See Figure 1 below for breaker size and line voltage.

CAUTION - Voltage must be 208/230 V or motor damage may occur.

(4) The electric motors have been designed to operate within a +/- 10% range from the rated nameplate voltage. Insure that the electric power source is the same as shown on motor name plate. Single phase motors are equipped with automatic reset type thermal protectors.

Figure 1: Recommended Wire and Breaker Size

Model	Voltage	Amperage	Wire Size (Gauge)	Recommended Breaker Size
Dual Head Compressors				
DSV-075-20	208/230	14.4	12	20
Triple Head Compressors				
DSV-075-30	208/230	21.6	10	30

ULTRA CLEAN SURGICAL VACUUM
INSTALLATION

2. INSTALLATION STEPS

This dental vacuum should only be installed by qualified personnel. Should any questions arise during the installation, call Tech West Technical Support between the hours of 7:00 a.m. to 4:00 p.m. (Pacific Standard Time).

Place the vacuum in a clean, dry, well ventilated area, on a solid, level surface. Consider sound level and insulate as needed. Be sure that adequate ventilation is available as the vacuum is air cooled. Ambient temperature in the equipment room should be within the temperature range of 40 degrees Fahrenheit minimum to 100 degrees Fahrenheit maximum.

(a) Check the shipping carton for damage. This could detect damage to the unit which might otherwise be overlooked. Remove cardboard shipping carton.

(b) Remove the Surgical Vacuum from its shipping skid. Inspect the unit for damage. Oilless vacuums are shipped bolted to a pallet. This pallet is intended for shipping only and should be discarded.

(c) Remove installation kit attached to pallet. It should contain the following:

(4) Isolation Feet
(1) 5’ Flexible Air Hose

(d) Install isolation feet on tank legs.

(e) Move vacuum into place and level by observing bubble level on compressor platform.

(f) Wiring instructions:

(1) Have all electrical connections made by qualified personnel only. All connections should be in accordance with local codes.

(2) Use the chart on page 1 to help determine the proper line and breaker size for the unit that is being installed.

(g) Install the vacuum line from the vacuum tank to the building supply.

(h) Install the 1” flex alternate air hose from the vacuum motors to a fresh air supply if required by local code.

ULTRA CLEAN SURGICAL VACUUM
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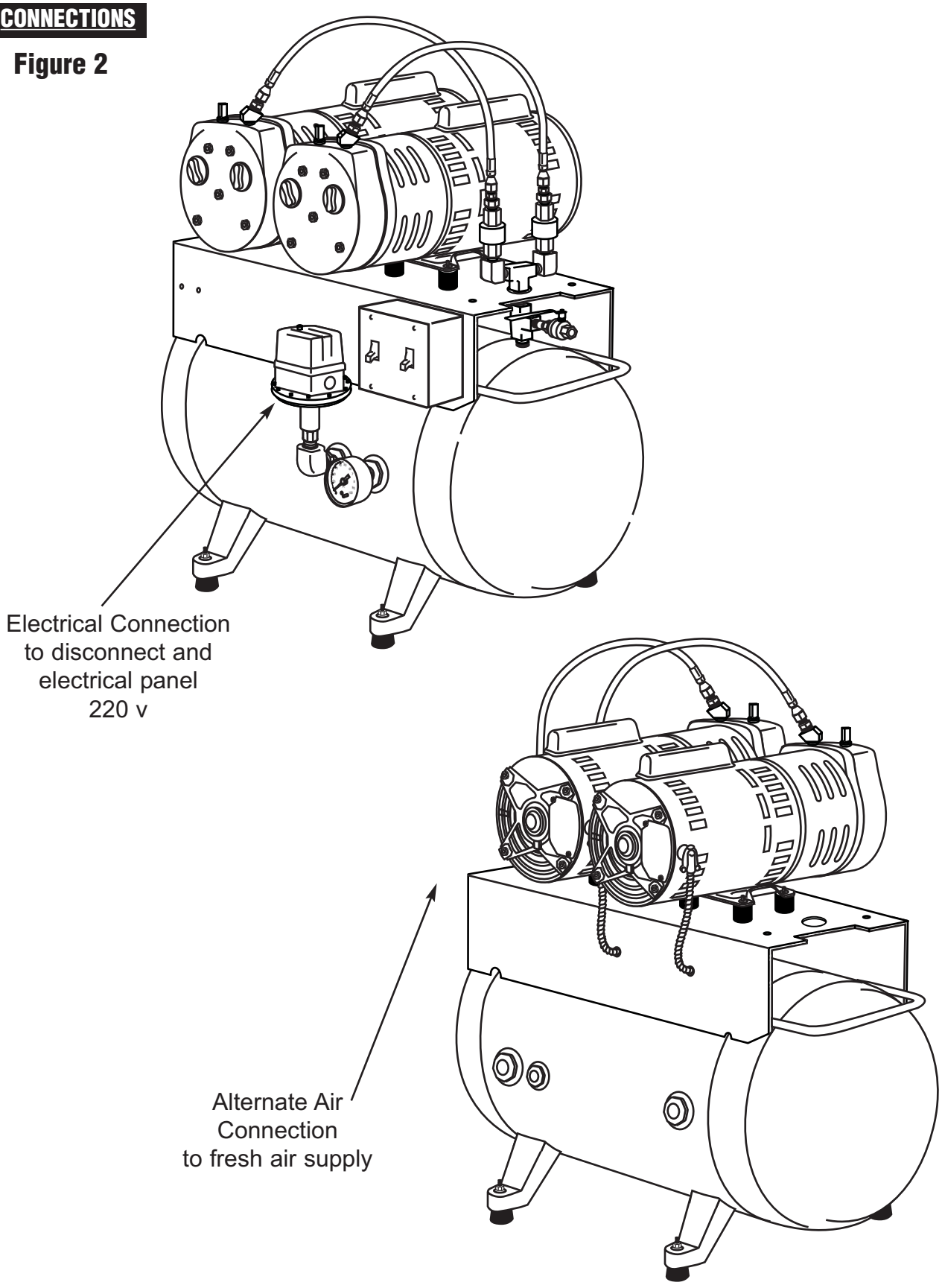
3. CONNECTIONS

Figure 2



ULTRA CLEAN SURGICAL VACUUM
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4. SAFETY PRECAUTIONS

- Keep fingers, foreign objects and clothing free from rotating parts and do not touch hot surfaces.
- Never attempt to service an operating unit.
- Isolate unit from building system before servicing.
- Disconnect all power before servicing. The thermal protector in single phase motors automatically starts motor when device resets.

USE OF THIS PRODUCT IN OR NEAR EXPLOSIVE ATMOSPHERES, OR FOR PUMPING MIXTURES OTHER THAN ATMOSPHERIC AIR MAY CAUSE AN EXPLOSION OR FIRE, RESULTING IN PERSONAL INJURY OR DEATH.

5. START-UP STEPS

(a) Make sure the shut-off valve from the vacuum tank is closed.

(b) Turn the breaker from the panel to the “ON” position.

(c) Turn power “ON” from the toggle switch on the vacuum. The vacuum unit should run quietly and vibration free. The storage tank should start to build vacuum.

(d) The vacuum will run until the pressure gauge reads 22” hg. The vacuum then will automatically shut off.

(e) Using soapy water, check the vacuum plumbing hook ups for leaks. Repair leaks if needed.

(f) Pressure test the entire plumbing system for leaks. Use the storage tank pressure gauge to monitor a pressure drop. After the plumbing system has been pressurized for 30 minutes, re-check the gauge for pressure drop. If there is a drop in pressure, find and repair all leaks in the office plumbing.

(g) If motor fails to start or slows down significantly under a load, shut off and add a disconnect from power supply. Check that the voltage is correct for the motor and that the motor is turning in the proper direction. Vane life will be drastically reduced if the motor is not operating properly. Vanes can break or be damaged if the motor/pump runs in the wrong direction.

(h) **Caution: Do Not Lubricate.** This product uses grease-packed bearings and does not require additional lubrication. Adding greae or petroleum products to this unit will reduce performance and can potentially damage the product. Do not allow moisture, liquid or contaminants to enter the pump.

(I) Complete and mail in the warranty card for the Surgical Vacuum within ten days of installation.

AIR LEAKS ARE THE MAIN CAUSE OF SYSTEM FAILURES.

ULTRA CLEAN SURGICAL VACUUM
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6. GENERAL MAINTENANCE

Check intake and exhaust filter after 500 hours of operation. Clean filters and determine how frequently filters should be checked during future operation. This proceedure will help to assure product performance and maximize service life.

(a) Remove the end cap and filters. Inspect the filters for rips, tears, cuts, brittleness and excessive foreign materials.

(b) If the filters are in good condition, clean with compressor air. Reinspect for wear and general overall condition.

(c) Check the condition of the O-ring on the internal filter. It should be soft and flexible. Replace if it shows signs of age.

(d) Re-install the original filters of new filters if necessary. Replace the end cap finger tight.

7. PERIODIC SERVICING

Vane Replacement:

(a) Disconnect electrical power to motor.

(b) Remove filters.

(c) Remove the five (5) screws and sound cover chamber. Use a small hammer to tap on the sound chamber . Do not use a screwdriver to pry.

(d) Remove the six (6) end plate bolts.

(e) Remove the end plate. Check direction of the beveled edges on the vanes then remove.

(f) Clean the body and rotor slots with compressor air.

(g) Check the end plate, rotor, and body for scoring and wear.

(h) Insert the new vanes, insuring that the beveled edges are facing the correct direction.

(i) Replace the end plate.

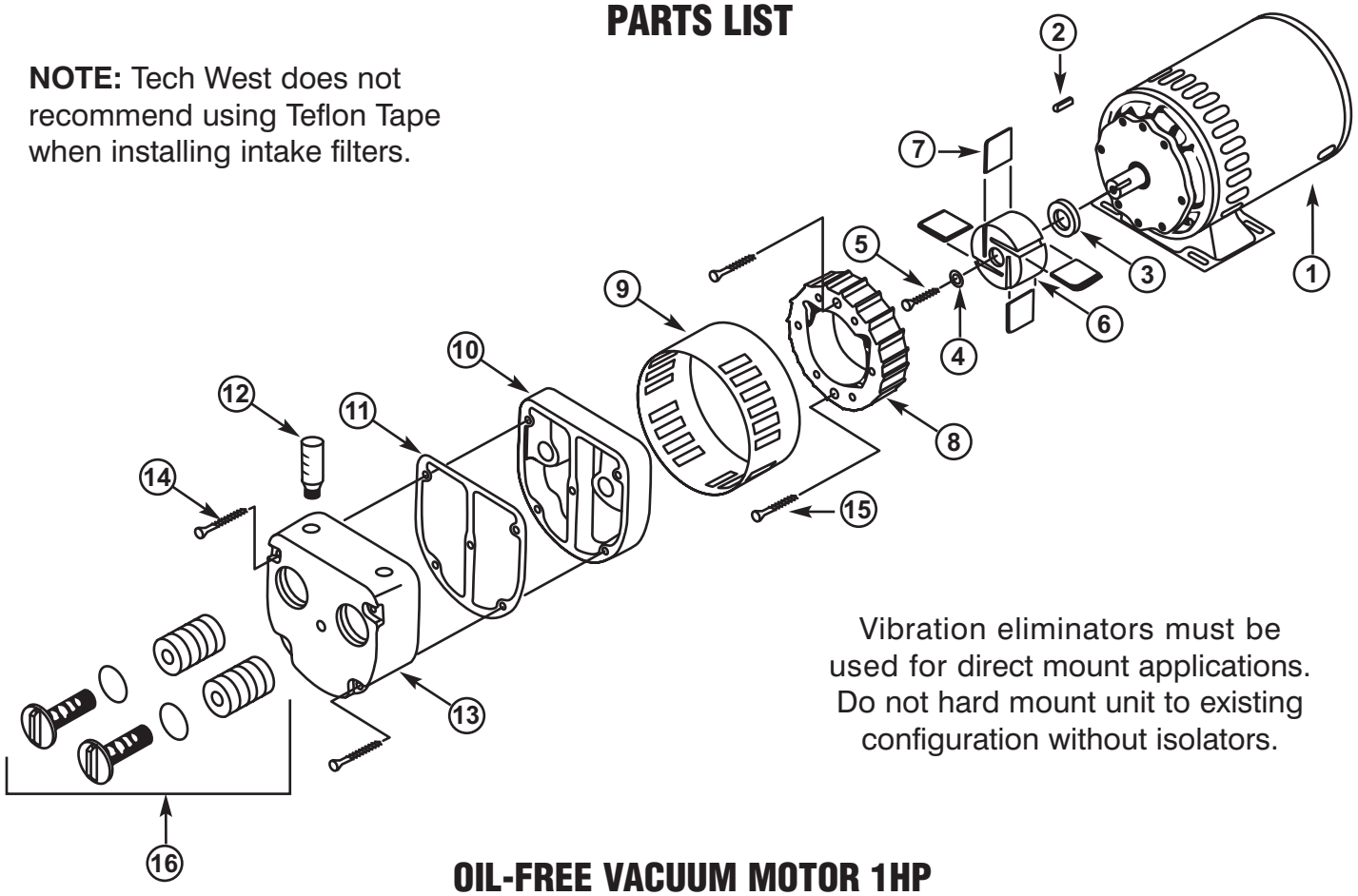
(j) Check the sound chamber gasket for damage.

(k) Re-install the sound chamber and filters.

ULTRA CLEAN SURGICAL VACUUM

PARTS LIST

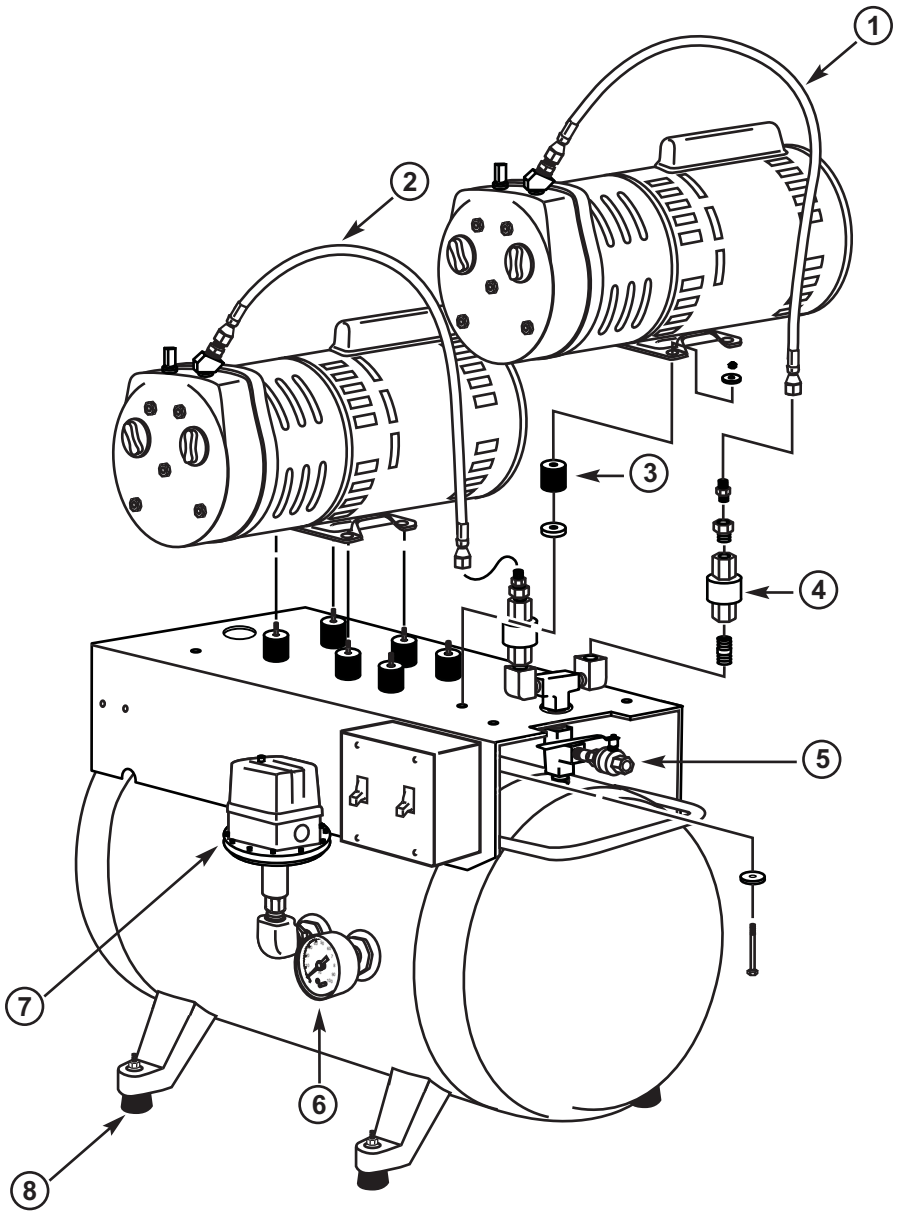
NOTE: Tech West does not recommend using Teflon Tape when installing intake filters.



Vibration eliminators must be used for direct mount applications. Do not hard mount unit to existing configuration without isolators.

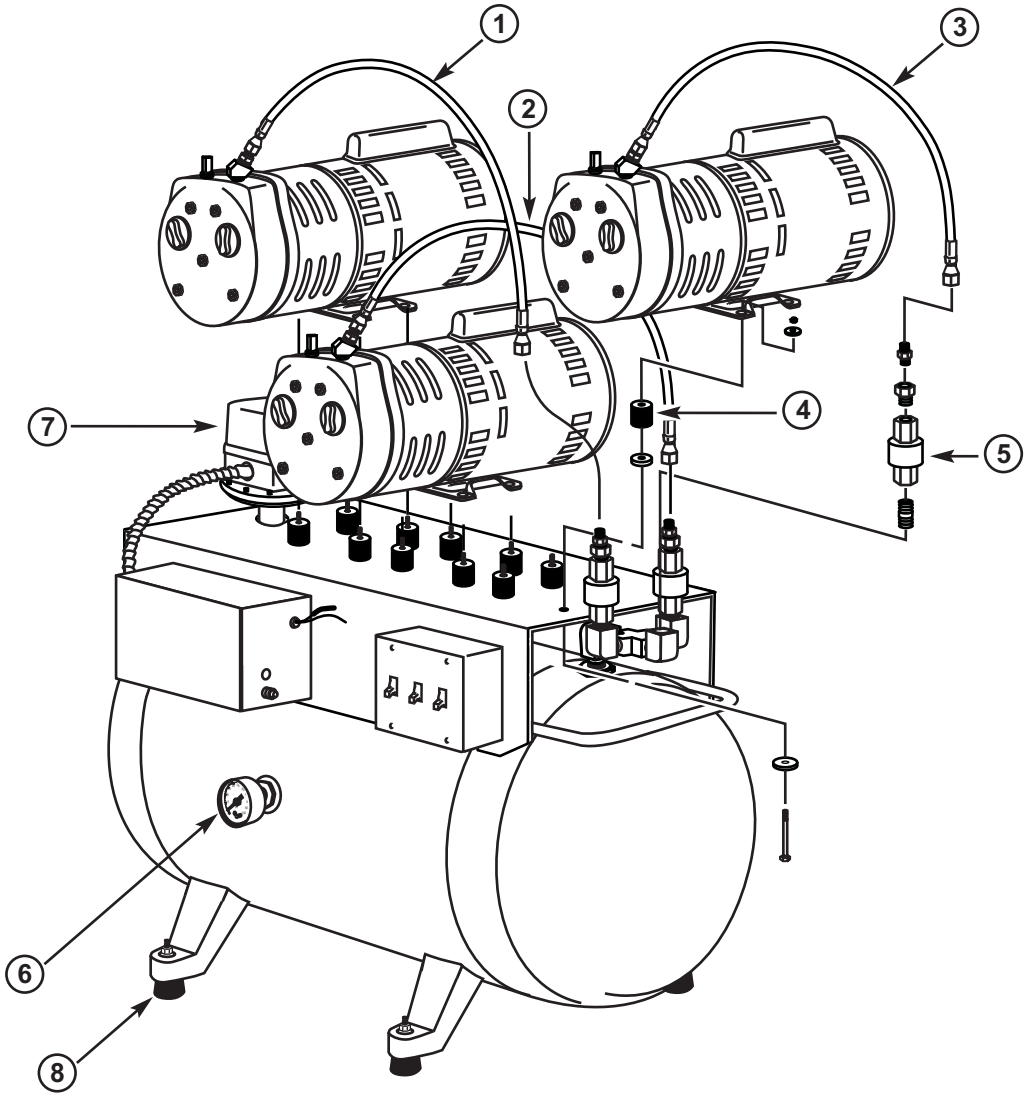
OIL-FREE VACUUM MOTOR 1HP

KEY	PART NO.	DESCRIPTION	UNIT
1		MOTOR ASSEMBLY	1
2		SHAFT KEY	1
3		VANE ASSEMBLY SPACER	1
4		VANE ASSEMBLY WASHER	1
5		VANE ASSEMBLY SCREW 1/4 - 28 X 3/4” LG	
6		VANE ROTOR	1
7		VANE KIT	4
8		CYLINDER	1
9		CYLINDER SHROUD	1
10		END PLATE	1
11		SOUND CHAMBER TO END PLATE GASKET	1
12	AS-375	SILENCER	1
13		SOUND CHAMBER	1
14		SOUND CHAMBER TO END PLATE SCREW 1/4 - 20 X 2 1/4” LG	
15		CYLINDER TO MOTOR SCREW 1/4 - 20 X 2: LG	
16	GAF-100	FILTER KIT (10 FELT ELEMENTS, (2) O-RINGS, (2) FILTER INSERTS)	2



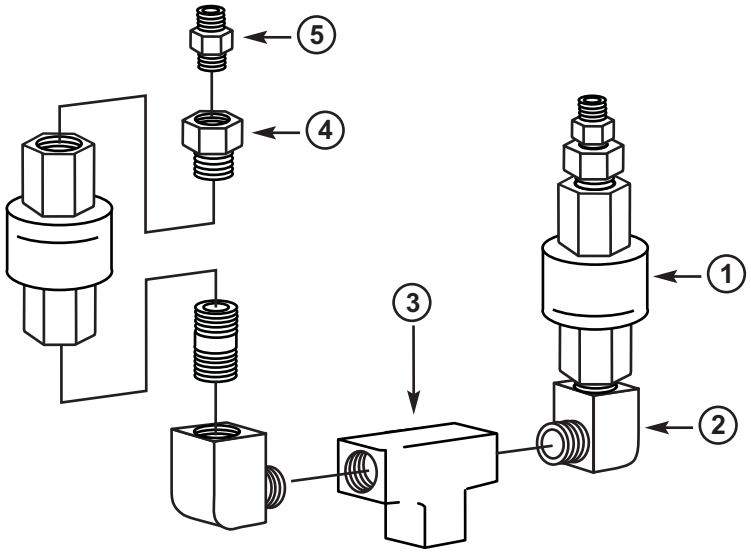
DUAL ULTRA CLEAN SURGICAL VACUUM

KEY	PART NO.	DESCRIPTION	UNIT
1	SBHA-14-375	STEEL BRAID HOSE ASSEMBLY 3/8 X 14	1
2	SBHA-18-375	STEEL BRAID HOSE ASSEMBLY 3/8 X 18	1
3	RIC-GAST	RUBBER MOTOR MOUNT	8
4	CV-500	1/2” CHECK VALVE	2
5	BV-250	1/4 BALL VALVE	1
6	PMG-VAC	VACUUM GAUGE	1
7	PSC-DV	VACUUM PRESSURE SWITCH	1
8	REV-100	RUBBER MOUNTING FOOT	4



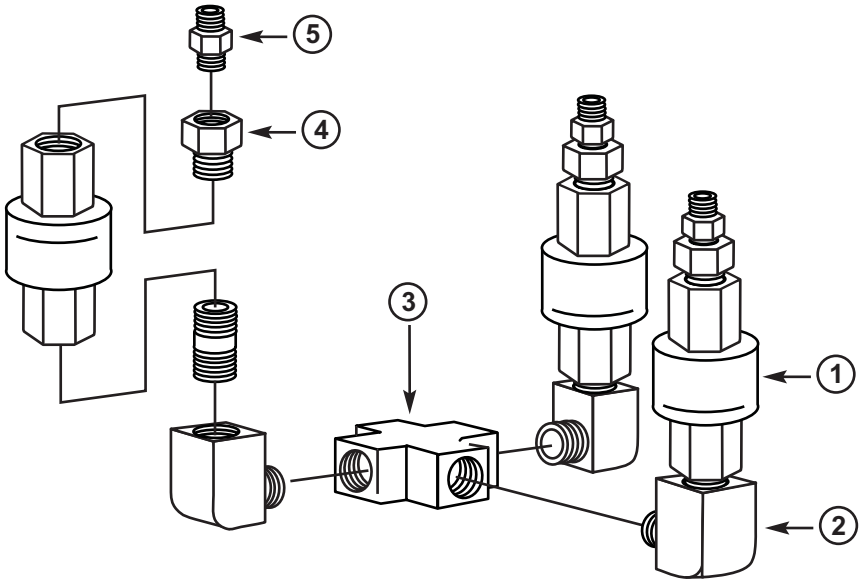
TRIPLE ULTRA CLEAN SURGICAL VACUUM

KEY	PART NO.	DESCRIPTION	UNIT
1	SBHA-14-375	STEEL BRAID HOSE ASSEMBLY 3/8 X 14	1
2	SBHA-18-375	STEEL BRAID HOSE ASSEMBLY 3/8 X 18	1
3	SBHA-23-375	STEEL BRAID HOSE ASSEMBLY 3/8 X 23	1
4	RIC-GAST	RUBBER MOTOR MOUNT	12
5	CV-500	1/2" CHECK VALVE	3
6	PMG-VAC	VACUUM GAUGE	1
7	PSC-DV	VACUUM PRESSURE SWITCH	1
8	REV-100	RUBBER MOUNTING FOOT	4



DUAL CHECK VALVE ASSEMBLY BREAK DOWN

KEY	PART NO.	DESCRIPTION	UNIT
1	CV-500	1/2 CHECK VALVE	2
2	BSE-8	1/2 BRASS 90° FITTING	2
3	BT-500	1/2 BRASS TEE	1
4	BB-8-6	BRASS BUSHING 1/2 X 3/8	2
5	FA-6-6	BRASS FLAIR FITTING 3/8 X 3/8	2



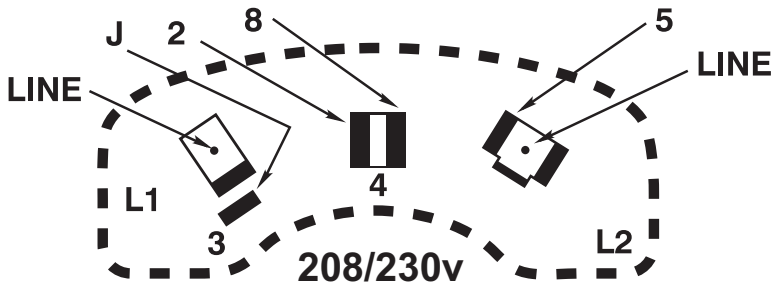
TRIPLE CHECKBALVE ASSEMBLY BREAK DOWN

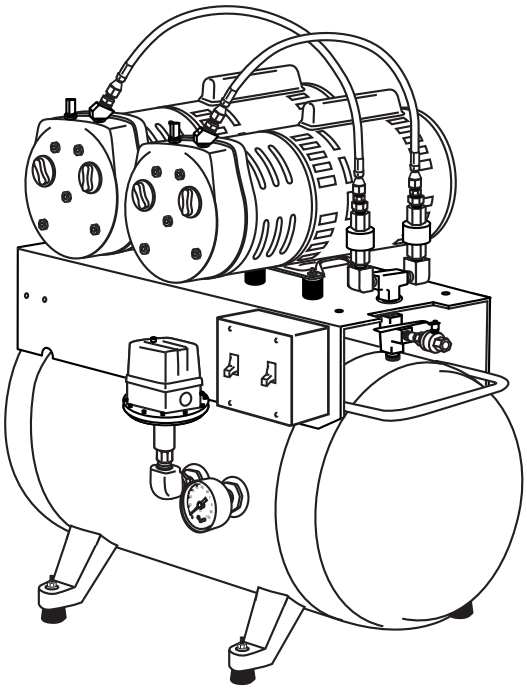
KEY	PART NO.	DESCRIPTION	UNIT
1	CV-500	1/2 CHECK VALVE	3
2	BSE-8	1/2 BRASS 90° FITTING	3
3	BC-500	1/2 BRASS CROSS	1
4	BB-8-6	BRASS BUSHING 1/2 X 3/8	3
5	FA-6-6	BRASS FLAIR FITTING 3/8 X 3/8	3

Wiring Diagram

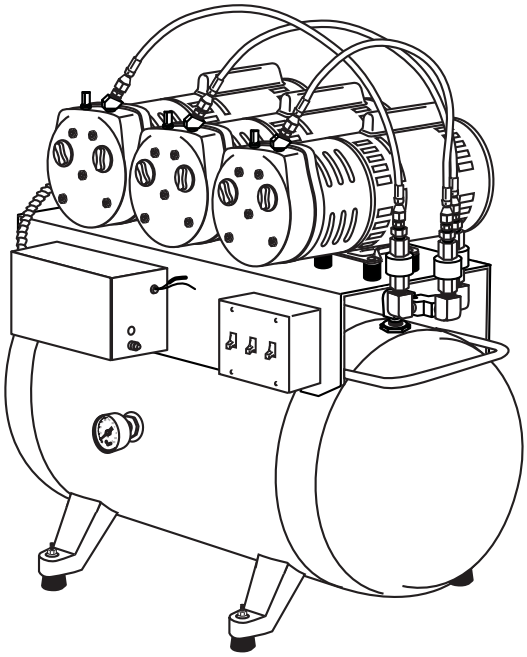
Ultra Clean Surgical Vacuum

HIGH VOLTAGE





Dual Ultra Clean Surgical Vacuum



Triple Ultra Clean Surgical Vacuum

FIG. 2. VACUUM AND AIR LINE SIZING CHART

ONE TO TWELVE OPERATORIES FOR OVERHEAD SYSTEM SEE FIG. 5.

NUMBER OF OPERATORIES SEE NOTE	VACUUM LINE PIPE DIAMETER	
	PVC sch 40	COPPER TYPE “M”
1	3/4”	3/4”
2	1”	1”
3	1”	1”
4	1 1/4”	1 1/4”
5	1 1/4”	1 1/2”

Trouble Shooting Chart

Ultra Clean Surgical Vacuum

Low		High		Pump Overheat	Motor Overload	Reason and remedy for problem
Vacuum	Pressure	Vacuum	Pressure			
●	●	At pump		●	●	Filter dirty. Clean or replace.
	●		At pump	●	●	Muffler dirty. Clean or replace.
●		At pump		●	●	Vacuum line collapsed. Repair or replace.
			●	●	●	Relief valve set too high. Inspect and adjust.
●	●					Relief valve set too low. Inspect and adjust.
●	●	At pump	At pump	●	●	Plugged vacuum/pressure line. Inspect and repair.
●	●					Vanes sticking. Clean or replace.
●	●					Vanes worn. Replace.
●	●			●	●	Foreign material in pump. Inspect and clean.
●	●			●	●	Motor not wired correctly. Check wiring diagram and line voltage.

Additional Trouble Shooting

Low Pressure:
Make sure intake filter isn't clogged
Vanes are not sticking
No foreign material in pump

Unit Not Running:
Check breaker
Wrong voltage applied to unit
Motor is wired incorrectly
Motor has dust & dirt inside

High Pressure at Pump or Grinding Noise:
Plugged diffuser causing back pressure on unit
Excessive heat causing bearing grease to dissipate causing noise
Foreign material causing parts to rub against each other.

Pump Overheating:
Plugged diffuser causing back pressure on unit
Foreign material causing parts to rub against each other.
Filter/muffler clogged
Motor incorrectly wired

Maintenance & Service / Notes

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