Ramvac

DUAL WET VACUUM PUMP

BARRACUDA

USER MANUAL

MODELS:
MC-201FS & MC-202FSW



DENTALEZ

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PRODUCT OVERVIEW

This manual contains site preparation, installation, operation, care and user service information for the Ramvac® Barracuda™ Dual Wet Vacuum Pump. To view the latest manual, go to *DENTALEZ.COM* to download a digital (PDF) copy.

The Barracuda Dual Wet Vacuum Pump is designed to provide trouble-free service when installed, operated and cared for according to the procedures set forth in this manual.

To ensure proper installation, carefully read all the instructions contained in this manual prior to installing, operating and servicing. For safety, pay close attention to all warnings, cautions, notices and notes.

Before starting installation procedures, review the illustration to become familiar with the components of the vacuum pump *(FIGURE 1)*.

WARNING

Do not modify this equipment without permission from Ramvac. Unauthorized modification will void the warranty and could result in serious injury. If this equipment is modified, appropriate inspection and testing must be conducted to ensure continued safe use of equipment.

After the vacuum pump is installed, review the features, operation procedures and care guidelines with the doctor's staff.

LEAVE THIS MANUAL IN THE DOCTOR'S OFFICE.

NOTICE

- Installation by an authorized Ramvac dealer service technician is recommended.
- For any questions about an order, please contact a Ramvac customer service representative at 866-DTE-INFO.

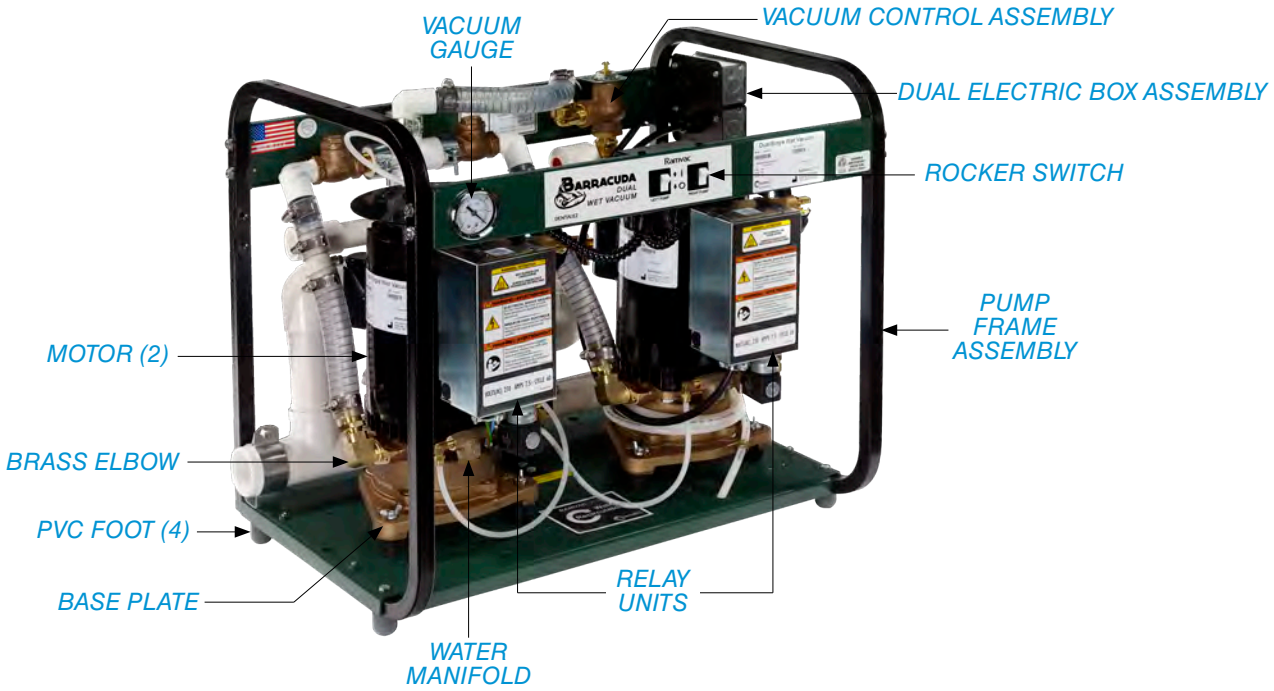


FIGURE 1. MAIN COMPONENTS OF THE BARRACUDA DUAL WET VACUUM PUMP

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PRODUCT FEATURES

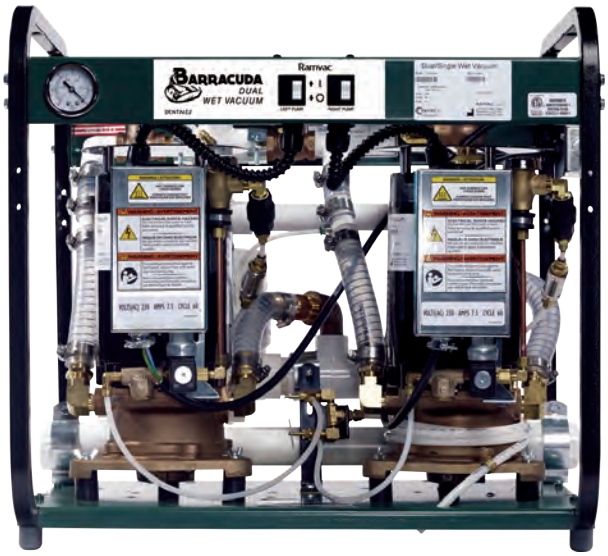
The Ramvac® Barracuda™ Dual Wet Vacuum Pump incorporates two water-injected pumps in one easily installed cabinet. The system offers full single-pump operation with the second pump providing backup protection or extra power for occasional heavy demand. Quiet and compact, the system features a chemical resistant brass impeller and housing for lasting performance.

STANDARD FEATURES

- Dual pump for optimum performance and reliability with powerful vacuum levels during peak operating hours and 100% back-up should one motor fail.
- Sealed bearings in motor.
- Frame provides easier access to motors for maintenance and transport.
- Easy four-step installation with no mounting hardware required.
- Five-year limited warranty (see *LIMITED WARRANTY* section of this manual).

OPTIONAL FEATURES

- Optional top shelf with a 300-pound capacity for stacking compressor.
- Optional air/water and nitrous oxide separator.
- Optional water recirculator reduces water consumption by approximately 75% without sacrificing high vacuum power.



Ramvac
DUAL WET VACUUM PUMP

BARRACUDA

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SPECIFICATIONS

		MC-201FS / MC-201FSW	MC-202FS / MC-202FSW
Max Users		4	6
Recirculator		N/A / Included	N/A / Included
Phase		1	1
Horsepower *(Per Motor)*		1	2
Running Speed *(RPM)*		3,450	3,450
Voltage Rating *(Min/Max)*		208/230	208/230
Cycle *(Hz)*		60	60
Breaker Rating Size *(Amps)*		15	20
Time Delay Fuse *(Amps)*		12	20
Standard Fuse *(Amps)*		25	40
Full Load Amps *(Each Motor)*		7.5	15
Switching *(Low Voltage VDC)*		24	24
Maximum Sealed Vacuum Level *(Hg)*		Approx. 20-25" Adjustable	Approx. 20-25" Adjustable
1-Pump Operation	Usable CFM	15	30
	Use factor (No. of high-volume hoses open simultaneously)	2	3
2-Pump Operation	Usable CFM	30	60
	Use factor (No. of high-volume hoses open simultaneously)	4	6
Gauge Accuracy		ASME/ANSI B40.1 Grade B (+/-3/2/3%)	ASME/ANSI B40.1 Grade B (+/-3/2/3%)
HR (Heat Released to Room) *(BTU)*		900	900
Sound Levels *(dBA)*		70 - 75	70 - 75
Weight *(lbs)*		175	215
Dimensions W × D × H *(in)*		24 × 17 × 24 / 26 × 20 × 24	24 × 17 × 24 / 26 × 20 × 24
Water Reqirements Per Pump *(Gal/Min)*		1 / 2	1
Ambient Temperature Range		10°-40°C / 50°-104°F	10°-40°C / 50°-104°F

RECOMMENDED ENVIRONMENTAL CONDITIONS

TRANSPORTATION AND STORAGE

- Temperature range: -40°F to 158°F (-40°C to 70°C)
- Relative humidity range: 10% to 100%
- Atmospheric pressure range: 50 kPa to 105 kPa

OPERATION

- Temperature range: 50°F to 104°F (10°C to 40°C)
- Relative humidity range: 0% to 95%; no condensing moisture
- Atmospheric pressure range: 63 kPa to 105 kPa

CLASSIFICATIONS

ETL CLASSIFIED
c ETL us
Intertek
4007136

Conforms to:
ANSI/AAMI STD ES60601-1:2005 (R2012)
Certified to:
CAN/CSA STD C22.2 No. 60601-1:08
Complies with NFPA 99C level 3 piped gas and vacuum requirements.
Manufactured in a FDA registered ISO 13485:2016 certified facility.

Ramvac vacuum units meet the most current and highest safety standards.

- Type of Protection Against Electric Shock: Class 1 Equipment.
- Degree of Protection Against Ingress of Water: Ordinary.
- Flammable Gases: Equipment not suitable for use in the presence of a flammable anesthetic mixture with air, oxygen or nitrous oxide.
- Not intended for use in an oxygen rich environment.
- Mode of Operation: Continuous.

EXPLANATION OF SYMBOLS & SIGNS

 = Caution

 = Warning

 = Biohazard

 = Warning - Dangerous Voltage

 = Hot Surface

 = General Mandatory Action

 = Consult Instructions for Use

 = Alternating Current

 = Direct Current

 = Protective Earth (Ground)

SN = Serial Number

 = Manufacture Date

 = Manufacturer

 = Hazardous Moving Parts

 = Box Must Remain Upright

 = Do Not Place Box on Unlevel Surface

 = Do Not Stack Box

 = Box Contents Safe Temperature Range

 = Box Contents Safe Humidity Range

SAFETY PRECAUTIONS

To ensure that the safety potential of this equipment is achieved, make sure equipment is installed according to written instructions.

Electrical shock could occur as a result of improper grounding. This product must be grounded according to NEC regulations and local codes.

- The vacuum unit should not be used adjacent to or stacked with other equipment. If adjacent or stacked use is necessary, the vacuum should be observed to verify normal operation in the configuration in which it will be used.
- Never use the vacuum to scavenge flammable anesthetic gases. Even small concentrations may cause a fire in the vacuum unit.
- Property damage and/or personal injury may result if directions are not followed or OEM parts are not used.
- Always turn off vacuum and remove power from unit when servicing. (Turn off power at disconnect or service breaker.)
- Danger of fire or explosion when using flammable substances.
- Never leave children unattended when vacuum is in use.

⚠ CAUTION

- The vacuum has several guards designed to protect against accidental contact with dangerous components. Do not remove these guards until power has been disconnected/turned off from the equipment. If service is required with the guard removed and the power on, it should only be performed by a qualified service technician. Always replace any guards that have been removed for service or that may have been damaged.
- During installation, always ensure all electrical, plumbing or other utilities are properly located to avoid possible tripping or falling hazards. Always follow all local, state and national building codes, as well as any applicable workplace safety regulations.
- Use of a plug for electrical service is not recommended. Incorrect connections will cause a drop in line voltage and/or loss of power. Overheating could result.
- The EMISSIONS characteristics of this equipment make it suitable for use in industrial areas and hospitals (CISPR 11 class A). If it is used in a residential environment (for which CISPR 11 class B is normally required) this equipment might not offer adequate protection to radio-frequency communication services. The user might need to take mitigation measures, such as relocating or re-orienting the equipment.

NOTICE

- Medical electrical equipment needs special precautions regarding electromagnetic (EMC) compatibility and needs to be installed according to EMC information. (See *EMC INFORMATION* provided in this manual.)
- The use of accessories, transducers, and cables other than those specified, with the exception of transducers and cables sold by the manufacturer of this device as replacement parts for internal components, may result in increased emissions or decreased immunity of the vacuum.
- Portable and mobile radio frequency (RF) communications equipment can affect medical electrical equipment.

SITE REQUIREMENTS

The following preinstallation information will assist in making a quick, easy and quality installation; however, if there are any questions, contact a Ramvac technical service representative at 1-866-DTE-INFO.

Before the dual wet vacuum pump can be properly installed, the following utilities must be supplied: electrical, water, waste, and vacuum lines. Low-voltage control lines are optional.

WARNING

- Not for use in an oxygen rich environment. Large concentrations may cause a fire in the vacuum unit and may cause an exhaust hazard.

To avoid risk of electric shock, this equipment must only be connected to a supply mains with protective earth.

- Electrician must provide a means to isolate the circuit electrically from the supply mains on all poles simultaneously.

ELECTRICAL

All electrical supply lines and control wiring should be supplied and installed by a licensed electrician according to local building codes. **The Barracuda Dual Wet Vaccum requires two (2) separate circuits** (one for each pump motor) of the correct voltage for the system ordered. In addition to the thermal overload protection built into the motors, each circuit must be provided with a circuit breaker, time delay fuse, or standard fuse.

See Motor Protection Chart for recommended breaker or fuse amperage.

MOTOR PROTECTION CHART

PROTECTION TYPE (EACH MOTOR)	MODEL MC-201FS 230V	MODEL MC-202FS 230V
Circuit Breaker	15 Amps	20 Amps
Time Delay Fuse	12 Amps	20 Amps
Standard Fuse	25 Amps	40 Amps

An electrical disconnect box is recommended for each circuit, near the dual wet vacuum.

Low-voltage Control Lines (Optional)

If remote low-voltage is desired, a licensed electrician should install 18-3 thermostat wire for lighted switch or 18-2 thermostat wire for non-lighted switch from the pump location to the operatory switch located up to 500 feet away. If the operatory switch is over 500 feet away from the pump location, use 16-3 thermostat wire for lighted switch or 16-2 thermostate wire for non-lighted switch.

NOTICE

All vacuum systems must be installed according to local building and electrical codes.

SITE REQUIREMENTS (CONTINUED)

WATER LINES

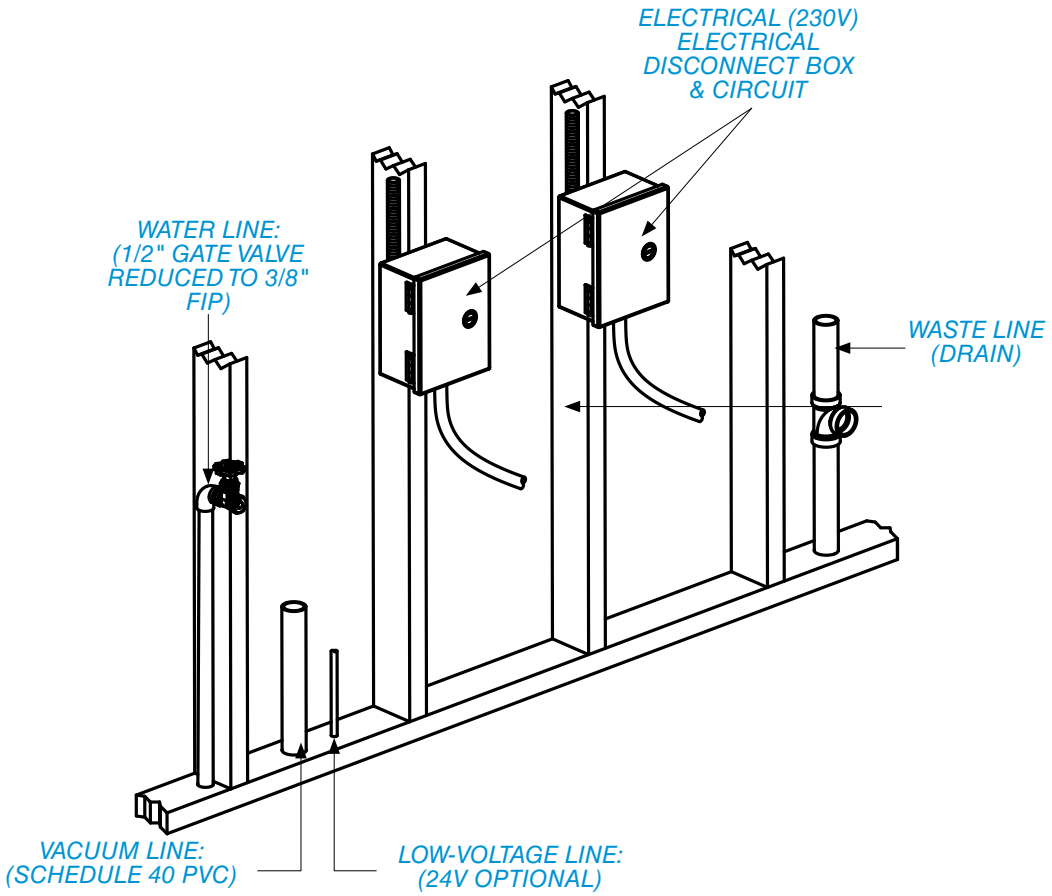
Water lines must be installed by a licensed plumber according to all local building codes. Terminate water line in 1/2" FIP gate valve.

WASTE LINES

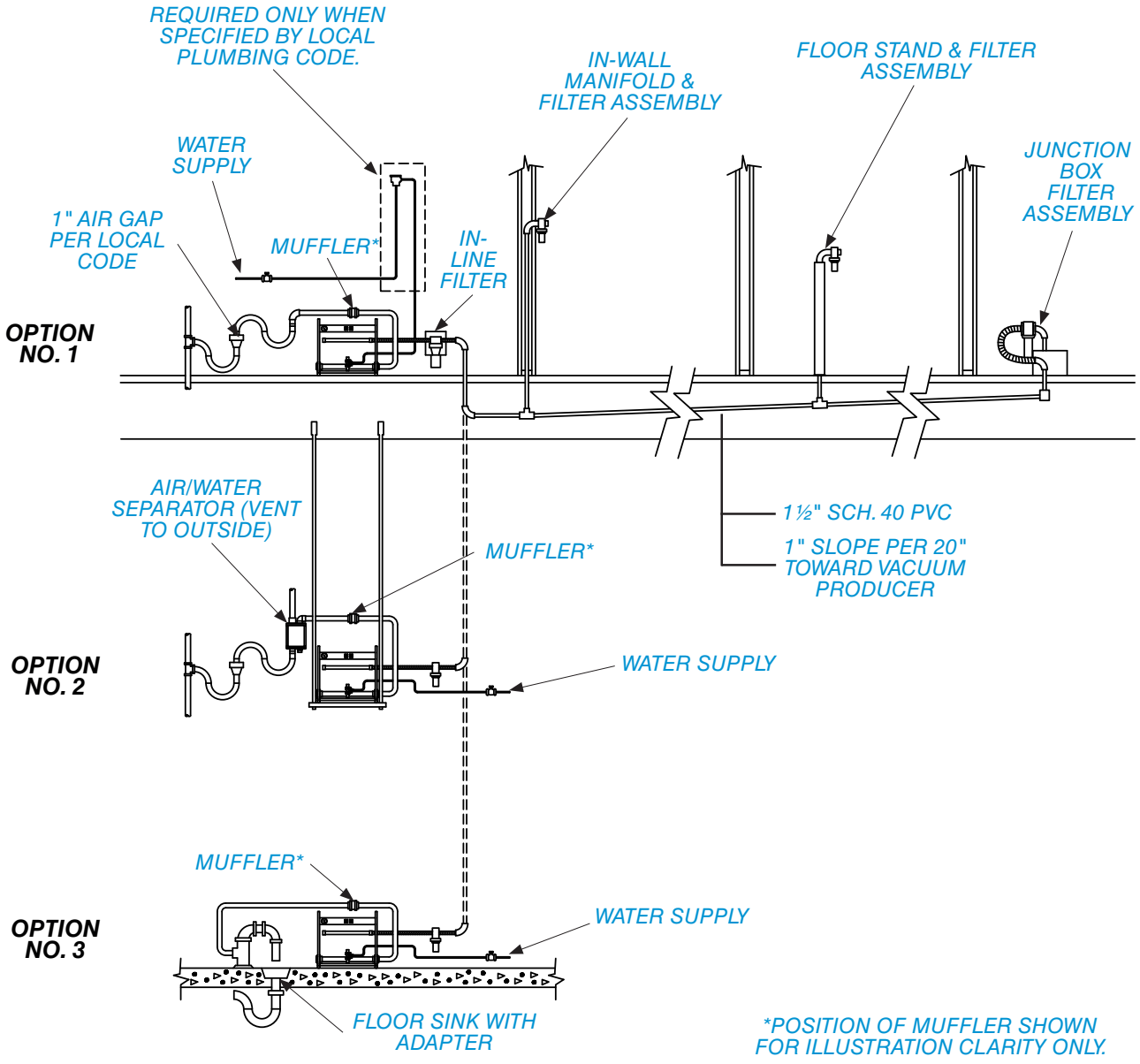
Waste line must be installed by a licensed plumber according to local building and health codes. For requirements, see *page 8*, *TYPICAL INSTALLATION OPTIONS* and *page 11*, *WASTE LINE*.

⚠ CAUTION

A free-flowing discharge system is required for proper operation of the vacuum system. The dual pump may leak at the anti-siphon valve if the discharge system is restricted. Ensure the vacuum system is installed and cleaned in accordance to the instructions in this manual.



TYPICAL INSTALLATION OPTIONS



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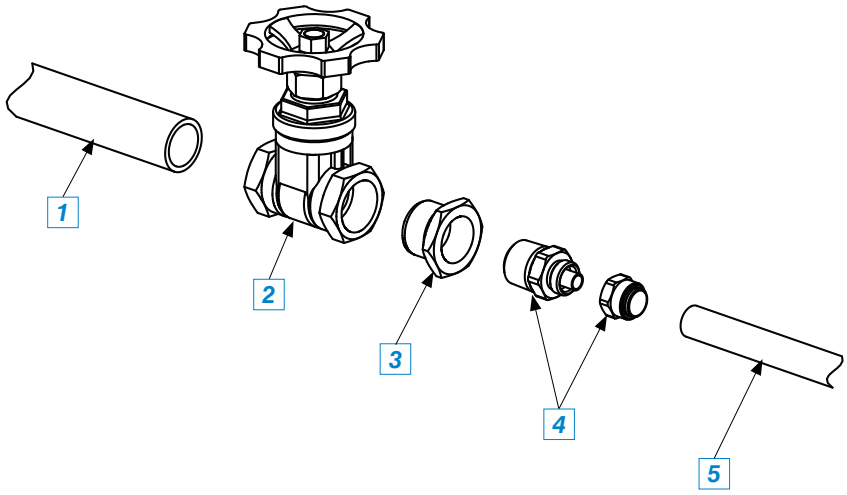
WATER SUPPLY LINE

The water going to the unit acts as a pump sealant and cooling agent. When the vacuum pump is in operation, the water supply must be on at all times. The plumber supplies and installs a 1/2" gate valve on the water supply line. Connect the 3/8" nylon tubing and fittings, which are supplied with the unit, as shown.

VALVE INSTALLATION

#	QTY.	PART/KIT NAME	PART/KIT NO.
1		Water Line	*
2	1	Valve, Gate, Brass, 1/2"	*
3	1	Bushing, Brass, 1/2" MIP × 3/8" FIP	64516041
4	1	Adaptor, Brass, 3/8" MIP × 3/8" Tube	64504067
5	6 ft	Tube, Nylon, 3/8"	64618046

*Supplied by plumber



VACUUM LINE

NOTICE

- All vacuum systems must be installed according to local building and electrical codes.

All vacuum lines and risers are recommended to be PVC, schedule 40. Type “M” copper should be used if local code does not allow the use of PVC.

Care should be taken to slope the lines 1" for every 20' of run toward the vacuum pump(s). This allows waste and liquids to flow with gravity, contributing to the efficiency of the vacuum system.

Make all connections using long radius sweep fittings. To promote unrestricted flow of air and waste liquids through the vacuum lines, directional flow connections should be used.

Using 45° elbows for turns or avoiding obstructions is best; however, do not make a trap in the line. Doing so will decrease the efficiency of the system.

All elbows and tees should be sized for the main line and sized down with bushing reducers to accommodate smaller lines.

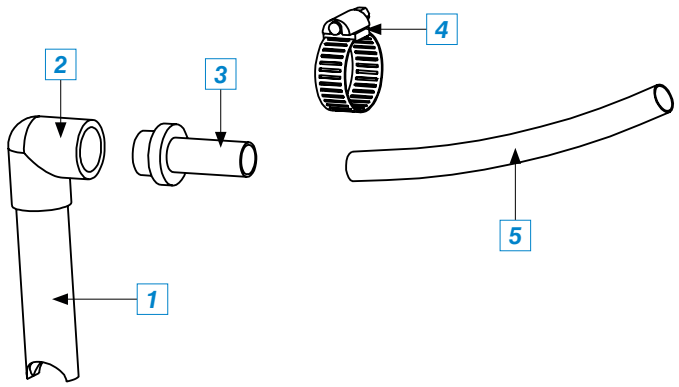
Avoid sagging lines, which cause the formation of traps in the system and prevent good air and waste liquid flow.

Connect the evacuation system to the vacuum line using the hose and fittings supplied in the installation kit. The vacuum line can be installed from the right or left side of the cabinet.

VACUUM LINE INSTALLATION

#	QTY.	PART/KIT NAME	PART/KIT NO.
1		Vacuum Line, IPS, PVC SCH. 40	*
2		Elbow, IPS, PVC SCH. 40	*
3	1	Adaptor, PVC, 1" MIP × 1½" Shank	64568153
4	1	Clamp, 1½" Hose	64527004
5	6 ft	Hose, Intake, 1½"	64562019

*Supplied by plumber



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WASTE LINE

NOTICE

- IMPORTANT: No part of the wasted line should be more than three (3) feet above the level of the waster connection on the vacuum pump.

The waste line carries water from the pumps and liquid waste from the operatory to the building's sewer system.The waste line should follow the most direct path to the sewer connection with a minimum of bends and elevations, and must be installed according to local building and plumbing codes.

The exhaust connection should be made by either of two methods, floor sink connection or direct connection to P-trap, depending on local code and building facilities.

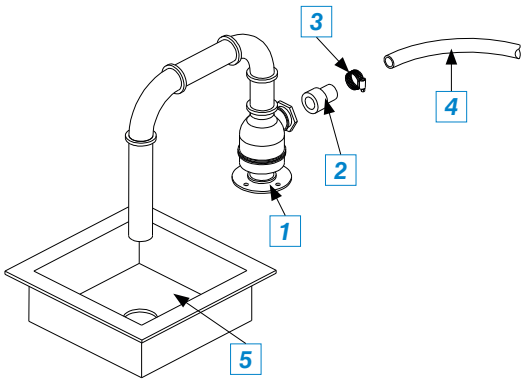
FLOOR SINK CONNECTION

Use floor sink adaptor. Install as illustrated.

FLOOR SINK CONNECTION

#	QTY.	PART/KIT NAME	PART/KIT NO.
1	1	Adaptor, PVC, Floor Sink, 1" Barbed Insert	**
2*	1	Adaptor, PVC, 1" MIP × 1½" Shank	64568153
3	1	Clamp, Stainless Steel, 1½"	64527003
4	6 ft	Hose, Exhaust, 1½"	64562019
5	1	Floor Sink	**

**Supplied by plumber



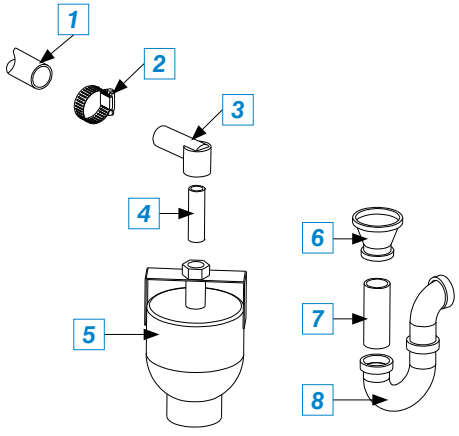
DIRECT CONNECTION TO "P" TRAP

Use "P" trap-air gap, if required by local code. Install as illustrated.

P-TRAP DIRECT CONNECTION

#	QTY.	PART/KIT NAME	PART/KIT NO.
1	6 ft	Hose, Exhaust, 1½"	64562019
2	1	Clamp, Stainless Steel, 1½"	64527004
3	1	Elbow, 1½"	*
4	1	Nipple, 1½"	*
5	1	Adapter, Air Gap, 2"	*
6	1	Reducer, Bell, 2" × 1½"	*
7	1	Nipple, 1½" × Close	*
8	1	Trap, "P", 1½"	*

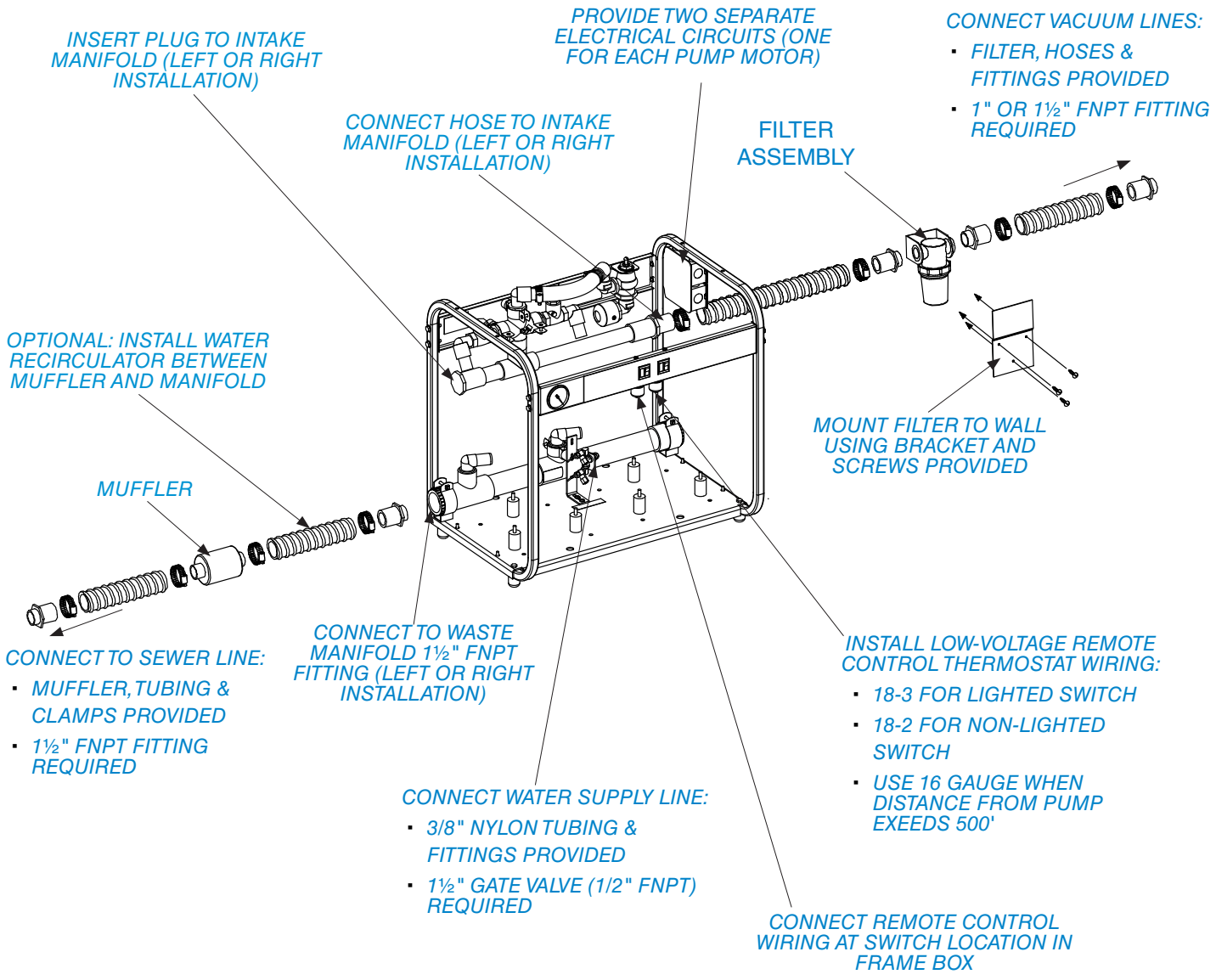
*Supplied by plumber



INTAKE / EXHAUST HOSE CONNECTIONS

Evaluate the installation site and determine which side the various hoses will enter the pump frame and the location for the water supply connector.

Place the hoses on their appropriate manifold hose adapters and secure them using the hose clamps. Complete the water supply hook-up using the poly flow tubing and fittings supplied in the installtion kit.

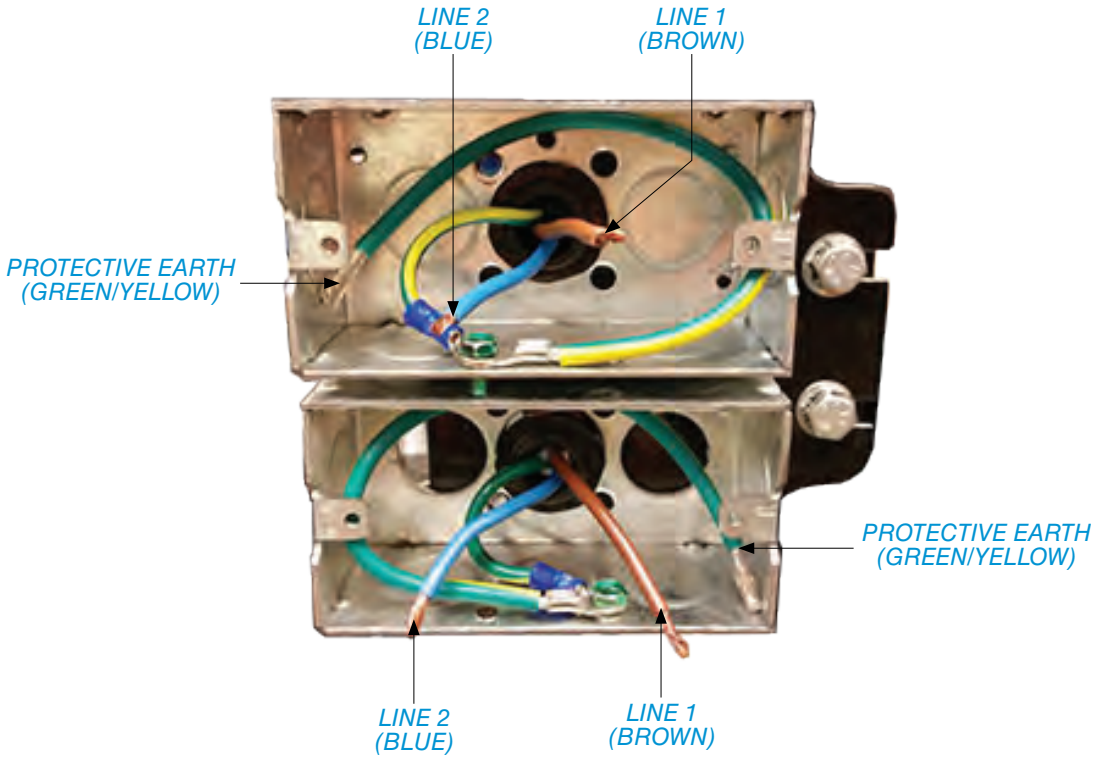


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ELECTRICAL CONNECTION

Complete the electrical hook-up per electrical code as follows:

- Connect line 1 to brown wire
- Connect line 2 to blue wire
- Conncect protective earth to green/yellow wire.



ELECTRICAL CONNECTION (CONTINUED)

REMOTE LOW-VOLTAGE SWITCH CONTROL

⚠ WARNING

Before proceeding with any electrical installation, comply with and maintain all applicable local electrical code(s) and regulations.

NOTICE

All wiring between the main control box and equipment should be Class B, low-voltage. In most cased, a conduit is not required when using this type of wiring.

1. Position the master switch in the desired location.

2. Run the appropriate wires to their respective equipment location. (See *WIRING CHART*).

3. Connect wired according to the *WIRING SCHEMATICS* on the following pages.

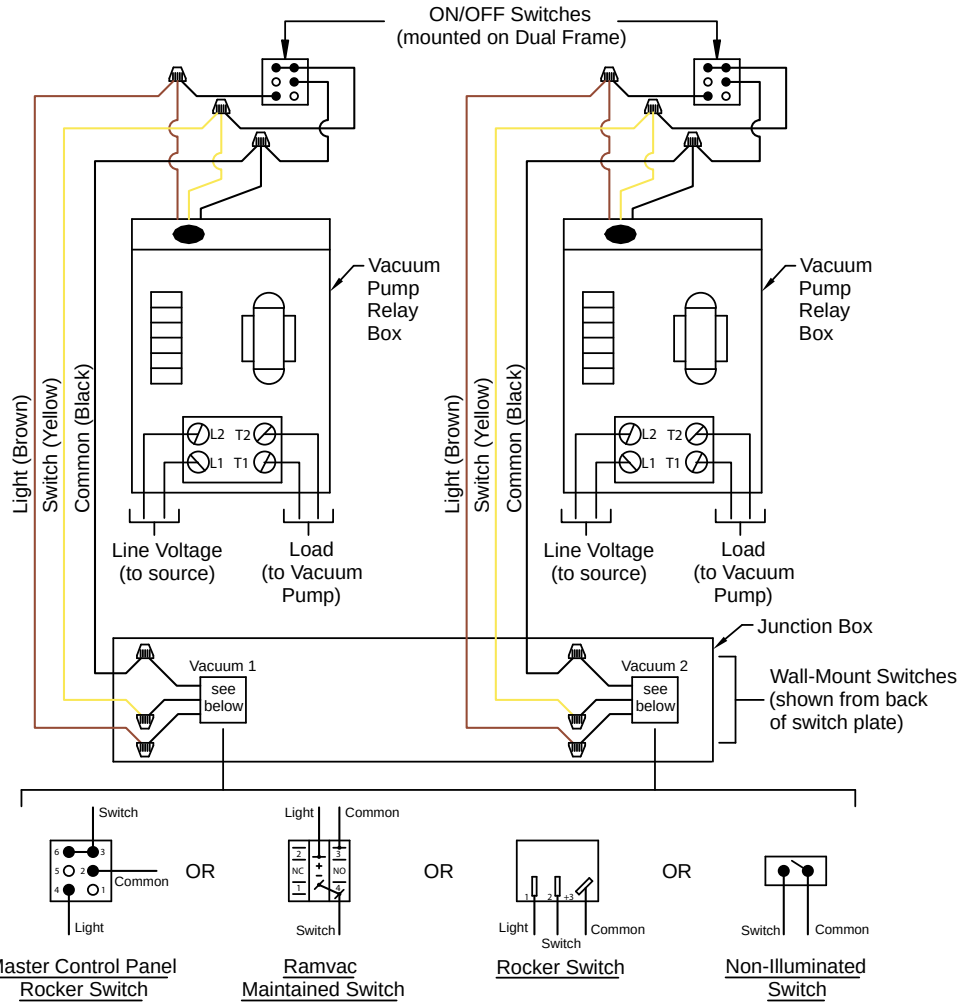
WIRING CHART

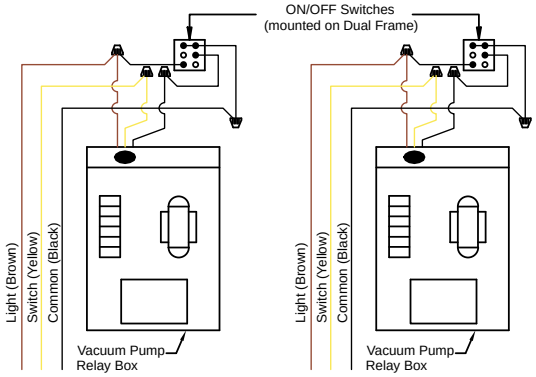
MODEL NO.	NO. OF WIRES	WIRE UNDER 500 FT	WIRE OVER 500 FT
MC-201	6	18 AWG	16 AWG
MC-202	6	18 AWG	16 AWG

ELECTRICAL CONNECTION (CONTINUED)

TWO SWITCH, DUAL VACUUM SYSTEM

IMPORTANT NOTE: *Refer to WIRING CHART (page 14) for length and gauge of wire.*





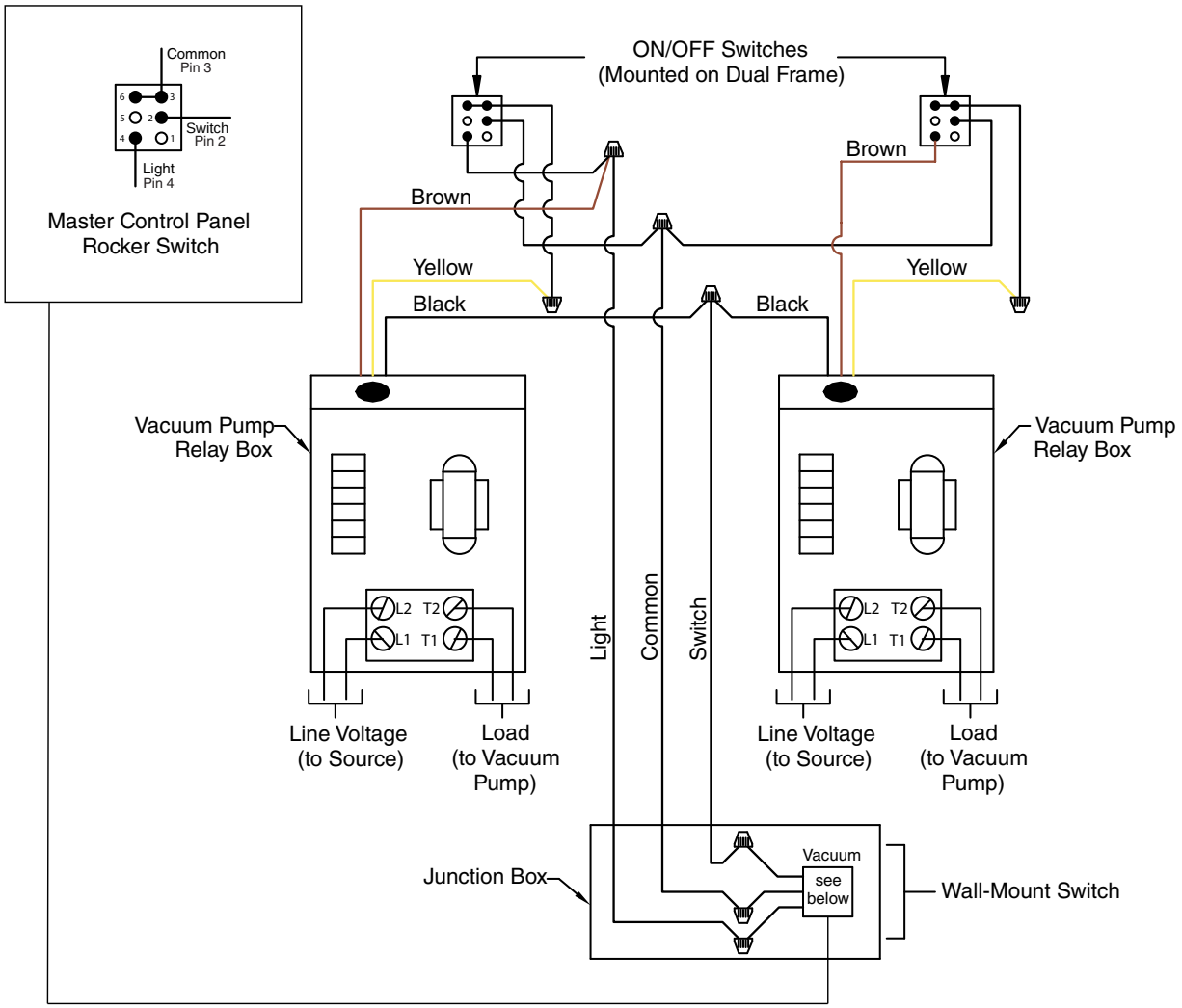
NOTE: *Using the circuit depicted in the diagram above, either switch will turn the vacuum pumps on. To wire pumps so that either switch will turn the vacuum pumps off, use the circuit shown in the diagram on the left.*

NOTE: *REFERENCE YOUR MASTER CONTROL PANEL INSTRUCTIONS.*

ELECTRICAL CONNECTION (CONTINUED)

ONE SWITCH, DUAL VACUUM SYSTEM

IMPORTANT NOTE: *Refer to WIRING CHART (page 14) for length and gauge of wire.*



Disconnect BLACK wires (of relay boxes) from lighted switches of each pump. Twist wires from relay box together and wires from switches together. Connect relay box wires to one side of remote toggle switch and other set to other side of toggle switch. If remote switch has an indicator light, connect that to one of the motor switches as shown.

With remote switch turned **OFF**, turn on both switches at the pumps. If pumps and lights stay off, wiring is correct and the pumps will not come on until remote switch is activated; however, if pumps come **ON**, pumps are out of phase. To correct the problem, open one relay box and interchange incoming power leads to that box.

NOTE: *REFERENCE YOUR MASTER CONTROL PANEL INSTRUCTIONS.*

HOW THE SYSTEM WORKS

OVERVIEW

The Ramvac® Barracuda™ Dual Wet Vacuum Pump is designed to provide a vacuum source for use by dental professionals in the dental operatory. The main purpose of the vacuum is to evacuate the oral cavity.

The vacuum pump can be operated from the operatory using an optional low-voltage conversion kit and low-voltage switches. This provides a convenient way to turn the pumps on or off as needed, while saving water and electricity.

In some installations, where two or more doctors are using the vacuum system, it may be necessary to leave the evacuator on throughout the working day. The pumps are designed to handle heavy workloads and are rated for continuous operation. If the evacuator operates for extended periods of time, proper ventilation is important. Installations in small, confined areas should be supplied with a ventilation system capable of keeping the air temperature around the pump at 40°C/104°F or less.

VACUUM PUMPS

The Barracuda Dual Wet Vacuum is powered by two water injected, impeller type vacuum pumps. This type of vacuum producer runs quietly and generates a high mercury pull, which is adjustable from a normal operating range of 10 to 12 inches of mercury to a high range of 18 to 20 inches of mercury for surgical applications. There are two vacuum pump sizes: the 1 HP (model MC-201 FS) and the 2 HP (model MC-202 FS). The dual pump back-up system and the choice of vacuum power ranges make this a highly reliable and versatile evacuation system.

INTAKE MANIFOLD

The intake manifold swing-check valves provide automatic isolation for the back-up pump when it is not operating. This prevents vacuum loss through the exhaust of the standby pump. When both pumps are operating, the swing-check valves open to allow maximum air flow. The manifold is constructed of PVC and the valves are brass. Both materials are not affected by chemical disinfectants.

EXHAUST MANIFOLD

The exhaust manifold delivers liquid waste materials from both pumps to the drain line. The manifold is constructed of PVC to prevent chemical corrosion and buildup of organic and mineral wastes. The exhaust muffler connected to the drain line outside assures quiet operation.

WATER CONTROL SYSTEM

The water control system of the Barracuda Dual Wet Vacuum provides the pumps with the water flow required for proper suction and supplemental cooling. Automatic and independent water control is provided for each pump. Filters protect the system from damage due to solid materials in the water supply. Flow valves control the amount of water supplied to each pump.

VACUUM CONTROL ASSEMBLY

The vacuum control assembly is attached to the central section of the front control panel. The valve in this assembly provides automatic regulation of the vacuum flow in the system. The vacuum level can be adjusted for different system requirements. The vacuum gauge is connected to a fitting on this assembly.

OVERVIEW

WARNING

Before starting cleaning procedures, make certain to put on eye protection, a mask, and puncture-resistant nitrile gloves.

Prior to performing any maintenance, proper precautions should be taken to reduce the possibility of contact with infectious substances.

Dual wet vacuum pump preventive maintenance is simple, clean and inexpensive. It can help ensure your system provides years of predictable performance. While most maintenance tasks can be performed by the user, Ramvac® recommends having all service and maintenance conducted by a dealer service technician.

NOTE: *When servicing the vacuum, only use Ramvac approved service parts. Utilizing non-approved components could lead to system damage and possible termination of product warranty. Circuit diagrams, parts lists and other required documents are available to service personnel by contacting Ramvac.*

KEY POINTS FOR TROUBLE-FREE OPERATION

- Keep area surrounding vacuum pump free of debris.
- Keep vacuum pump clean and free of dirt.
- Follow the recommended *PREVENTIVE MAINTENANCE SCHEDULE* in this section of the manual .
- Rinse vacuum lines daily with the recommended quantity of liquid (see *FLUSH VACUUM PLUMBING SYSTEM* in this section of the manual).
- Clean in-line filter weekly (see *CLEAN IN-LINE FILTER* in this section of the manual).
- Maintain a controlled ambient temperature between recommended levels of 50°F to 104°F (10°C to 40°C). High temperatures will shorten the life of the vacuum pump (see *SECTION I - INTRODUCTION - SPECIFICATIONS*).

CLEANING INSTRUCTIONS (VACUUM UNIT)

CAUTION

Some parts/components on the vacuum unit get hot during operation. Provide the equipment ample time to cool prior to cleaning.

- A free-flowing discharge system is required for proper operation of the vacuum system. The pump systems may leak at the anti-siphon valve if the discharge system is restricted. Ensure the vacuum system is installed and cleaned in accordance to the instructions in this manual.

1. ALWAYS DISCONNECT THE POWER FROM THE EQUIPMENT PRIOR TO CLEANING.
2. All components can be safely wiped down with a damp cloth, wet with water. Using any cleaners or harsh chemicals to clean this equipment is NOT recommended; potentially harmful effects have not been evaluated.
3. Do not heavily wet electrical components.
4. Allow equipment to air dry or dry with clean, soft cloth.

PREVENTIVE MAINTENANCE SCHEDULE

A minimum amount of maintenance is required to keep the dual wet vacuum in top running condition. The motor and pump assemblies require no lubrication. This is a recommended schedule for a vacuum in a clean, dry environment.

Flush Vacuum Plumbing System	Daily
Clean In-line Filter	Weekly
Inspect Operatory Filters	Weekly
Inspect Vacuum System	Weekly
Clean Water Recirculator	1-2 Times Per Month (Depending on Workload)
Check Vacuum Level	Monthly

DAILY SHUTDOWN PROCEDURE FOR THE WET VACUUM

To terminate operation of the vacuum pump, press the designated switch on the low-voltage panel or use the rocker type switch on the front panel located on the frame of the dual pump unit. For maintenance or any physical interaction with the vacuum pump or associated circuitry, disable the unit using the local disconnect or wall panel breaker for electrical isolation. Utilization of a lock-out/tag-out procedure is recommended for safety.

NOTICE

- IMPORTANT: At the end of each working day, turn off the water supply to the unit by closing the gate valve on the water supply line. Or, if an optional remote control panel is installed, push the water button to the OFF position. Then close the gate valve on the water supply line.

NOTE: *Although the water supply to the vacuum system is normally turned off electrically when the system is turned off, it is possible that a solenoid valve may malfuntion, allowing water to flow through the valves and into the vacuum system.*

DAILY MAINTENANCE

FLUSH VACUUM PLUMBING SYSTEM

Before the system is turned off at the end of the day, it is recommended that the hoses in the operatory be flushed with fresh water and vacuum system cleaner. Just before turning off the vacuum, rinse lines first with hot water– approximately one (1) quart through each high-volume line and a few ounces through each saliva ejector line. Then aspirate a few ounces of dental vacuum line cleaner through each vacuum line. SlugBuster™ vacuum line cleaner is highly recommended. Cleaner should have these qualities: non-foaming, deodorizing, sanitizing and pH between 6 and 10.

⚠ CAUTION

- IMPORTANT: Use of detergent-based, foaming-type line cleaners outside of the pH range will greatly restrict vacuum performance and void the warranty.
- Foam may cause a damage to the pump. Avoid interruptions by ensuring your cleaner is truly non-foaming. Test by shaking the mixed solution. True non-foamers will be bubble-free.

Cleaning requirements will vary according to activity. After surgical procedures, aspirate a few ounces of vacuum line cleaner through the lines. For overhead plumbing, be sure to allow air to follow liquids before closing vacuum valves. Check the treatment room solids separator routinely, and clean when dirty.

SLUGBUSTER ORDERING INFORMATION

NOTE: *Use of SlugBuster™ vacuum line cleaner is highly recommened.*

SlugBuster is a non-foaming, non-chlorinated dental vacuum line cleaner that is compatible with ALL dental vacuum systems and amalgam separators (8 pH). SlugBuster is available in powder and liquid forms, and can be ordered through any authorized Ramvac dealer.

RAMVAC PART NO.	CONTENTS
900143	Powder Starter Pack: Mixing jug, two 40-ounce containers of SlugBuster
900146	Powder Six Pack: Six 40-ounce containers of SlugBuster (makes 480 gallons of solution)
900241	Liquid Single Gallon: One gallon of SlugBuster concentrate and hand pump dispenser
900243	Liquid Starter Pack: Mixing jug, one gallon of SlugBuster concentrate and hand pump dispenser
900246	Liquid Four Pack: Four single gallons of SlugBuster concentrate and four hand pump dispensers



WEEKLY MAINTENANCE

CLEAN IN-LINE FILTER

Check and clean the in-line filter weekly.

1. Turn **OFF** the pump motors.
2. Carefully unscrew the lower bowl from the filter top and lift out the screen.
3. Using water, flush the bowl assembly and any contaminated sediment.
4. Submerge the screen/bowl assembly into a high-level chemical disinfectant solution. Follow the disinfectant manufacturer's recommendation for time interval required to achieve disinfection.
5. Remove the screen/bowl assembly from the disinfectant solution and rinse using tap water.
6. Properly dispose of the contaminated sediment and disinfectant solution waste.
7. Replace the screen and make sure the gasket is in place before replacing the bowl.
8. Check all connecting vacuum, waste and water lines for tightness.
9. Turn **ON** the pump motors to check for leaks and proper function.

INSPECT OPERATORY FILTERS

Check and clean all operatory and secondary filters weekly. Follow the equipment manufacturer's recommendations.

INSPECT VACUUM SYSTEM

Check the vacuum system for water leaks and loose or broken connections weekly.

MONTHLY MAINTENANCE

CLEAN WATER RECIRCULATOR

Clean the water recirculator one (1) or two (2) times per month, depending on workload.

NOTICE

Failure to use the water recirculator cleaner as directed (sample included with recirculator) will **VOID** the manufacturer's warranty!

To clean water recirculator:

1. Turn the vacuum pump **OFF**.
2. Remove the lower bowl of the filter at the pump location *(FIGURE 2)*.
3. Separate and clean the filter screen, gasket and bowl.
4. Re-insert the gasket and screen into the bowl, then add one (1) scoop (1 oz) of water recirculator cleaner to the bottom of the bowl.
5. Carefully replace the bowl assembly back into the filter head at the pump location.
6. Turn the vacuum pump **ON** and operate normally.

Reorder Water Recircuator Cleaner Kit Part Number: 64568129.

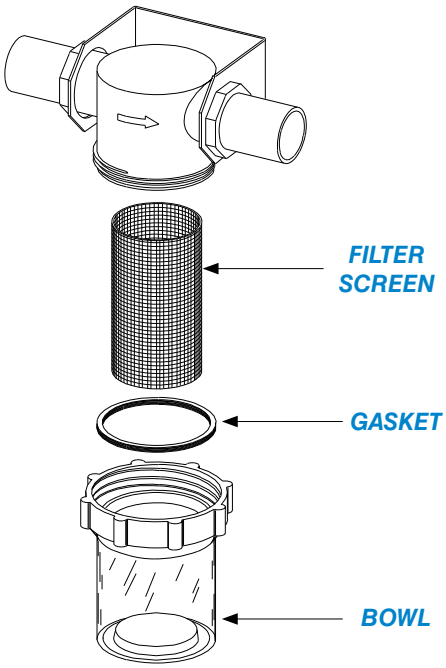


FIGURE 2. WATER RECIRCULATOR

MONTHLY MAINTENANCE (CONTINUED)

CHECK VACUUM LEVEL

Check the vacuum level monthly. The vacuum level of the dual wet vacuum pump is preset at the factory.

Recommended operatory vacuum levels are 10" Hg. (general dentistry) or 19" Hg. (surgery).

The vacuum gauge will indicate the vacuum level provided by the pump.

If it becomes necessary to adjust this setting, the following steps can be taken.

NOTE: *Turn* ***ON*** *one pump — vacuum level adjustments are made with only one pump operative.*

NOTE: *The evacuator should be left* ***ON*** *when setting the vacuum level. Also, make sure all hoses in the operatory are* ***CLOSED****.*

1. Turn the locknut counter-clockwise to loosen *(FIGURE 3)*.
   - For greater vacuum level, turn the screw clockwise.
   - For less vacuum level, turn the screw counter-clockwise.
2. Set to desired volume level and tighten locknut.



FIGURE 3. SCREW AND LOCKNUT

TROUBLESHOOTING - VACUUM PUMP

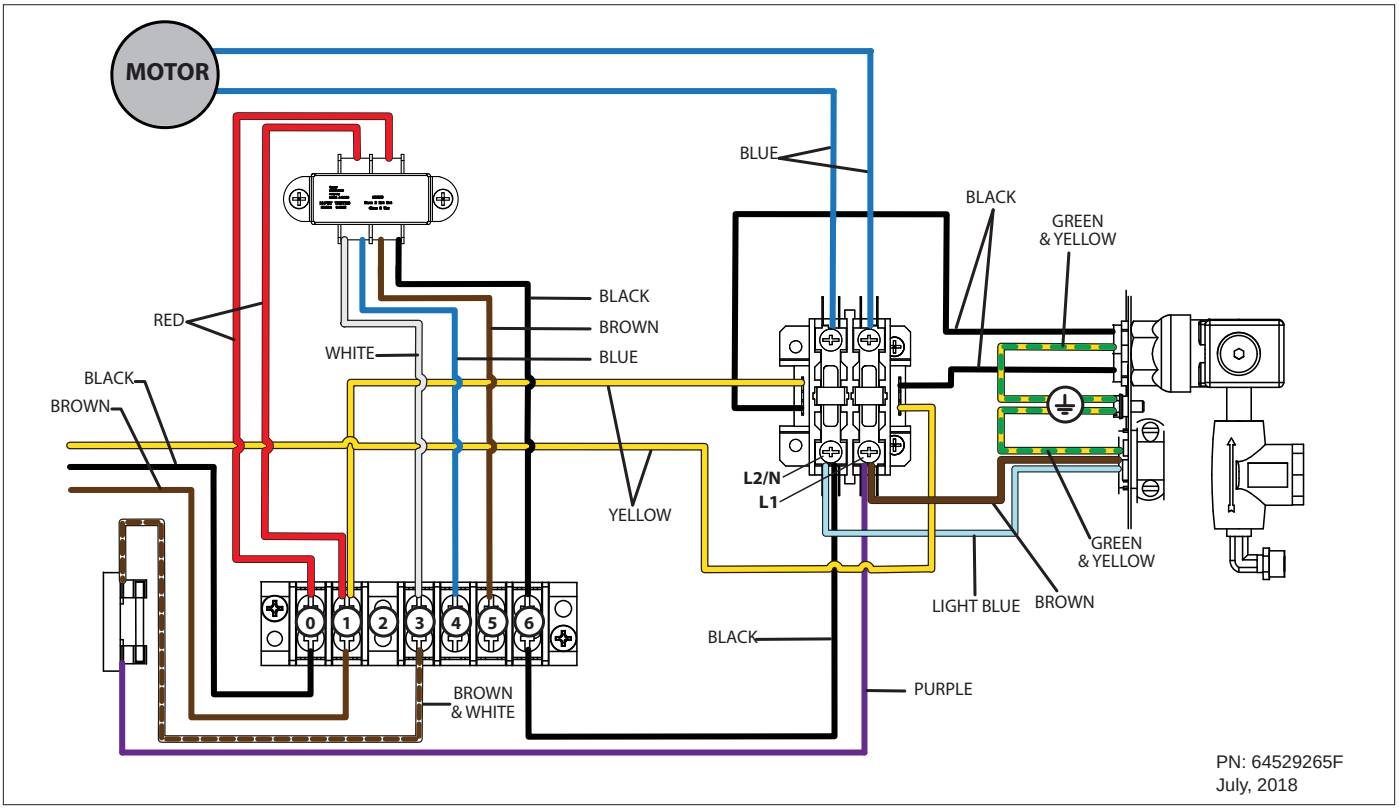
PROBLEM	POSSIBLE CAUSE	CORRECTIVE ACTION
Pump Will Not Run	Check all wires for loose or broken connection. Check fuse. Check low-voltage leads (yellow and black wires) for 24 volts.	If voltage is not present, replace the transformer or fuse. (Also see *ELECTRICAL SYSTEM* chart, page 25.)
	Turn power **ON** and **OFF**, watching to see if relay breaker bar operates properly.	If relay is not operating properly, and assuming all other parts are good, replace the relay. (Also see *ELECTRICAL SYSTEM* chart, page 25.)
	Test solenoid valve by loosening brass nut on right side. If water flows out with power **ON**, turn power **OFF**. Water flow should stop. **CAUTION: DO NOT** operate the pump for an extended time because running the pump without water could cause internal damage.	If water flow does not stop with power **OFF**, replace the solednoid valve.
Motor Stops or Will Not Start	Circuit breaker, main cut-off and low-voltage operatory switches are in the **OFF** position.	Place switches in **ON** position.
	Unit is not plugged in.	Plug in unit.
	Loose or broken wires.	Tighten, repair or replace wires.
	Motor hums, indicating bad capacitor.	Replace capacitor.
	Tight or noisy motor.	Check bearings. Make sure pump is properly shimmed to the motor or remove any debris in the pump.
	Motor is overheating.	Make sure the vacuum relief valve is adjusted properly and the motor has sufficient ventillation and water supply. Check for low line voltage.
Low or No Vacuum	Dirty filter.	Clean operatory and secondary filters if necessary.
	Water control assembly clogged, not allowing water to go throug pump.	Turn pump **OFF** immediately to prevent internal damage. Then unclog water control assembly.
	Loose or broken vacuum line connections.	Tighten, repair or replace vacuum line connections.
	Swing check valves clogged, allowing pump to suction through the other pump.	Take off the top of the valve and, if possible, remove debris. Otherwise, the valve should be replaced.
	Pump is worn out.	Refer to *VACUUM PUMP SYSTEM REPAIR PROCEDURES* in this section.
	Insufficient water supply.	Check supply where it connects to the cabinet. Then check the water control valve. The water control solenoid valve opens when the pump is turned on. Check this function by disconnecting the water line that enters the vacuum housing and by holding a container under the valve. Then turn on the pump. There should be a steady stream of water. ***CAUTION: DO NOT LEAVE THE PUMP RUNNING WITHOUT WATER!*** If there is no water flow, replace the water control solenoid valve.

TROUBLESHOOTING - ELECTRICAL SYSTEM

PROBLEM	POSSIBLE CAUSE	CORRECTIVE ACTION
Pump Not Running Because of Suspect Electrical Problem	Main power supply has blown fuse or circuit breaker.	Replace blown fuse or reset circuit breaker.
	Power not reaching pump or incorrect voltage.	Check connection box on the side of the dual cabinet to verify power is reaching the pump and main power supply is the correct voltage.
	Blown fuse in the control box.	Replace the fuse with the same rated capacity as the one from the factory.
	Loose connections inside the control box.	Remove the control box cover and visually inspect for loose connections. *(Refer to the schematic inside the control box cover for the components and wiring scheme for that particular box.)*
Motor Does Not Start by Switch	Defective transformer or coil in the relay.	Using a non-conductive device, push in the tabs on the relay to determine if the motor will start. Then using electrical test equipment, verify the voltage coming out of the secondary side of the transformer. If it is less than 21V, replace the transformer. If it is more than 21V, replace the relay.

The troubleshooting charts should be used when attempting to isolate Barracuda Dual Wet Vacuum operational problems. If the problem is not addressed by using these actions, contact Ramvac technical service at 866-DTE-INFO.

RELAY BOX



FUSE REPLACEMENT

⚠ WARNING

For continued protection against fire hazard, correct fuse must be used.

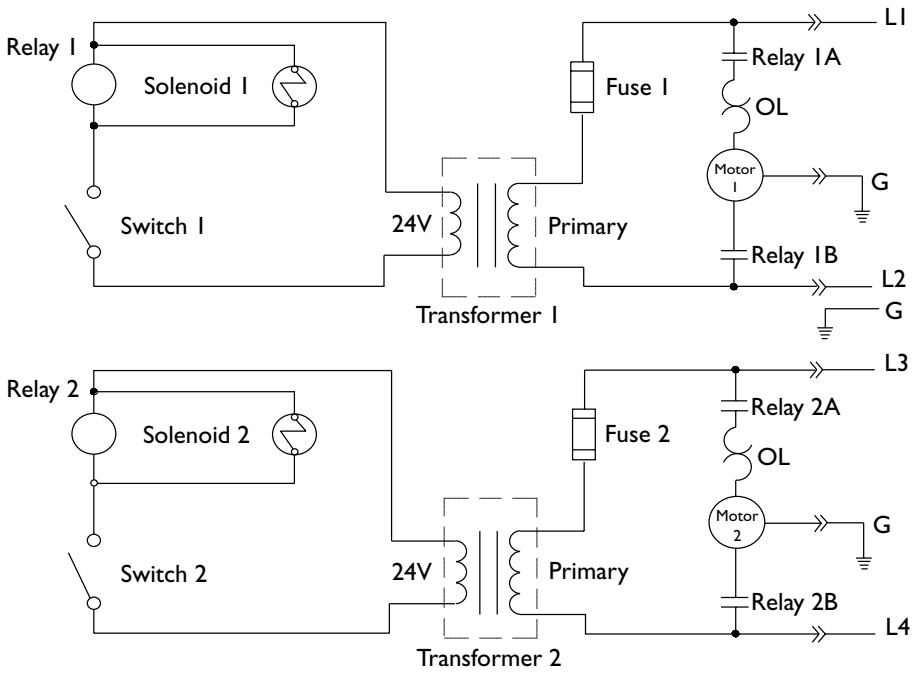
230 VOLT PUMP

Fuse replacement: Use BUSS MDL or MDQ 250V AC 15/100 A, Littlefuse 313 250V AC 15/100 A Slo-blo.

Ramvac

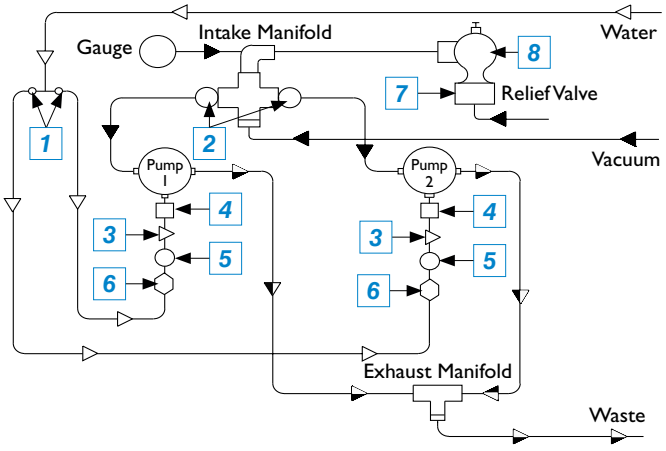
WIRING SCHEMATIC

The Barracuda dual wet vacuum electrical control system is a low-voltage (24V) circuit, designed to provide two totally independent control systems for each pump. This system also provides automatic control of the water supply system for each pump. The wiring schematic shows for electrical rough-in (refer to *SECTION II - PREINSTALLATION* and *SECTION III - INSTALLATION* of this manual.)*(See pages 7-8 for further information on rough-in and final hook-up locations.)*



AIR/WATER FLOW CIRCULATION DIAGRAM

The circulation diagram shows the relationship of all the major assemblies to the total system. All connecting lines are marked with a symbol to indicate their function: vacuum line, water line or waste line. The assemblies are individually broken down and further explained in other sections of this manual.



AIR/WATER FLOW CIRCULATION PARTS

#	QTY	PART/KIT NAME	PART/KIT NO
1	2	Filter, Water Shutoff	64622012
2	2	Valve, Swing Check	64568191
3	2	Valve, Anti-Siphon	64622011
4A	2	Valve, Flow Control - 1 HP	64568192
4B	2	Valve, Flow Control - 2 HP	64622010
5	2	Valve, Solenoid (Only)	64568156
6	2	Filter, Water	64568135
7	1	Muffler, Vacuum Relief	64568159
8	1	Valve, Vacuum Relief	64622001

DENTALEZ

PUMP REMOVAL

⚠ WARNING

- To prevent any chance of electrical shock, always disconnect power when indicated.

If the motor does not start after checking through the *TROUBLESHOOTING* section of this manual, the motor may be defective. If the pump must be removed for factory repair or replacement, perform the following steps:

1. Turn **OFF** power to the vacuum system at the circuit breaker or electrical disconnect box.
2. Use a Phillips-head screwdriver to loosen the two #10-32 panhead screws securing the electrical box cover plate, then remove cover plate.
3. Disconnect the pump electrical supply cord from the relay and remove from electrical box.
4. Using the manual valve, turn **OFF** the water supply.
5. Disconnect the water line to the pump being removed.
6. Disconnect the waste and input lines from the pump being removed and cap off the lines using the closure plugs provided.
7. Disconnect the low-voltage wires from the remote switch circuit.
8. Remove the wing nuts.

VACUUM PUMP SYSTEM REPAIR PROCEDURES

WARNING

- To prevent any chance of electrical shock, always disconnect power when indicated.
- Do not attempt these repairs in the dental office.

TOOLS NEEDED

- 1/4", 5/16", 11/32" & 3/8" Nut Driver
- 7/16", 1/2", 9/16" & 15/16" Open-end Wrench
- 1", 15/16", 5/8", 3/4", 1¾" Socket
- DOW® CORNING 4 Silicone Grease
- Needle-nose Pliers
- Ratchet
- Channel-lock Pliers
- Loctite® 571 Thread Sealant Brown
- Flat-head Screwdriver
- Torque Wrench
- Paint Scraper
- Loctite® 243 Threadlocker Blue
- Wire Stripper/Crimper
- Hammer
- Pop Riveter
- Loctitie® 271 Threadlocker Red
- Wire Cutter
- Bench Vise
- Phillips Head Screwdriver

NOTE: *Retain all hardware for reinstallation.*

DIAGNOSTIC TEST PROCEDURE

Determine if the required repair procedure is electrical or mechanical.

1. Turn **OFF** power to the vacuum system at the circuit breaker or electrical disconnect box.
2. Disconnect the pump electrical supply cords from the dual electrical boxes.
3. At the needle valves, turn **OFF** the main water supply to the cabinet.
4. Use Phillips Head screwdriver to remove the two #10-32 round head screws securing the drip plates to the top of the motor, then remove the busing and drip plates *(FIGURE 4)*.
5. Remove the dust cover located at the top center of the motor *(FIGURE 5)*.
6. Using flat-head screwdriver, engage the slot in the drive shaft and rotate the shaft to check for free movement.
    - If the shaft moves smoothly, proceed to *ELECTRICAL BOX REMOVAL* instructions.
    - If the shaft is difficult to turn or is jammed, proceed to *PUMP DISASSEMBLY* instructions *(page 31)*.

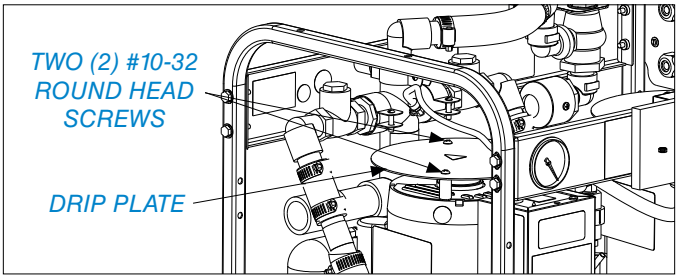


FIGURE 4. REMOVE TWO SCREWS SECURING DRIP PLATE

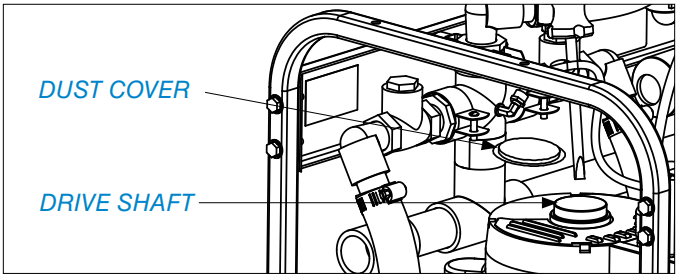


FIGURE 5. REMOVE DUST COVER

VACUUM PUMP SYSTEM REPAIR PROCEDURES (CONTINUED)

ELECTRICAL BOX REMOVAL

NOTE: *Most electrical repairs can be performed without removing the pump from the cabinet.*

1. Use Phillips Head screwdriver to loosen the two (2) #10-32 panhead screws securing the electrical box cover plate, then remove the cover plate *(FIGURE 7)*.
2. Check the wire leads to the motor for breaks or bad connections.
3. Check the fuse and check for loose or broken wires in the electrical box *(FIGURE 6)*.
4. Disconnect the pump electrical supply cord from the relay and ground screw, then remove from electrical box.
5. Disconnect the wires from behind the faceplate of the cabinet and pull through the box.
6. Remove the two water lines from the water manifold *(FIGURE 7)*.
7. Use a 9/16" wrench to remove the 3/8-16 bolt that secures the electrical box bracket to the motor/pump.
8. Use a 1" socket to remove the chase nipple that secures the electrical box to the motor, then remove the electrical box.

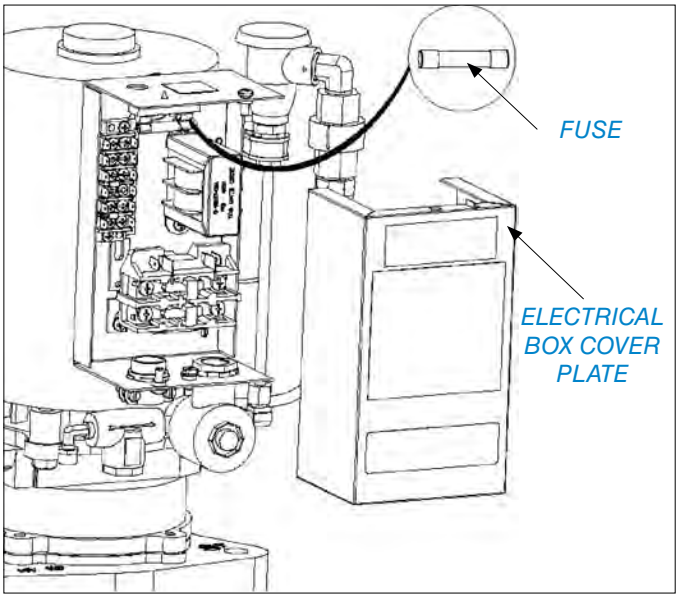


FIGURE 6. REMOVE ELECTRICAL BOX COVER PLATE

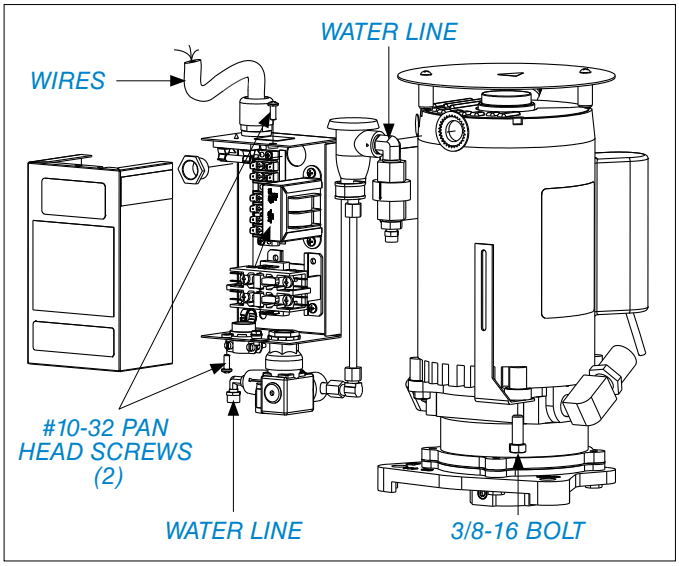


FIGURE 7. REMOVE WATER LINE FROM WATER MANIFOLD

VACUUM PUMP SYSTEM REPAIR PROCEDURES (CONTINUED)

PUMP DISASSEMBLY

1. Remove the motor cover plate (top of the motor).
2. Disconnect the three electrical box wires from the switch located behind the faceplate of the cabinet.

MOTOR PUMP ASSEMBLY REMOVAL

1. Disconnect the pump vacuum and exhaust lines and install line closure plugs.
2. Shut **OFF** the valve at the water control manifold.
3. Disconnect the pump water line *(FIGURE 8)*.
4. Disconnect the two motor wire leads from the electrical terminal.
5. Remove the 5/16-18 wing nuts from the pump base (four nuts on the 2 HP pump; three nuts on the 1 HP pump).
6. Take off the base by using a 1/2" wrench to remove the four or five 5/16-18 bolts and lock washers that secure it to the pump housing, then inspect the base for excessive scoring or side wear *(FIGURE 9)*.
7. Remove the impeller *(FIGURE 10)*:
   a. Use a 5/8" (1 HP) or 3/4" (2 HP) socket to remove the 7/16-20 (1 HP) or 1/2-20 (2 HP) Flexloc® nut, securing the impeller in place.
   b. Use a 1¾" socket to remove the impeller.
   c. Inspect the impeller for any pitting or scoring.
8. Use a 9/16" wrench to remove the four 3/8-16 bolts that secure the pump housing to the motor, then remove pump housing *(FIGURE 11)*.
9. Remove the water seal spring assembly.
10. Inspect the housing for pitting or scoring.

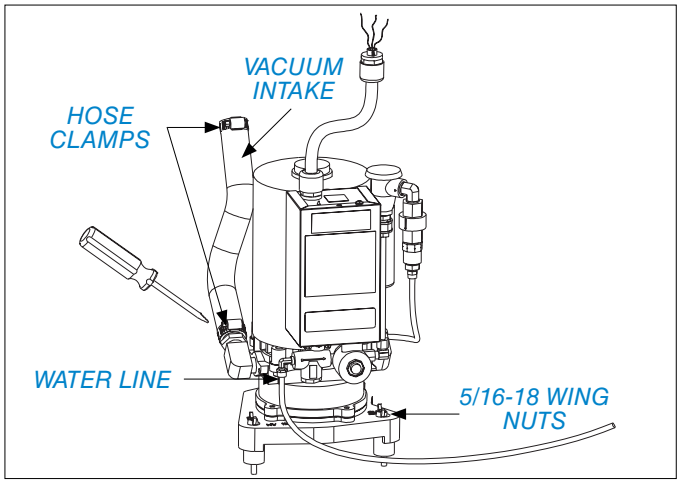


FIGURE 8. DISCONNECT PUMP WATER LINE

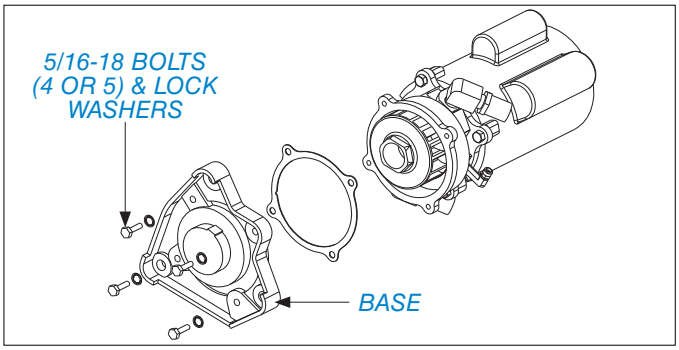


FIGURE 9. TAKE OFF BASE

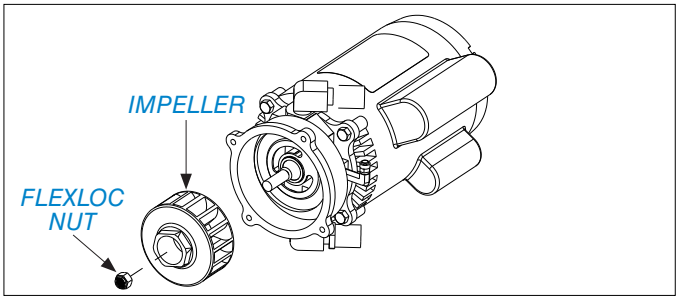


FIGURE 10. REMOVE INPELLER

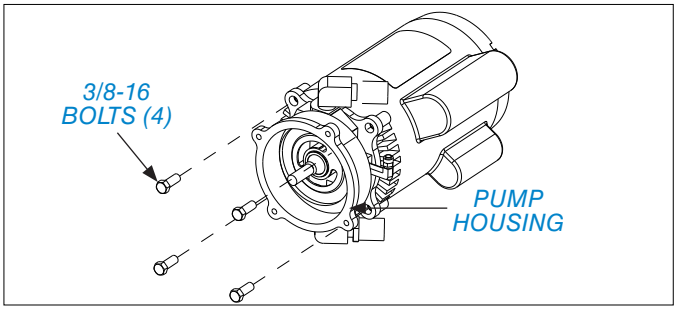


FIGURE 11. REMOVE BOLTS & PUMP HOUSING

VACUUM PUMP SYSTEM REPAIR PROCEDURES (CONTINUED)

PUMP TO MOTOR ASSEMBLY

1. Apply silicone grease to the motor shaft, seal and pump housing.
2. Press the seal into the pump housing with the ceramic side facing outward *(FIGURE 12)*.
3. Carefully reinstall the pump housing onto the motor shaft.
4. Install the spring seal with the nylon side in contact with the ceramic washer.

NOTE: *Lubrication of the motor shaft will ease installation.*

5. Remove any grease from the motor shaft threads. Apply Loctite® 271 to the threads of the motor shaft. (Allow 20-minute cure time).
6. Reinstall the impeller onto the shaft with the flat side facing the motor. Torque the impeller to 380 in. lbs.
7. Install the Flexloc® nut. Torque the nut to 60 ft. lbs.
8. Align the housing so that the small elbow is opposite the electrical box mounting hole in the motor.

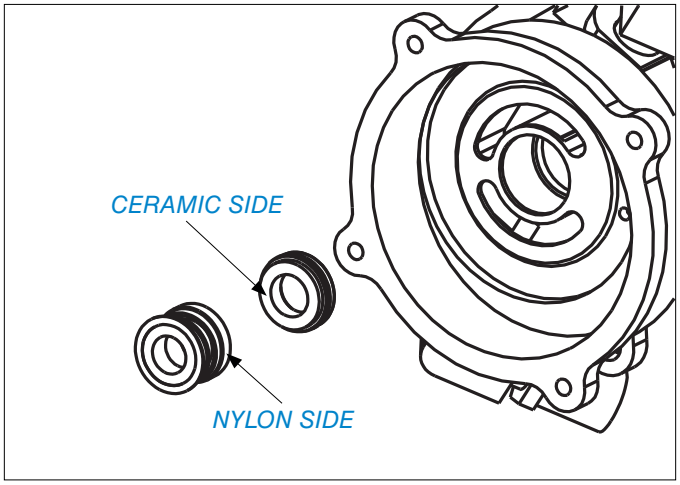


FIGURE 12. PRESS SEAL INTO PUMP HOUSING

VACUUM PUMP SYSTEM REPAIR PROCEDURES (CONTINUED)

HOUSING/IMPELLER SPACING

1. To properly space the impeller to the housing, slide two or three .031" shims between the housing and the motor at one corner *(FIGURE 13)*.
2. Slide other shims of various sizes diagonally across from the corner in Step 1 until the impeller is snug with the housing.
3. Remove and add up all the sizes of the shims used. EXAMPLE: A total of .100" is used, divide that by 2 to obtain .050". Use this amount minus an additional .005" for 1 HP pumps and .010" for 2 HP pumps for each corner.

NOTE: *For further explanation, see SHIMMING PROCEDURE chart on the next page.*

4. Apply Loctite 243® to the retained 3/8-16 bolt threads. Install the bolts and required shims. Torque screws to 390 in. lbs *(FIGURE 14)*.
5. Check for free spin of the impeller by removing the motor from the fixture and rotating the impeller.

NOTE: *For proper fit, shims may need to be added or removed.*

6. Apply Loctite 243 to the 5/16-18 bolt threads. Reinstall the base and gasket, aligning the intake and discharge ports, using the 5/16-18 bolts and lock washers. Torque bolts to 21 ft. lbs *(FIGURE 15)*.
7. Set the pump upright and insert a screwdriver into the slot on top of the motor.
8. Check for free spin and smooth operation of the pump.

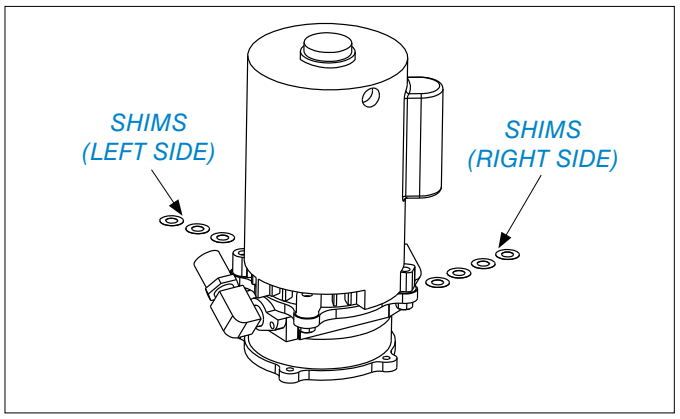


FIGURE 13. SLIDE SHIMS BETWEEN HOUSING AND MOTOR

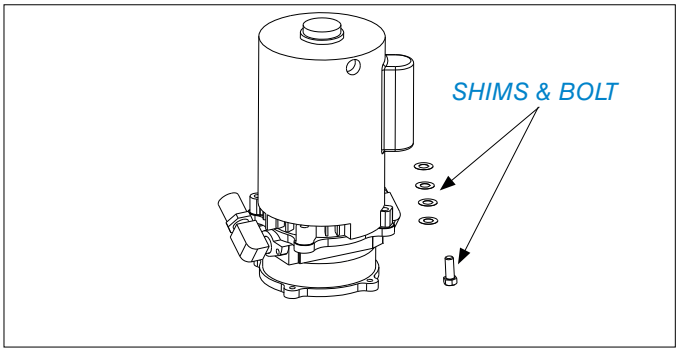


FIGURE 14. INSTALL BOLTS AND REQUIRED SHIMS

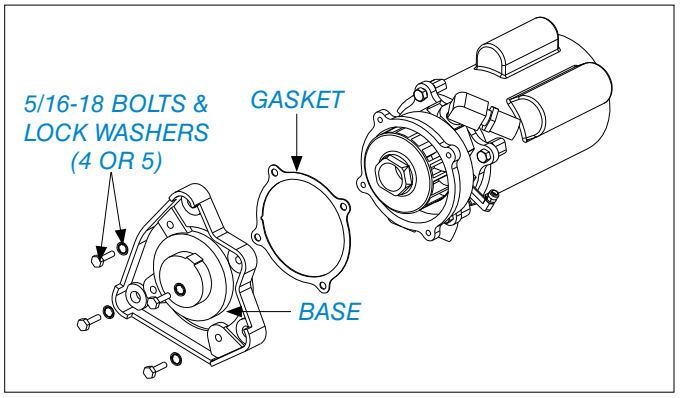


FIGURE 15. REINSTALL BASE AND GASKET

VACUUM PUMP SYSTEM REPAIR PROCEDURES (CONTINUED)

HOUSING/IMPELLER SPACING

SHIMMING PROCEDURE

A. Insert shims between the motor and the housing at two opposite mounting legs until snug.

B. Remove and add up the total thickness of the shims from both sides.

EXAMPLE:	Left Side Shims	Right Side Shims
	.031	.031
	+.015	+.031
	+.015	+.005
	.061	.067

.016 + .067 = .128

C. Divide the total by 2 and subtract:

.005 for 1 HP motor
.010 for 2 HP motor

D. Use the best combination of shims for the required shim dimension.

EXAMPLE:	Required Shim Dimension	Combine Shims
	.059	.031
		+.015
		+.010
		+.002
		.058

E. Install a bolt and equal shim combinations at all four locations.

VACUUM PUMP OPERATION TESTING

1. To check for proper operation of the vacuum pump, connect to an electrical source, water and waste line.
2. Start the pump, then block the suction side of the pump and the vacuum relief valve. The vacuum level should read between 20" to 25" Hg. Shims may need to be added or removed for proper vacuum reading. (Refer to *HOUSING/IMPELLER SPACING* section, page 33.)
3. Set the vacuum level by unblocking the vacuum relief valve and adjusting the valve to 10" to 12" Hg.
4. Operate the pump for approximately one hour continuously to check for any water leaks, electrical problems, and consistent vacuum level.

SERVICE INSTRUCTION

If the area of concern is not addressed in this manual, contact DENTALEZ customer service at 866-DTE-INFO. (See *LIMITED WARRANTY*.)

Please have the following product information available. Information may be found on the product model/serial number label on the vacuum *(FIGURE 16)*:

Model Name:

Model Number:

Serial Number:

Date of Installation:

Dealer:

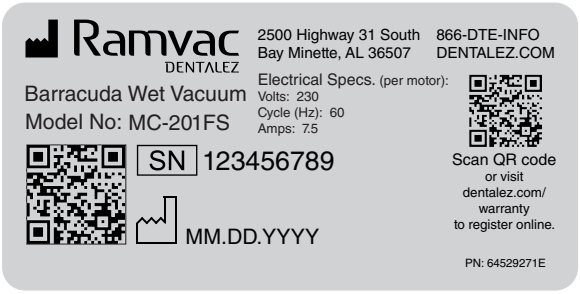


FIGURE 16. MODEL/SERIAL NUMBER LABEL ON THE VACUUM UNIT

DISPOSAL OF EQUIPMENT

DISPOSAL AND DECOMMISSIONING OF DENTALEZ PRODUCTS

NOTE: *All local regulatory requirements for disposal and decommissioning of equipment apply.*

- *ELECTRICAL SALVAGE:* Remove all circuit board and electrical cabling for recycle as electrical salvage.
- *METAL SALVAGE:* Remove all aluminum and steel components for recycle as metal salvage.
- *PLASTIC SALVAGE:* Remove all plastic components for recycle as plastic salvage.
- *BIOLOGICALLY CONTAMINATED SALVAGE:* Cuspidor, waste lines from the cuspidor, and the oral extraction lines should be handled with precaution and disposed of appropriately.
- *NON-SALVAGE COMPONENTS:* All other material unsuitable for recycling should be disposed of properly.

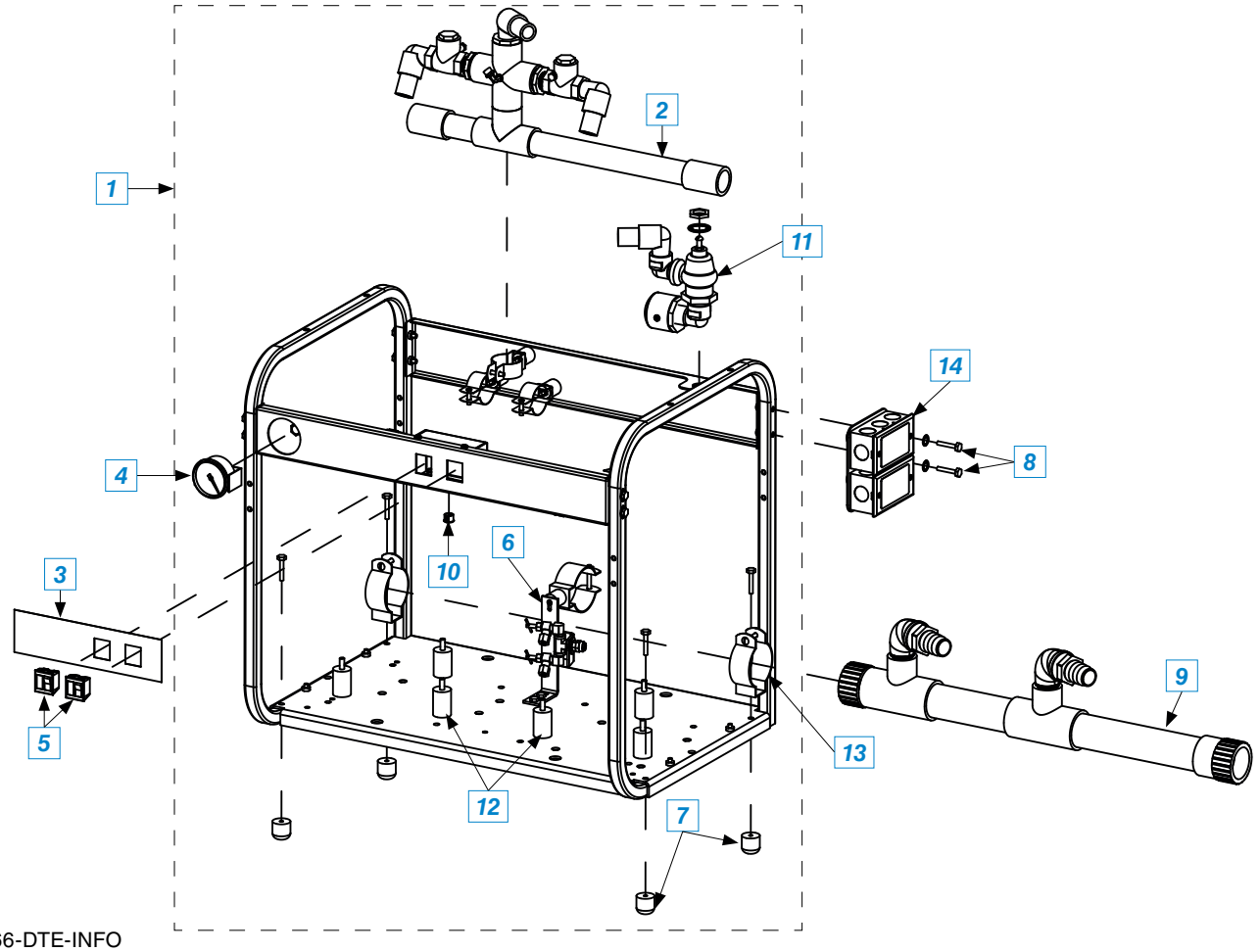
For specific questions regarding material type, contact DENTALEZ customer service. For decommissioning information on associated equipment from other manufacturers, refer to the documentation from the manufacturer.

REPLACEMENT PARTS LIST

The various parts of the Barracuda Dual Wet Vacuum are attached to the frame assembly. The table identifies each assembly and the drawing indicates its location.

FRAME ASSEMBLY

#	QTY.	PART/KIT NAME	PART/KIT NO.
1	1	Frame Assembly	64501452
2	1	Intake Manifold Assembly	64501451
3	1	MC 201/202 Decal	64529272
4	1	Vacuum Gauge	64568134
5	2	Rocker Switch	64568132
6	1	Water Manifold Assembly	64568163
7	4	Dual PVC Foot	64568161
8	6	Dual Screw, 1/4-20X1-1/4"	64611027
9	1	Waste Manifold Assembly	64568162
10	1	Grommet, 1/2" White	64556016
11	1	Vacuum Control Assembly	64501391
12	1	Motor Mount (Pkg. of 4)	64568149
13	2	Clamp, Hanger, 2" EMT	64527017
14	1	Dual Electric Box Assembly	005426



Ramvac

REPLACEMENT PARTS LIST (CONTINUED)

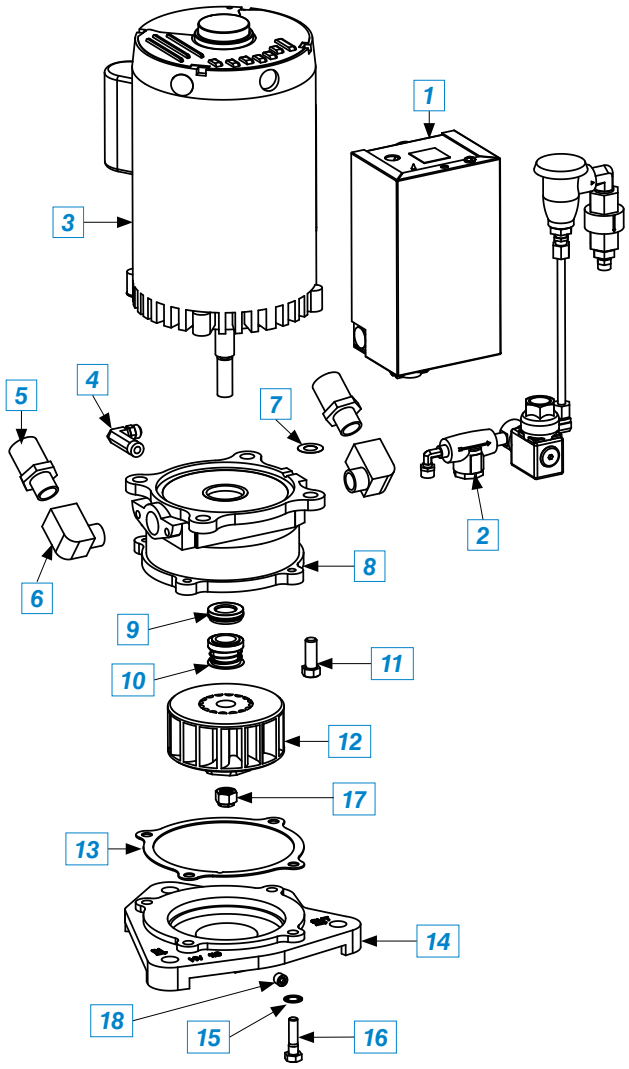
1 HP DUAL PUMP ASSEMBLY

#	QTY.	PART/KIT NAME	PART/KIT NO.
		Dual Pump Assemblly, 1 HP	SEE CHART
1	1	Relay Unit, 60 Hz, w/o Recirc. Relay Unit, 60 Hz, w/ Recirc.	64501153 64501159
2	1	Water Manifold, 60/50 Hz, w/o Recirc. Water Manifold, 60 Hz, w/ Recirc.	64572023 64572025
3	1	Motor, 1 HP, 60 Hz	64575059
4	1	Elbow, Brass, 1/4" Tube × 1/4" MIP	64568155
5	2	Adaptor, Brass, 1" Hose × 1/2" MIP	64568143
6	2	Elbow, Brass, 1/2" Street	64568139
7	As Req.	Shim, Steel .005 Thick Shim, Steel .031 Thick Shim, Steel .015 Thick Shim, Steel .002 Thick Shim, Steel .010 Thick	64604001 64604002 64604003 64604004 64604005
8	1	Housing, Brass, 1 HP	64564001
9	1	Ceramic Bearing	64599006
10	1	Spring Seal	64599005
11	4	Cap Screw, 3/8-16 × 1"	1615-028
12	1	Impeller, Brass, Balanced, 1 HP	64566020
13	1	Housing Gasket, Fiber	64568127
14	1	Base Plate, Brass, 1 HP	64508001
15	4	Internal Star Washer, 5/16"	64624016
16	4	Cap Screw, 5/16-18 × 1¼"	1615-041
17	1	Nut, Flexloc, 7/16-20	64579052
18	1	Pipe Plug, Brass, 1/8"	1637-010
	1	Motor Replacement Kit, 1 HP Includes Parts 3, 7, 9, 10, 13 & 17	64568165
	1	Housing Replacement Kit, 1 HP Includes Parts 7, 8, 9, 10, 13, 15 & 16	64568199
	1	Rotary Seal Replacement Kit, 1 HP Includes Parts 9, 10, & 13	64568123
	1	Impeller Replacement Kit, 1 HP Includes Parts 12, 13, 15 & 16	64568198
	1	Base Replacement Kit, 1 HP Includes Parts 13, 14 & 18	64568167
	1	Lower Rebuild Kit, 1 HP Includes Parts 7, 8, 9, 10, 12, 13, 14, 15, 16, 17 & 18	64568125

NOTE: *See OPERATION and CARE & MAINTENANCE sections of this manual for detailed information on hookup and care of the Barracuda Dual Wet Vacuum Pump.*

DUAL PUMP ASSEMBLY, 1 HP

QTY.	PART/KIT NAME	PART/KIT NO.
1	60 Hz, w/o Recirculator	64586811R
1	60 Hz, w/ Recirculator	64586813R



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REPLACEMENT PARTS LIST (CONTINUED)

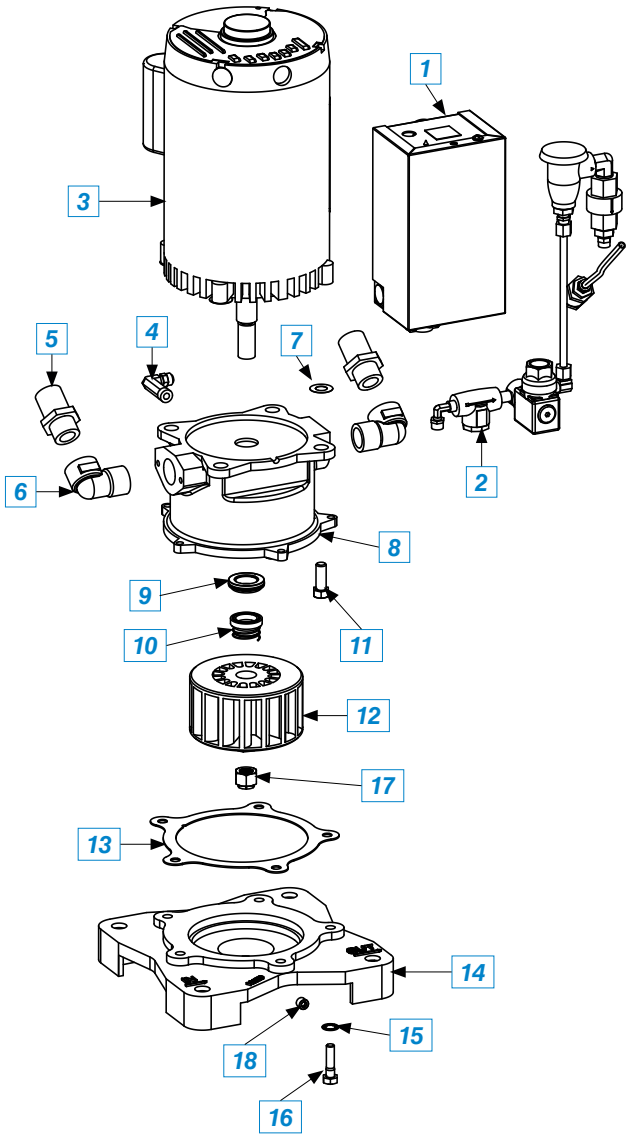
2 HP SINGLE PUMP ASSEMBLY

#	QTY.	PART/KIT NAME	PART/KIT NO.
		Dual Pump Assemblly, 2 HP	SEE CHART
1	1	Relay Unit, 60 Hz, w/o Recirc. Relay Unit, 60 Hz, w/ Recirc.	64501158 64501181
2	1	Water Manifold, 60 Hz, w/o Recirc. Water Minifold, 60/50 Hz, w/ Recirc.	64572024 64572026
3	1	Motor, 2 HP, 60 Hz	64575060
4	1	Elbow, Brass, 1/4" Tube × 1/4" MIP	64568155
5	2	Adaptor, Brass, 1" Hose × 3/4" MIP	64504087
6	2	Elbow, Brass, 3/4" Street	64568144
7	As Req.	Shim, Steel .005 Thick Shim, Steel .031 Thick Shim, Steel .015 Thick Shim, Steel .002 Thick Shim, Steel .010 Thick	64604001 64604002 64604003 64604004 64604005
8	1	Housing, Brass, 2 HP	64564002
9	1	Ceramic Bearing	64599007
10	1	Spring Seal	64599008
11	4	Cap Screw, 3/8-16 × 1"	1615-028
12	1	Impeller, Brass, Balanced, 2 HP	64566021
13	1	Housing Gasket, Fiber	64568128
14	1	Base Plate, Brass, 2 HP	64508002
15	5	Internal Star Washer, 5/16"	64624016
16	5	Cap Screw, 5/16-18 × 1¼"	1615-041
17	1	Nut, Flexloc, 1/2-20	64579053
18	1	Pipe Plug, Brass, 1/8" MIP	1637-010
	1	Motor Replacement Kit, 2 HP Includes Parts 3, 7, 9, 10, 13 & 17	64568166
	1	Housing Replacement Kit, 2 HP Includes Parts 7, 8, 9, 10, 13, 15 & 16	64568200
	1	Rotary Seal Replacement Kit, 2 HP Includes Parts 9, 10, & 13	64568124
	1	Impeller Replacement Kit, 2 HP Includes Parts 12, 13, 15 & 16	64568189
	1	Base Replacement Kit, 2 HP Includes Parts 13, 14 & 18	64568168
	1	Lower Rebuild Kit, 2 HP Includes Parts 7, 8, 9, 10, 12, 13, 14, 15, 16, 17 & 18	64568126

NOTE: *See OPERATION and CARE & MAINTENANCE sections of this manual for detailed information on hookup and care of the Barracuda Dual Wet Vacuum Pump.*

DUAL PUMP ASSEMBLY, 2 HP

QTY.	PART/KIT NAME	PART/KIT NO.
1	60 Hz, w/o Recirculator	64586812R
1	60 Hz, w/ Recirculator	64586814R

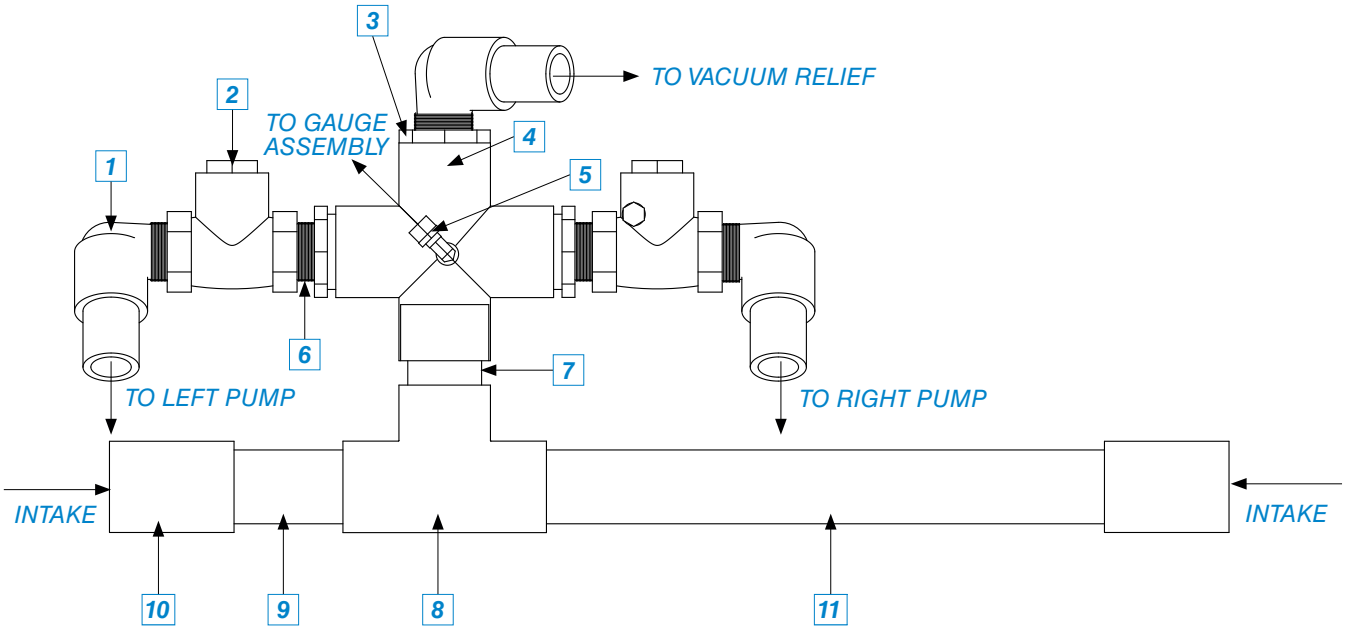


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REPLACEMENT PARTS LIST (CONTINUED)

DUAL INTAKE MANIFOLD ASSEMBLY

#	QTY.	PART/KIT NAME	PART/KIT NO.
	1	Intake Manifold Assembly	64501451
1	3	Elbow, 3/4" MIP × Shank	64541117
2	2	Swing Check Valve, 3/4" FIP	64568191
3	3	Bushing, Reducer 1" Slip × 3/4" FIP	64516006
4	1	Cross, PVC 1" Slip	64537006
5	1	Elbow, Brass, 1/4" Tube × 1/8" MIP	64541004
6	2	Nipple, Brass, 3/4" Close	64568142
7	1	PVC, 1" × 2" Long	64578098
8	1	Tee, 1" Slip	64616008
9	1	PVC, 1" × 4" Long	64578097
10	2	Adaptor, PVC, 1" FIP × Slip	64504029
11	1	PVC, 1" × 12" Long	64578096

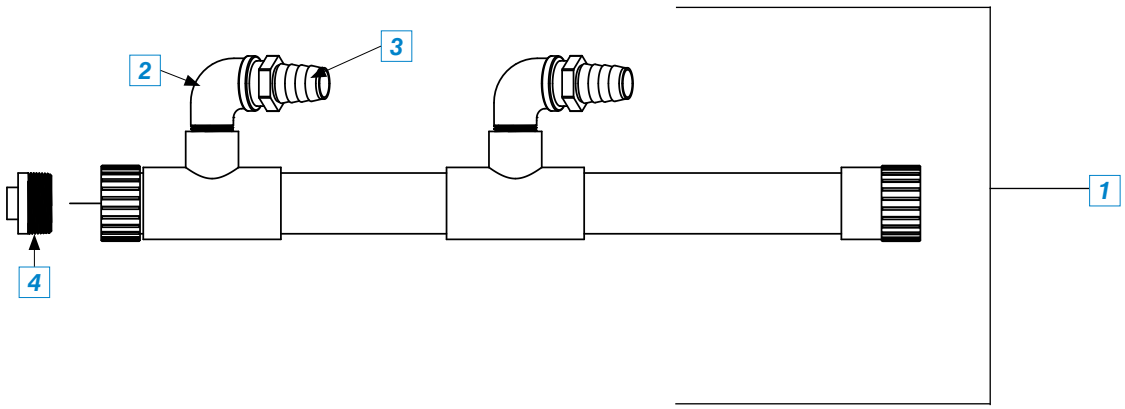


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REPLACEMENT PARTS LIST (CONTINUED)

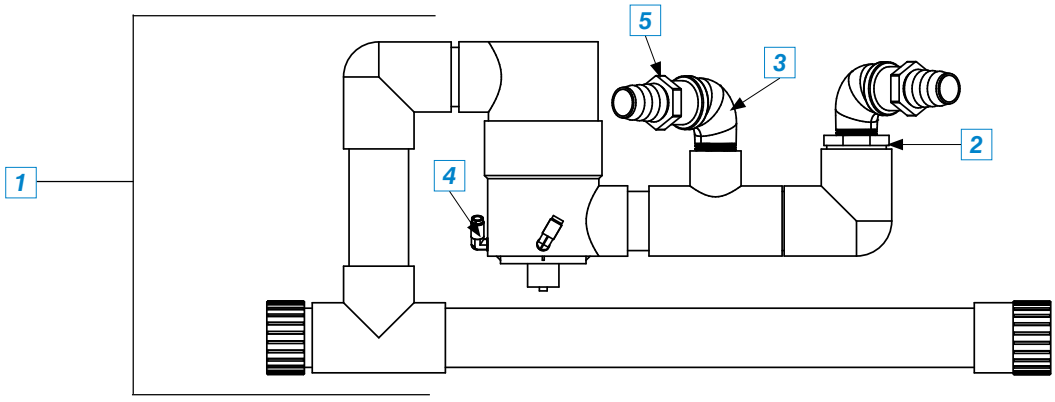
DUAL EXHAUST MANIFOLD ASSEMBLY

#	QTY.	PART/KIT NAME	PART/KIT NO.
1	1	Standard Exhaust Manifold Assembly	64568162
2	2	Elbow, Brass, 1" MIP × 1" FIP	64541134
3	2	Adaptor, Brass, 1" Hose × 1" MIP	64504121
4	1	Plug, PVC, 1½" MIP	64584024



WATER RECIRCULATOR EXHAUST MANIFOLD ASSEMBLY (OPTIONAL)

#	QTY.	PART/KIT NAME	PART/KIT NO.
1	1	Water Recirculator Exhaust Manifold Assembly (Optional)	64501122
2	1	Bushing Reducer, 1½" Slip × FIP	64516031
3	2	Elbow, Brass, 1" MIP × FIP	64541134
4	2	Elbow, 1/4" Poly × 1/8" MIP	64541121
5	2	Adaptor, Brass, 1" Hose × 1" MIP	64504121



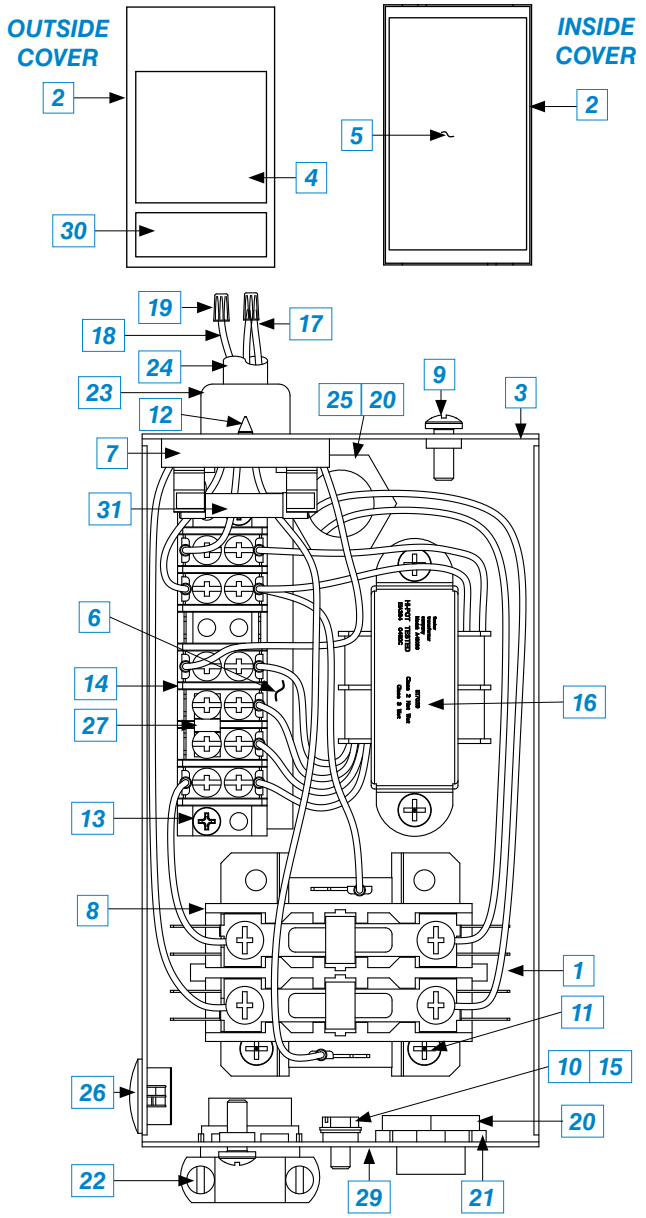
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REPLACEMENT PARTS LIST (CONTINUED)

ELECTRICAL BOX

#	QTY.	PART/KIT NAME	PART/KIT NO.
	1	Electrical Box Assembly	64501150
1	1	Control Box Chassis	64513011
2	1	Control Box Cover	64513011B
3	1	Decal, Low, 24V	64529027
4	1	Decal, Fire/Shock Warning	64529174
5	1	Decal, D V Elec. Diagram	64529265
6	1	Decal, D V Terminal Block	64529185
7	1	Fuse Clip Holder	64561004
8	1	Relay, 30 Amp Capacity	64568133
9	2	Screw, 10-32 × 1/2"	1623-054
10	1	Screw, 10-32 Green, Ground	64611060
11	4	Screw, 8-32 × 1/4" Phillips	64611085
12	1	Screw, 6 × 5/16", Fuse Holder	64611119
13	2	Screw, 6-32, Terminal Board	64611120
14	1	Terminal Block	64619006
15	1	Lock Washer, #10 Intl. Star	1636-026
16	1	Primary Trans., 115/230V	64568195
17	1	Decal, Caution Low Volts	64529025
18	1	Tag, Wire Usage Warning	64529203
19	2	Wire Nut, Ideal, 71-B Gray	64626003
20	2	Nipple, Chase, 1/2"	64578001
21	1	Nut Lock, 1/2"	64579001
22	1	Clamp, Cable	64531001
23	1	Connector, Snap-in, Black	64531025
24	1	Conduit, Black	64618068
25	1	Washer, 7/8" Intl Star	64624013
*	1	Electrical Box Assembly Kit: 230V, 60 Hz, 1 HP w/o recirc. 230V, 60 Hz, 1 HP w/ recirc. 230V, 60 Hz, 2 HP w/o recirc. 230V, 60 Hz, 2 HP w/ recirc.	 64501153 64501159 64501158 64501181
26	1	Plug, Breaker Hole	64584032
27	1	Jumper, Terminal Block	64615021
28	1	Decal, Fuse Replacement 15/100A, 230V	64529187

***NOTE:** Electrical Box Assembly Kits are complete with water manifold attached.*



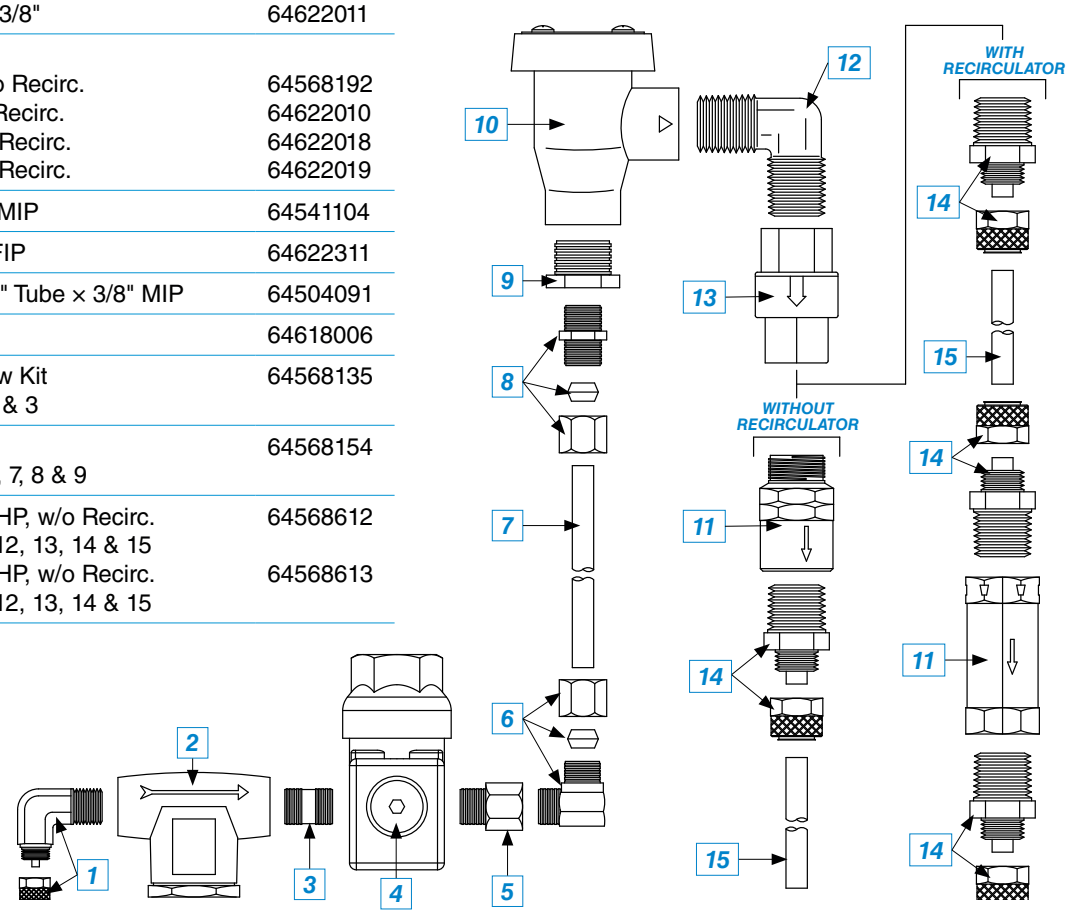
#	QTY.	PART/KIT NAME	PART/KIT NO.
29	1	Decal, Ground	2679-497
30	1	Electrical Rating Decal: 230V, 7.5A, 60 Hz, 1 HP 230V, 7.5A, 60 Hz, 2 HP	 64529125 64529126
31	1	Fuse, 15/100A, Slo-Blo, 250V (pkg. of 4) (60 Hz)	64568130

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REPLACEMENT PARTS LIST (CONTINUED)

WATER CONTROL ASSEMBLY

#	QTY.	PART/KIT NAME	PART/KIT NO.
	1	Water Control Assembly, 1 HP w/o Recirc. Water Control Assembly, 1 HP w/ Recirc. Water Control Assembly, 2 HP w/o Recirc. Water Control Assembly, 2 HP w/ Recirc.	64572023 64572025 64572024 64572026
1	1	Elbow, Brass, 1/4", Tube × 1/8" MIP	64541004
2	1	Water Filter, 1/8" FIP	64545002
3	1	Nipple, Brass, 1/8" MIP	64578002
4	1	Solenoid Valve	64568156
5	1	Adapter, Brass, 1/8" MIP × 1/8" FIP	64504072
6	1	Elbow, Brass, 1/4" Compression × 1/8" MIP	64541106
7	1	Water Tube, 6" Straight	64618065
8	1	Connector, 1/4" Tube × 1/8" MIP	64531013
9	1	Bushing, Reducer, Brass, 3/8" MIP × 1/8" FIP	64516005
10	1	Anti-syphon Valve, 3/8"	64622011
11	1	Flow Control Valve: 1/2 GPM, 1 HP, w/o Recirc. 1 GPM, 2 HP, w/o Recirc. 1/8 GPM, 1 HP, w/ Recirc. 1/4 GPM, 2 HP, w/ Recirc.	 64568192 64622010 64622018 64622019
12	1	Elbow, Brass, 3/8" MIP	64541104
13	2	Check Valve, 3/8" FIP	64622311
14	1 or 3	Adapter, Brass, 1/4" Tube × 3/8" MIP	64504091
15	1	Tube, 1/4"	64618006
	1	Water Filter & Elbow Kit Includes Parts 1, 2 & 3	64568135
	1	Water Tube Kit Includes Parts 5, 6, 7, 8 & 9	64568154
	1	Check Valve Kit, 1 HP, w/o Recirc. Includes Parts 11, 12, 13, 14 & 15 Check Valve Kit, 2 HP, w/o Recirc. Includes Parts 11, 12, 13, 14 & 15	64568612 64568613

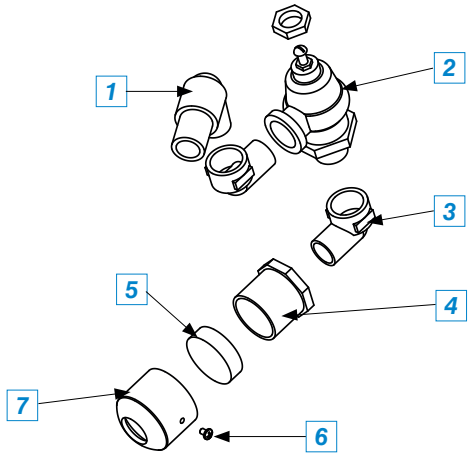


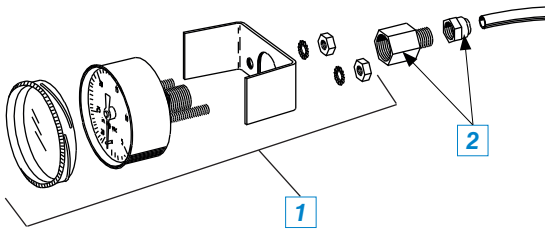
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REPLACEMENT PARTS LIST (CONTINUED)

WATER RECIRCULATOR EXHAUST MANIFOLD ASSEMBLY (OPTIONAL)

#	QTY.	PART/KIT NAME	PART/KIT NO.
	1	Vacuum Control Assembly	64501391
1	1	Elbow, PVC, 3/4" MIP x 1" Shank	64541117
2	1	Vacuum Relief Valve	64622001
3	2	Elbow, Brass, 3/4" FIP x 3/4" MIP	64541016
4	1	Bushing, PVC, 1¼" Slip x 3/4" FIP	64516008
5	1	Filter Element, Vacuum Relief Valve	64568145
6	1	Screw, 8 x 1/4" Phillips	64611085
7	1	Cap, PVC, 1¼" Slip	64521009





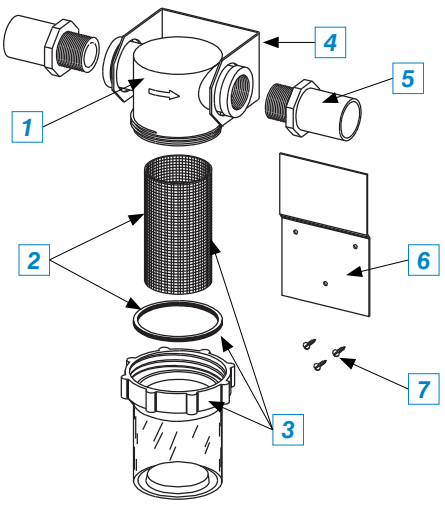
PRIMARY/SECONDARY FILTER

#	QTY.	PART/KIT NAME	PART/KIT NO.
1	1	Vacuum Gauge Assembly	64568134
2*	1	Adaptor, 1/4" FIP × 1/4" Poly	64531008

**Not included in assembly.*

WATER RECIRCULATOR EXHAUST MANIFOLD ASSEMBLY (OPTIONAL)

#	QTY.	PART/KIT NAME	PART/KIT NO.
	1	In-line Filter Assembly, 1"	64501940
1	1	In-line Filter Body, 1"	64509017
2	1	Screen (1", 20 Mesh, 2¼" D × 4¼" L) & Gasket	64568121
3	1	Screen (1", 20 Mesh, 2¼" D × 4¼" L) Gasket & Bowl (Clear)	64568122
4	1	Bracket, 1" In-line Filter Holder	64514041
5	2 2	Adaptor, PVC 1" MIP x 1½" Shank or Adaptor, PVC 1" MIP x 1" Shank	64568153 64504103
6	1	Bracket, In-line Filter Wall Mount	64514042
7	3	Screw, 10 x 1/2" Pan Head Phillips	64611007

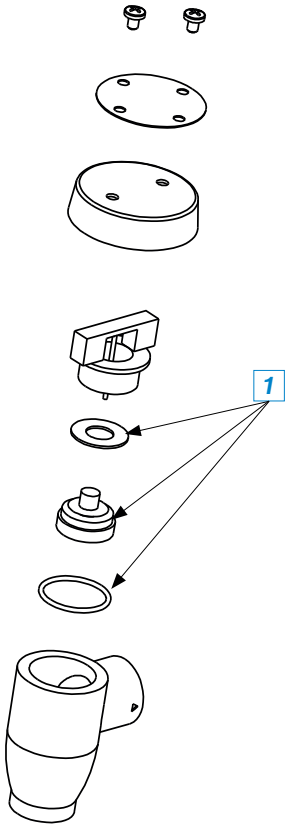


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REPLACEMENT PARTS LIST (CONTINUED)

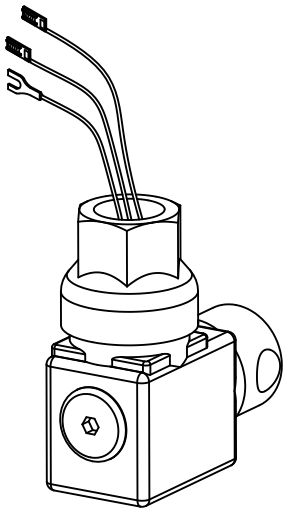
ANTI-SIPHON VALVE ASSEMBLY

#	QTY.	PART/KIT NAME	PART/KIT NO.
	1	Anti-siphon Valve Assembly	64622011
1	1	Anti-siphon Repair Kit	64568016A



WATER SOLENOID VALVE ASSEMBLY

#	QTY.	PART/KIT NAME	PART/KIT NO.
	1	Water Solenoid Valve Assembly, 24V	64568156



The Ramvac® Barracuda™ Dual Wet Vacuum is suitable for use in the specified electromagnetic environment. The customer and/or user of the vacuum should ensure that it is used in an electromagnetic environment as described in this manual.

Medical electrical equipment needs special precautions regarding electromagnetic compatability (EMC) and needs to be installed and put into service according to the EMC information provided in the accompanying documents.

Portable and mobile RF communications equipment can affect medical electrical equipment.

Include a list of all cables and maximum lengths of cables (if applicable), transducers and other accessories with which the manufacturer of the equipment or system claims compliance with the requirements of 5.2.2.1 a) and 5.2.2.1 b). Accessories that do not affect compliance with the requirements of these subclauses need not be listed. Accessories, transducers and cables may be specified either generically (e.g. shielded serial cable, load impedance) or specifically (e.g. by manufacturer and model or part number).

Use of accessories, sensors, and cables other than those specified may result in increased emission and/or decreased immunity of the vacuum.

The vacuum should not be used adjacent to, or stacked with other equipment. If adjacent or stacked use is necessary, the vacuum should be observed to verify normal operation in the configuration in which it is used.

There are minimum amplitudes for the vacuum to measure physiological signals. Operation of the equipment below the minimum amplitudes may cause inaccurate results.

Portable and mobile RF communications equipment can affect medical electrical equipment.

GUIDANCE AND MANUFACTURER'S DECLARATION – ELECTROMAGNETIC EMISSIONS		
The vacuum is intended for use in the electromagnetic environment specified below. The customer or the user of the vacuum should assure that it is used in such an environment.		
Emissions Test	Compliance	Electromagnetic Environment - Guidance
RF Emissions CISPR 11	Group 1	The vacuum uses RF energy only for its internal function; therefore, its RF emissions are very low and are not likely to cause any interference in nearby electronic equipment.
RF Emissions CISPR 11	Class A	The vacuum is suitable for use in all establishments, other than domestic establishments and those directly connected to the public low-voltage power supply network that supplies buildings used for domestic purposes.
Harmonic Emissions IEC 61000-3-2	Class A	
Voltage Fluctuations/ Flicker Emissions IEC 61000-3-3	Complies	

GUIDANCE AND MANUFACTURER'S DECLARATION – ELECTROMAGNETIC IMMUNITY ALL ME EQUIPMENT AND ME SYSTEMS			
The vacuum is intended for use in the electromagnetic environment specified below. The customer or the end user of the vacuum should assure that it is used in such an environment.			
Immunity Test	IEC 60601 Test Level	Compliance Level	Electromagnetic Environment - Guidance
Electrostatic Discharge (ESD) IEC 61000-4-2	±6 kV Contact ±8 kV Air	Not Applicable Not Applicable	Floors should be wood, concrete or ceramic tile. If floors are covered with synthetic material, the relative humidity should be at least 30%.
Electrical Fast Transient/Burst IEC 61000-4-4	±2 kV for power supply lines ±1 kV for input/output lines	Not Applicable Not Applicable	Mains power quality should be that of a typical commercial or hospital environment.
Surge IEC 61000-4-5	±1 kV differential mode ±2 kV common mode	Not Applicable Not Applicable	Mains power quality should be that of a typical commercial or hospital environment.
Voltage Dips, Short Interruptions and Voltage Variations on Power Supply Input Lines IEC 61000-4-11	<5% Ut; (>95% dip in Ut) for 0.5 cycle 40% Ut; (60% dip in Ut) for 5 cycles 70% Ut; (30% dip in Ut) for 25 cycles <5% Ut; (>95% dip in Ut) for 5 seconds	Not Applicable Not Applicable Not Applicable Not Applicable	Mains power quality should be that of a typical commercial or hospital environment. If the user of the equipment or system requires continued operation during power mains interruptions, it is recommended that the equipment or system be powered from an uninterruptible power supply or a battery.
Power Frequency (50/60 Hz) Magnetic Field IEC 61000-4-8	3 A/m	Not Applicable	Power frequency magnetic fields should be at levels characteristic of a typical location in a typical commercial or hospital environment.
NOTE: Ut is the AC mains voltage prior to application of the test level.			

GUIDANCE AND MANUFACTURER'S DECLARATION – ELECTROMAGNETIC IMMUNITY ME EQUIPMENT AND ME SYSTEMS			
The vacuum is intended for use in the electromagnetic environment specified below. The customer or the user of the vacuum should assure that it is used in such an environment.			
Immunity Test	IEC 60601 Test Level	Compliance Level	Electromagnetic Environment - Guidance
Conducted RF IEC 61000-4-6 Radiated RF IEC 61000-4-3	3 Vrms 150 kHz to 80 MHz 3 V/m 80 MHz to 2.5 GHz	3 Vrms 3 V/m	Portable and mobile RF communications equipment should be used no closer to any part of the vacuum, including cables, than the recommended separation distance calculated from the equation applicable to the frequency of the transmitter. Recommended separation distance: $d = 1.2 \sqrt{P}$ $d = 1.2 \sqrt{P}$ 80 MHz to 800 MHz $d = 2.3 \sqrt{P}$ 800 MHz to 2.5 GHz where *P* is the maximum output power rating of the transmitter in watts (W) according to the transmitter manufacturer and *d* is the recommended separation distance in meters (m). Field strengths from fixed RF transmitter, as determined by an electromagnetic site survey[a], should be less than the compliance level in each frequency range[b]. Interference may occur in the vicinity of equipment marked with the following symbol: 
NOTE 1: At 80 MHz and 800 MHz, higher frequency range applies. **NOTE 2:** These guidelines may not apply in all situations. Electromagnetic propagation is affected by absorption and reflection from structures, objects and people.			
a. Field strengths from fixed transmitters, such as base stations for radio (cellular/cordless) telephones and land mobile radios, amateur radio, AM and FM radio broadcast and TV broadcast cannot be predicted theoretically with accuracy. To assess the electromagnetic environment due to fixed RF transmitters, an electromagnetic site survey should be considered. If the measured field strength in the location in which the equipment or system is used exceeds the applicable RF compliance level above, the equipment or system should be observed to verify normal operation. If abnormal performance is observed, additional measures may be necessary, such as re-orienting or relocating the equipment or system. b. Over the frequency range 150 kHz to 80 MHz, field strengths should be less than 3 V/m.			

RECOMMENDED SEPARATION DISTANCE BETWEEN PORTABLE AND MOBILE RF COMMUNICATIONS EQUIPMENT AND THE VACUUM UNIT

The vacuum unit is intended for use in an electromagnetic environment in which radiated RF disturbances are controlled. The customer or the user of the vacuum can help prevent electromagnetic interference by maintaining a minimum distance between portable and mobile RF communications equipment (transmitters) and the vacuum as recommended below, according to the maximum output power of the communications equipment.

Rated maximum output power of transmitter W	Separation distance according to frequency of transmitter m		
	150 kHz to 80 MHz	80 MHz to 800 MHz	800 MHz to 2.5 GHz
	$d = 1.2 \sqrt{P}$	$d = 1.2 \sqrt{P}$	$d = 2.3 \sqrt{P}$
0.01	0.12	0.12	0.23
0.1	0.38	0.38	0.73
1	1.2	1.2	2.3
10	3.79	3.79	7.27
100	12	12	23

For transmitters rated at a maximum output power not listed above, the recommended separation distance *d* in meters (m) can be estimated using the equation applicable to the frequency of the transmitter, where *P* is the maximum output rating of the transmitter in watts (W) according to the transmitter manufacturer.

NOTE 1: At 80 MHz and 800 MHz, the separation distance for the higher frequency range applies.

NOTE 2: These guidelines may not apply in all situations. Electromagnetic propagation is affected by absorption and reflection from structures, objects and people.

Ramvac

BARRACUDA™ DUAL WET VACUUM PUMP FROM RAMVAC®

DENTALEZ® and its employees are proud of the products we provide to the dental community. We stand behind these products with a warranty against defects in material and workmanship as provided below and have our own in-house repair facility to service our products. In the event that you experience difficulty with the application or operation of any of our products, please contact our technical service department at our expense at (866) DTE-INFO.

If we cannot resolve the issue by telephone, we will arrange for a representative to contact you or suggest that the product be returned to our factory for inspection.

If product return or repair is required, we will provide you with a **Return Authorization** number and shipping instructions to return the product to the proper facility. If the product is under warranty, we will ask you to provide proof of purchase such as a copy of your invoice. Please be sure to include the **Return Authorization** number on the package you are returning. **Products returned without a return authorization number cannot be repaired.**

Freight costs for product returns are the responsibility of the customer. Products under warranty will be repaired or replaced, at our sole discretion, and returned at our expense. Products outside the warranty limits will be repaired and returned with costs invoiced to the customer. We are not responsible for shipping damages. We will, however, help you file a claim with the freight carrier. Written repair estimates are available.

DENTALEZ warrants all equipment and parts to be free of defects in material and workmanship, under normal usage under the following terms:

Ramvac	Limited Warranty Period*
Barracuda Dual Wet Vacuum Pump	5 Years from date of installation

Please note the following additional terms of our warranty and return policy:

- This warranty covers manufacturing defects only and does not cover defects resulting from abuse, accidents, misuse, improper handling, cleaning, care or maintenance. Damage resulting from the use of chemicals, cleaners, disinfectants or sterilization is not covered under this warranty nor is normal wear and tear. Failure to follow or observe our operating/use, maintenance and/or installation instructions voids this warranty as does the use of non-authorized parts and repairs made by an unauthorized repair facility.
- Liability is limited to repair or replacement of the defective part(s) or products at our sole discretion. All other liabilities, in particular liability for damages, including, without limitation, special, exemplary, consequential or incidental damages are excluded.
- THIS WARRANTY IS IN LIEU OF ALL OTHER WARRANTIES, EXPRESSED OR IMPLIED, INCLUDING ANY IMPLIED WARRANTIES OF MERCHANTABILITY OR FITNESS FOR A PARTICULAR PURPOSE. NO EMPLOYEE, REPRESENTATIVE OR DEALER IS AUTHORIZED TO CHANGE THIS WARRANTY IN ANY WAY OR TO GRANT ANY OTHER WARRANTY.

WARRANTY REPAIRS

Parts repaired or replaced on a product that is in warranty will be warranted for the duration of that product's original warranty.

PRODUCT RETURNS

Opened products or product returns more than a year old cannot be returned for credit. There will be a 15% ($25.00 minimum) restocking charge on all items authorized for return.

NOTES:

*See individual Product Manuals for complete warranty details. Provided conditions defined in instruction manual are met.

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DENTALEZ

NOTES:

DENTALEZ EQUIPMENT PRIVACY POLICY

Effective Date: November 1, 2023.

1. **Introduction and Overview.** This Privacy Policy describes how DentalEZ, Inc. its subsidiaries and affiliates (collectively "DentalEZ," "we," "our," or "us") collects, uses, and shares information about you as well as your rights and choices.

   This Privacy Policy applies to your use of the DentalEZ equipment containing the Aeras platform, or similar "smart technology" in such dental or medical equipment and any online service location that posts a link to this Privacy Policy, and all features, content, and other services that we own, control, and make available through such online service location (collectively, the "Service"). By using the Service or our DentalEZ smart equipment, you agree to our Terms of Use ("Terms") and consent to our collection, use and disclosure practices, and other activities as described in this Privacy Policy and the Terms. If you do not agree and consent, discontinue use of the Service and our equipment. If you have any questions or wish to exercise your rights and choices, please contact us as set out in the "Contact Us" section below.

2. **Information Collection.**

   A. Information You Provide.

   We collect information when you use the Service and our DentalEZ smart technology in your dental or medical equipment, including information you provide when you register an account for the Service, update your profile, access our content, test or use equipment, participate in a DentalEZ sweepstakes, contest, survey, special or promotion ("Promotion"), contact DentalEZ customer support or apply for a job with DentalEZ. We may use Service Providers (defined below) to collect information.

   You represent and warrant that you will only provide information and use the Service acting as an employee, owner, director, officer, or contractor of a company, partnership, sole proprietorship, nonprofit or other legal entity (a "Customer"), and that your communications and transactions with DentalEZ occur solely within the context of DentalEZ providing the Service or equipment to the Customer that you represent.

   Information we and our Service Providers on our behalf collect includes the following:

   - **Contact Data**, including your first and last name, email address, office address, phone number, organization name, dental profession and role.
   - **Account Credentials**, including your username, password, and information for authentication and account access.

   You may choose to voluntarily submit other information to us through the Service that we do not request, and, in such instances, you are solely responsible for such information, and we may immediately delete such information, without liability to you.

   B. Information Collected Automatically.

   In addition, we automatically collect information when you use the Service. Information we automatically collect includes the following:

   - **Service Use Data**, including data about the features you use, the pages you visit, the emails and advertisements you view, the products you purchase, the time of day you browse, and your referring and exiting pages.
   - **Device Connectivity and Configuration Data**, including data about the type of device or browser you use, your device's operating software, your internet service provider, your device's regional and language settings, and device identifiers such as IP address, MAC address, and Ad Id (e.g., IDFA or AAID).
   - **Location Data**, including imprecise location data (such as location derived from an IP address, equipment sensor or data that indicates a city or postal code level) and, with your consent, precise location data (such as latitude/longitude data).

- **Equipment Usage and Performance Data**, including performance data collected from sensors connected to the DentalEZ smart technology in your dental or medical equipment, including by not limited to when the equipment is used and for how long, what equipment functions are being used, how the equipment is running, power surges, tank pressure, voltage, oil or water level, maintenance alert, service history, pump intake, runtime and vacuum efficiency, and other kinds of equipment performance data.

We use various tracking technologies to automatically collect information and other data, including the following:

- **Log Files**, which are files that record events that occur in connection with your use of the Service.
- **Cookies**, which are small data files stored on your device that act as a unique tag to identify your browser. We use two types of cookies: session cookies and persistent cookies. Session cookies make it easier for you to navigate our website and expire when you close your browser. Persistent cookies help with personalizing your experience, remembering your preferences, and supporting security features. Additionally, persistent cookies allow us to bring you advertising both on and off the Service. Persistent cookies may remain on your device for extended periods of time, and generally may be controlled through your browser settings.
- **Pixels** (also known as web beacons), which is code embedded in a website, video, email, or advertisement that sends information about your use to a server. There are various types of pixels, including image pixels (which are small graphic images) and JavaScript pixels (which contains JavaScript code). When you access a website, video, email, or advertisement that contains a pixel, the pixel may permit us or a third party to drop or read cookies on your browser. Pixels are used in combination with cookies to track activity by a particular browser on a particular device. We may incorporate pixels from other parties that allow us to track our conversions, bring you advertising both on and off the Service, and provide you with additional functionality, such as the ability to connect our Service with your social media account.
- **Location-Identifying Technologies**, which are technologies used to collect your location. For example, GPS, WiFi, and Bluetooth may be used to collect precise location data. Location data may be used for purposes such as verifying your device's location.

Some information about your use of the Service and other parties' services may be collected using tracking technologies across time and services and used by us and other parties for purposes such as to associate different devices you use, and deliver relevant ads and/or other content to you on the Service and other services.

For further information on tracking technologies and your rights and choices regarding them, see the "Your Rights and Choices" section below.

C. Information from Other Sources.

We also collect information from other sources. To the extent we combine third party sourced information with information we have collected through the Service, we will treat the combined information in accordance with the practices described in this Privacy Policy, plus any additional restrictions imposed by the source of the data. These sources vary over time, but have included:

- **Dealers and/or Service Providers** that sell or provide our equipment to dental offices and you on behalf of your employer.
- **Publicly available sources**, including data in the public domain.

3. Use of Information.

We use information we collect for legitimate business purposes in accordance with the practices described in this Privacy Policy, including to:

- Manage our Service, including registration of your account, provision of access to product literature, and provision of dental equipment with smart technology to manage and monitor the equipment.
- Perform services requested by you, such as scheduling equipment testing and repairs.
- Respond to your comments, questions, requests, and provide customer service.

- Send you technical notices, updates, security alerts, information regarding changes to our policies, and administrative messages.
- Prevent and address fraud, breach of policies or terms, and threats or harm.
- Monitor and analyze trends, usage, activities and failure analysis.
- For research and analysis purposes, including to improve the Service and other DentalEZ websites, marketing efforts, products, equipment and services, and to develop and create new products, equipment and services.
- Develop and send you direct marketing, including advertisements and communications about our and other party's such as our dealers' products, offers, promotions, events, and services.
- Fulfill any other purpose disclosed to you or with your consent.

We may use information we collect to create data and data sets that are not identifiable to you or any individual by aggregating data and/or de-identifying data ("Aggregated Data"). We may use Aggregated Data for any purpose except as prohibited by applicable law. For more information on your rights and choices regarding how we use information about you, please see the "Your Rights and Choices" section below.

1. Sharing of Information.

We share information we collect, including as follows:

- **Service Providers.** We share information with our agents, vendors, dealers, and various other service providers (collectively "Service Providers") in connection with their work on our behalf. Service Providers assist us with services such as payment processing, data analytics, marketing and advertising, website hosting, and technical support to DentalEZ and to you. Service Providers are prohibited from using information about you for any purpose other than to provide this assistance, although we may permit them to use information that does not identify you (including information that has been aggregated or de-identified and equipment performance data) for any purpose except as prohibited by applicable law.
- **Dealers.** We share information with dealers who sell dental or medical equipment and our products , including to enable Dealers to manage and honor Customer equipment warranties, provide repair services to our Customers, and to advertise their services to you.
- **Affiliates.** We may share information with our related entities including our affiliates and related companies. Our Affiliates may use this information to help us provide our Services and equipment and for their own business purposes. For example, we share information with our affiliates who help us manufacture and distribute the DentalEZ smart technology in dental or medical equipment. Our affiliates may also use the information to develop or enhance their own products and services and to promote their own products and services to you.
- **Business Partners.** We may enter into relationships with third party business partners where we license or otherwise disclose data to them to use for their own business purposes. For example, we may license data regarding equipment performance, wear and maintenance to third party equipment manufacturers.
- **Merger or Acquisition.** We may share information in connection with, or during negotiations of, any proposed or actual merger, purchase, sale or any other type of acquisition or business combination of all or any portion of our assets, or transfer of all or a portion of our business to another business.
- **Security and Compelled Disclosure.** We may share information to comply with the law or other legal process, and where required, in response to lawful requests by public authorities, including to meet national security or law enforcement requirements. We also share information in accordance with the applicable laws in order to protect the rights, property, life, health, security and safety of DentalEZ, DentalEZ personnel, the Service or any third party.
- **Consent.** We may share information to fulfill any other purpose disclosed to you or with your consent.

Notwithstanding the above, we may share information that does not identify you (including information that has been aggregated or de-identified and equipment performance data) with third parties except as prohibited by applicable law. For information on your rights and choices regarding how we share information about you, please see the "Your Rights and Choices" section below.

2. Your Rights and Choices.

A. Account Information.

You may access or update certain information that you have provided to us through your account by visiting your account settings or sending an email to the email address set out in the "Contact Us" section below or by contacting your dealer directly. We may require additional information from you to allow us to confirm your identity. Please note that we will retain and use information about you as necessary to provide the Service, comply with our legal obligations, resolve disputes, and enforce our agreements.

B. Tracking Technology Choices.

- **Cookies and Pixels.** Most browsers accept cookies by default. You can instruct your browser, by changing its settings, to decline or delete cookies. If you use multiple browsers on your device, you will need to instruct each browser separately. Your ability to limit cookies is subject to your browser settings and limitations.
- **Do Not Track.** Your browser settings may allow you to automatically transmit a "Do Not Track" signal to online services you visit. Note, however, there is no industry consensus as to what site operators should do with regard to these signals. Accordingly, unless and until the law is interpreted to require us to do so, we do not monitor or take action with respect to "Do Not Track" signals or other mechanisms. For more information on "Do Not Track," visit http://www.allaboutdnt.com.

Please be aware that if you disable or remove tracking technologies some parts of the Service may not function correctly.

C. Analytics.

Our Service contains tracking technologies owned and operated by other parties. For example, we use tracking technologies from analytics providers to help us analyze your use of the Service, compile statistic reports on the Service's activity, and provide us with other services relating to Service activity and internet usage.

D. Communications.

- E-mails. By registering for an account to use the Service, it is implied that you consent to us sending emails to you about the Service, the status of your account and information about your equipment. As such, we may send emails to the email address you provide for transactional and promotional purposes in regard to the Service, the status of your account and your equipment. You can opt-out of receiving certain promotional emails from us at any time by following the instructions as provided in emails to click on the unsubscribe link or emailing us at the email address set out in the "Contact Us" section below with the word UNSUBSCRIBE in the subject field of the email. Please note that you cannot optout of non-promotional emails, such as those about your account, transactions, servicing, or DentalEZ's ongoing business relations.
- Text Messages. You can opt-out of receiving text messages to your phone number at any time by (i) for text messages, texting "STOP" in response to any text message you receive from us or contacting us as set out in the "Contact Us" section below and specifying you want to opt-out of text messages; and (ii) for calls, requesting opt-out during any call you receive from us or contacting us as set out in the "Contact Us" section below and specifying you want to opt-out of calls.

Please note that your opt-out is limited to the email address, phone number and device used and will not affect subsequent subscriptions.

3. Your California Privacy Rights.

Under California Civil Code Section 1798.83, also known as California's "Shine the Light" law, California residents with whom we have an established business relationship are entitled to request and receive, free of charge, once per calendar year, information about certain personal information we shared, if any, with other businesses for their own direct marketing uses in the previous calendar year. To request a copy, please contact us as set out in the "Contact Us" section below. Requests must include "California Privacy Rights Request" in the first line of the description and include your name, street address, city, state, and ZIP code. Please be aware that not all information sharing is covered by the "Shine the Light" law requirements and only information on covered sharing will be included in our response.

1. Your Canadian Privacy Rights.

If you are a resident of Canada, you may be entitled to additional rights regarding your personal information, including: (i) the right to withdraw consent to processing of your personal information where consent is the basis of processing; (ii) the right to access your personal information and certain other supplementary information, under certain conditions; (iii) the right to challenge improper processing of your personal information, under certain conditions; (iv) the right to demand that we restrict the use or disclosure of your personal information, under certain conditions, if you believe we have exceeded the legitimate basis for such use or disclosure, use or disclosure is no longer necessary, or believe your personal information is inaccurate; and (v) the right to lodge a complaint with applicable Canadian data protection authorities. If you want to learn more about your rights under Canadian law or our privacy practices, you may contact our Privacy Officer (see the "Contact Us" section below).

2. Children.

The Service is intended for a general audience and not directed to children under eighteen (18) years of age. DentalEZ does not knowingly collect personal information of children under the age of thirteen (13). If you are a parent or guardian and believe DentalEZ has collected such information in a manner not permitted by law, please contact us as set out in the "Contact Us" section below, and we will remove such data to the extent required by law.

3. Data Security.

We implement and maintain reasonable administrative, physical, and technical security safeguards to help protect information about you from loss, theft, misuse and unauthorized access, disclosure, alteration and destruction. Nevertheless, transmission via the internet is not completely secure and we cannot guarantee the security of information about you that is transmitted over the internet.

4. International Transfer.

We are based in the U.S. and the information we collect is stored and processed in the U.S. and is therefore subject to U.S. law. If you are accessing the Service from outside of the U.S., please be aware that information collected through the Service may be transferred to, processed, stored, and used in the U.S. Data protection laws in the U.S. and other jurisdictions may be different from those of your country of residence. Your use of the Service or provision of any information therefore constitutes your consent to the transfer to and from, processing, usage, sharing, and storage of information about you in the U.S. and other jurisdictions as set out in this Privacy Policy

5. Changes to this Privacy Policy.

We reserve the right to revise and reissue this Privacy Policy at any time. Any changes will be effective immediately upon posting of the revised Privacy Policy. Your continued use of our Service indicates your consent to the Privacy Policy then posted. If the changes are material, we may provide you additional notice to your email address.

6. Contact Us.

If you have any questions or comments about this Privacy Policy, our data practices, or our compliance with applicable law, please contact us:

By email:

DentalEZIOT@DentalEZ.com

By mail:

Attention: Privacy Officer
310 Lindenwood Drive, Suite 100
Malvern, PA 19355

DENTALEZ TERMS OF USE FOR EQUIPMENT WITH SMART TECHNOLOGY

Effective Date: November 1, 2023.

1. Introduction and Overview.

These Terms of Use ("Online Terms") set forth a legally binding agreement between DENTALEZ, Inc., DentalEZ Alabama, Inc., DTE Oregon, Inc., their subsidiaries and affiliates (collectively "DentalEZ", "we", "our", or "us") and the person or entity identified on the order form or other Service (as defined below) subscription purchase document ("Customer"). These Online Terms govern your access to and use of the DentalEZ "smart technology" contained in certain DentalEZ dental equipment as well as any service that posts a link to these Terms or integrates with certain DentalEZ smart technology contained in certain DentalEZ dental equipment that Customer may have purchased from us or through your local dealer, and all features, content, and other services that we own, control and make available through such online service (collectively, the "Service").

You hereby represent and warrant that you will access and use the Service acting in your capacity as an employee, owner, director, officer, or contractor of a Customer, and that your communications and transactions with DentalEZ occur solely within the context of DentalEZ providing the Service to the Customer that you represent. As such, you hereby represent and warrant that you have the authority to bind such Customer to these Online Terms (in which case "you" or "your" will refer to you and such Customer). By initiating the first use of the Service, you the User acknowledge and agree upon the entire contents of these Online Terms.

In some instances, both these Online Terms and separate terms that we make available to you through the Service or through your local dealer will apply to your use of the Service (the "Additional Terms" and collectively, with the Online Terms, the "Terms"). To the extent there is a conflict between these Online Terms and any applicable Additional Terms, the Additional Terms will control unless they expressly state otherwise.

By accessing or using the Service, you agree to these Terms, and agree to our collection, use and disclosure practices, and other activities as described in our Privacy Policy, as amended from time to time (the "Privacy Policy). If you do not agree to these Terms and our posted Privacy Policy, you must discontinue your use of the Service (and this is your sole remedy).

2. Service Use.

A. About the Service.

Subject to these Terms, the Service may enable you to register and create an Account (defined below), view certain data collected by the sensors in your DentalEZ smart technology enabled equipment, use the configuration manager software to manage your DentalEZ smart technology equipment settings, install software updates on your DentalEZ smart technology enabled equipment, manage access to the Service and communicate with DentalEZ regarding the use and operation of your DentalEZ smart technology enabled equipment.

B. Content.

The Service contains: (i) materials and other items relating to DentalEZ and its products and services, and similar items from our licensors and other third parties, including all layout, information, databases, articles, posts, text, data, files, images, scripts, designs, graphics, instructions, illustrations, photographs, sounds, pictures, videos, advertising copy, URLs, technology, software, software documentation, interactive features, the "look and feel" of the Service, and the compilation, assembly, and arrangement of the materials of the Service and any and all copyrightable material; (ii) trademarks, logos, trade names, trade dress, service marks, and trade identities of various parties, including those of Aeras; and (iii) other forms of intellectual property (all of the foregoing, collectively "Content"). All right, title, and interest in and to the Service and the Content, as well as all derivative works thereof, are owned by us or our licensors or service providers, and are protected by U.S., Canadian and international copyright, trademark, trade dress, patent and/or other intellectual property and unfair competition rights and laws to the fullest extent possible.

C. Limited License.

Subject to your strict compliance with the Terms, DentalEZ grants you a limited, non-exclusive, revocable, non-assignable, personal, and non-transferable license to download, display, view, use, and play the Content on a personal computer, browser, laptop, tablet, mobile phone, or other internet enabled device (each, a "Device"), in each case for your personal, non-commercial use only. The foregoing limited license (i) does not give you any ownership of, or any other intellectual property interest in, any Content, and (ii) may be suspended or terminated

for any reason, in DentalEZ' sole discretion, and without advance notice or liability. Your unauthorized use of the Content may violate copyright, trademark, privacy, publicity, communications, and other laws, and any such use may result in your personal liability, including potential criminal liability.

D. Accounts.

Certain features of the Service may require you to register an account, including access to equipment performance data associated with your DentalEZ smart technology enabled equipment purchased directly from DentalEZ, a third-party equipment manufacturer or through your local dealer ("Account"). When registering an Account or using DentalEZ smart technology enabled equipment, you agree to: (i) provide true, accurate, current, and complete information; (ii) maintain and update this information to keep it true, accurate, current, and complete; (iii) protect your Account log-in credentials so as to prevent unauthorized access to your Account or equipment; (iv) not share your Account or log-in credentials with any third party or transfer your Account to any third party; and (v) immediately notify us of any suspected or actual unauthorized use of your Account, equipment or breach of security. Your right to access and use the Service is not transferable by you to any other third party. You are solely responsible for all activities that occur under your Account, whether or not you authorized the activity, and we are not liable for any loss or damage to you or any third party arising from your failure to comply with any of the foregoing obligations.

E. Restrictions.

You may not use the Service unless you are at least eighteen (18) years old and are fully able and competent to agree to and comply with the Terms (in their entirety). If you accept the Terms, you represent that you have the capacity to be bound by them.

You may not: (i) use the Service or Content for any political purpose; (ii) engage in any activity in connection with the Service or Content that is unlawful, harmful, offensive, sexually explicit, obscene, violent, threatening, harassing, abusive, falsely representative of your persona, invasive of someone else's privacy, or otherwise objectionable to DentalEZ; (iii) harvest or scrape any information from the Service or Content; (iv) reverse engineer or modify the Service or Content; (v) interfere with the proper operation of or any security measure used by the Service or Content; (vi) infringe any intellectual property or other right of any third party; (vii) use the Service or Content in a manner that suggests an unauthorized association or is beyond the scope of the limited license granted to you; or (viii) otherwise violate the Terms including these Online Terms and any applicable Additional Terms.

You agree to comply with all local, state, federal, national, foreign, supranational, and international laws, statutes, ordinances, regulations, treaties, directives, and agreements that apply to your use of the Service and Content.

F. Availability.

DentalEZ may suspend or terminate the availability of the Service and Content, in whole or in part, to any Account, individual user or all users, for any reason (including, a failure to pay Service subscription fees when due), in DentalEZ' sole discretion, and without advance notice or liability. Upon suspension or termination of your access to the Service, or upon notice from DentalEZ, all rights granted to you under the Terms will cease immediately, and you agree that you will immediately discontinue use of the Service and Content.

G. Reservation of Rights.

All rights not expressly granted to you are reserved by DentalEZ and its licensors and other third parties. No right or license may be construed, under any legal theory, by implication, estoppel, industry custom, or otherwise. Any unauthorized use of the Content or Service for any purpose is prohibited.

H. Data

The Service may enable the collection of data relating to Customer's use of the Service and Equipment through sensors, the Service features described in Section 7 and information that is transmitted, uploaded and/or submitted to the Service by Customer and its employees, owners, directors, officers, and contractors, including usage information such as logins, button-presses, and maintenance history and records ("Customer Data"). As between DentalEZ and Customer, Customer is the owner of the Customer Data. Customer hereby grants DentalEZ a worldwide, nonexclusive, transferable, sublicensable, perpetual, irrevocable, fully paid up and royalty free right and license to use, reproduce, prepare derivative works of, distribute, perform, display, arrange, de-identify, create Aggregated Data (as defined below) from, and otherwise exploit for DentalEZ' business purposes, any Customer Data, and to use the know-how and analytical results resulting therefrom in connection with the

enhancement, improvement, and provision of Service and derivatives thereof, provided that DentalEZ shall disclose Customer Data that is identifiable to Customer or any individual only as permitted in our Privacy Policy.

You understand that you will not receive any fees, sums, consideration, or remuneration for any of the rights granted in this Section. You waive any and all rights and claims in connection with our use of, or development of any product, content, or other materials using in whole or in part, Customer Data. You represent and warrant that you own or have the necessary rights, licenses, consents, and permissions to grant us the rights granted in this Section.

I. Aggregated Data.

For the purposes of these Online Terms and the Privacy Policy: "Aggregated Data" means data, including data derived from Customer Data, that does not identify you (including information that has been manipulated, de-identified or combined to provide generalized or anonymous information).

As between the you and DentalEZ, DentalEZ owns all right, title and interest in and to Aggregated Data. DentalEZ may use or share Aggregated Data for any purpose including developing, providing, enhancing, and improving the Service, DentalEZ equipment and DentalEZ' other current and future online and offline products and services.

1. Submissions.

When you submit any unsolicited ideas, feedback, opinions, techniques, images, sounds, videos, or other content to us through or relating to the Service ("Submissions"), you grant us a non-exclusive, unrestricted, unconditional, unlimited, worldwide, irrevocable, perpetual, transferable and cost-free right and license to host, store, use, display, reproduce, modify, adapt, edit, combine with other materials, publish, distribute, create derivative works from, promote, exhibit, broadcast, syndicate, sublicense (including, without limitation, to third party media channels, platforms, and distributors), publicly perform, publicly display, and otherwise use and exploit in any manner whatsoever, or grant third parties the right to do any of the foregoing, all or any portion of your Submissions, for any purpose whatsoever in all formats, on or through any means or medium now known or hereafter developed, and with any technology or devices now known or hereafter developed, and to advertise, market, and promote the same. You further irrevocably grant us the right, but not the obligation, to use your name in connection with your Submissions. You also agree to waive any right of approval for our use of the rights granted herein and agree to waive any moral rights that you may have in any Submissions, even if it is altered or changed in a manner not agreeable to you. To the extent not waivable, you irrevocably agree not to exercise such rights in a manner that interferes with any exercise of the granted rights.

You understand that you will not receive any fees, sums, consideration, or remuneration for any of the rights granted in this Section. Our receipt of your Submissions is not an admission of their novelty, priority, or originality, and it does not impair our right to existing or future intellectual property rights relating to your Submissions. You waive any and all rights and claims in connection with our consideration, use, or development of any product, content, or other materials similar or identical to your Submission now or in the future.

You represent and warrant that you own or have the necessary rights, licenses, consents, and permissions to grant us the rights granted in this Section. You alone, though, retain whatever legally cognizable right, title, and interest that you have in your Submission and remain responsible for them.

2. Products.

We do our best to describe every product or service offered on our Service as accurately as possible. However, we are human, and therefore we do not warrant that product specifications, pricing, or other content on the Service is complete, accurate, reliable, current, or error-free. In the event of any errors relating to the pricing or specifications, DentalEZ shall have the right to refuse or cancel any orders in its sole discretion. If we charged your credit card or other Account prior to our cancellation, we will issue a credit to your Account in the amount of the charge. Additional Terms may apply. If a product or service you purchased from DentalEZ is not as described, your sole remedy is to cancel the purchase and receive a credit for the purchase price.

For any purchases made through dealers or resellers, please contact their customer support. Their terms, conditions and policies, and not ours, apply and we do not handle returns or refund requests for purchases through those third-party platform providers.

1. Customer Support; Notice.

If you have any questions or comments, please send an e-mail to us at DentalEZIOT@DentalEZ.com. You acknowledge that the provision of support is at DentalEZ' sole discretion and that we have no obligation to provide you with customer support of any kind. All legal notices to us must be mailed to: 301 Lindenwood Drive, Suite 100, Malvern Pennsylvania19355. When you communicate with us electronically, you consent to receive communications from us electronically. You agree that all agreements, notices, disclosures, and other communications that we provide to you electronically satisfy any legal requirement that such communications be in writing.

2. Other Services.

Our Service contains content from and hyperlinks to websites, locations, platforms, and services operated and owned by other parties ("Other Services"). We may also integrate Other Services technologies into our Service and host our content on Other Services. These Other Services are not owned, controlled, or operated by us, and you acknowledge and agree that we are not responsible or liable for the information, content, products, technologies, or services on or available from such Other Services, or for the results to be obtained from using them. These Other Services are made available as a convenience only and are not part of the "Service" or subject to any of the warranties (whether express or implied) or other obligations with respect to Service hereunder. DentalEZ has no obligation to monitor or maintain Other Services and may disable or restrict access to any Other Services at any time without notice.

If you choose to access, transact with, or otherwise interact with any such Other Services, you do so at your own risk. Your access to and use of any Other Services is solely determined by the relevant third-party provider and may be subject to such additional terms and conditions applicable to such Other Services. You are solely responsible for maintaining appropriate accounts in good standing with the Other Services providers. Aeras will have no liability or other obligation to you for such Other Services or your content or data exported to Other Services, including but not limited to any unavailability of any Other Services, or any third-party provider's decision to discontinue, suspend or terminate any Other Services.

In addition, by using or enabling any Other Services, you are expressly permitting DentalEZ to disclose your content, data or other information to the extent necessary for the Service to interoperate with, or for you to utilize, the Other Services. We are not responsible for any disclosure, modification or deletion of your content, data or other information resulting from access by, or transmission to, any Other Service. For more information on Other Services, see our Privacy Policy.

3. Service Features.

A. Wireless Features.

The Service may offer features that are available to you via your wireless Device including the ability to access the Service's features and upload content to the Service (collectively, "Wireless Features"). By using the Service, you agree that DentalEZ may collect information related to your use of the Wireless Features as described in our Privacy Policy, and may change, alter, or modify the settings or configurations on your Device in order to allow for or optimize your use of the Service. Data rates and other carrier fees may apply.

B. Location-Based Features.

If you have location-based features on your wireless Device, you acknowledge that your Device location will be tracked and shared consistent with the Privacy Policy. You can terminate location tracking by us by adjusting the permissions in your Device. Location-based features are used at your own risk and location data may not be accurate.

C. Communications.

(i) E-mails: By registering for an Account, it is implied that you consent to us sending you emails about the Service and the status of your Account. As such, we may send emails to the email address you provide for transactional and promotional purposes in regard to the Service and the status of your Account. You have the right to opt-out of receiving certain promotional e-mails about the Service or your Account from us at any time by following the instructions as provided in e-mails to click on the unsubscribe link or contacting us at

DentalEZIOT@DentalEZ.com with the word UNSUBSCRIBE in the subject field of the e-mail. We will unsubscribe your email from promotional e-mails sent by us within 10 business days of our receipt of your opt-out request. Your opt-out of promotional emails will not affect nonpromotional e-mails, such as those about your Account, transactions, servicing, or DentalEZ' ongoing business relations with you.

(ii) Text Messages: We may send you reoccurring text messages to the phone number you provide for transactional and promotional purposes in regard to the Service, your Account or DentalEZ products and services. You understand that your consent is not required as a condition of purchase, and that you can opt-out of receiving certain promotional text messages from us at any time by:

- for text messages, texting "STOP" in response to any text message you receive from us or contacting us at DentalEZIOT@DentalEZ.com and specifying you want to opt-out of text messages; and
- for calls, requesting opt-out during any call you receive from us or contacting us at DentalEZIOT@DentalEZ.com and specifying you want to opt-out of calls. For text messages, you can also text "HELP" at any time for more information. We will unsubscribe your phone number from reoccurring texts messages from us within 10 business days of our receipt of your opt-out request. You understand that you may receive a text message confirming any opt-out by you. Standard message, data, and other fees may be charged by your carrier, and carriers may deduct charges from pre-paid amounts or data allowances, for which you are responsible. Not all phone and/or carriers are supported. Contact your carrier for further details.

Please note that any opt-out by you is limited to the e-mail address, phone number and device used and will not affect subsequent subscriptions.

4. Agreement to Arbitrate and Choice of Law.

PLEASE READ THIS SECTION CAREFULLY – IT MAY SIGNIFICANTLY AFFECT YOUR LEGAL RIGHTS, INCLUDING YOUR RIGHT TO FILE A LAWSUIT IN COURT AND TO HAVE A JURY HEAR YOUR CLAIMS. IT CONTAINS PROCEDURES FOR MANDATORY BINDING ARBITRATION AND A CLASS ACTION WAIVER.

A. We Both Agree to Arbitrate.

You and DentalEZ agree to resolve any claims relating to these Terms through final and binding arbitration, except to the extent you have in any manner violated or threatened to violate DentalEZ' intellectual property rights (for example, trademark, trade secret, copyright, or patent rights). Under such circumstances DentalEZ may bring a lawsuit solely for injunctive relief to stop unauthorized use or abuse of the Service, or intellectual property infringement (for example, trademark, trade secret, copyright, or patent rights) without first engaging in arbitration or the informal dispute-resolution process described herein.

B. What is Arbitration.

Arbitration is more informal than a lawsuit in court and seeks to resolve disputes more quickly. Instead of a judge or a jury, the case will be decided by a neutral arbitrator who has the power to award the same damages and relief that a court can. If any provision of this arbitration agreement is found unenforceable, the unenforceable provision shall be severed, and the remaining arbitration terms shall be enforced.

C. Arbitration Procedures.

The Federal Arbitration Act governs the interpretation and enforcement of this dispute resolution provision. Arbitration shall be initiated through JAMS. Any dispute, controversy, or claim arising out of or relating to these Terms shall be referred to and finally determined by arbitration in accordance with the JAMS Streamlined Arbitration Rules and Procedures in front of one arbitrator. If there is a conflict between JAMS Rules and the rules set forth in these Terms, the rules set forth in this Terms will govern. The JAMS Rules and instructions for how to initiate an arbitration are available from JAMS at http://www.jamsadr.com or 1-800-352-5267. To initiate arbitration, you or DentalEZ must do the following things:

(1) Write a demand for Arbitration. The demand must include a description of the Claim and the amount of damages sought to be recovered. You can find a copy of a demand for Arbitration at www.jamsadr.com.

(2) Send three copies of the demand for Arbitration, plus the appropriate filing fee to: JAMS to your local JAMS office or to JAMS, Two Embarcadero Center, Suite 1500, San Francisco, CA 94111.

(3) Send one copy of the demand for Arbitration to the other party.

Payment of all filing, administration and arbitrator fees will be governed by the JAMS Rules. Arbitration under this agreement shall be held in the United States in Pennsylvania, under Pennsylvania law without regard to its conflict of laws provisions. If traveling to Pennsylvania is a burden, you may participate in the arbitration by phone or via document submission to the fullest extent allowable by the arbitrator. Each party will bear their own costs of arbitration unless the arbitrator directs that bearing such costs would be an undue burden and, in that case, we will pay for your portion of the arbitration administrative costs (but not your attorneys' fees). The arbitration may award on an individual basis the same damages and relief as a court (including injunctive relief). Any judgment on the award rendered by the arbitrator may be entered in any court of competent jurisdiction.

D. Authority of Arbitrator.

The arbitrator will decide the rights and liabilities, if any, of you and DentalEZ, and the dispute will not be consolidated with any other matters or joined with any other cases or parties. The arbitrator shall have the authority to grant motions dispositive of all or part of any claim. The arbitrator shall have the authority to award monetary damages and to grant any non-monetary remedy or relief available to an individual under applicable law, the Arbitration Rules, and the Terms. The arbitrator shall issue a written award and statement of decision describing the essential findings and conclusions on which the award is based, including the calculation of any damages awarded. The arbitrator has the same authority to award relief on an individual basis that a judge in a court of law would have. The award of the arbitrator is final and binding upon you and Aeras.

E. Waiver of Class Actions.

You waive any right to pursue an action on a class-wide basis against us and may only resolve disputes with us on an individual basis and may not bring a claim against us as a plaintiff or a class member in a class, consolidated, or representative action. Class arbitrations, class actions, private attorney general actions, and consolidation with other arbitrations are not allowed.

F. Waiver of Jury Trial.

EACH PARTY ACKNOWLEDGES AND AGREES THAT ANY CONTROVERSY THAT MAY ARISE UNDER THE TERMS IS LIKELY TO INVOLVE COMPLICATED AND DIFFICULT ISSUES AND THEREFORE THE PARTIES HEREBY IRREVOCABLY AND UNCONDITIONALLY WAIVE ANY RIGHT THEY MAY HAVE (INCLUDING ANY CONSTITUTIONAL AND STATUTORY RIGHTS) TO GO TO COURT AND HAVE A TRIAL IN FRONT OF A JUDGE OR A JURY, instead electing that all claims and disputes arising in connection with these Terms shall be resolved by arbitration. Arbitration procedures are typically more limited, more efficient and less costly than rules applicable in court. In the event any litigation should arise between you and DentalEZ in any state or federal court in a suit to vacate or enforce an arbitration award or otherwise, YOU AND DENTALEZ WAIVE ALL RIGHTS TO A JURY TRIAL, instead electing that the dispute be resolved by a judge alone.

YOU ACKNOWLEDGE THAT YOU HAVE BEEN ADVISED THAT YOU MAY CONSULT WITH AN ATTORNEY IN DECIDING TO ACCEPT THIS AGREEMENT TO ARBITRATE.

G. Choice of Law/Forum Selection.

In any circumstances where the Agreement to Arbitrate Disputes permits the parties to litigate in court, these Terms shall be governed by and construed in accordance with the laws of the State of Pennsylvania, excluding its conflict of law rules. You further expressly consent and agree to submit to the exclusive jurisdiction and venue of a court of competent jurisdiction located in Pennsylvania.

1. Disclaimer of Representations and Warranties.

YOUR USE OF THE SERVICE AND ALL CONTENT FORMING PART OF OR RELATED TO THE SERVICE INCLUDING ANY OTHER SERVICES, ARE AT YOUR SOLE RESPONSIBILITY AND RISK. THE SERVICE IS PROVIDED TO YOU ON AN "AS IS," "AS AVAILABLE," AND "WITH ALL FAULTS" BASIS. TO THE MAXIMUM EXTENT PERMITTED BY LAW, NEITHER DENTALEZ NOR ANY OF ITS OFFICERS, DIRECTORS, MANAGERS, EMPLOYEES OR AGENTS (COLLECTIVELY, THE "DENTALEZ PARTIES") MAKE, AND THE DENTALEZ PARTIES EXPRESSLY DISCLAIM, ANY REPRESENTATIONS, WARRANTIES, CONDITIONS OR ENDORSEMENTS OF ANY KIND WHATSOEVER WITH RESPECT TO THE SERVICE, THE CONTENT OR OTHER SERVICES, WHETHER EXPRESS OR IMPLIED, STATUTORY OR OTHERWISE, OR ARISING FROM COURSE OF DEALING, COURSE OF PERFORMANCE OR USAGE OF TRADE, INCLUDING THE

IMPLIED WARRANTIES OR CONDITIONS OF TITLE, NONINFRINGEMENT, MERCHANTABILITY, FITNESS FOR A PARTICULAR PURPOSE, ACCURACY, COMPLETENESS, QUIET ENJOYMENT, FREEDOM FROM COMPUTER VIRUS AND THE RESULTS YOU MAY OBTAIN BY USING THE SERVICE. BY ACCESSING OR USING THE SERVICE YOU REPRESENT AND WARRANT THAT YOUR ACTIVITIES ARE LAWFUL IN EVERY JURISDICTION WHERE YOU ACCESS OR USE THE SERVICE.

2. Limitations of Our Liability.

TO THE MAXIMUM EXTENT PERMITTED BY LAW, IN NO EVENT SHALL THE DENTALEZ PARTIES BE LIABLE TO YOU OR ANY THIRD PARTY ACTING ON YOUR BEHALF FOR ANY LOSS, DAMAGE OR INJURY OF ANY KIND INCLUDING ANY DIRECT, INDIRECT, SPECIAL, INCIDENTAL, EXEMPLARY, CONSEQUENTIAL OR PUNITIVE LOSSES OR DAMAGES, OR DAMAGES FOR SYSTEM FAILURE OR MALFUNCTION OR LOSS OF PROFITS, DATA, USE, BUSINESS OR GOOD-WILL, OR THE COST OF ANY SUBSTITUTE EQUIPMENT, FACILITIES OR SERVICES (EVEN IF DENTALEZ PARTIES HAVE BEEN ADVISED OF THE POSSIBILITY OF SUCH DAMAGES), ARISING OUT OF OR IN CONNECTION WITH (A) THE SERVICE, (B) THESE TERMS OR (C) YOUR MISUSE OF THE SERVICE OR ANY CONTENT AVAILABLE ON OR THROUGH THE SERVICE. THE LIMITATIONS SET FORTH IN THIS SECTION SHALL APPLY REGARDLESS OF THE FORM OF ACTION, WHETHER THE ASSERTED LIABILITY OR DAMAGES ARE BASED ON CONTRACT, INDEMNIFICATION, TORT, STRICT LIABILITY, STATUTE OR ANY OTHER LEGAL OR EQUITABLE THEORY. IF UNDER ANY CIRCUMSTANCES THE AERAS PARTIES ARE FOUND LIABLE TO YOU OR ANY EMPLOYEE, OWNER, DIRECTOR, OFFICER, CONTRACTOR OR THIRD PARTY ACTING ON YOUR BEHALF AND IF THE DISCLAIMER OF DAMAGES HEREUNDER IS NOT ENFORCED FOR ANY REASON, THE DENTALEZ PARTIES' MAXIMUM AGGREGATE LIABILITY FROM ALL CLAIMS UNDER OR RELATED TO THESE TERMS IS LIMITED TO ONE HUNDRED DOLLARS ($100). TO THE EXTENT ANY APPLICABLE LAW DOES NOT ALLOW THE EXCLUSION OR THE LIMITATION OF LIABILITY FOR CONSEQUENTIAL OR INCIDENTAL DAMAGES, THE DENTALEZ PARTIES' LIABILITY WILL BE LIMITED TO THE FURTHEST EXTENT PERMITTED BY LAW.

NOTWITHSTANDING THE FOREGOING, THESE DISCLAIMERS HEREIN DO NOT EXCLUDE ANY PRODUCT LIABILITY CLAIMS, STATUTORY CONSUMER RIGHTS, DAMAGES ASSOCIATED WITH PERSONAL INJURY OR RESULTING FROM AERAS INTENTIONAL MISCONDUCT, RECKLESSNESS, FRAUD, OR GROSS NEGLIGENCE.

3. Indemnification.

You agree to defend, indemnify and hold harmless the DentalEZ Parties from and against any and all claims, liabilities, damages, losses, costs and expenses (including, reasonable attorneys' fees and costs) arising out of or in connection with any of the following:

(i) your breach or alleged breach of these Terms;

(ii) your Submissions;

(iii) your misuse of the Service;

(iv) your violation of any laws, rules, regulations, codes, statutes, ordinances or orders of any governmental or quasi-governmental authorities;

(v) your violation of the rights of any third party, including any intellectual property right, publicity, confidentiality, property or privacy right;

(vi) your use of Other Services; or

(vii) any misrepresentation made by you. DentalEZ reserves the right to assume, at your expense, the exclusive defense and control of any matter subject to indemnification by you. You agree to cooperate with DentalEZ' defense of any claim. You will not in any event settle any claim without the prior written consent of DentalEZ.

This provision does not require you to indemnify us for any unconscionable commercial practice by us or for our fraud, deception, false promise, misrepresentation or concealment, suppression or omission of any material fact in connection with the Service.

4. Waiver of Injunctive or other Equitable Relief.

TO THE MAXIMUM EXTENT PERMITTED BY LAW, YOU AGREE THAT YOU WILL NOT BE PERMITTED TO OBTAIN AN INJUNCTION OR OTHER EQUITABLE RELIEF OF ANY KIND, SUCH AS ANY COURT OR OTHER

ACTION THAT MAY INTERFERE WITH OR PREVENT THE DEVELOPMENT OR EXPLOITATION OF ANY WEBSITE, APPLICATION, CONTENT, SUBMISSIONS, PRODUCT, SERVICE, OR INTELLECTUAL PROPERTY OWNED, LICENSED, USED OR CONTROLLED BY DENTALEZ OR A LICENSOR OF DENTALEZ.

1. Updates to Terms.

We reserve the right, at any time in our sole discretion, to modify or replace any part of the Terms or Privacy Policy, without prior notice. You agree that we may notify you of any updated Terms or Privacy Policy by posting them on the Service so that they are accessible via a link from the home page, and/or to send you an e-mail to the last e-mail address you provided to us. All such changes are effective immediately when we post them, or such later date as may be specified in the notice of updated Terms or Privacy Policy. If you object to any such changes, your sole recourse is to cease using the Service. Your continued use of the Service will be deemed irrevocable acceptance of any such revisions. Before you continue, you should print and/or save a local copy of the Terms and our Privacy Policy for your records.

2. General Provisions.

A. You May Cancel Your Account.

You may cancel your Account at any time through the Service or by emailing DentalEZIOT@DentalEZ.com or by contacting your dealer directly. These are the only ways to cancel your Account. Phone requests to cancel your Account will not be accepted. You acknowledge that cancelling your Account will not prevent your equipment from collecting or sending certain equipment performance data to us or dealers sharing information with us in accordance with our Privacy Policy.

B. Data Deletion at Cancellation or Termination.

DentalEZ is under no obligation to store any data or information you submit, upload, or make available to us through the Service and DentalEZ reserves the right to delete your Account and information immediately upon cancellation or termination.

C. Consent or Approval.

No DentalEZ consent or approval may be deemed to have been granted by DentalEZ without being in writing and signed by an officer of DentalEZ.

D. Survival.

The provisions of the Terms, which by their nature should survive termination of your use of the Service, including sections on Service Use (except for the limited license), Unsolicited Submissions, Copyright Infringement, Subscriptions and Products, Customer Support, Other Services, Service Features, Agreement to Arbitrate Disputes and Choice of Law, Disclaimer of Representations and Warranties, Limitations of Our Liability, Indemnification, Waiver of Injunctive or Other Equitable Relief, Updates to Terms, and General Provisions, will survive.

E. Severability; Interpretation; Assignment.

If any provision of the Terms, including these Online Terms or any applicable Additional Terms, is for any reason deemed invalid, unlawful, void, or unenforceable, then that provision will be deemed severable from the Terms, and the invalidity of the provision will not affect the validity or enforceability of the remainder of the Terms. You hereby waive any applicable statutory and common law that may permit a contract to be construed against its drafter. The summaries of provisions and section headings are provided for convenience only and shall not limit the full Terms. DentalEZ may assign its rights and obligations under the Terms, in whole or in part, to any party at any time without any notice. The Terms may not be assigned by you, and you may not delegate your duties under them, without the prior written consent of an officer of DentalEZ.

F. Complete Agreement; No Waiver.

The Terms and the Privacy Policy reflect our complete agreement regarding the Service and supersede any prior agreements, representations, warranties, assurances or discussion related to the Service. Except as expressly set forth in the Terms, (i) no failure or delay by you or DentalEZ in exercising any of rights, powers, or remedies under will operate as a waiver of that or any other right, power, or remedy, and (ii) no waiver or modification of any term of the will be effective unless in writing and signed by the party against whom the waiver or modification is sought to be enforced.

G. International Issues.

DentalEZ controls and operates the Service from the U.S., and DentalEZ makes no representation that the Service is appropriate or available for use beyond the U.S. You agree that the United Nations Convention on Contracts for the International Sale of Goods does not apply to the Terms or to any sale of goods carried out as a result of your use of the Service. Software related to or made available by the Service may be subject to export controls of the U.S., and, except as authorized by law, you agree and warrant not to export or re-export the software to any county, or to any person, entity, or end-user subject to U.S. export controls or sanctions.

H. Investigations; Cooperation with Law Enforcement.

DentalEZ reserves the right to investigate and prosecute any suspected breaches of the Terms or the Service. DentalEZ may disclose any information as necessary to satisfy any law, regulation, legal process, or governmental request.

I. California Consumer Rights and Notices.

Residents of California are entitled to the following specific consumer rights information: you may contact the Complaint Assistance Unit of the Division of Consumer Services of the Department of Consumer Affairs by mail at: 1625 North Market Blvd., Suite N 112, Sacramento, California 95834, or by telephone at (916) 445-1254. Their website is located at: http://www.dca.ca.gov.

3. Contact Us.

If you have any questions or comments about the Terms, please contact us:

By email:

DentalEZIOT@DentalEZ.com

By mail:

Attention: Privacy Officer
310 Lindenwood Drive, Suite 100
Malvern, PA 19355

DENTALEZ

DENTALEZ Alabama, Inc.
2500 Highway 31 South
Bay Minette, AL 36507

T: 866-DTE-INFO

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