OSPREY

RAMVAC®



Osprey™

Dental Compressor

User Manual

DentalEZ
INTEGRATED SOLUTIONS

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Product Overview

This manual contains installation, operation, care, repair instructions and user service information for the RAMVAC® Osprey™ Dental Compressor.

The Osprey compressors are designed to provide trouble-free service when installed, operated and cared for according to the procedures set forth in this manual. They are NFPA 99C Level 3 dental compressors. Two versions of Osprey are available: basic and smart models.

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 basic and smart compressor models **(Figure 1)**.

After the compressor 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.

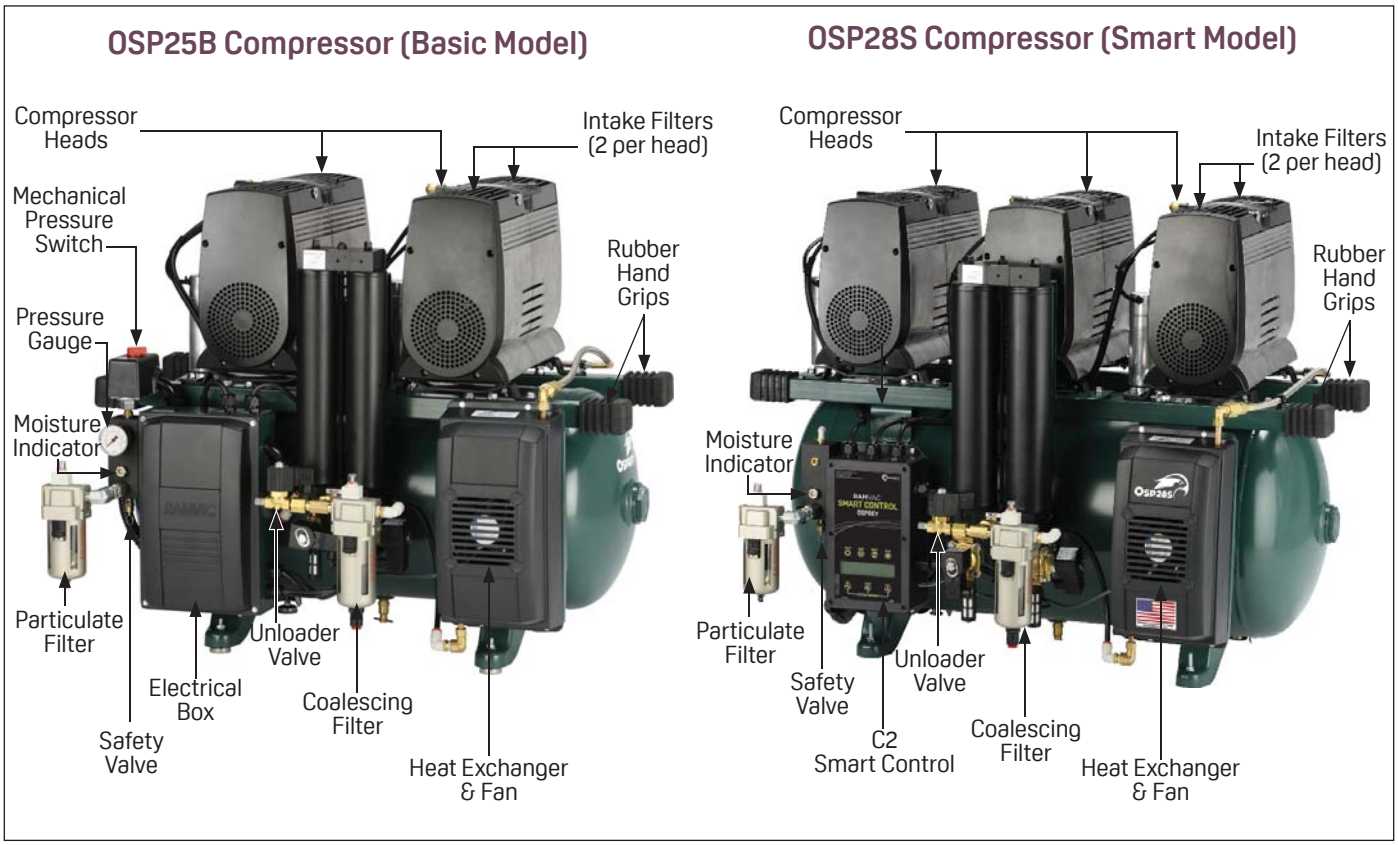


Figure 1. Main components of the Osprey compressor (basic and smart models)

Compressor Features

The Osprey compressor offers increased productivity while decreasing downtime. The compressor is dependable, quiet and simple to operate. In order to achieve the most efficient use in the operatory and understand what the Osprey offers, here is a compilation of some of those features and benefits.

Standard Features

- Basic controls use a traditional pressure switch and contactor arrangement to control the cycling of the compressor heads.
- RAMVAC heads are 100% duty cycle rated and run at 115 PSI max operating pressure, producing more usable air than any other dental compressor.
- Dual column desiccant dryer provides 100% continuous supply of the driest, cleanest air in the dental industry. While one column is drying, the other is in operation.
- Stores air at -40°C, preventing growth of harmful bacteria.
- Design allows for easy desiccant cartridge replacement.
- Industry leading 6-year/4,200-hour (whichever comes first) warranty.
- Models available suited for 2 up to 11 users.
- Outperforms competitors on three critical ISO 8573 classifications: final filter particle size, solids containment concentration, and pressure dew point.

Optional Features

- Smart (C2) control platform utilizes state-of-the-art technology with a pressure transducer and solid state relays to control cycling.
- Optional sound cover lowers decibel ratings by 6 to 8 decibels. It is available for all Osprey models and is simple to install.



Specifications

	OSP22B OSP22S	OSP13B OSP13S	OSP23B OSP23S	OSP24B OSP24S	OSP25B OSP25S	OSP28B OSP28S
Maximum No. of Users	3	4	4	6	7	11
Motor Per Unit	1	2	2	2	2	3
HP Per Motor	2	1.25	1.25	Left 1.25 Right 2	2	2
Voltage	230V (208 - 253)	115V (103 - 126)	230V (208 - 253)	230V (208 - 253)	230V (208 - 253)	230V (208 - 253)
Breaker Size (Recommended)	20 Amps	30 Amps	20 Amps	20 Amps	30 Amps	40 Amps
Fusetron Size (Recommended)	FRN 15	FRN 25	FRN 15	FRN 20	FRN 25	FRN 40
Unit Power Consumption	10.5 Amps	23 Amps	11.5 Amps	16.3 Amps	21 Amps	32 Amps
Unit Dimensions (W×D×H)	29" × 21" × 29"	29" × 21" × 29"	29" × 21" × 29"	35" × 25" × 30"	35" × 25" × 30"	41" × 29" × 32"
Weight	160 lbs	190 lbs	190 lbs	250 lbs	260 lbs	385 lbs
Tank Size	12 gallon	12 gallon	12 gallon	20 gallon	20 gallon	30 gallon
dB Levels	N/A	N/A	N/A	N/A	N/A	N/A
CFM @ 80 PSI	6.0	6.6	6.6	9.3	12.0	18.1
Operating Pressures	586 kPa/85 PSI to 793 kPa/115 PSI with ± 2% Total Error Band	586 kPa/85 PSI to 793 kPa/115 PSI with ± 2% Total Error Band	586 kPa/85 PSI to 793 kPa/115 PSI with ± 2% Total Error Band	586 kPa/85 PSI to 793 kPa/115 PSI with ± 2% Total Error Band	586 kPa/85 PSI to 793 kPa/115 PSI with ± 2% Total Error Band	586 kPa/85 PSI to 793 kPa/115 PSI with ± 2% Total Error Band

Recommended Environmental Conditions

Transportation and Storage

- Temperature range: -20°F to 165°F (-29°C to 74°C)
- Relative humidity range: 0% to 95%

Operation

- Temperature range: 35°F to 100°F (2°C to 38°C)
- Relative humidity range: 0% to 95%

Indoor Use

- Altitude up to 9,000 ft (2,743 m)

Classifications

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

RAMVAC compressors meet the most current and highest safety standards.

- Type of Protection Against Electric Shock: Class 1 Equipment.
- Degree of Protection Against Ingress of Water: IPX0.
- 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

The authorized European representative is:
Dental Hygienics & Decontamination (DHD)
41 Blackwell Drive, Braintree Business Park
Braintree Essex, CM7 2PU, UK
Phone: +44 01787 877877 (ext. 200)

Explanation of Symbols & Signs

 = Caution

 = Warning

 = Biohazard

 = Warning - Dangerous Voltage

 = Hot Surface

 = General Mandatory Action

 = Refer to Manual (Follow Instructions)

 = Refer to Accompanying Documents

 = Alternating Current

 = Direct Current

 = Protective Earth (Ground)

 = Type B Applied Part

 = European Certification

 = Serial Number

 = Manufacture Date

 = Manufacturer

 = Electromagnetic Radiation

 = 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 and that the provided **Installation Checklist** is completed. If compressor was purchased from an authorized dealer, the dealer is responsible for providing the completed checklist.

⚠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.

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

- Property damage and/or personal injury may result if directions are not followed or OEM parts are not used.
- Always turn off compressor and remove power from compressor when servicing. (Turn off power at disconnect or service breaker.)
- Danger of fire or explosion when using flammable substances.
- Never leave children unattended when compressor is in use.

⚠CAUTION

- The compressor 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.
- Connect only equipment suitable for listed maximum pressure of the compressor.

Safety Precautions (Continued)

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 compressor.
- Portable and mobile radio frequency (RF) communications equipment can affect medical electrical equipment.
- There may be an instance, in low humidity environments, that the user of the dental compressed air system may cause the compressor to stop as a result of electrostatic discharge (ESD) energy. To remedy this issue, push the START button to acitvate the compressor.
- An air leakage test should be conducted on the facility air system to ensure no air leaks are present. Excessive air leakage will impact the performance and life expectancy of your compressor.

Packaging

Tools Required

- 7/16" Wrench

Unpacking Compressor Carton

1. Carefully remove the shipping carton from the pallet containing the compressor.
2. Visually inspect the entire compressor for any shipping damage.
    - Visually inspect the motor isolator mounts for tearing.
    - If shipping damage is found, immediately contact the freight carrier and supplier.
3. Using a 7/16" wrench, remove the four nuts that secure the compressor to the shipping pallet.
4. For easier handling, four rubber grips have been installed on the frame of the compressor for lifting **(Figure 2)**.

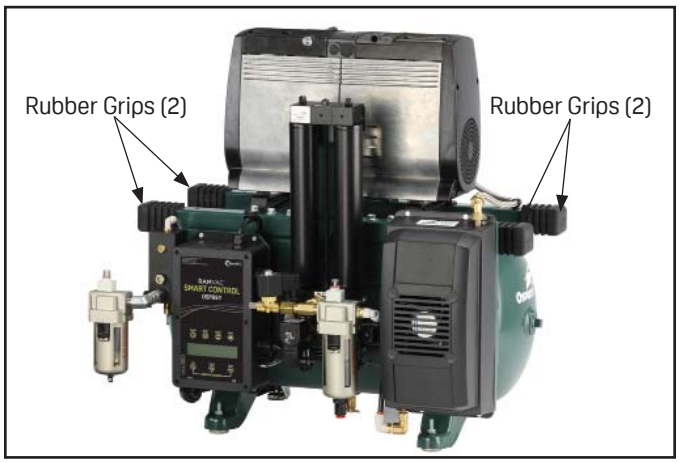


Figure 2. Rubber grips (4)

NOTE: *LIfting the compressor assembly by any other part or location could result in damage to the compressor.*

⚠WARNING

To prevent tipping during transport, securely fasten unit to shipping pallet until final destination has been reached.

5. Verify additional Osprey parts shipped with the compressor for use at installation:
    - Outlet Plumbing Kit
    - Coalescing Filter Drain Kit
    - Feet Kit
    - Filter Drain Kit
    - Doctor's Packet
    - Installation Packet
    - Maintenance Chart and Head Service Kit
    - Low-voltage Wiring Kit

NOTE: *The compressor is shipped with the shut-off valve in the CLOSED position to limit exposure of the system to humidity. Open the valve after installation.*

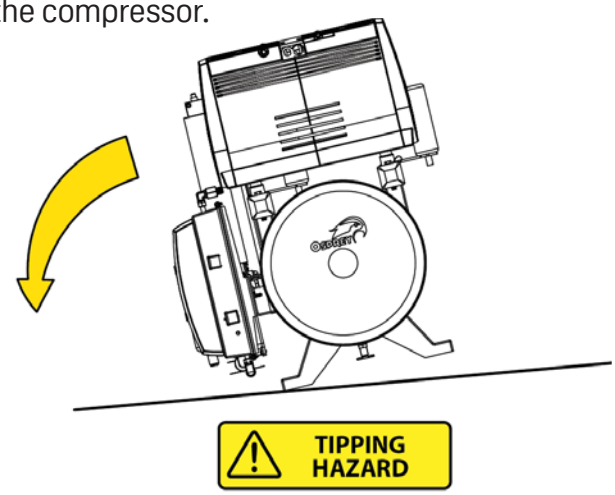
Placement

⚠WARNING

DO NOT install on surfaces with more than a 5° incline.

⚠CAUTION

The compressor is front heavy. When moving with handles, be sure to hold it securely to prevent it from tipping and possible dropping of the device, which could result in damage to the compressor.



- This device must not be stacked during transport and storage and must be oriented right side up during transport and storage.
- The compressor unit should not be used adjacent to or stacked with other equipment. If adjacent or stacked use is necessary, the compressor should be observed to verify normal operation in the configuration in which it will be used.
- Locate the compressor on a level hard surface capable of supporting the compressor weight. If a level surface is not available, the compressor is equipped with height adjustable feet to level the device. Install four adjustable rubber feet supplied to ensure unit stands firmly on the floor (see **Section III Installation**).
- Floors should be wood, concrete or ceramic tile. It is highly recommended that a higher than 30% relative humidity be established and the operator wear a ground strap before physical contact is attempted.
- Compressor is for indoor use only, in a dust free, climated controlled room.
- DO NOT install in a enclosed area where ambient temperature could exceed temperature specifications of below 35°F/0°C or above 100°F/37.7°C while the compressor is running.
- Maintain minimum 12" clearance on all sides and on top of all compressors.
- A source of conditioned fresh air is required for safe operation of this compressor. The air source must be located outside of the utility room and away from potential air contaminants.
- Do not locate this device or it's air intake opening in an area that is prone to flooding or has previously flooded. Water can damage components, reduce life expectancy of the compressor or cause serious personal injury.

Site Requirements

Before the compressor can be properly installed, the following utilites must be supplied.

This device requires proper electrical grounding for safe operation. A licensed electrician should always complete the electrical portion of the installation process.

⚠WARNING

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

⚠CAUTION

- During the performance of any service procedures that may involve the disconnection of a ground wire, take extra precautions to verify the ground wire has been properly re-connected. Never leave a ground wire disconnected, since this can create a significant safety issue.

NOTICE

This air compressor has been designed to operate within the following voltage ranges; 115V systems, 103 to 126V AC; 230V systems, 208 to 253V AC. Failure to provide sufficient voltage to this device could result in damage to electrical components and reduced service life.

Electrical

- Follow NEC, NFPA 99C, and all local codes.
- Compressors are shipped with a 6-foot electrical whip of the appropriate size for the compressor.
- Qualified personnel must install a dedicated electrical circuit of sufficient capacity. See **Section I Introduction, Specifications** in this manual for additional electrical information.
- Any means provided to isolate this device from the supply mains shall isolate all poles simultaneously.
- The disconnection means and overcurrent protection are to be provided by the installer (qualified electrician) in accordance with applicable local and national electric codes. This device should always be attached to a dedicated circuit with appropriate wiring and circuit protection. If this device is being installed as a replacement, always have a licensed electrician inspect the existing facility electrical and complete the electrical portion of the device installation.

Plumbing

- Attach drain tubing to fitting on bottom of coalescing filter and direct it into floor drain for proper disposal of water.
- Connect compressor air outlet to facility plumbing with provided supply hose (3/8" × 3/8" MPT, 6 feet in length).
- Install particulate filter to the facility shut-off valve using plumbing kit connectors provided.
- Install fresh air manifold and connect fresh air intake kit supplied to external air source per NFPA 99C recommendations.
- This device should always be installed with the appropriate plumbing and fresh air intake systems. If this device is being installed as a replacement, always have a licensed plumber inspect the existing facility plumbing and complete the plumbing portion of the device installation.

Feet Kit

⚠WARNING

- Prior to starting this assembly, read, understand and follow the safety information and the assembly instructions in this user manual.
- Handles for lifting the compressor assembly are provided on each end of the device. Lifting the compressor assembly by any other part or location could result in damage to the compressor.
- The weight distribution of this compressor is unbalanced to the front of the device. Exercise care when lifting to avoid accidental tipping and possible dropping of the device, which could result in damage to the compressor or severe injuries to the installer.
- Compressor assemblies are very heavy and may require multiple people to safely lift. Prior to lifting, check the user manual for the weight of this model. Over-exertion could result in serious injuries to the installer.
- This procedure may not comply with all safety requirements of federal, state or local agencies or safety requirements of the installer's employer. If a conflict does exist, follow the requirements set forth by the other organizations.

Parts Included

- Foot (4 Pieces)
- Flanged Nut (4 Pieces)

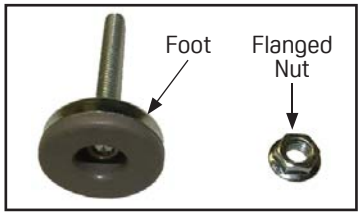


Figure 3. Feet kit parts

Tools Required

- 7/16" Wrench
- 1/2" Wrench

Assembly

1. Remove the four nuts (7/16" wrench) from the bolts that secure the Osprey compressor legs to the wooden shipping pallet. At this point, the bolts can be removed from the legs and the compressor can be removed from the pallet. Do not attempt to install the feet while the compressor is on the pallet; tipping of the pallet and subsequent loss of control may occur.
2. Lift one end of the compressor using the integrated handles and place blocking under the end of the tank to support the compressor. Be careful not to damage the drain valve under the center of the tank. Never work under a compressor not supported with adequate blocking **(Figure 4)**.
3. Thread feet into the two elevated legs from the bottom side of the leg **(Figure 4)**.



Figure 4. Block compressor tank to install feet

Feet Kit (Continued)

4. Adjust each foot to approximately the same height, then thread a flanged nut (flange side toward the leg) onto each foot **(Figure 5)**.

NOTE: *It is not necessary to tighten the flanged nuts at this time. The feet will require further adjustment once the compressor has been placed in its permanent location in the utility room.*



Figure 5. Install flanged nut

5. Lift the compressor and remove the blocking from under the tank end. Repeat steps 2 through 4 for the opposite end of the compressor.
6. After the compressor is in its permanent location in the utility room, adjust each foot using a 7/16" wrench until the compressor is setting level. After adjusting the feet, tighten the flanged nut with a 1/2" wrench to lock the foot into position.

Filter Drain Kit

⚠WARNING

- Prior to starting this assembly, read, understand and follow the safety information and the assembly instructions in this user manual.
- The bowl on the coalescing filter assembly is under high pressure while the system is running. Allow the compressor to stop running and release the air from the unloader valve prior to removing the bowl. Failure to allow the system to properly depressurize could result in severe injuries.
- Always disconnect the compressor from the electrical power source prior to conducting any maintenance or service of the equipment. The compressor could start unexpectedly, resulting in possible injury to the service technician.
- This procedure may not comply with all safety requirements of federal, state or local agencies or safety requirements of the installer's employer. If a conflict does exist, follow the requirements set forth by the other organizations.

Parts Included

- Drain Hose
- Elbow Fitting

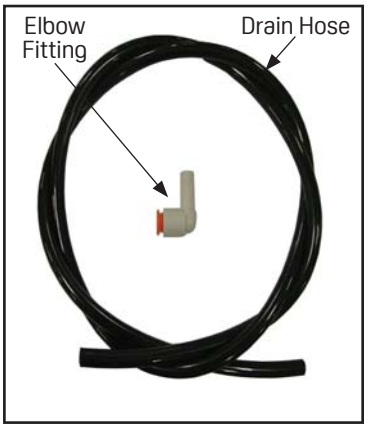


Figure 6. Filter drain kit parts

Filter Drain Kit (Continued)

Assembly

1. To help in determining the routing of the drain hose, read the following tips on proper installation.
    - The connection at the bottom of the coalescing filter is designed to work with either the elbow fitting or the 3/8" hose provided in the kit, depending on space constraints in the utility room.
    - The drain hose will require a steady downward slope to the drain.
    - Never route the drain hose assembly across traffic areas in the utility room. This could create tripping or falling hazards that could result in injury to personnel.
2. The connections for installing the filter drain are a “push to connect” style of fitting and do not require any tools to install. After determining proper routing, simply insert either the hose end or the elbow fitting into the fitting on the bottom of the coalescing filter bowl. Apply light force until the item stops. Gently pull the opposite direction on the hose or fitting to determine if they have properly seated into the connection. If the fitting or hose comes out with light force, then the hose was not fully seated into the connection and can be re-inserted again.
3. If for some reason the fitting or hose needs to be released from the connection, depressing the colored plastic ring (while gently pulling on the hose or fitting) releases the hose or fitting from the connection **(Figure 7)**.

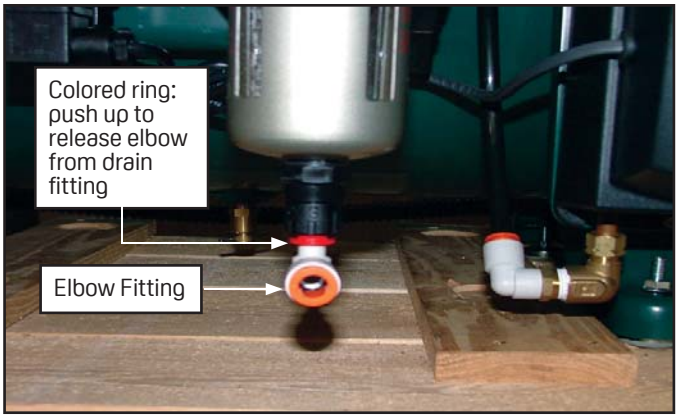


Figure 7. Elbow fitting installed in coalescing filter drain

Low Voltage Wiring Kit

⚠WARNING

- Prior to starting this assembly, read, understand and follow the safety information and the assembly instructions in this user manual.
- Always disconnect the compressor from the electrical power source prior to conducting any maintenance or service of the equipment. The compressor could start unexpectedly resulting in possible injury to the service technician.
- This procedure may not comply with all safety requirements of federal, state or local agencies or safety requirements of the installer's employer. If a conflict does exist, follow the requirements set forth by the other organizations.

Parts Included

- FGH Connector for Smart Controls
- Wire Nuts for Basic Controls



Figure 8. Low voltage wiring kit parts

Assembly

1. The compressor can be ordered with two different control schemes (basic or smart) which influence the method for wiring a low voltage switch. If the electrical box has a plastic cover with the RAMVAC logo on it, it is a basic control version; if the compressor has a C2 control, it is considered a smart control. The instructions in this manual contain information for wiring both versions, so care is required to make sure the proper instructions are used **(Figure 9)**.
2. This kit contains wire nuts required to make the connections to the basic control and the FGH connector required to attach the wires to the smart control.
3. See the **Low Voltage Remote Switching** section of this user manual for the recommended wiring methods for different types of switches.
4. The basic control will require that a strain relief (not included) be added where the low voltage wires from the facility enter the pressure switch. All connections should be housed inside the pressure switch; do not leave wire connections outside the pressure switch.

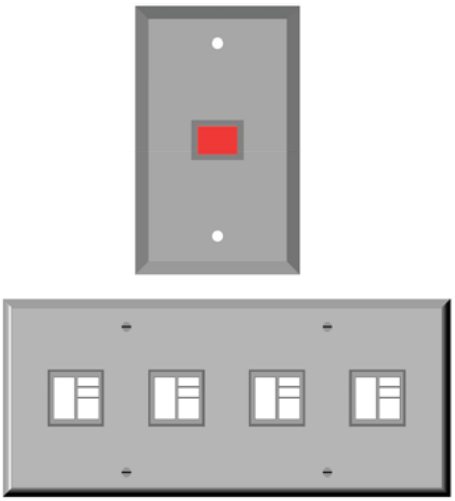


Figure 9. Basic and smart control electric panels

Low Voltage Remote Switching

Low voltage remote switching is used to turn the system on and off from a remote location. Your Osprey compressor is manufactured to continuously cycle as required throughout the workday. Power the compressor off at end of day.

Illuminated Remote Panels



- Switch light is steady on when system is running normally.
- Switch light flashes for maintenance or one of the heads has been disabled by the disable button on the C2 control.

Non-illuminated Remote Switches



- Non-illuminated switches provide no indication for system status.

NOTICE

- Maximum wire length for low voltage 18-gauge wire is 500 feet.
- High voltage switching is an option, but not recommended. Contact RAMVAC.
- OWL to C2 connection must be made with Cat 6 shielded cable using RJ45 connectors.

RAMVAC OWL Touch™



- Touchpad illuminates while equipment is running.
- OWL (on wall logic) gives a complete breakdown of data on selected equipment.
- **Manual** mode allows the user to turn on or off each individual type of device, similar to a standard remote switch panel.
- **Schedule** mode automatically turns on or off all devices by a saved user defined weekly schedule.
- **Master Shutdown** turns off the entire utility room when activated.

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Low Voltage Remote Switching (Continued)

Recommended Switching



RAMVAC Remote Panel (or Equivalent) with Illuminated 24V DC Switch

1 → F 2 → G 3 → H	C2 Control Terminals	Purple Red Black	Basic Control Wires

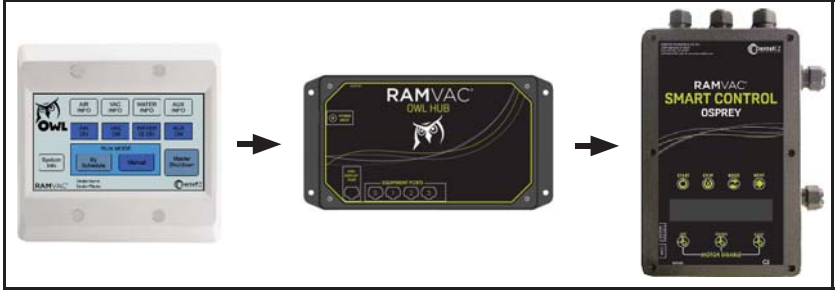
C2 Control



RAMVAC Panel or Alternative Switch Connection

OWL Connection

OWL Touch **OWL Hub** **C2 Control**

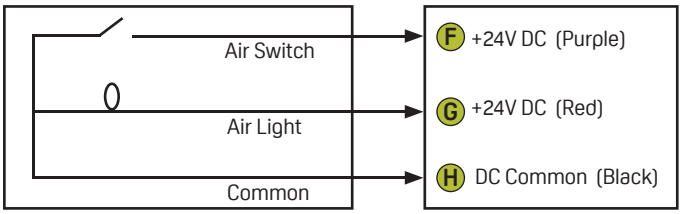


Alternative Switching

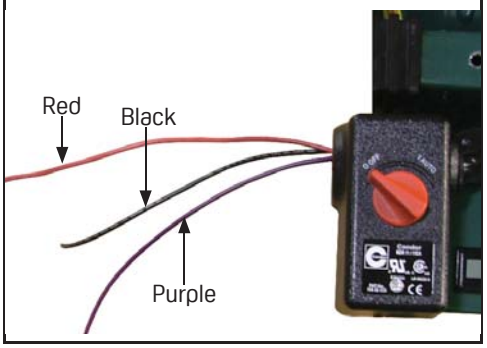


Toggle Switch or Other Non-Illuminated Switch (Option)

F H	C2 Control Terminals	Purple Black	Basic



Low Voltage Switch Wires



Outlet Plumbing Kit

⚠WARNING

- The compressor system may be pressurized; follow the discharge procedures in the user manual prior to conducting any repairs or maintenance. Working on pressurized components could result in severe injuries or even death. It is recommended any repairs or service be performed by a qualified service technician.
- When installing air lines in a new facility always follow NFPA 99 standards (or local codes) and maintain cleanliness throughout.
- Prior to or during the replacement of compressors, always verify the cleanliness of the existing air lines in the facility. Old or malfunctioning compressors can cause unhealthy deposits of mold, dust or dirt.
- This compressor is designed for dental procedures and powering dental equipment and can be safely used in the oral cavity for such purposes. Under no circumstances should it be supplied or considered as medical/breathing air for a patient.

⚠WARNING

- Installation of this device should be conducted by licensed electrical and plumbing contractors and should always follow the instructions found in the various manuals, unless local state or national building codes specify otherwise. Failure to comply with all applicable codes and installation procedures may result in personal injury, damaged components or reduced life expectancy of this product.
- Never direct the air stream toward any portion of the body or others in the vicinity. Pressurized air streams can be extremely hazardous to your health and can result in death in certain circumstances.
- This procedure may not comply with all safety requirements of federal, state or local agencies or safety requirements of the installer's employer. If a conflict does exist, follow the requirements set forth by the other organizations.

Parts Included

- Final Filter
- Facility Supply Hose
- Fittings
- Thread Sealer



Figure 10. Outlet plumbing kit parts

Outlet Plumbing Kit (Continued)

⚠WARNING

- Prior to starting this assembly, read, understand and follow the safety information and the assembly instructions in this user manual.
- Never route the facility supply hose across traffic areas in the utility room. This could create tripping or falling hazards that could result in injury to personnel.

Assembly

1. Determine the best routing for the facility supply hose and the filter assembly. The filter can be mounted in two different directions, depending on the safest and easiest route for the hose **(Figure 11)**.

   Always use the hose assembly provided to connect the compressor to the facility airlines. If a longer hose is required, be certain the product used is rated to an adequate pressure level and is intended for compressed air systems.

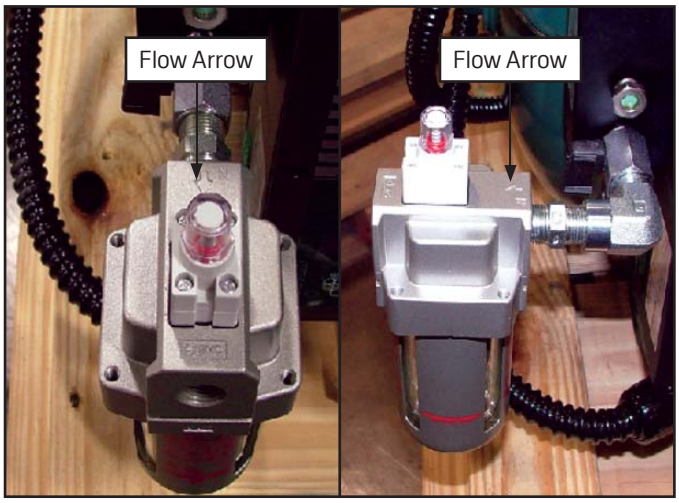


Figure 11. Filter mounting options

2. Utilize the fittings provided to mount the filter assembly in the orientation determined in step 1. A small tube of thread sealer has been provided in the kit. Do not over-apply the thread sealer; just a couple of drops on the male threads of all the fittings will provide an adequate seal. Tighten fittings as needed.
3. Thread the final filter onto the fittings and tighten it into the desired position. Note the final filter has to be installed in the correct flow orientation.
4. Thread the facility supply hose into the final filter and tighten. Both ends of the hose have swivel fittings to make installation easier.
5. Attach the other end of the hose to the facility piping. The kit contains an adapter bushing to adapt the 3/8 pipe thread on the end of the hose to a 1/2 pipe thread on the facility piping if it is required.
6. Upon completion of the air compressor installation, always check to ensure the shut off valve on the pressure manifold is in the open position.
7. After the system has been pressurized perform the following checks:
   - Check each joint for leaks using a soap and water mixture. Tighten any joints that may be leaking.
   - Check the facility plumbing for leaks, either by inspection or by completing a pressure decay test. Repair any leaks in the facility plumbing.

Theory of Operation

When power is applied, fresh air is taken in through air filters and compressed by the pump pistons. The compressed air is very warm and is cooled for use by the heat exchanger and fan. Air is then delivered to the coalescing filter to remove most of the moisture.

The coalescing filter is equipped with an automatic draining feature that allows the draining of the excess moisture. The cool air enters the desiccant-style dryer assembly to complete the moisture removal by removing 99.7% of the water vapor from the air.

Air is directed into the dryer cartridges, from one to the other, by electronically controlled solenoid valves. The timing for the solenoid valves is provided by an electronic timing board on the basic models or the C2 control on the smart models.

While the air is moving through one cartridge, the desiccant in the other cartridge is being dried by air directed through an orifice in the outlet shuttle valve. This valve cycle will be noticeable by a short burst of air from the purge valves. It is then collected in the tank where it is stored for future use.

A pressure gauge on the basic model and the C2 control panel on the smart model displays the tank air pressure. When air is called for to run equipment in the facility, it goes through a particulate filter to remove any remaining particulates from the air.

The tank pressure is monitored by a pressure switch on the basic models with the operating pressure from 85 to 115 PSI. Pressure adjustment is not recommended and will void the warranty. The smart models are monitored by a pressure transducer in the C2 control, which runs the motors on demand. Pressure is factory set from 85 to 115 PSI and is not adjustable.

Getting Started

⚠WARNING

Never direct the air stream toward any portion of the body or others in the vicinity. Pressurized air streams can be extremely hazardous to your healt and can result in death in certain circumstances.

⚠CAUTION

DO NOT attempt to operate the compressor at ambient temperature below 35°F/0°C or above 104°F/40°C.

The Osprey compressor is easy to operate and maintain.

1. Verify the compressor is connected to a dedicated circuit.
2. Verify the compressor is properly connected to the facility plumbing and a fresh air source.
3. Verify the shut-off valve is closed.
4. Start the compressor.
    - Basic model: turn the pressure switch toggle from **OFF** to **AUTO**.
    - Smart model: push the **START** button on the C2 control panel.

NOTE: *If the compressor is controlled by the OWL Touch, it cannot be started by the C2 control.*

5. Test for leaks. (See **Section IV Care - Test Compressor for Leaks**.)
6. Turn the shut-off valve to **OPEN**.

Getting Started (Continued)

7. The compressor installation is complete.

NOTE: *Periodically during startup from 0 PSI, the dryer shuttle valve may be out of sync from the previous cycle. This is noted by the sound of air being released out of the dryer purge valves. This minor interruption causes no harm to the dryer or air system. The dryer shuttle valve will relocate itself to the correct position after 35 seconds, and after which the dryer will cycle normally.*

C2 Control Display Screen

The C2 smart control platform utilizes state-of-the-art technology with a pressure transducer and solid state relays to control cycling of the compressor.



START	Starts Unit
STOP	Stops Unit from Running
RESET	Resets Alarms and Maintenance Timer
NEXT	Toggles Screens in Display

Figure 12. Osprey compressor C2 smart control panel

C2 Control Display Screen (Continued)

SCREEN 1



Head motor control status.

Head status: ON-Running, OFF-Not running, DIS-motor disabled, N/A-No head in this location.

SCREEN 2



Solinoid valve location.

Valve status: ON/OFF. NOTE: TWR1 & TWR2 status will toggle back and forth as system runs.



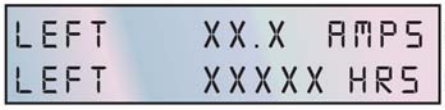
Only shown when powerup override selected on board.



Average time (last 60 cycles) to pump up from 85 to 115 PSI.

Average time (last 60 cycles) to drain the system from 115 to 85 PSI.

SCREEN 5
All models



Instantaneous amp reading.

Hours of runtime for each head (not system hours). Can be reset when motor is replaced.

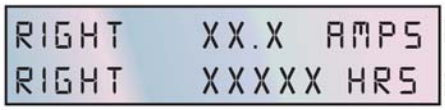
SCREEN 6
Models with 2 or 3 Motors



Instantaneous amp reading.

Hours of runtime for each head (not system hours). Can be reset when motor is replaced.

SCREEN 7
Models with 3 Motors



Instantaneous amp reading.

Hours of runtime for each head (not system hours). Can be reset when motor is replaced.

SCREEN 8



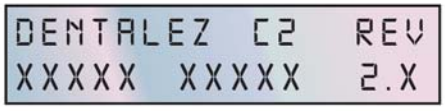
Factory set to count down from 700 hours. Alert given when reaches zero. Reset counter with **RESET** button when filters are replaced.

SCREEN 9



Factory set to count down from 3,500 hours. Alert given when reaches zero. Reset counter with **RESET** button when dryer desicant is replaced.

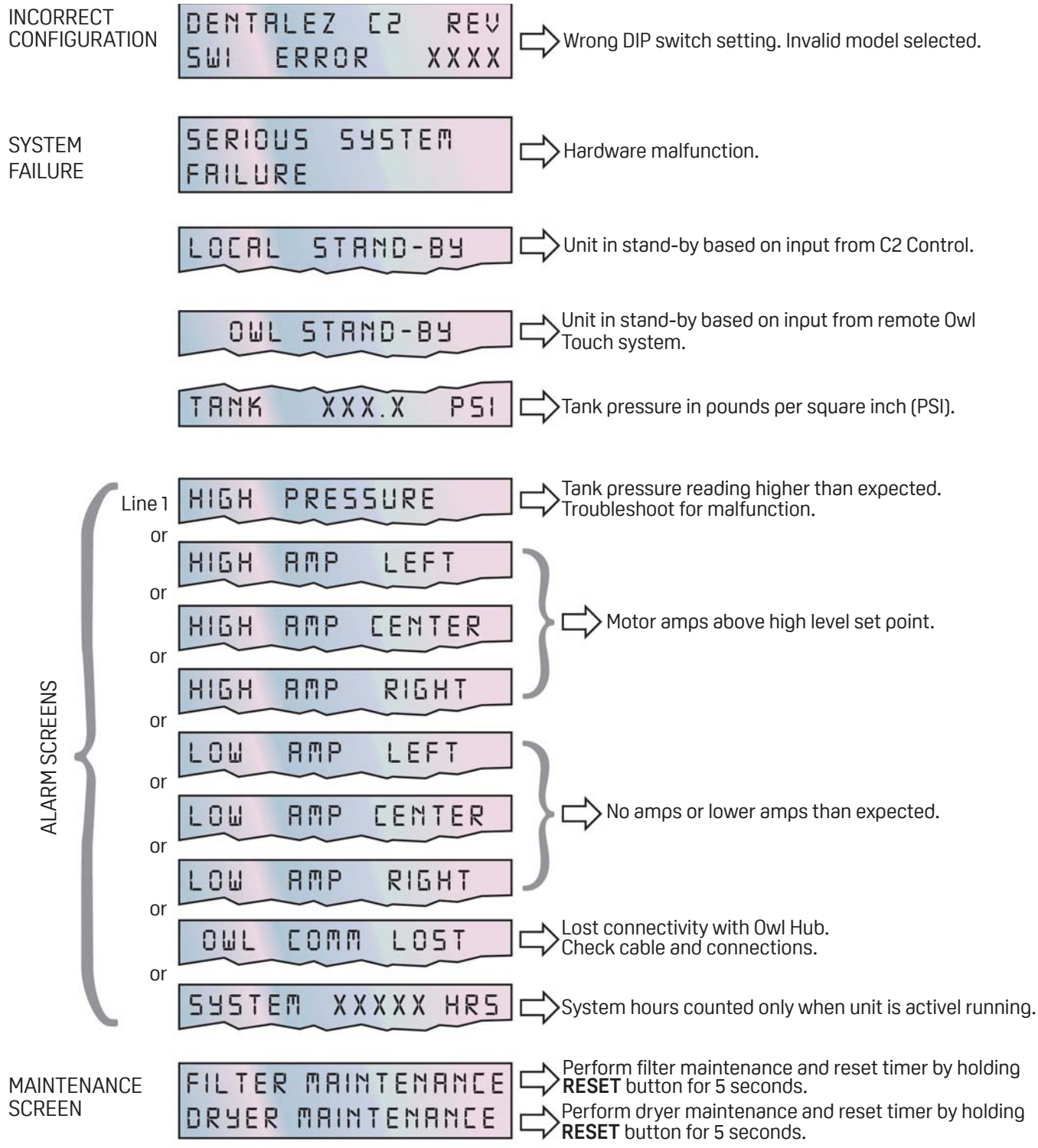
BOOT UP



Boot-up screen with software and unit model.

Model number.

C2 Control Display Screen (Continued)



Enable High-Pressure Mode

⚠CAUTION

High-pressure mode should only be activated when supplying air to a dedicated milling machine that requires higher pressure.

High-pressure mode on the Osprey compressor is enabled by using the control buttons located on the C2 smart control panel **(Figure 13)**.



Figure 13. Osprey compressor C2 smart control panel

To enable high-pressure mode:

1. Press **NEXT** button to cycle through the menu screens. Stop at the screen that displays **HI PRESSURE MODE OFF (Figure 14)**.

   NOTE: *This will require seven to nine presses, based on the model of Osprey being operated.*

2. Press and hold **RESET** button for 10 seconds. The screen will now display **HI PRESSURE MODE ON 105→130 PSI (Figure 15)**.

3. Press **NEXT** button. Screen will display this warning: **IN HI PRESS MODE OWL COM DISABLED**. This indicates that the On Wall Logic (OWL) Smart Hub is in high-pressure mode and will have limited functionality with the compressor **(Figure 16)**.

4. Press **NEXT** button again to return to the main screen.

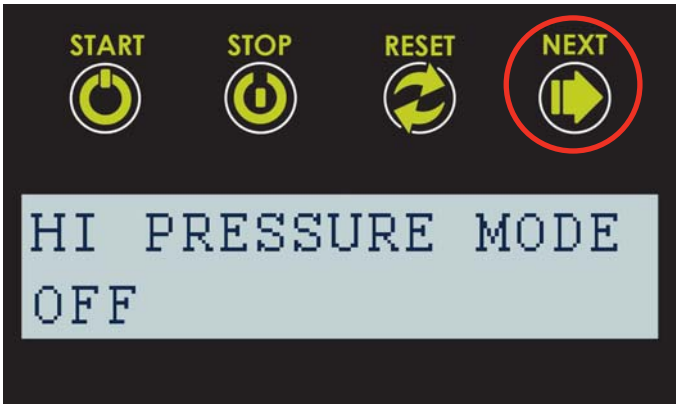


Figure 14. Press NEXT button to cycle to screen

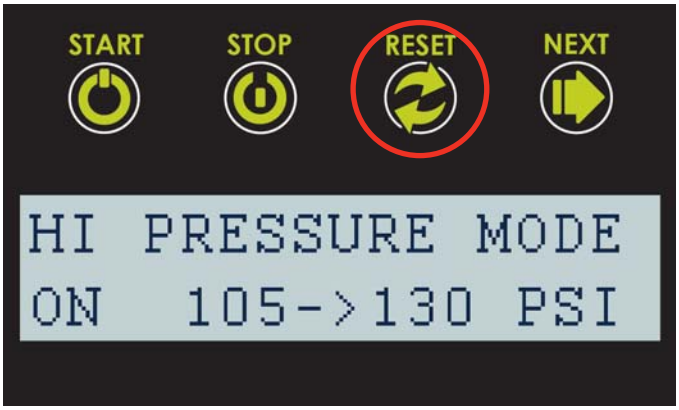


Figure 15. Press and hold RESET button for 10 seconds



Figure 16. Press NEXT button

Cleaning

Cleaning Instructions

1. Always disconnect the power from the equipment prior to cleaning.
2. Some parts/components on the compressor get hot during operation; provide the equipment ample time to cool prior to cleaning.
3. All components can be safely wiped down with a damp cloth, wet with water. Using any cleaners or harsh chemicals to clean this equipment are not recommended since their potentially harmful effects have not been evaluated.
4. Do not heavily wet electrical components.
5. Allow equipment to air dry or dry with clean, soft cloth.

Scan QR code to view online Osprey Maintenance Video

www.DentalEZ.com/CompressorMaintenanceVideo

Maintenance

Overview

Osprey compressor 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.

This compressor system, when correctly specified for a dental office, should accumulate around 700 hours per year, or run at approximately a 50% duty cycle (3 minutes on, 3 minutes off). Service and maintenance intervals are calculated accordingly, but could vary greatly depending on the installation. It is important to occasionally inspect the compressor for emerging issues or maintenance requirements that may not conform to the average.

Key Points for Trouble-free Operation

- Follow the recommended **Preventive Maintenance Schedule**.
- Check the coalescing and particulate filters indicator every month (see **Checking Moisture Indicator** and **Checking Filter Element Service Indicator** in this section).
- Keep compressor clean and free of dirt.
- Keep area surrounding compressor free of debris.
- Maintain a controlled ambient temperature between recommended levels. High temperatures will shorten the life of the air compressor. (see **Section I Introduction, Specifications** section).

DentalEZ INTEGRATED SOLUTIONS

Maintenance (Continued)

When servicing this compressor, 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 information is available to service personnel by contacting RAMVAC.

Preventive Maintenance Schedule	
This is a recommended schedule for a compressor in a clean, dry environment. Any site other than specified will decrease maintenance time exponentially.	
Test for Air Leaks	First week and annually thereafter
Replace Intake Filters	Annually
Replace Coalescing Filter	Replace annually or when filter indicator moves to completely red while running (see **Filter Element Service Indicator** diagram)
Replace Particulate Filter	Replace annually or when filter indicator moves to completely red while running (see **Filter Element Service Indicator** diagram)
Inspect Dryer	Annually
Test Safety Valves	Annually
Replace Dessicant Cartrides	Every five (5) years
Osprey smart models: Reset the 2,000 hour maintenance light by navigating to the maintenance screen on the C2 control and pressing the RESET button. **Osprey basic models:** There is no maintenance alarm.	

Replacing Intake Filter

Tools Required

- Phillips-head Screwdriver

NOTE: *All models us the same intake filter.*

1. Turn compressor **OFF**.
   a. For smart models, use the STOP button on the C2 control.
   b. For basic models, use the switch toggle, turning it to the off position.
2. Remove power from the compressor.
3. Remove intake filter cap by removing two screws **(Figure 17a)**.
4. Remove intake filter and discard.
5. Install replacement filter and replace filter cap **(Figure 17b)**.
6. Return power to the compressor.
7. Return compressor to service.

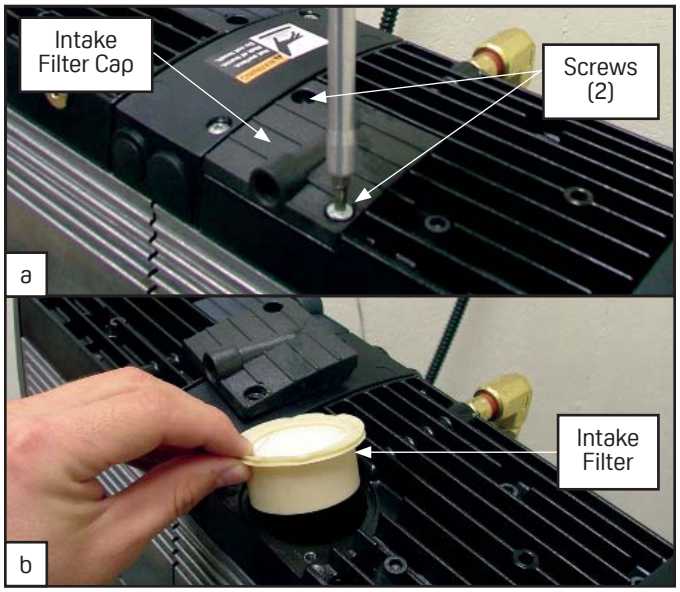


Figure 17. Remove intake filter cap and replace intake filter

Maintenance (Continued)

Replacing Particulate Filter

NOTE: *All models us the same intake filter.*

1. Turn compressor **OFF**.
   a. For smart models, use the STOP button on the C2 control.
   b. For basic models, use the switch toggle, turning it to the off position.
2. Remove power from the compressor.
3. Bleed air from the system.
4. Push up slightly and turn particulate filter bowl slightly and remove **(Figure 18a)**.
5. Remove filter by turning completely out.
6. Install new .01 micron filter **(Figure 18b)**.
7. Position filter bowl, push up slightly and turn into place.
8. Return power to compressor.
9. Return compressor to service.

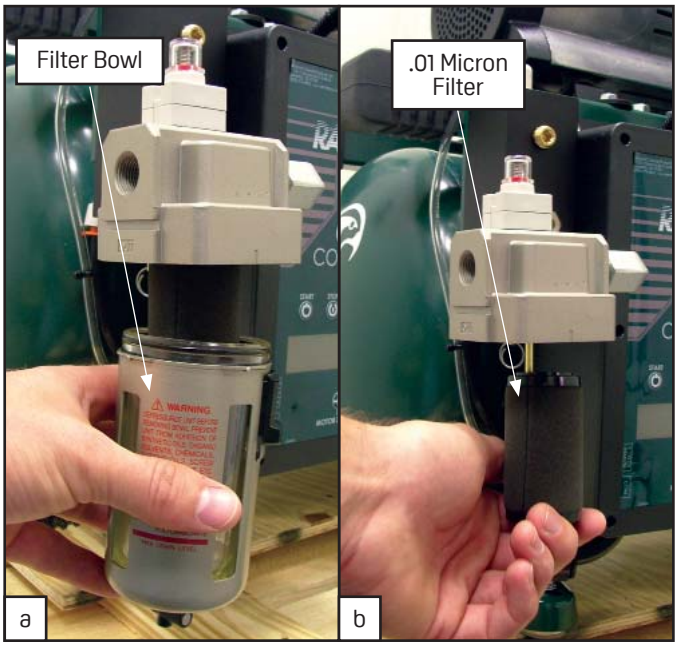


Figure 18. Remove filter bowl and replace filter

Replacing Coalescing Filter

NOTE: *All models us the same intake filter.*

1. Turn compressor **OFF**.
   a. For smart models, use the STOP button on the C2 control.
   b. For basic models, use the switch toggle, turning it to the off position.
2. Remove power from the compressor.
3. Pull tab down and turn coalescing filter bowl slightly right and remove **(Figure 19a)**.
4. Remove filter by turning completely out.
5. Install new .3 micron filter **(Figure 19b)**.
6. Position filter bowl, push up slightly and turn left into place. Tab will snap down into place.
7. Return power to compressor.
8. Return compressor to service.

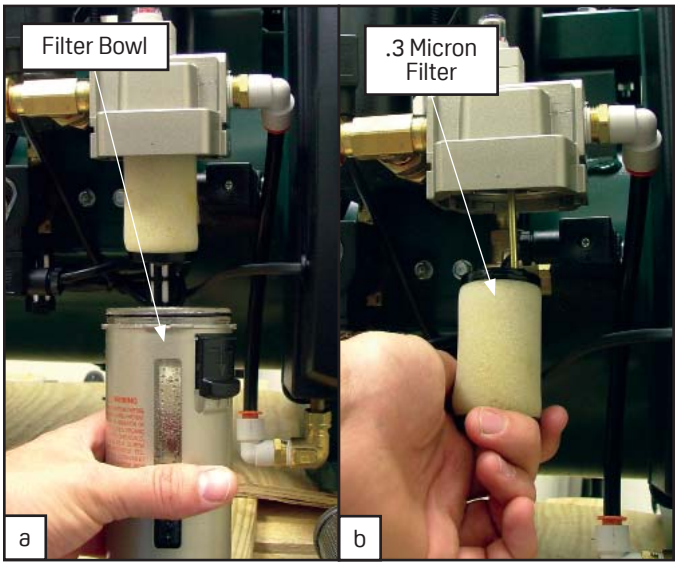


Figure 19. Remove intake filter cap and replace filter

Maintenance (Continued)

Inspecting Dryer

1. Operate the compressor until the pressure of the tank reaches at least 45 PSI.
2. Turn compressor **OFF**.
   a. For smart models, use the STOP button on the C2 control.
   b. For basic models, use the switch toggle, turning it to the off position.
3. Carefully open the tank petcock **(Figure 20)**.
4. If no water drains from the tank when the valve is opened, the dryer is working; proceed to step 6.
5. If water drains from the tank when the valve is opened, the dryer is not working; contact RAMVAC at 866-DTE-INFO.
6. Return compressor to service.

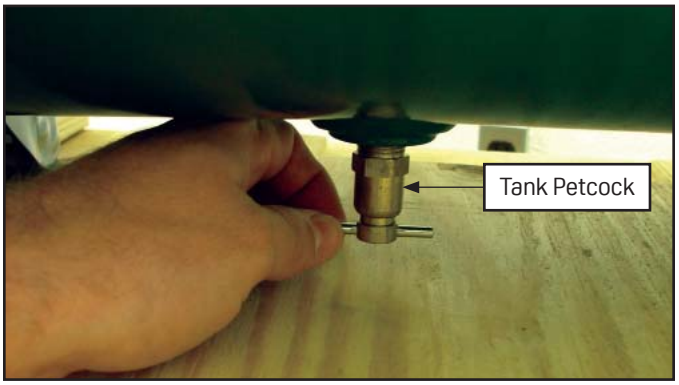


Figure 20. Open tank petcock

Testing Safety Valve

1. Run compressor until 45 PSI shows on the gauge.
2. Pull ring on safety valve **(Figure 21)**.

NOTE: *Safety valve located below the facility shut-off valve. A loud burst of escaping air will be heard when air is released from the safety valve.*

3. If no air comes out of safety valve, the valve is defective and must be replaced immediately.
4. Return compressor to service.

⚠CAUTION

- Bleed air from system before servicing.
- Some activities, such as opening the safety pressure relief valve may create excessive sound levels that could damage hearing. Hearing protection is recommended during service of this device.

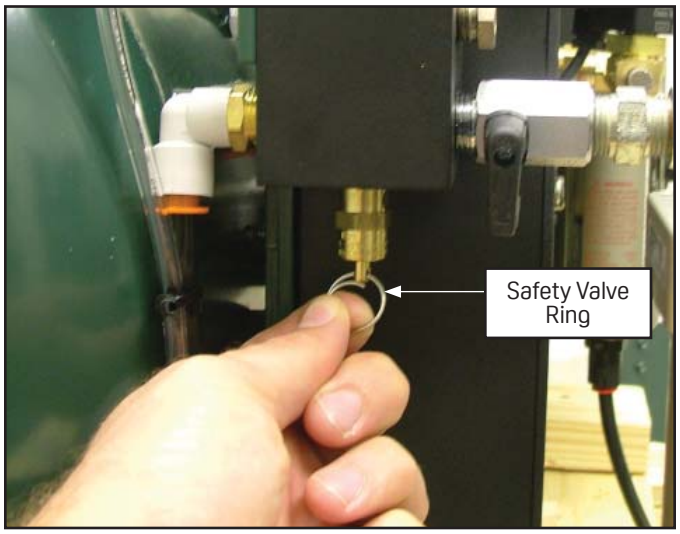


Figure 21. Pull ring on safety valve

Maintenance (Continued)

Testing Compressor for Leaks

1. Close valve to facility plumbing.
2. Run compressor until it shuts off at 100 PSI.
3. Turn compressor **OFF**.
   a. For smart models, use the STOP button on the C2 control.
   b. For basic models, use the switch toggle, turning it to the off position.
4. Let compressor sit for five minutes.
5. If the pressure drop is more than 5 PSI in a five-minute time period, leaks must be repaired.
6. Repair if needed.
7. Open valve to facility plumbing.
8. Return compressor to service.

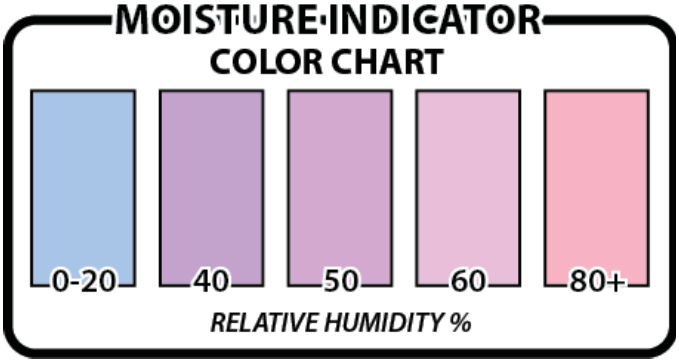
Depressurizing Air System

1. Remove the power from the air system.
2. Close the outlet to the shut-off valve.
3. Open the petcock to drain any air in the tank.

DO NOT pull the pressure relief valve to depressurize the air system.

Checking Moisture Indicator

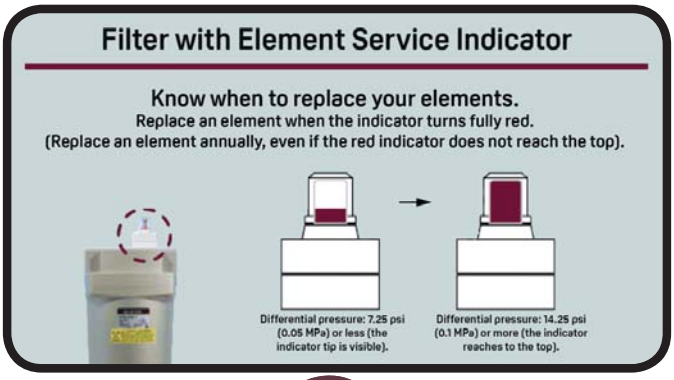
The compressor is equipped with a moisture indicator near the operatory outlet that will change colors based on the dew point level of the compressed air. During normal operation, the indicator should be blue. If the indicator turns pink during normal operation, the dryer system of the compressor may be malfunctioning or need service. Contact a qualified service technician if maintenance or service is required.



Checking Filter Element Service Indicator

The compressor is equipped with a filter element service indicator. When the indicator turns fully red, the filter element should be replaced.

NOTE: *Replace an element annually, even if the red indicator does not reach the top.*



DentalEZ INTEGRATED SOLUTIONS

Service Instruction

If the area of concern is not addressed in this manual, contact your local DentalEZ full-service dealership 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 **(Figure 22)**:

- Model Name: _____
- Model Number: _____
- Serial Number: _____
- Date of Installation: _____
- Dealer: _____

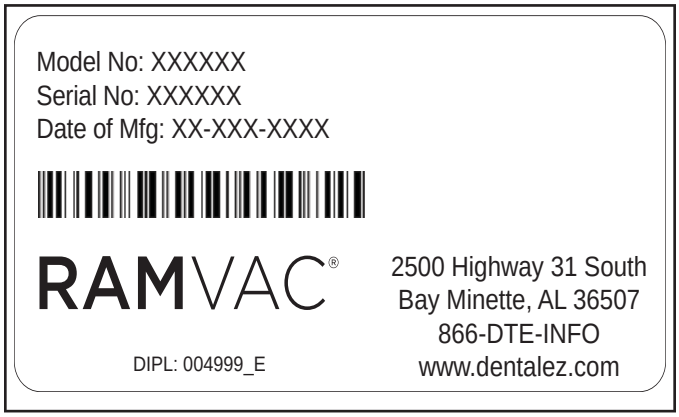


Figure 22. Model/serial number label on the Osprey

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.

DentalEZ Parts Online

To order parts online, visit www.dentalezparts.com or scan QR code with smartphone.

Guidance and Manufacturer's Declaration – Electromagnetic Emissions

The Osprey family of dental air compressors is intended for use in the electromagnetic environment specified below. The customer or the user of the Osprey family of dental air compressors should assure that it is used in such an environment.

Emissions Test	Compliance	Electromagnetic Environment Guidance
RF Emissions CISPR 11	Group 1	The Osprey family of dental air compressors 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 Osprey family of dental air compressors 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	Not Applicable	
Voltage Fluctuations/Flicker Emissions IEC 61000-3-3	Not Applicable	

Guidance and Manufacturer's Declaration – Electromagnetic Immunity

The Osprey family of dental air compressors is intended for use in the electromagnetic environment specified below. The customer or the end user of the Osprey family of dental air compressors 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	± 2 kV contact ± 2 kV air	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	± 2 kV for power supply lines not applicable. No data I/O lines	Mains power quality should be that of a typical commercial or hospital environment.
Surge IEC 61000-4-5	±1 kV line(s) to line(s) ±2 kV line(s) to earth	±1 kV line(s) to line(s) ±2 kV line(s) to earth	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 sec	<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 sec	Mains power quality should be that of a typical commercial or hospital environment. If the user of the Osprey family of dental air compressors requires continued operation during power mains interruptions, it is recommended that the Osprey family of dental air compressors 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 Emissions

The Osprey family of dental air compressors is intended for use in the electromagnetic environment specified below. The customer or the user of the Osprey family of dental air compressors should assure that it is used in such an environment.

Immunity Test	IEC 60601 Test Level	Compliance Level	Electromagnetic Environment Guidance
Radiated RF IEC 61000-4-3	3 V/m 80MHz to 2.5 GHz	3 V/m	Portable and mobile RF communications equipment should be used no closer to any part of the Osprey family of dental air compressors, including cables, than the recommended separation distance calculated from the equation applicable to the frequency of the transmitter. d = 1.2 √P d = 1.2 √P 80 MHz to 800 MHz d = 2.3 √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 transmitters, 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: 
Conducted RF IEC 61000-4-6	150 kHz to 80 MHz	3 Vrms	

NOTE 1: At 80 MHz and 800 MHz, 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.

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 Osprey family of dental air compressors is used exceeds the applicable RF compliance level above, the equipment should be observed to verify normal operation. If abnormal performance is observed, additional measures may be necessary, such as reorienting or relocating the equipment.

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 Model @ 3Vrms

The Osprey family of dental air compressors is intended for use in an electromagnetic environment in which radiated RF disturbances are controlled. The customer or the user of the compressor can help prevent electromagnetic interference by maintaining a minimum distance between portable and mobile RF communications equipment (transmitters) and the compressor 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	0.34	0.34	0.74
1	1.7	1.7	2.3
10	3.7	3.7	7.4
100	11.7	11.7	23.3

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.

Osprey™ Dental Compressor

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 customer 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™ Wet Dental Vacuum Systems	5 Years from date of installation
Bulldog & Bison Dental Vacuum Systems	2 Years from date of installation
Vacuum Pumps Only *(excludes Badger™ LF and Barracuda™)*	10 Years from date of installation
Osprey™ Compressors	6 Years/4,200 hours from date of installation *(whichever comes first)*
OWL™ Touch	2 Years from date of installation
Badger™ LF Dental Vacuum System	2 Years from date of installation
Badger™ LF Pump Only	5 Years/10,000 hours from date of installation *(whichever comes first)*
NXT Hg5 Amalgam Separator	2 Years from date of purchase
NXT Hg5 Collector Container	1 Year from date of purchase
Master Water Control Valve	2 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: *Provided conditions defined in instruction manual are met.

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