Spirit™ RM
Rear Mount
Cuspidor
& Assistant’s Instrumentation
Use & Care Manual
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WARNING: Federal law restricts this device to sale by or on the order of a dentist.

Technical Support

Technical assistance is available Monday through Friday, 8:00 am to 6:00 pm (Eastern Standard Time).
Phone: 800-659-5922
Fax: 800-659-7255
Customer Service: 800-659-6560
CATALOG OVERVIEW

CATALOG: RM88

CATALOG: RM89

CATALOG: RM87

CATALOG: RM89S
GENERAL INFORMATION

Definition of Symbols
The following symbols and terms may be used throughout this manual and your equipment:

WARNING: Failure to carefully follow the described procedure may result in damage to the equipment and/or injury to the patient/operator.

Risk of electrical shock present. Make sure power is disconnected before attempting this procedure.

See operating instructions.

(AC) Alternating current.

Protective earth (Ground)

Manufacturing Date

Manufacturing Place

Waste Electrical and Electronic Equipment.

Type B Applied part.


Conforms with the Essential Requirements of the European Medical Device Directive 93/42/EEC for Class IIa Devices.

Indicates conformity to General Requirements for Safety is certified by Intertek Testing Services.

General mandatory action required, important to follow instruction. Not a caution.

Warning, strong magnetic field.

Off

On

Light Switch

European Authorized Representative

USB Port

Product Disposal
Contact your local authorized dealer for proper disposal of the device to ensure compliance with your local environmental regulations.

Interference with Electromedical Devices
To guarantee the operational safety of electromedical devices, it is recommended that the operation of mobile radio telephones in the medical practice or hospital be prohibited.

Strong EMI sources such as electro surgery units or x-ray units may affect performance. If performance problems occur, move the unit to another electrical circuit or physical location.

Incompatible Units or Accessories
Incompatible Units or Accessories: To guarantee the operational safety and function of this device, the use of unapproved units or accessories is not advised. Doing so could result in potential hazard. Using accessory equipment not complying with the equivalent safety requirements of this equipment may lead to a reduced level of safety of the resulting system. Connecting electrical equipment to multiple socket outlets effectively leads to creating an ME SYSTEM, and can result in a reduced level of safety. All configurations shall comply with the system standard IEC 60601-1-1 or IEC 60601-1:2005

Product Identification
This product can be identified by its product label. This label states the unit model and serial number, electrical specifications, manufacture date and safety classification. Note the SAMPLE label shown below.

Working Environment
The unit is to be used in an office environment only.

Recommended working condition is:
Ambient Temperature: 68°F to 76°F (20°C to 25°C)
Relative Humidity: 20% to 60% non-condensing
Atmospheric Pressure: 13.1 to 15.3 PSI (900 to 1060hPa)

Storage Conditions: The device is appropriately packaged in a box. If product is to be stored before installation, storage and handling instructions in the packaging should be adhered to. Handling and storage conditions are marked on the box.
Temperature: -4°F to 122°F/ -20°C to 50°C
Relative Humidity: 10% to 90%
If the device is not to be used for some time, ensure the water line is disinfected and flushed with air before the master switch is switched off.
SAFETY INSTRUCTIONS
Please read the safety warnings and instructions before using the device. The manufacturer’s liability is applicable only if the device is used in compliance with the directions and safety warnings provided in this manual. Safety warnings are spread throughout the manual.

**WARNING:** This product is intended for use by trained dental professionals only.

**WARNING:** A dental unit may include magnets in the construction of the device which may temporarily affect the function/programming of some implantable pacemakers or defibrillators. If the implanted device is programmed to respond to a magnet, people who have these type of devices should avoid dental units with magnets.

**WARNING:** Only authorized service technicians should install or service this equipment. Use of other than authorized technicians will void the warranty.

**WARNING:** This product must be disinfected before use. Failure to disinfect may promote contamination.

**WARNING:** Dental instruments and accessories are sharp - use care when near the dental unit. Remove sharp tips when not in use to prevent injury.

**WARNING:** Failure to return handpieces to proper location could result in alternate or additional handpieces operating without notice.

**WARNING:** This product is intended for use by trained dental professionals only.

**WARNING:** Proper personal protective equipment (PPE), including, but not limited to, gloves and eye protection, must be used when operating the dental unit. Failure to use protective equipment can expose operator and patient to cross-contamination.

**WARNING:** Failure to install the syringe tip correctly can result in injury or damage. Refer to the documentation that came with the syringe for full instructions on proper installation and use.

**WARNING:** Failure to disinfect equipment between patients could expose user/patient to cross contamination and bio-burden/bio-contamination.

**WARNING:** Use a licensed electrician for all wiring.

**WARNING:** Failure to disinfect may promote contamination.

**WARNING:** This product must be disinfected before use. Failure to disinfect may promote contamination.

**WARNING:** Dental instruments and accessories are sharp - use care when near the dental unit. Remove sharp tips when not in use to prevent injury.

**WARNING:** Failure to return handpieces to proper location could result in alternate or additional handpieces operating without notice.

**WARNING:** Proper personal protective equipment (PPE), including, but not limited to, gloves and eye protection, must be used when operating the dental unit. Failure to use protective equipment can expose operator and patient to cross-contamination.

**WARNING:** Failure to install the syringe tip correctly can result in injury or damage. Refer to the documentation that came with the syringe for full instructions on proper installation and use.

**WARNING:** Failure to disinfect equipment between patients could expose user/patient to cross contamination and bio-burden/bio-contamination.

**WARNING:** Use only Pelton and Crane replacement parts. All repairs should be performed by authorized Pelton & Crane Dealers or their representatives.

The dental unit complies with IEC/EN 60601-1 third edition.

As manufacturers of electro-medical products we can assume responsibility for safety-related performance of the equipment only if maintenance, repair and modifications are carried out only by Pelton & Crane or agencies we have authorized for this purpose, and if components affecting safe operation of the unit that may be needed are replaced with original parts.

We suggest that you request a certificate showing the nature and extent of the work performed, from those who carry out such work, and specify that the certificate show any changes in rated parameters or working ranges, as well as the date, the name of the firm and a signature.
TECHNICAL DESCRIPTION

Intended Use - Dental Unit

Indications for Use:
The Spirit Dental Operative Units are intended to supply power to and serve as a base for other dental devices and accessories by providing air, water, vacuum and low voltage electrical power to hand held dental instruments. The Spirit Dental Operative Units are intended for use by professional dental practitioners in providing treatment to dental patients in a dental operatory.

Product Description:
The Spirit Dental Operative Units serve as a base that includes components to deliver air, water, electrical power, and vacuum to dental handpieces, instruments, and accessories. The controls are contained in a Doctor’s Unit, an Assistant’s Unit, and a Cuspidor. Additional parts include mount arms, foot control, and a junction box that houses a power supply and air/water regulators. Various Handpieces and accessories can be added to the Spirit Dental Operative Unit which Pelton & Crane does not manufacture but does provide a means to connect them into the Spirit Dental Operative Units. These include, but are not limited to, pneumatic handpieces, electric motors with handpieces, scalers, intra-oral cameras, curing lights, air/water syringes, SE and HVE vacuum instruments.

The dental delivery system is classified as Class 1 device under rule FDA CFR 21, Class II device under Health Canada guidelines and a Class IIa device under rule 11 of the MDD 93/42/EEC of Annex IX.

Air and Water Supply Requirements
- Air Quality: Dry and clean
- Pressure: 80-100 psi (5.5 - 7.2 bar)
- Water Quality: Potable
- Hardness: 7.2 - 7.8 pH
- Pressure: 40-80 psi (2.75-5.5 bar)

Incompatible Units or Accessories
To guarantee the operational safety and function of the device, the use of unapproved units or accessories is not advised. Doing so could result in potential hazard. Using accessories or equipment not compliant with the equivalent safety requirements of this equipment may lead to a reduced level of safety of the resulting system.

The manufacturer will supply, upon request, plumbing diagrams, component parts lists, descriptions and other information needed to assist service technicians in repairing or servicing the dental unit.
OPERATION

The description includes all possible features. Your model may or may not have all of the functions shown below.

Optional Touch Pad: The electronic touch pad allows the user to adjust the chair’s manual positioning using the directional arrows shown. The user can also program and access the chair’s automatic positions using the buttons labeled 0 and 1 and the unmarked LEARN button. The light can also be activated using the button with the light symbol (the toggle switch on the light head must be in the “on” position for this function to operate).

NOTE: The touch pad will operate the unit light only if the junction box power supply has been installed and connected.

Debris Cup: The debris cup has a solid strainer inside. A cap which keeps the strainer in position is removed to access the strainer for cleaning.

Bowl Rinse: The RM84 and RM85 bowl rinse function is set to run for a 30 second time period and is activated by pressing the bowl rinse activator. The RM88 and RM89 is equipped with a timed rinse bowl. The push button initiates rinsing. The timer is adjusted by a knob underneath the cuspidor.

Cup Filler: The RM84 and RM85 cup filler is set to fill a 5 ounce cup 3/4 full. This function is activated by gently pulling the cup fill spout forward until the pilot valve is activated. Pushing the cup fill spout back and away from the cup will stop water flow. In RM88 and RM89 the cup filler is manual.

Water Outlet: The water outlet is provided to run any accessories needed by the user. Use the supplied 1/4” male connector and attach to the outlet.

Water Outlet Flow Control: This is a needle valve that adjusts the water flow of the outlet.

Junction Box

Your device may come with a junction box. The air and water regulators are factory set. Air and water gauges should read 80psi and 40psi, respectively. The manual shut-off valve (supplied by the customer) and the delivery master on-off toggle should be turned on for the gauges to register.

If a regulator needs adjustment, turn the knob clockwise to increase pressure and counterclockwise to decrease pressure. For an accurate reading, bleed off the air pressure by using the air syringe button.

WARNING: Do not dispose of amalgam residues found in the debris cup directly into the sink. Dispose of amalgam properly.

WARNING: If unit is equipped with assistant’s unit, care must be taken when using the saliva ejector or HVE. Do not point the tip of the instrument directly on the patient’s gums or cheeks.

Utility outlets in the J-box are exclusively for the dental system. It is unsafe to connect other devices into it.
The cuspidor relay valve controls the timing of the cup filler and bowl rinse functions. This valve is mounted on a bracket in the junction box. The run time of each of these functions can be tested and adjusted as follows:

**Cuspidor Cup Fill (Automated Timer)**

1. Place cup on cuspidor under spout to check water flow.
2. Push forward the cup filler spout to activate the water flow.
3. Water should fill the cup between 1/3 to 2/3 full (approximately two ounces).
4. If the water level is less than 1/3 cup, using a flat blade screwdriver, rotate the cup filler valve clockwise approximately 1/4 turn.
5. If the water is greater than 2/3 cup, rotate the cup filler valve counterclockwise approximately 1/4 turn.
6. Repeat steps 1 through 5 above until cup is filled between 1/3 and 2/3 full (approximately two ounces).
7. Check that there is good shut off of the cup filler function with no more than a drop after shut off.
8. Pull cup filler spout to activate water flow and push cup filler spout to deactivate water flow.

The cup fill in the 1500 cuspidors (RM88 and RM89) is an on-off manual valve. The water will flow as long as you hold the button.

**Bowl Rinse**

9. Press the bowl rinse button to activate the bowl rinse flow.
10. If equipped with the timed bowl rinse feature, the rinse time should be between 20 and 30 seconds.
11. If the bowl rinse time is greater than 30 seconds, using a flat blade screwdriver, rotate the bowl rinse valve clockwise approximately 1/4 turn.
12. If the bowl rinse time is less than 30 seconds, rotate the rinse bowl valve counterclockwise approximately 1/4 turn.
13. Repeat steps 9 through 12 until bowl rinse time is between 20 and 30 seconds. For units equipped with the timed bowl rinse feature, 25 to 35 seconds for remote timed rinse.

Timers are set at the factory. In the 1500 cuspidors the bowl rinse timer is adjusted different to the 2000 cuspidors. The knob located underneath the cuspidor controls the bowl rinse duration. Rotate knob clockwise to increase duration on the rinse cycle or counterclockwise to decrease cycle duration.

**WARNING:** Do not dispose of amalgam residues found in the debris cup directly into the sink. Dispose of amalgam properly.
PROGRAMMING THE AUTO BUTTONS

STORING PRESET POSITIONS 0 and 1
1 Using the manual buttons, adjust the chair into the desired position.
2 Press and hold desired auto (“0” or “1”) button to be programmed for several seconds (5).
3 Listen for beep to confirm the position has been set, then release.

TO OPERATE — Use manual buttons to move chair from stored position. Press desired auto preset button once. Chair will move to new stored position.
PROGRAMMING THE AUTO BUTTONS

STORING PRESET POSITIONS 0 and 1
1. Using the manual buttons, adjust the chair into the desired position.
2. Press and hold the unmarked LEARN button, the chair will beep once to confirm. Continue holding the LEARN button, while pressing desired auto ("0" or "1") button TWO TIMES.
3. Upon releasing the LEARN button, listen for one quick beep to confirm the position has been set.

TO OPERATE — Use manual buttons to move chair from stored position. Press desired auto preset button once. Chair will move to new stored position.

STORING PRESET POSITIONS 2 and 3
NOTE: In order to access preset positions 2 and 3 with this style of touchpad, a jumper must be placed and left on pin# 7 of the main chair board.
1. Using the manual buttons, adjust the chair into the desired position.
2. Press and hold the LEARN button. The chair will beep twice to confirm. Press and hold the LEARN button while pressing the desired auto button ("0" or "1") FOUR TIMES.
3. Upon releasing the LEARN button, listen for two quick beeps to confirm the position has been set.

To program the second auto button repeat the procedure.

TO OPERATE — Use manual buttons to move chair from stored position. Press desired auto preset button once. Chair will move to new stored position.

NOTE: Accessing preset position 2 and 3 will cause the dental chair to have a 3 second delay before moving.
PROGRAMMING THE AUTO BUTTONS

STORING PRESET POSITIONS 0 and 1

1  Using the manual buttons, adjust the chair into the desired position.

2  Press and hold the unmarked LEARN button, the chair will beep once to confirm. Continue holding the LEARN button, while pressing desired auto ("0" or "1") button TWO TIMES.

3  Upon releasing the LEARN button, listen for one quick beep to confirm the position has been set. To program the second auto button, repeat procedure.

TO OPERATE — Use manual buttons to move chair from stored position. Press desired auto preset button once. Chair will move to new stored position.
ASSISTANT’S VACUUM INSTRUMENTS

After Each Patient
Draw clean water through each valve, while opening and closing it several times. Leave the valve open for several seconds to allow all of the water to clear the hoses. The HVE and Saliva Ejector tips should always be replaced with sterile ones before each patient.

At the End of Each Day
We recommend that you draw a vacuum system sanitizing solution which is non-toxic and environmentally safe through each valve, while opening and closing it.

Cleaning the Solids Collector
At least once a day the solids collector screen should be cleaned or replaced as needed. Turn off the vacuum pump before removing the solids collector cap and lift out the screen. If you find an excessive amount of material in the screen, more frequent cleaning is necessary.

WARNING: Ultrasonic cleaning is not recommended, as the chemicals used may damage the surface finishes of the instrument.

WARNING: Do not use sodium hypochlorite or any chlorine bleach on the vacuum instruments. These products will permanently damage the instruments. Never use powdered cleansers, scouring pads or abrasive scrubbers, any of which can damage the finishes.

Sterilization
Remove each valve from its tubing for sterilization. A vacuum plug may be inserted into the quick disconnect while there is no valve in place.

In any situation involving high-risk patients, it is recommended that the instruments be removed for sterilization after every patient.

Cleaning
Clean the external surfaces of the vacuum instruments using a solution of mild detergent and warm water. Thoroughly rinse the syringe with clean water, then dry with a clean, soft, lint-free cloth.

Once a month, visually check the HVE and SE for proper functions, verifying that the air flow adjustment is regulated by the thumb lever and that the HVE and SE are being cleaned and maintained properly.

Disassemble the valve and lubricate the internal parts when operation becomes stiff or sticky. Clean the inner surfaces and apply a small amount of O-ring lubricant to the moving parts and O-rings.
ASEPTIC VACUUM MAINTENANCE

WARNING: Always wear gloves when performing any dental procedure or performing maintenance on the dental unit.

Instrument Hanger Cover (A)
For cleaning or autoclaving, remove cover from hanger by lifting the two locking tabs (B).

Order Replacement, PN 058182LG.

Debris Cup
Empty the debris cup daily. Place HVE and saliva ejector in holders and ensure that vacuum is off. Remove solids separator cover (C) and set aside. Using forceps, remove debris cup. Clean and disinfect cup or replace with disposable trap (Pinnacle Dental No. 5509). Clean and replace cover.

Weekly lubricate O-ring using petroleum jelly.

Debris Cup Replacement, PN 16366.

Hose
All hoses have quick-connect fittings. Simply disconnect the quick-connects to thoroughly clean and disinfect hoses. Flush hoses at the beginning of each day and between patients in accordance with regulatory guidelines. Disinfect and clean daily using Sanitreat®, Purevac®, or a comparable brand. Flush five ounces of non-sudsing vacuum system cleaner through each hose at the end of each day. Lubricate O-rings in fittings weekly using petroleum jelly.
HVE and Saliva Ejector (F)
After each patient, draw clean water through the instrument, working the valve opened and closed several times. This will minimize the accumulation of debris that could interfere with the operation of the valve.

Clean all of the external surfaces with a mild detergent and water solution. Dry with a clean, soft, lint-free cloth.

Daily, draw clean water through the instrument while repetitively working open and close valve. Use a stiff brush of the proper size to scrub the internal surfaces.

**WARNING:** Do not use ultrasonic cleaning methods, since the chemicals involved may damage the surface finishes of the instrument.

If the valve becomes sticky, stiff or difficult to operate, remove the valve spool/lever assembly (H) to thoroughly clean and lubricate it.

To remove the valve spool/lever assembly (H), gently push the spool out of the valve body (G) from the opposite side of the lever.

Thoroughly clean the surfaces and inspect the O-rings (J) for wear or damage. Replace O-ring that have nicks, cuts, flat spots or other signs of damage. Lubricate O-rings with food-grade O-ring lubricant, then reassemble the valve.

**WARNING:** Do not use sodium hypochlorite on these instruments doing so will cause permanent damage.

**WARNING:** Temperature should never exceed 280° F or 138° C. Do not allow the instrument to contact the walls of the sterilizer, and avoid placing it in close proximity to the heating elements.
TECHNICAL INFORMATION - CUSPIDOR ARM DIMENSION
CleanInG, DI SInfeCTInG & sTeRIlIzaTIon

Barrier Technique
Pelton & Crane recommends the use of disposable barri-
ers on all controls that may be contacted by dental practi-
tioners during a dental procedure. The use of disposable
barriers helps preserve the finish and appearance of the
equipment in addition to infection control. Pelton & Crane
recommends the use of an FDA market-cleared barrier
(example: Pinnacle Cover-all™). Follow barrier manufac-
turer instructions for proper use of products.

Chemical Disinfection
In addition to the use of barriers, Pelton & Crane recom-
mends the use of an EP registered and FDA market-
cleared chemical disinfectant (example: Cavicide™)to be
used on all surfaces that may come in contact with dental
instruments during dental procedures. Follow chemical
disinfectant manufacturer instructions for proper use of
products.

WARNING: Only disinfect by wiping, no spray
disinfectants. Pelton & Crane expressly rejects
any claims for warranty or damages if spray
disinfectants are used.

Even with the use of chemical disinfectants, it is recom-
mended that the equipment be thoroughly washed with
soap and warm water at least once per day. This wash-
down will minimize the harmful effects of the disinfectant
residues that can accumulate on the equipment.

WARNING: Pelton & Crane makes no war-
 ranty, expressed or implied, that the use of
chemical disinfectants will not damage the
surface finish of the equipment. Damage and
discoloration of the surface finishes are not
covered under the warranty.

Cleaning and Disinfecting Assistance
For assistance with cleaning and disinfecting, contact the
Pelton & Crane Technical Service Department at 1-800-
659-5922.

Additional information is available from the organizations
listed below:
- Organization for Safety and Asepsis Procedures:
  www.osap.org
- American Dental Association:
  www.ada.org
- Department of Health and Human Resources
  Centers for Disease Control and Prevention (CDC):
  www.cdc.gov
- European Dental Association:
  www.eda-eu.org

General Purpose Cleaning
For general purpose cleaning, Pelton & Crane recom-
mends one of two methods:
1) Use a mild detergent and warm water
2) Use a 10% solution of bleach with water

WARNING: Do not use powdered cleansers,
scouring pads or abrasive scrubbers on any of
the painted, plastic or metal surfaces of the den-
tal unit. To remove dried-on material, use a soft-
bristled brush and a solution of mild detergent.

Dental Handpiece, Instruments and
Accessories
Please refer to respective manufacturer’s
Instructions for Use (IFU) for appropriate
cleaning, disinfecting and sterilization require-
ments. These include, but are not limited to,
pneumatic handpieces, electric motors with
handpieces, scalers, intra-oral cameras, curing
lights, air/water syringes, SE and HVE vacuum
instruments.
The control system is equipped with a handpiece flush system that allows you to periodically flush fresh water through the handpiece tubings. The need for this is caused by the low flow of water through the tubings during normal use, which can lead to stagnation and the potential growth of “biofilm” contamination.

We recommend that you flush the tubings at the beginning and end of each day. This may be done with or without handpieces installed, but having handpieces on the tubings will restrict flow, so a longer flush time will be required.

Handpiece Flush — Daily Maintenance
The control system is equipped with a handpiece flush system that allows you to periodically flush fresh water through the handpiece tubings. The need for this is caused by the low flow of water through the tubings during normal use, which can lead to stagnation and the potential growth of “biofilm” contamination.

We recommend that you flush the tubings at the beginning and end of each day. This may be done with or without handpieces installed, but having handpieces on the tubings will restrict flow, so a longer flush time will be required.

All of the tubings are flushed simultaneously. Hold them together and direct them into a basin, sink or cuspidor to catch the water. Flip and hold the flush toggle.

Allow adequate time for fresh water to make its way through the entire system and displace all standing water. The American Dental Association and the Centers for Disease Control can provide additional recommendations regarding this procedure, including information on frequency and duration of flushing and the use of antibacterial solutions in the self-contained water system.

Handpiece Oil Collector:
Replace the 2 x 2 gauze with a clean gauze in the handpiece oil collector every 90 days or more often if handpieces are oiled frequently.