Spirit 1800 Series
Dental Chair
Installation Instructions
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WARNING: Federal law restricts this device to sale by or on the order of a dentist.

It is the user’s responsibility to read and understand the contents of this manual. This manual contains important information relative to hazards to personnel and property if this equipment is not installed, used and/or maintained as instructed.

WARNING: Only authorized service technicians should attempt to service Pelton & Crane Equipment. Use of other than authorized technicians will void the warranty.

Technical Support
Technical assistance is available Monday through Friday, 8:00 am to 8:00 pm (Eastern Standard Time).

Phone: 800-659-5922
Fax: 800-659-7255

Pelton & Crane
SYSTEM OVERVIEW

Quick Release Dual Articulating Headrest
Articulating Armrest
Chair Back
Chair Seat with Scuff Cover
Truss
Pump Cover
Base
J-box
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
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

OBTAINING TECHNICAL LITERATURE
The manufacturer will make available on request circuit diagrams, component parts lists, descriptions, calibration instructions or other information that will assist technical personnel to repair and replace serviceable items.

Storage and Transport
Temperature -68° F to 122° F (-55°C to +50°C)
Relative humidity 10% to 90%

Working environment
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

WARNING: Use only original replacement parts. All repairs should be performed by an authorized dealer and/or their representatives.

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

Electrical Specifications
Volts Cycles Amps
115 VAC 60 Hz 8 A ~
230 VAC 50 Hz 4 A ~

FUSE IDENTIFY VOLTAGE 
IDENTITY (VAC) AMPS SPEED BRAKING CAPACITY
F1, F2 250 12 FAST ACTING 750@250V
F1*, F2* 250 6 FAST ACTING 750@250V

F1*, F2* FOR 230VAC CHAIR

IEC Medical Device Classification
Classification: I
Type: B
Operation Mode: Intermittent - 5% Duty Cycle
0.5 min. ON
9.5 min OFF

Authorized Representative:
Kaltenbach & Voigt GmbH
Bismarckring 39
88400 Biberach
Germany
SAFETY INFORMATION

Review the following safety precautions to avoid injury and prevent damage to this equipment. Use this product only as specified.

**WARNING:** Power cords and their associated parts cannot be substituted without increased risk of electric shock or fire. We recommend the use of original equipment replacement parts only! Power cords must be installed by qualified personnel. Make sure all service loops, strain reliefs, and cord guards are in place and that line, neutral and ground wires are secured.

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

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

**WARNING:** Maximum load rating for this chair is 350 lbs. To avoid personal injury and/or damage to the chair, do not exceed this limit.

**WARNING:** To avoid possible injury and/or damage to the chair, do not apply full body weight on the headrest, backrest, toeboard and armrest. Doing so may cause the chair to tip.

**WARNING:** Support the patient’s head and neck when adjusting the headrest. Failure to do so may result in injury to the patient.

**WARNING:** Use caution when using arm rests for leverage when exiting the chair, as arms may rotate and cause patient to fall or get injured.

**WARNING:** Do not operate chair when any cover is removed. Doing so may result in injury to the operator.

**WARNING:** Do not place knees or legs under chair arm support when chair is being lowered.

**WARNING:** To avoid injury, discontinue use of chair and have serviced by authorized dealer if oil is seen leaking from chair hydraulic system.

**WARNING:** Use caution when filling the hydraulic reservoir to avoid overflow and spillage.

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

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 us or agencies we have authorized for this purpose, and if components affecting safe operation of the chair 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.
INSTALLATION INSTRUCTIONS

STEP 1:
Inspect chair for damage before beginning installation. Make sure any attached units are properly secured (and will not swing around as chair is moved). Remove blocks and carefully slide the chair off the pallet to the location to be installed by lifting in locations shown below. (Do not grasp units or poles to lift chair).

NOTE: Placing a temporary piece of cardboard (or other appropriate moving equipment) under chair base will allow chair to slide more easily across floor.

NOTE: Do not cut shipping straps until Step 2.

WARNING: Chair weight is in excess of 250 pounds. Use an assistant to safely position the chair.

WARNING: Only authorized service technicians should attempt to service this equipment. Use of other than authorized technicians will void the warranty.

STEP 2:
Remove shipping straps and remaining packaging on chair equipment. Install the headrest into the backrest section as shown.

Check to ensure that the chair base is on a stable, level surface and that the chair does not rock due to high or low spots on the floor. If the surface is uneven, use the supplied leveling pads found in the chair hardware kit to eliminate gaps between the floor and the chair base as needed.
**INSTALLATION INSTRUCTIONS, CONT’D**

**STEP 3:**
If your chair has an ellipse or rear mount, follow the instructions that came with these configurations for the installation steps.

NOTE: The next step applies only to Spirit units with utility centers. For all others, continue to Step 4.

**NOTE:** Right handed application shown

If the chair is to have a unit mount bracket installed, it should be set up at this time. If the unit was purchased as a complete package, then the unit mount bracket will be factory installed. In this case, swing the upper roller link assembly up and rest it on the chair’s backrest. Loosen both nuts with a 15/16 inch wrench and swing the unit mount arm to its extreme left side position (for a right-handed user; swing to opposite side for a left-handed user). Re-tighten both nuts securely and lower upper roller assembly.

NOTE: For all the following procedures, be careful not to nick or scratch cylinder shaft on upper structure.

If the chair is to have a unit mount bracket installed, it should be set up at this time. If the unit was purchased as a complete package, then the unit mount bracket will be factory installed. In this case, swing the upper roller link assembly up and rest it on the chair’s backrest. Loosen both nuts with a 15/16 inch wrench and swing the unit mount arm to its extreme left side position (for a right-handed user; swing to opposite side for a left-handed user). Re-tighten both nuts securely and lower upper roller assembly.

**STEP 4:**
Remove the nylon washers, metal washers and lock nuts leaving the nylon bushings in place as shown below.

**NOTE:** Follow the instructions that came with the unit for the installation steps.

**STEP 5:**
Remove seat rail, cushion and shrouds from packaging. Lay seat onto bag (upholstery side down) with rail facing upward.

**NOTE:** Open bag along perforated lines by hand. Do not use a knife to cut the bag.

Remove the seat cushion from the seat rail by rotating the seat handle 90 degrees and lifting cushion away.

**STEP 6:**
Install the seat rail over one nylon bushing, then pull the other seat rail over the other bushing. Re-install the hardware as shown and tighten securely, allowing no side-to-side play on the rails.

**NOTE:** If your chair has an ellipse or rear mount, follow the instructions that came with these configurations for the installation steps.

**NOTE:** For all the following procedures, be careful not to nick or scratch cylinder shaft on upper structure.
INSTALATION INSTRUCTIONS, CONT’D

STEP 7:
Pivot seat rail up and down to ensure it moves freely with no side to side play. There should be slight resistance from nuts as you lift up the chair rail. (Tighten chair rail nuts as necessary) Shrouds should also be on the outside of the chair support and not get pinched when lowering the rail.

Re-install seat cushion by engaging plastic hooks on rear rail brackets. Secure seat cushion by rotating seat handle back 90 degrees.

STEP 8:
Properly connect external facility electrical, air and water to chair as needed.

Properly route or bundle cords and lines to reduce risk of injury or tripping. Replace and secure all covers properly.

Plug in chair and listen for an audible beep.

Operate chair through all range of motions and functions to verify proper operation and complete installation checklist found at the back of this manual.

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

WARNING: Use a licensed electrician for all wiring.

WARNING: This product must be disinfected before use. See Use & Care manual for further instructions

WARNING: Power cords and their associated parts can not be substituted without increased risk of electric shock or fire. We recommend the use of original equipment replacement parts only. Power cords must be installed by qualified personnel. Make sure all service loops, strain reliefs and cord guards are in place and that line, neutral and ground wires are secured.

WARNING: The optional ErgoSoothe must be supplied with a 1/4 in. OD, 80-100 psi air supply line with no oil or other contaminants. The pressure is pre-set and cannot be adjusted. If the relief valves begin venting, turn off the control switches and contact a Pelton & Crane authorized service technician for repair.
**DENTAL CHAIR DIAGNOSTIC CODES**

<table>
<thead>
<tr>
<th>INPUT STATUS DIGIT</th>
<th>INPUT STATUS</th>
</tr>
</thead>
<tbody>
<tr>
<td>0</td>
<td>No Input</td>
</tr>
<tr>
<td>1</td>
<td>Foot switch Button Pressed</td>
</tr>
<tr>
<td>2</td>
<td>Touch Pad Button Pressed</td>
</tr>
<tr>
<td>3</td>
<td>Button on Both are Pressed</td>
</tr>
<tr>
<td>4</td>
<td>Loss of Input Signal</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>OUTPUT STATUS DIGIT</th>
<th>OUTPUT STATUS</th>
</tr>
</thead>
<tbody>
<tr>
<td>0</td>
<td>No Motion</td>
</tr>
<tr>
<td>1</td>
<td>Backrest in Motion</td>
</tr>
<tr>
<td>2</td>
<td>Base in Motion</td>
</tr>
<tr>
<td>3</td>
<td>Both in Motion</td>
</tr>
<tr>
<td>4</td>
<td>Receiving Input to Move But No Motion is Detected</td>
</tr>
<tr>
<td>5</td>
<td>Backrest at Soft Limit</td>
</tr>
<tr>
<td>6</td>
<td>Base at Soft Limit</td>
</tr>
<tr>
<td>7</td>
<td>Both at Soft Limit</td>
</tr>
<tr>
<td>8</td>
<td>In Motion to Programmed Position</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>DIAGNOSTIC DISPLAY</th>
<th>OPERATING STATUS</th>
<th>CORRECTIVE ACTION</th>
</tr>
</thead>
<tbody>
<tr>
<td>00 (Flashing)</td>
<td>Potentiometer value too low</td>
<td>Calibrate potentiometer</td>
</tr>
<tr>
<td>FF</td>
<td>Potentiometer value too high</td>
<td>Calibrate potentiometer</td>
</tr>
<tr>
<td>E_</td>
<td>Main control board failure (replace)</td>
<td>Replace board</td>
</tr>
<tr>
<td>RIGHT DECIMAL</td>
<td>Error is for base potentiometer</td>
<td>Examine potentiometer</td>
</tr>
<tr>
<td>LEFT DECIMAL</td>
<td>Error is for back rest potentiometer</td>
<td>Examine potentiometer</td>
</tr>
</tbody>
</table>

**Main Control Board Diagnostic Display**

![Diagram of Main Control Board Diagnostic Display]
HYDRAULIC CONTROL VALVE

CHAIR SPEED ADJUSTMENTS

Adjust screws shown to the right:

TV2 = Base Down  
TV4 = Backrest Down  
TV1 = Base Up  
TV3 = Backrest Up

To increase speed, turn adjustment screws counterclockwise. To decrease speed turn adjustment screws clockwise.
INSTALLATION CHECKLIST

Verify the following after installation or servicing of the unit:

☐ All manuals are present.
☐ All labels are present and legible.
☐ No mechanical damage from installation.
☐ The chair is connected to the correct power source.
☐ The chair is sitting on a level surface and is stable.
☐ Lumbar and back Ergosoothe features are functioning properly (if present).
☐ All terminals are connected securely and all connections are properly routed, attached and secured.
☐ When each touchpad button is pressed, the chair/unit/light functions properly.
☐ Chair stops downward motion when truss cover is depressed. Lower truss cover returns back to normal position when released and chair continues downward.
☐ Ensure there are no hydraulic or air leaks while chair is operating or stationary.
☐ The chair passes a ground continuity test.
☐ The internal wiring is in good shape and not frayed.
☐ Lower truss cover moves freely and no wires interfere with cover operation. Hinges are completely and properly engaged.
☐ All handpieces and components function properly and can be moved throughout their full range of motion.
☐ Pump cover is closed and rear fasteners are tightened. All other covers are closed and properly installed. (Take care not to pinch tubing or wires).
☐ Chair is wiped down and clean before use.