Spirit 2000 Series
Installation Instructions

Model: SDC-D
Catalog: 2610
Cabinet Mounted

Model: SDW-D
Catalog: 2600 Wall Mounted

Model: SET20
Catalog: 2120 Ellipse
Chair Mounted

Model: MWS-C
Catalog: 2500, 2510, 2520, 2530

Model: FWS-C
Catalog: 2800, 2801, 2810, 2811, 2820, 2821

Model: SCT20
Catalog: 2100, 2105 PMU Mounted
Catalog 2222, 2322
Cabinet Mounted

Model: FCT-C
Catalog: 2802, 2812, 2822, 2832
TABLE OF CONTENTS

CATALOG OVERVIEW ................................................................................................................................................................. 3
TECHNICAL DESCRIPTION .................................................................................................................................................................. 9
SPIRIT ELLIPSE DELIVERY SYSTEM INSTALLATION ......................................................................................................................... 10
SPIRIT ELLIPSE DELIVERY SYSTEM INSTALLATION - PREMIER STYLE .............................................................................................. 11
POLE LEVELING ADJUSTMENT ........................................................................................................................................................... 12
SPIRIT ELLIPSE DELIVERY SYSTEM INSTALLATION - CLASSIC STYLE .............................................................................................. 13
ELLIPSE MOUNT INSTALLATION - PMU INSTALLATION CLASSIC STYLE .............................................................................................. 14
POLE LEVELING ADJUSTMENT ........................................................................................................................................................... 14
PMU INSTALLATION ................................................................................................................................................................................ 15
WALL MOUNT INSTALLATION ............................................................................................................................................................... 21
CABINET MOUNT INSTALLATION .......................................................................................................................................................... 23
CENTER ISLAND WITH SIDE DECK ....................................................................................................................................................... 24
RECOMMENDED JUNCTION BOX LAYOUT ........................................................................................................................................... 25
JUNCTION BOX UTILITY CONNECTIONS - GENERAL NOTES ................................................................................................................ 26
PMU UTILITY CONNECTIONS ............................................................................................................................................................... 27
OPTIONAL EQUIPMENT INSTALLATION ................................................................................................................................................. 28
JUNCTION BOX INSTALLATION ............................................................................................................................................................... 29
FINAL ADJUSTMENTS ................................................................................................................................................................................ 30
FINAL ADJUSTMENTS, CONT’D ............................................................................................................................................................... 31
CUSPIDOR CUP FILL & BOWL RINSE ADJUSTMENT ................................................................................................................................ 32
MOBILE WORKSTATION INSTALLATION ........................................................................................................................................... 33
FLEX WORKSTATION INSTALLATION ................................................................................................................................................... 37
WALL BOARD INSTALLATION ................................................................................................................................................................. 40
FLEXIBLE WORKSTATION INSTALLATION ........................................................................................................................................ 40
PLUMBING AND ELECTRICAL CONNECTIONS .................................................................................................................................. 42
ADJUSTMENTS .......................................................................................................................................................................................... 43
CHECK POINTS BEFORE OPERATING UNIT ........................................................................................................................................ 46
ELECTRICAL DIAGRAM - 2000 UNITS ....................................................................................................................................................... 48
PLUMBING DIAGRAM - 2000 UNIT ............................................................................................................................................................ 49
DELIVERY SYSTEM INSTALLATION AND SERVICE CHECKLIST ......................................................................................................... 50
NOTES .............................................................................................................................................................................................................. 51

CAUTION: 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, CONT’D

Catalog 2500

Catalog 2510

Catalog 2520

Catalog 2530
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.

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

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

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)

**WARNING:** It is not safe to use the unit where there is flammable gas or other hazardous material. Such materials can easily catch fire resulting loss of lives and heavy property damages

**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.
GENERAL SAFETY SUMMARY

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 types of devices should avoid dental units with magnets.

WARNING: Power cords and their associated parts cannot be substituted without increased risk of electric shock or fire. We recommend the use of authorized 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: To avoid risk of electric shock, this equipment must be connected only to supply mains with protective earth.

Ensure that the J-box, delivery head and PMU covers are in place before operating the dental system. Failure to follow instructions may cause electric shock or other injuries.

WARNING: No unauthorized modification of this equipment is allowed. Failure to comply with, will void the warranty.

Refer to the Installation Instructions, Use & Care manual and accessory manufacturer’s literature to install and operate safely.

WARNING: Federal law restricts this device to sale by or on the order of a dentist.

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

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.

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 serves 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 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 Class1 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, clean and oil free |
| Pressure: | 80-100 psi (5.5 - 7.0 bar) |

Water Quality: Water must meet EPA requirements for municipal water.

Hardness: 6.5 - 8.5 pH
We recommend water treatment for very hard water to minimize mineral deposits in the water line fittings and valves. We do not recommend the use of distilled water as it is known to corrode components.

Pressure: 40-80 psi (2.75-5.5 bar)

Electrical Specifications

<table>
<thead>
<tr>
<th>Volts</th>
<th>Cycles</th>
<th>Amps</th>
<th>All fuses are labeled at point of use. Replace fuses only with type and rating as indicated.</th>
</tr>
</thead>
<tbody>
<tr>
<td>115 VAC 60 HZ</td>
<td>3 A ~</td>
<td></td>
<td></td>
</tr>
<tr>
<td>230 VAC50/60 HZ</td>
<td>1.5 A ~</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

IEC Medical Device Classification

Classification: I
Type: B
Operation Mode: Continuous
Splash Protection: IPX0

Handpiece Compatibility

This delivery system is designed to be compatible with air driven handpieces that conform to ISO 13294 and electric handpieces that conform to ISO 11498.

For the air driven handpieces, tubing is available in 4-hole Midwest tubing. For electric handpieces, dental units will be equipped with an “E-type” coupler and cordset.

The end user will have specified the preferred type prior to ordering from the factory. It is the responsibility of the end user to procure appropriate handpieces for use with this delivery system. Certain countries may have particular regulations regarding which handpieces are acceptable for use; e.g. countries in the European Union require handpieces which meet the requirements of the Council Directive 93/42/EEC. See your local dealer for additional information.

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

Refer to handpiece manufacturer’s manual for safe and functional operations of the accessory.

Incompatible Units or Accessories:
To guarantee the operational safety and function of the device, the use of approved 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 a multiple socket outlet effectively leads to creating a ME system and can result in a reduced level of safety. All configurations shall comply with the system standard IEC60601-1-1 or IEC60601-1-1:2005.
SPIRIT ELLIPSE DELIVERY SYSTEM INSTALLATION

Premier Style

Classic Style
SPIRIT ELLIPSE DELIVERY SYSTEM INSTALLATION - PREMIER STYLE

POLE LEVELING ADJUSTMENT

1. Begin by setting up the chair in its final location. Remove poles and arm from shipping box. Leave the strapping tape in place on the flex arm for now. Remove packing on vertical pole only.

2. Take the lower ellipse pole and insert bayonet end into the chair mount until fully engaged (Figure 1). Set screws should be seated in chair mount holes and lower ellipse pole will be supported on its own.

3. Attach levels on vertical posts, 90 degrees apart so they will measure front to rear leveling and side to side leveling. Use a hex tool to adjust front set screw (A) to level the posts from front to back (Figure 2). Adjust the side set screws (B) to level the posts from front to rear. When the post is level in both directions, tighten bolt (C) to secure the unit to the chair mount (Figure 3) (Make sure pole is still level after tightening bolt).

4. Remove all remaining packaging and inspect the unit for damage.

5. Carefully unbundle and unpack hand pieces. Attach and hang hand pieces in appropriate slots.

6. Loosen the screws and slide out the tubing cover from the underside of the chair mount (Figure 4).

WARNING: Before making any connections, be sure all power has been disconnected. Making connections while chair or unit is connected to power source may result in equipment damage or injury.

WARNING: This line is intended for low voltage use only. Use of this line is at the discretion of the end user.

Figure 1

Set Screw (A)  
Set Screw (B)  
Chair Mount  
Bayonet  
Bolt (C)

Figure 2

Set Screw (B)  
Set Screw (A)

Figure 3

Bolt (C)

Figure 4

Screws  
Tubing Cover

1800 / 3300 Chair

1700 Chair
SPIRIT ELLIPSE DELIVERY SYSTEM INSTALLATION - PREMIER STYLE POLE LEVELING ADJUSTMENT

7. Install supplied cable braid sleeving over existing cables.

8A. UNIT WITHOUT WATER BOTTLE: Connect cables and plumbing lines from ellipse unit to chair (Figure 6). Match tubing by colors and numbers and screw connectors together until tight. Match electrical cables by type.

8B. UNIT WITH WATER BOTTLE: Make the same connections as described in 8A, but notice that there will be two extra 1/8” blue tubes that form a loop at the connection point. This is to allow output from the routing toggle (1/8” blue) to connect with the control head (also 1/8” blue). Also note that there will be an extra 1/8” transparent green on the unit side that will not be used at this time. Install the water bottle with the quick disconnect adapter by first aligning the adapter slot and manifold pin. Then push the bottle up and twist clockwise. Check that bottle is tight. (Note: bottle with cap is a spare bottle).

9. Connect the unit touch pad and low voltage cables (Figure 6). Depending on the options ordered with the unit there may be other electrical connections such as S-video or camera power. These connections should be made with their mating connectors. As with all electrical connections, care should be taken for proper alignment to prevent damage and ensure proper electrical contact.

10. Connect ground wire to bayonet as illustrated (Figure 6).

11. NOTE: If your package includes an ellipse-mounted light, please refer to the Light Installation Instructions to install the light at this time. After light is installed, remove lower truss cover and pump cover and route electrical cable through existing bundle and through umbilical tube as needed. Properly replace and secure all covers when finished.

12. Once all connections are made, put on cable braid sleeving over visible bundles and push any excess lines and cables back into poles. Rotate ellipse poles to their worst case position(s) and make sure cables have enough slack to move properly with rotations.

13. Replace tubing cover and tighten the screws that were loosened earlier (Figure 7).

14. Properly connect all electrical lines and plumbing lines at junction box at foot of the chair. Match tubing by colors and numbers and cables as labeled. Once connections are made, install cover onto junction box.
POLE LEVELING ADJUSTMENT

The mounting arm has been leveled at the factory. Because of uneven flooring, it may again be necessary to level the arm. Once the unit pole and or light pole are installed, use a level to ensure the poles are vertical. If leveling is necessary, use the following procedure:

NOTE: These instructions are oriented when facing the chair.

1. Begin by setting up the chair in its final location. Unpack the Ellipse lower unit pole with flex arm and prepare it for installation. Leave the strapping tape in place for now.

2. Remove unit from box. Leave unit bundled together and insert bayonet into chair mount.

3. Use the 3/8" set screw on the bottom of the bayonet (A) to level the post from front to rear. Use the two set screws (B) to level the post side to side. When the posts are level, tighten bolt (C) to secure the unit to the chair mount.

4. Route tubings as shown in illustration.

5. Connect electrical lines and plumbing lines at junction box under mount and install cover with supplied screws.

WARNING: Before making any connections, be sure all power has been disconnected. Making connections while chair or unit is connected to power source may result in equipment damage or injury.
NOTE: Connect tubings by numbers and cables as directed in the instructions below.

6. Route the unit umbilical through the holes in the mounting arm as shown (see figure 3). If the unit will not have a water bottle, continue by attaching the quick connects from the unit umbilical to the corresponding quick connects from the junction box umbilical. Match tubing by color and screw together connectors until tight. If the unit does have a water bottle, make the same connections as described, but notice that there will be two extra 1/8” blue tubings that form a loop at the connection point. This is to allow output from the routing toggle (1/8” blue) to connect with the control head (also 1/8” blue). Also note that there will be an extra 1/8” transparent green on the unit head side that will not be used at this time. Next, install the water bottle by first aligning the adaptor slot and manifold pin. Then, push the bottle up and twist clockwise. Make sure bottle is tight.

7. Connect the unit touch pad cables. Connect the low voltage wiring 8-pin connector. Depending on the options ordered with the delivery system there may be other electrical connections such as s-video or camera power. These connections should be made with their mating connectors. As with all electrical connections, care should be taken for proper alignment before inserting mating connector, to prevent damage and to insure proper connections.

NOTE: If this package includes a unit-mounted light, please refer to the Light Installation Instructions to install the light at this time. When completed, return to this point of the unit installation procedure.

**WARNING:** This line is intended for low voltage use only. Use of this line is at the discretion of the end user.
1. Locate the post-mounted utility center (PMU) in the bottom level of packing in the delivery system box. Remove the two side covers from the utility center by pulling with both hands from the bottom, then the sides. (Note that one side cover is attached using ball studs and receivers, while the other is held in place by magnets.) Using a 3/16” hex driver, ensure that the mounting set screws in the utility center are backed out enough to allow the mounting collar to pass freely over the unit mount hub (see figure 1A).

2. Install the utility center to the unit mounting bracket as shown in figure 1A. Verify that the utility center is properly positioned with the cuspidor oriented toward the chair’s backrest. If an internal umbilical system is to be installed, refer to figure 1B. Be careful to avoid pinching the tubing and cables coming up out of the chair mounting bracket hub.

3. Install the cuspidor stop pins at this time (located in a bag with the stainless steel tray). Insert the two pins into machined holes on utility center casting. (Note that all the stop pins used in the utility center casting are of the larger diameter.)
4. Follow the next three steps for an internal umbilical system only:

   a. Route the remaining tubings and cables out from under the chair bracket and up through the opening in the bottom of the utility center casting (figure 1B, pg. 11).

   b. Connect the 1/4" blue and yellow tubing to the corresponding tubing coming from the cuspidor manifold (see figure 2).

   c. Connect one of the 5/8" I.D. tubes to the matching sized port of the vacuum canister, and the other tube to the cuspidor drain. Either tube may be used for either purpose, provided the correct end is connected in the junction box.

**NOTE:** If this package includes a unit-mount light, please refer to the Light Installation Instructions to install the light at this time. When completed, return to this point of the unit installation procedure.

5. If equipped, locate the telescoping assistant’s arm assembly from the delivery system box. Lower the arm assembly over the swivel collar as shown in figure 3.
6. Locate and unpack the flex arm assembly. Position the unit arm assembly over the utility center as shown in figure 4. Route the unit umbilical tubing into the utility center and install the pole so that it is fully seated.

7. Connect unit umbilical quick connects to the main umbilical quick connects. Match tubing by color and numbers, then screw together connectors until tight.

NOTE: If a water bottle is to be installed, leave the 1/8” transparent green and 1/8” blue tubings disconnected for now.

Also, if a wet/dry foot control will be installed from the utility center, connect foot control tubing as shown below:

8. Connect the low voltage wiring 8-pin connectors (see figure 4).
9. Locate the two unit touch pad cables inside the utility center and connect as shown in figure 5. Depending on the options ordered with the delivery system there may be other electrical connections such as s-video or camera power. These connections should be made with their mating connectors. As with all electrical connections, care should be taken for proper alignment before inserting mating connector to prevent damage and to insure proper connections.

**WARNING:** This line is intended for low voltage use only. Use of this line is at the discretion of the end user.

10. Carefully remove the shipping tape and material while providing pressure on the spring loaded flex arm. Slowly bring the flex arm into its upward position as shown in figure 6. Locate the smaller stop pins from the hardware kit and install in flex arm elbow.

**WARNING:** The flex arm is a spring loaded device. Apply downward pressure on the arm when removing shipping material and relieve the spring tension slowly.
11. Tighten the bottom four leveling set screws on the utility box until screws contact the unit mount hub. Place a level on the unit post’s vertical section as shown in figure 7. Make small adjustments while watching the level until a stable and even reading is obtained.

Swivel post 90° to position #2 and adjust position #2 set screws as shown. Again, adjust set screws until level shows stable and even reading. Fully tighten the eight set screws once a proper level has been accomplished.

12. Locate and install the HVE and SE at this time. Install the vacuum utilities on the vacuum canister as shown in figure 8. Hang the vacuum utilities on the holder bar and cap off any unused ports.
13. Locate the cuspidor bowl (if included) and position it over the cuspidor support as shown in figure 9. Before installing, connect the 1/4" blue tubing from the cuspidor support to the back of the bowl rinse spout. Press the bowl into place over the support, making sure the bowl plates are firmly seated on the magnets. Attach the bowl rinse and cup filler spouts to the bowl assembly. Insert in hole and slightly rotate until fully seated.

14. Locate the fresh water bottle and install it in the quick disconnect on the utility center as shown in figure 9.
WALL MOUNT INSTALLATION

1. Place or position wall board installation template over the located studs with the lower holes’ center marks 6" from the floor.

2. Position level over template. Using the centerlines, verify that marks are level. Mark holes using an awl or scribe by piercing the wall through the template.

3. Drill 1/4” diameter holes 2 1/2” deep in the wall at the four marked positions.

4. Locate the wall board hardware kit. Insert the 3/8” lag bolt into the 3/8” flat washers and the 3/8” dish washers. Ensure that bolt heads fit inside the concave depression in the washer. The wall board comes with four-prong 3/8-16x9/16” T-nuts (4 pcs.)

5. Using a 9/16” wrench, mount the wallboard to the pre-drilled wall using the lag bolts and washers. Tighten bolts securely to wall. Snap the bolt head covers (supplied in hardware kit) onto the dish washer flanges.

6. Locate the mounting plate in packaging. Remove the four 3/8-16 x 1 1/4” hex hd. bolts, 3/8” lockwashers, dish washers and the caps from packaging. Line up holes in the mounting plate with the T-nuts in the wall board. Using a 9/16” Allen wrench, fasten mounting plate to the wall board with the four button head screws and washers. Tighten securely. Re-check mounting bracket level.
7. Remove delivery system from package. Leave strapping tape that is holding the flex arm in place.

8. Remove the tape from the mounting plate pin. Slowly lower unit’s arm onto the mounting plate pin making sure that it is fully seated.

9. Carefully remove the shipping tape and material while keeping pressure on the spring-loaded unit flex arm. Slowly bring flex arm into its upward position.

**WARNING:** The delivery system comes packaged with the arm strapped down. Leave strap secured on the arm while installation procedures are performed. After installation, take extreme caution when removing the strap. The arm is spring loaded and will spring up once strap is removed. Press down on arm while strap is being cut!
Installation of the cabinet mount unit will vary depending on the type of cabinet that will host it. On cabinets other than Pelton & Crane, the technician will need to provide the applicable hardware and fasteners to accommodate the installation.

Supplied with this particular installation are two 3/8-16 x 1 1/4” and two 3/8-16 x 2 1/2” button head screws, four 3/8” washers, fender and dish washers, white nylon caps to secure the mounting plate to the cabinet.

1. If the cabinet has not been pre-drilled, it will be necessary to do so at this time. Locate the mounting plate template supplied in literature kit or the full size template. Determine hole locations according to the dimensions shown, keeping in mind the clearance necessary from the edge and underside of the cabinet surfaces.

2. Position level over template. Using the centerlines, verify that marks are level. Mark holes using an awl or scribe by piercing the cabinet wall through the template.

3. Drill 13/32” diameter holes in the cabinet wall at the four marked positions.

4. Locate the mounting plate. Line up holes in the mounting plate with the holes drilled in the cabinet wall. Secure the mounting plate to the wall using the supplied fasteners.

5. Remove delivery system from package. Leave strapping tape that is holding arm intact.

6. Remove the tape from plastic washer on mounting plate pin. Slowly lower unit’s flex arm onto the mounting plate pin making sure that it is fully seated.

7. Connect the touchpad cable from the umbilical to the under-floor cable that runs into the chair.

8. Carefully remove the shipping tape and material while keeping pressure on the spring-loaded unit flex arm. Slowly bring flex arm into its upward position.
1. Route umbilical through umbilical knockout hole in the cabinet sub-base and follow path indicated by the arrows shown above to the utilities.

2. Make the connections at the utilities matching crops and labels.

3. Route the foot control tubing under flooring to the chair.

Cabinet Mount Only

Mount bracket with regulators and gauges directly inside the cabinet where the office plumbing connections reside. Make sure there will be enough length for the tubing coming from the shut-off blocks to reach this bracket. It may also be necessary to disconnect and reroute the foot control tubing so that it exits the cabinet through the proper opening.
RECOMMENDED JUNCTION BOX LAYOUT

Water Regulator

Air Regulator

Gauge

Filter

Utility Center Housing

Air & Water Regulator Gauges

Electrical Duplex
(Supplied by contractor)

Air Shut-off Valve

Water Shut-off Valve

Water Shut-off Valve
JUNCTION BOX UTILITY CONNECTIONS - GENERAL NOTES

- Local regulations may require that licensed plumbers and electricians install utilities.
- Make sure all plumbing conforms to prevailing local codes.
- Use the junction box template to determine floor locations for connections.

AIR:

1/2” pipe N.P.T. protruding 1” from floor or wall. Supplied by contractor.

Manual air shut-off valve supplied by dental dealer to be installed by contractor.

Air pressure 80 psi.

Air plumbing should be flushed clean before making final connections to dental equipment

WATER:

1/2” pipe N.P.T. protruding 1” from floor or wall. Supplied by contractor.

Manual water shut-off valve supplied by dental dealer to be installed by contractor.

Water pressure 40 psi.

Water plumbing should be flushed clean before making final connections to dental equipment.

ELECTRICAL:

1/2” conduit and box with quad or equal receptacle supplied by contractor.

Wire box as per code with top of the box no higher than 4 1/2” above finished floor.

Voltage:
115 Volts AC or 230 Volts AC

CENTRAL VACUUM:

Plumbing up to utility center should be specified by central vacuum supplier and terminated in junction box with 5/8” OD tube perpendicular to floor, similar to drain connection.

GRAVITY DRAIN:

5/8” OD tube protruding 1” from finished floor.

NOTE: Place trap in line and use vented fitting to conform with local codes. Supplied by contractor Floor mounting only.

Junction Box Installation

1. Prior to junction box installation, it will be necessary to flush out the office plumbing. Connect a hose to the water line and flush into a drain or pail. This will prevent debris getting into unit lines. Flush the air line also.

2. Locate the junction box template and refer to figure 1 for general layout. Place the junction box base over the office plumbing with the umbilical entering the enclosure on the properly configured side. Next, install the master shut-off valves. Using a 5/8” wrench, install the air and water shut-off blocks onto the master valves. Tighten the compression nuts securely.

3. If it is necessary to shorten the umbilical, shorten carefully the outer sheathing, gravity drain, and vacuum tubing as required.
1. Locate the control head rainbow tubing coming from the unit umbilical (it will be enclosed in a braided sheath). Connect the tubing to the corresponding bundle of tubing coming from the air and water shut-off blocks. Match tubing by color and number and twist connectors until tight. If a wet/dry foot control will be connected at this location, make the additional connections shown in figure 3.

2. If a cuspidor will be present, install the gravity drain fitting and tubing onto the office plumbing. On all units, connect the vacuum tubing to the office vacuum fitting. Make sure an air-tight connection exists by using the included locking clamp.

3. (Cuspidor units only) Remove the compression fittings on air and water shut-off blocks using a 7/16” wrench (figure 2). Install the 1/4” air and water supply tubing onto compression fitting. Reinstall fitting and tighten securely.

4. Mount the junction box base to the floor using correct screws for mounting surface.

Refer to the Final Tests and Adjustments section of the unit Use & Care Manual before opening master valves and connecting electrical power cord.

**WARNING:** Before making any connections, be sure all power has been disconnected. Making connections while chair or unit is connected to power source may result in equipment damage or injury.

**WARNING:** To prevent possible injury, ensure that all covers are installed before operating or after servicing the equipment.
OPTIONAL EQUIPMENT INSTALLATION

**WARNING:** Placing the handpieces in the wrong holder may cause the user and/or patient to be cut or injured.

Before connecting optional equipment, be certain all power is disconnected to the chair.

**Optional Scaler**

1. It may be necessary to make power connections for the scaler to the supplied 300 watt power supply PCB. Depending on the shipping methods, these connections may not have been made in the factory.

2. Connect the blue and orange supply lines from the 8-conductor cable to the terminal strip at the flaps designated “scaler” feed and return (24 VAC taps) (as shown in figure 4).

**Optional Curing Light**

1. It may be necessary to make power connections for the curing light to the supplied 300 watt power supply PCB. Depending on the shipping methods, these connections may not have been made in the factory.

2. Connect the green and yellow supply line from the 8-conductor cable to the terminal strip at the taps designated “auxiliary” feed and return (24 VAC taps) (as shown in figure 4).

**Optional Light Source**

1. It may be necessary to make power connections for the optional light source to the supplied 300 watt power supply PCB. Depending on the shipping methods, these connections may not have been made in the factory.

2. Connect the brown and white supply lines from the 8-conductor cable to the terminal strip at the taps designated “fiber optic” feed and return (9 VAC taps) (as shown in figure 4).

Figure 5
1. Prior to junction box installation, it will be necessary to flush out the office plumbing. Connect a hose to the water line and flush into a drain or a suitable container. This will prevent debris getting into unit lines. Flush the air line also.

2. Locate the junction box template for general layout. Place the junction box frame over the office plumbing with the umbilical entering the enclosure on the properly configured side.

Note: If unit is equipped with a power supply box, see template for proper orientation inside the junction box.

Next, install the master shut-off valves. Using a 5/8" wrench, install the air and water shut-off blocks onto the master valves. Tighten the compression nuts securely.

Note: It is recommended that the junction box power supply installed after the junction box installation to improve access to plumbing connections.

3. It is necessary to shorten the umbilical, shorten only the outer, gravity drain, and vacuum tubing as required. Remove the umbilical retainer and carefully shorten the tubings. Reinstall the umbilical retainer when done.

4. Locate the control head rainbow tubing coming from the unit umbilical (it will be enclosed in a braided sheath). Connect the tubing to the corresponding bundle of tubing coming from the air and water shut-off blocks. Match tubing by color and twist connectors until tight. If a foot control will be connected at this location, make the additional connections.

5. If a cuspidor will be present, install the gravity drain fitting and tubing onto the office plumbing. On all units, connect the vacuum tubing to the office vacuum fitting. Make sure an air tight connection exists by using the included locking clamp.

6. Cuspidor units only:
   Remove the compression fittings on air and water shut-off blocks using a 7/16" wrench. Install the 1/4" air and water supply tubing onto compression fitting. Reinstall fitting and tighten securely.

7. Install the umbilical into the junction box frame remaining notch.

8. Mount the junction box frame to the floor using correct screws for mounting surface.

9. After completing final adjustments, reinstall the junction box power supply and mount it to the junction box base using four #10 bolts.

Optional:
If a light is to be installed, plug the light cord’s square four-pin connector into the matching receptacle on the power supply enclosure. Next, connect the one or more touch pad cables to the matching receptacles below the light cord connection. (The touch pad cable has a flat, four-pin connector.)

Refer to the Final Tests and Adjustments section of this manual.
**FINAL ADJUSTMENTS**

**Unit Flex Arm Tension Adjustment Spring Tension**

NOTE: Before adjusting front flex arm bolt, loosen the smaller set screw. After adjustment is complete, retighten.

The flex arm has been set at the factory for normal operating weight. If the arm drifts during use it will be necessary to adjust the flex arm tension using the following procedure:

1. Remove the flex arm end caps by pulling off.
2. Using a 3/16" hex wrench, adjust the correct tension bolt as indicated. Spring tension is increased by turning the rear flex arm bolt counterclockwise. Spring tension is decreased by turning the front flex arm bolt clockwise.
3. When spring tension is properly set, reinstall the end caps.

**Swivel Tension**

1. Using a 1/8" drive, rotate the Allen screw clockwise to increase tension, counterclockwise to decrease tension.

**WARNING:** To prevent unit damage and/or personal injury, tension should be adjusted so that the arm will not drift.

**Unit Head Leveling Adjustment**

If the tray or unit head is not level (front-to-back) it may be necessary to adjust the front knuckle of the unit flex arm. Check the level reading by fully extending the unit pole, flex arm and head in the same direction (as stop pins permit). Place a level in the orientation shown, either on a tray or directly on top of the unit head - whichever is intended to be the supporting platform. While leaving the arms fully extended, make the adjustment as follows:

1. Remove the flex arm end cap closest to the unit head.
2. Using a 3/32" hex wrench, loosen the smaller set screw on the left side of the knuckle.
3. Adjust the larger set screw in the middle of the knuckle while observing the reading on the level. Continue turning until surface is level.
4. Re-tighten the smaller set screw.
5. Replace the end cap.

**Drag Tension**

Drag tension works in unison with spring tension to provide controlled and regulated movement of the arm. Adjust the arm’s drag tension using the following procedure:

1. Remove the bottom cover by popping it off and access the drag tension set screw.
2. Using a 3/32" hex wrench, turn the set screw clockwise to increase drag tension; counterclockwise to decrease.
3. Raise and lower the arm several times to ensure the correct amount of drag tension and adjust if necessary.
4. Reinstall bottom cover.
**FINAL ADJUSTMENTS, CONT’D**

**SPIRIT CONTROL HEAD / JUNCTION BOX**

1. Check to see that the master on/off toggle is in the “off” position. Turn on the manual air and water valves located in the junction box. Make a visual and audible inspection for leaks.

2. Turn the master on/off toggle to the “on” position and make a careful inspection for leaks in the following areas:
   - A. Junction box
   - B. Utility center (if applicable)
   - C. Control head; tubing and quick-connects
   - D. Any other intermediate connections.

3. Check air and water pressure on junction box gauges. The gauges must read:
   - A. Air 75 - 80 PSI
   - B. Water 35 - 40 PSI.

4. Check the flow of air and water from the syringe and check the spray pattern. Hold the handpiece tubings over a suitable receptacle and activate the flush toggle on the control head. A steady stream of water should flow from the tubings.

5. Ensure that the handpieces to be installed have the proper connectors for the supplied tubings.

6. Install the connectors onto the handpieces and place each handpiece in its appropriate holder.

7. Locate the drive air stems on the control head to adjust handpiece air. Install handpiece onto connector and activate foot control while observing reading on drive air pressure gauge. Adjust handpiece pressure to manufacturer’s requirements using drive air adjustment stems.

8. Check the water spray pattern of each handpiece. Counterclockwise rotation of the water control valve increases water flow.

9. Counterclockwise rotation of the coolant air control valve increases the air flow.

10. This completes testing of the control head. Install the tray and pad onto the assembled swivel tray (if applicable).

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**WARNING:** Avoid running handpieces for extended periods longer than is necessary to check pressure. Extended running with no load can damage the handpiece. No handpiece should ever be run without a burr in the chuck. After operating a handpiece, ensure that it is returned to its original hanger.

**WARNING:** When installing and using instruments and attachments, refer to all manufacturer’s instructions and recommendations before operating instruments.

**WARNING:** Do not activate syringe while tip is in direct contact with skin.
The cuspidor relay valve controls the timing of the cup filler and bowl rinse functions. This valve is located in the utility center, where it is mounted to the regulator gauge bracket. The run time of each of these functions can be tested and adjusted as follows:

**Cuspidor Cup Fill**

1. Place cup on cuspidor under spout to check water flow.
2. Pull cup filler spout to activate 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 cup filler valve clockwise approximately 1/4 turn.
5. If the water level 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 to 2/3 full (approximately two ounces).
7. Check the cup filler function for no more than one drop after shut-off.
8. Pull cup filler spout to activate water flow and push cup filler spout to deactivate water flow.

**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 bowl rinse 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.
NOTE: The delivery unit with the arms, umbilical and working surface come assembled from the factory.

1. Preparation

Check cabinet to ensure it is anchored firmly to floor.

Ensure cabinet countertop is level.

Ensure air, water, vacuum, and power lines are installed per mounting template.

Check packaging box making sure there is no damage to container.

Open box and check for hardware kit and literature kit.

2. Mounting Unit into Cabinet

Open hardware kit and prepare the six 5/16” x 18 bolts and respective washers for mounting.

Lift the delivery unit out of the box and orient the mounting plate toward the cabinet.

Align mounting plate holes against the cabinet Mounting Plate holes and bolt the plates with the 5/16” x 18 bolts. Bolts install from the bottom up.

3. Mounting Unit Countertop

Locate the Countertop (A) and the eight #8-32 allen screws (B) in packaging. Align Countertop’s predrilled holes with the hinge plate (C). Using a 7/64” allen wrench, secure Countertop to the Hinge Plate.

WARNING: Do not lift the unit by the work surface. The unit may fall causing equipment damage or injury.
4. Leveling Unit Countertop

Countertop is leveled using the 5/16” set screws in the mounting plate. Use 5/32” allen wrench to rotate the set screws.

More precise adjustment is also possible using the set screws under the working surface.

5. Flexible Arm Tension Adjustment

Tension can be adjusted to the user’s particular preference.

Each of the areas specified in the illustration are tension adjustment points.

To adjust tension, using a 1/8” hex wrench, tighten set screw to increase tension and loosen set screw to decrease tension.

Tighten set screws after final adjustments are made. Diagram at right shows adjustment locations.

**WARNING:** Do not lift the unit by the work surface. The unit may fall causing equipment damage or injury.
MOBILE WORKSTATION INSTALLATION, CONT’D

6A. Integrated Water Installation (Optional)

Secure Water Mount Plate to Bottle Mount through the rectangular slot on the Center Side Partition of the cabinet as shown.

6B. Integrated Water Installation (Optional)

Tubing from the bottle manifold and the umbilical are color matched.

Connect blue umbilical tubing to the blue tubing coming from the integrated water bottle.

Connect transparent blue umbilical tubing to the transparent blue tubing coming from the integrated water bottle.

Similarly, connect clear tubing from the umbilical to the clear tubing from the integrated water bottle.
7. Foot Control Installation

Remove foot control and rubber grommet from packaging. Insert foot control tubings through the rubber grommet and install foot control through the hole located in the front panel.

Route foot control tubings to the utilities located in the base of the cabinet.

Using a flat head screwdriver, seat grommet into hole to secure tubings.
Installing Flexible Work Station to Treatment Column

1. Locate the arm mount, (4) flat washers, (4) cap washers, (4) 5/16-18 bolts and the leveling cam. Insert leveling cam into the hole in the back of arm mount (A). Align cam with the slot in the mounting plate. Using a 1/2” socket wrench, install the arm mount to the mount plate using the four (4) flat washers, (4) dish washers and the four (4) 5/16-18 bolts. Do not fully tighten bolts.

2. Using a 3/16" Allen wrench, adjust the four 3/8-16" set screws to level arm mount perpendicular to the cabinet.

3. Using a 1/2" open-end wrench, adjust leveling cam to level arm mount side to side while observing level.

4. As bolts are being fully tightened, observe level so that arm mount does not become unleveled. Torque bolts to 10 ft-lbs (120 in-lbs). Cover bolt openings using the four (4) plastic caps (B).

5. Remove flexible arm from packaging. Before seating flexible arm into mount, remove the tape securing plastic washer (C) to the arm pivot. Seat flex arm into mount. Ensure plastic washer is seated between arm and arm mount.

6. Insert umbilical coupler into the cabinet base hole. Place coupler (located in hardware kit) inside of cabinet (2.D) and attach it to the umbilical coupler to hold umbilical in place. Tighten couplers securely. Route cables, tubings and umbilical through the hole located in the base and up to the opening in the left side of cabinet frame. Pull umbilical, tubings and cables to the utilities mounted to the left side of cabinet’s frame (6.E).

Foot Control Installation

1. Remove foot control and rubber grommet from packaging. Insert foot control tubings through the rubber grommet and install foot control through the hole located in the front panel. Route foot control tubings to the utilities (6.E) mounted on the left side of cabinet frame.

2. Using a flat head screw driver, seat grommet into hole to secure tubings.
**Install Mounting Bracket to Custom Cabinet**

1. Position mounting bracket inside the cabinet.

2. Using the bracket as a template, mark the bracket’s four floor drill holes and the bracket’s four cabinet drill holes. Ensure that the location of the bracket is where the unit is to be installed.

3. Drill four 5/16” diameter holes into the cabinet wall at the marked position. Drill four 1/2” diameter holes into the floor.

4. Drill four 3/8” diameter holes into the floor. Insert the four anchors into the floor drilled holes. Secure bracket to floor using the four 3/8” anchor bolts.

**Install Mounting Bracket to Floor**

5. Position mounting bracket at the installation site. Ensure that bracket is positioned to accommodate umbilical hook-ups to the utilities.

6. Using the bracket as a template, mark the four bracket’s floor drill holes.

7. Drill four 3/8” diameter holes into the floor. Insert the four anchors into the floor drilled holes and secure bracket to floor using the four (4) 3/8 x 2-3/4” anchor bolts.
FLOOR MOUNT BRACKET INSTALLATION, CONT’D

INSTALL MOUNTING BRACKET TO CUSTOM CABINET

1. Locate the arm mount, (4) flat washers, (4) smooth washers, (4) 5/16-18 bolts and the leveling cam. Insert leveling cam into the hole into the back of arm mount (A). Align cam with the slot in the mounting plate. Using a 1/2" socket wrench, install the arm mount to the mount plate using the four (4) flat washers, (4) cap washers and the four (4) 5/16-18 bolts. Do not fully tighten bolts.

2. Locate the arm mount, (4) flat washers, (4) cap washers and the (4) 5/16-18 bolts. Using a 1/2" socket wrench, install the arm mount to the mount plate using four (4) flat washers, (4) cap washers and the four (4) 5/16-18 bolts. Do not tighten bolts.

3. Using a 3/16" allen wrench, adjust the four (4) 3/8-16 set screws to level the arm mount perpendicular from cabinet or mounting bracket.

4. Locate the leveling cam in the bottom of arm mount hub. Using a 1/2" open-end wrench, level arm mount side to side while observing level.

5. As bolts are being fully tightened, observe level so that arm mount does not become unleveled. Torque bolts to 10 ft.-lbs. (120 in-lbs.). Cover bolts openings using the four (4) plastic caps (A).

6. Remove flexible workstation from packaging and remove the tape securing plastic washer(B) to the arm pivot. Seat flex arm into mount. Ensure plastic washer is seated between arm and arm mount.

7. Insert the umbilical into the junction box frame. Thread the umbilical grooves into the junction box frame to secure the umbilical in junction box.

Foot Control Installation
1. Remove foot control from packaging.
2. Install foot control into the junction box frame.
NOTE: The wallboard is drilled to mount on 16" centers. Locate two studs and mark the locations.

1. Position wall board installation template over the located studs with the lower marks 6" from the floor.

2. Position a level over template. Using the centerlines, verify that marks are level. Mark holes using an awl on scribe by piercing the wall through the template.

3. Drill 1/4" diameter pilot holes in the wall at the marked position.

4. Insert the four 3/8" lag bolts into the dish washers. Be certain the bolt heads fit inside the concave depression on the washer. Mount the wallboard with the lag bolts and snap the bolt head covers on the washer flanges.

FLEXIBLE WORKSTATION INSTALLATION

5. Locate the mounting plate and four (4) 5/16-18 flat socket bolts. Using a 3/16" allen wrench, Install mounting plate to wallboard.

6. Located the arm mount, (4) flat washers, (4) dish washers, (4) 5/16-18 bolts and the leveling cam. Insert leveling cam into the hole in the back of arm mount (A). Align cam with the slot in the mounting plate. Using a 1/2" socket wrench, install the arm mount to the mount plate using the four (4) flat washers, (4) dish washers and the four (4) 5/16-18 bolts. Do not fully tighten bolts.
SPIRIT 2800 FLEXIBLE WORKSTATION INSTALLATION (CONT'D)

7. Using a 3/16" allen wrench, adjust the four (4) 3/8-16 set screws to level arm mount perpendicular to board.

8. Locate the leveling can in the bottom of arm mount hub. Using a 1/2" open-end wrench, level arm mount side to side while observing level.

9. As bolts are being fully tightened, observe level so that arm mount does not become unleveled. Torque bolts to 10 ft-lbs (120 in-lbs). Cover bolt openings using the four plastic caps (A).

10. Remove flexible workstation from packaging and remove the tape securing the plastic washer (B) to the arm pivot. Seat flex arm into mount. Ensure plastic washer is seated between arm and mount.

11. Insert umbilical into the junction box frame. Thread the umbilical grooves into the junction box frame to secure the umbilical using the umbilical retainer.

FOOT CONTROL INSTALLATION

1. Remove foot control from package.

2. Install foot control into the junction box frame.
1. Insert vacuum connector into the end of vacuum hose. Install hose into the vacuum stub-up.

2. Connect 1/8" red tubing (air) to the red tubing coming from the air regulator assembly.

3. Connect 1/4" clear tubing to the clear tubing coming from the air regulator assembly.

4. Connect 1/8" clear yellow tubing to the clear yellow tubing coming from air and water regulators. This connection is for switching the air from the delivery unit which activates the air piloted ON/OFF water and air valves.

5. Connect 1/4" blue tubing (water) to blue tubing coming from the water regulator.

6. Locate foot control tubings and connect drive air tubing (large tubing with female connector) to the 1/4" gray tubing (drive air) coming from umbilical.

7. Connect drive air tubing (large tubing with male connector) to the 1/4" tubing coming from the air regulator.

8. Connect small tubing (spray air) coming from foot control to the clear green tubing (spray air) coming from umbilical.

9. Connect the 1/8" clear tubing coming from the umbilical to the 1/8" clear tubing coming from the air regulator.

NOTE: After all connections are made, extra tubing or wiring may be left. These tubings are for optional accessories that may not apply to this unit.
ADJUSTMENTS

NOTE: All adjustments are set at the factory but may require additional adjustments once unit is installed.

1. Water Filter/Regulator

The water filter/regulator should be set at 40 psi (275.8 kPa). To adjust, turn regulator knob clockwise to increase pressure and counterclockwise to decrease pressure.

2. Air Filter/Regulator

The air regulator should be set at 80 psi (551.7 kPa). To adjust, turn regulator knob clockwise to increase pressure and counterclockwise to decrease pressure.

3. Flexible Arm Tension Adjustment

This adjustment allows the arm to raise more freely once the arm brake is depressed. Raise arm to the upmost position.

   a) Remove the lower screw and loosen the upper screw securing the upper flex arm cover.

   b) Lift cover slightly to gain access to the tension adjusting screw.

   c) Using the 1/4 Allen wrench, turn the adjusting screw clockwise to decrease flexible arm tension and counter clockwise to increase tension.

   d) Once adjusted to the desired tension, replace lower cover screw and tighten the upper cover screw. Tighten fasteners securely.

4. Upper Arm Adjustment

This adjustment allows the upper arm to rotate more freely. Lower flexible arm to it’s lowest position.

   a) Remove the two screws from the upper flex arm cover to gain access to the adjusting screw located in the front knuckle of flex arm.

   b) Using 1/8” hex drive, turn adjusting screw clockwise to increase tension and counterclockwise to decrease tension.

   c) Once desired tension is obtained, replace upper cover and fasteners.
5. Work Surface Rotation Tension Adjustment

This adjustment allows the work surface to rotate more freely. To adjust, using a 1/8” allen wrench, turn the set screw (A) clockwise to increase tension and counterclockwise to decrease tension. Do not back set screw completely out of it’s slot.

6. Delivery Arm Assembly Tension Adjustment

This adjustment allows the delivery system arm assembly to rotate more freely. Extend upper and rear arms straight out.

a) Loosen the 1/16” set screw located in the collar of rear arm.

b) Using a 7/32” hex drive, turn the adjusting screw located in the bottom side of rear arm clockwise to increase tension and counterclockwise to decrease tension.

c) Once desired tension is obtained, tighten the 1/16” set screw to secure adjustment.

7. Rear Arm Delivery Tension Adjustment

This adjustment allows the front arm to rotate more freely from the rear arm. Extend upper and rear arms straight out

a) Loosen the 1/16” set screw located in the collar of rear arm.

b) Using a 7/32” hex drive, turn the adjusting screw located in the top of rear arm clockwise to increase tension and counterclockwise to decrease tension.

c) Once desired tension is obtained, tighten the 1/16” set screw to secure adjustment.

8. Delivery Control Head Tension Adjustment

This adjustment allows the control head to rotate more freely from the front arm.

a) Remove cover and loosen the 1/16” set screw located in the collar of front arm.

b) Using a 7/32” hex drive, slightly turn the adjusting screw located inside of control head clockwise to increase tension and counterclockwise to decrease tension.

c) Once desired tension is obtained, tighten the 1/16” set screw to secure adjustment.
9. Assistant’s Arm Assembly Tension Adjustment

This adjustment allows the assistant arm assembly to rotate more freely. Extend upper and rear arms straight out.

   a) Loosen the 1/16” set screw located in the collar of rear arm.

   b) Using a 7/32” hex drive, turn the adjusting screw located in the bottom side of rear arm clockwise to increase tension and counterclockwise to decrease tension.

   c) Once desired tension is obtained, tighten the 1/16” set screw to secure adjustment.

10. Assistant’s Rear Arm Tension Adjustment

This adjustment allows the front arm to rotate more freely from the rear arm. Extend upper and rear arms straight out.

   a) Loosen the 1/16” set screw located in the collar of rear arm.

   b) Using a 7/32” hex drive, turn the adjusting screw located in the top of rear arm clockwise to increase tension and counterclockwise to decrease tension.

   c) Once desired tension is obtained, tighten the 1/16” set screw to secure adjustment.

11. Assistant’s Vacuum Head Tension Adjustment:

This adjustment allows the assistant’s vacuum head to rotate more freely from the front arm.

   a) Loosen the four 1/8” mounting screws from mounting plate to raise vacuum head to gain access to the set screw.

   b) Loosen the 1/16” set screw located in the front arm near the vacuum head.

   c) Using a 7/32” hex drive, slightly turn the adjusting screw (located underside in front arm near vacuum head) clockwise to increase tension and counterclockwise to decrease tension.

   d) Once desired tension is obtained, tighten the 1/16” set screw to secure adjustment.

**Flexible Work Station Optional Equipment Installation**

1. Install medicament and tray onto the work surface as illustrated.

2. Install optional water bottles to the cap located underneath the work surface.

3. Converting delivery to Left/Right or Right/Left: Move hoses away when rotating heads to avoid hose interference. Swing control head to left/right or right/left to the rear of work station Swing assistant’s instrumentation to the front of work station for new position.
1. Switch power off. Turn the manual air (A) and water (B) valves on. Make a visual and audible inspection for leaks.

2. Turn the master on/off toggle to the “ON” position and make a careful inspection for leaks in the following areas:
   A. Treatment Column
   B. Control head; tubing and connecting manifolds
   C. Internal plumbing of the control head.
   D. Assistant’s Instrumentation

3. Check air and water pressure on gauges.
   The gauges must read:
   E. Air 75 - 80 PSI
   F. Water 35 - 40 PSI.

4. Turn air regulator knob clockwise to increase pressure and counterclockwise to decrease. For an accurate reading from the gauge, bleed off the air pressure by using the air syringe button. Adjust air pressure regulator knob in half turn steps.

5. Check air and water filters if a reduction in air and water flow is noticed.

6. Ensure that the handpieces to be installed have the proper connectors for the supplied tubings.

7. Place each handpiece in its appropriate holder. Standard layout for a right-hand operator is as follows (illustration may not depict your particular unit):
   Position #1 (Left): Syringe
   Position #2 (Center Left): High Speed (Fiber Optic, if equipped)
   Position #3 (Center): High Speed (Fiber Optic, if equipped)
   Position #4 (Center Right): Low/High Speed (Fiber Optic, if equipped)
   Position #5 (Right): Optional Handpiece
8. Locate the auto block inside the delivery system. Locate drive air adjustment stems to adjust handpiece air. Install handpiece onto connector and activate foot control while observing reading on drive air pressure gauge. Adjust handpiece pressure to manufacturer’s requirements using drive air adjustment stems.

**WARNING:** Avoid running handpieces for extended periods longer than is necessary to check pressure. Extended running with no load can damage the handpiece. No handpiece should ever be run without a bur in the chuck.

9. Check the water spray pattern of each handpiece. Counterclockwise rotation of the water control valve (A) increases water flow. Counterclockwise rotation of the coolant air control valve (B) increases the air flow.

10. Replace all covers to unit. Reinstall shelving and replace false floor to cabinet base.
DELIVERY SYSTEM INSTALLATION AND SERVICE CHECKLIST

Verify the following after installation or servicing of the unit:

☐ All manuals are present.
☐ All labels are present and legible.
☐ No mechanical damage on new installations.
☐ The unit is connected to the correct power source.
☐ The unit is setting on a level surface.
☐ All air/water connections are properly attached.
☐ When the master switch is "on" all air and water is available. When the master switch is "off" and the system pressure is bled down, the air and water stop flowing.
☐ If applicable, the cover is closed and fasteners tightened (take care not to pinch tubing on wires).
☐ When depressing the touchpad (if applicable), the unit/chair functions properly.
☐ While running the unit there is no water or air leaking from the tubing.
☐ The unit passes a high pot test.
☐ All terminals are connected securely.
☐ The unit passes a ground continuity test.
☐ The internal wiring is in good shape and not frayed.