Model Numbers:

EDS-0570 and EDS-0575

(including 0579, 0675, 0670, 0679)

ECO-Sys

Delivery Systems

Owner's Manual and Installation Instructions

WARNING: PLEASE TAKE TIME OUT TO READ THROUGH THE FEATURES AND FAMILIARIZE YOURSELF WITH THE UNIT. THIS UNIT SHOULD BE ASSEMBLED ONLY BY A QUALIFIED DENTAL EQUIPMENT TECHNICIAN.

For questions and general information, please contact us at:

BELMONT EQUIPMENT
101 Belmont Drive
Somerset, NJ 08873
Watts: 800-223-1192 or Fax: 732-356-1035

INDICATION FOR USE STATEMENT

Device Name: Belmont ECO-Sys Series Dental Units

Indications For Use:

Belmont ECO-Sys Series Delivery Units are intended to be used by Dentists, Hygienists, and Dental Assistants, or other licensed physician, or practitioner to supply power and utilities to, and serve as a base for, dental instruments and tools.

Warranty

Belmont Equipment is warranted from the manufacturer to be free from defective material and workmanship under normal use and service, for a period of two (2) years from date of shipment to the Buyer, except that any part or parts that are replaced under this Warranty within ninety (90) days of the completion of the two (2) year period shall be warranted to be free from defective material and workmanship for a period of ninety (90) days from date of shipment of said parts to Buyer. Belmont will repair or replace any defective part under this Warranty, provided the part is returned to our factory with prepaid postage, delivery or freight charges. In the event Warranty service must be performed to correct any defect, only Belmont and/or one of its authorized dealers shall provide same upon mutually agreeable arrangements made in advance.

Except as otherwise provided herein, there is NO WARRANTY, representation or condition of ANY KIND, express or implied (including NO WARRANTY OF MERCHANTABILITY OR FITNESS) and none shall be implied by law. THE EXPRESS WARRANTY AND THE REMEDIES CONTAINED HEREIN (1) ARE MADE SOLELY TO THE FIRST PURCHASER FOR BENEFICIAL USE (THE BUYER), (2) ARE THE SOLE WARRANTIES AND REMEDIES, (3) ARE IN LIEU OF ALL OTHER WARRANTIES, GUARANTEES, AGREEMENTS OR OTHER LIABILITIES, WHETHER EXPRESSED OR IMPLIED, AND ALL OTHER REMEDIES FOR BREACH OF WARRANTY OR ANY OTHER LIABILITY OF BELMONT. IN NO EVENT SHALL BELMONT BE LIABLE FOR CONSEQUENTIAL OR INCIDENTAL DAMAGES.

No person, agent, distributor or dealer is authorized to change, modify or extend the terms of the Warranty in any manner, whatsoever.

This Warranty is void when failure or defect is caused by conditions beyond the manufacturer's control, such as damage resulting from mishandling, neglect, misuse, improper maintenance, accident or alteration or repair by anyone other than Belmont or an authorized Belmont dealer.

Labor required to repair, replace or retrofit is not included during the warranty period by the manufacturer.

Please address any warranty or non-warranty service requests to your local dealer.

The serial number on your dental unit is found under the delivery head.

Register your serial number here for future use. _____

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Tools Required for Assembly

Phillips Screwdriver #2
Box Knife
¾" Wrench or Ratchet
½" Ratchet with Extension
1/8" Allen Wrench
5/32" Allen Wrench
3/32" Allen Wrench
Magnetic Bubble Levels

Symbol Definitions

DANGER
A DANGER is used for an imminently hazardous operating procedure, practice or condition which, if not correctly followed, can result in loss of life or serious personal injury.

WARNING
A WARNING is used for a potentially hazardous operating procedure, practice or condition which, if not correctly followed, can result in loss of life or serious personal injury.

CAUTION
A **CAUTION** is used for a potentially hazardous operating procedure, practice or condition which, if not correctly followed, could result in minor or moderate injury. It may also be used to alert against unsafe practices.

EQUIPMENT ALERT
An **EQUIPMENT ALERT** is used for an imminently or potentially hazardous operating procedure, practice or condition which, if not correctly followed, will or could result in serious, moderate or minor damage to unit.


High Voltage, *Haute tension*


Ground, *Mise à la Terre*


Fuse Rating Specs, *Spécifications du fusible*

Shipping Orientation, *Orientation du colis pour l'expédition*


Fragile, *Fragile*


Storage Range, *Plage ou T° d'emmagasinage*


Keep Dry, *Garder au Sec*


Exercise Mode, *Mode d'utilisation*


Hot Surface, *Surface chaude*


Type B Applied Part,

Définitions des symboles

DANGER
DANGER est utilisé dans le cas d'une procédure hasardeuse éminente, une condition d'opération ou une pratique qui, si elle n'est pas respectée, peut résulter en la perte de vie humaine ou engendrer des blessures corporelles graves.

AVERTISSEMENT
AVERTISSEMENT est utilisé pour signaler une procédure potentiellement dangereuse, une condition d'opération ou une pratique qui, si elle n'est pas respectée, peut résulter en la perte de vie humaine ou engendrer des blessures corporelles graves.

PRUDENCE
PRUDENCE est utilisé pour signaler une procédure potentiellement dangereuse, une condition d'opération ou une pratique qui, si elle n'est pas respectée, peut provoquer des blessures corporelles mineures. Peut être utilisé également pour signaler des pratiques hors normes ou non sécuritaires.

ÉQUIPEMENT ALERTE
ÉQUIPEMENT ALERTE est utilisé pour signaler une procédure hasardeuse éminente ou potentiellement dangereuse, une condition d'opération ou une pratique qui, si elle n'est pas respectée, va ou pourrait causer des dommages sérieux, modérés ou mineurs à l'appareil (équipement).


Self-contained Water, *Source d'eau indépendante*


Municipal Water, *Eau municipale*


Cup Fill, *Distributeur d'eau pour gobelet*


Bowl Flush, *Source d'eau temporisée pour petit lavabo*


Drive Air, *Source d'air*


Coolant Air Flow Control, *Contrôle de flux d'air pour refroidissement*

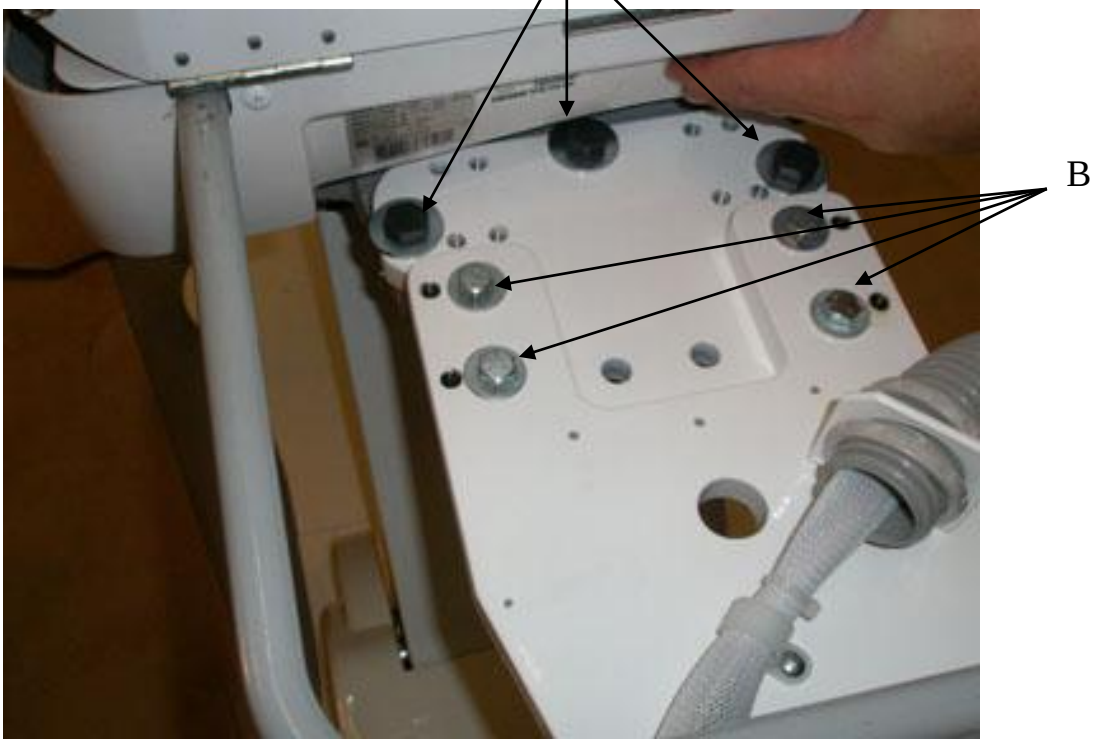

Water Flow Control, *Contrôle de flux d'eau*

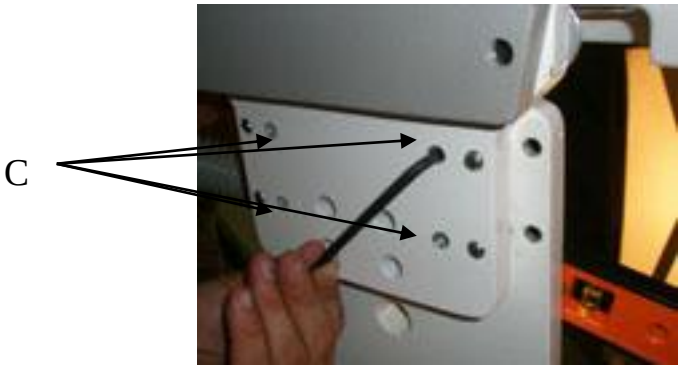
Assembly Instructions

1. Mounting brackets and swing arm(s) to chair:
Inside the box containing the delivery head, locate the box marked "5040". This is the Front Mount Bracket that attaches to the front of your Belmont Chair. Attach the Front mount bracket to chair using the 3 (12mm x 35mm hex cap) bolts and washers included in the box (A). NOTE: Be sure the 4 (3/8-16 x 1/2") leveling set screws on this bracket can be accessed from the bottom.

After attaching the Front Mount bracket, remove the Swing arm(s) from shipping box. You will need 2 people to attach the adapter on this assembly to the 5040 Front Mount bracket. Set the bracket from the swing arm assembly on top of the Front Mount bracket and attach with 4 (3/8-16 x 1-3/4" hex head) bolts and washers included with the 5040 bracket. (B)

This assembly may be leveled by adjusting the 4 set screws located in the 5040 Bracket (access from under bracket). (C) Note: You may need to loosen the 4 bolts on the top bracket.





View of leveling setscrews in front mount bracket from underside of chair

Assembly Instructions (cont.)

2. Install Delivery Head and Flex Arm Assembly to Swing arm

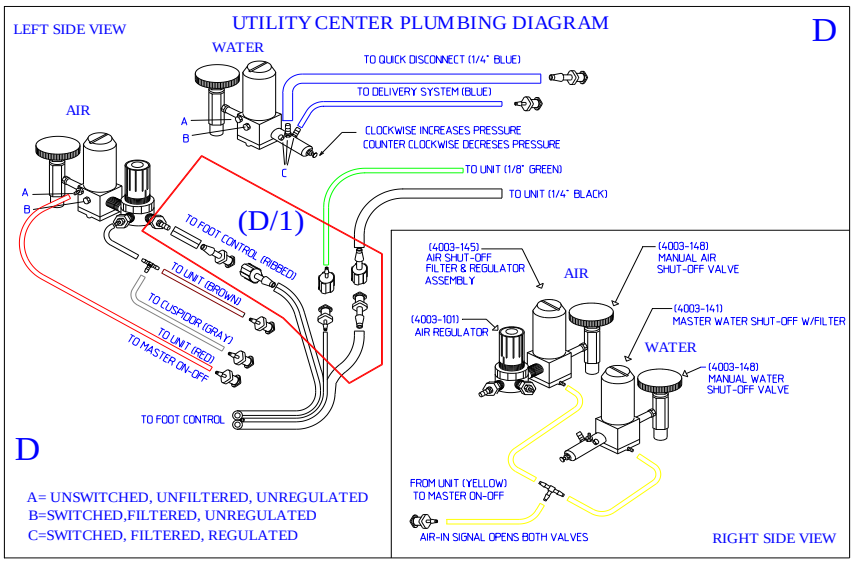
Remove delivery head/arm assembly from shipping box. Feed end of umbilical through Dr. Control Swing Arm. Connect purple and white tubing with luer connectors (from the bottled water system) in the top of the post. Grease flex arm pin and insert pin into top of Dr. Control Swing Arm.

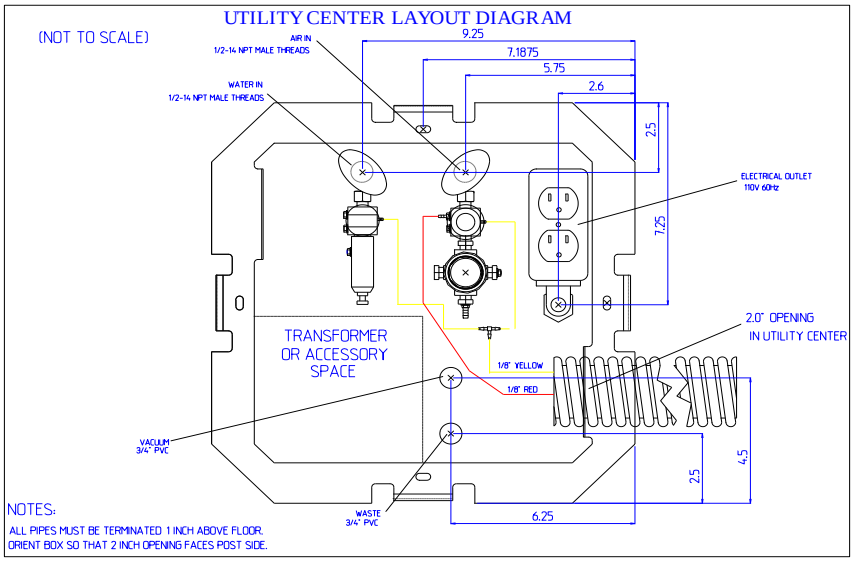
Attach spiral flex umbilical duct hose onto front mount umbilical bracket. Feed umbilical from Dr. Control Swing Arm through spiral flex duct hose and down toward utility center.

3. Umbilical/utility center

Mount utility box frame to the floor. Be sure plumbing is installed correctly according to the utility center diagram (shown below). Attach the lower end of the spiral flex umbilical duct hose to the utility center frame retainer and tighten the umbilical rings – one on each side of the retainer – to secure hose. Install angle stop valves and purge feed lines prior to MSO valve connection. Install MSO air and water valves. Attach luers according to the tubing diagram (color to color, size to size). (See diagram below) Connect foot control tubing, per diagram.

Utility Center Tubing / Layout Diagram

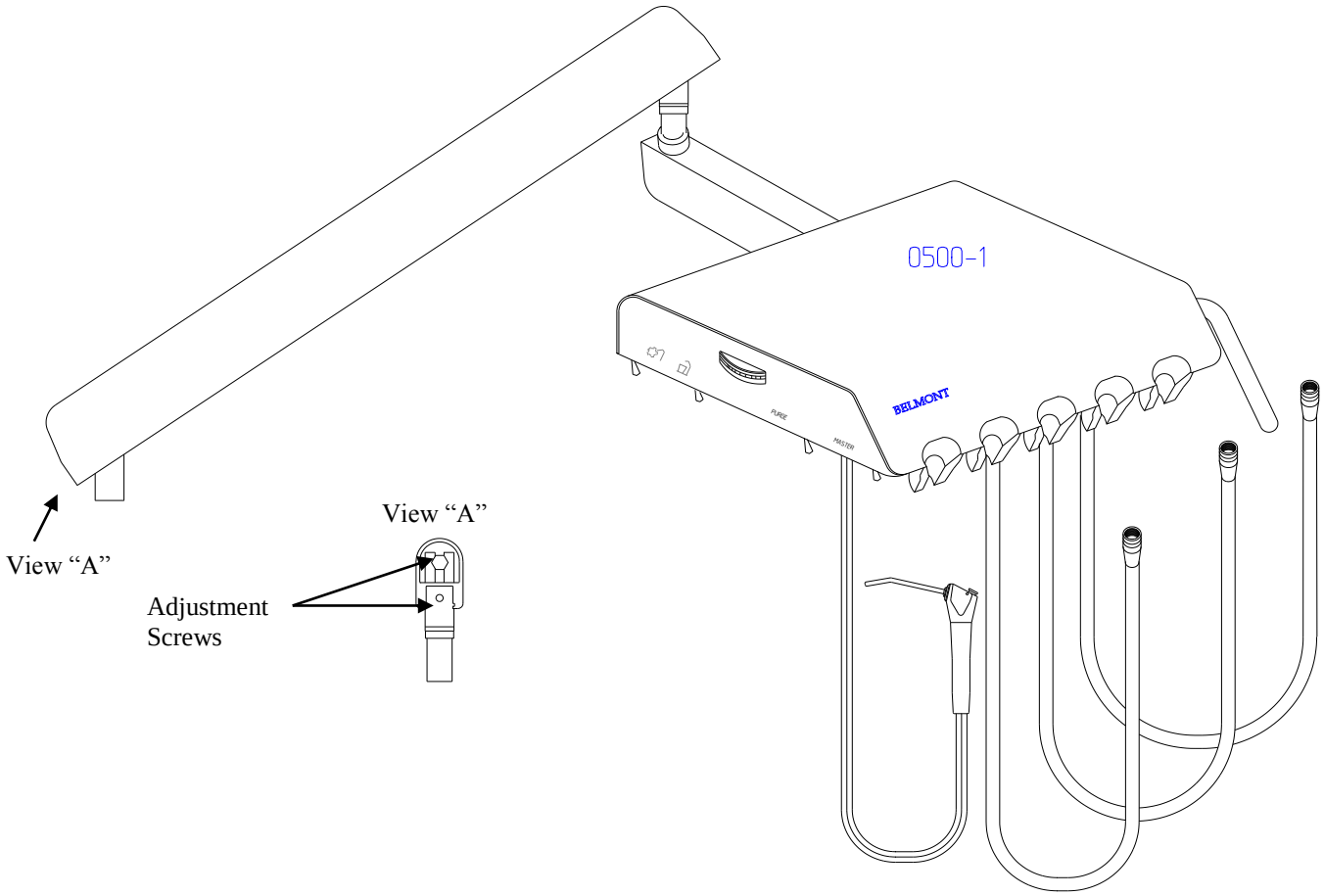




FLEX ARM LEVEL ADJUSTMENT

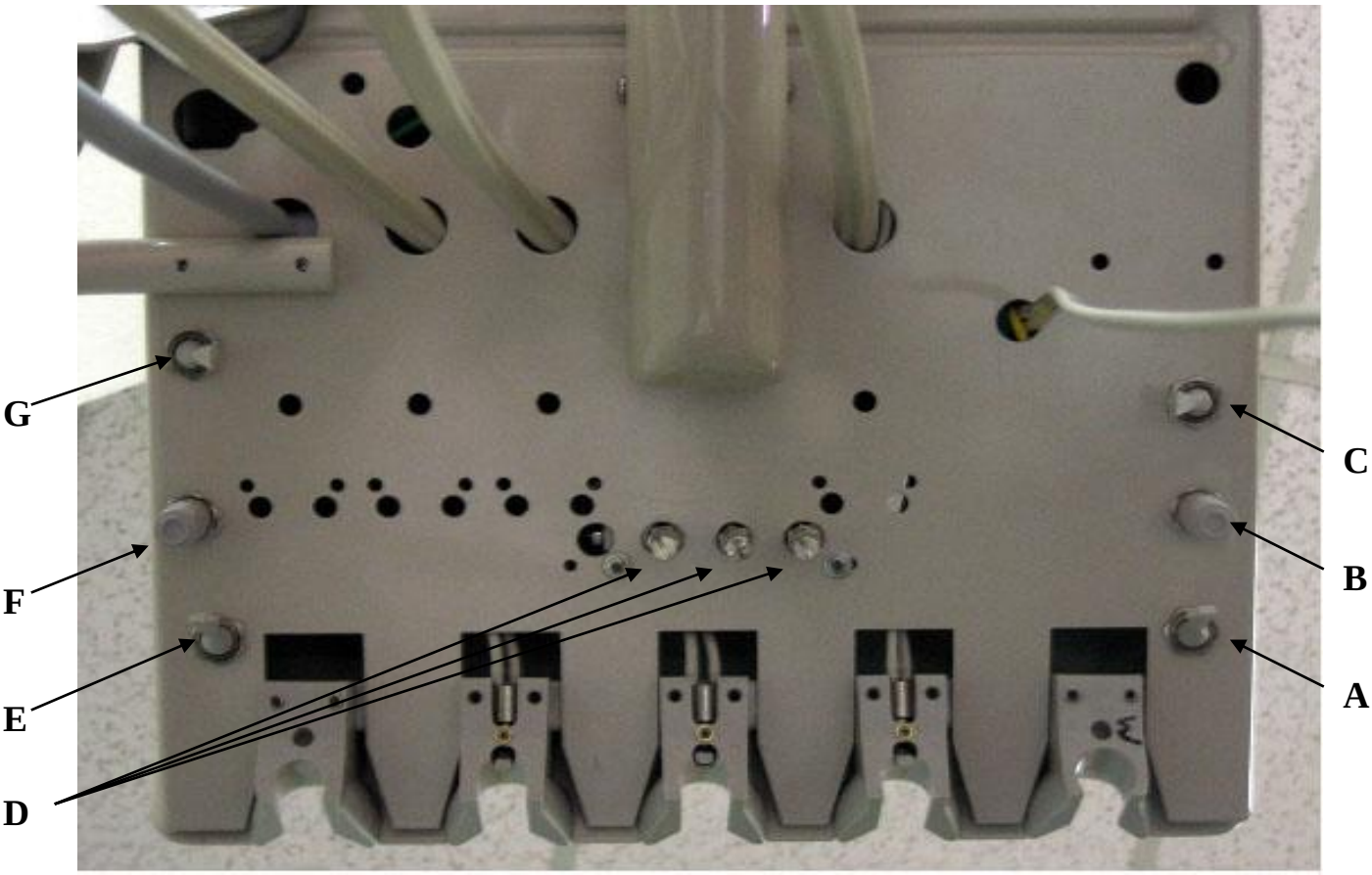
The delivery head on the flexible arm should travel in a parallel plane to the floor. If not, the camber may need to be adjusted, per the following:

- Remove plastic end cap from the arm.
- Check that arm does not rise or fall on its own from its set position. Adjust tension as necessary. Adjust the tension by turning the adjustment screw shown in View A with a ½" socket wrench.
- Check unit pole for vertical alignment (plumb). If not level, adjust as necessary.
- Check the delivery system head for level. If not level, turn vertical adjustment screw with a 1/8" allen wrench clockwise to lower, or counter-clockwise to raise until delivery system travels in a plane parallel to the floor
- Replace plastic end cap. Delivery system head may need to be re-leveled (see leveling instruction above).



You have completed the Belmont ECO-Sys Delivery installation. Thank you for purchasing one of the most reliable delivery systems made today.

Delivery Head Operation and Controls



A) Master On/Off toggle

Opens and closes the Air/Water valves in the Utility Center Box. Supplies Air and Water to the complete Delivery system. (***MUST BE SHUT OFF NIGHTLY***.)

B) Chip Air Adjusts chip air to the handpieces

C) Handpiece tubing flush toggle

Purges water and some biological debris out of handpiece lines.
Remove handpiece hoses from holders to activate the switch to flush handpieces.

D) Drive-Air Pressure control knob

Adjusts drive air pressure to the handpiece, turn clockwise to decrease pressure, and counter-clockwise to increase.

E) Water On/Off toggle Turns water on and off to handpieces

F) Water coolant flow control knob

Adjusts the flow of water coolant to handpieces, counter-clockwise increases flow, clockwise decreases flow. For low speed, turn clockwise to shut off water.

G) Arm Brake Releases the pneumatic brake in the flex arm.

Tubing Color Guide

1/4" Black————Drive Air in 1/8" Red ————Master Air in 1/8" Yellow———Return Air out	1/8" Blue———Water In 1/8" Brown———Syringe Air 1/8" Clear———Air Brake release

Troubleshooting Guide

Delivery System Troubleshooting

Symptom	Possible cause	Corrective action
Air bubbles present in syringe or water coolant flow.	Cross-leakage through the diaphragm in the utility center filter-regulator (part number E4003101).	Replace diaphragm.
Water in syringe air or in handpiece drive air.	Cross leakage through the diaphragm in the utility center filter-regulator (part number E4003141).	Replace diaphragm.
	Water in supply line.	Close manual air valve (part number E4003148) in utility center and remove the filter/regulator assembly (part number E4003145). Open manual air valve and check for moisture in the air supply. If water is present, service or install compressed air dryer.
Water drips continuously from handpiece when foot control is not depressed.	Non-retracting Water Safety Valve faulty (part number E4003059).	Check using another handpiece. If symptoms are the same check water safety valve.
	Partially clogged handpiece water port.	Check using another handpiece.
Handpiece runs while still in the auto-holder.	Pilot valve in the rear of autoholder is out of adjustment.	Turn master switch OFF. Loosen setscrew at bottom of auto-holder assembly, and adjust pilot valve in slightly. Tighten setscrew.
	Handpiece is in the wrong holder.	Assure that handpiece hoses are not crossed.
Inadequate air flow to unit.	Clogged filter element in filter-regulator assembly. (part number E4003145)	Replace filter element. (part number E4003145)
	Inadequate air from foot control.	See Foot Control Troubleshooting Guide.
	Pinched supply tubing.	Check supply tubing in selector head, utility center and in flex arm.
Water in syringe air only.	Water in air supply line.	Close manual air valve (part number E4003148) in utility center and remove filter/regulator assembly (part number 4003145). Open manual air valve and check for moisture in the air supply. If moisture is present, service or install compressed air dryer.
	Syringe tip improperly installed.	See three-way syringe Troubleshooting Guide.
Gauge does not read handpiece air pressure.	Tubing at rear of gauge is pinched against chassis.	Push the gauge back towards the rear of delivery head.
	Bracket around gauge is too tight and pinches casing.	Slightly loosen screw(s) holding bracket and test.

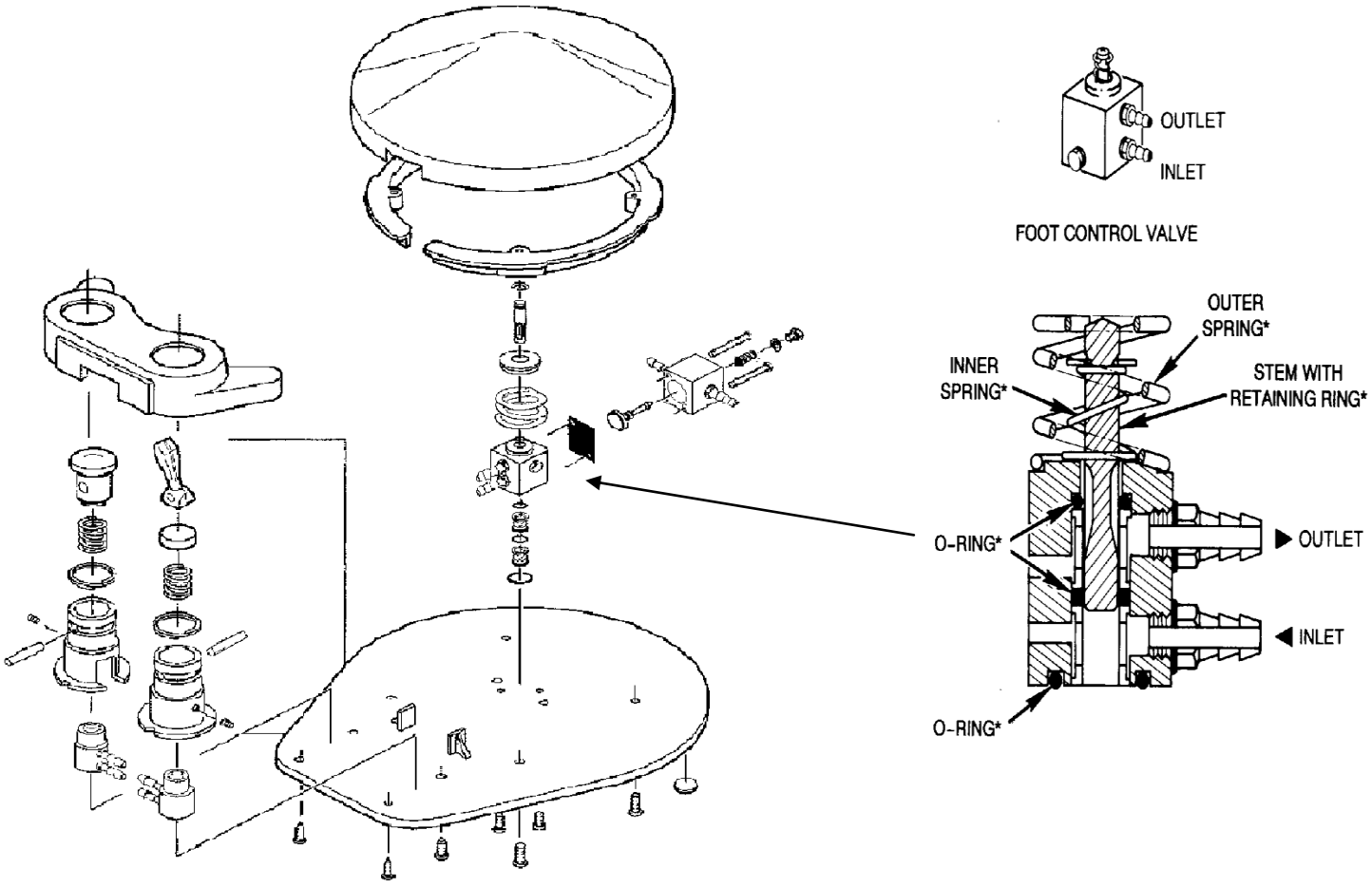
Foot Control Troubleshooting

Symptom	Possible Cause	Test procedure	Corrective Action	
			If test is Normal	If test is Abnormal
Audible leakage while the Foot Control is not being used.	Loose mounting screws.	Turn Foot Control over, face down and tighten the two Phillips-head screws at the center of the base plate.	If the leakage stops, no further action is required.	If leakage does not stop, proceed with the next step.
	Loose tubing connection.	Note "**WARNING**" in the DESCRIPTION heading. Remove the Foot Control cover and use a soap solution, if necessary, to locate the source of the leakage.	If the air is leaking around a barb connection, tighten the barb and re-test the valve.	If the air is leaking from the exhaust vent or around the bottom of the valve body, proceed with the next step.
	Defective O-Rings or sealing surface.	Turn the unit OFF and bleed the air pressure, then disassemble the Foot Control. Inspect the O-Ring and sealing surfaces for defects or debris.	If no defects are noted, carefully clean and lubricate the parts. Reassemble and test the valve.	Replace any defective parts. Carefully clean and lubricate the parts. Reassemble and test the valve.
Inadequate air flow from the Foot Control.	Pinched tubing going to or from the Foot Control.	Inspect the Foot Control for crimps or restrictions.	If no problem is found, proceed with the next step.	If tubing is crimped. Install a new tube. (part number E4003497) Assemble and test the unit.
	Obstruction at the inlet or outlet.	Note "**WARNING**" in the DESCRIPTION heading With the cover removed, depress the piston and check for adequate airflow.	If no defects are noted, carefully clean and lubricate the parts. Reassemble and test the valve.	Replace any defective parts. Carefully clean and lubricate all parts. Reassemble and test the valve.
Foot control is sluggish.	Stem may be Sticking.	Note "**WARNING**" in the DESCRIPTION heading. Remove the valve body from the base. Remove and inspect the O-Rings and spacers for debris or defective parts.	If it works easily and smoothly, check for a weak or improperly installed spring.	If there is any sticking or binding, remove the stem, spacers, and O-Rings. Replace any defective parts. Carefully clean and lubricate all parts. Reassemble and test the valve.

Foot Control Parts Breakdown

EQUIPMENT ALERT
Before removing the foot control cover, turn the air supply OFF and bleed all pressure from the system. Failure to do so can result in the stem assembly being ejected from the foot control valve.

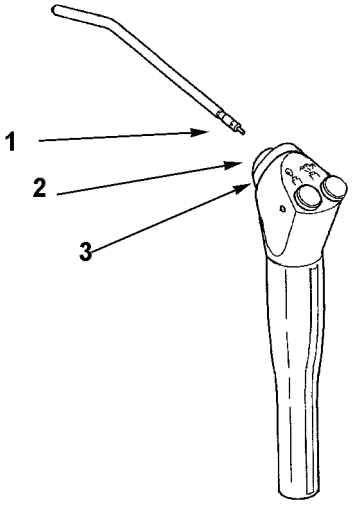
Description
The Foot Control is actuated by foot pressure on the domed cover, which depresses the stem assembly in the valve bore. This moves the fluted surface of the stem below the inlet O-Ring seal, allowing air to flow to the outlet. When foot pressure is released, the stem returns, sealing the inlet at the O-Ring. Any pressure from the outlet side of the valve is then exhausted as the fluted surfaces move above the outlet O-Ring seal.



EQUIPMENT ALERT
Never install a three-way syringe in a system without a provision for turning off air and water supplies. When the operatory is unattended or when maintenance is being performed, both the air and water supplies should be turned off.

Three-way syringe Installation

Installation and removal of syringe tip



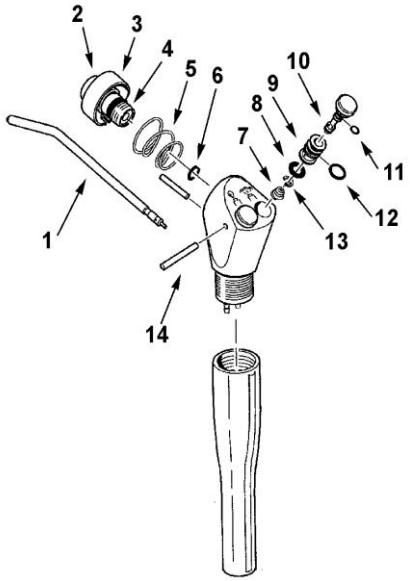
Install: Depress collar (3) and insert base of tip (1) into the hexagonal hole on adapter (2). Gently push in on tip until it is seated in syringe head. Release collar (3) to lock the tip in position Always make sure the syringe tip is fully inserted and locked. Pull lightly on the syringe tip to test before using.

Remove: Depress collar (3): gently pull tip (1) from adapter (2).

Installation of tubing

Turn off air and water supply. Connect syringe air and water tubing to air and water ports on dental unit or syringe manifold.

Three-way syringe Troubleshooting



A) Momentary water spray when air button is pressed

1) Be sure tip is properly seated and locked by pulling lightly on syringe tip. If not seated and locked see the instructions for Installation and Removal of Syringe Tip. If tip was seated and locked, O-rings (4&6) need to be replaced- go to following steps.
2) Remove tip (1) from adapter (2).
3) Important note: while removing adapter (2) and collar (3), be careful to position collar (3) so ball bearings housed inside it do not fall out. Insert 5/32" Allen wrench into the hexagonal hole on adapter (2), and turn wrench to remove adapter. Remove O-rings (4&6).
4) Apply a light coating of silicone lubricant to new O-rings (4&6). Install O-rings on adapter, and carefully reinstall spring (5), collar (3) and adapter (2) on syringe head. Use Allen wrench to tighten adapter.

B) Air or Water leakage around buttons

1) Use paper clip to push retaining pin (14) completely out of syringe body. Remove the problem button assembly from syringe.
2) Use needle nose pliers, or forceps, to remove retaining ring (13) from button assembly. Remove brass spool (9) from button stem (10).
3) Note position of O-ring (12) on brass spool, and O-ring (11) on bottom stem. Use a sharp instrument to cut both O-rings. Remove O-ring from stem assembly.
4) Apply a light coating of silicone lubricant to all new O-rings. Install O-ring (12) on brass spool and O-ring (11) on the button stem in positions noted in step 3. Insert button stem through brass spool. O-ring (8) is positioned between the bottom of brass spool and retaining ring (13).
5) Note the position of spring (7), and insert spring into syringe head. Insert button assembly on top of spring, and secure it in the syringe head with retaining pin (14).
6) Turn on air and water supply to system.

HVE / SE Care Maintenance and Sterilization

After Each Patient
Immerse the suction tip in clean water. Open and close the valve 3 times. This will decrease the accumulation of particles in the spool valve area, which can interfere with the valves operation.

Daily Care
Immerse the suction tip in clean water. Open and close the valve 3 times. Using a rigid brush approximately 3/8" in diameter brush the internal surfaces.

As Needed
When the bail lever becomes difficult or is sticking, you will need to remove the Spool Valve to clean and lubricate the internal components.

To remove the spool valve (refer to figures A and B):

1) Gently pry the bail lever out from the valve on one side until it is free from the recesses in the spool.
2) Push the spool out of the valve.

Thoroughly clean the surfaces, and inspect the O-rings for wear or damage. Replace O-rings that have nicks, cuts, flat spots or other signs of damage.

Surface Disinfecting
Do not use Sodium Hypochlorite or any bleaching agents to clean these instruments. They will cause permanent damage.

Sterilization
Autoclavable vacuum valves should be steam autoclaved between patients. The following protocol should be followed:

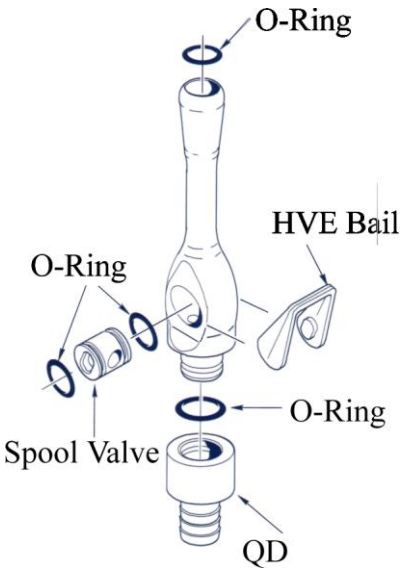
HVE – steam autoclave at 134°C (273 °F), 6 minutes holding time
SE – steam autoclave at 134°C (273 °F), 6 minutes holding time
Air/Water Syringe - steam autoclave at 134°C (273 °F), 4 minutes holding time

Regardless of the process used, temperatures should never exceed 280 degrees Fahrenheit or 138 degrees Celsius.

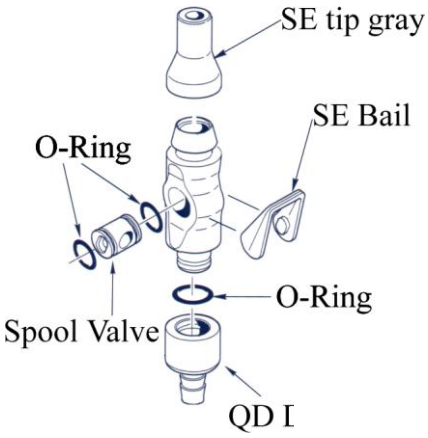
Do not allow the instrument to come into contact with the walls of the sterilizer. Avoid placing the instrument in close proximity to the sterilizer heating element.

Each handheld device with air and water lines should be discharged for 20-30 seconds between each patient to reduce the chance of cross-contamination as a result of potential bio-burden retraction.

Specifications
Minimum air, water and vacuum service requirements for proper unit operation:
Air: 2.50 cfm (70.80 1/min) at 80 psi (551 kPa).
Water: 1.50 gpm (5.68 1/min) at 40 psi (276 kPa).
Vacuum: 12 cfm (339.84 1/min) at 8 inches of mercury (27 kPa).
Specifications are subject to change without notice

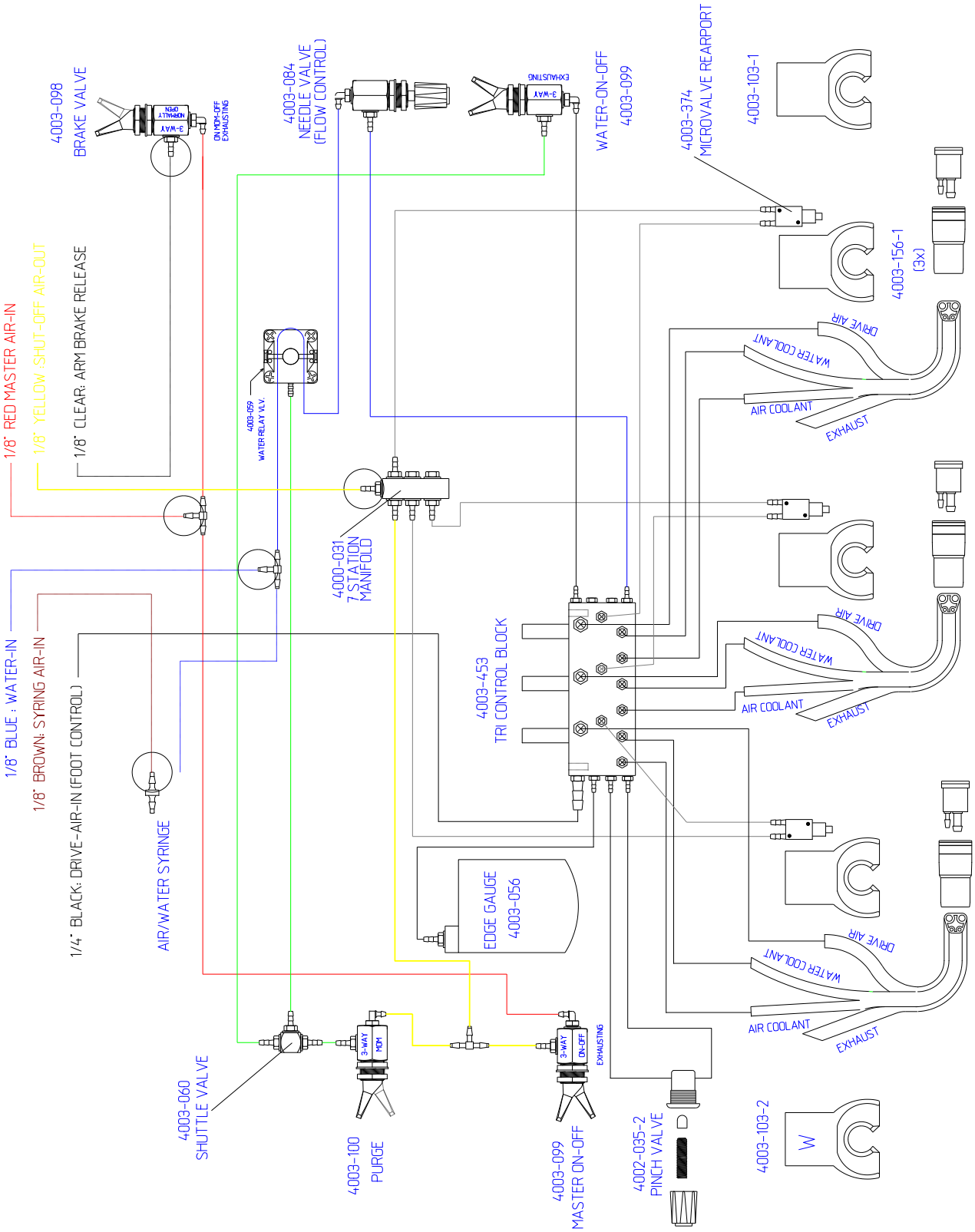


HVE valve
Fig A

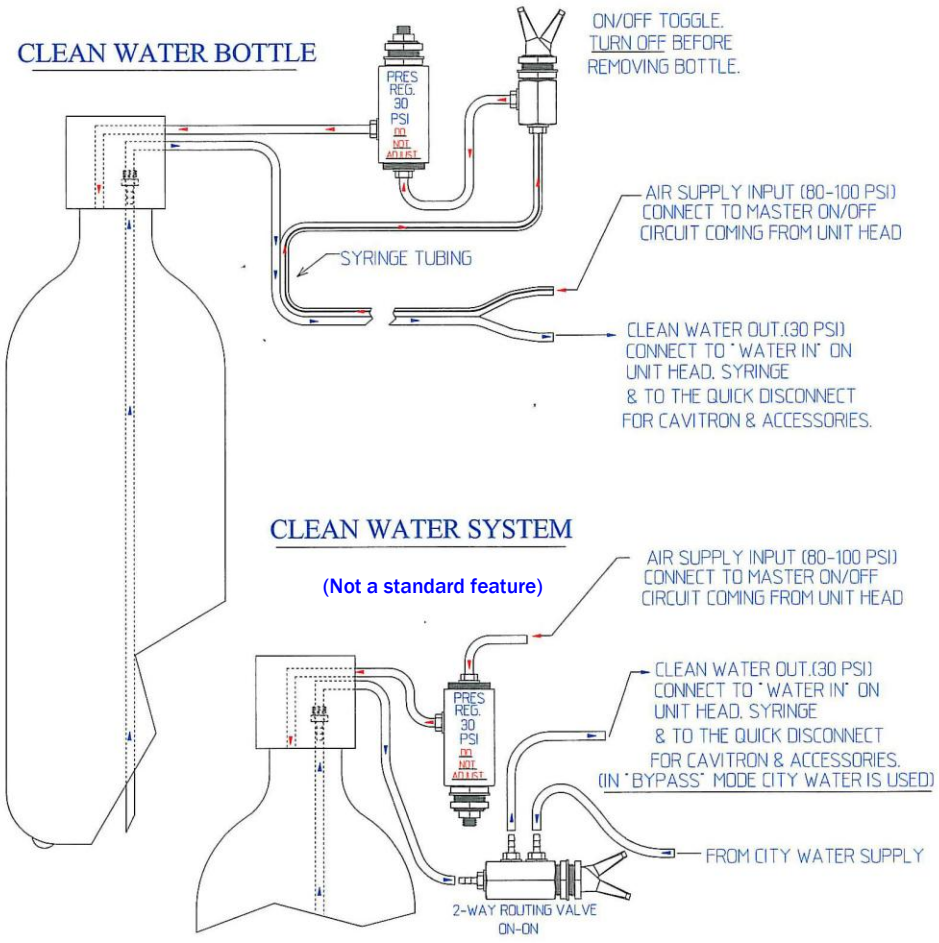


SE valve
Fig B

ECO-Sys Control Head Schematic



Water Bottle System



Belmont ECO-Sys Delivery Systems Dimensions