



**BEAVERSTATE DENTAL SYSTEMS**

# **Service Manual**

## **SC-4250**

**3 HP Automatic Rear Delivery  
DuoSwing System with Vacuum**

## Installation

1. Place the shipping carton in the desired location. Remove the unit with pivot arm system from the shipping carton.
2. Mark 4 hole locations under the shelf and pre-drill holes for the mounting screws.
3. Align the drilled holes with the holes on the mounting bracket. Insert 4 screws and fasten the mounting bracket securely to the underside of the shelf.
4. Insert the control head pivot arm into the top block. Feed the umbilical through the top hole in the mounting bracket.
5. Insert the vacuum cannister pivot arm into the bottom block. Feed the umbilical through the bottom hole in the mounting bracket.
6. Install master valve assemblies, with filter and regulator, onto the manual shut-off valves. (Pressures are preset at the factory: 80 psi air, 40 psi water).
7. Connect the supply and vacuum tubings as shown in the Utility Center Template & Guide.

Check air pressure, adjust to 80 psi if necessary.  
Check water pressure, adjust to 40 psi if necessary.  
Test handpieces for proper function.  
Test syringe for proper pressure and function.  
Test HVE and Saliva Ejector valve for proper function.

## Final Adjustments

# SC-4250

## Operation

1. Turn on the master switch located on the left side of the control head.
2. The handpiece is automatically activated when lifted from the holder.
3. Depress the foot control to activate each handpiece. Pressure is shown on the gauge for the handpiece being used.
4. Individual handpiece pressure adjustments are located on the autoblock inside the control head. To adjust the pressure to each handpiece:
  - a. Turn adjustment screw *clockwise* to decrease the handpiece pressure.
  - b. Turn adjustment screw *counter-clockwise* to increase the handpiece pressure.



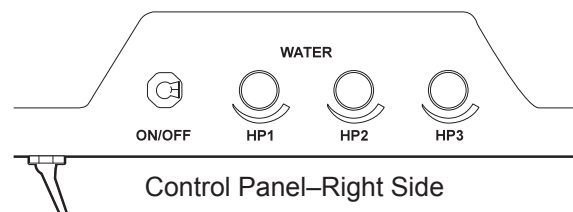
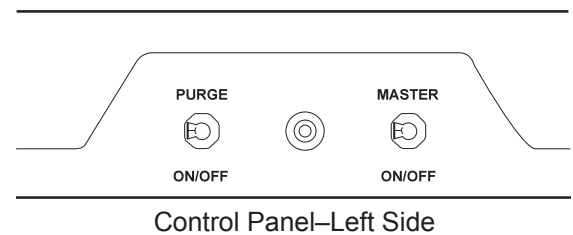
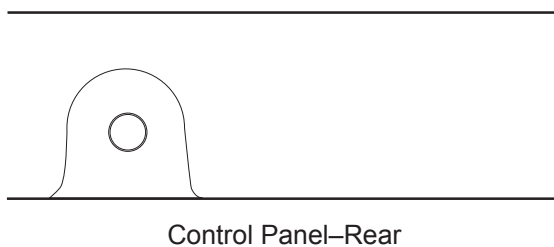
### CAUTION

When adjusting the handpiece pressure, do not over-tighten the screws. Damage may result.

5. Activate the water spray to the handpiece by flipping the toggle for the water located on the right side of the control head.
6. Water coolant flow adjustments are located on the right side of the control head.
7. This system may be positioned in either right or left hand configuration. Pull Dr's control forward, remove Syringe, HVE and Saliva Ejector valves from the assistant's side and pass the assistant's side behind the Dr's control to the opposite side.
8. Air Coolant Adjustment is located on the rear of the control. The flow adjustment valve will reduce the air coolant (chip air) pressure.

## Handpiece Purge

The purge switch, located on the left side of the control head, flushes fresh water through the water coolant system. Guidelines from the Center for Disease Control (CDC) recommends that each handpiece be flushed (purged) 20 to 30 seconds between patients and several minutes at the beginning of each day. Handpieces must be removed from the holder to activate the purge system.

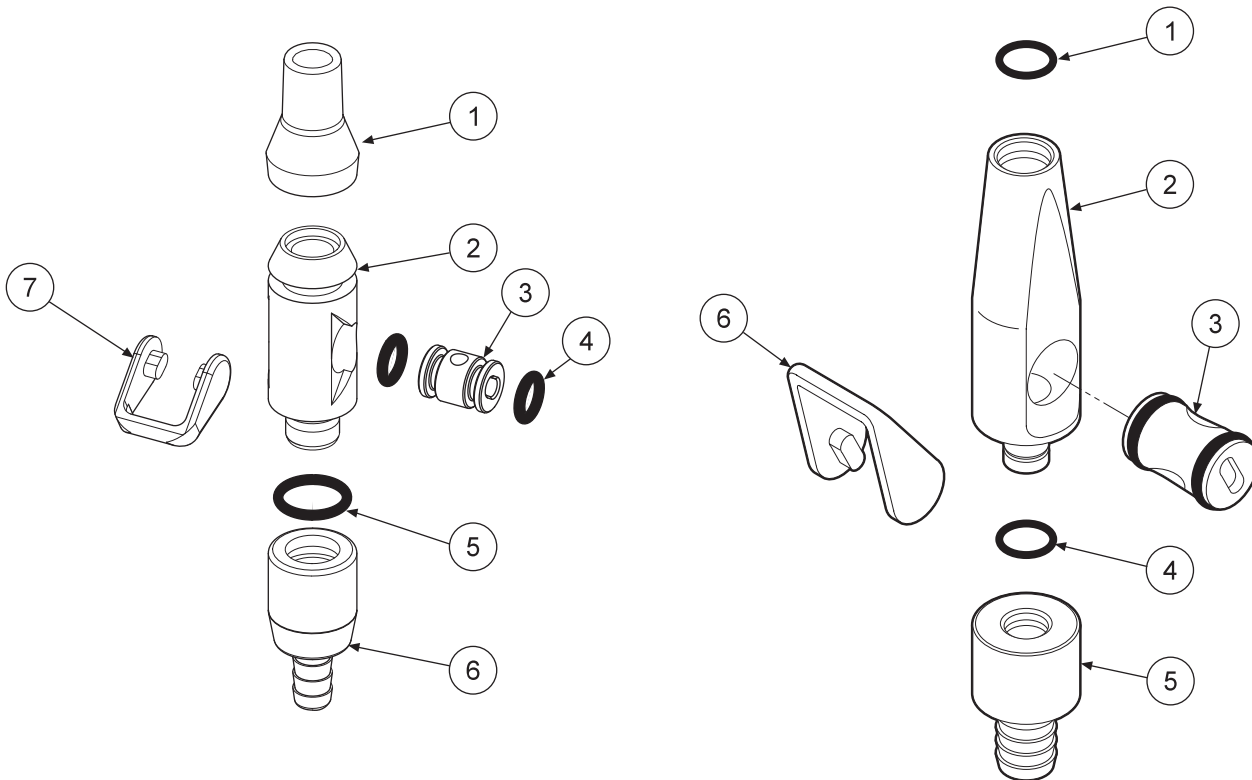


# Autoclavable HVE & S/E Valves

**Maintenance** Autoclavable vacuum valves may be autoclaved by steam autoclave or a chemical vapor. Due to the tight clearances and hardness of the anodized surfaces, the valve spool can become jammed or seize in the valve if it is sterilized while contaminated with debris.

Valves can be quickly disassembled for cleaning.

1. Pry one side of the lever and flip it off of the valve. For saliva ejector valves, remove the tip also.
2. Push out the valve spool and clean all the disassembled parts in an ultrasonic cleaner daily. *Rinse thoroughly before putting into autoclave.*
3. Lubricate the O-Rings on the spool with a silicone based lubricant before reassembly.



ITEM	PART DESCRIPTION	PART NUMBER	QTY
1	Tip.....	112-174	1
2	Body.....	112-276	1
3	Spool.....	112-278	1
4	O-Ring #10.....	017-110	2
5	O-Ring, #12.....	017-012	1
6	Swivel.....	112-177	1
7	Lever.....	112-181	1

ITEM	PART DESCRIPTION	PART NUMBER	QTY
1	O-Ring, #13.....	017-113	3
2	Body.....	112-266	1
3	Spool.....	112-268	1
4	O-Ring #13.....	017-113	1
5	Swivel.....	112-170	1
6	Lever.....	112-169	1

**AUTOCLAVABLE S/E LEVER VALVE**  
112-280

**AUTOCLAVABLE STANDARD HVE VALVE**  
112-262

# Troubleshooting

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Symptom Handpiece lacks power.

Possible Causes

- A. Improper supply pressure from compressor (80 psi).
- B. Check handpiece pressure adjustment on unit.
- C. Air filter may be plugged.
- D. Pinched supply tubing.
- E. Defective handpiece gasket at connection with tubing.
- F. Defective handpiece.

Symptom Water coolant does not shut off when foot control is released.

Possible Causes

- A. Adjust air pressure to 80 psi—water pressure to 40 psi.
- B. Foot control is not exhausting.
- C. Defective water relay valve.
- D. Air coolant adjustment located on rear of unit

Symptom More than one handpiece is operating.

Possible Causes

- A. Handpiece is not all the way in the holder.
- B. Improper adjustment on pilot valve in the handpiece holder.
- C. Defective shuttle valve to gauge.

Symptom Insufficient water coolant.

Possible Causes

- A. Adjust coolant flow valve.
- B. Water filter may be plugged.
- C. Handpiece may be plugged.
- D. Pinched supply tubing.
- E. Improper adjustment of water relay valve.

Symptom Water coolant is running from handpiece while in the holder.

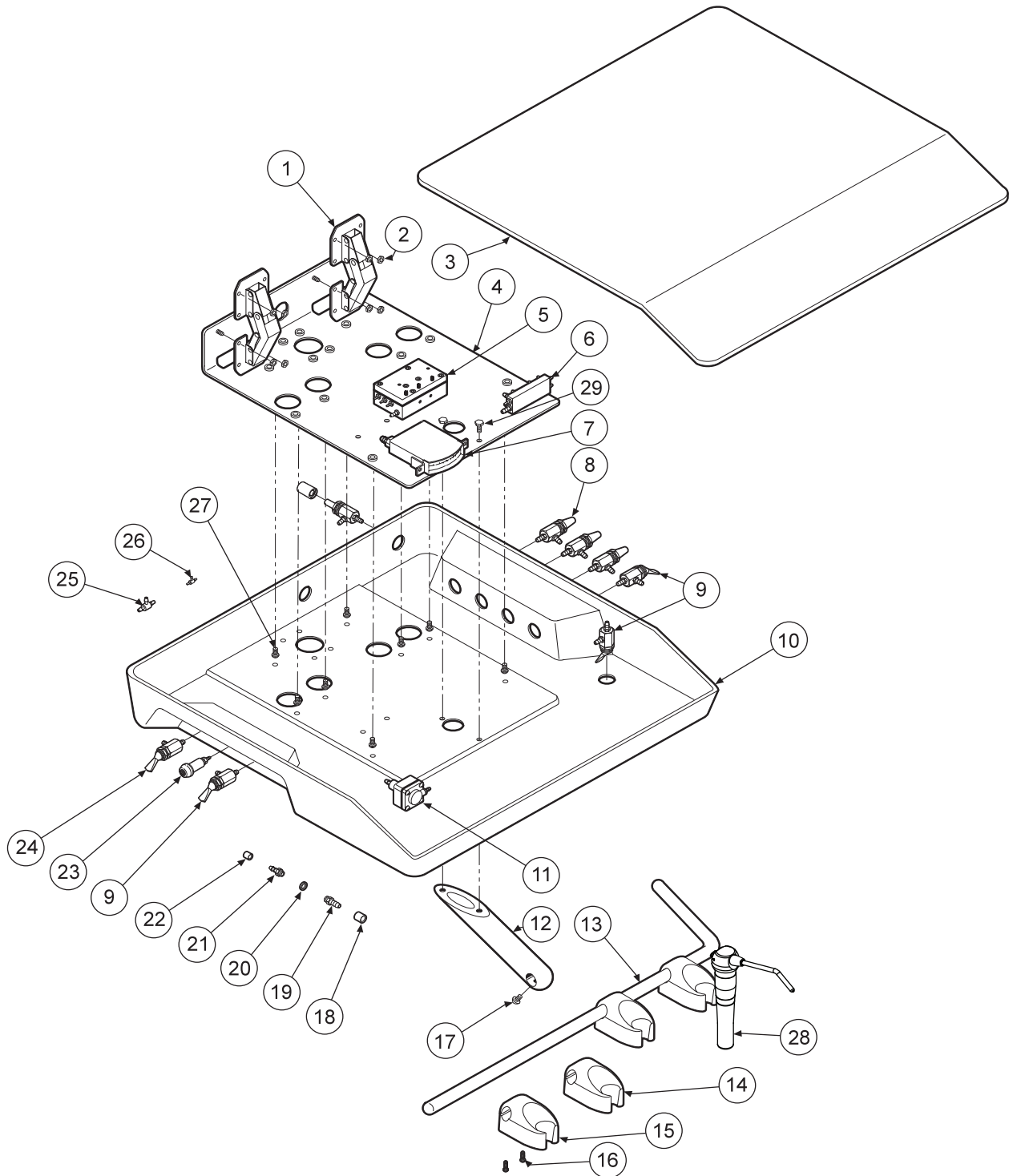
Possible Causes

- A. Water pressure too high.
- B. Air pressure too low.
- C. Handpiece holder out of adjustment.

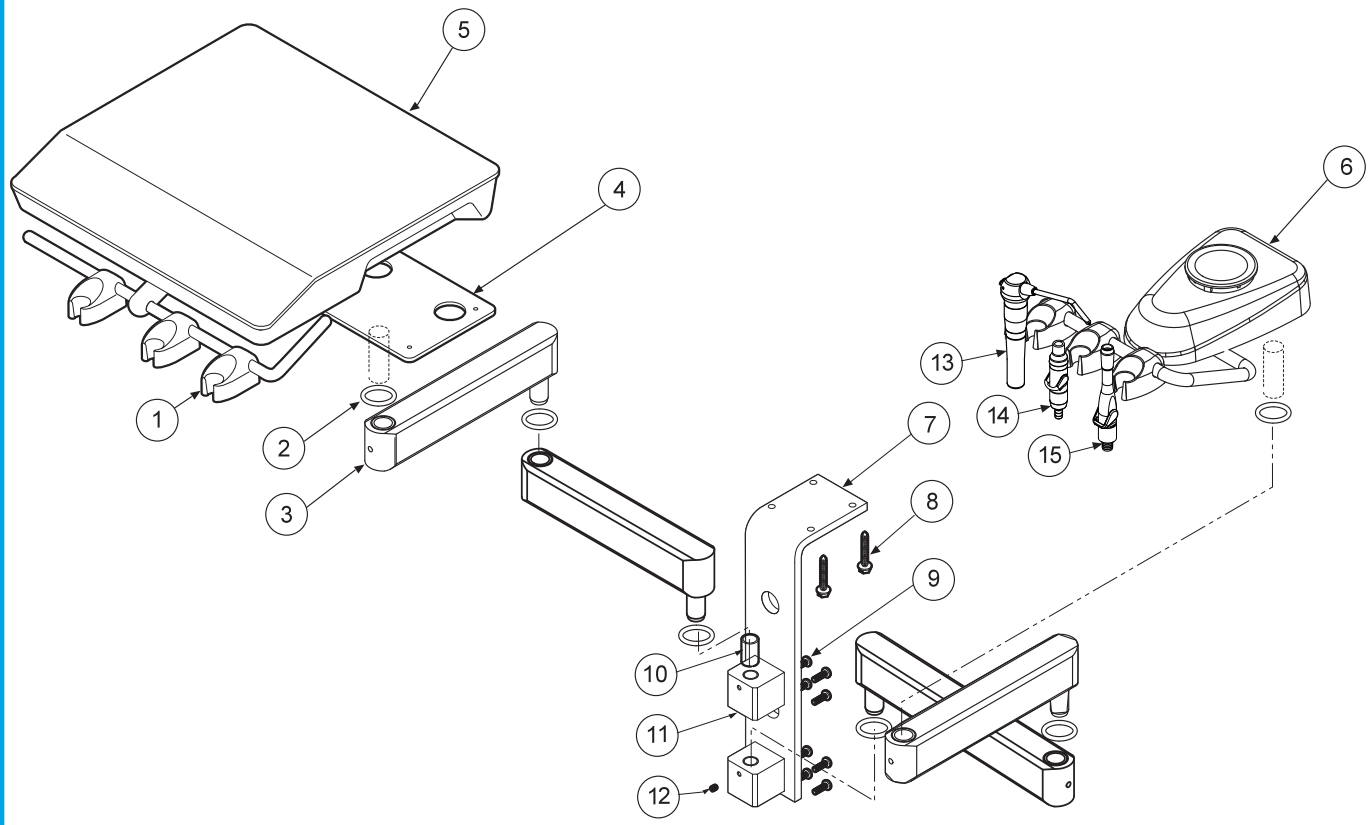
Symptom Water coolant is running continuously.

Possible Causes

- A. Purge switch is on (on applicable systems).
- B. Water pressure too high.
- C. Handpiece holder out of adjustment.
- D. Defective water relay valve.

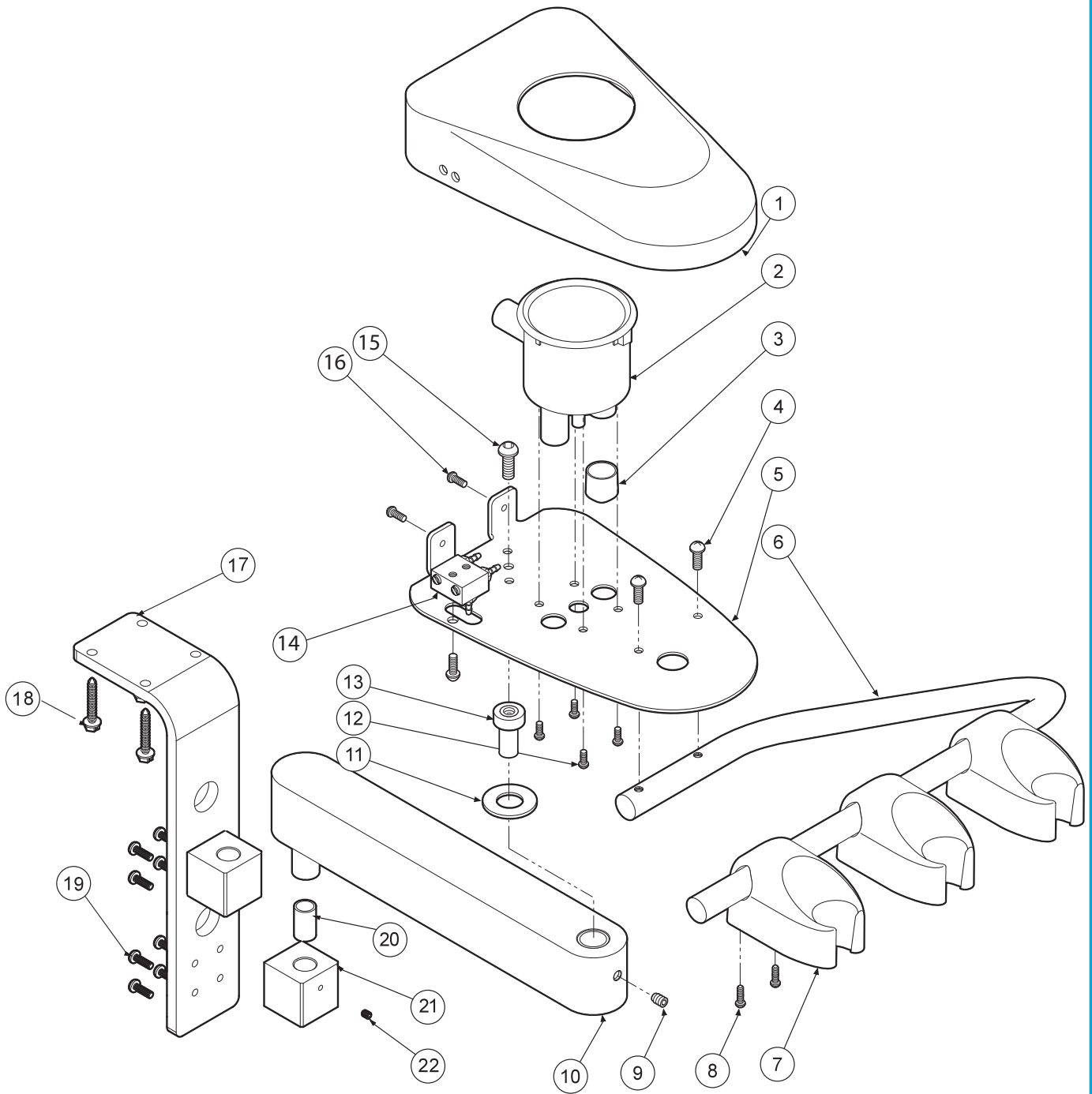


ITEM	PART DESCRIPTION	PART NUMBER	QTY	ITEM	PART DESCRIPTION	PART NUMBER	QTY	ITEM	PART DESCRIPTION	PART NUMBER	QTY
1	Hinge.....	107-083	2	11	Water Relay Valve.....	123-000	1	21	Barb, 10-32 x 1/16".....	022-009	9
2	Hex Nut 6-32.....	002-004	8	12	Holder Bar Mount.....	107-007	1	22	Ferrule, 1/8".....	117-007	32
3	Cover.....	107-112	1	13	Holder Bar.....	107-006	1	23	Indicator.....	026-020	1
4	Chassis.....	107-110	1	14	Automatic Holder.....	122-200	3	24	Momentary Valve.....	120-005	1
5	Automatic Handpiece Block.....	125-030	1	15	Syringe Holder.....	141-200	1	25	Shuttle Valve.....	014-012	1
6	Handpiece Manifold.....	023-003	1	16	Screw, 8 x 1/2".....	001-018	8	26	Plastic Tee, 1/16".....	022-033	1
7	Gauge.....	026-003	1	17	Screw, 10-32 x 3/8".....	001-070	1	27	Screw, 8-32 x 3/8".....	001-151	4
8	Needle Flow Valve.....	121-000	4	18	Ferrule, 1/4".....	117-008	2	28	Syringe.....	113-400	1
9	3-way Toggle Valve.....	120-000	3	19	Barb, 10-32 x 1/8".....	022-010	4	29	Screw, 10-32 x 1/2".....	001-166	2
10	Base.....	105-357	1	20	Plastic Washer, 1/4".....	003-001	13				



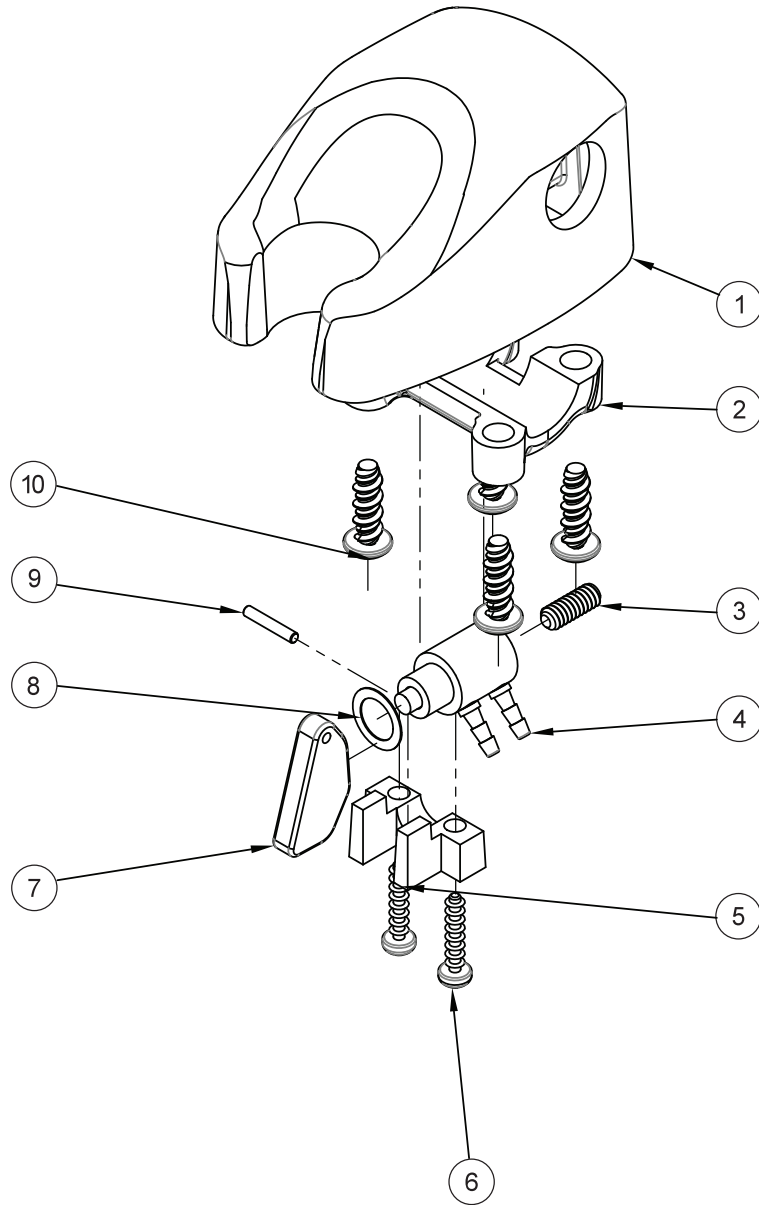
ITEM	PART DESCRIPTION	PART NUMBER	QTY
1	Automatic Holder.....	122-200	3
2	Washer, O-ring.....	003-057	6
3	Arm, 6".....	105-040	4
4	Bracket for 1/2" pin mount.....	105-060	1
5	Automatic Handpiece Control Head.....	330-RD	1
6	Vacuum Duo Swing Pac Assembly.....	131-058	1
	Rear Delivery Mount.....	105-120	1
7	Mount, Duo Swing, Cabinet.....	105-120	1
8	Screw, Hex, #14 x 1/4".....	001-137	4
9	Screw, 10-32 Phillips Round.....	001-056	4
10	Bushing, Bronze.....	013-014	1
11	Block, Wall Mount.....	105-048	1
12	Screw, Set.....	005-026	
13	Syringe.....	113-400	1
14	Autoclavable S/E Valve.....	112-280	1
15	Autoclavable Universal HVE Valve.....	112-263	1

**REAR DELIVERY DUO SWING SYSTEM  
SC-4250**

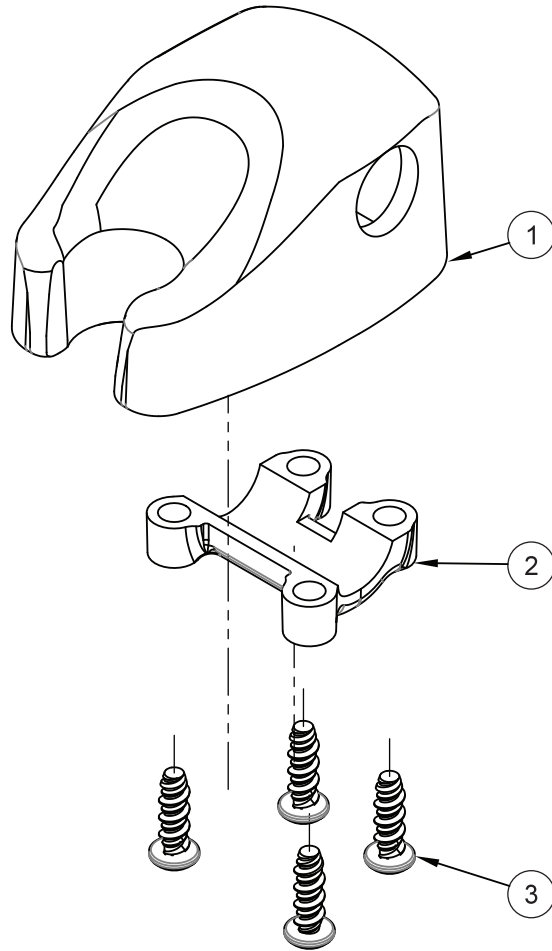


ITEM	PART DESCRIPTION	PART NUMBER	QTY	ITEM	PART DESCRIPTION	PART NUMBER	QTY	ITEM	PART DESCRIPTION	PART NUMBER	QTY
1	Cover.....	105-232	1	9	Set Screw, 10-32 x 1/4".....	005-026	2	16	Screw, 6-32 x 1/4".....	001-133	2
2	Cannister.....	131-036	1	10	Arm.....	105-040	2		Rear Delivery Mount.....	105-120	1
3	HVE Port Plug.....	010-009	1	11	Washer, 1/2".....	003-006	2	17	Mount, Duo Swing, Cabinet.....	105-050	1
4	Screw, 10-32 x 3/8".....	001-070	3	12	Screw, 6-32 x 3/8".....	001-134	4	18	Screw, Hex, #14 x 1/4".....	001-137	4
5	Mounting Plate.....	105-232	1	13	Pivot Adapter.....	105-012	1	19	Screw, 10-32 Phillips Round.....	001-056	8
6	Holder Bar.....	105-114	1	14	Syringe Block.....	113-026	1	20	Bushing, Bronze.....	013-013	2
7	Vacuum Handpiece Holder.....	141-200	3	15	Screw, 1/4-20 x 1".....	001-103	1	21	Block, Wall Mount.....	105-048	2
8	Screw, #8 x 1/2" Phillips, Plastite.....	001-018	6					22	Screw, Set.....	005-026	2

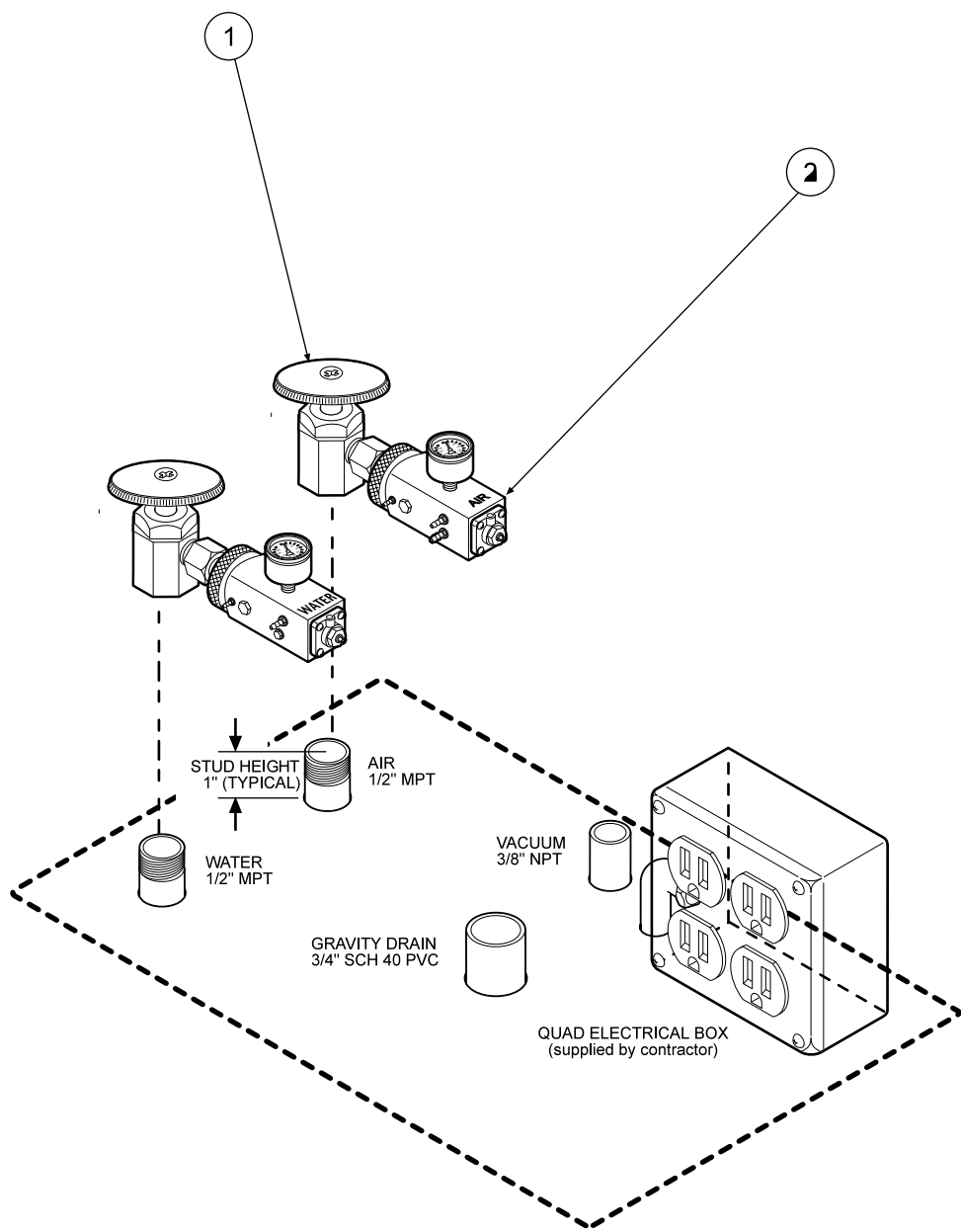




ITEM	PART DESCRIPTION	PART NUMBER	QTY
1	Molded Body.....	122-201	1
2	Clamp .....	122-104	1
3	Set Screw, 6-32 x 3/8".....	005-012	1
4	Valve Cartridge.....	122-031	1
5	Molded Clip.....	122-102	1
6	Screw, 4 x 1/2".....	001-019	2
7	Handpiece Actuator Lever.....	122-103	1
8	Washer.....	003-004	1
9	Pin, 1/16"x3/8" Dowel.....	009-010	1
10	Screw, 8-18 x 1/2".....	001-267	4

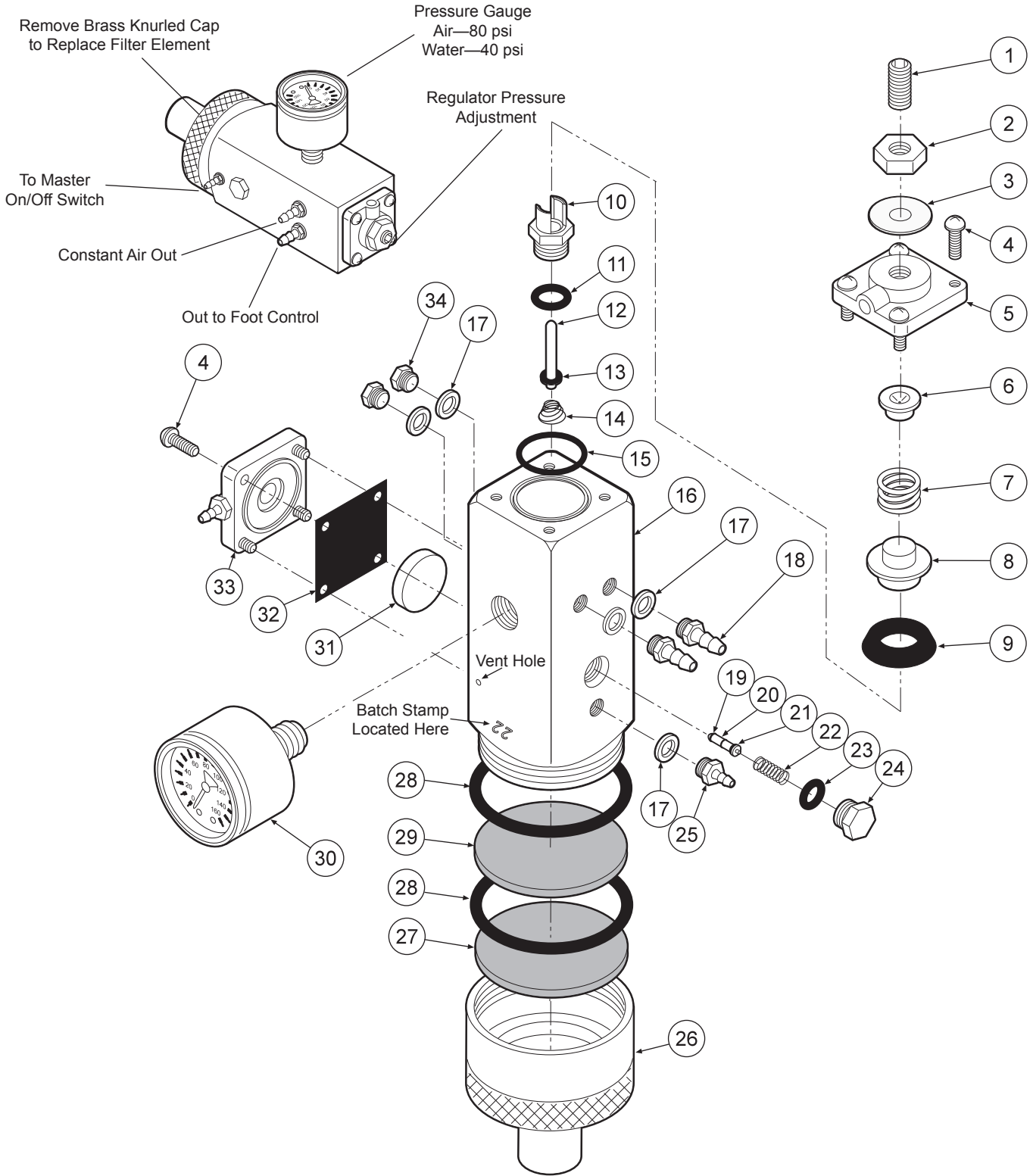


ITEM	PART DESCRIPTION	PART NUMBER	QTY
1	Molded Body.....	141-201	1
2	Clamp .....	122-204	1
3	Screw, 8-32 x 1/2".....	001-267	4



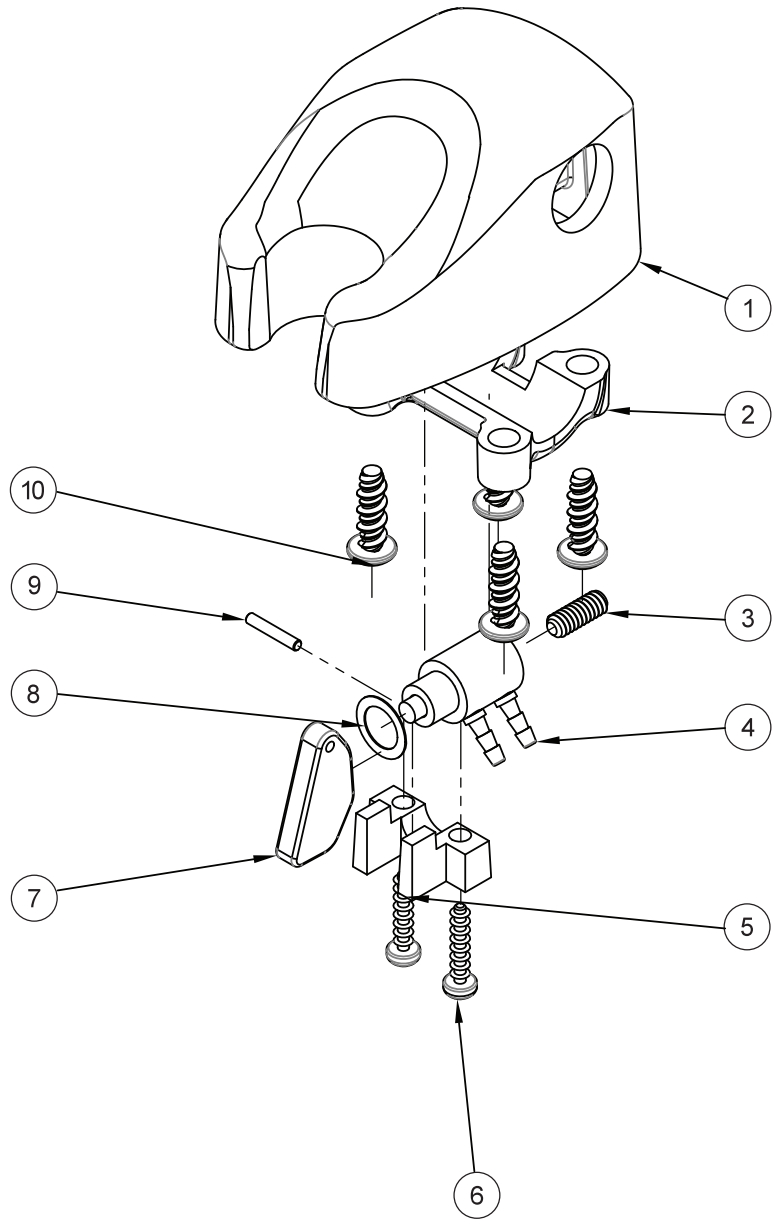
ITEM	PART DESCRIPTION	PART NUMBER	QTY
1	Manual Shut-off Valves.....	020-022	2
2	Master Shut-off Valve Kit.....	127-012	1

**UTILITY CENTER LESS HOUSING AND COVER**  
127-010



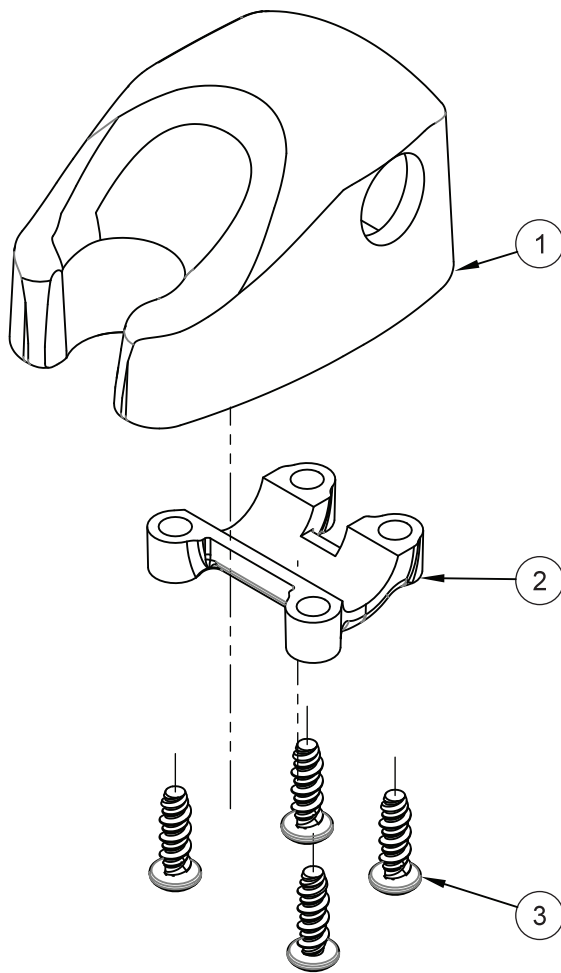
ITEM	PART DESCRIPTION	PART NUMBER	QTY	ITEM	PART DESCRIPTION	PART NUMBER	QTY	ITEM	PART DESCRIPTION	PART NUMBER	QTY
1	Set Screw, 1/4-20 x 5/8"	005-024	1	13	O-Ring, 004	017-104	1	24	Plug	020-026	1
2	Jam Nut, 1/4-20	002-006	1	14	Spring	008-028	1	25	Barb, 10-32 x 1/16"	022-009	1
3	Washer	003-015	1	15	O-Ring	017-018	1	26	Cap Inlet	127-041	1
4	Screw, 6-32 x 3/8"	001-041	8	16	Body	127-040	1	27	Filter Element, 100 Micron	119-005	1
5	Cap	127-033	1	17	Plastic Washer, 1/4"	003-001	5	28	O-Ring, 018	017-022	2
6	Spring Seat	127-043	1	18	Barb, 10-32 x 1/8"	022-010	2	29	Filter Element, 35 Micron	119-004	1
7	Spring	008-008	2	19	O-Ring, 001	017-501	2	30	Gauge	026-001	1
8	Cup Seat	127-044	1	20	Stem	127-045	1	31	Piston	123-014	1
9	Cup Seal	017-200	4	21	O-Ring, 003	017-103	1	32	Gasket	127-031	1
10	Seat	127-026	3	22	Spring	008-040	1	33	Cap	123-030	1
11	O-Ring, 008	017-008	2	23	O-Ring, 007	017-007	1	34	Plug	001-001	2
12	Stem	127-024	1								



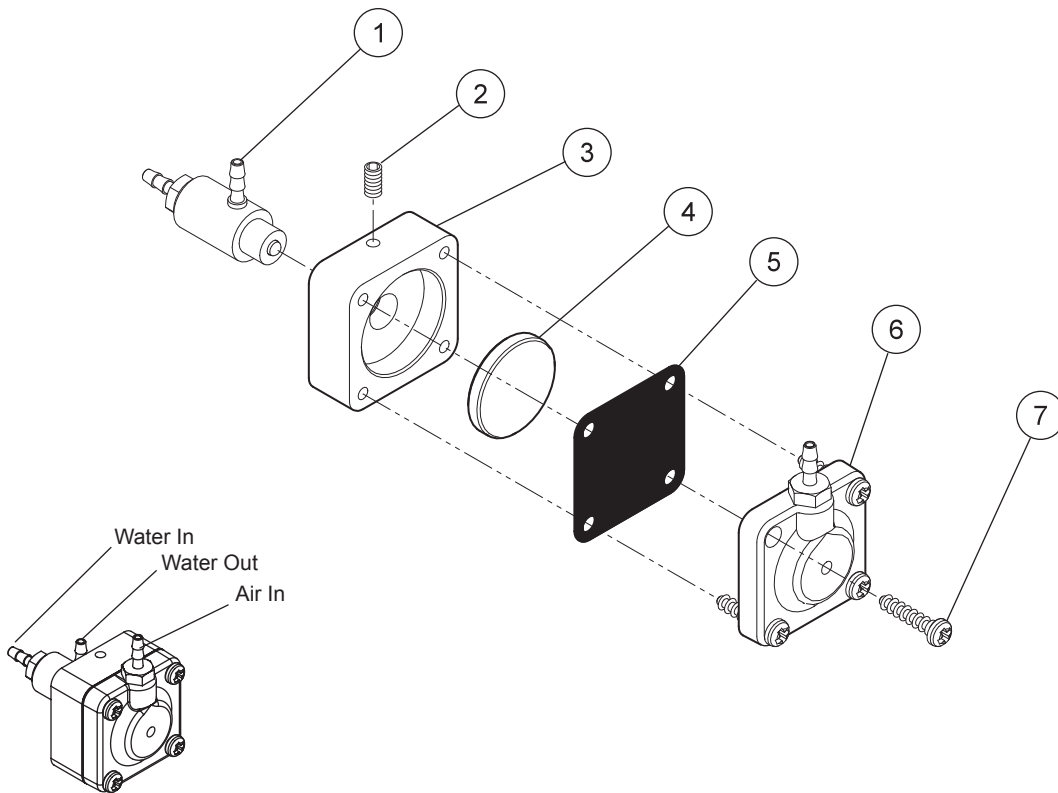
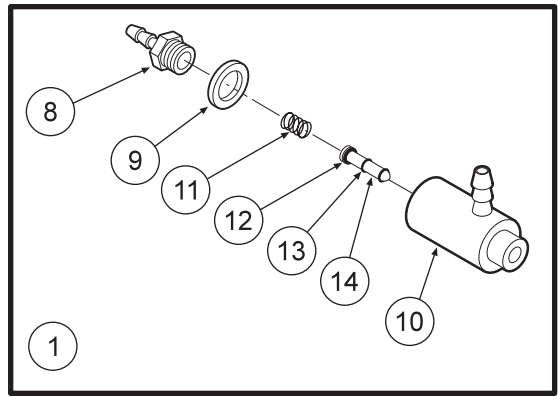


ITEM	PART DESCRIPTION	PART NUMBER	QTY
1	Molded Body.....	122-201	1
2	Clamp .....	122-104	1
3	Set Screw, 6-32 x 3/8".....	005-012	1
4	Valve Cartridge.....	122-031	1
5	Molded Clip.....	122-102	1
6	Screw, 4 x 1/2".....	001-019	2
7	Handpiece Actuator Lever.....	122-103	1
8	Washer.....	003-004	1
9	Pin, 1/16"x3/8" Dowel.....	009-010	1
10	Screw, 8-18 x 1/2".....	001-267	4

**MOLDED IC AUTOMATIC HOLDER**  
122-200



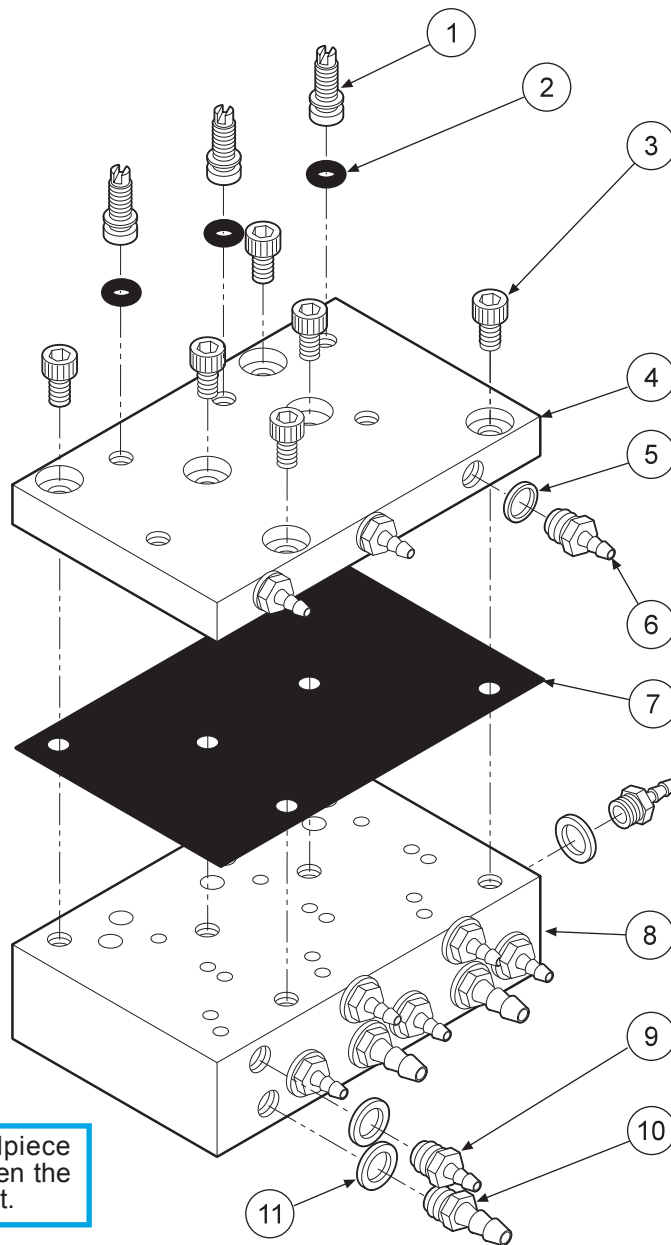
ITEM	PART DESCRIPTION	PART NUMBER	QTY
1	Molded Body.....	141-201	1
2	Clamp .....	122-204	1
3	Screw, 8-32 x 1/2".....	001-267	4




Water Relay Valve 123-000

ITEM	PART DESCRIPTION	PART NUMBER	QTY
1	Cartridge Body Assembly.....	123-018	1
2	Set Screw, 4-40 x 5/8".....	005-028	1
3	Body.....	123-013	1
4	Piston.....	123-014	1
5	Diaphragm.....	127-031	1
6	Cap.....	123-012	1
7	Screw, #6 x 1/2".....	001-267	4
8	Barb, 10-32 x 1/16".....	022-009	1
9	Plastic Washer, 1/4".....	003-001	1
10	Valve Body.....	123-017	1
11	Spring.....	008-011	1
12	O-Ring, 002.....	017-502	1
13	O-Ring, 001.....	017-501	2
14	Stem.....	123-015	1





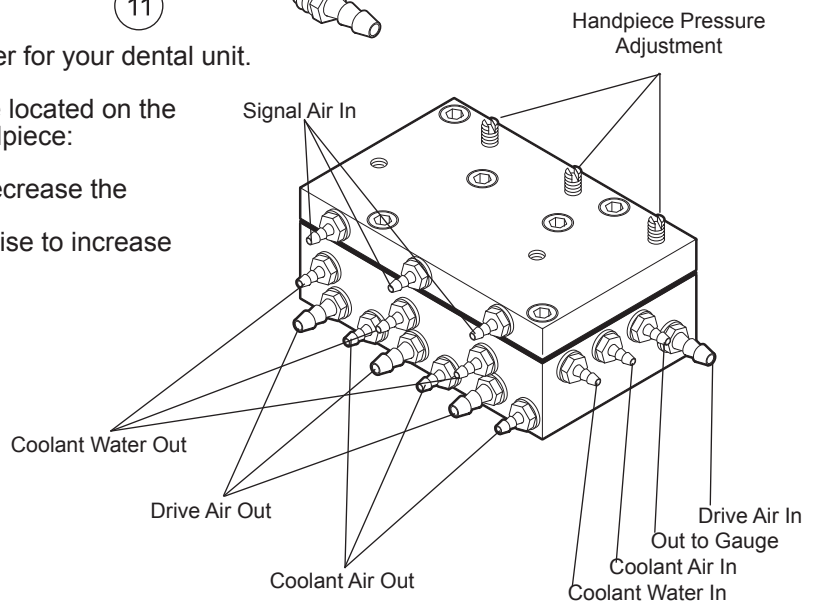
**CAUTION**  
 When adjusting the handpiece pressure, do not over-tighten the screws. Damage may result.

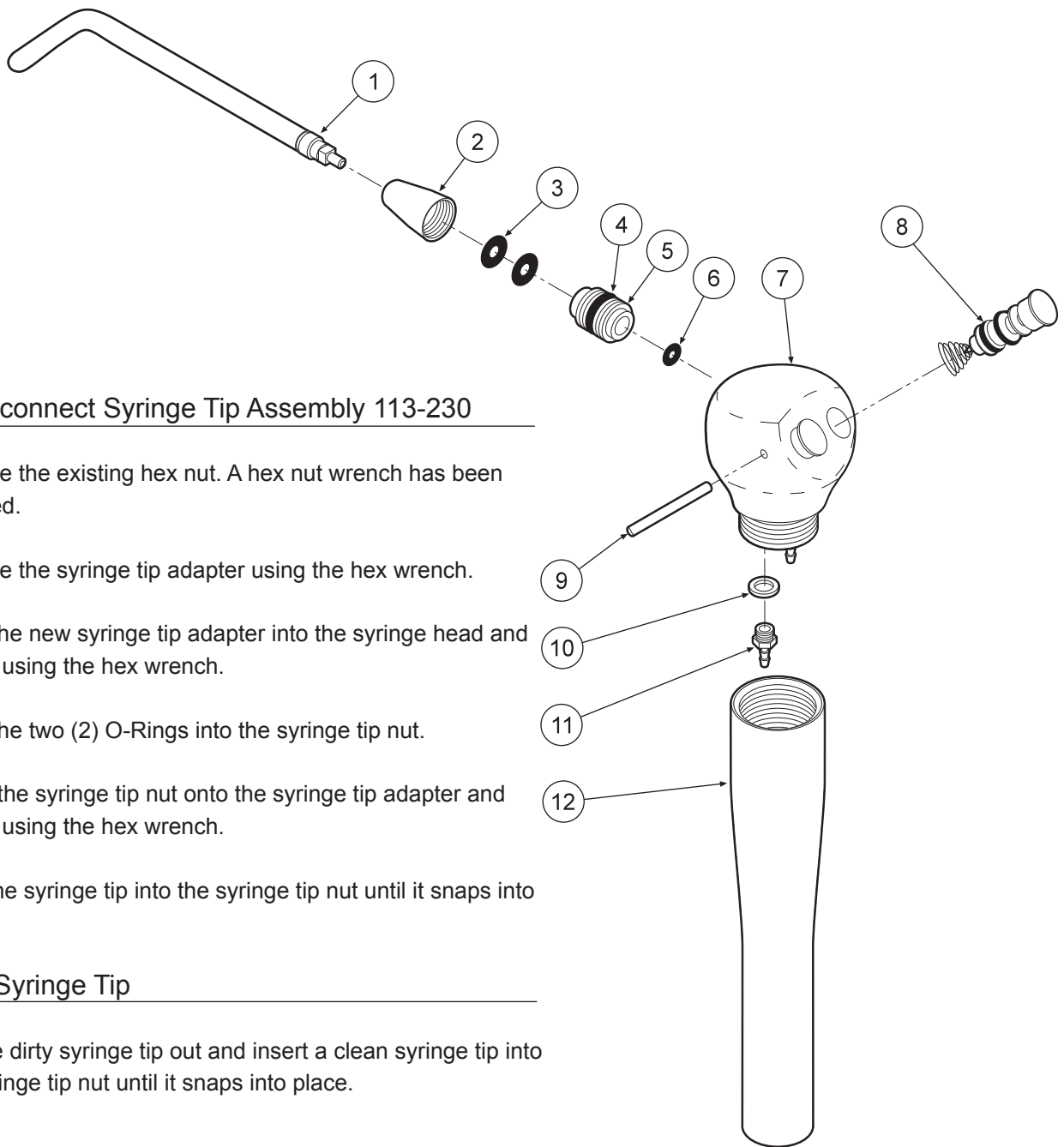
The automatic control block is the control center for your dental unit.

Individual handpiece pressure adjustments are located on the autoblock. To adjust the pressure to each handpiece:

- a. Turn adjustment screw clockwise to decrease the handpiece pressure.
- b. Turn adjustment screw counter-clockwise to increase the handpiece pressure.

ITEM	PART DESCRIPTION	PART NUMBER	QTY
1	Adjusting Stem.....	125-023	3
2	O-Ring, 021.....	017-021	3
3	Screw, 6-32 x 1/4".....	001-131	7
4	Cap.....	125-032	1
5	Plastic Washer, 8-32 x 1/16".....	003-030	3
6	Barb, 8-32 x 1/16".....	022-040	3
7	Diaphragm.....	125-016	1
8	Body.....	125-031	1
9	Barb, 10-32 x 1/16".....	022-009	9
10	Barb, 10-32 x 1/8".....	022-010	4
11	Plastic Washer, 1/4".....	003-001	13





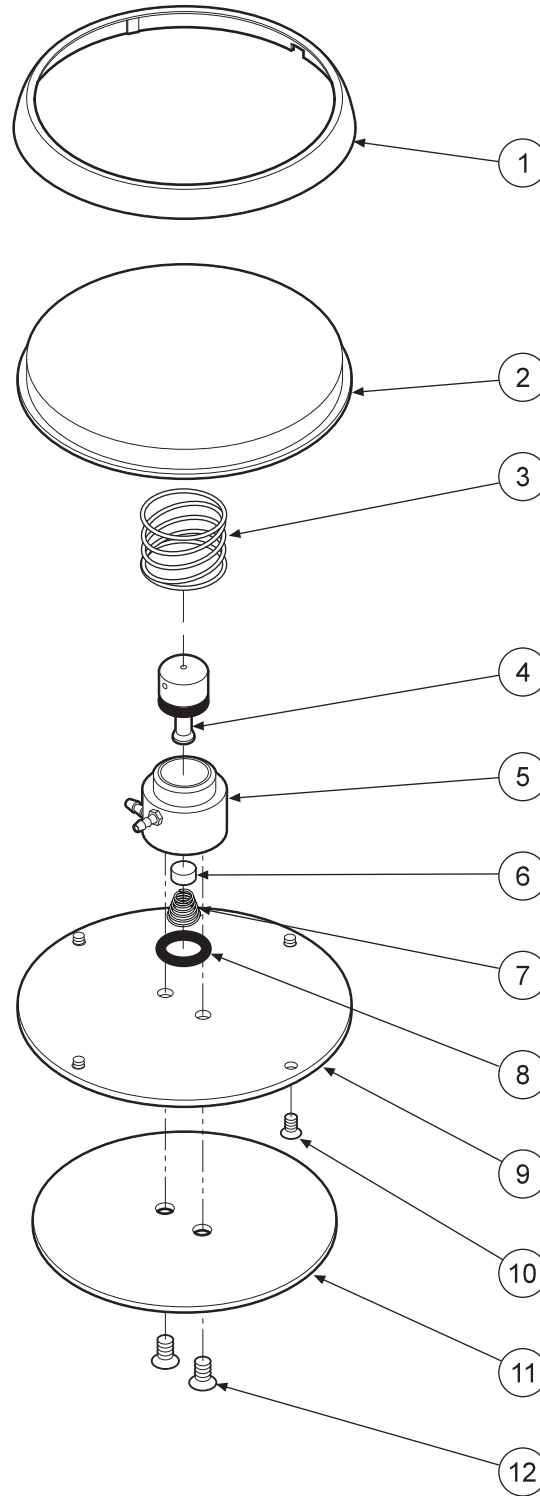
### Quick-disconnect Syringe Tip Assembly 113-230

1. Remove the existing hex nut. A hex nut wrench has been provided.
2. Remove the syringe tip adapter using the hex wrench.
3. Insert the new syringe tip adapter into the syringe head and tighten using the hex wrench.
4. Place the two (2) O-Rings into the syringe tip nut.
5. Screw the syringe tip nut onto the syringe tip adapter and tighten using the hex wrench.
6. Push the syringe tip into the syringe tip nut until it snaps into place.

### Replace Syringe Tip

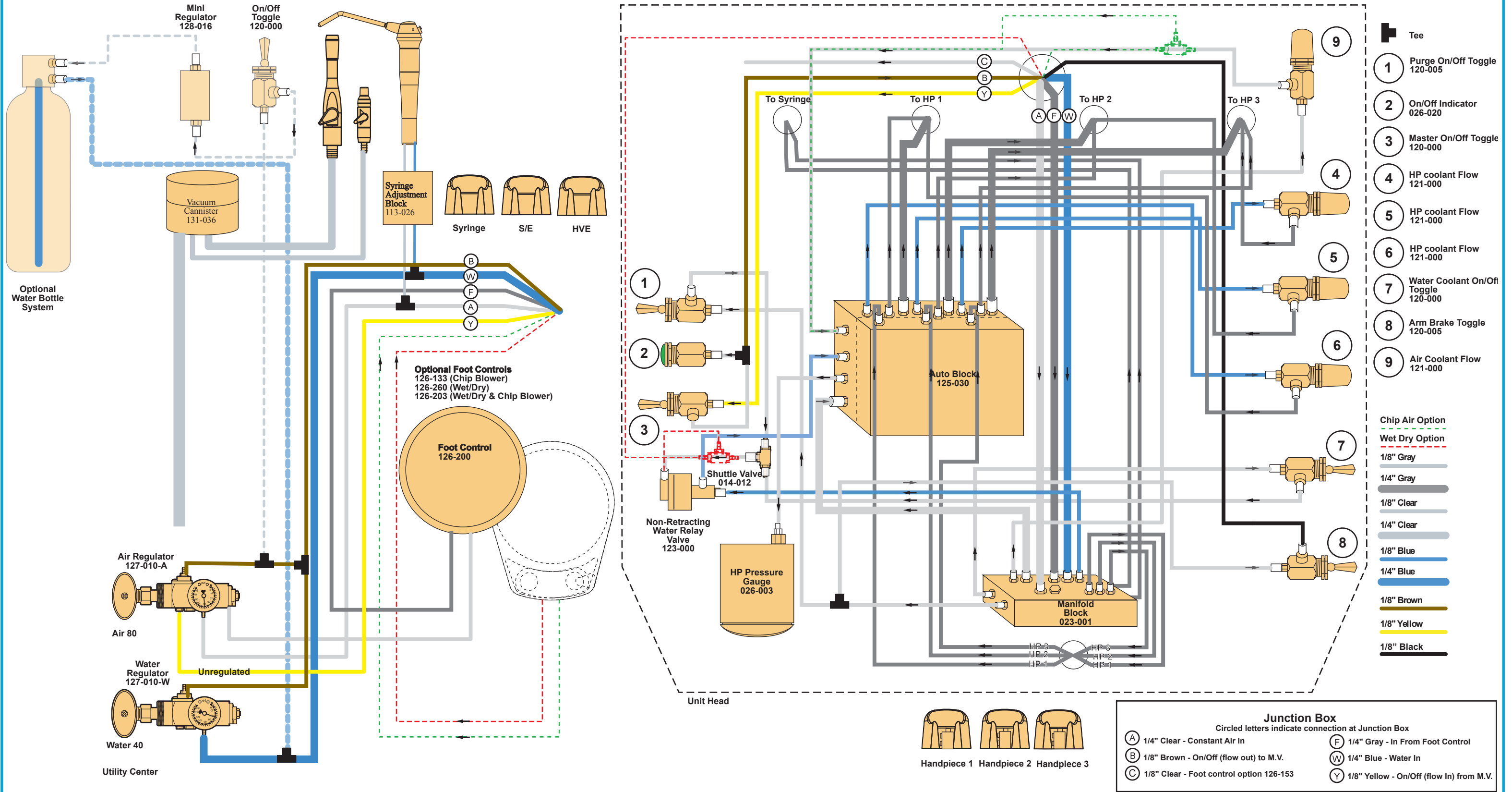
1. Pull the dirty syringe tip out and insert a clean syringe tip into the syringe tip nut until it snaps into place.

ITEM	PART DESCRIPTION	PART NUMBER	QTY
1	Syringe Tip .....	113-030	1
2	Syringe Tip Nut.....	113-402	1
3	O-Ring, 006 .....	017-006	2
4	O-Ring, 228-040 .....	017-023	1
5	Syringe Tip Adapter.....	113-227	1
6	O-Ring, 003 .....	017-003	1
7	Syringe Head.....	113-405	1
8	Syringe Button Repair Kit .....	113-403	2
9	Pin, Syringe Cartridge .....	113-008	1
10	Plastic Washer, 8-32.....	003-030	2
11	Barb, 8-32 x 1/16" .....	022-040	2
12	Syringe Handle.....	113-236	1



ITEM	PART DESCRIPTION	PART NUMBER	QTY
1	Ring.....	126-202	1
2	Cover.....	126-201	1
3	Spring.....	008-005	1
4	Stem (Includes 017-012 o-ring)..	126-005	1
5	Body.....	126-004	1
6	Poppet.....	126-006	1
7	Spring.....	008-006	1
8	O-Ring, 013.....	017-013	1
9	Baseplate.....	126-003	1
10	Screw, 4-40 x 1/4".....	001-005	4
11	Rubber Pad.....	126-007	1
12	Screw, 6-32 x 1/4".....	001-004	2

# IC Automatic Handpiece Control SC-4250



## WARRANTY

BDS warrants its product to be free of defects in material and workmanship for SEVEN FULL YEARS from the date of purchase on all units. Auto-blocks and standard foot controls are covered by a LIFETIME warranty when factory installed as part of a complete dental system. Upholstery has a TWO YEAR warranty and does not cover normal wear, stains, cuts or tears. Our LED lights have a FIVE year Warranty and our halogen light has a ONE year Warranty. Operatory chair motors feature a TEN year warranty. All warranty is limited to repair or replacement by BDS. Products returned to the factory and determined to be defective will be repaired or replaced free of charge at discretion of BDS. The warranty does not cover light bulbs, electrical components and trimmed or installed tubing. BDS reserves the right to void all warranties if any product is installed by other than an authorized technician. BDS' warranty does not cover damage to any surface finish, including but not limited to, discoloration or abrasion from cleaners, disinfectants or light sources. No claim for labor or consequential damages will be allowed. Return items must include a copy of the invoice or packing slip as proof of purchase.

**Beaverstate Dental Inc.**  
**115 S. Elliott Rd.**  
**Newberg, OR 97132**  
**800-237-2303**  
**503-538-8756**  
**503-538-2845 Fax**  
**[www.beaverstatedental.com](http://www.beaverstatedental.com)**

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