Better Water LLC

PB2
Mediport Portable RO
Service Manual

rev. Sep 2021

Better Water LLC; 698 Swan Dr; Smyrna, TN 37167; www.betterwater.com

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Our Company

Better Water LLC is a leading integrated manufacturer of water treatment equipment and components for the industrial, commercial and institutional markets.

Located in Smyrna, Tennessee, Better Water LLC continues its history of manufacturing and distribution of equipment specifically designed for the renal dialysis market.

Founded in 1971, Better Water LLC has built a reputation for solving our customers' toughest problems with high quality products and unmatched service.

Contact Us

Better Water LLC
698 Swan Dr
Smyrna, TN 37167

Phone (615) 355-6063
Fax (615) 355-6065

Technical Support:
Phone (615) 355-6063, press "1"
Email support@betterwater.com

Customer Service:
Phone (615) 355-6063, press "3"
Email customerservice@betterwater.com

Technical Phone Support

Support is available regarding all Better Water LLC systems,
24 hours a day,7 days a week.

- Normal business hours are Monday through Friday from 8:00 am until 3:30 pm, Central Standard Time (*excluding holidays*)

Call (615) 355-6063, press "1" for Technical Support

Emergency assistance is available after normal business hours *(including holidays)* by calling **(615) 708-8627.**

Technical Support Info Online

Our website, **www.betterwater.com**, which is updated frequently, contains a wealth of technical support information on the **SUPPORT** tab and includes:

- Operator and Service Manuals
- Consumables and Accessories Lists
- Technical Service Bulletins

For your convenience there are also online forms for placing **Orders** and requesting **Returned Goods Authorization**. These are PDF forms that can be downloaded and either faxed or emailed to us.

Specific Contacts

Technical Support	Phone	(615) 355-6063, option “1”
	Email	support@betterwater.com
To Place an Order (*purchase orders*)	Fax	(615) 355-6065
	Email	orders@betterwater.com
	Phone	(615) 355-6063
Customer Service (*returns*)	Phone	(615) 355-6063, option “2”
	Fax	(615) 355-6065
	Email	customerservice@betterwater.com

Website **www.betterwater.com**

Helpful information and forms that can be found on our website:

- Operator & Service Manuals
- Technical Service Bulletins
- Consumables and Replacement Parts List
- Brochures
- Order Form
- Return Goods Authorization Request Form

Introduction

This Service Manual has been developed for the purpose of ordering factory replacement parts and for Troubleshooting the PB2 units. This Service Manual is not intended to replace the Operator Manual, but serve as a supplement to it. Current versions of this Service Manual and the Operator Manual as well as other helpful information can be found on our website at www.betterwater.com/support.

It is important to understand that the Better Water PB2 unit is a ***Class II Medical Device*** and that non-factory replacement parts could affect the safety, performance, and warranty of the unit.

This manual includes parts lists, photographs, schematics and diagrams to assist you in servicing the unit.

NOTE concerning pictures in this manual:
Pictures of devices and components may vary slightly due to product changes, and therefore should be for general reference only. Information concerning their use, functionality, or replacement will not differ unless noted.

WARNINGS

1. It is unsafe to operate or service this device without first reading and understanding the **entire** Operator and Service Manuals. Keep this manual and other associated documentation for future reference.

2. Misuse, improper operation, and/or improper monitoring of this system could result in serious injury, death, or other serious reactions to patients undergoing hemodialysis treatment.

3. Misuse, improper use or handling of disinfectants and chemical cleaning solutions could result in serious injury or even death. You must comply with the information contained in the Material Safety Data Sheet (MSDS) for the chemical being used.

4. To avoid electrical shock hazard, do not operate this device when the covers or panels are removed.

5.  **ELECTROMAGNETIC INTERFERENCE: This device can create and radiate radio frequency energy and may cause harmful interference if not installed according to the manufacturer's instructions**.

CAUTIONS

1. When used as a medical device, federal law restricts this device to sale by or on the authority of a physician. Per CFR 801.109 (b)(1).

2. Improper operation of this device could result in a low or no-flow alarm on the dialysis machines.

3. Misuse or improper operation of this device will void any warranty.

4. Where water is mentioned, unless otherwise noted, it must be AAMI standard quality water.

5. Electrical and plumbing connections must adhere to local statutes and any facility codes. Connect this device to a proper ground connection in accordance with the National Electrical Code. Do not remove the ground wire or ground plug. Do not use an extension cord with this device.

6. Do not remove any Caution, Warning or any other descriptive labels from the device.

7. Do not operate this device in an explosive environment or in the presence of flammable materials. Do not use this device to store, mix or transfer flammable liquids.

8. Movement or vibrations during shipment may cause connections to loosen.

9. Do not operate this unit in an environment where temperatures may be below 50^{o} F or above 90^{o} F.

10. This device should not be used for purposes outside the device's stated applications, specifications or limitations.

QUICK REFERENCES

- PB2 Specifications, Requirements, and Features

- Maintenance Schedule for the PB2

- Differences Between PB2 Models 120V versus 220V

- Related Consumable and Replacement Parts

SPECIFICATIONS		
Capacity at 77°F	2600 cc's/min *(1000 gallons per day minimum)*	
Recovery Rate	50%	
Operating Weight	110 lbs.	
Dimensions	Height 30 ¾" x Depth 12" x Width 20 ½"	
Electrical *(two models)*	120 vac, single phase, 6.5 amps 220 vac, single phase, 6.5 amps	
Operating Decibels	55 dB	
Electromagnetic Interference *This equipment generates, uses, and can radiate radio frequency energy. If not used in accordance with these instructions, it may cause harmful interference to other devices in the vicinity.*	If such interference is determined to be coming from the PB2, then do the following to correct: - Reorient, relocate, and/or increase separation between the PB2 and the device experiencing the interference. - Connect the PB2 to a different electrical circuit than the device experiencing the interference.	
REQUIREMENTS		
Electrical	It is recommended that the PB2 be plugged into a dedicated G.F.I. plug, and be on a stable power supply. Do not use power strips or extension cords, and do not operate on an emergency electrical supply or any unstable power supply that may supply over or under voltage.	
Incoming Water Requirements	Flow/Pressure Total Chlorine Chloramines Silt Density Index Operating pH Range Optimum pH range Total Iron Total Hardness Temperature Range Optimum Water Temp.	Minimum: 2.2 gpm at greater than 10 psi <0.1 parts per million (ppm) < .01 parts per million (ppm) < 5 3 – 11 5 – 8 < 0.1 parts per million (ppm) < 10 grains per gallon (gpg) 50°F - 85°F 77°F (25°C) The PB2 is normally connected to a cold water supply. The performance specifications are based on 77°F (25°C) feed water temperature. The PB2 product flow will decrease approximately 1.5% with each degree Fahrenheit drop, or 3% with each degree Celsius drop. Serious damage can result if the temperature reaches or drops below freezing.
Drain Requirement	Drain capable of discharging 2 gpm	
General Operating Pressures	Filter-In: 20-40 psi, Filter-Out: 10-40 psi, Pump: 90-150 psi, Product: 0-70 psi	
FEATURES		
Membrane	One - 4" x 21" TFC Membrane	
Internal Filters	Pre Filter, 5 micron Filter *(sediment)* Pre Filter, 10" Carbon Block *(chlorine/chloramines)* Final Filter, Capsule Filter *(pyrogen)*	
Standard Alarms	Poor Water Quality, Low Feed Pressure	
Pressure Gauges	Filter-In, Filter-Out, Pump, Product	
Water Quality Monitor	Digitally displays: % Rejection, Feed TDS, Product TDS, and Alarm Set Point	

MAINTENANCE SCHEDULE for the PB2							
PB2 Maintenance Tasks	**Each Shift**	**Daily**	**Monthly**	**3 Months**	**6 Months**	**12 Months**	**Other**
Check the system for leaks	X	X					
Monitor the system for unusual sounds	X	X					
Clean external surfaces	X	X					
Check pressures: Filter-In, Filter-Out, Product, & Pump	X	X					
Check Water Quality Monitor	X	X					
Check chlorine/chloramine	X	X					
Check water hardness *(if applicable)*	X	X					
Flush PB2	X	X					
Change Capsule Filter				X			
Change the 10" Carbon Filter				X			
Change 5 micron Filter				X			
Change the 4" x 21" Membrane							**As needed**
Low pH Clean			X	X			
High pH Clean				X			
Disinfect			X	X			
Calibrate Water Quality Monitor					X		
Test low pressure switch						X	
Clean lint from fan and motor intake						X	
Tighten PB2 fittings						X	
Perform Chemical, Microbial, and Endotoxin Testing on feed and product water as per AAMI requirements						X	
Perform PB2 amperage test							**Per your company policy**
Perform ground leakage test							**Per your company policy**
PB2 ACCESSORIES MAINTENANCE TASKS	**Each Shift**	**Daily**	**Monthly**	**3 Months**	**6 Months**	**12 Months**	**Other**
Check DI Cartridge & Monitor	X						
Change DI Cartridge			X				
External Sediment Filters				X			
External Carbon Blocks *- Move Polisher to Worker position and replace Polisher*				X			
External Carbon Tanks *- Move Polisher to Worker position and rebed/replace Polisher*				X			
Perform Divert-to-Drain Functionality Test				X			
Replace Divert-to-Drain Solenoid Diaphragm						X	
Replace UV light bulb						X	
Clean UV quartz sleeve						X	
Replace UV quartz sleeve							**2 years**

DIFFERENCES BETWEEN PB2 MODELS 120V versus 220V

The operation and maintenance are the same for all models of the PB2, but there are a few parts that are different, specific to the device's voltage.

1. The following PB2 parts are different between the PB2 models:

Part Description	120V Model Part#	220V Model Part#
Transformer *(control box)*	ELMTTR00739	ELMTTR01907
Contactor *(control box)*	ELSICN009	ELSICN008
Piezo-Alarm *(control box)*	ELSAPZ01097	ELSAPZ01748
Red Indicator Light *(control box)*	ELPLLP00741	ELPLLP01362
Water Quality Monitor/Display Board *(control box)*	EQMOCO01067	EQMOCO1069
Cooling Fan *(internal)*	ELPBFN01036	ELPBFN01044
Recirculation Hydro-Block Assembly *(internal)*	EQSUBPB2HYDRECIRC	EQSUBPB2HYDRECIRC220
1/2HP Motor *(internal)*	EQMTOO00920	EQMTOO00921

2. PB2's Power Cord has Different Ends

The PB2's power cord, part number **ELPCOO00200**, comes with the standard 120V, three prong plug connection. If purchased it must have that connection cut off, and the following 220V, two prong plug connection added to it in order for it to be compatible with the 220V model.
- Part number: **ELHBPL01362** **"220V Euro Plug for PB2"**

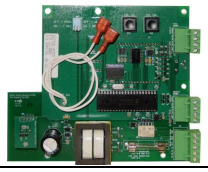
3. External Accessories are different between the PB2 models:

Part Description	120V Model Part#	220V Model Part#
PB2 UV Light Assembly *(VT4 complete with fittings)*	EQSUBUVPB2	EQSUBUVPB2220
PB2 UV Light *(VT4 UV light only)*	SUUV02017	SUUV02018
PB2 UV Light + Dual 20" Big Blue Filters Assembly	EQASSY20BB/UV	EQASSY20BB/UV220
PB2 UV Light, Power Supply/Ballast	EQSUBUVPB2-1	EQSUBUVPB2-3
Booster Pump Assembly *(complete with fittings)*	EQSUBPB2BP	EQSUBPB2BP-220V
End to End Disinfect Pump Adaptor	EQSUBPB2BP01925	EQSUBPB2BP01927

IF TECHNICAL SUPPORT IS REQUIRED, it is vital that you inform the technician, at the onset of any communications the voltage model of the device in question.

RELATED CONSUMABLE and REPLACEMENT PARTS		
DESCRIPTION	**PART#**	**PICTURE**
FILTERS, MEMBRANES, & RELATED		
10” Carbon Block - O-Ring **SUMIOO00587**	**SUCAOO00547**	
10”, 5 micron Pre-Filter - O-Ring **EQFHOO01588**	**SUCAOO00550**	
10” DI Polishing Filter	**SUCAOO00563**	
20” Carbon Block - Housing O-Ring **SUMIOO00587**	**SUCAOO01905**	
PB2 Capsule Filter	**SUCAOO01934**	
4” x 21” Membrane - Large O-ring **EQFHOO01587** - Small O-ring **EQFHOO01588**	**SUMEM01340**	
Filter Wrench for Slim-Line Filter Housings	**SUWROO00582**	
Filter Wrench for Big Blue Filter Housings	**SUWROO00584**	
Pictures do not reflect the size of the item in relation to the other pictures		

RELATED CONSUMABLE and REPLACEMENT PARTS		
DESCRIPTION	**PART#**	**PICTURE**
Short Bowl for Internal Carbon Block Filter	**PLFIS801951**	
False Tube for Capsule Filter	**EQSUBPB2FT**	
CHEMICALS		
BWI-2000, Alkaline Cleaner, high pH cleaner	**SUMCOO00571**	
BWI-1000, Acid Cleaner, low pH cleaner	**SUMCOO00572**	
BWI-3000, MemStore, Preservative	**SUMCOO00574**	
MinnCare Cold Sterilant, Disinfectant	**SUMCOO00575**	
MinnCare Residual Test Strips	**SUMCOO00576**	
MinnCare 1% Test Strips	**SUMCOO00577**	
Pictures do not reflect the size of the item in relation to the other pictures		

RELATED CONSUMABLE and REPLACEMENT PARTS		
DESCRIPTION	**PART#**	**PICTURE**
PB2 REPLACEMENT PARTS		
PB2 Pump Assembly (pump, fittings, and boot) - Pump only **EQPUPR00916**	**EQSUBPB2PUMP**	
PB2 1/2 HP Motor, 120V ***- OR -*** PB2 ½ HP Motor, 220V	**EQMTOO00920** ***- OR -*** **EQMTOO00921**	
Water Quality Monitor/Display Board, 120V ***- OR –*** Water Quality Monitor/Display Board, 220V	**EQMOCO01067** ***- OR -*** **EQMOCO1069**	
PB2 Power Cord ***"NOTE: Power cord comes standard with 120vac, 3 prong end. If ordering a replacement, for a 220vac model, additionally order: ELHBPL01362 "220V Euro Plug for PB2".***	**ELPCOO00200**	
1/4 Amp Fuse - On water quality monitor board	**ELLFFS01930**	
PB2 Flow-Meter By-Pass Kit	**EQKIT-PL004**	
PB2 Remediation Kit - Includes the parts to replace the internal filters, membrane, hoses, and tubing, as well as the primary external hoses (inlet, product, reject and disinfect).	**EQPB2REMEDIATION**	[No Picture]
Pictures do not reflect the size of the item in relation to the other pictures		

SERVICE INFORMATION

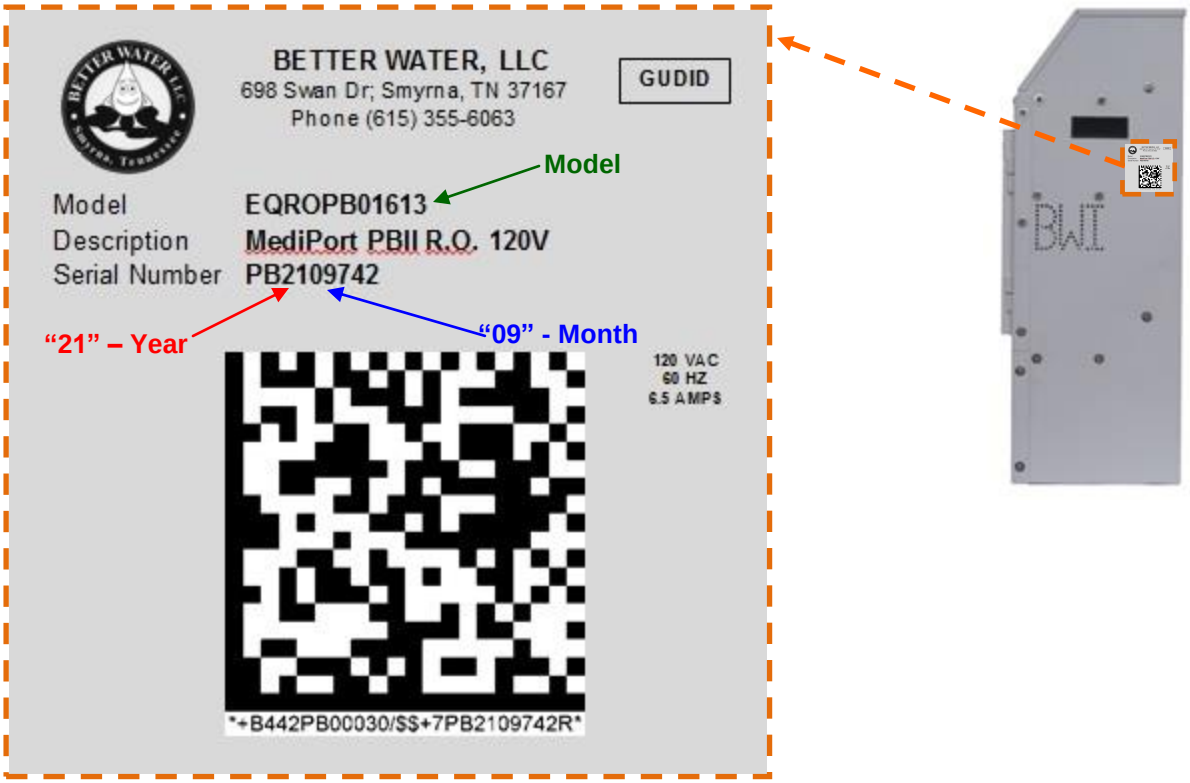
MODELS

There are two models of the **PB2**, based on the electrical requirements. The operation, service, and replacement parts of these two units are basically the same with the only difference being some electrical components.

Electrical
120 vac, single phase
220 vac, single phase

IMPORTANT INFORMATION FOR SUPPORT

Adhered to the side of the control box of each PB2 is a label containing important information relating to the specific unit, and details both the **Model** and **Serial Number**. Both of these pieces of information are very important in obtaining support, determining warranty, and properly servicing the unit. Please have this information available if you contact Technical Support.



The first four numbers in the serial number denote the year and month the device was manufactured. *In the example above the PB2 was produced in **2021**, in the month of **September**.*

MODEL CHANGES RELEVANT for SUPPORT and REPLACEMENT PARTS

The following is a summary of changes that were made and the time period they were made in that are relevant to support and determining the correct replacement part numbers. Refer to the section above concerning the serial number in determining the year and month the device was manufactured to determine the relevance of these changes to your device.

May 2016 – Removed Flow-Meter

The flow-meter was removed from the front panel, and a by-pass kit was made available for previously manufactured units. This kit's part number is **EQKIT-PL004 "PB2 Flow-Meter By-Pass Kit"**

Front Panel with Flow-Meter

Front Panel without Flow-Meter

December 2015 and March 2020 Changed UV Light Models

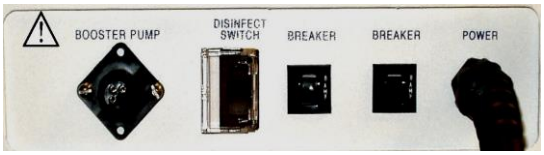
The Steri-Light UV and Wonder-Light UV models have been used over the life of the PB2.

Steri-Light UV

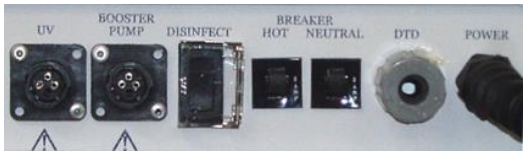
Wonder-Light UV

March 2013 – Control Box Changed

Connection points were added for the UV Light and the Divert-to-Drain. A piezo was also added which had previously been manufactured into the water quality monitor board.



Control Box Back with Old Connections



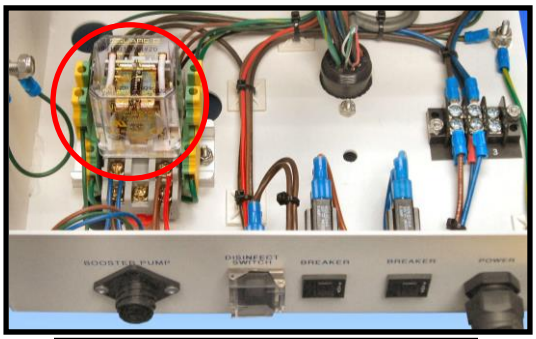
Control Box Back with New Connections

February 2009 – Fitting Changes for External Ports, and Their Related Hose

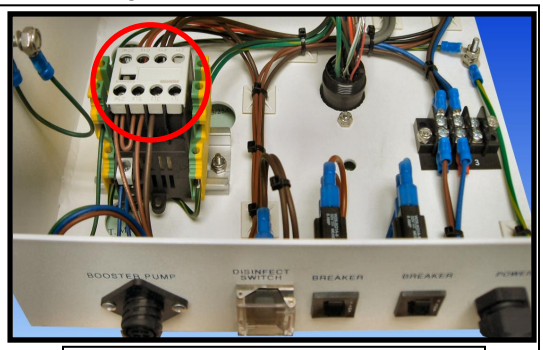
The fittings for the external ports were changed as well as their related hoses for easier connectivity. A tamper resistant fitting was also added to the product hose.

January 2005 – Replaced Relay with a Contactor

Models manufactured prior to this had a relay, which was changed to a contactor.

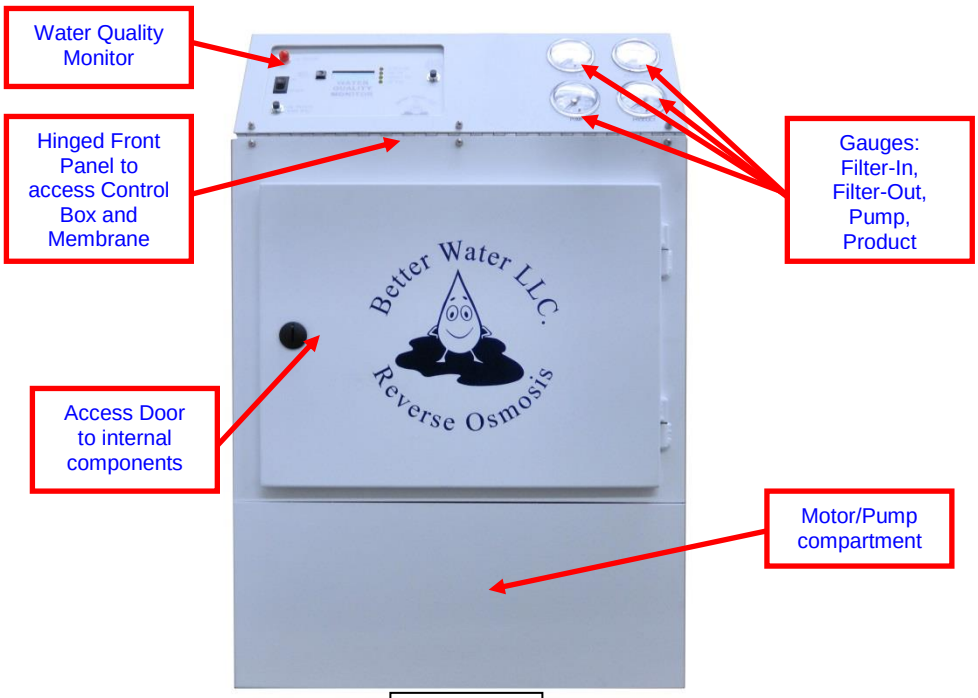


Control Box with Relay

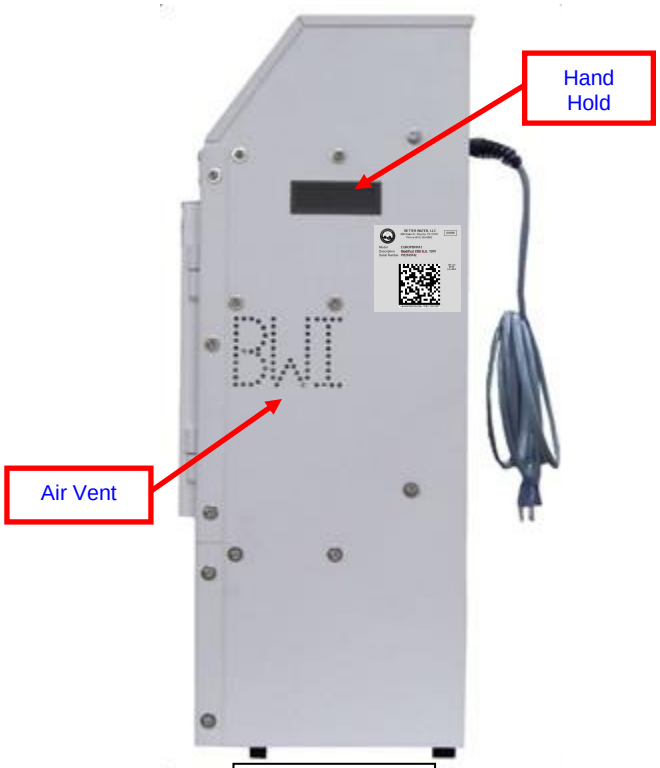


Control Box with Contactor

FRONT & RIGHT SIDE VIEWS

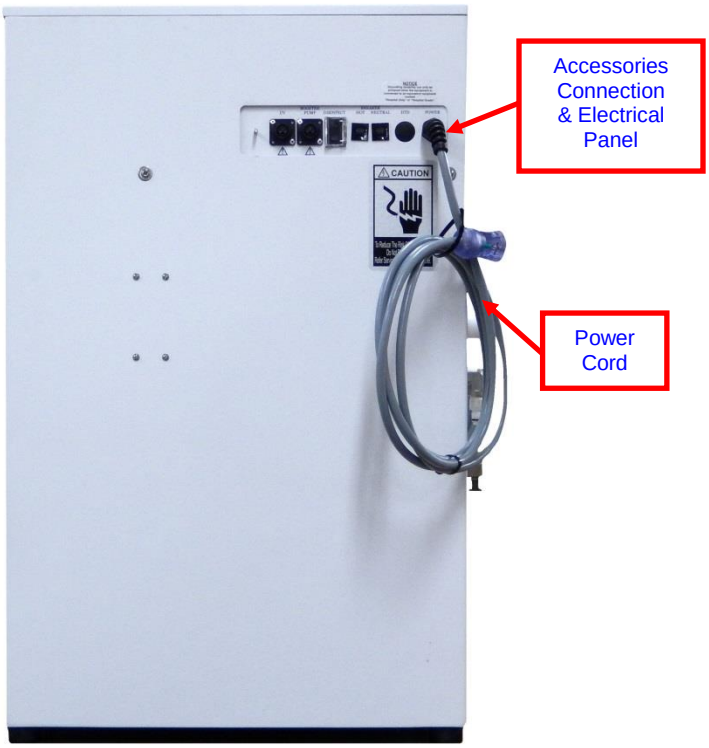


Front View

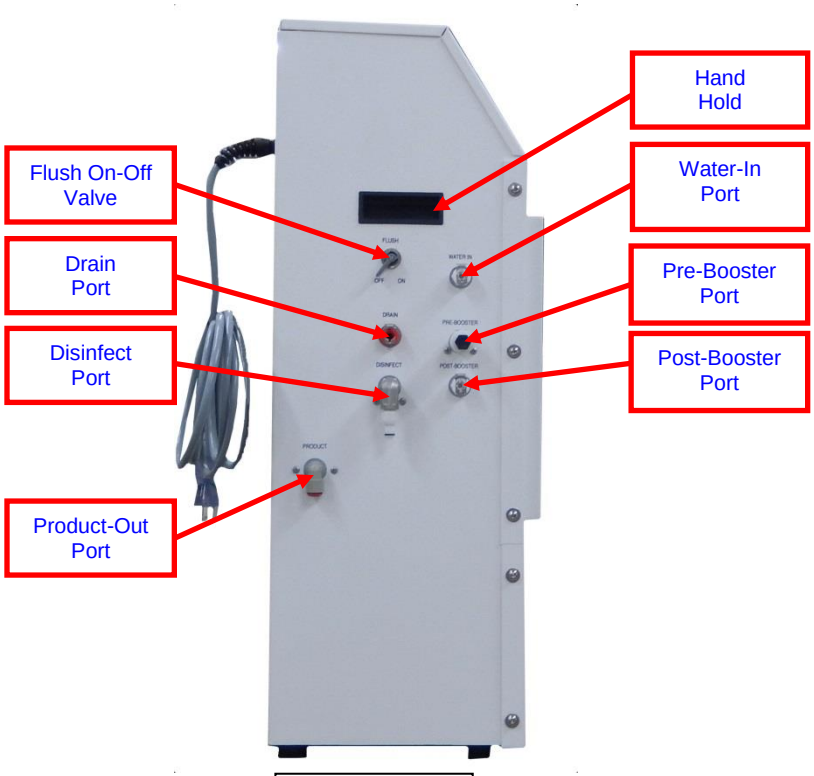


Right Side View

BACK and LEFT SIDE VIEWS

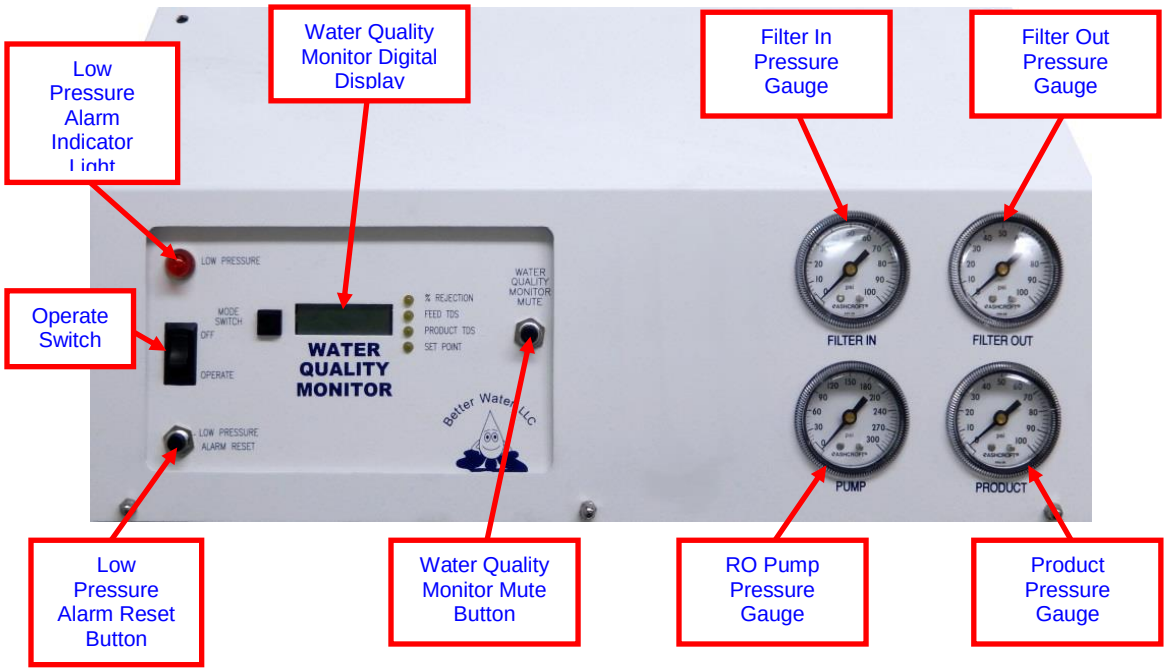


Back View



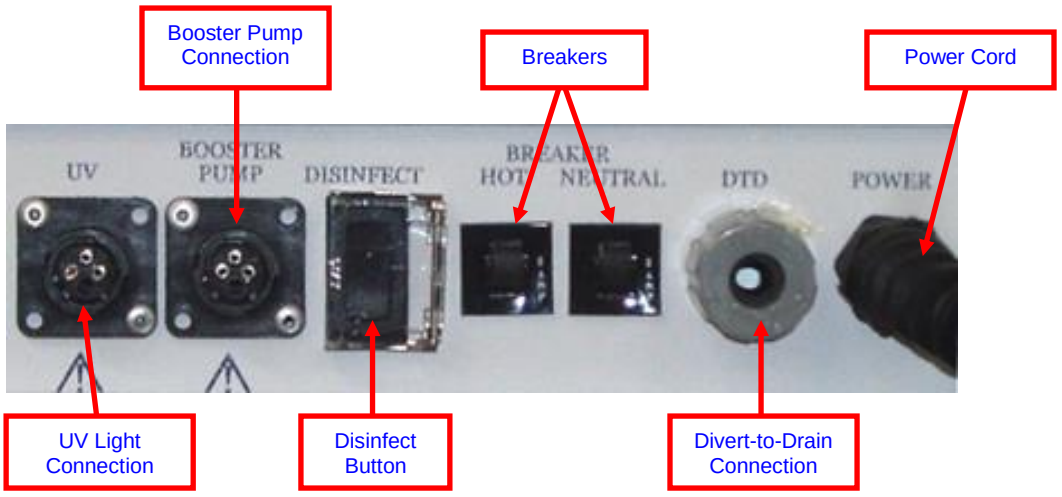
Left Side View

CONTROL PANEL, FRONT VIEW



** NOTE: Current model shown. Previous models had a flow meter on the front.*

CONTROL BOX, BACK VIEW



** NOTE: Current model shown. Previous models did not have a UV Light or DTD Connection.*

INSIDE FRONT PANEL VIEW

SCHEMATICS, DIAGRAMS, and CHART

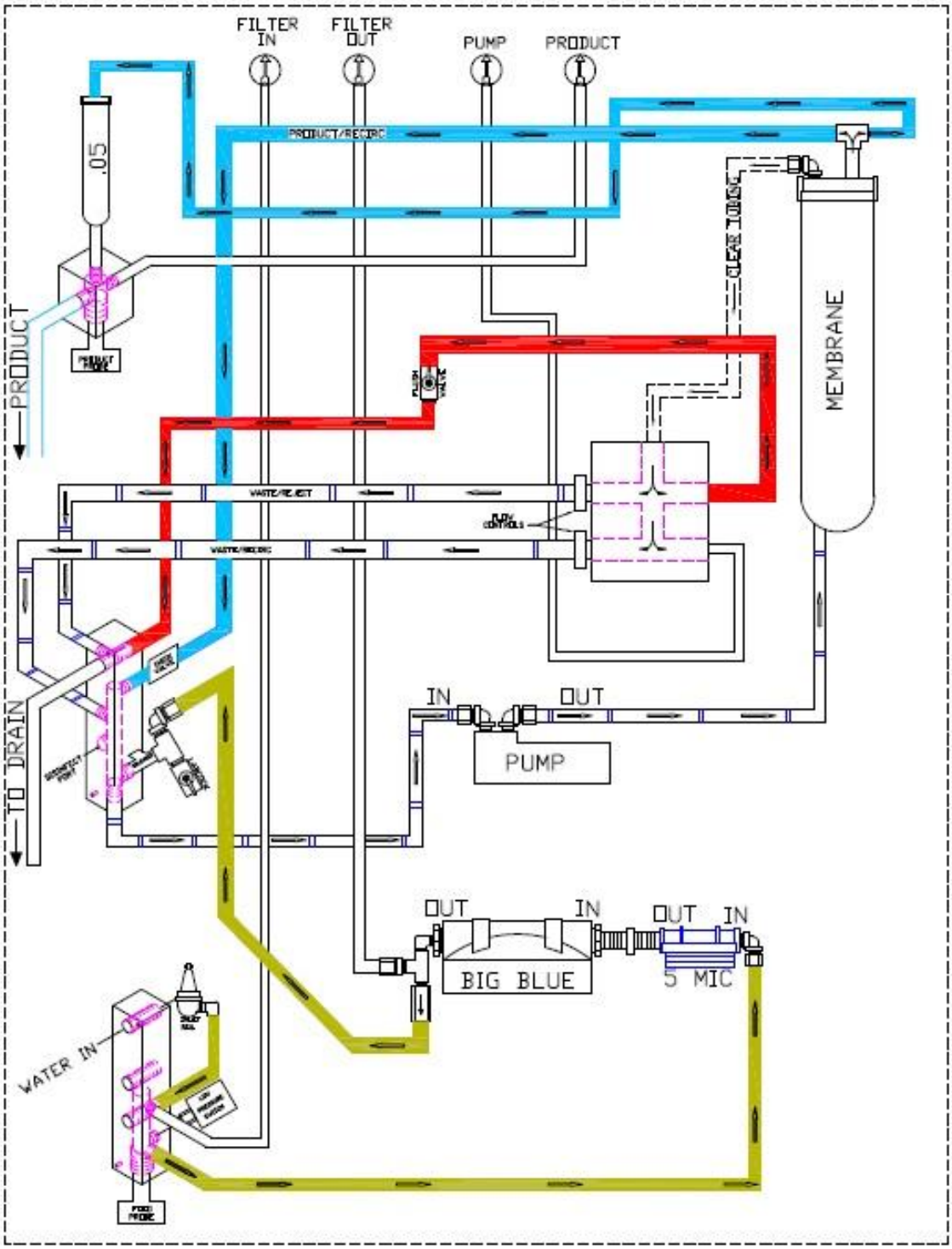
- PB2 Flow Schematic
- PB2 Flow Schematic with Booster Pump
- PB2 Flow Schematic with Loop Return

- PB2 Control Box, Electrical Diagram for Current Production Model
- PB2 Control Box, Electrical Diagram for Models Produced From January 2005 to March 2013
- PB2 Control Box, Electrical Diagram for Models Produced Prior to January 2005
- PB2 Motor Subassembly Wiring Diagram

- PB2 Membrane Flow Variance Based on Temperature Correction Factors Chart

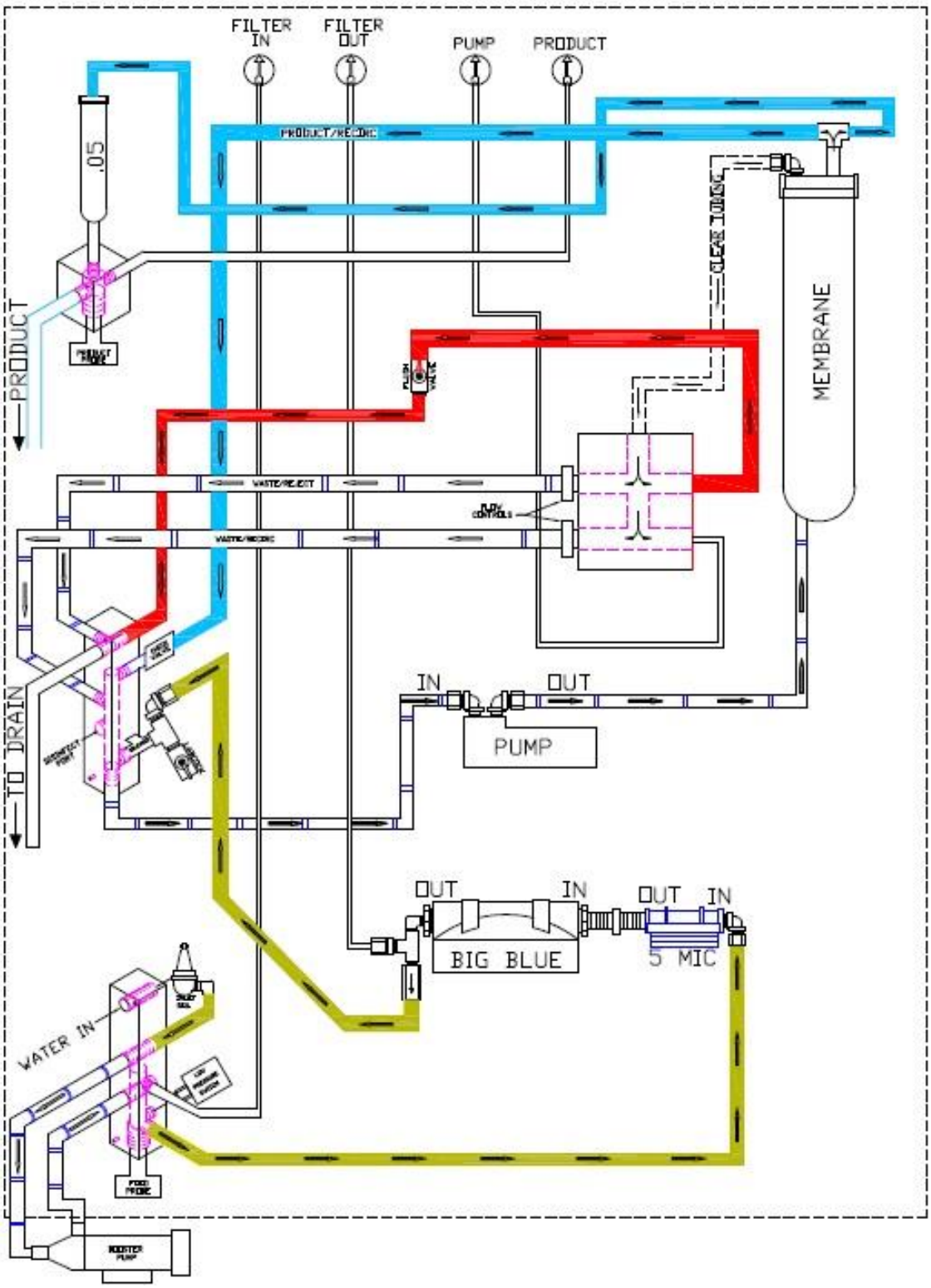
- Diagram of Water Hose Connections and Water Flow

FLOW SCHEMATIC



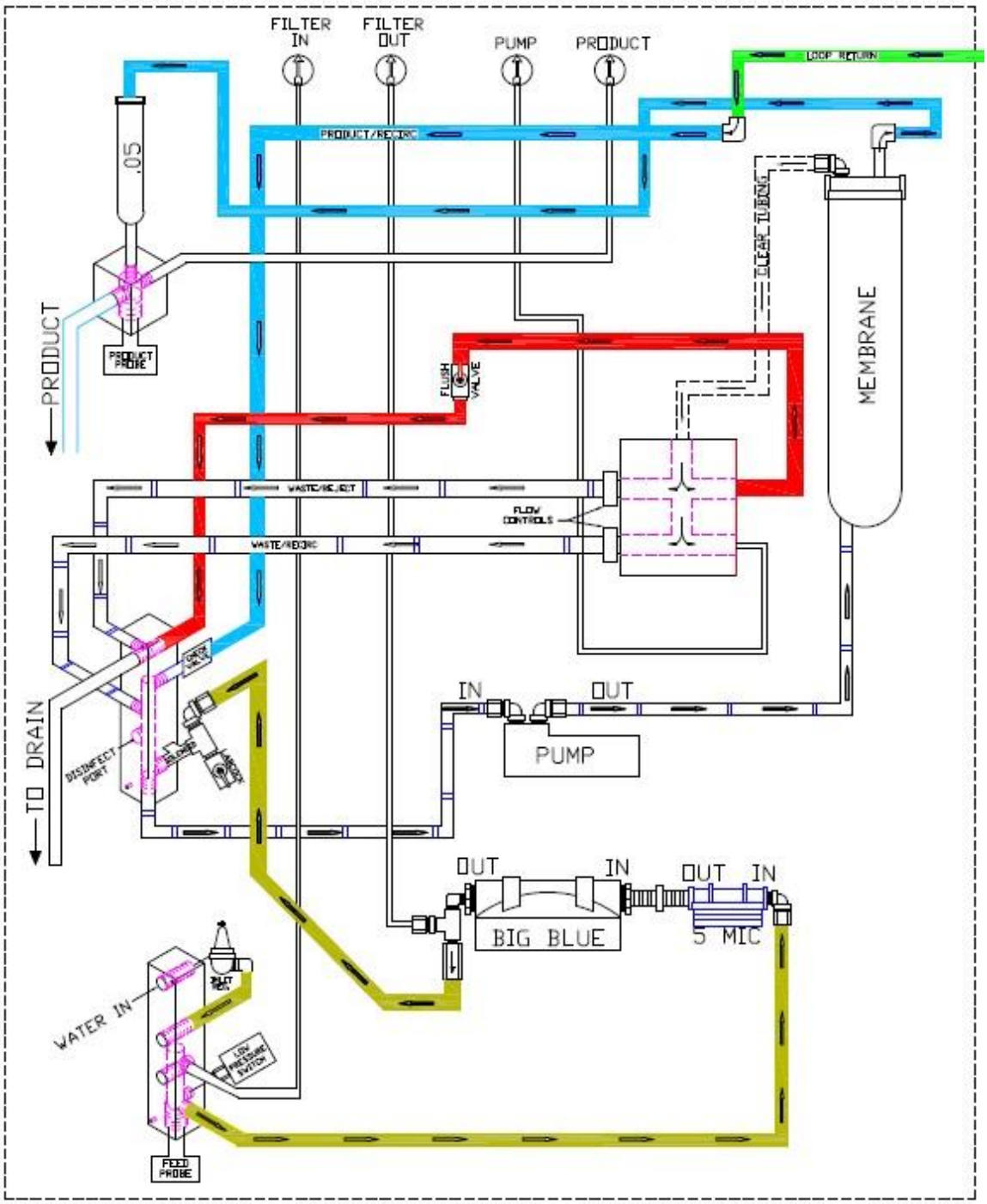
Ref DWG 1224, rev 4

FLOW SCHEMATIC with BOOSTER PUMP



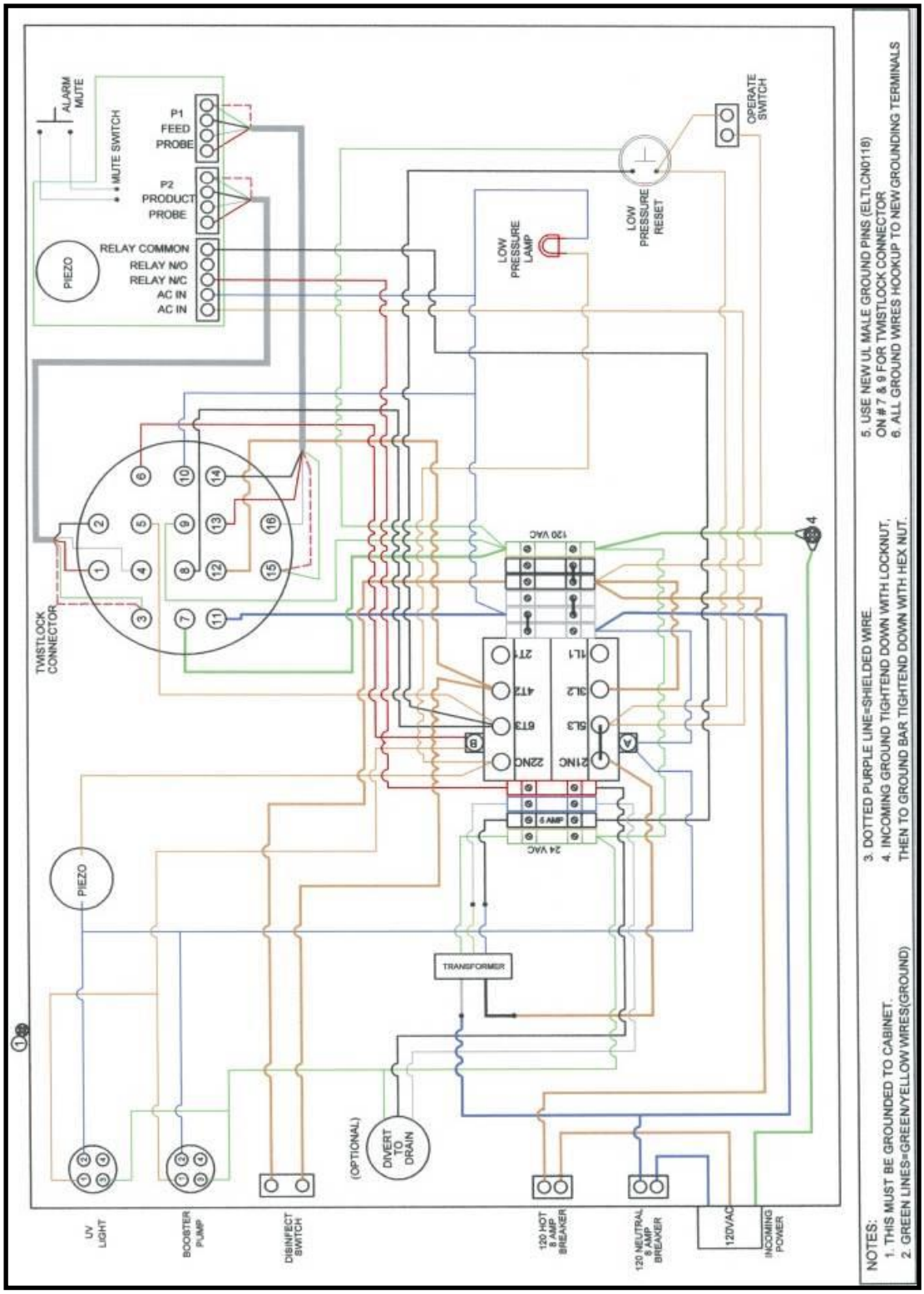
Ref DWG 1224, rev 4

FLOW SCHEMATIC with LOOP RETURN



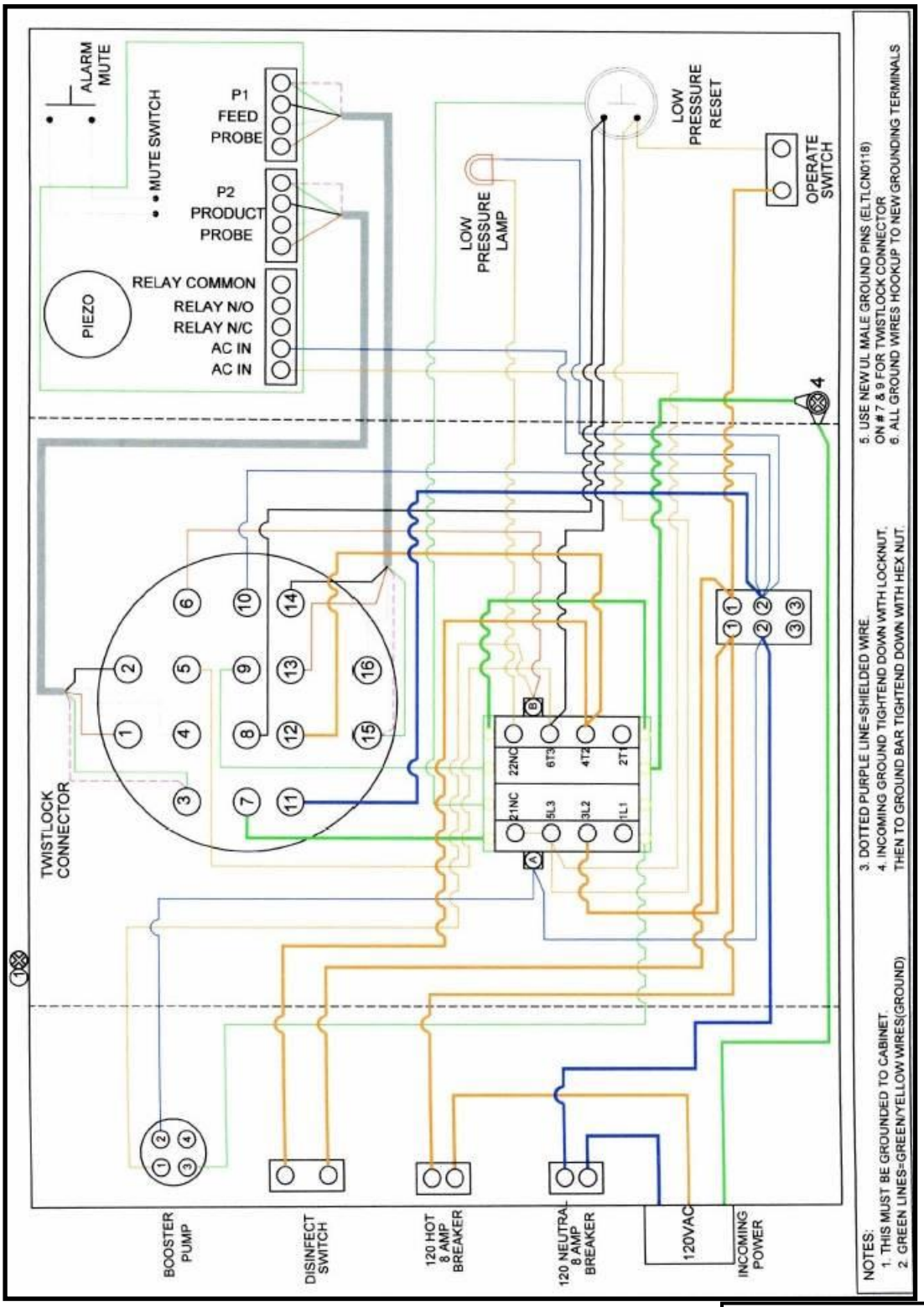
Ref DWG 1224, rev 4

CONTROL BOX, ELECTRICAL DIAGRAM for Models Produced March 2013 to Present



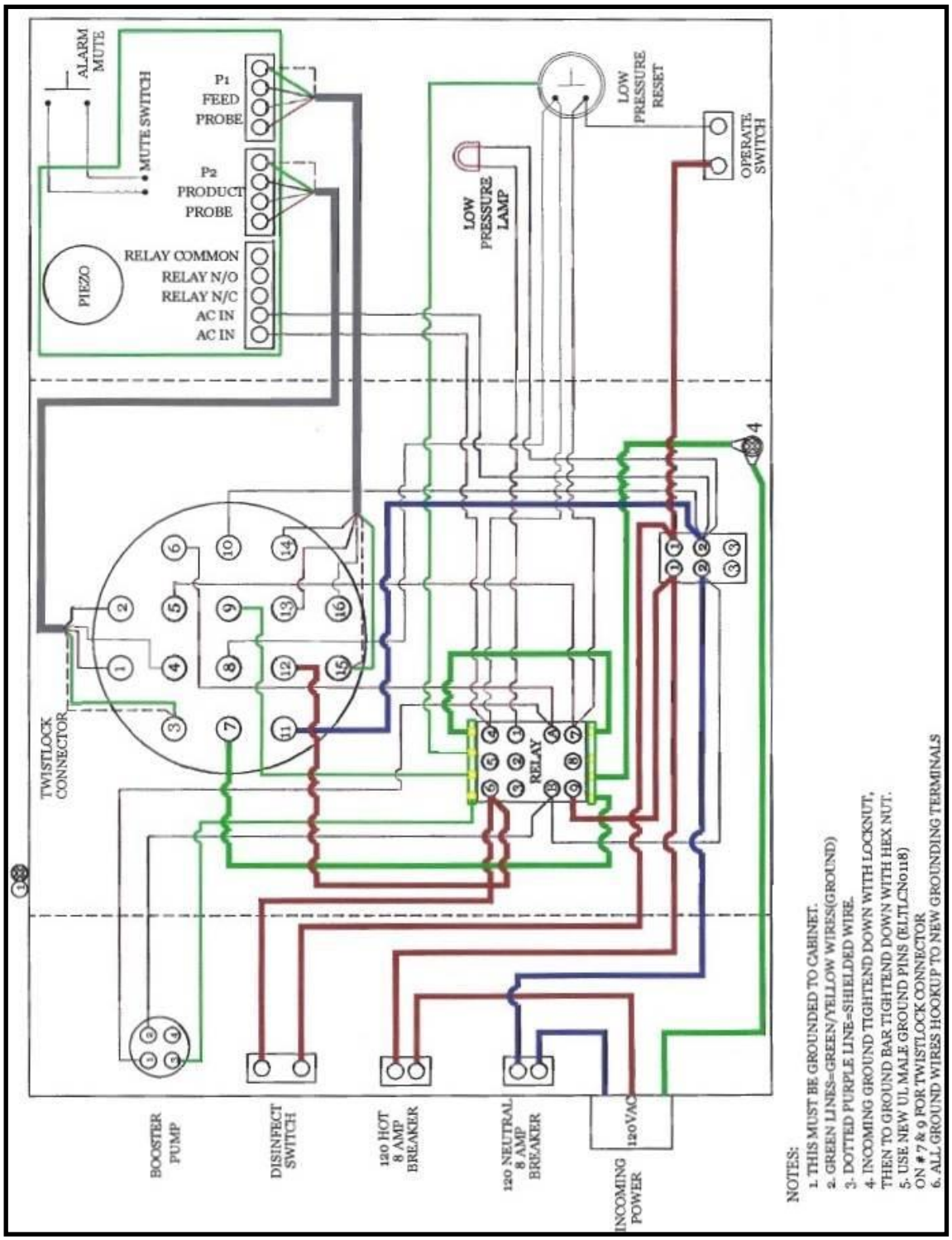
Ref DWG 3648, rev 1

CONTROL BOX, ELECTRICAL DIAGRAM for Models Produced January 2005 to March 2013



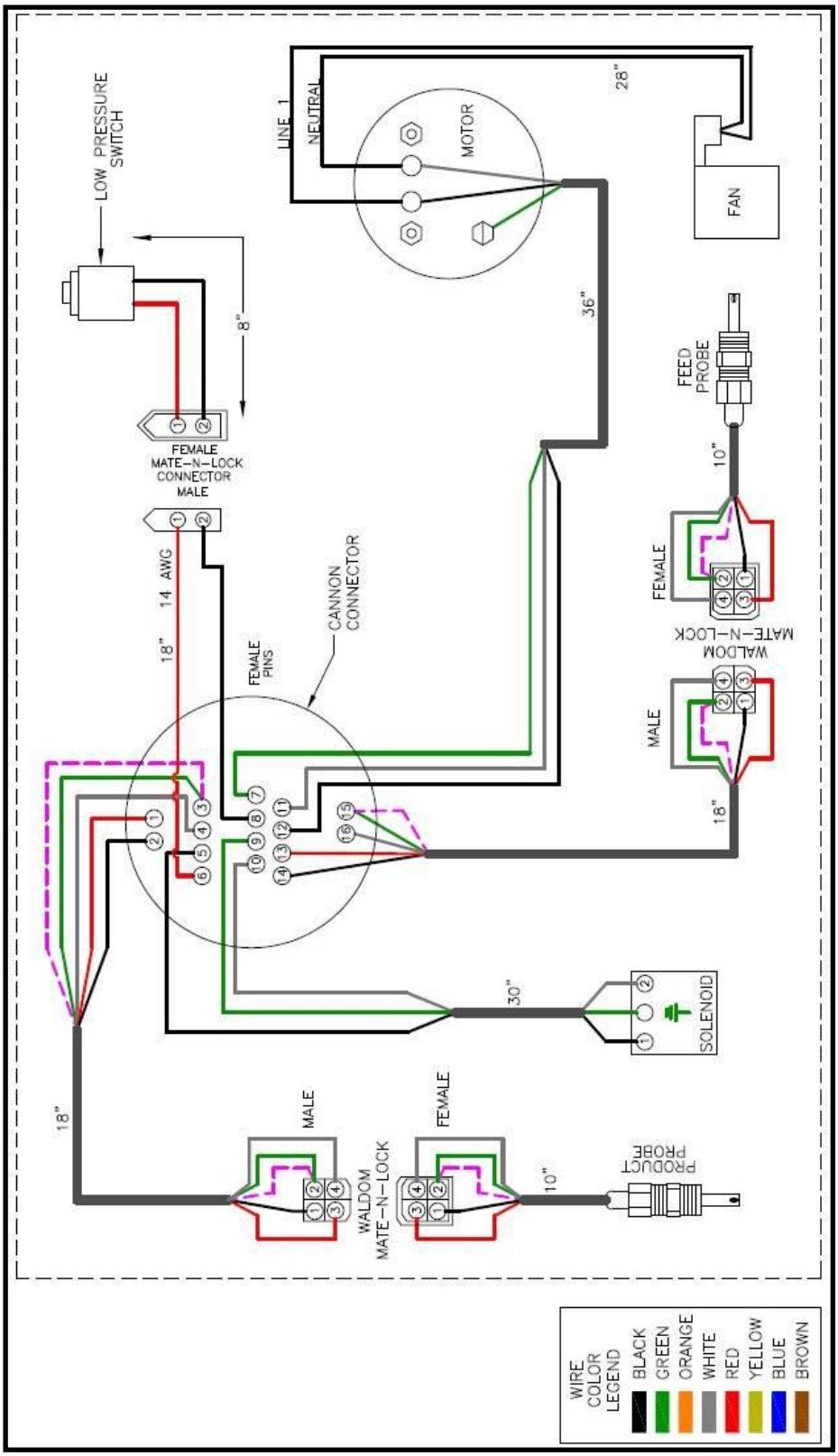
Ref DWG 1190, rev 6

CONTROL BOX, ELECTRICAL DIAGRAM for Models Produced Prior to January 2005



Ref DWG 1190, rev 4

MOTOR SUBASSEMBLY WIRING DIAGRAM



Ref DWG 1191, rev 6

PB2 MEMBRANE FLOW VARIANCE BASED on TEMPERATURE CORRECTION FACTORS CHART

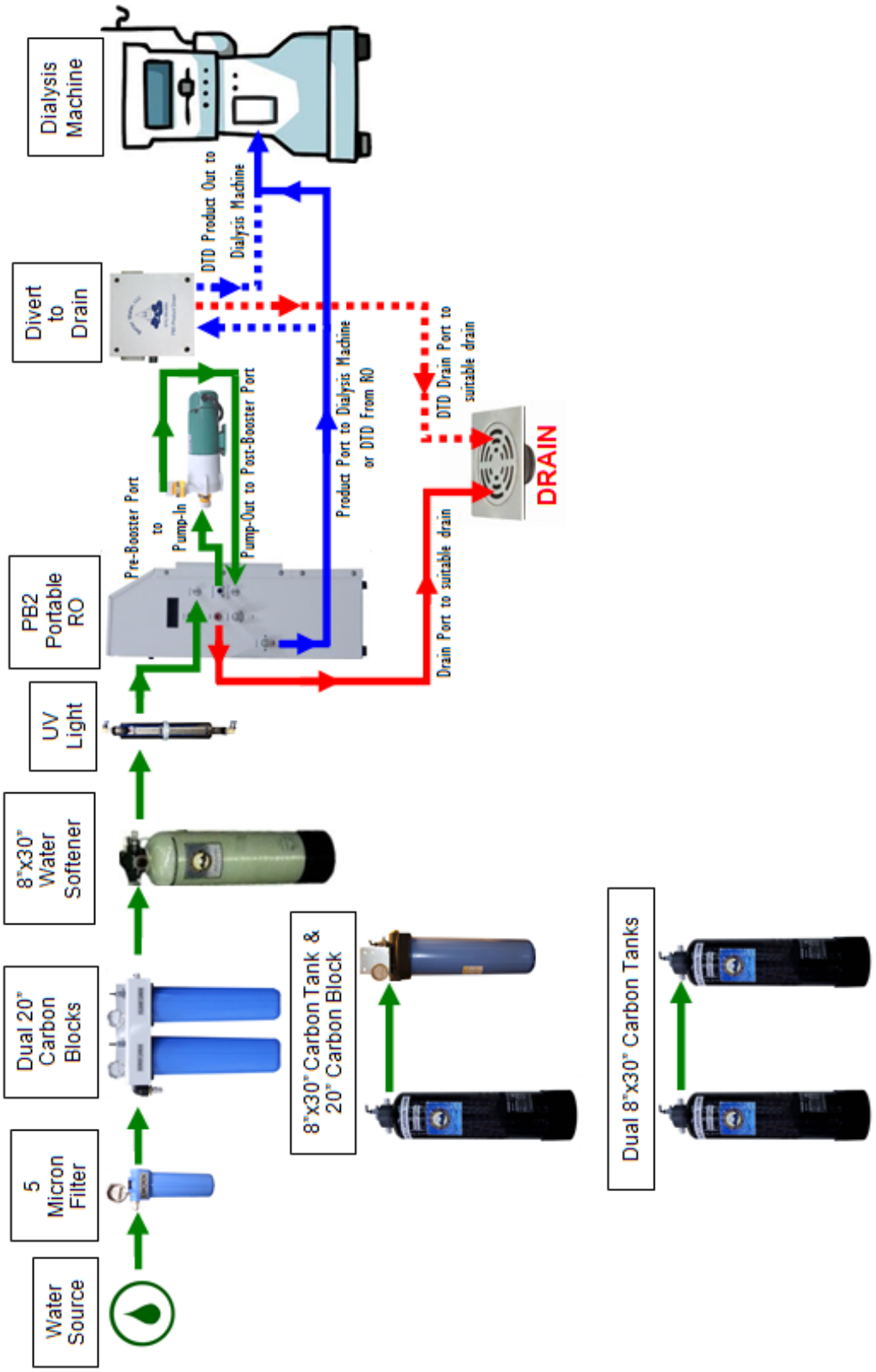
Permeate flow varies with feed water temperature. Divide the rated flow with the correction factor below to get the permeate flow at that temperature.

FORMULA: Rated Flow / Correction Factor = Adjusted Flow
EXAMPLES: At 41°F .7 gpm / 2.58 = .27 gpm
At 77°F .7 gpm / 1.00 = .70 gpm
At 86°F .7 gpm / 0.85 = .82 gpm

Temperature °C	Temperature °F	Correction Factor	Adjusted Flow *(Based on .7 gpm)*
5	41.0	2.58	.27 gpm
6	42.8	2.38	.29 gpm
7	44.6	2.22	.32 gpm
8	46.4	2.11	.33 gpm
9	48.2	2.00	.35 gpm
10	50.0	1.89	.37 gpm
11	1.80	1.78	.39 gpm
12	53.6	1.68	.42 gpm
13	55.4	1.61	.43 gpm
14	57.2	1.54	.45 gpm
15	59.0	1.47	.48 gpm
16	60.8	1.39	.50 gpm
17	62.6	1.34	.52 gpm
18	64.4	1.29	.54 gpm
19	66.2	1.24	.56 gpm
20	68.0	1.19	.59 gpm
21	69.8	1.15	.61 gpm
22	71.6	1.11	.63 gpm
23	73.4	1.08	.65 gpm
24	75.2	1.04	.67 gpm
25	77.0	1.00	.70 gpm
26	78.8	0.97	.72 gpm
27	80.6	0.94	.74 gpm
28	82.4	0.91	.77 gpm
29	84.2	0.88	.80 gpm
30	86.0	0.85	.82 gpm

** Data provided by Applied Membranes & Tri-Sep Membranes. Stated flow rates are ±10%.*
** Optimum temperature is 25°C / 77°F*

ORDER of PRE-TREATMENT and DIAGRAM of WATER FLOW

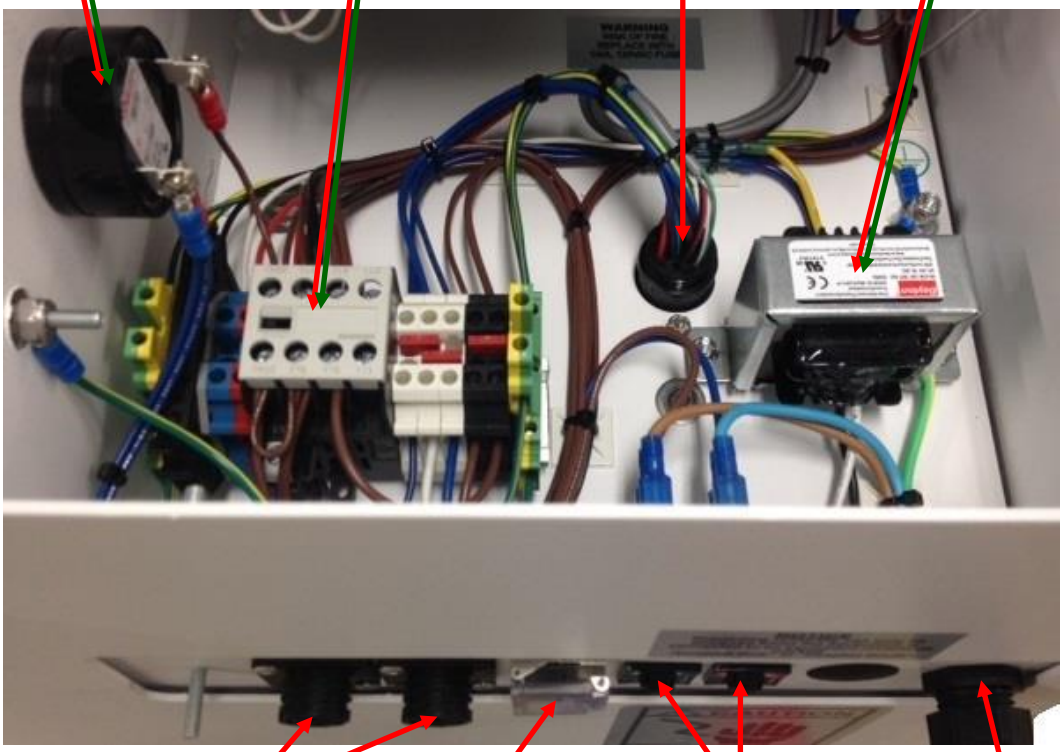


CONTROL BOX

Manufactured March 2013 to Present *(Difference: New UV Light and Divert-to-Drain Connections)*

Part# EQSUBPB2120CB2 – 120v model

Part# EQSUBPB2220CB – 220v model

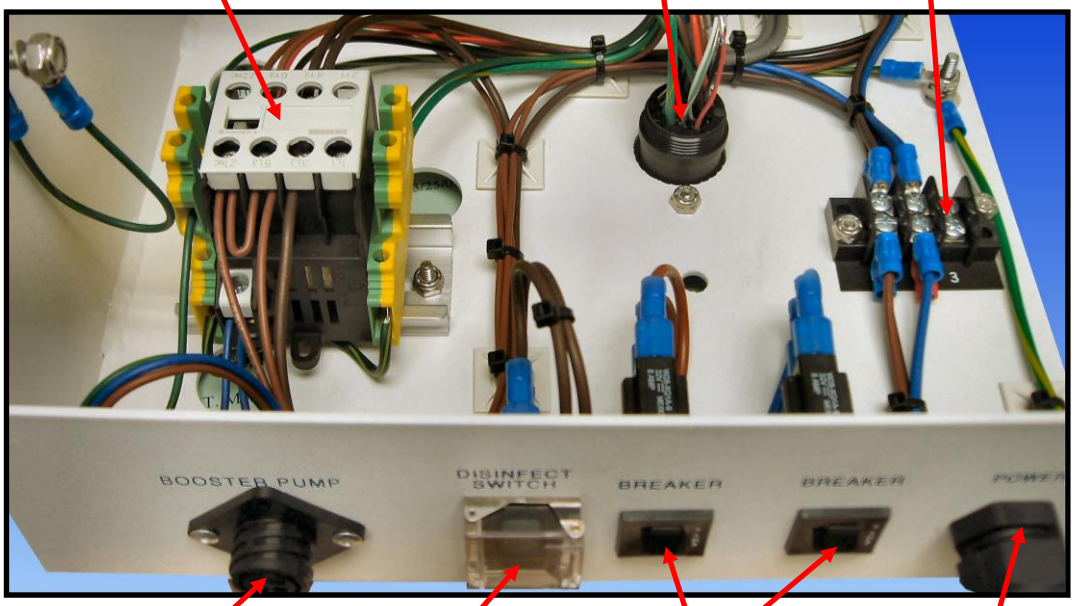


See related sections to follow:

- Reset and/or Replacing the Breakers in Control Box

CONTROL BOX

Manufactured January 2005 to March 2013 *(Difference: With Siemens Contactor)*



Siemens 120vac Contactor
ELSICN009

Amp/Caltronics 16 Pin Fem TL Connection
ELTLCN00753

Beau 3 Position, High Bridge Terminal Block
ELTERM01313

4 Pin Reverse Sex Receptacle
ELTLCN00762

Carling 125V/250V Black Disinfect Switch
ELPWSW00806

Honeywell Switch Guard
ELPWSW01120

P&B 8 Amp Breaker 120V/250V
ELPHBR00749

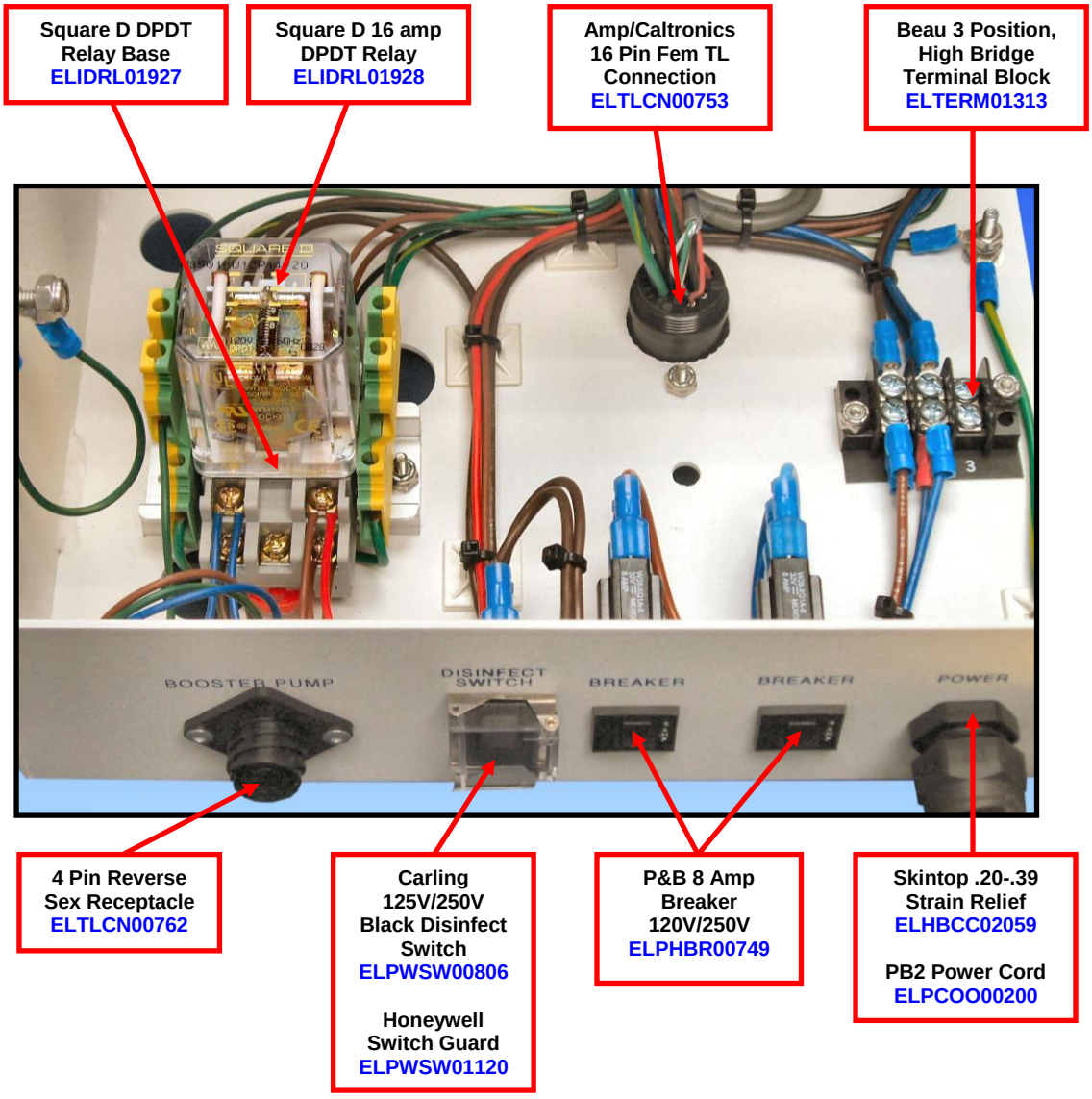
Skintop .20-.39 Strain Relief
ELHBCC02059

PB2 Power Cord
ELPCOO00200

See related sections to follow:
- Reset and/or Replacing the Breakers in Control Box

CONTROL BOX

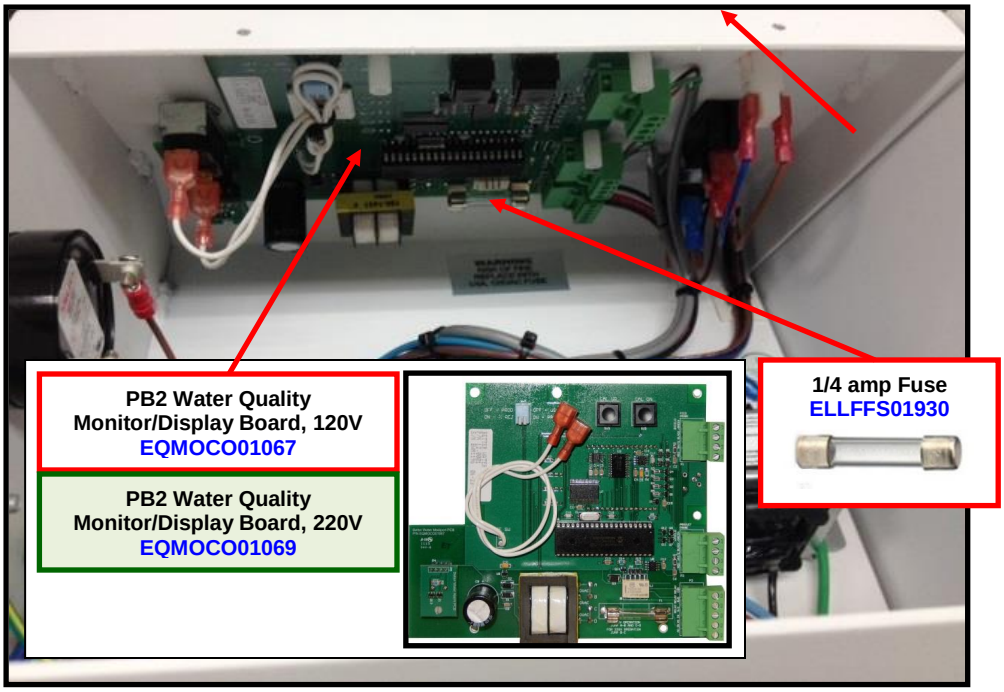
Manufactured Prior to January 2005 *(Difference with Square D Relay)*



See related sections to follow:

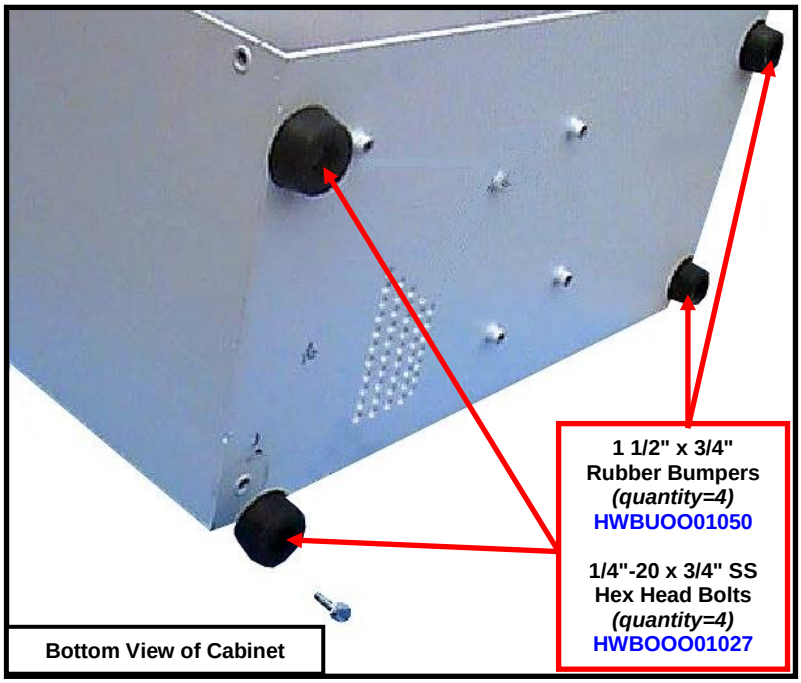
- Reset and/or Replacing the Breakers in Control Box

CONTROL BOX
Inside & Front of Lid

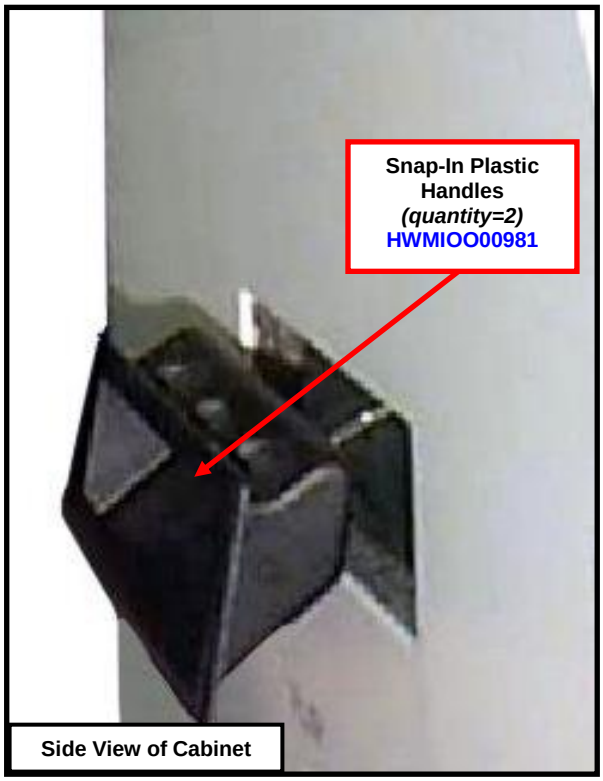


See related sections to follow:
- Calibrate the Water Quality Monitor
- Factory Reset Water Quality Monitor Board
- Replace Fuse on Water Quality Monitor Board
- Retro-Fitting a 510 Kilo-Ohm Resistor to a Water Quality Monitor Board
- Replacing the Water Quality Monitor Board
- Changing Water Quality Monitor Modes of Operation

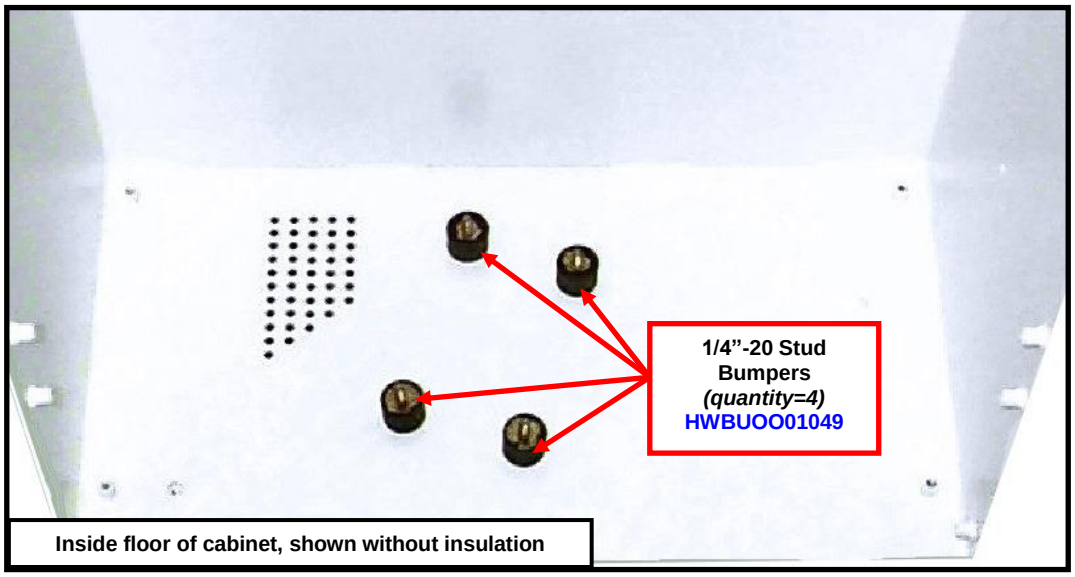
CABINET BUMPERS

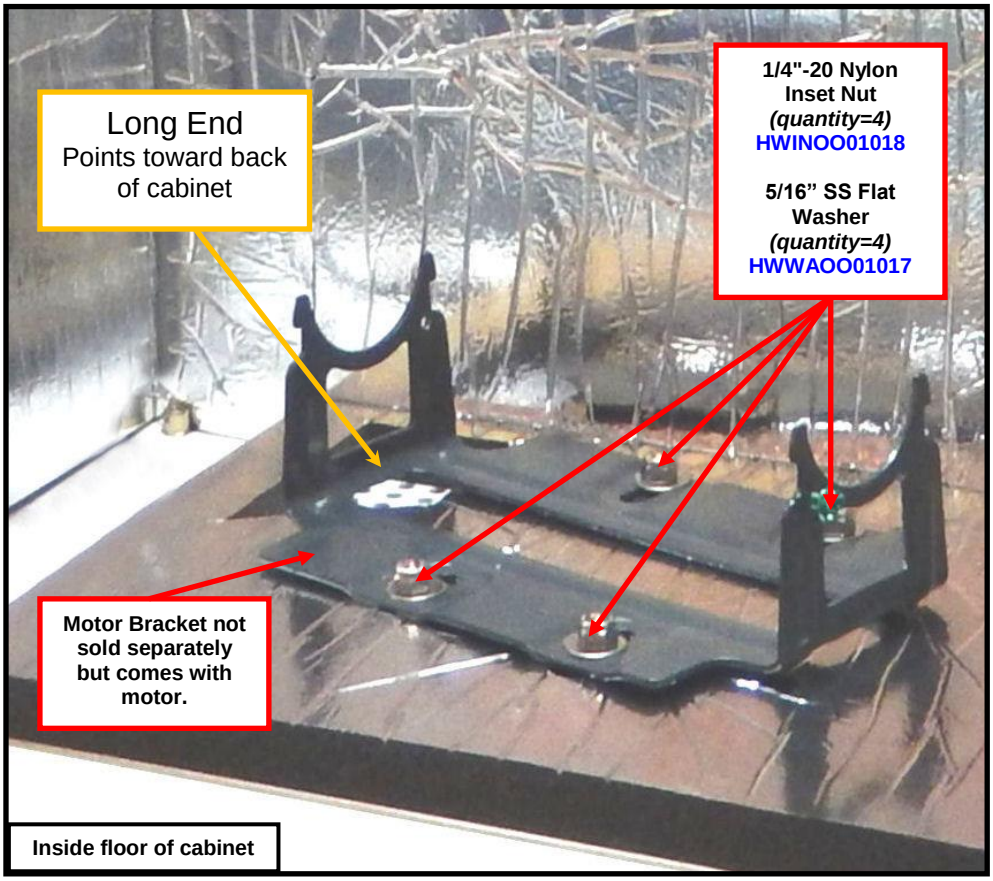


CABINET HANDLES

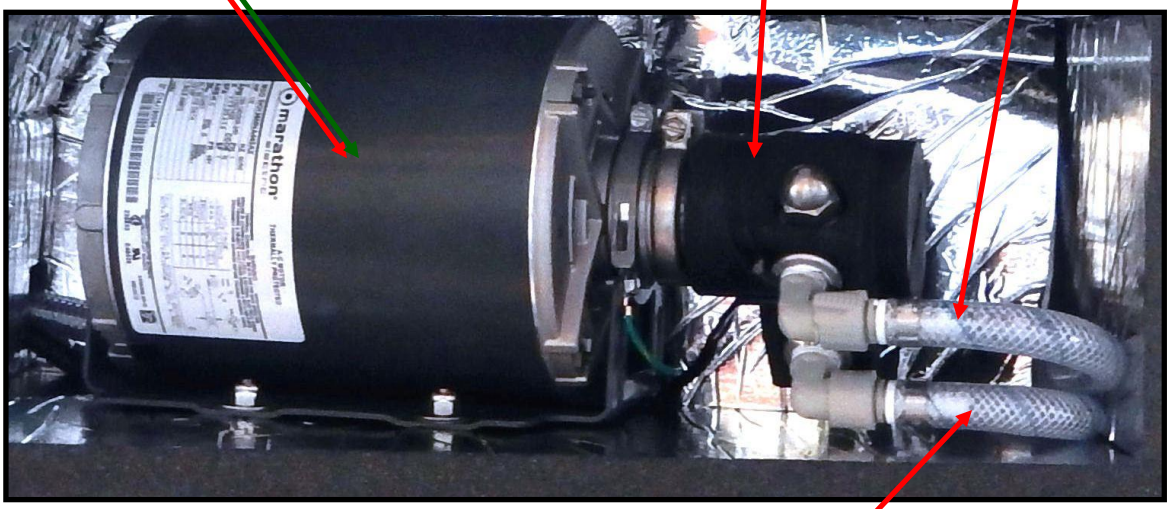


MOTOR MOUNTING BUMPERS and BRACKET

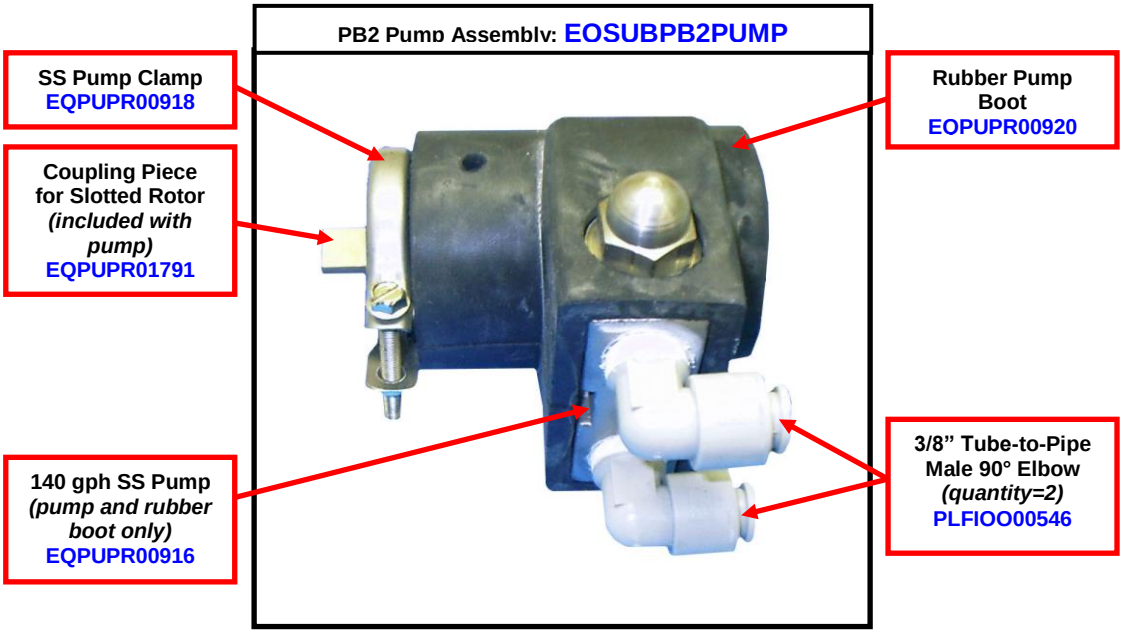




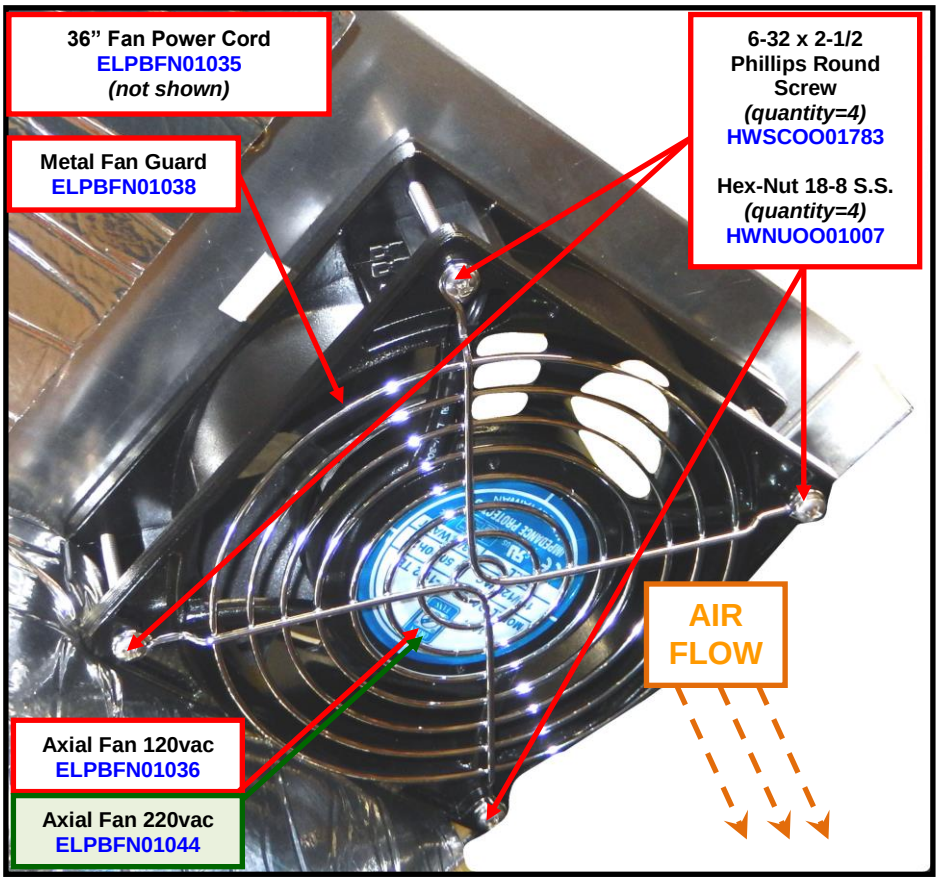
MOTOR and PUMP



See related sections to follow:
- PB2 Plumbing; Hoses (components for inlet and outlet hoses)

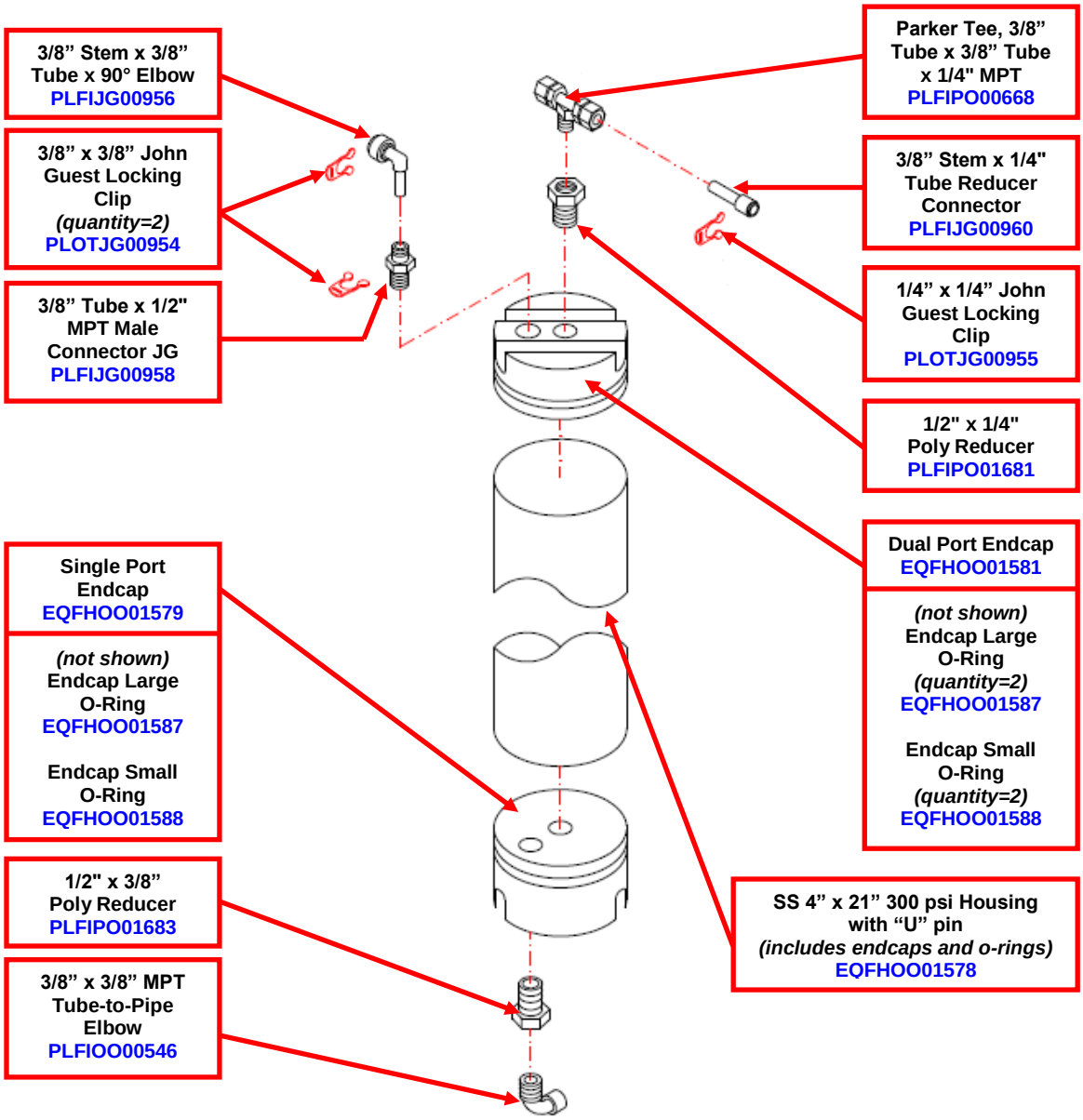


COOLING FAN


36” Fan Power Cord
ELPBFN01035
(not shown)
Metal Fan Guard
ELPBFN01038
6-32 x 2-1/2
Phillips Round
Screw
(quantity=4)
HWSCOO01783
Hex-Nut 18-8 S.S.
(quantity=4)
HWNUOO01007
AIR
FLOW
Axial Fan 120vac
ELPBFN01036
Axial Fan 220vac
ELPBFN01044

MEMBRANE HOUSING ASSEMBLY

Part# EQSUBPB2MEMHOU



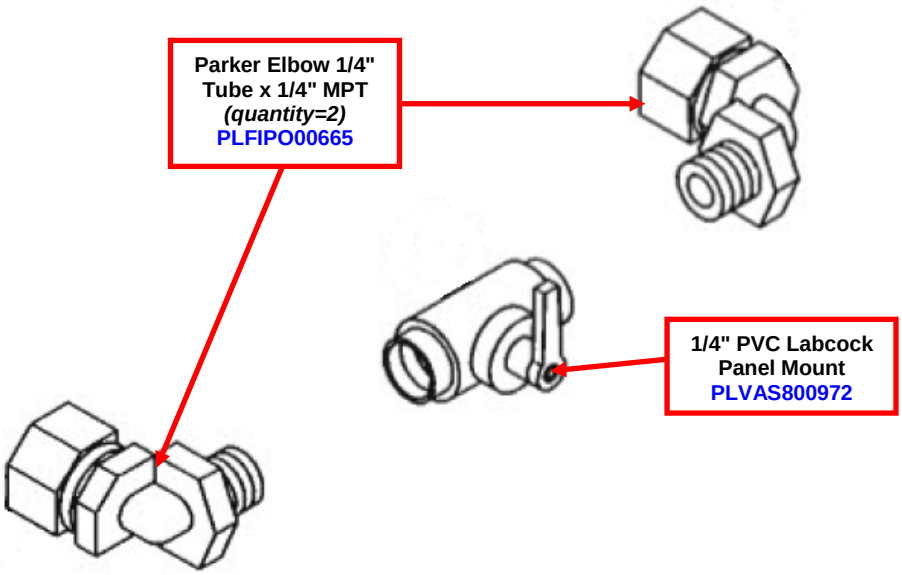
Top End of Housing

Membrane 4” x 21” Low Pressure for PB2 SUMEM01340

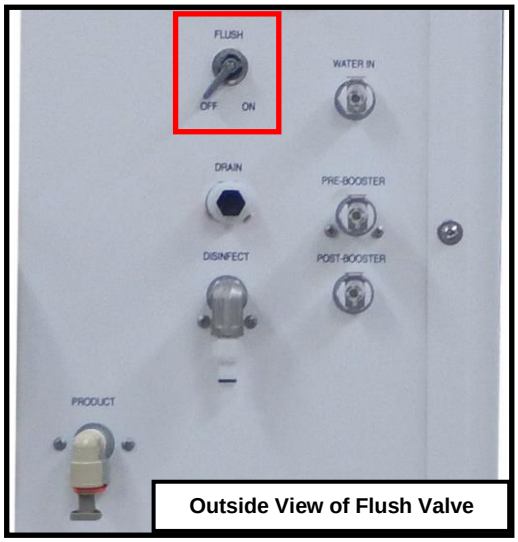
Bottom End of Housing

FLUSH VALVE ASSEMBLY

Part# EQSUBPB2FLVA



Inside Cabinet View

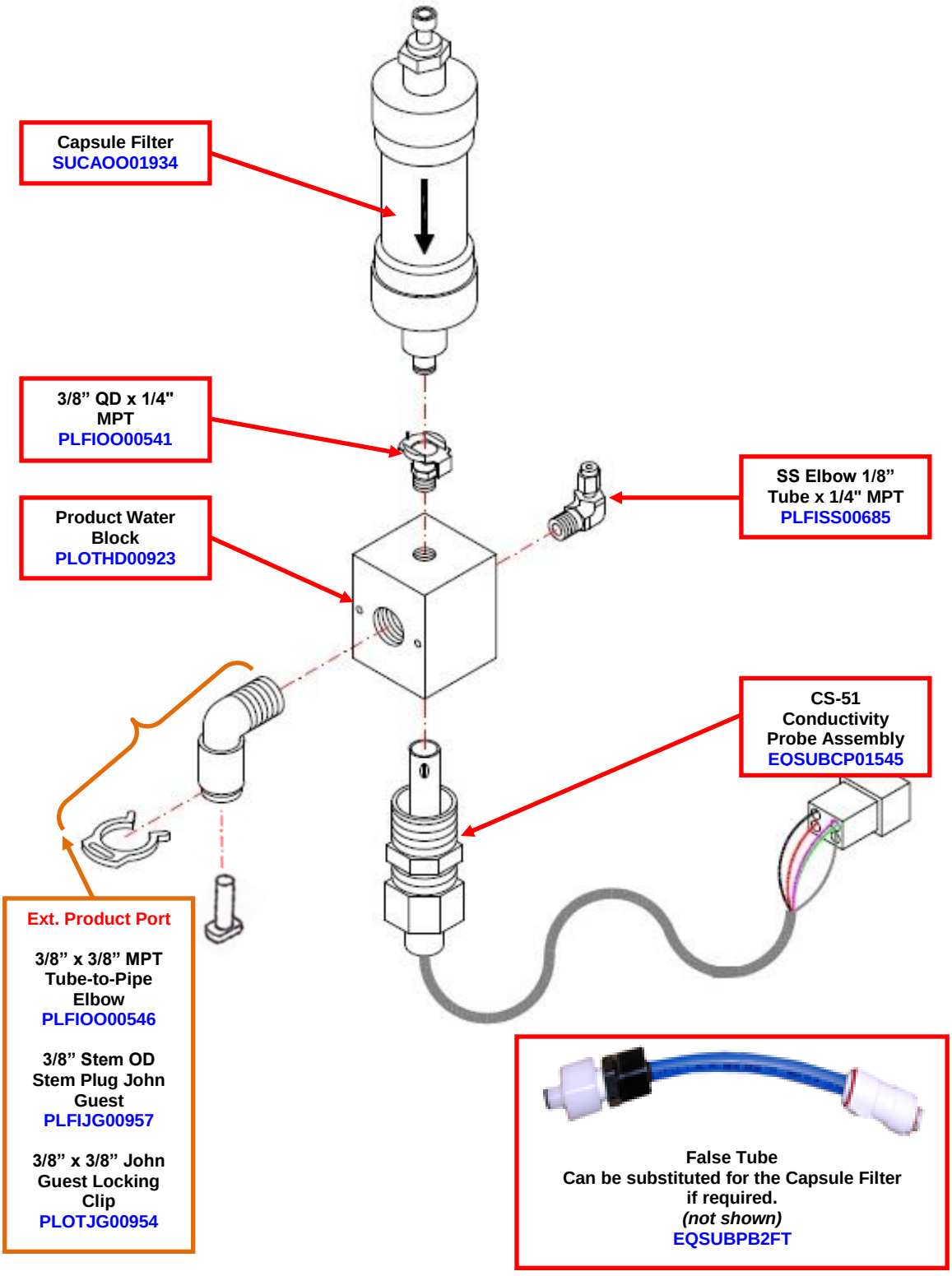


Outside View of Flush Valve

PRODUCT BLOCK ASSEMBLY

Manufactured February 2009 to Present *(Difference: Ext. Product Port)*

Part# EQSUBPB2HYDPROD

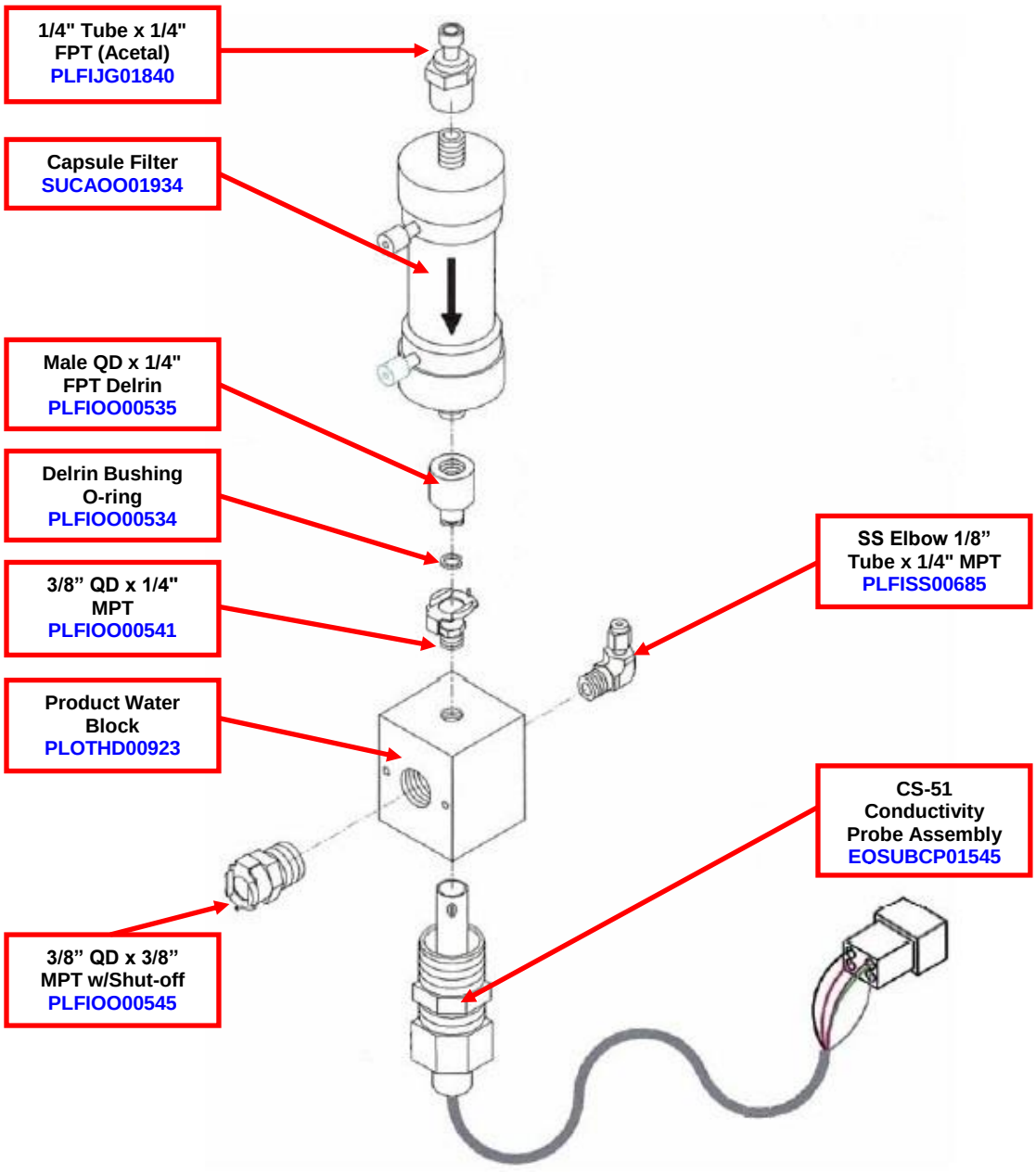


Inside Cabinet View

Outside View of Product Port

PRODUCT BLOCK ASSEMBLY

Manufactured Prior to February 2009 *(Difference: Ext. Product Port)*



Inside Cabinet View

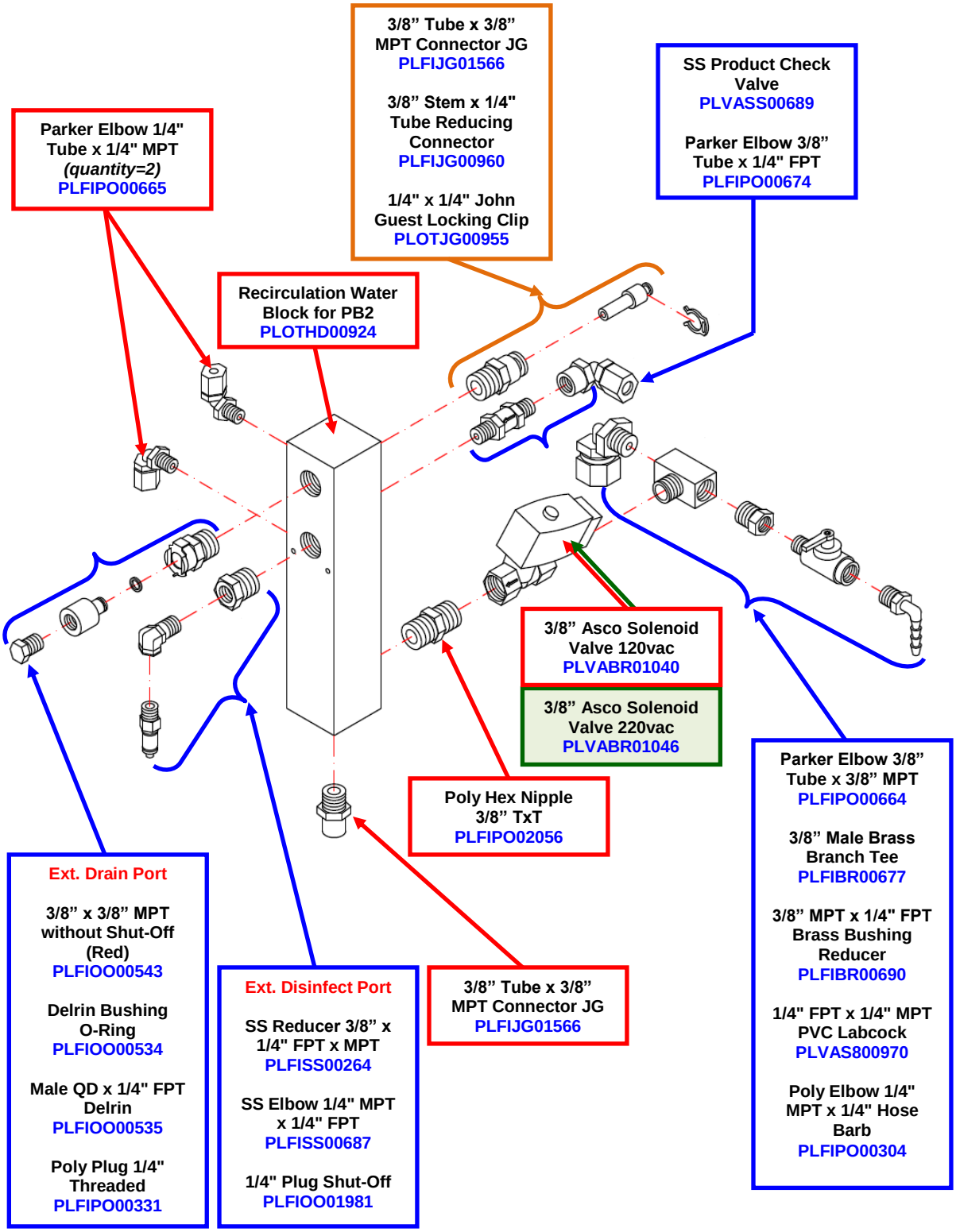
Outside View of Product Port

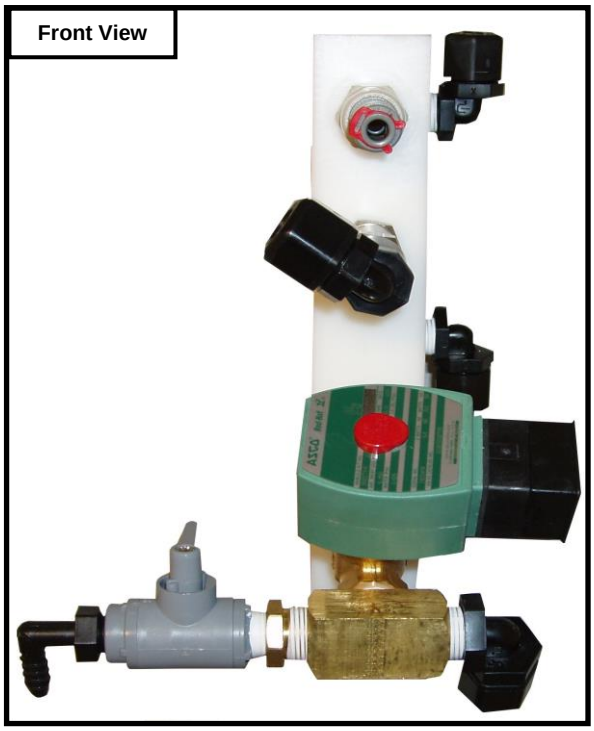
RECIRCULATION / DRAIN BLOCK ASSEMBLY

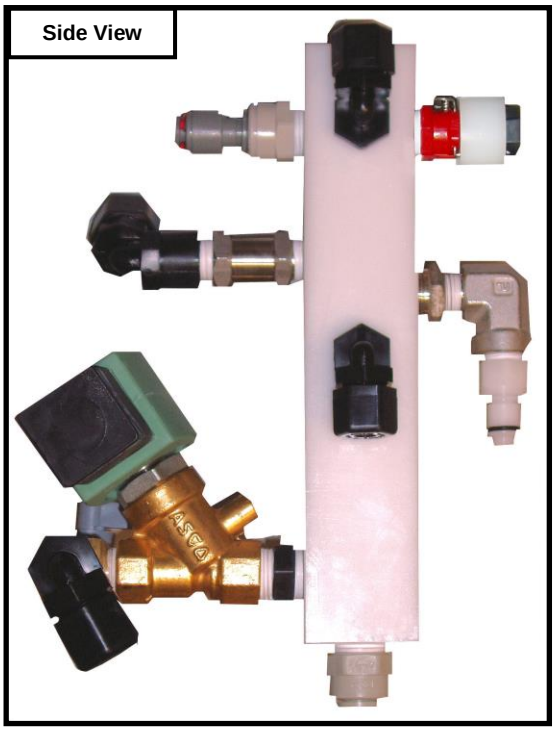
Manufactured February 2009 to Present *(Difference: Ext. Drain and Disinfect Ports)*

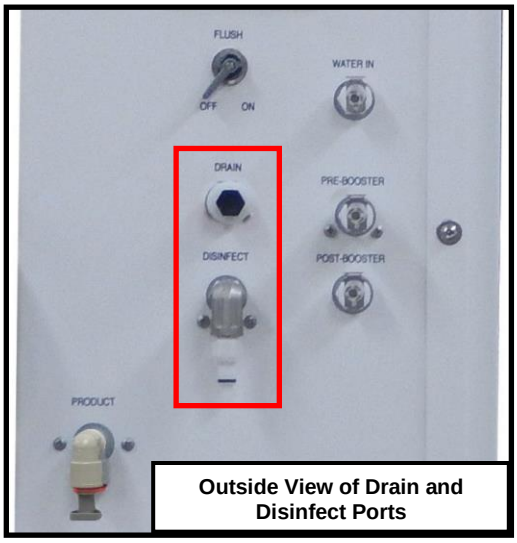
Part# EQSUBPB2HYDRECIRC – 120v Model

Part# EQSUBPB2HYDRECIRC220 – 220v Model



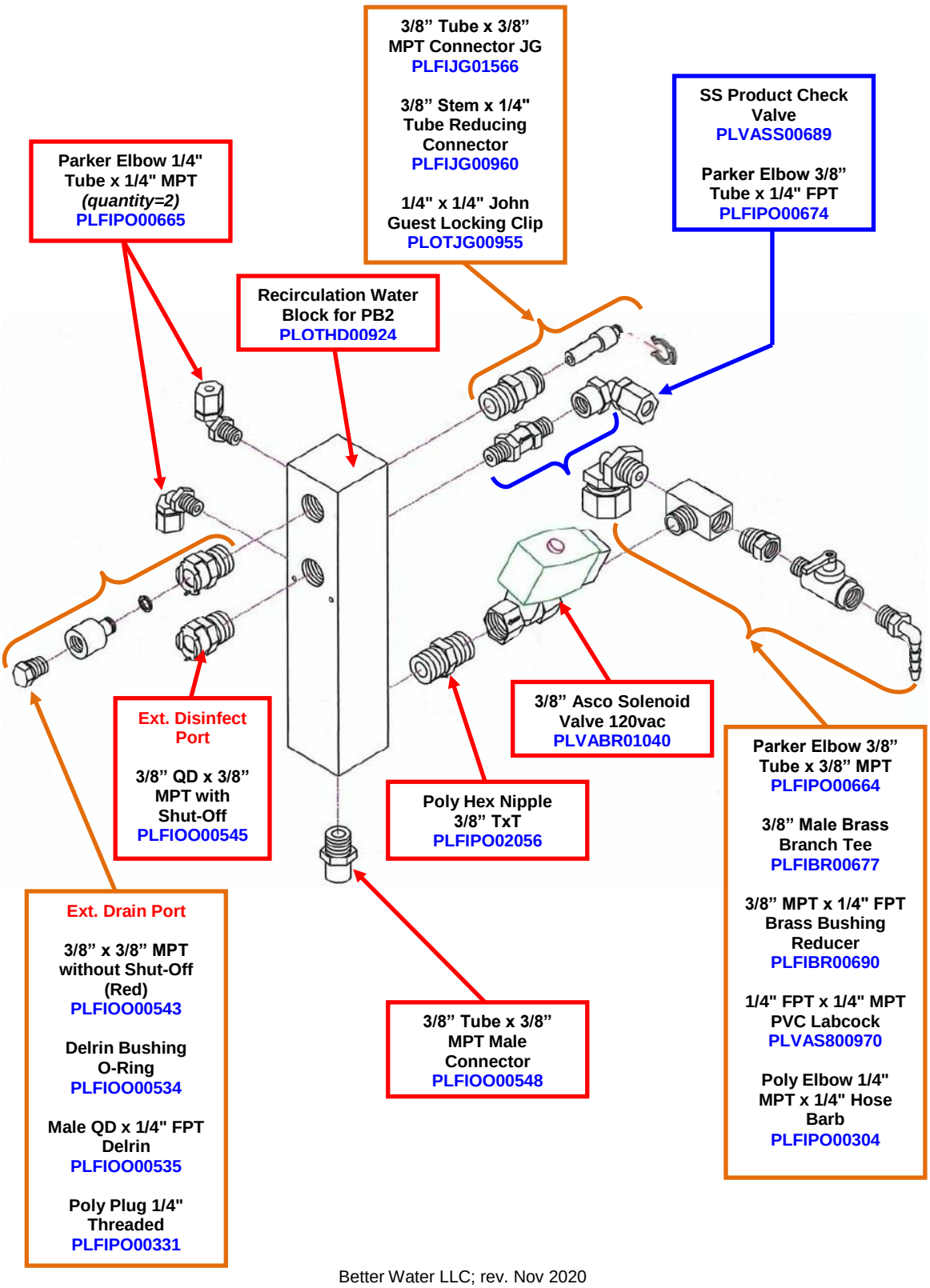

Front View


Side View


FLUSH
OFF
ON
WATER IN
DRAIN
PRE-BOOSTER
DISINFECT
POST-BOOSTER
PRODUCT
Outside View of Drain and Disinfect Ports

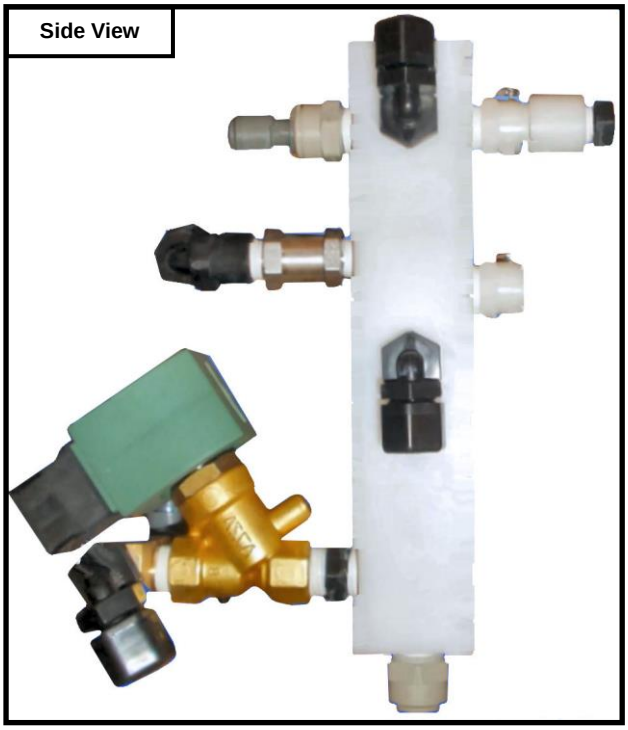
RECIRCULATION / DRAIN BLOCK ASSEMBLY

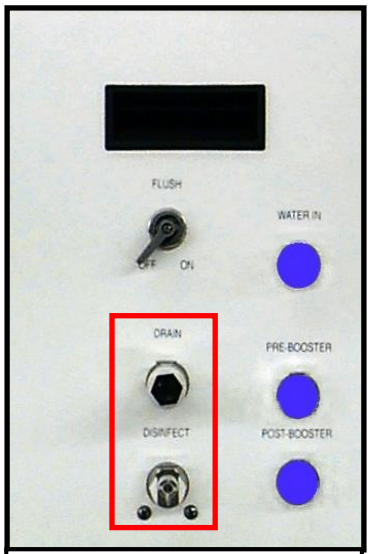
Manufactured Prior to February 2009 *(Difference: Ext. Drain and Disinfect Ports)*



Front View

Side View

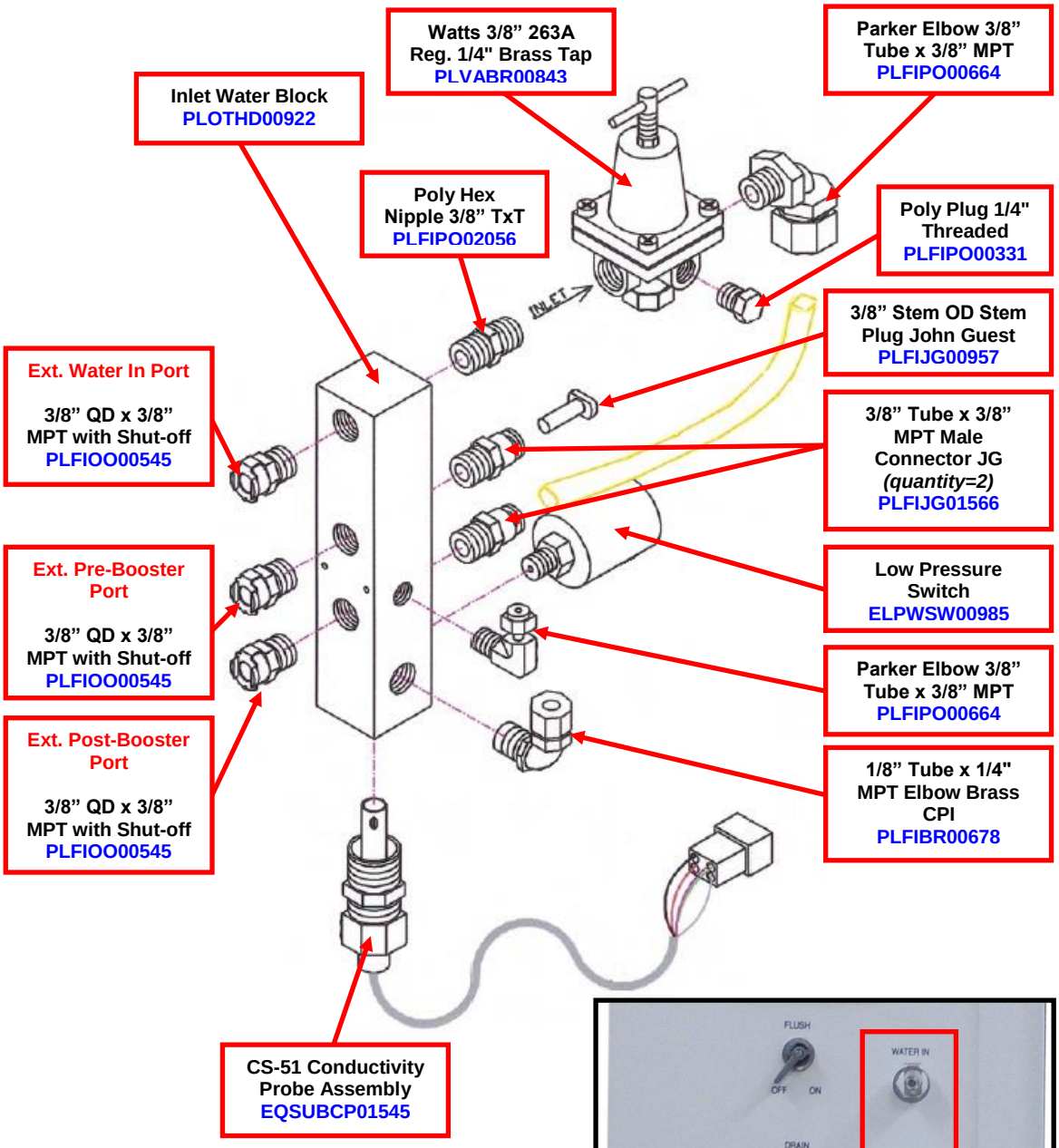


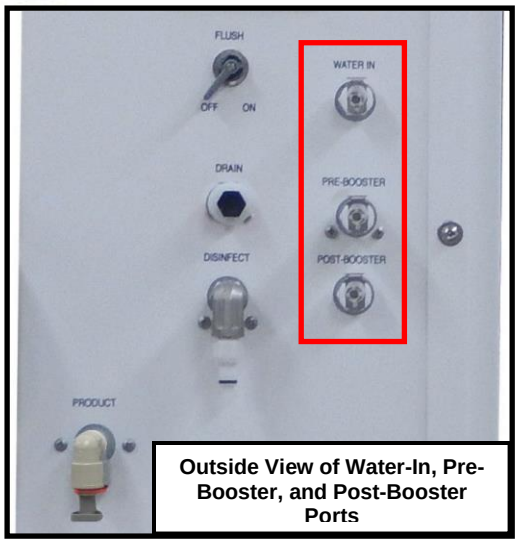


Outside View of Drain and Disinfect Ports

WATER INLET BLOCK ASSEMBLY

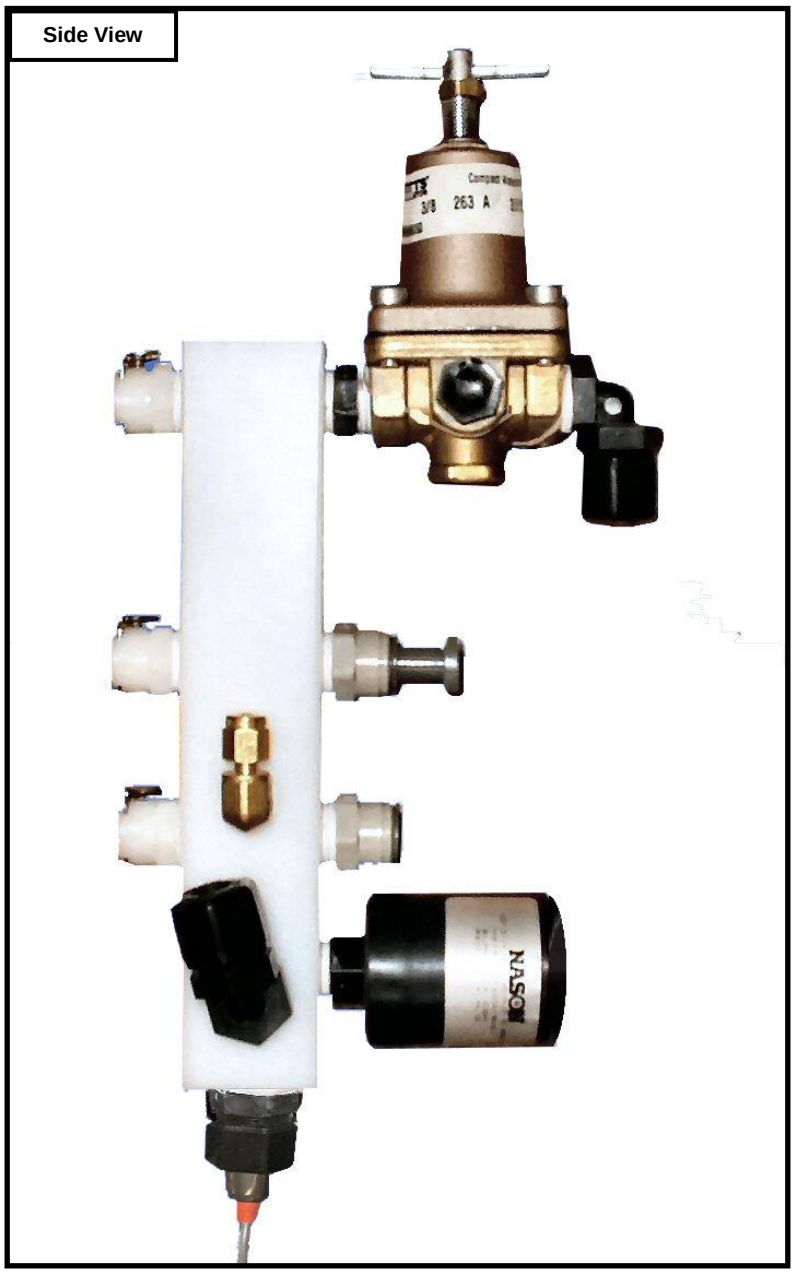
Part# EQSUBPB2HYDIW





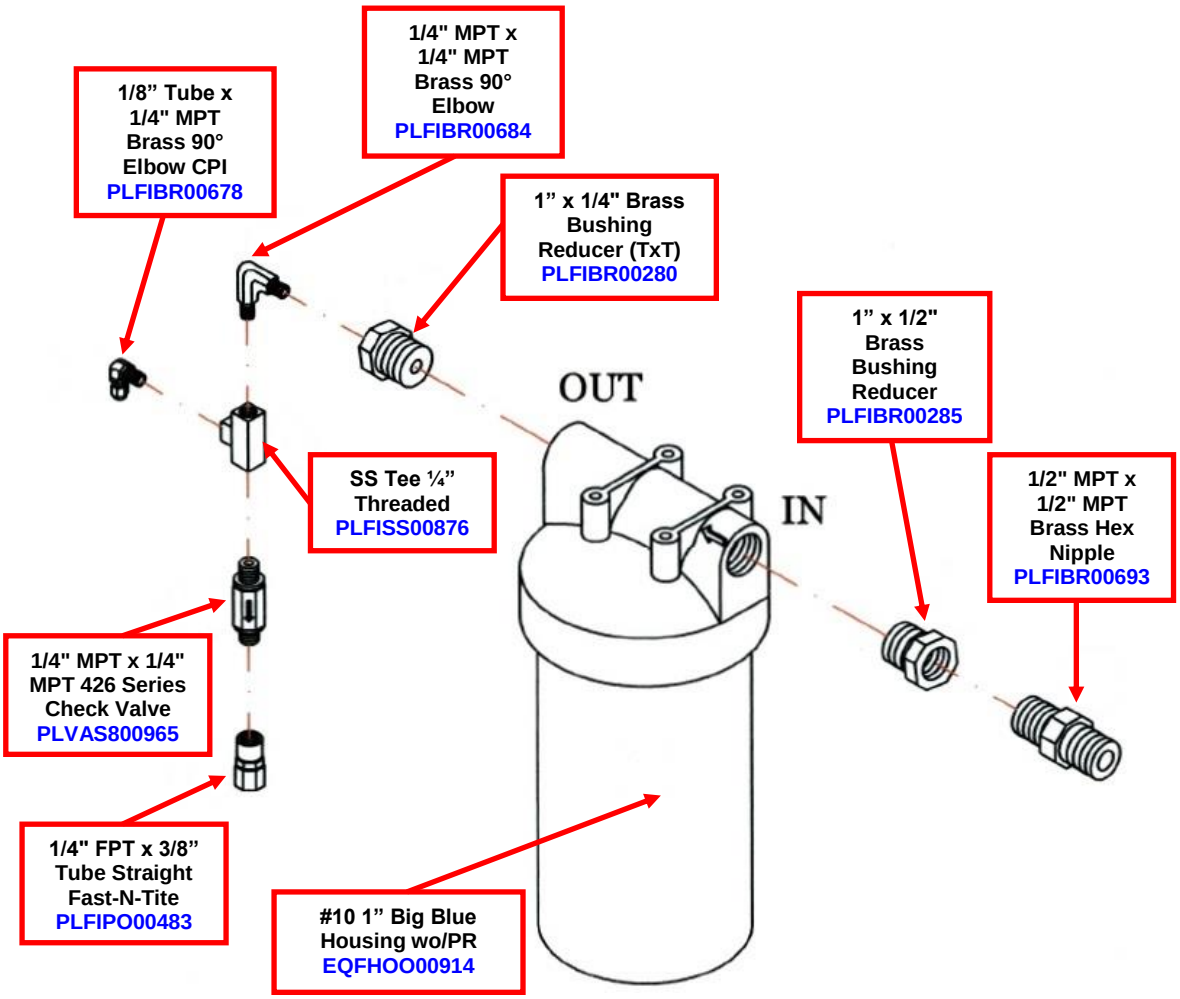
Outside View of Water-In, Pre-Booster, and Post-Booster Ports

Side View



BIG BLUE CARBON BLOCK HOUSING ASSEMBLY

Part# EQSUBPB2BB



Shown Inside Cabinet

Short Bowl for 10" Big Blue Housing
PLFIS801951

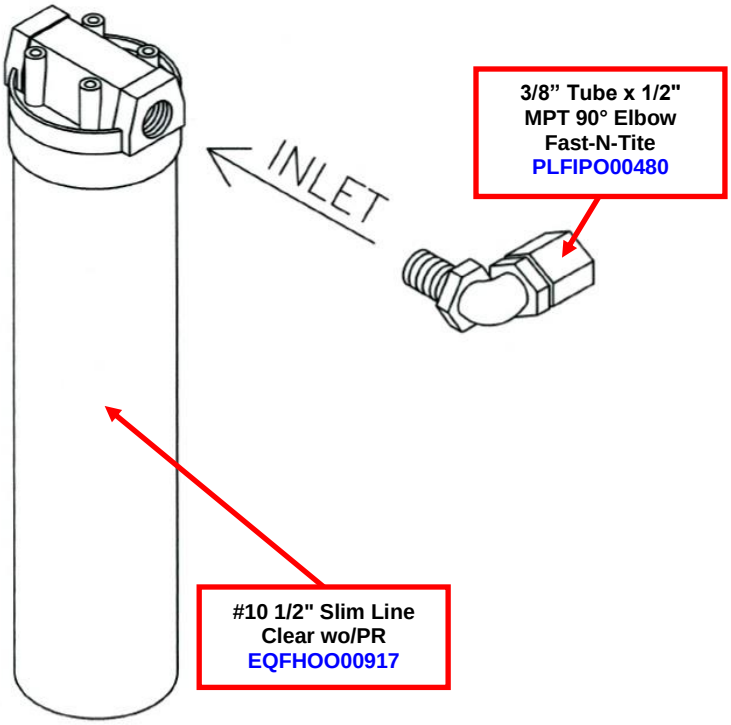
10 Carbon Block
SUCAOO00547

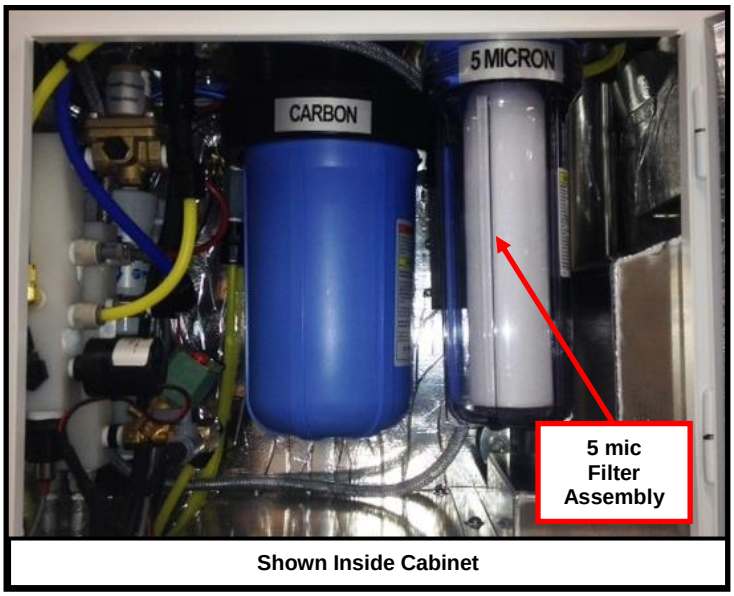
Housing O-Ring
SUMIOO00587

BB Filter Wrench
SUWROO00584

5 micron FILTER HOUSING ASSEMBLY

Part# EQSUBPB25MIC





Shown Inside Cabinet

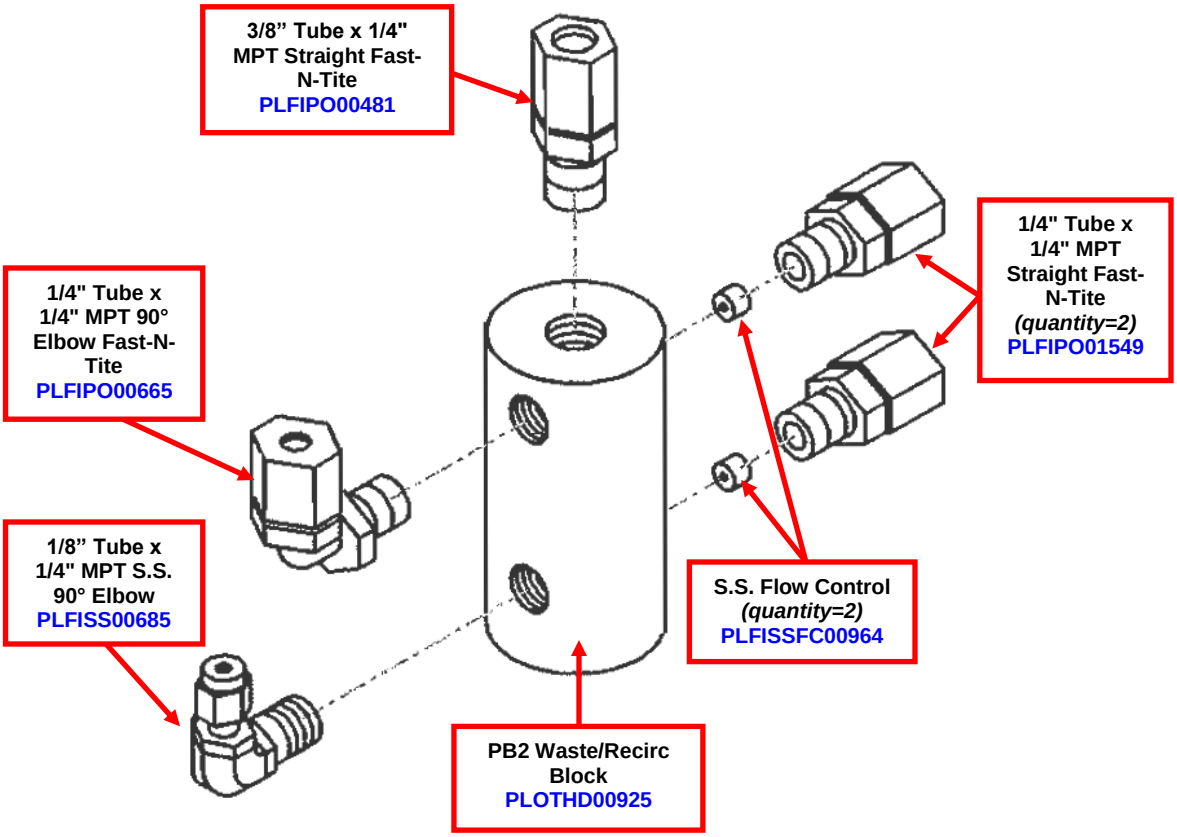
5 micron Filter
SUCAOO00550

Housing O-Ring
SUMIOO00588

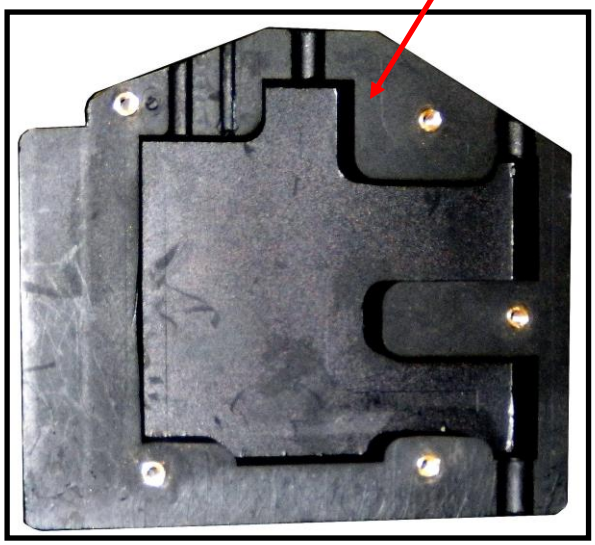
Slim-line Filter Wrench
SUWROO00582

WASTE / RECIRCULATION BLOCK ASSEMBLY and BOOT

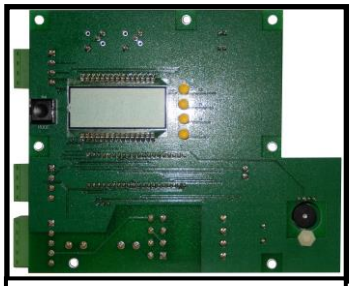
Part# EQSUBPB2WASTE



Side View of Waste/Recirc Hydroblock



WATER QUALITY MONITOR DISPLAY/BOARD



Front View

part#
EQMOCO01067
PB2 Water Quality Monitor/Display Board, 120V

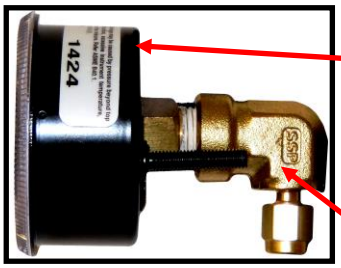
part#
EQMOCO01069
PB2 Water Quality Monitor/Display Board, 220V

Back View

See related sections to follow:
- Calibrate the Water Quality Monitor
- Factory Reset Water Quality Monitor Board
- Replace Fuse on Water Quality Monitor Board
- Retro-Fitting a 510 Kilo-Ohm Resistor to a Water Quality Monitor Board
- Replacing the Water Quality Monitor Board
- Changing Water Quality Monitor Modes of Operation

FILTER-IN, FILTER-OUT, and PRODUCT PRESSURE GAUGE ASSEMBLIES

Part# EQSUBPB2FOGA

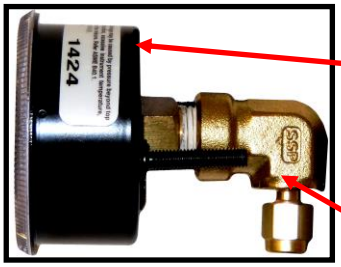


Ashcroft 0-100 psi Gauge, 1/4" NPT
PLGAOO00910

1/8" Tube x 1/4" FPT Brass Elbow
PLFIBR00679

PUMP PRESSURE GAUGE ASSEMBLY

Part# EQSUBPB2PUGA



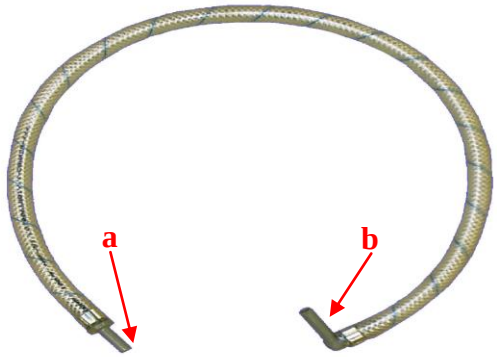
Ashcroft 0-300 psi Gauge, 1/4" NP1
PLGAOO00911

1/8" Tube x 1/4" FPT Brass Elbow
PLFIBR00679

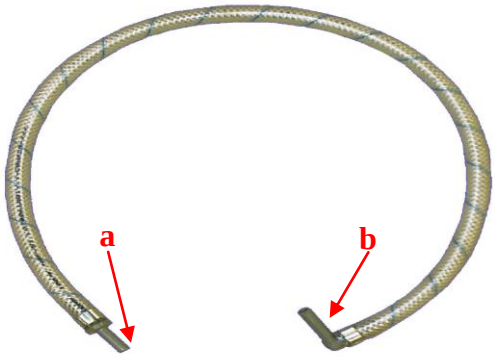
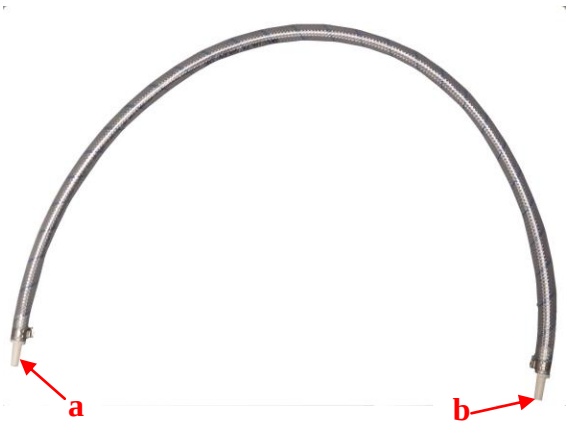
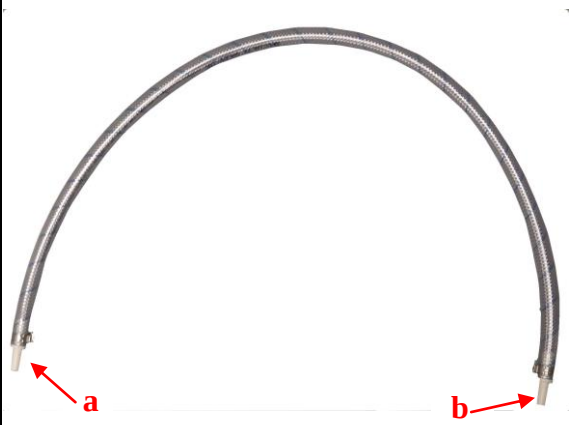
INTERNAL TUBING and HOSES

Below is a list of the tubing and hose that comprises the internal plumbing of the PB2. It is listed by the type of tubing or hose, and details the connection points for the ends.

INTERNAL TUBING		
Type & Approximate Length	**Connection Points**	**Part Number**
1/4" Blue Poly Tubing, 32”	Capsule Filter to Top of Membrane End-Cap	**PLHOPA01964**
3/8” Blue Poly Tubing, 41”	Drain Block to Top of Membrane End-Cap	**PLHOPA00449**
1/8” Black Tubing, 46”	Water-Inlet Block to Filter-In Pressure Gauge	**PLHOPA00657**
1/8” Black Tubing, 39”	Big Blue Carbon Filter End-Cap to Filter-Out Pressure Gauge	**PLHOPA00657**
1/8” Black Tubing, 19”	Waste Block to Pump Pressure Gauge	**PLHOPA00657**
1/8” Black Tubing, 39”	Product Block to Product Pressure Gauge	**PLHOPA00657**
3/8” Natural Tubing, 18”	Waste Block to Top of Membrane End-Cap	**PLHOPA00659**
1/4" Red Poly Tubing, 9”	Drain Block to Flush Valve (front)	**PLHOPA00908**
1/4" Red Poly Tubing, 18”	Flush Valve (back) to Waste Block	**PLHOPA00908**
3/8” Yellow Poly Tubing, 30.5”	Water-Inlet Block to 5 micron Filter End-Cap	**PLHOPA00450**
3/8” Yellow Poly Tubing, 17.5”	Big Blue Carbon Filter End-Cap to Drain Block	**PLHOPA00450**
3/8” Yellow Poly Tubing, 6.5”	Water Inlet Block to Water Inlet Block	**PLHOPA00450**

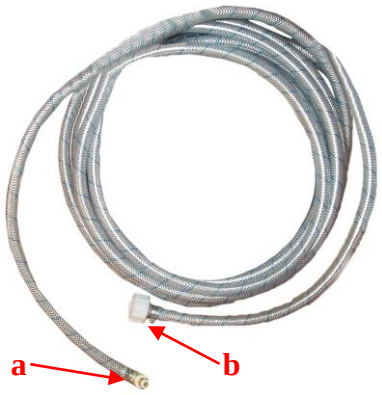
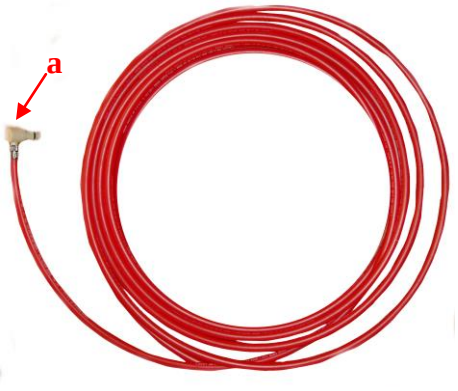
INTERNAL HOSES	
Type & Approximate Length Hose & Fitting Part Numbers	**Connection Points & Picture**
Waste/Recirculate Hose, 23”	Drain Block (bottom fitting) to Waste Block (lower fitting)
HOSE: **PLHOST01833** – 1/4" Clear Braided Hose, Style 5015 **FITTINGS:** a. **PLFIJG01837** – 1/4" Stem x 1/4" HB Straight **HWHCOO01040** – Clamp Oticker 1/2" Stepless SS b. **PLFIJG01836** – 1/4" Stem x 1/4" HB Elbow **HWHCOO01040** – Clamp Oticker 1/2" Stepless SS	

INTERNAL HOSES

Type & Approximate Length Hose & Fitting Part Numbers	Connection Points & Picture
Waste/Recirculate Hose, 25”	Drain Block (upper fitting) to Waste Block (upper fitting)
HOSE: **PLHOST01833** – 1/4" Clear Braided Hose, Style 5015 **FITTINGS:** a. **PLFIJG01837** – 1/4" Stem x 1/4" HB Straight **HWHCOO01040** – Clamp Oticker 1/2" Stepless SS b. **PLFIJG01836** – 1/4" Stem x 1/4" HB Elbow **HWHCOO01040** – Clamp Oticker 1/2" Stepless SS	
Pump Inlet Hose, 35”	Drain Block to Pump Head (upper-IN fitting)
ASSEMBLY PART# **EQSUBPB2PUMP-1** **HOSE:** **PLHOST00946** - 3/8” ID Braided Clear Hose, Style 5015 **FITTINGS:** **a. PLFIJG00959** - 3/8” Stem x 3/8” HB Straight **HWHCOO01041** - 5/8” Oticker Hose Clamp, 1 Ear **b. PLFIJG00959** - 3/8” Stem x 3/8” HB Straight **HWHCOO01041** - 5/8” Oticker Hose Clamp, 1 Ear	
Pump Outlet Hose, 13 ¼”	Membrane End-Cap to Pump Head (lower-OUT fitting)
ASSEMBLY PART# **EQSUBPB2PUMP-2** **HOSE:** **PLHOST00946** - 3/8” ID Braided Clear Hose, Style 5015 **FITTINGS:** **a. PLFIJG00959** - 3/8” Stem x 3/8” HB Straight **HWHCOO01041** - 5/8” Oticker Hose Clamp, 1 Ear **b. PLFIJG00959** - 3/8” Stem x 3/8” HB Straight **HWHCOO01041** - 5/8” Oticker Hose Clamp, 1 Ear	

EXTERNAL HOSES

Manufactured February 2009 to Present *(Difference: External Ports/Hose Connections)*

EXTERNAL HOSES, February 2009 to Present	
Type & Approximate Length Hose & Fitting Part Numbers	**Connection Points & Picture**
3/8" Water Inlet Hose, 25 ft.	From Water Source
ASSEMBLY PART# **EQSUBHSE01449-2** **HOSE:** **PLHOST00946** – 3/8" Clear Braided Hose, Style 5015 **FITTINGS:** a. **PLFIOO01982** – 3/8" Barb with Shut-Off Elbow **HWHCOO01041** – 5/8" Oticker Clamp, 1 Ear b. **HWHCOO01041** – 5/8" Oticker Clamp, 1 Ear **PLFIOT00948** – 3/4" Nylon Garden Hose Swivel Nut **PLFIOT00947** – 3/4" Nylon Garden Hose Barb **PLFIOT00949** – 3/4" Rubber Garden Hose Washer ** 3/8" or 1/2" hose may be used based on first piece of equipment*	
Tamper Resistant Product Hose, 3 ft.	From PB2 Product Port
ASSEMBLY PART# **EQSUBPB2TRPH** **HOSE:** **PLHOPA00449** – 3/8" Blue Poly Tube **FITTINGS:** a. **PLFIPO00483** – Parker Connection 3/8" Tube 1/4" FPT **PLVAS800965** – Valve Check 1/4" x 1/4' MPT **PLFIOT00544** – 3/4" MGHT x 1/4" Nylon Grd Hose Ad. **PLFIOT00545** – 3/4" Garden Hose Cap **PLFIOT00949** – 3/4" Garden Hose Washer	
Reject Hose, 25 ft.	From PB2 Drain Port to suitable drain
ASSEMBLY PART# **EQSUBHSE01451-2** **HOSE:** **PLHOPA00447** – 3/8" Red Poly Tube **FITTINGS:** a. **PLFIOO01983** – 3/8" Barb x 3/8" Tube Elbow	

EXTERNAL HOSES, February 2009 to Present	
Type & Approximate Length Hose & Fitting Part Numbers	**Connection Points & Picture**
Disinfect Hose, 3 ft.	From PB2 Disinfect Port to Disinfect Jug
ASSEMBLY PART# **EQSUBHSE01452-2** **HOSE:** **PLHOPA00658** – 3/8" Clear Tube **FITTINGS:** a. **PLFIOO00551** – 3/8" Barb x Quick Connect b. **PLFIPO00951** – 1/4" MPT x 3/8" HB Male Poly **PLFIS800113** – 1/2" x 1/4" PVC Sch 80 Bushing SxT	

EQSUBHOSEPB-2 **PB2 Hose Kit Assembly**

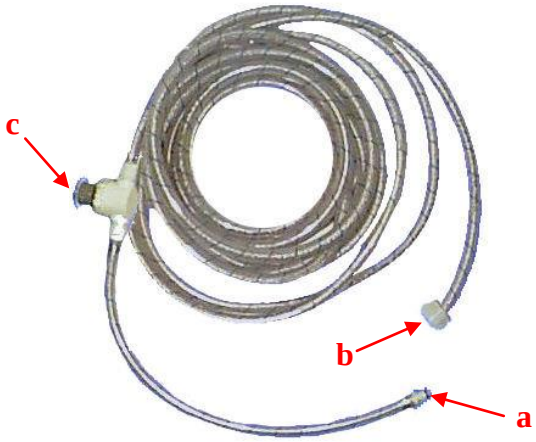
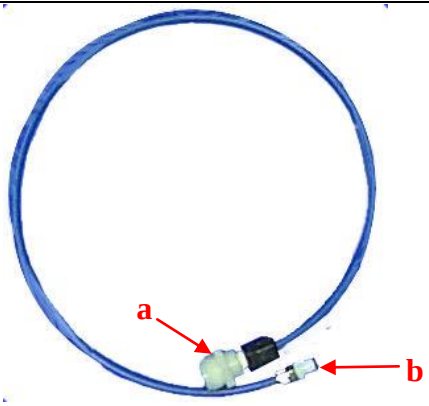
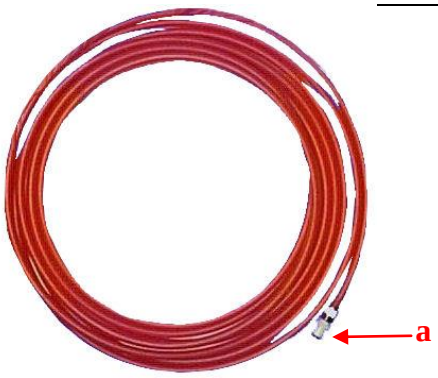
Contains the four external hoses listed above as well as two filter wrenches all in one kit:

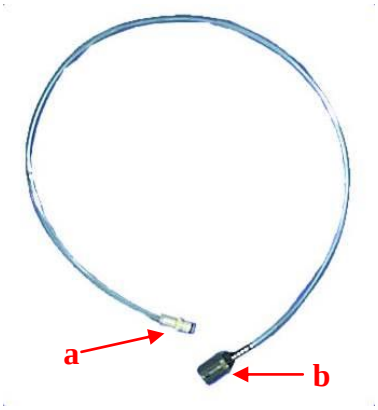
EQSUBHSE01449-2	3/8" Water Inlet Hose
EQSUBPB2TRPH	Tamper Resistant Product Hose
EQSUBHSE01451-2	Reject Hose
EQSUBHSE01452-2	Disinfect Hose
SUWROO00582	Wrench, Slim Line Housings
SUWROO00584	Wrench, Big Blue Housings

EXTERNAL INLET WATER HOSE, January 2013 to Present	
Type & Approximate Length Hose & Fitting Part Numbers	**Connection Points & Picture**
1/2" Water Inlet Hose, 25 ft.	From Water Source
ASSEMBLY PART# **EQSUBHSE01449-3** **HOSE:** **PLHOST00322** – 1/2" Style 5000 Hose **FITTINGS:** a. **PLFIOO00508** – CPC 1/2" Female x Barb **HWHCOO01042** – 7/8" 2-Ear Oticker Clamp b. **PLFIOT00949** – 3/4" Rubber Garden Hose Washer **PLFIOT00948** – 3/4" Nylon Garden Hose Swivel Nut **PLFIOT00546** – 1/2" Barb x 3/4" Garden Hose **HWHCOO01042** – 7/8" 2-Ear Oticker Clamp ** 3/8" or 1/2" hose may be used based on first piece of equipment*	

EXTERNAL HOSES

Manufactured Prior to February 2009 *(Difference: External Ports/Hose Connections)*

EXTERNAL HOSES, Prior to February 2009	
Type & Approximate Length Hose & Fitting Part Numbers	**Connection Points & Picture**
Water Inlet Hose, 3 ft.	From Water Source
ASSEMBLY PART# **EQSUBHSE01452-2** **HOSE:** **PLHOST00946** – 3/8" Clear Braided Hose, Style 5015 **FITTINGS:** a. **PLFIOO00909** – 3/8" Male Insert x 3/8" Hose Barb **HWHCOO01041** – 5/8" Oticker Clamp, 1 Ear b. **HWHCOO01041** – 5/8" Oticker Clamp, 1 Ear **PLFIOT00948** – 3/4" Nylon Garden Hose Swivel Nut **PLFIOT00947** – 3/4" Nylon Garden Hose Barb **PLFIOT00949** – 3/4" Garden Hose Washer **c. EQFHOO01031** – 1/4" In-Line Strainer **PLFIOT00952** – 1/4" FPT x 3/8" Hose Barb Female **HWHCOO01041** – 5/8" Oticker Clamp, 1 Ear	
Product Hose, 3 ft.	From PB2 Product Port
ASSEMBLY PART# **EQSUBHSE1450-2** **HOSE:** **PLHOPA00449** – 3/8" Blue Poly Tube **FITTINGS:** a. **PLFIOT00544** – 3/8" MGHT x 1/4" Nylon Garden Hose Adapter **PLFIPO00481** – Male Connector 1/4" MPT x 3/8" Fast-N-Tite **b. PLFIOO0000543** – 3/8" Male Insert with Compression Nut	
Reject Hose, 25 ft.	From PB2 Drain Port to suitable drain
ASSEMBLY PART# **EQSUBHSE01451-2** **HOSE:** **PLHOPA00447** – 3/8" Red Poly Tube **FITTINGS:** a. **PLFIOO0000543** – 3/8" Male Insert with Compression Nut	

EXTERNAL HOSES, Prior to February 2009	
Type & Approximate Length Hose & Fitting Part Numbers	**Connection Points & Picture**
Disinfect Hose, 3 ft.	From PB2 Disinfect Port to Disinfect Jug
ASSEMBLY PART# **EQSUBHSE01452** **HOSE:** **PLHOPA00658** – 3/8" Clear Tube **FITTINGS:** a. **PLFIOO00909** – 3/8" Male Insert x 3/8" Hose Barb b. **PLFIPO00951** – 1/4" MPT x 3/8" HB Male Poly **PLFIS800113** – 1/2" x 1/4" PVC Sch 80 Bushing SxT	

SYSTEM MAINTENANCE

SYSTEM MAINTENANCE, Maintenance Schedule for the PB2

PB2 Maintenance Tasks	Each Shift	Daily	Monthly	3 Months	6 Months	12 Months	Other
Check the system for leaks	X	X					
Monitor the system for unusual sounds	X	X					
Clean external surfaces	X	X					
Check pressures: Filter-In, Filter-Out, Product, & Pump	X	X					
Check Water Quality Monitor	X	X					
Check chlorine/chloramine	X	X					
Check water hardness *(if applicable)*	X	X					
Flush PB2	X	X					
Change Capsule Filter				X			
Change the 10" Carbon Filter				X			
Change 5 micron Filter				X			
Change the 4" x 21" Membrane							**As needed**
Low pH Clean			X	X			
High pH Clean				X			
Disinfect			X	X			
Calibrate Water Quality Monitor					X		
Test low pressure switch						X	
Clean lint from fan and motor intake						X	
Tighten PB2 fittings						X	
Perform Chemical, Microbial, and Endotoxin Testing on feed and product water as per AAMI requirements						X	
Perform PB2 amperage test							**Per your company policy**
Perform ground leakage test							**Per your company policy**
PB2 ACCESSORIES MAINTENANCE TASKS	**Each Shift**	**Daily**	**Monthly**	**3 Months**	**6 Months**	**12 Months**	**Other**
Check DI Cartridge & Monitor	X						
Change DI Cartridge			X				
External Sediment Filters				X			
External Carbon Blocks *- Move Polisher to Worker position and replace Polisher*				X			
External Carbon Tanks *- Move Polisher to Worker position and rebed/replace Polisher*				X			
Perform Divert-to-Drain Functionality Test				X			
Replace Divert-to-Drain Solenoid Diaphragm						X	
Replace UV light bulb						X	
Clean UV quartz sleeve						X	
Replace UV quartz sleeve							**2 years**

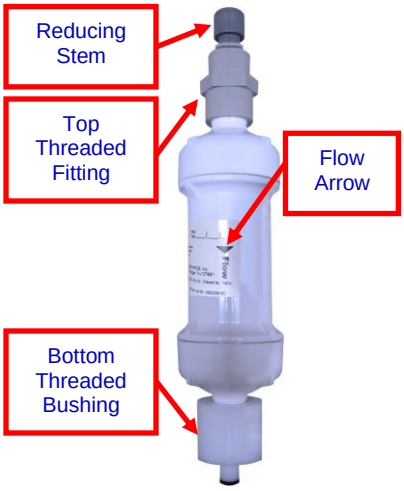
SYSTEM MAINTENANCE, Change Capsule Filter (internal)

Better Water LLC, recommends that the Capsule Filter be changed every 3 months. If the total chlorine in the water supply is not at a minimum of 1.0mg/L continuously or fluctuates where it is hard to maintain a minimum residual, the greater the chance for bacteria in the water. If the bacterial or endotoxins are out of AAMI standards the filter should be changed. The filter should also be changed if suspected of being clogged when the dialysis machine goes into low flow or heater disable alarm. Unlike most filters, this filter is designed to handle the recommended cleaners and disinfectants used on the PB2.

To verify whether the filter is clogged do the following:
- Disconnect the dialysis machine inlet hose from the PB2.
- Place the PB2's Product Hose to drain.
- Start the PB2 allowing the product water to run to drain.
- The Product pressure gauge should read zero psi. If it doesn't, then the filter should be replaced.

NOTE: In March 2018, Better Water changed the model of the internal PB2 Capsule Filter, to one now using a mini-capsule filter with fittings, which makes it a direct replacement for the old filter. These fittings are shipped with each replacement filter.

If replacing one of the older model filters, see instructions shipped with the new filter.



part#
SUCAOO01934
PB2 Capsule Filter

1. Attach fittings to new filter
a. Using plumbers tape, place four wraps of tape, and no more, around the threaded ends of the new filter. Too few wraps and the filter will leak. Too many wraps and the fittings may crack.
**** Do not use pipe dope which will expand and cause the fittings to crack.***
b. Properly orient the new filter, top to bottom, so that the **FLOW ARROW** on the side of the filter is pointing down.
c. Insert **Reducing Stem** into **Top Threaded Fitting** until it locks into place.
d. Thread **Top Threaded Fitting** on the top of the filter.
e. Thread **Bottom Threaded Bushing** onto the bottom of the filter.

2. Remove old filter
a. Turn the PB2 OFF, and turn the water supply to the PB2 OFF.
b. Open the PB2's Front Cabinet Door and attach a small piece of tube onto the Labcock on the Inlet Solenoid, and then open the Labcock to relieve the system pressure, and drain it outside the cabinet. When finished close the Labcock.
c. Unseat the filter's bottom threaded bushing from the PB2's CPC fitting on the Product Block.
d. Remove the PB2's blue tubing from the filter's reducing stem in the top threaded fitting.
e. Dispose of the filter and attached fittings.

3. Install new filter
a. Properly orient the new filter, top to bottom, so that the **FLOW ARROW** on the side of the filter is pointing down.
b. Insert the PB2's blue tubing into the filter's reducing stem.
c. Seat the filter's bottom threaded bushing into the PB2's CPC fitting on the Product Block.
d. Once the filter is installed, open the Labcock on the Inlet Solenoid, and turn the PB2 ON, to allow the air to purge from the filter.
e. Once the air is purged from the filter, close the Labcock, remove the tube on the Labcock, then close and secure the PB2's Front Cabinet Door.

SYSTEM MAINTENANCE, Change 10” Carbon Filter (internal)

Better Water LLC, recommends that the carbon filter be changed every 3 months. It should also be replaced if the chlorine and/or chloramine levels are equal to or greater than 0.1 mg/L. The housing O-Ring should be examined and replaced if necessary. If adequate external carbon blocks and/or tanks are used the internal carbon block and housing may be removed and replaced with the short bowl shown below.

part#
SUCAOO00547
10” Carbon Filter

part#
SUMIOO00587
Housing O-ring

part#
SUWROO00584
Wrench, BB Housing

part#
PLFIS801951
Short Bowl for Internal Carbon Block

1. Turn the PB2 OFF, and turn the water supply to the PB2 OFF.

2. Open the PB2’s Front Cabinet Door and attach a small piece of tube onto the Labcock on the Inlet Solenoid, and then open the Labcock to relieve the system pressure, and drain it outside the cabinet. When finished close the Labcock.

3. Place a filter wrench onto the filter housing, and turn counter-clockwise until loose, then spin off and remove it from the cabinet.

4. Remove the old filter, and wipe out bowl with a clean towel/cloth, and then place a new filter in the filter housing.

5. Inspect and replace the housing o-ring if necessary. Make sure it is properly seated.

6. Reinstall the filter housing, turning clock-wise to hand tighten.
**** Do not overtighten which will cause the filter-cap to crack.***

7. Once the filter is installed…
… Turn the water supply to the PB2 ON,
… Open the Labcock to purge all air from the filter.
**** Failure to purge air from the filter could cause damage to the pump.***

8. Once the air is purged and only water is flowing from the Labcock, continue to rinse the filter of excess carbon fines until the water flows clear.

9. Once no carbon files can be seen…
… Close the Labcock,
… Remove the tube from the Labcock,
… Turn the water supply to the PB2 OFF.

SYSTEM MAINTENANCE, Change 10” 5 micron Filter (internal)

Better Water LLC, recommends that the 5 micron filter be changed every 3 months. It should also be replaced if the differential pressures between the Filter-In and Filter-Out pressure gauges reaches or exceeds 15 psi, or if it appears dirty. The housing O-Ring should be examined and replaced if necessary.

part#
SUCAOO00550
10”, 5 micron Filter

part#
SUMIOO00588
Housing O-ring

part#
SUWROO00582
Wrench for Slim-line

1. Turn the PB2 OFF, and turn the water supply to the PB2 OFF.

2. Open the PB2’s Front Cabinet Door and attach a small piece of tube onto the Labcock on the Inlet Solenoid, and then open the Labcock to relieve the system pressure, and drain it outside the cabinet. When finished close the Labcock.

3. Place a filter wrench onto the filter housing, and turn counter-clockwise until loose, then spin off and remove it from the cabinet.

4. Remove the old filter, and wipe out bowl with a clean towel/cloth, and then place a new filter in the filter housing.

5. Inspect and replace the housing o-ring if necessary. Make sure it is properly seated.

6. Reinstall the filter housing, turning clock-wise to hand tighten.
**** Do not overtighten which will cause the filter-cap to crack.***

7. Once the filter is installed…
… Turn the water supply to the PB2 ON,
… Open the Labcock to purge all air from the filter.
**** Failure to purge air from the filter could cause damage to the pump.***

8. Once the air is purged and only water is flowing from the Labcock…
… Close the Labcock,
… Remove the tube from the Labcock,
… Turn the water supply to the PB2 OFF.

SYSTEM MAINTENANCE, Change 4” x 21” Membrane

Better Water LLC, recommends that the membranes be changed if low flow rates or percent of rejection fall below operational parameters after cleaning.

The life of an RO membrane is dependent on many factors such as feed water quality, properly operating pre-treatment and routine maintenance such as membrane cleanings and disinfections.

Normally, you can expect the membrane to last from 2-3 years or more. Eventually, you will need to replace it and the following should be used as a guide for this procedure.

CAUTION

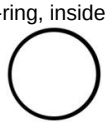
Failure to follow these instructions can result in voiding the membrane warranty.

NOTE

It is recommended that the O-Rings be replaced when the membrane is replaced, and that medical grade glycerin be used as a lubricant because of its water-solubility.

part#
SUMEM01340
4” x 21” Membrane

part#
EQFHOO01588
Small O-ring, inside end-cap



part#
EQFHOO01587
Large O-ring, outside end-cap

WARNING

Membrane is packed in a chemical preservative which must be handled in accordance with their Material Safety Data Sheet (MSDS) available on our website.

Proper protective equipment must be used.

These procedures should be performed by trained and qualified technicians.

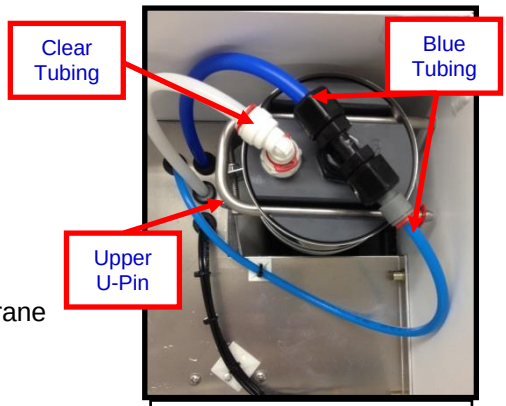
1. Turn the PB2 OFF, and turn the water supply to the PB2 OFF.
** Verify that the PB2 is not connected to a dialysis machine.*

2. Open the PB2’s Front Cabinet Door and attach a small piece of tube onto the Labcock on the Inlet Solenoid, and then open the Labcock to relieve the system pressure, and drain it outside the cabinet. When finished, remove the tube and close the Labcock.

3. Remove the two corner screws on top of the PB2’s cabinet, and swing open the top cover to gain access to the top of the membrane.

4. Disconnect the two pieces of blue tubing, and the one clear tubing from the top end-cap fittings.

5. Remove the upper U-Pin from the top of the membrane housing.



Open Top of Cabinet

6. Carefully remove the top end-cap from the membrane housing.

7. Remove the membrane from the housing.

8. Apply a small amount medical grade glycerin used as a lubricant because of its water-solubility, to the o-rings on the inside and outside of the end-cap.

9. Place the new membrane into the housing with the brine seal pointing down.

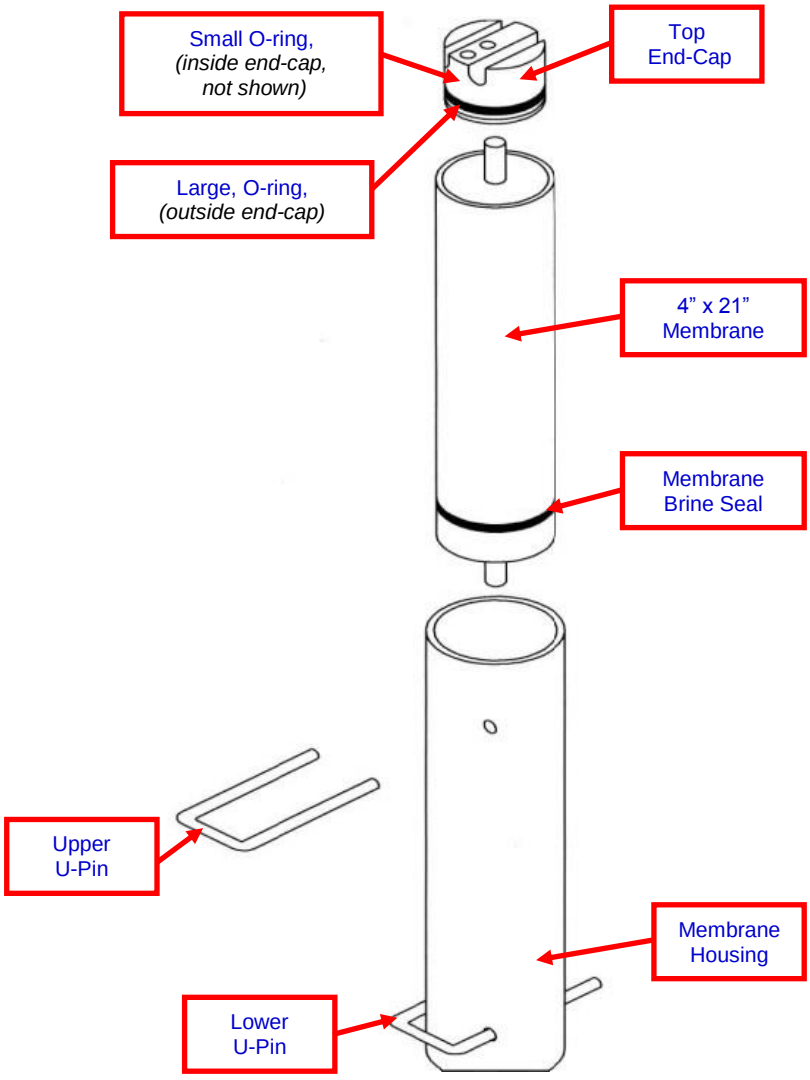
10. Replace the top end-cap onto the membrane housing.

11. After ensuring that the holes in the end-cap and the membrane housing line up, reinstall the U-Pin.

12. Reinstall the blue and clear tubing onto the top end-cap fittings.

13. After installation of the membrane, the PB2 should be started and the product water flushed to drain for a **minimum of 2 hours** to rinse the preservative from the membrane.

14. Perform a Disinfect Procedure.



SYSTEM MAINTENANCE, Calibrate the Water Quality Monitor

Periodically the Water Quality Monitor may require calibration, and Better Water recommends that it be calibrated every 6 months.

CAUTION

This procedure requires that the PB2 be plugged into an electrical outlet and powered ON while accessing the back of the Water Quality Monitor inside the control box. Take necessary precautions to avoid electrical shock while accessing and working in proximity to and within the control box.

Turn OFF and unplug the PB2 if tools or screws are dropped into the control box before attempting to retrieve them.

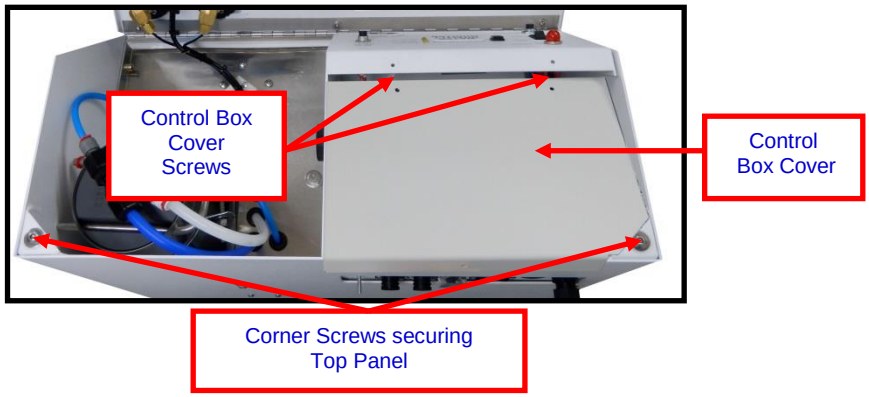
REQUIRED:
Hand-Held TDS meter that reads in parts-per-million (ppm)

PROCEDURE
1. Calibrate a hand held TDS Meter before calibrating the PB2, using NaCl (sodium chloride) solutions per instructions in the meter's manual.
- The hand held has to be calibrated with a NaCl (Sodium Chloride) standard.
- Do not calibrate to the 442 value if using a Myron L standard.
- Calibrate to the NaCl value printed below the 442 value.
  Example: 442-15 the NaCl value printed below that will say 11.1 ppm NaCl.
- Calibrate the meter to 11.1 ppm NaCl.

2. Unplug the PB2 from its electrical receptacle.

3. Remove the two corner screws on top of the PB2's cabinet, and swing open the top panel.

4. Remove the two screws securing the control box cover and remove the cover to gain access to the back of the Water Quality Monitor.



5. Plug the PB2 back into its electrical receptacle.

6. Disconnect the Product Hose and place to drain.

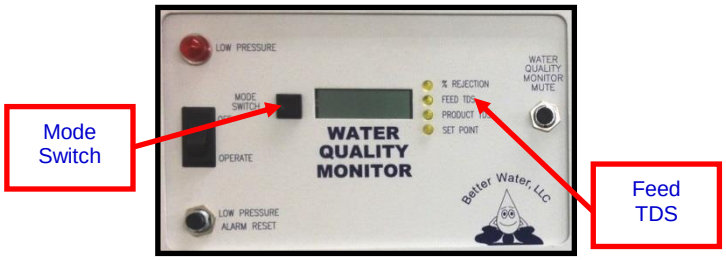
7. Turn the **OPERATE Switch** to the **OPERATE** position.
- If the PB2 goes into Low Pressure Alarm, press the **LOW PRESSURE ALARM RESET Button**. If it continues to go into Low Pressure Alarm, see "*Low Pressure Alarm" Section.*

8. Allow the PB2 to run for 10 minutes before proceeding.
CHECK/CALIBRATE FEED TDS

9. Open the front cabinet door and locate the Labcock on the inlet solenoid.

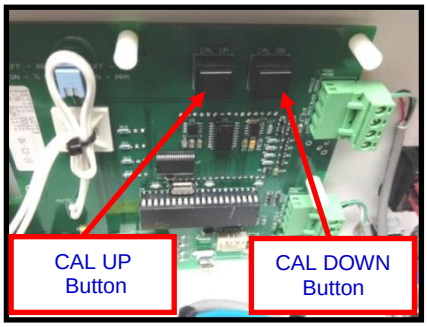
10. Open the Labcock and rinse the TDS Meter's probe a few times to insure an accurate reading.
- Take several feed water samples to verify correct reading.

11. Push the **MODE Switch** on the front of the Water Quality Monitor until the **FEED TDS** light illuminates.



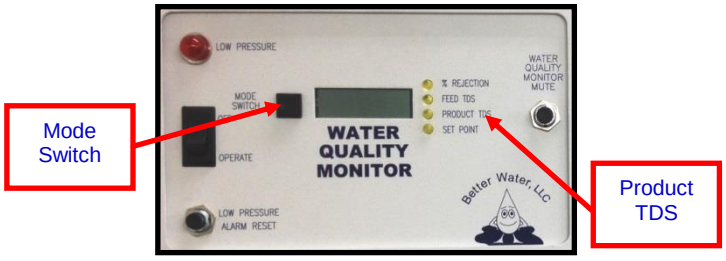
12. Compare the value displayed on the Water Quality Monitor with the reading on the TDS Meter.

13. If the values differ…
a. Locate the **CAL-UP** and **CAL-DOWN** buttons on the back of the Water Quality Monitor board
b. Press either up or down to adjust the reading displayed on the Water Quality Monitor until it matches the TDS Meter's reading
c. Press the **MODE Button** on the front of the Water Quality Monitor until the **% REJECTION** light illuminates and "**CAL**" is display on the Water Quality Monitor.



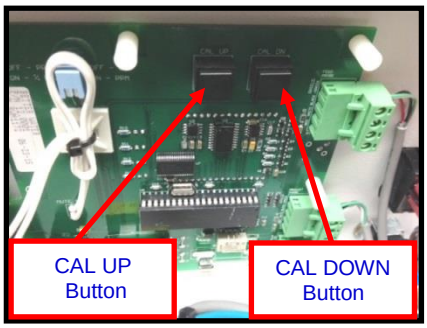
CHECK/CALIBRATE PRODUCT TDS
14. Rinse the TDS Meter's probe a few times with water from the Product Hose to insure an accurate reading.
- Take several product water samples to verify correct reading.

15. Push the **MODE Switch** on the front of the Water Quality Monitor until the **PRODUCT TDS** light illuminates.



16. Compare the value displayed on the Water Quality Monitor with the reading on the TDS Meter.

17. If the values differ…
a. Locate the **CAL-UP** and **CAL-DOWN** buttons on the back of the Water Quality Monitor board
b. Press either up or down to adjust the reading displayed on the Water Quality Monitor until it matches the TDS Meter's reading
c. Press the **MODE Button** on the front of the Water Quality Monitor until the **% REJECTION** light illuminates and "**CAL**" is display on the Water Quality Monitor.



18. To verify % Rejection, manually calculate the % Rejection using the following formula:

FEED TDS – **PRODUCT TDS** = **REJECTED SUM** *Example: **400** – **4** = **396***

REJECTED SUM / **FEED TDS** x 100 = **% REJECTION** *Example: **396** / **400** x 100 = **99%***

- If the manually calculated % Rejection is different than the % Rejection displayed on the Water Quality Monitor, then recheck your calculations above. If it still different, then contact Technical Support for assistance.

19. Turn the **OPERATE Switch** to the **OFF** position.

20. Unplug the PB2 from its electrical receptacle.

21. Replace the control box cover using the two screws that secure it.

22. Close the front panel, and replace the two corner screws on top of the PB2's cabinet that hold it closed.

23. The Water Quality Monitor is now calibrated.

SYSTEM MAINTENANCE, Factory Reset Water Quality Monitor Board

In some cases it may be required to perform a factory reset of the PB2 Control Board.

CAUTION

This procedure requires that the PB2 be plugged into an electrical outlet and powered ON while accessing the back of the Water Quality Monitor inside the control box. Take necessary precautions to avoid electrical shock while accessing and working in proximity to and within the control box.

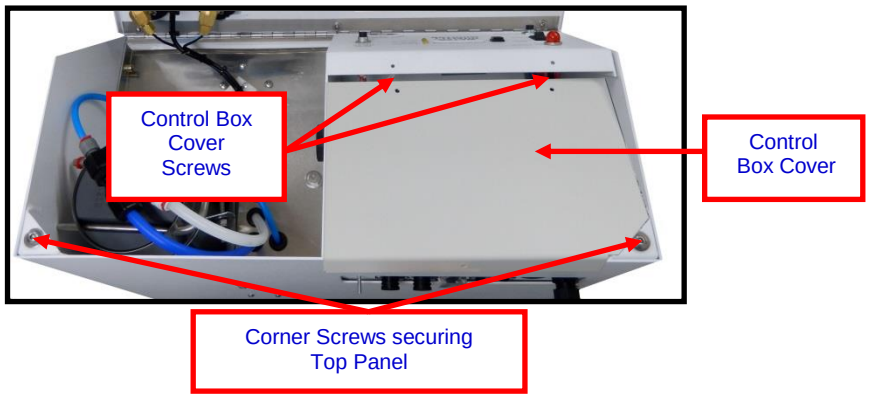
Turn OFF and unplug the PB2 if tools or screws are dropped into the control box before attempting to retrieve them.

PROCEDURE

1. Unplug the PB2 from its electrical receptacle.

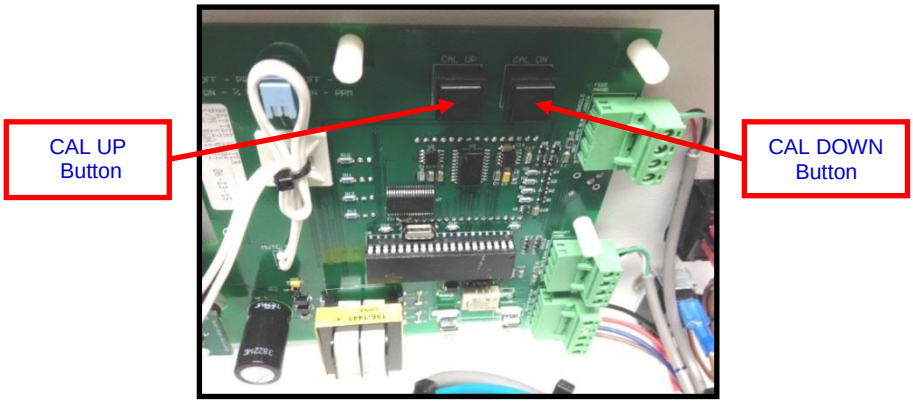
2. Remove the two corner screws on top of the PB2's cabinet, and swing open the top panel.

3. Remove the two screws securing the control box cover and remove the cover to gain access to the back of the Water Quality Monitor.



4. Plug the PB2 back into its electrical receptacle.

5. Locate the **CAL-UP** and **CAL-DOWN Buttons** on the back of the Water Quality Monitor board, then press and hold both of these buttons in then turn the **OPERATE Switch** to the **OPERATE** position. **Continue holding the CAL-UP and CAL-DOWN Buttons in.**
- If the PB2 goes into Low Pressure Alarm, press the **LOW PRESSURE ALARM RESET Button**. If it continues to go into Low Pressure Alarm, see "*Low Pressure Alarm" Section.*



6. Wait 5-10 seconds, and then release both **CAL-UP** and **CAL-DOWN Buttons**.

7. Turn the **OPERATE Switch** to the **OFF** position.

8. Wait 5-10 seconds then turn the **OPERATE Switch** to the **OPERATE** position.
- If the PB2 goes into Low Pressure Alarm, press the **LOW PRESSURE ALARM RESET Button**. If it continues to go into Low Pressure Alarm, see "*Low Pressure Alarm" Section.*

9. After a few minutes turn the **OPERATE Switch** to the **OFF** position.

10. Unplug the PB2 from its electrical receptacle.

11. Replace the control box cover using the two screws that secure it.

12. Close the front panel, and replace the two corner screws on top of the PB2's cabinet that hold it closed.

13. The PB2 Control Board has now been reset.

SYSTEM MAINTENANCE, Replace Fuse on Water Quality Monitor Board

There is a fuse located on the Water Quality Monitor board to protect it from surges, which might need to be replaced if blown.

part#
ELLFFS01930
1/4 amp *(250 milliamp)* Fuse

1. Unplug the PB2 from its electrical receptacle.

2. Remove the two corner screws on top of the PB2's cabinet, and swing open the top panel.

3. Remove the two screws securing the control box cover and remove the cover to gain access to the back of the Water Quality Monitor.

4. Remove the old fuse and replace with a new one.

5. Replace the control box cover using the two screws that secure it.

6. Close the front panel, and replace the two corner screws on top of the PB2's cabinet that hold it closed.

SYSTEM MAINTENANCE, Retro-Fitting a 510 kilo-ohm Resistor to a Water Quality Monitor Board

OVERVIEW

This is a procedure for installing a 510 kilo-ohm resistor on a Water Quality Monitor product probe connector for the Feed TDS that's less than 70 ppm. When rejection rates are greater than 99%, the RO will nuisance alarm, usually with dashes and double zeros appearing in the display, because the Water Quality Monitor is not designed to read very low values from the Feed Probe. The resistor keeps the Product TDS from reading less than 0.3 ppm. Once the Product goes less than 0.3 ppm the monitor tries to calculate a 100% rejection rate causing the above mentioned conditions. The resistor prevents this from occurring.

PROCEDURE

1. Perform a Factory Reset of the Water Quality Monitor as previously detailed in the *"Factory Reset PB2 Control Board" section*.
- After performing the factory reset check the display again, and if the display has not changed then proceed.

2. Verify with a hand-held TDS Meter that the Feed TDS is 70 ppm or less.
- If the Feed TDS is verified as being greater than 70 ppm call Technical Support for assistance.
- If the Feed TDS is verified as being 70 ppm or less proceed with adding the resistor.

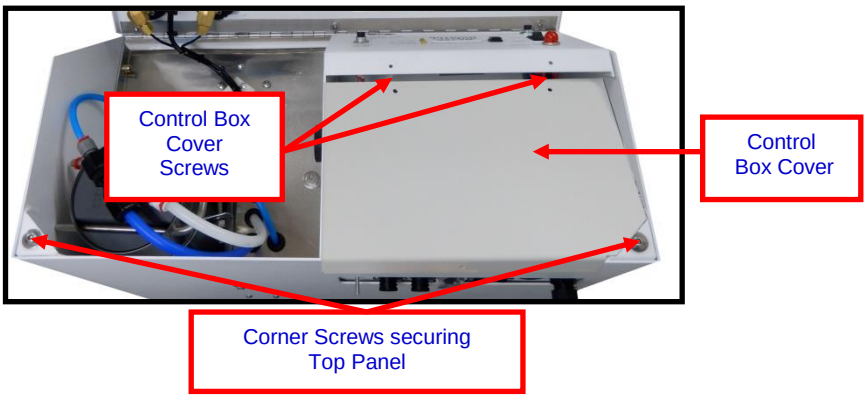
3. Acquire resistor:
- A **510 kilo-ohm resistor** should be used if the TDS is less than 70 ppm.
- This resistor is available through Better Water or from many electronic parts providers.

part#
ELCPDI01011
510 kilo- ohm Resistor

4. Unplug the PB2 from its electrical receptacle.

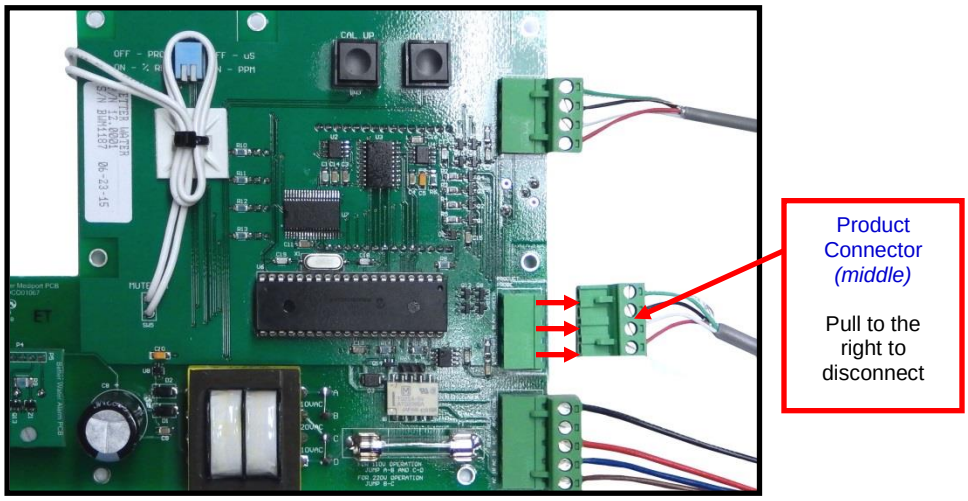
5. Remove the two corner screws on top of the PB2's cabinet, and swing open the top panel.

6. Remove the two screws securing the control box cover and remove the cover to gain access to the back of the Water Quality Monitor.



7. On the right side of Water Quality Monitor Board there are three green connectors.
- Locate connector that is labeled **Product**, which is the **middle** connector.

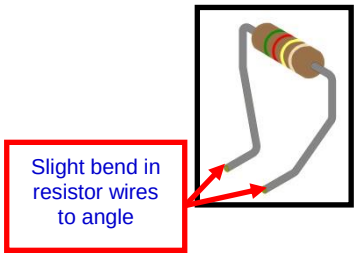
8. Carefully pull this male wire connector to the right, to slide it out of the female connector which is soldered onto the board.

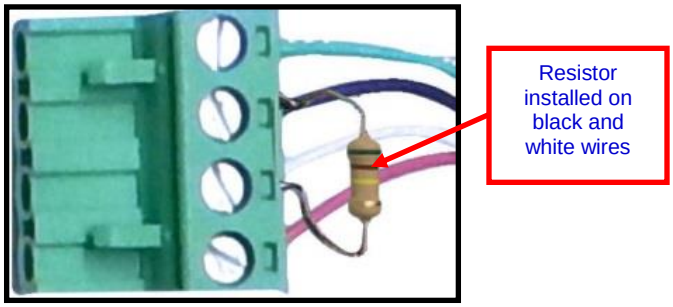


9. Locate the black and white probe wire in the male connector.
- Use a small flat blade screwdriver and loosen the screws that secure the white and black wire.

10. Carefully bend the wires on both ends of the resistor to angle them for easier insertion into the connector.

11. Place one end of the resistor in black wire slot with the black wire and the other end of the resistor in the white wire slot with white wire.
- Make sure the black and white wires are in the slots with the resistor ends.
- Tighten the screws until tight, and then pull on wires and resistor to insure they are secure.





12. Replace the male connector back into the product female connector of the Water Quality Monitor.

13. Replace the control box cover using the two screws that secure it.

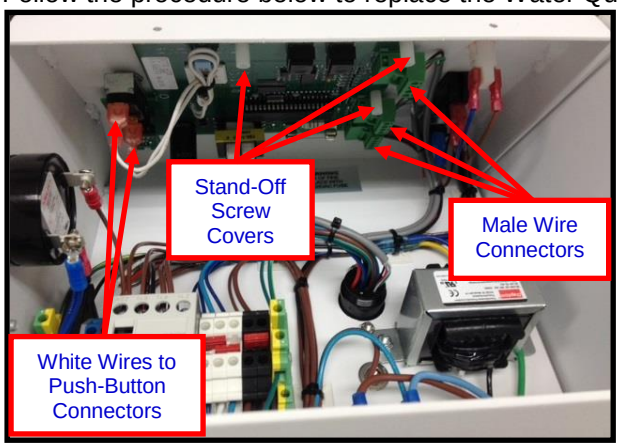
14. Close the front panel, and replace the two corner screws on top of the PB2's cabinet that hold it closed.

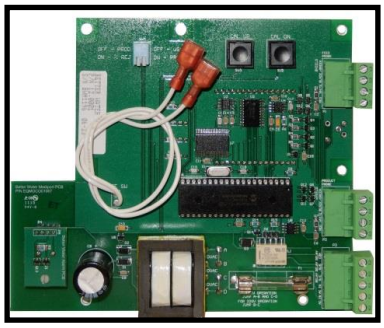
15. Plug the PB2 back into its electrical receptacle.

16. Restart unit and recalibrate water quality monitor per previously detailed steps in the *"Calibrate the Water Quality Monitor" section.*

SYSTEM MAINTENANCE, Replacing the Water Quality Monitor Board

Follow the procedure below to replace the Water Quality Monitor Board should the need arise.





part#
EQMOCO01067
PB2 Water Quality Monitor/Display Board, 120V
- OR -
EQMOCO01069
PB2 Water Quality Monitor/Display Board, 220V

1. Unplug the PB2 from its electrical receptacle.

2. Remove the two corner screws on top of the PB2's cabinet, and swing open the top panel.

3. Remove the two screws securing the control box cover and remove the cover to gain access to the back of the Water Quality Monitor.

4. On the right side of Water Quality Monitor Board there are three green connectors. Carefully pull the male wire connector to the right, to slide it out of the female connector which is soldered onto the board.

5. On the left side of the Water Quality Monitor Board there are two white wires connected to the Mute Push-Button. Carefully disconnect these wires from the Push-Button Connectors by pulling them straight back.

6. Locate and remove the three Stand-Off Screw Covers that hold the Water Quality Monitor Board in place.

7. Gently remove the old Water Quality Monitor Board from the Front Panel and replace with a new one.

8. Reinstall the three Stand-Off Screw Covers that hold the Water Quality Monitor Board in place.

9. Reconnect the two white wires to the Push-Button Connectors.

10. Reconnect the three green male wire connectors to their female counter-parts.

11. Replace the control box cover using the two screws that secure it.

12. Close the front panel, and replace the two corner screws on top of the PB2's cabinet that hold it closed.

13. Plug the PB2 back into its electrical receptacle.

14. Restart unit and recalibrate water quality monitor per previously detailed steps in the *"Calibrate the Water Quality Monitor" section.*

SYSTEM MAINTENANCE, Changing Water Quality Monitor Modes of Operation

The Water Quality Monitor can be set to different modes of operation by changing the dip switch settings.

Dip Switch#1 *(switch on the left),* controls whether the Water Quality Monitor will alarm in either **% Rejection Set-Point** or **Conductivity Set-Point**.

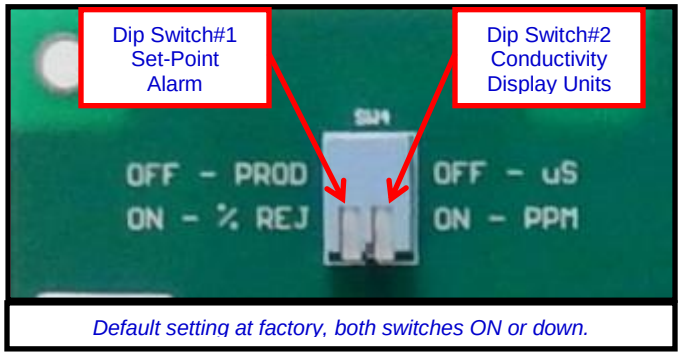
- **OFF – PROD** Switch Up
- **ON - %REJ** Switch Down

*** Default setting at the factory is ON-% REJ.**

Dip Switch#2 *(switch on the right),* controls whether the Water Quality Monitor displays conductivity in either **Parts-per-Million (ppm)** or **Micro-Siemens (µS/cm).**

- **OFF - µS** Switch Up
- **ON – PPM** Switch Down

*** Default setting at the factory is ON-PPM.**



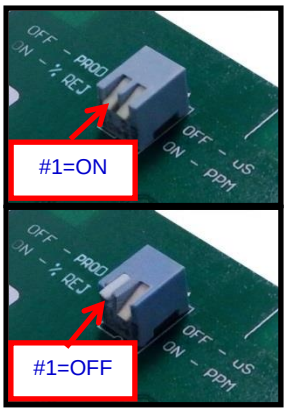
Default setting at factory, both switches ON or down.

Changing Dip Switch#1 – Set-Point Alarm Setting

- **Alarm on % Rejection Set-Point:** Set switch to **ON-%REJ** *(switch down)*, and the Water Quality will alarm at the % Rejection Set-Point specified for which 90% is the default setting.

- **Alarm on Conductivity Set-Point:** Set switch to **OFF-PROD** *(switch up),* the Water Quality will alarm at the set-point specified for which 50 is the default setting. For this setting the set-point should be set to four times the baseline product reading. For example, if the baseline product reading is 4.00 ppm *(8.6 µS/cm if set to read in micro-siemens)* the user will multiple that number by four.

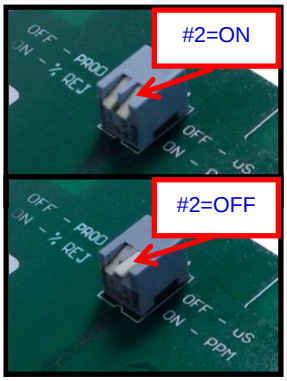
  4.0 ppm x 4 = 16 ppm or 8.6 µS/cm x 4 = 34.4 µS/cm



Changing Dip Switch#2 – Conductivity Units Display Setting

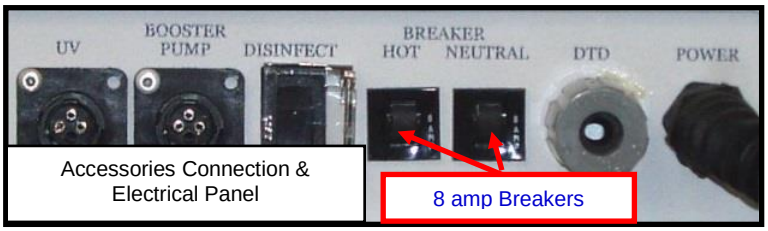
- **Display in Micro-Siemens:** Set switch to **OFF-µS** *(switch up),* the Water Quality Monitor will display in **Micro-Siemens (µS/cm)**.

- **Display in Parts-per-Million:** Set switch to **ON-PPM** *(switch down),* the Water Quality Monitor will display in **Parts-per-Million (ppm)**.



SYSTEM MAINTENANCE, Reset and/or Replacing the Breakers in Control Box

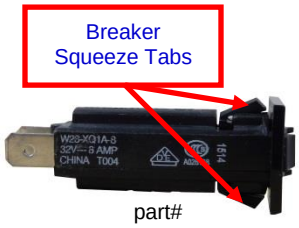
If the PB2 is plugged in but does not have any power, check the two breakers located on the back of the Control Box, in the Accessories Connection & Electrical Panel.



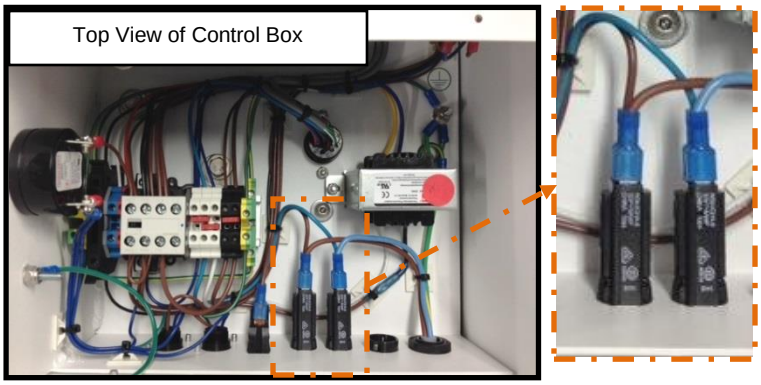
RESET BREAKER

1. If the breakers have been tripped, try resetting them. If they continue to trip after being reset, and no other problems are apparent, then they might have to be replaced.

REPLACE BREAKER



part#
ELPHBR00749
8 amp Breaker



1. Unplug the PB2 from its electrical receptacle.

2. Remove the two corner screws on top of the PB2's cabinet, and swing open the top panel.

3. Remove the two screws securing the control box cover and remove the cover to gain access to the back of the Water Quality Monitor.

4. Remove the wire attached to the breaker.

5. Remove the breaker by squeezing the tabs on both sides of the breaker with a pair of small pliers and slide out the rear of the control box.

6. Slide in the new breaker until the tabs click, to hold it in place.

7. Reattach the wire to the breaker.

8. Replace the control box cover using the two screws that secure it.

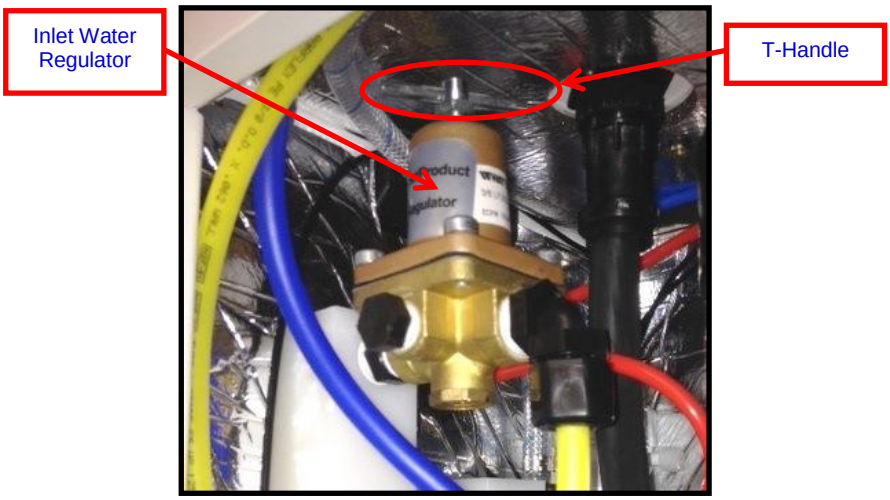
9. Close the front panel, and replace the two corner screws on top of the PB2's cabinet that hold it closed.

SYSTEM MAINTENANCE, Adjust Inlet Water Pressure

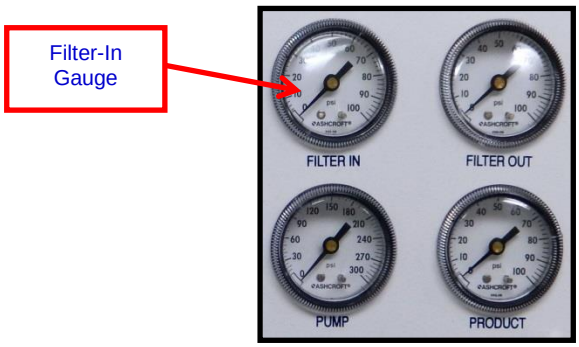
Due to fluctuations in the inlet water pressure it is sometimes necessary to adjust the inlet water pressure if out of the normal operating range of 20-40 psi.

1. Turn the **OPERATE Switch** to the **OPERATE** position.
** Not disinfecting.*
- If the PB2 goes into Low Pressure Alarm, press the **LOW PRESSURE ALARM RESET Button**. If it continues to go into Low Pressure Alarm, see "*Low Pressure Alarm" Section.*

2. Open the **Front Cabinet Door** and locate the **Inlet Water Regulator** located in the upper left-hand corner.



3. While looking at the **Filter-In Gauge** on the front panel, increase or decrease the inlet water pressure by turning the **T-handle** on top of the Inlet Water Regulator to set the operating pressure between **20 – 40 psi** with the **optimum pressure being 40 psi**…
… To increase the pressure turn theT-Handle clockwise,
… To decrease the pressure turn the T-Handle counter-clockwise.



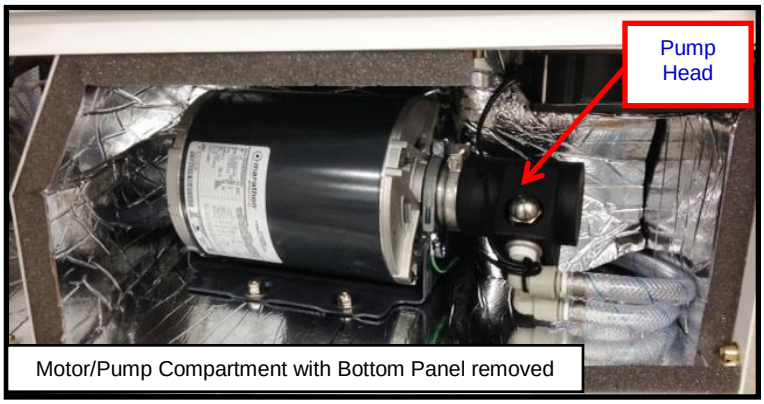
4. When finished close the **Front Cabinet Door**.

SYSTEM MAINTENANCE, Adjust Pump Pressure

Due to changing conditions in the feed water and the inlet feed water pressure it is sometimes necessary to adjust the inlet water pressure if out of the normal operating range of 90-150 psi.

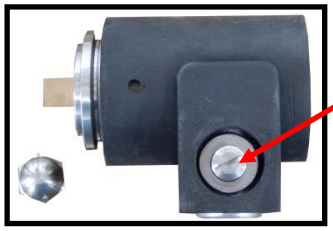
1. Turn the **OPERATE Switch** to the **OPERATE** position.
** Not disinfecting.*
- If the PB2 goes into Low Pressure Alarm, press the **LOW PRESSURE ALARM RESET Button**. If it continues to go into Low Pressure Alarm, see "*Low Pressure Alarm" Section.*

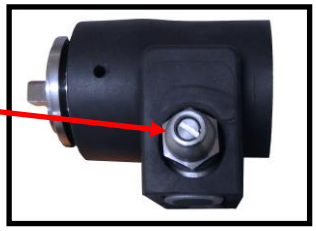
2. Open the **Bottom Panel** that covers the **Motor/Pump Compartment**, by removing the four bolts that hold it on.



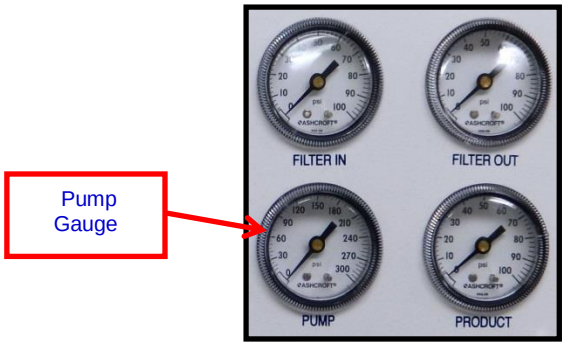
Motor/Pump Compartment with Bottom Panel removed

3. Locate the **Pump Head** and the Adjustment Screw.
*- Some model pumps have an **Acorn Nut** that must be removed to access the adjustment screw. It is normal to have slight leaking when acorn nut is removed.*





4. While looking at the **Pump Gauge** on the front panel, increase or decrease the pump pressure by turning the **Adjustment Screw** with a flat blade screwdriver to optimum rating pressure between **90 – 150 psi**, with the **optimum pressure being 100 psi**…
… To increase the pressure turn the adjustment screw clockwise,
… To decrease the pressure turn the adjustment screw counter-clockwise.



5. When finished…
… Replace the **Acorn Nut** *(if applicable),*
… Check for leaks,
… Replace the **Bottom Panel**.

SYSTEM MAINTENANCE, Test Low Pressure Switch

Better Water recommends that the PB2's Low Pressure Switch be tested annually.

1. Turn the **OPERATE Switch** to the **OPERATE** position.
* *Not disinfecting.*
- If the PB2 goes into Low Pressure Alarm, press the **LOW PRESSURE ALARM RESET Button**. If it continues to go into Low Pressure Alarm, see "*Low Pressure Alarm" Section.*

2. Slowly turn the feed water off, while watching the Filter-In Pressure Gauge.

3. The PB2 should automatically turn off when the Filter-In pressure reaches 10 psi *(+/- 1 psi).*

4. If the PB2 either does not turn off at all or turns off between 1 and 9 psi, then the Low Pressure Switch should be replaced.

SYSTEM MAINTENANCE, Amperage Test

An amperage test should be performed periodically, according to your company policy, by a qualified technician, while the PB2 is running and producing water.

The PB2 is tested at the factory checking that the amps are less than or equal to 6.5 amps.
* Length of service and use should be taken into account when determining an appropriate reading.

SYSTEM MAINTENANCE, Ground Leakage Test

A ground leakage test should be performed periodically, according to your company policy, by a qualified technician, while the PB2 is running and producing water.

Reference Technical Service Bulletin - TSB2012004 for details concerning the current leakage values which is contained in the section titled *"Appendix A: Technical Service Bulletins".*

OPTIONAL EXTERNAL ACCESSORIES

The following section contains information specific to the multiple optional external accessories available for the PB2. This includes maintenance procedures *(if applicable)* and parts lists applicable to these accessories.

- 5 micron 10” Pre-Filter

- 5 micron 20” Pre-Filter

- 20” Carbon Block Filters

- Portable Carbon Tanks

- 8” x 30” Water Softener with Brine Tank

- UV Light

- Booster Pump

- Divert-to-Drain

- DI Polishing Filter

5 micron 10” PRE-FILTER

CHANGE FILTER

Better Water LLC, recommends that the 5 micron filter be changed every 3 months, or more often if necessary. The housing O-Ring should be examined and replaced if necessary.

part#
SUCAOO00550
10”, 5 micron Filter

part#
SUMIOO00588
Housing O-ring

part#
SUWROO00582
Wrench for Slim-line

part#
EQASSY5.0MICRON
5 micron, 10” Pre-Filter

1. Turn the PB2 OFF, and turn the water supply to the PB2 OFF.

2. Open the PB2’s Front Cabinet Door and attach a small piece of tube onto the Labcock on the Inlet Solenoid, and then open the Labcock to relieve the system pressure, and drain it outside the cabinet. When finished, remove the tube and close the Labcock.

3. Place a filter wrench onto the filter housing, and turn counter-clockwise until loose, then spin off and remove it.

4. Remove the old filter, and wipe out bowl with a clean towel/cloth, and then place a new filter in the filter housing.

5. Inspect and replace the housing o-ring if necessary. Make sure it is properly seated.

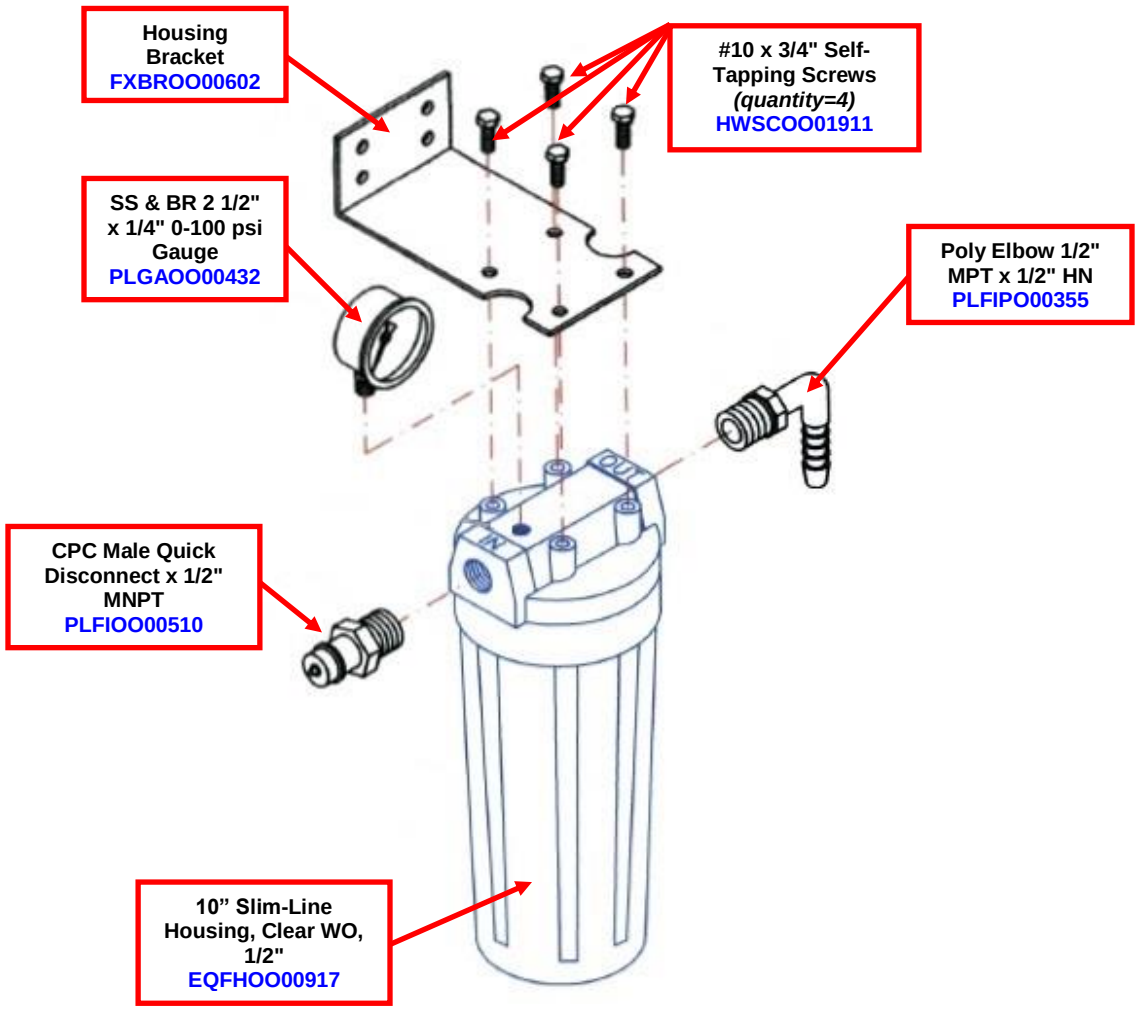
6. Reinstall the filter housing, turning clock-wise to hand tighten.
**** Do not overtighten which will cause the filter-cap to crack.***

7. Once the filter is installed…
… Place a container under the inlet solenoid’s Labcock,
… Turn the water supply to the PB2 ON,
… Open the Labcock to purge all air from the filter.
**** Failure to purge air from the filter could cause damage to the pump.***

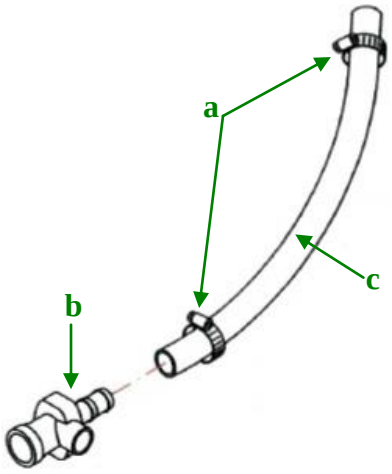
8. Once the air is purged and only water is flowing from the Labcock…
… Close the Labcock,
… Turn the water supply to the PB2 OFF,
… Remove the container from under the inlet solenoid’s Labcock.

5 micron 10” PRE-FILTER : Parts

Part# EQASSY5.0MICRON



PRE-FILTER CONNECTION HOSE



5 micron 20” PRE-FILTER

CHANGE FILTER

Better Water LLC, recommends that the 5 micron filter be changed every 3 months, or more often if necessary. The housing O-Ring should be examined and replaced if necessary.

part#
SUCAOO00552
20”, 5 micron Filter

part#
SUMIOO00588
Housing O-ring

part#
SUWROO00582
Wrench for Slim-line

part#
EQASSY5.0MICRON20
5 micron, 20” Pre-Filter

1. Turn the PB2 OFF, and turn the water supply to the PB2 OFF.

2. Open the PB2’s Front Cabinet Door and attach a small piece of tube onto the Labcock on the Inlet Solenoid, and then open the Labcock to relieve the system pressure, and drain it outside the cabinet. When finished, remove the tube and close the Labcock.

3. Place a filter wrench onto the filter housing, and turn counter-clockwise until loose, then spin off and remove it.

4. Remove the old filter, and wipe out bowl with a clean towel/cloth, and then place a new filter in the filter housing.

5. Inspect and replace the housing o-ring if necessary. Make sure it is properly seated.

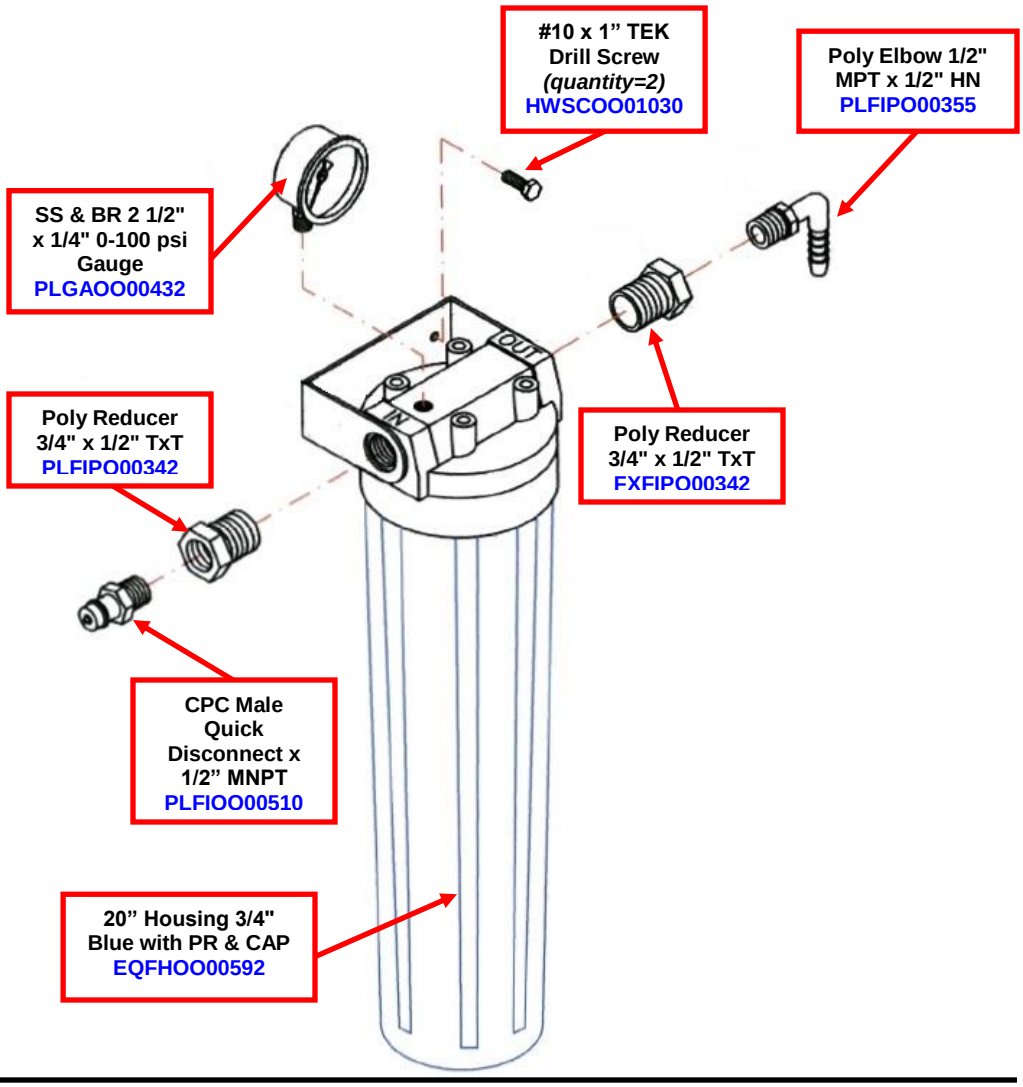
6. Reinstall the filter housing, turning clock-wise to hand tighten.
**** Do not overtighten which will cause the filter-cap to crack.***

7. Once the filter is installed…
… Place a container under the inlet solenoid’s Labcock,
… Turn the water supply to the PB2 ON,
… Open the Labcock to purge all air from the filter.
**** Failure to purge air from the filter could cause damage to the pump.***

8. Once the air is purged and only water is flowing from the Labcock…
… Close the Labcock,
… Turn the water supply to the PB2 OFF,
… Remove the container from under the inlet solenoid’s Labcock.

5 micron 20” PRE-FILTER: Parts

Part# EQASSY5.0MICRON20

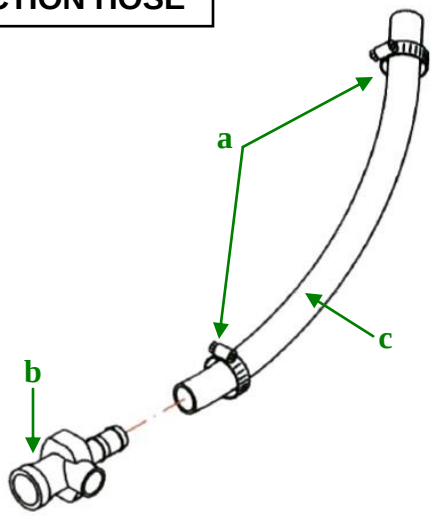


PRE-FILTER CONNECTION HOSE

Clamp Lined Worm-Drive Hose 6508E *(quantity=2)*
a. PLHOCL001

CPC 1/2" Female Barb
b. PLFIOO00508

1/2" Hose Style 5000
c. PLHOST00322



20” CARBON BLOCK FILTERS

CHANGE FILTER

Better Water LLC, recommends the following for when to change the carbon block filter:
- Single blocks should be changed every 3 months.
- For dual blocks, after 3 months, remove the worker block, move the polisher block to the worker position, and install a new polisher carbon block filter.

** NOTE: Additional water testing should be implemented to determine the effectiveness of these blocks which may extend their life for up to up to six months. A UV light may be required to be installed after these carbon blocks, prior to the RO if an elevated bacteria level is noticed.*

- In either configuration, these carbon block filters should also be replaced if the chlorine and/or chloramine levels are equal to or greater than 0.1 mg/L.
- The housing O-Ring should be examined and replaced if necessary.

part#
EQASSY20BB W GAC
Single 20” Carbon Block and
8”x30” Carbon Tank Assembly
(carbon tank not shown)

EQASSY20BBDUAL
Dual 20” Carbon Blocks

part#
SUCAOO01905
20” Carbon Filter

part#
SUMIOO00587
Housing O-ring

part#
SUWROO00584
Wrench, BB Housing

1. Turn the PB2 OFF, and turn the water supply to the PB2 OFF.

2. Attach a small piece of tube onto the Labcock on the Carbon Filter and then open to relieve the system pressure. When finished, close the Labcock.

3. Place a filter wrench onto the filter housing, and turn counter-clockwise until loose, then spin off and remove it.
4. Remove the old filter, and wipe out bowl with a clean towel/cloth, and then place a new filter in the filter housing.

5. Inspect and replace the housing o-ring if necessary. Make sure it is properly seated.

6. Reinstall the filter housing, turning clock-wise to hand tighten.
**** Do not overtighten which will cause the filter-cap to crack.***

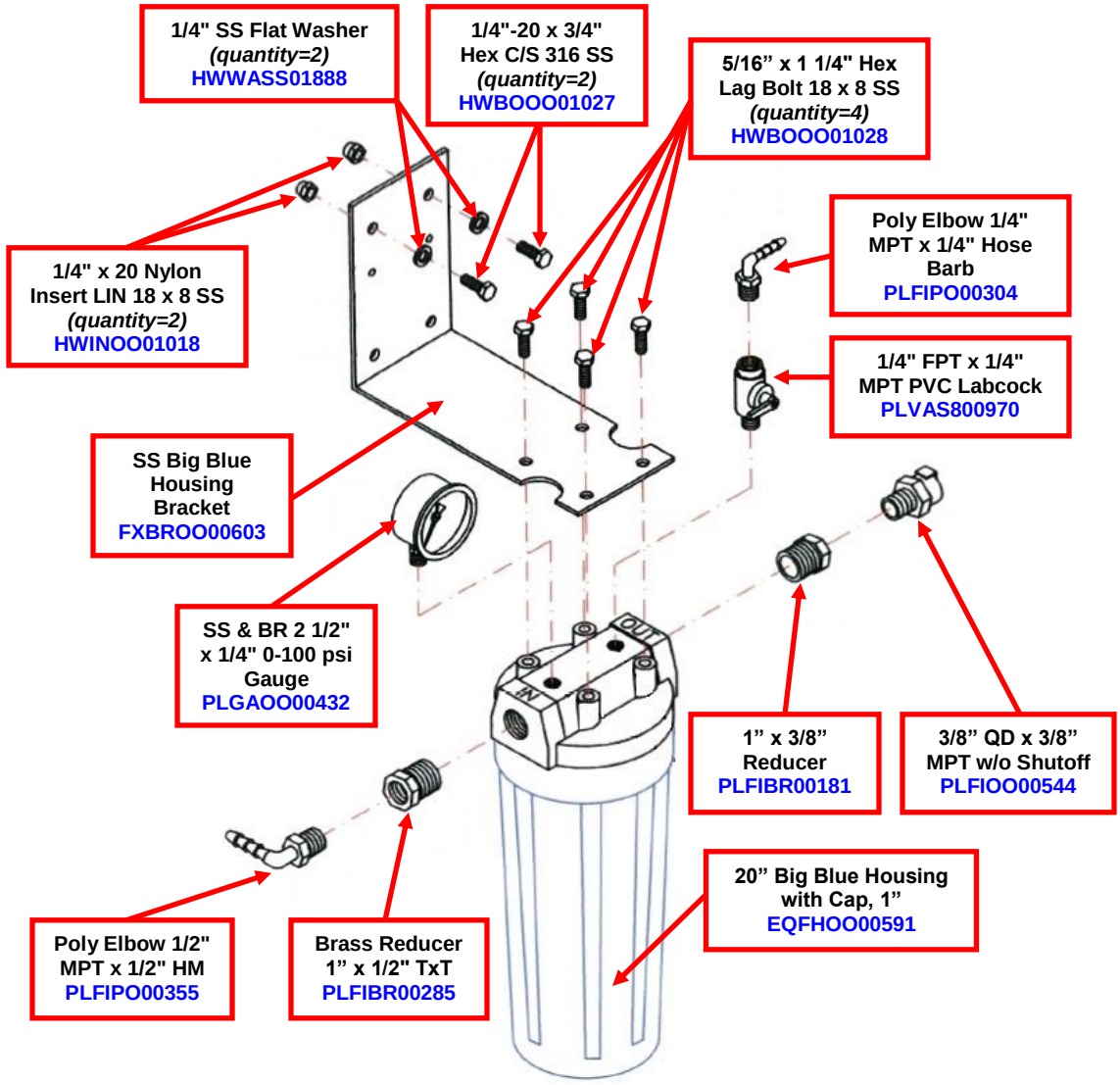
7. Once the filter is installed…
… Turn the water supply to the PB2 ON,
… Open the Labcock on the Carbon Filter to purge all air from the filter.
**** Failure to purge air from the filter could cause damage to the pump.***

8. Once the air is purged and only water is flowing from the Labcock, continue to rinse the filter of excess carbon fines until the water flows clear.

9. Once no carbon files can be seen…
… Close the Labcock,
… Remove the tube from the Labcock,
… Turn the water supply to the PB2 OFF,

20” CARBON BLOCK FILTER, SINGLE: Parts

Part# EQASSY20BB W GAC



**** NOTE: See “PORTABLE CARBON TANK: Parts” page for carbon tank details.***

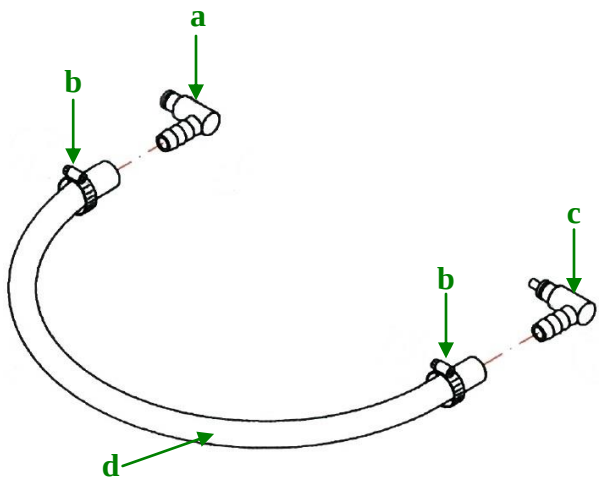
3/8” Barb without Shut-off Elbow
a. PLFIOO01980

SS 1/4" – 5/8” Hose Clamp
(quantity=2)
b. HWHCOO00350

3/8” Barb with Shut-off Elbow
c. PLFIOO01982

Hose 3/8” ID Sty 5015 Braided Clear Hose
d. PLHOST00946

CARBON FILTER OUTLET HOSE



Clamp Lined Worm-Drive Hose 6508E
(quantity=2)
e. PLHOCL001

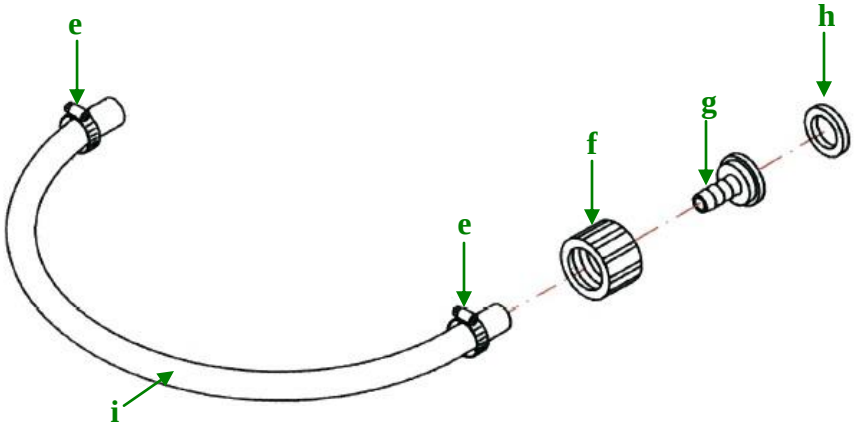
3/4" Nylon Garden Hose Swivel Nut
f. PLFIOT00948

1/2" Barb x 3/4" Garden Hose
g. PLFIOT00546

3/4" Rubber Garden Hose Washer
h. PLFIOT00949

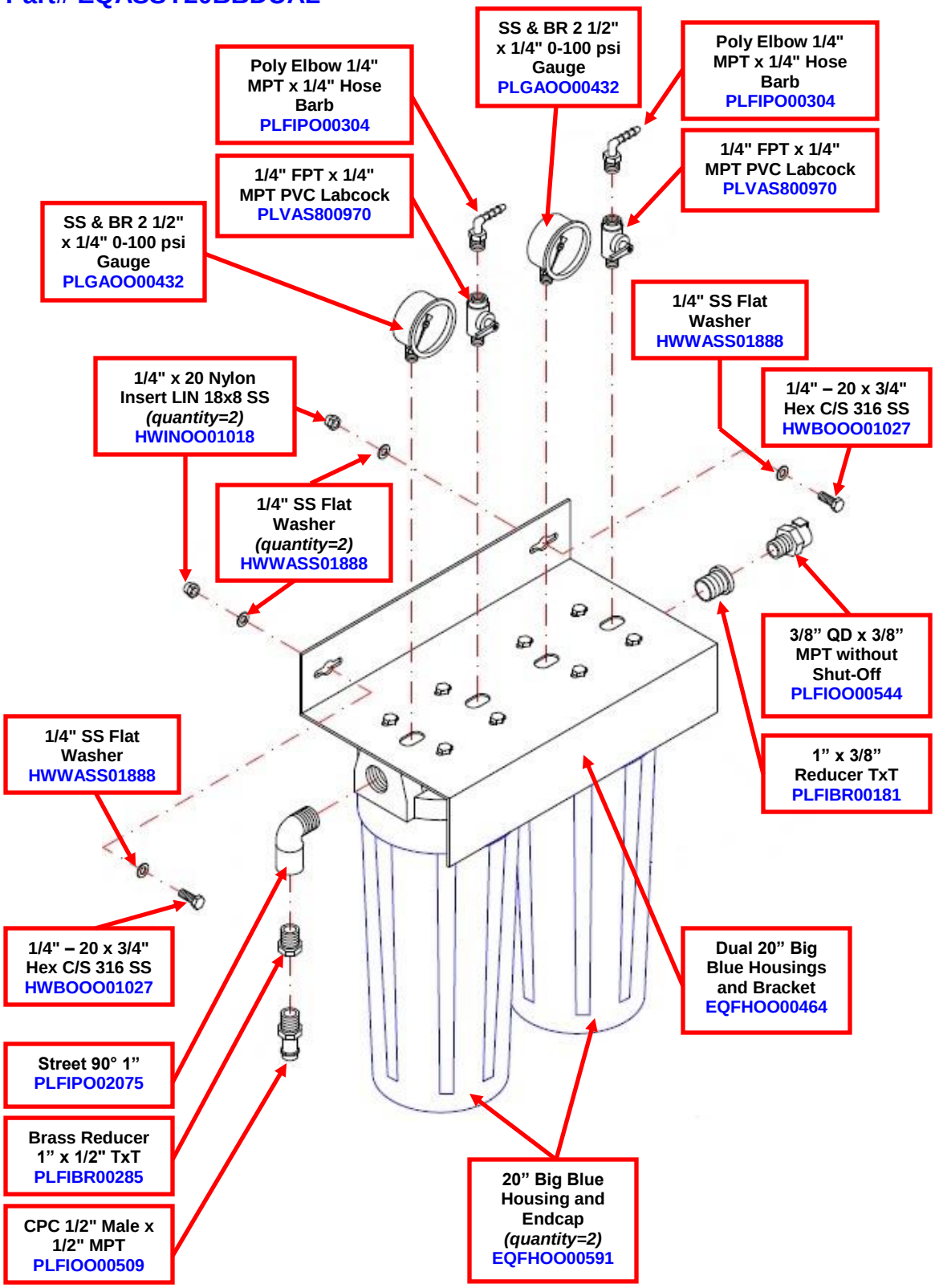
1/2" Hose Style 5000
i. PLHOST00322

CARBON FILTER INLET HOSE



20” CARBON BLOCK FILTER, DUAL: Parts

Part# EQASSY20BBDUAL



CPC 1/2" Female Barb
a. PLFIOO00508

7/8” Two-Ear Oticker Clamp *(quantity=2)*
b. HWHCOO01042

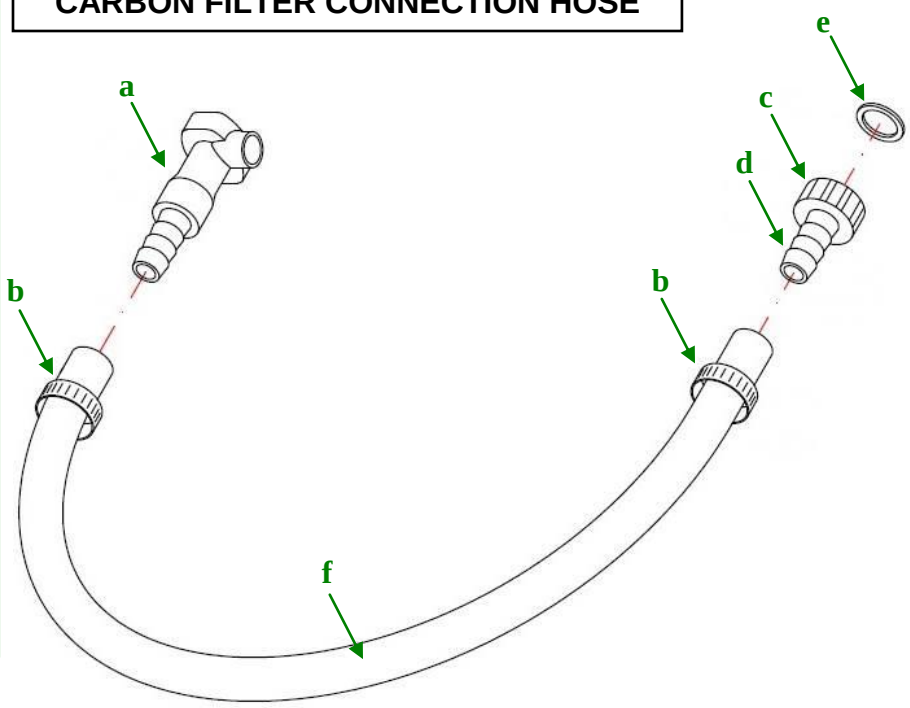
3/4” Nylon Garden Hose Swivel Nut
c. PLFIOT00948

1/2" Barb x 3/4" Garden Hose
d. PLFIOT00546

3/4" Rubber Garden Hose Washer
e. PLFIOT00949

1/2" Hose Style 5000
f. PLHOST00322

CARBON FILTER CONNECTION HOSE



PORTABLE CARBON TANKS

REBEDDING / REPLACING

Better Water LLC, recommends the following for when to rebed or replace the portable carbon tanks:

- Single tanks should be rebedded or replaced every 3 months.
- For dual tanks, after 3 months, move the polisher tank to the worker tank position, and rebed or replaced the polisher tank.

> ** NOTE: Additional water testing should be implemented to determine the effectiveness of these tanks which may extend their life for up to up to six months. A UV light may be required to be installed after these carbon tanks, prior to the RO if an elevated bacteria level is noticed.*

- In either configuration, these carbon tanks should also be replaced if the chlorine and/or chloramine levels are equal to or greater than 0.1 mg/L.

part#

EQASSYCFRO.8CF830PB2
8”x30” Carbon Tank

EQASSYCFRO.DUAL830
Dual Carbon Tanks 8”x30” for PB2

EQASSYCFRO942PB2
9”x42” Carbon Tank

EQASSYCFRO.DUAL942
Dual Carbon Tanks 9”x42” For PB2

PROCEDURE

The carbon media must be soaked and rinsed for new Carbon Tanks supplied dry and after rebedding existing Tanks. This removes air pockets within the carbon media and then rinses it free of excess carbon fines.

1. Soaking

a. Connect **Water Hose** to a water source and to the **Inlet-Port**.
b. Connect a **Water Hose** to the **Outlet Port** and run the other end to drain.
c. Verify that the Sample Port is closed.
d. Turn water **ON** and fill Carbon Tank completely with water.
e. In order to rinse out excess carbon fines, continue to fill until the Carbon Tank overflows, allowing it to run to drain for several minutes until the water flows clear. Once no evidence of carbon fines are present, turn the water **OFF**.
f. Allow to soak for a **minimum of 4 hours**, not to exceed 24 hours. Tag the Carbon Tank with the wet date and time.

2. Rinse after soaking

a. After soaking for a minimum of 4 hours, turn the water **ON** to rinse the Carbon Tank, running to drain for 10-15 minutes or until the water is clear. Once no evidence of carbon fines are present, turn the water **OFF**.

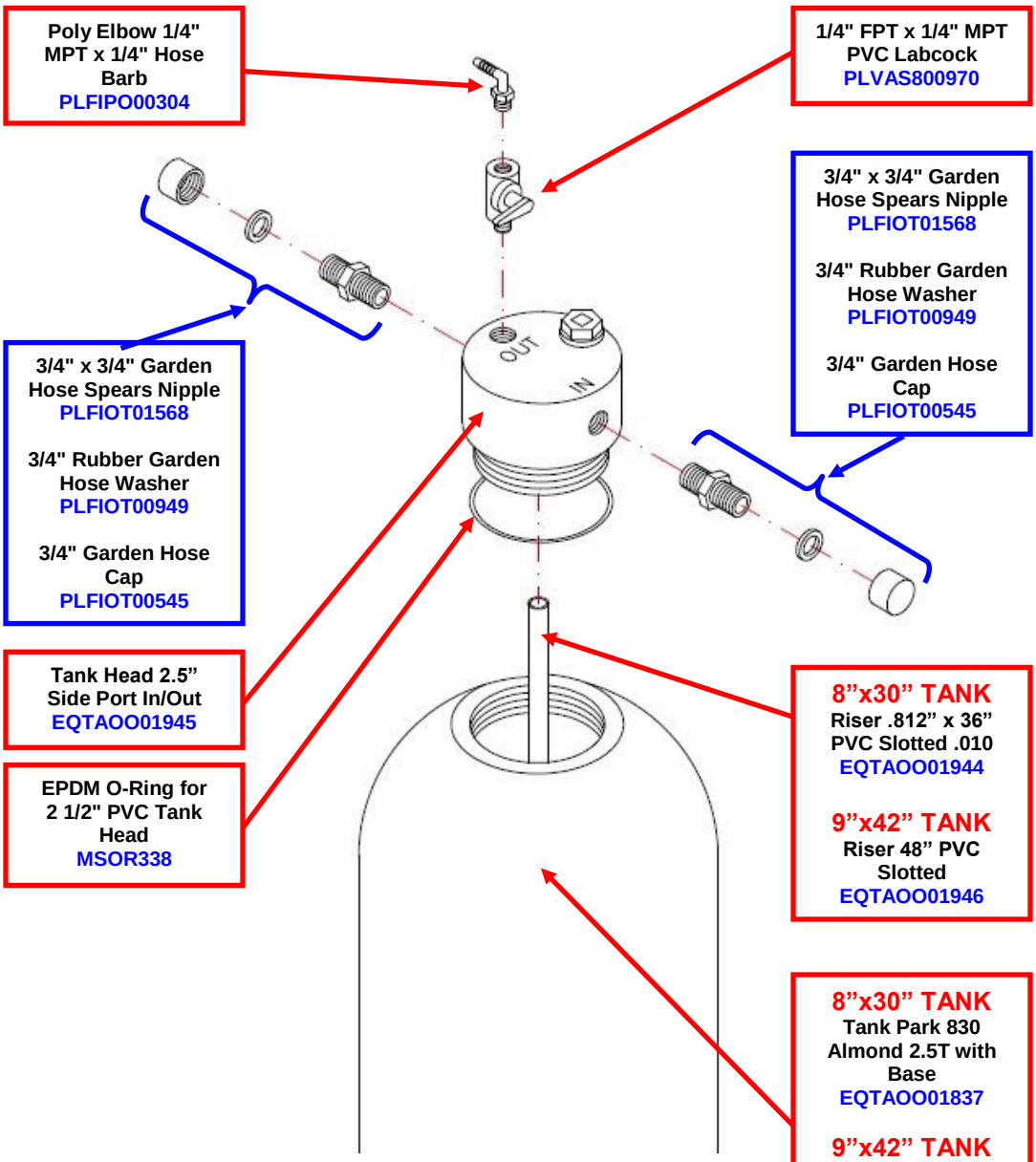
3. Check Chlorine

a. Perform a total *(low-range)* chlorine check per test kit instructions. If results are above .05 ppm, rinse for an additional 15 minutes. Continue to test and rinse until results are at or below .05 ppm or contact Tech Support.

4. Reconnect hoses for normal operation

PORTABLE CARBON TANK: Parts

Part# EQASSYCFRO.8CF830PB2 – Single 8”x30” Tank
EQASSYCFRO.DUAL830 – Dual 8”x30” Tanks
EQASSYCFRO942PB2 – Single 9”x42” Tank
EQASSYCFRO.DUAL942 – Dual 9”x42” Tanks



CARBON TANK JUMPER HOSE

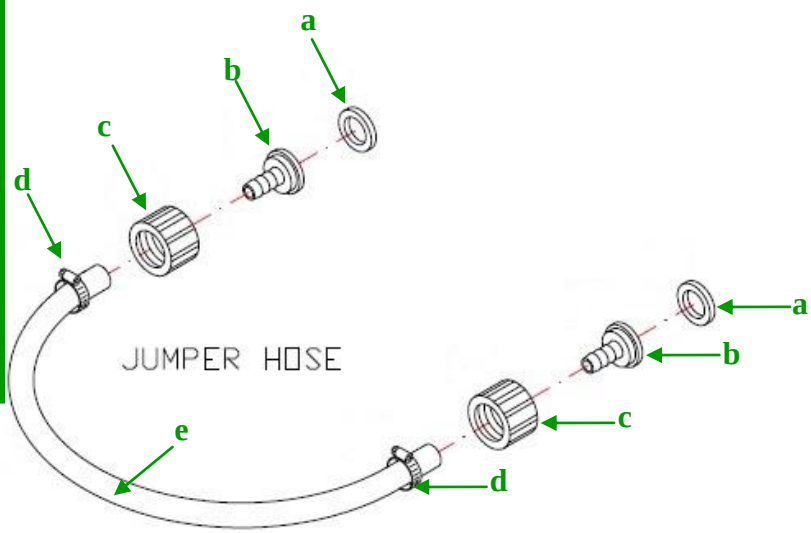
3/4" Rubber Garden Hose Washer *(quantity=2)*
a. PLFIOT00949

3/4" Nylon Garden Hose Swivel Nut *(quantity=2)*
b. PLFIOT00948

3/4" Nylon Garden Hose Barb *(quantity=2)*
c. PLFIOT00947

SS 1/4" – 5/8" Hose Clamp *(quantity=2)*
d. HWHCOO00350

Hose 3/8" ID Style 5015 Braided Clear
e. PLHOST00946



CARBON TANK CONNECTION HOSES
(quantity=2)

3/8" Hose Barb x Quick Disconnect
a. PLFIOO00551

SS 1/4" – 5/8" Hose Clamp
b. HWHCOO00350

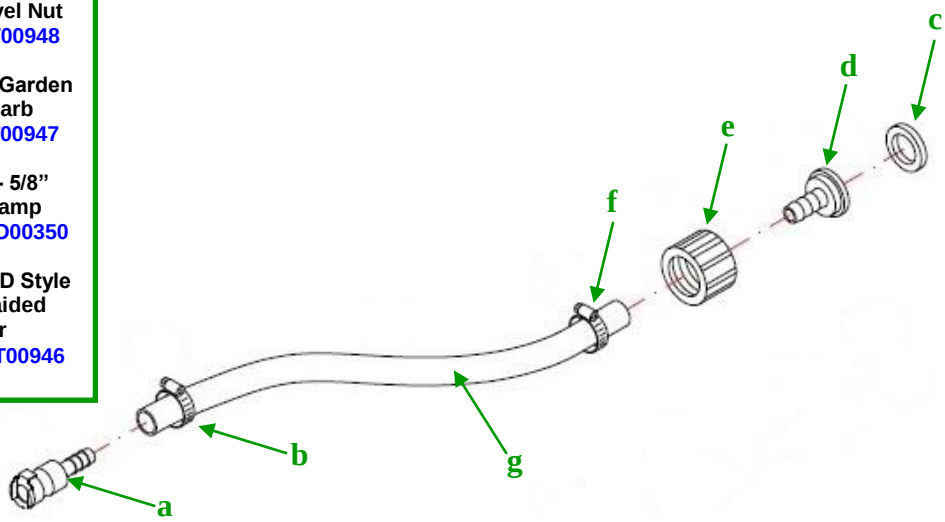
3/4" Rubber Garden Hose Washer
c. PLFIOT00949

3/4" Nylon Garden Hose Swivel Nut
d. PLFIOT00948

3/4" Nylon Garden Hose Barb
e. PLFIOT00947

SS 1/4" – 5/8" Hose Clamp
f. HWHCOO00350

Hose 3/8" ID Style 5015 Braided Clear
g. PLHOST00946



8” x 30” WATER SOFTENER with BRINE TANK

ADDING SALT to the BRINE TANK

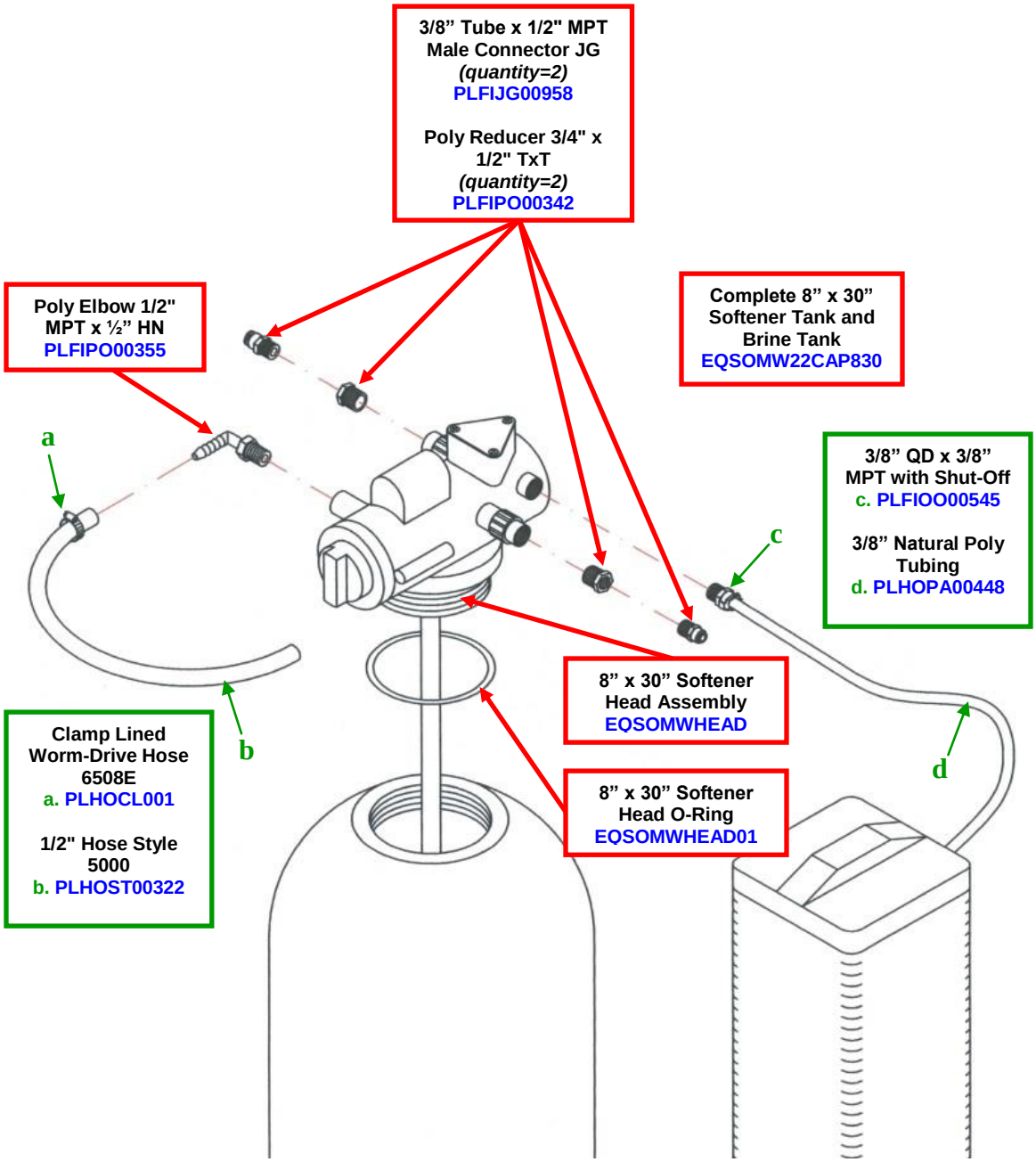
As needed, add high purity salt pellets to the brine tank.
Allow the salt to soak for 4 hours before first regeneration.

REBEDDING

Rebedding the water softener is required when the media is exhausted, noted by an increase in water hardness. This should be done according to company procedures as needed.

part#
EQASSYSORO22CAP830
8”x30” Water Softener & Brine Tank

8” x 30” WATER SOFTENER with BRINE TANK: Parts
Part# EQASSYSORO22CAP830



UV LIGHT

The current UV Light Assembly includes the UV Light, Power Supply, and fittings.

Over the course of the PB2's life, two different UV lights have been supplied. Refer to the details below for support and replacement parts. The UV Manufacturer's Operator Instructions should also be referenced for specific usage and maintenance instructions.

Steri-Light VT4 UV

UV Light VT4 Only, 120vac
SUUV02017

Replacement UV Lamp
EQUVOO00906

Replacement Quartz Sleeve
EQUVOO00907

Ballast/Power Supply, 120vac
EQSUBUVPB2-1

Replacement O-ring
SUUV02019

UV Light VT4 Only, 220vac
SUUV02018

Ballast/Power Supply, 220vac
EQSUBUVPB2-3

Wonder Light UV

UV Light Only
EQUVOO00901

Replacement UV Lamp
EQUVOO00902

Replacement Quartz Sleeve
EQUVOO00903

Ballast/Power Supply
EQUVOO00904

Replacement O-Ring
EQUVOO00908

Replacement Clips
EQUVOO00905

NOTE: No Wonder Light 220vac model used.

MAINTENANCE

The UV Manufacturer's Operator Instructions should be referenced concerning specific usage and maintenance instructions for the model in question. Below are general recommendations relating to the UV Lamp and Quartz Sleeve.

UV LAMP:
- Recommended to be replaced every 8000-9000 hours, which is approximately 12 months of continuous use, or as needed.
- Inspect and replace the o-ring if necessary.

UV QUARTZ SLEEVE:
- Recommended to be cleaned every 6-12 months.
- Recommended to be replaced every 24 months, or if broken, cracked, or chipped.

REPLACING a UV LAMP and/or QUARTZ SLEEVE

- Avoid touching the sides of the quartz sleeve and lamp with bare hands. Use soft gloves, and handle with care.
- See the UV Manufacturer's Operator Instructions for specific instructions for the model in question.

1. Disconnect the power to the UV Light.

2. Turn water source OFF to the UV Light.

3. Open the PB2's Front Cabinet Door and attach a small piece of tube onto the Labcock on the Inlet Solenoid, and then open the Labcock to relieve the system pressure, and drain it outside the cabinet. When finished, remove the tube and close the Labcock.

4. Remove the UV Light from the PB2 Cart.

5. Remove the end of the UV Light to expose the UV Lamp and Quartz Sleeve.

6. Carefully remove the UV Lamp for replacement and/or the Quartz Sleeve for cleaning or replacement.
- Take care not to remove at an angle, which could put undue pressure on either the bulb or sleeve causing breakage.

7. Inspect the O-ring and replace if necessary.

8. Perform the necessary maintenance (replacement and/or cleaning).

9. Reinstall the end of the UV Light to the unit.

10. Reinstall the UV Light onto the PB2 cart.

11. Turn water source ON to the UV Light and check for leaks.

12. Reconnect the power to the UV Light.

CLEANING UV QUARTZ SLEEVE

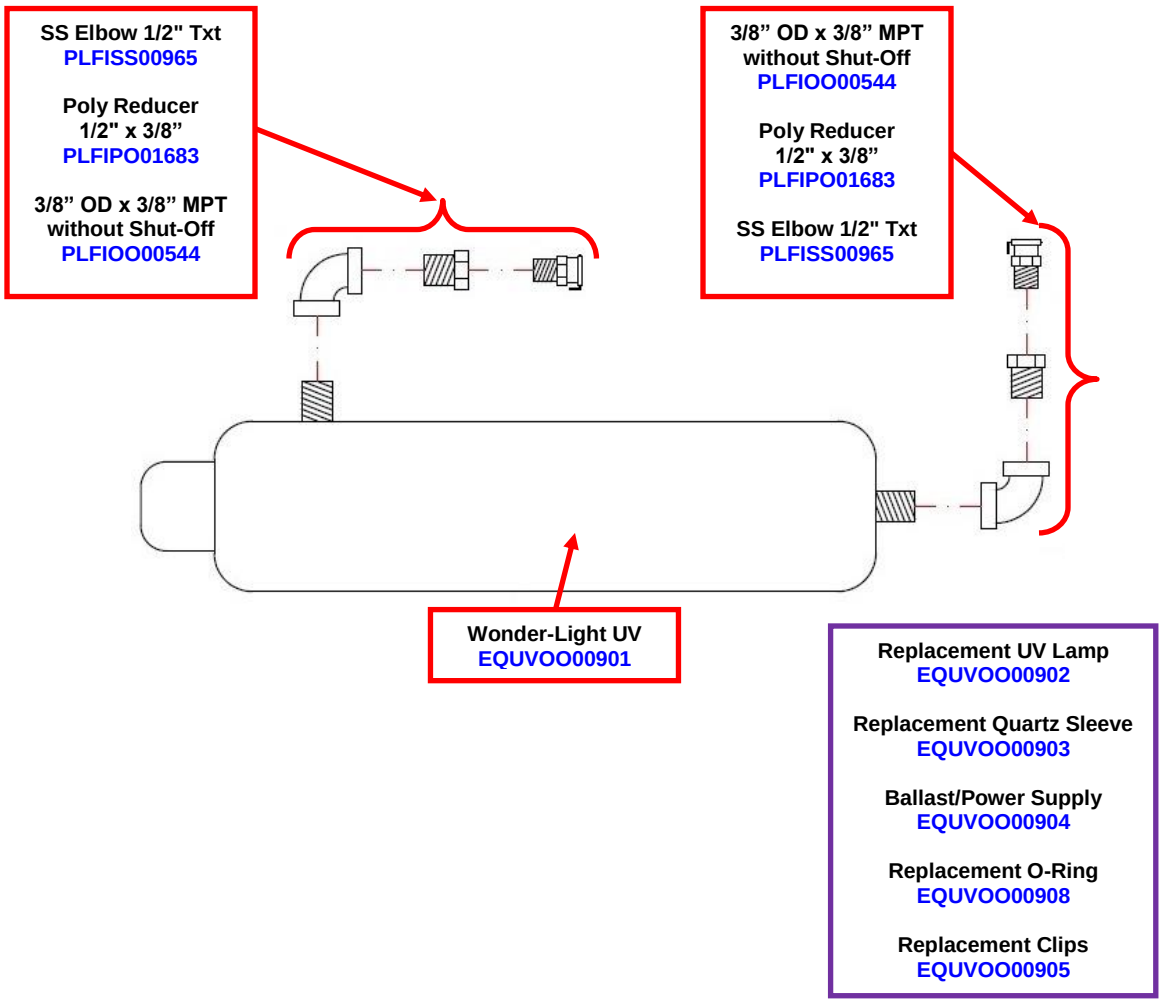
1. Remove the Quartz Sleeve following the instructions above.

2. Clean with vinegar consisting of 5-20% acetic acid.

3. Rinse the Quartz Sleeve with RO or DI water after cleaning.

4. Let it air dry before reinstalling.

UV LIGHT: Wonder-Light UV Parts



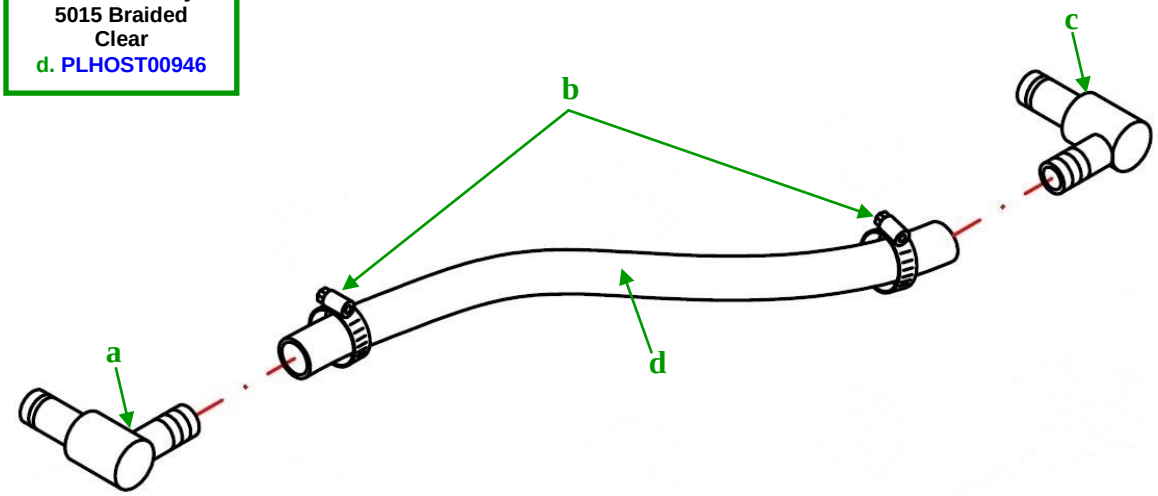
UV OUTLET HOSE

3/8” Barb with Shut-Off Elbow
a. PLFIOO01982

5/8” One Ear Oticker Clamp *(quantity=2)*
b. HWHCOO01041

3/8” Barb without Shut-Off Elbow
c. PLFIOO01980

Hose 3/8” ID Style 5015 Braided Clear
d. PLHOST00946



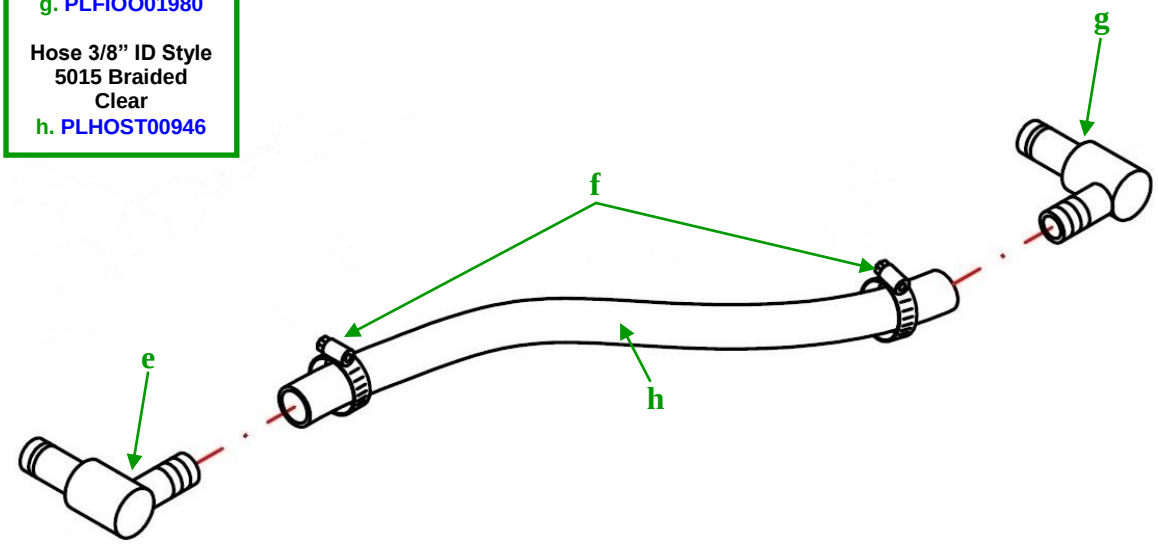
UV INLET HOSE

3/8” Barb without Shut-Off Elbow
e. PLFIOO01980

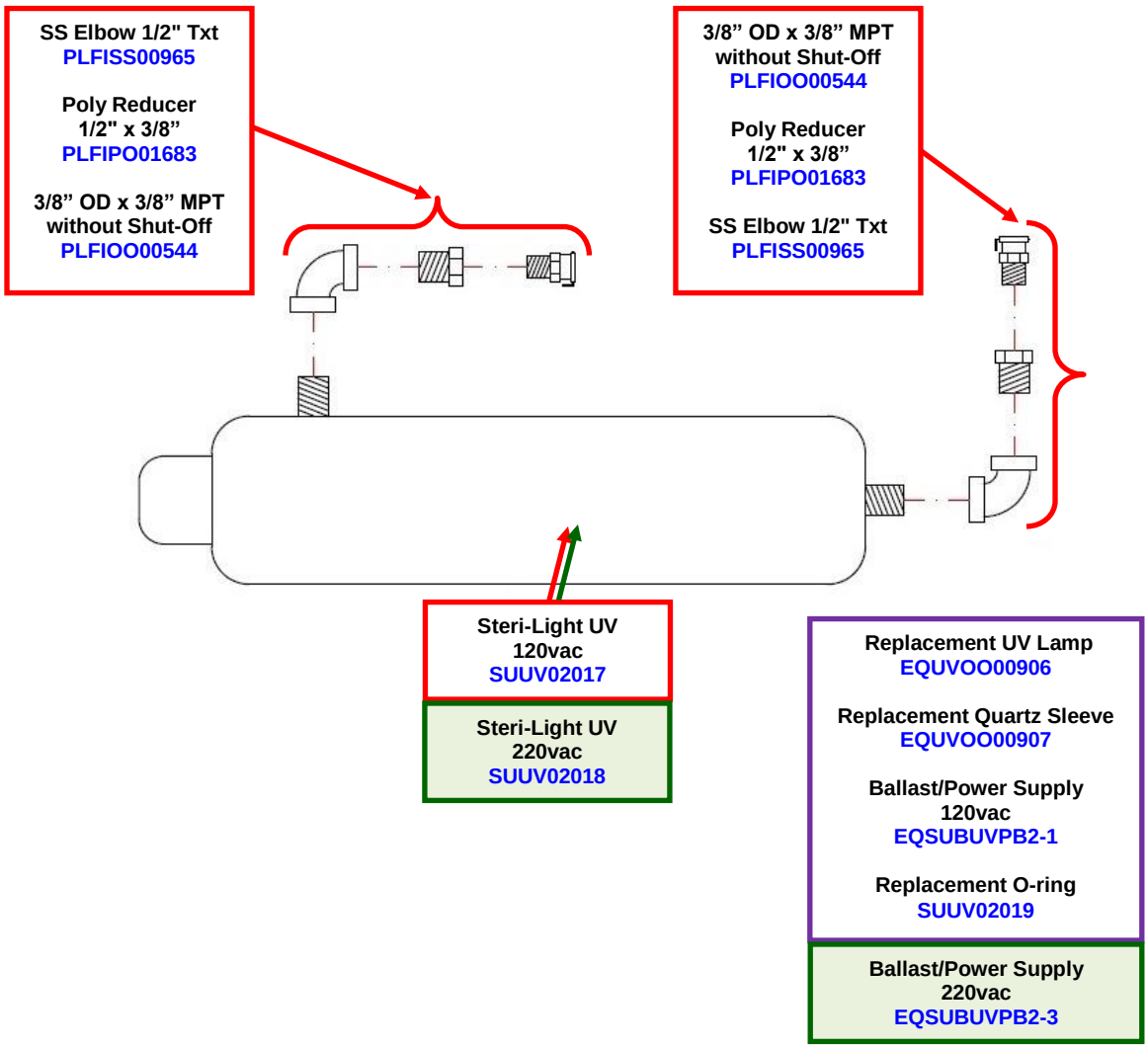
5/8” One Ear Oticker Clamp *(quantity=2)*
f. HWHCOO01041

3/8” Barb without Shut-Off Elbow
g. PLFIOO01980

Hose 3/8” ID Style 5015 Braided Clear
h. PLHOST00946



UV LIGHT: Steri-Light UV Parts



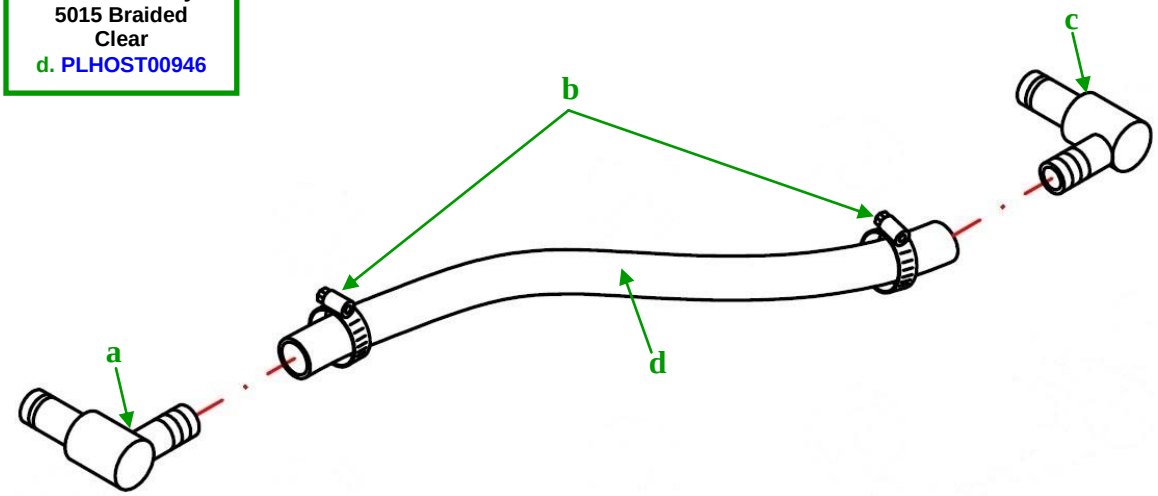
UV OUTLET HOSE

3/8” Barb with Shut-Off Elbow
a. PLFIOO01982

5/8” One Ear Oticker Clamp *(quantity=2)*
b. HWHCOO01041

3/8” Barb without Shut-Off Elbow
c. PLFIOO01980

Hose 3/8” ID Style 5015 Braided Clear
d. PLHOST00946



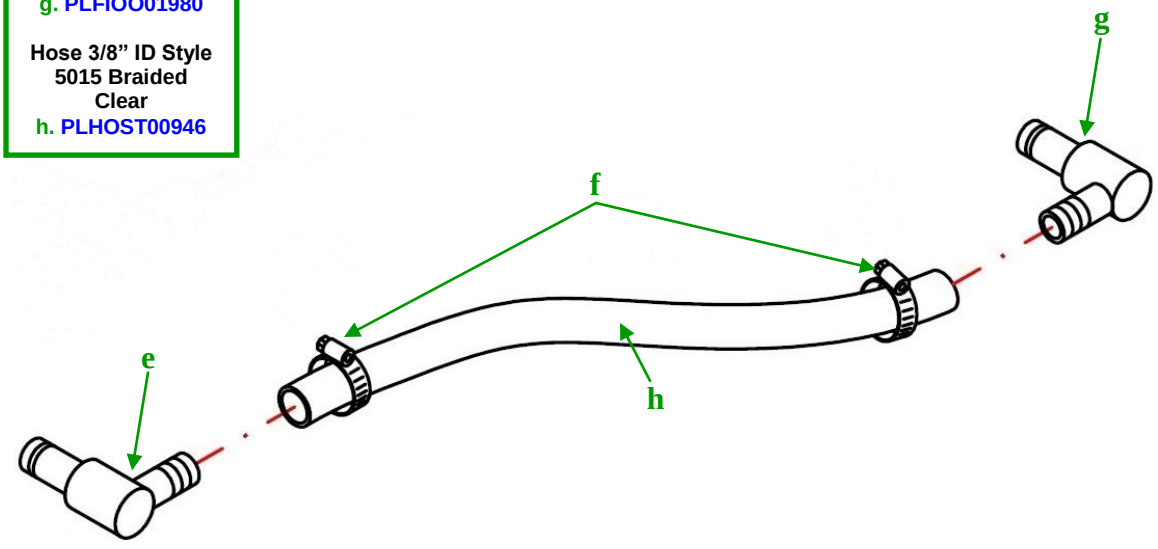
UV INLET HOSE

3/8” Barb without Shut-Off Elbow
e. PLFIOO01980

5/8” One Ear Oticker Clamp *(quantity=2)*
f. HWHCOO01041

3/8” Barb without Shut-Off Elbow
g. PLFIOO01980

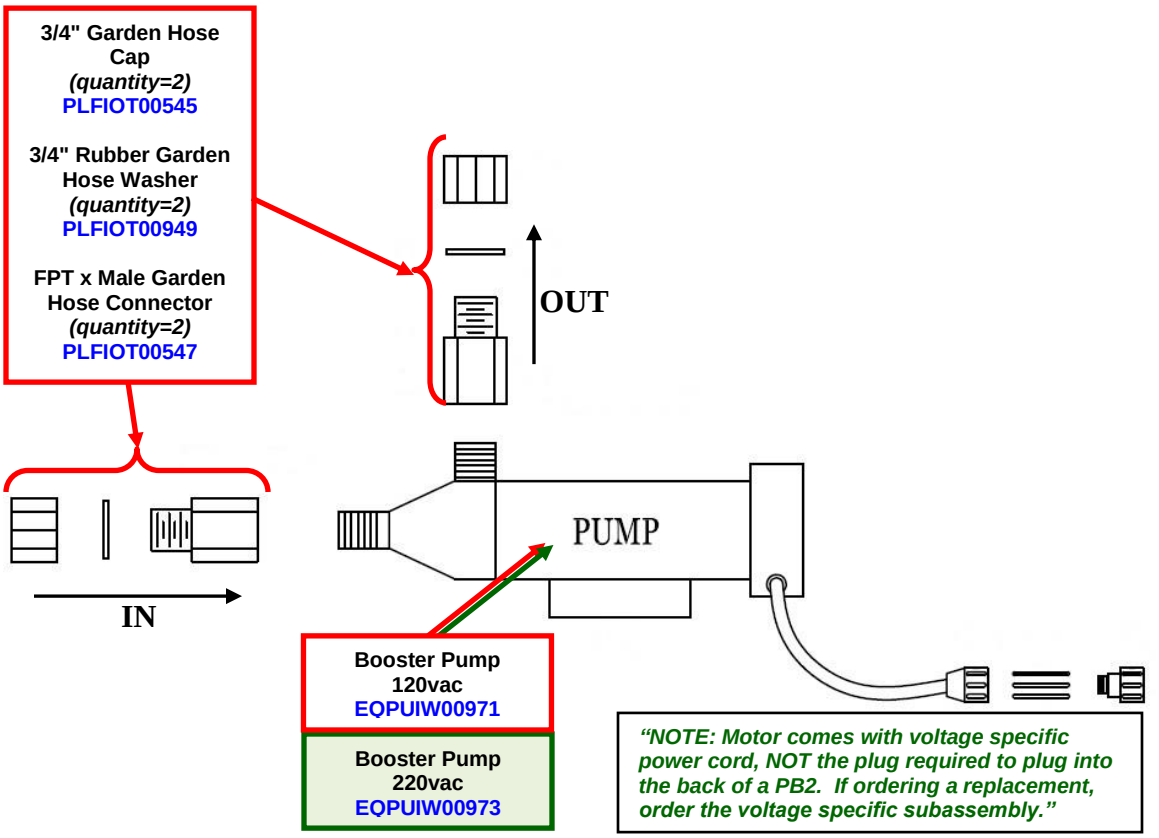
Hose 3/8” ID Style 5015 Braided Clear
h. PLHOST00946

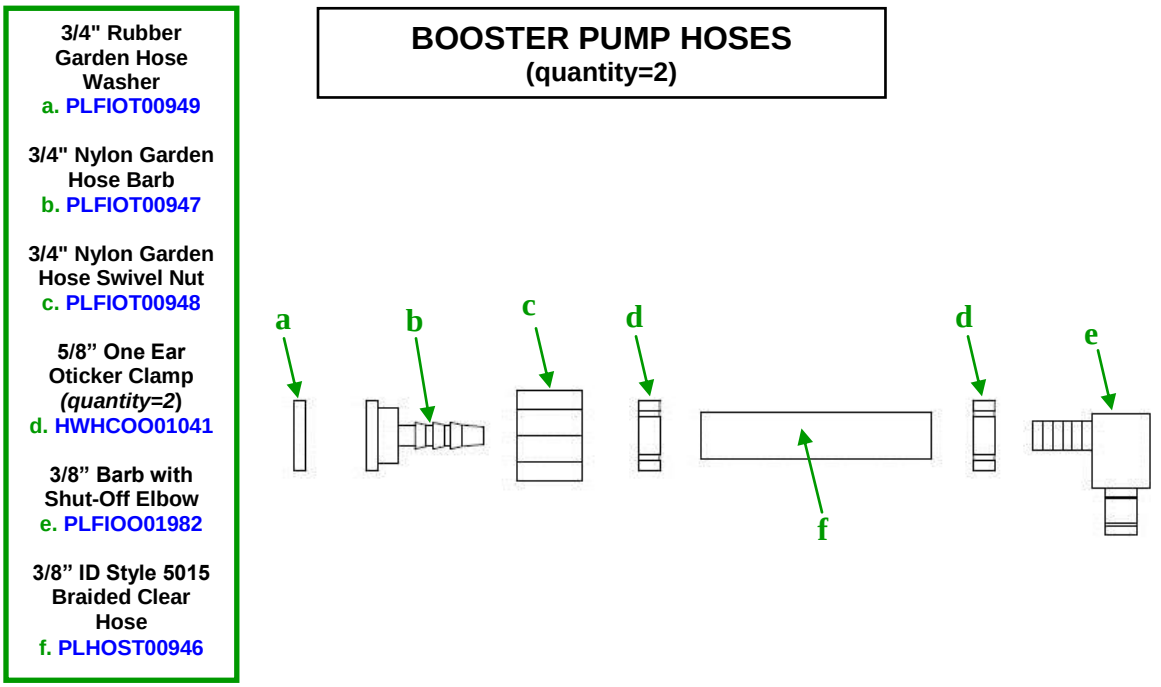


BOOSTER PUMP: Parts

Part# EQSUBPB2BP – 120v Model

Part# EQSUBPB2BP-220V – 120v Model

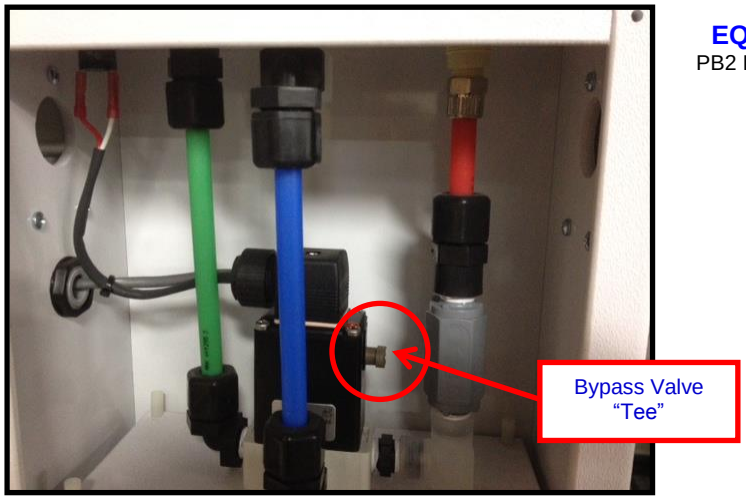




DIVERT-to-DRAIN

Manual Divert "Tee"
Located inside the Divert-to-Drain is a manual "Divert Tee" which is used during certain procedures noted in this manual.
- *Divert/Bypass Position:* Press in the "tee" and turn clockwise to lock into position.
- *Normal Operation Position:* Turn the "tee" counter-clockwise until it "pops" out.
**** NOTE: Failure to set the "Divert Tee" back to its normal operating position and the Divert-to-Drain's solenoid valve will NOT divert to drain in a poor water quality condition.***

part#
EQDTD-PB2
PB2 Divert-to-Drain



TESTING AFTER SET-UP/INSTALL

1. Place the Green Tubing from the Divert-to-Drain's "PRODUCT OUT" port and the Red Tubing from the "TO DRAIN" port to drain.

2. Plug the PB2 into an electrical receptacle.

3. Verify that all air has been purged from the PB2's pre-treatment as detailed in the "*Unpacking and Initial Start-Up" section.*

4. Turn the **OPERATE Switch** to the **OPERATE** position.
- If the PB2 goes into Low Pressure Alarm, press the **LOW PRESSURE ALARM RESET Button**. If it continues to go into Low Pressure Alarm, see "*Low Pressure Alarm" Section.*
- The PB2 should start up and the Water Quality Monitor should go into poor water quality condition. Verify that while in this condition the following is happening:
    - No product water should be coming out of the Green Tubing from the "PRODUCT OUT" port.
    - Product water is being diverted to drain through the Red Tubing from the "TO DRAIN" port.
    - The "Good Water Quality" LED indicator is not lit.
- Once the Water Quality Monitor gets above the set-point it should go into a good water quality condition. Verify that while in this condition the following is happening:

- The product water should flow from the Green Tubing from the "PRODUCT OUT" port.
- No product water should be diverting to drain through the Red Tubing from the "TO DRAIN" port.
- The "Good Water Quality" LED indicator should be lit.

- If it is not functioning as described, recheck set-up/install, and if necessary contact Technical Support.

QUARTERLY FUNCTIONALITY TESTING

CAUTION

This procedure requires that the PB2 be plugged into an electrical outlet and powered ON while accessing the back of the Water Quality Monitor inside the control box. Take necessary precautions to avoid electrical shock while accessing and working in proximity to and within the control box.

Turn OFF and unplug the PB2 if tools or screws are dropped into the control box before attempting to retrieve them.

1. Place the Green Tubing from the Divert-to-Drain's "PRODUCT OUT" port and the Red Tubing from the "TO DRAIN" port to drain.

2. Verify that the PB2 is powered OFF, and unplugged from its electrical receptacle.

3. Remove the two corner screws on top of the PB2's cabinet, and swing open the top panel.

4. Remove the two screws securing the control box cover and remove the cover.

5. Plug the PB2 into an electrical receptacle.

6. Verify that all air has been purged from the PB2's pre-treatment as detailed in the "*Unpacking and Initial Start-Up" section.*

7. Turn the **OPERATE Switch** to the **OPERATE** position.
- If the PB2 goes into Low Pressure Alarm, press the **LOW PRESSURE ALARM RESET Button**. If it continues to go into Low Pressure Alarm, see "*Low Pressure Alarm" Section.*

8. Push the **MODE Switch** on the front of the Water Quality Monitor until **Set-Point** is displayed.

9. Locate the **CAL-UP** and **CAL-DOWN Buttons** on the back side of the Water Quality Monitor at the top of the board inside the control box. The Water Quality Monitor should be displaying **"90"**.
a. Press the **CAL UP Button** to set this reading to **"99"**.
b. Press the **MODE Switch** until "**CAL"** is displayed briefly, and will then change to **% Reject**.

10. This will cause the Water Quality Monitor to go into poor water quality condition. Verify that while in this condition the following is happening:
- No product water should be coming out of the Green Tubing from the "PRODUCT OUT" port.
- Product water is being diverted to drain through the Red Tubing from the "TO DRAIN" port.
- The "Good Water Quality" LED indicator is not lit.

11. Push the **MODE Switch** on the front of the Water Quality Monitor until **Set-Point** is displayed.

12. Press the **CAL DOWN Button** to set this reading to **"90"**.

a. Press the **MODE Switch** until "**CAL"** is displayed briefly, and will then change to **% Reject**.

13. Once the Water Quality Monitor gets above the set-point it should go into a good water quality condition. Verify that while in this condition the following is happening:

- The product water should flow from the Green Tubing from the "PRODUCT OUT" port.
- No product water should be diverting to drain through the Red Tubing from the "TO DRAIN" port.
- The "Good Water Quality" LED indicator should be lit.

- If it is not functioning as described, contact Technical Support.

14. Turn the **OPERATE Switch** to the **OFF** position.

15. Unplug the PB2 from its electrical receptacle.

16. Replace the control box cover using the two screws that secure it.

17. Close the front panel, and replace the two corner screws on top of the PB2's cabinet that hold it closed.

ANNUAL REPLACEMENT of the DIVERT-TO-DRAIN'S SOLENOID VALVE DIAPHRAGM

To ensure proper functionality, the Divert-to-Drain's Solenoid Diaphragm must be replaced annually. Follow these steps to perform this maintenance function.

1. Verify that the PB2 is powered OFF, and unplugged from its electrical receptacle.

2. Remove all red John Guest retainer clips from the John Guest 90° elbows and bulkheads, on the following ports; "FROM RO", "PRODUCT OUT", and "TO DRAIN".

3. Disconnect the Blue and Green tubing from the John Guest 90° fittings.

4. Remove the Divert-to-Drain's access cover.

5. Remove the John Guest 90° elbow from the outside John Guest bulkhead labeled "FROM RO".
- Loosen the Fast-N-Tight compression nut and remove Blue tubing from the Divert-to-Drain solenoid.
- Remove the John Guest 90° elbow from the inside John Guest bulkhead labeled "FROM RO". -
- Loosen the same panel nut to remove the bulkhead from the Divert-to-Drain box.

6. Loosen the Green and Red Fast-N-Tight compression nuts.
- Loosen the panel nut on the inside of Divert-to-Drain labeled "TO DRAIN".
- Slide the Red and Green tubing out of Divert-to-Drain solenoid valve.

7. Use a small flat blade or Phillips screwdriver and loosen the DIN connect on top of the solenoid valve, and disconnect the DIN connector from the solenoid coil.

8. Loosen and remove the 4 solenoid platform nylon nuts, then lift the solenoid platform up and remove the solenoid valve from Divert-to-Drain box.

9. Loosen and remove the 4 solenoid coil screws.
- Separate the solenoid coil from the solenoid base.
- Remove the FFKM diaphragm and discard.
- Replace the FFKM diaphragm new one.

10. The solenoid coil and base have line up dowels for proper assembly and reseating.
- Reinsert the coil screws and loosely tighten the screws.
- Diagonally tighten the screws in an X pattern**.**
- Do not over tighten the coil screws as this may strip the screw hole or crack the base.

11. Reassembly is reverse order starting with Step# 8.

12. Perform “Quarterly Functionality Testing” when complete to verify proper installation.

REPLACEMENT of the DIVERT-TO-DRAIN’S FUSE in the CONTROL BOX

There is a fuse located in the PB2’s control box protecting the Divert-to-Drain from surges, which might need to be replaced if blown.

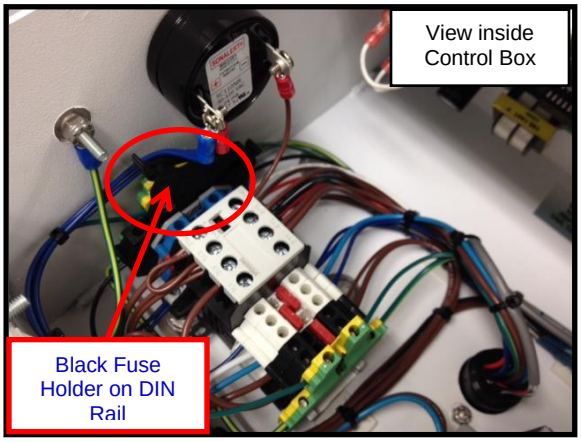
part#
ELLFFS01159
5 amp Fuse

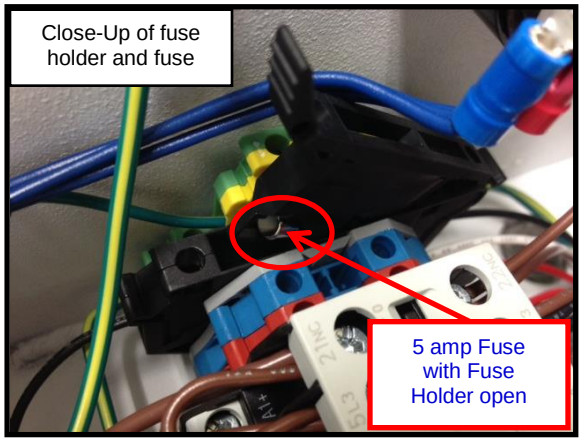
1. Unplug the PB2 from its electrical receptacle.

2. Remove the two corner screws on top of the PB2’s cabinet, and swing open the top panel.

3. Remove the two screws securing the control box cover and remove the cover to gain access to the inside of the control box.

4. Locate the black fuse holder on DIN rail which if looking from back to front of the control box, is located on the left side near the piezo.
- Gently lift the top left-side of the black fuse holder to unsnap it, opposite the hinged side to expose the fuse.





5. Remove the old fuse and replace with a new one.

6. Close the black fuse holder, snapping back into place.

7. Replace the control box cover using the two screws that secure it.

8. Close the front panel, and replace the two corner screws on top of the PB2’s cabinet that hold it closed.

DI POLISHING FILTER

part#
EQSUBDI01456
DI Polishing Filter Assembly

MONITORING the DI POLISHING CARTRIDGE

The resistivity monitor located on top of the unit has green and red indicator lights which denote the quality of water. When the green light is on, the water is above 1 meg ohm and suitable for dialysis. When the red light is on an audible alarm will also sound, and alerts to the water quality being less than 1 meg ohm and not suitable for dialysis.

Water must be flowing through the DI Polishing Cartridge for an accurate reading on the resistivity monitor. It is recommended that the dialysis machine be on and using water (such as in a rinse mode) for at least 5 minutes before the resistivity monitor is considered to be accurate. The PB2 must be in running in normal operation mode when rinsing up the DI cartridge.

CALCULATING DI CARTRIDGE CAPACITY

1. Start the PB2 and let it run for 10-15 minutes with either the product water diverted to drain.

2. Record the Product TDS reading from the Water Quality Monitor.

3. The DI Polishing Cartridge has a 488 grain capacity which may not be exact due to factors such as CO^2 content, pH, and temperature. Use the following formula to estimate the number of treatments per cartridge.

- Convert Product TDS to grains per gallon

Formula: **PRODUCT TDS / 17.1 = PRODUCT TDS (gpg)**
Example: ***10 / 17.1 = .5848 gpg***

- Calculate grains removal for a single dialysis treatment (gpg)

Formula: **PRODUCT TDS (gpg) x DIALYSATE FLOW (cc's per minute) x 60 (minutes) x TOTAL PB2 HOURS FOR A SINGLE TREATMENT = GRAINS REMOVAL FOR A SINGLE TREATMENT (cc)**
Example: ***.5848 gpg x 650 cc x 60 min x 5 hrs = 114036 cc***

- Convert grains removal from cc's to grains per gallon:

Formula: **GRAINS REMOVAL FOR A SINGLE TREATMENT (cc) / 3785 = GRAINS REMOVAL FOR A SINGLE TREATMENT (gpg)**
Example: ***114036 cc / 3785 = 30.12 gpg***

- Calculate estimated number of treatments per cartridge:

Formula: **DI CARTRIDGE GRAIN CAPACITY(488) / GRAINS REMOVAL FOR A SINGLE TREATMENT (gpg) = EST NUMBER OF TREATMENTS PER CARTRIDGE (rounded)**
Example: ***488 / 30.12 gpg = 16*** *est. treatments per cartridge*

CHANGING the DI POLISHING CARTRIDGE

The DI Polishing Cartridge should be changed when the resistivity monitor on top of the unit turns RED, or when disinfecting as described above.

1. Turn the PB2 OFF, and turn the water supply to the PB2 OFF.

2. Open the PB2's Front Cabinet Door and attach a small piece of tube onto the Labcock on the Inlet Solenoid, and then open the Labcock to relieve the system pressure, and drain it outside the cabinet. When finished, remove the tube and close the Labcock.

3. Place a container under the DI Filter Housing to catch water.

4. Place a filter wrench onto the filter housing, and turn counter-clockwise until loose, then spin off and remove it.

5. Remove the old filter, and place a new one in the filter housing.

6. Inspect and replace the housing o-ring if necessary. Make sure it is properly seated.

7. Reinstall the filter housing, turning clock-wise to hand tighten.
**** Do not overtighten which will cause the filter-cap to crack.***

part#
SUCAOO00563
10" DI Polishing Cartridge

SAMPLING

All water samples for AAMI standards should be collected from the product line out of the DI Polishing Filter, since it is the last measure of filtration prior to the dialysis machine.

DISINFECTING the PB2 with a DI POLISHING FILTER

When disinfecting the PB2 the DI Polishing Cartridge must be removed and discarded, and a false tube substituted in its place inside the filter housing. This false tube should remain in place during the entire disinfection procedure and rinsing procedure. Once complete a new DI Polishing Cartridge should be installed.

part#
SUFFOO00581
10" Standard False Tube

APPENDIX A

LIMITED WARRANTY TERMS and CONDITIONS

a. This limited warranty is given only to the original buyer and covers the equipment delivered with this limited warranty.
b. The buyer shall be barred from any recovery on this limited warranty or otherwise for damages due in whole or in part to…

… unreasonable use
… improper operation
… use beyond normal fashion
… failure to follow instructions
… failure to maintain the product in good condition and repair
… or the like.

c. If the buyer discovers or should have discovered a defect in which it is reasonable to conclude that damage, either personal, property, or economic, may result, the buyer's continued use of the product shall constitute any assumption of risk by the buyer and a bar to any recovery for breach of this limited warranty or otherwise.
d. No oral or written representation, information, or advice given by Better Water LLC or any of its representatives shall create a warranty or in any way increase the scope of this express limited warranty and shall not form a part of the basis for bargain.

WHAT IS WARRANTED AND FOR HOW LONG?

a. All equipment, excluding ion exchange and filtration media and cartridges, are warranted to be free from factory defects in materials, and workmanship under normal use for a period of one (1) year from the date of shipment.
b. It is a condition precedent to recovery on this limited warranty that the buyer strictly comply with all operating and maintenance guidelines established by Better Water LLC and that the serial number (*if applicable*) is intact and legible on the equipment.
c. It is a condition precedent to recovery on this limited warranty for damage to the external finish of the equipment that the buyer notifies Better Water LLC at the time of the installation that the finish is damaged.

WHAT IS REMEDY FOR BREACH OF THIS LIMITED WARRANTY or NEGLIGENCE BY BETTER WATER LLC

a. Buyer's sole and exclusive remedy for any breach of this limited warranty or negligence by Better Water LLC shall be repair or replacement of the defective part, at the option of Better Water LLC, provided such defective part is returned to Better Water LLC for inspection.
b. Better Water LLC shall not be obligated to supply an exact replacement of the defective part and reserves the right to substitute new and improved parts.
c. Better Water LLC shall provide at no cost to buyer, labor to remove and/or replace defective parts covered by this limited warranty for a period of ninety (90) days from the date of installation by Better Water LLC of the equipment.
d. After such ninety (90) day period, buyer shall be responsible for any labor or service charge for the removal and/or replacement of any defective parts.
e. Buyer shall be responsible for all travel expenses and freight charges at all times.
f. Better Water LLC shall have no obligation to repair or replace any defective part if buyer fails to follow the procedure set forth in “HOW TO OBTAIN A REPLACEMENT PART UNDER LIMITED WARRANTY”.

IN NO EVENT SHALL THIS LIMITED WARRANTY BE CONSTRUED TO COVER, NOR SHALL BETTER WATER LLC BE LIABLE TO BUYER AS ANY OTHER PERSON FOR, ANY

CONSEQUENTIAL, INCIDENTAL, ECONOMIC, DIRECT, INDIRECT, GENERAL OR SPECIAL DAMAGES, WHICH ARE HEREBY EXPRESSLY DISCLAIMED.

HOW TO OBTAIN A REPLACEMENT PART UNDER LIMITED WARRANTY

a. Buyer should contact the Customer Service or Technical Support Departments and request a Return Goods Authorization.
b. Described part(s) will be sent with a purchase order.
c. The returned part(s) will be returned to the factory for limited warranty consideration. If part(s) are not covered under the limited warranty, part(s) will be considered billable against the purchase order supplied.

WHAT IS NOT COVERED BY THIS LIMITED WARRANTY:

By way of example and not limitation, this limited warranty does not cover:

- Damage to or replacement of any ion exchange resin of filter media
- Labor or service charges for the removal and/or replacement of any defective parts after the ninety (90) day period from the date of installation or sale by Better Water LLC
- Freight charges and travel expenses
- Damage from inadequate or defective wiring, improper voltage, improper connections or electrical service, inadequate or defective plumbing, water supply, or water pressure, or in violation of applicable building, plumbing or electrical codes, laws, ordinances or regulations.
- Damage from improper installation or operation, including but not limited to, abuse, accident, neglect, improper maintenance, freezing and fires, or abnormal use.
- Damage caused by contaminants in Buyer's water supply, including hardness, chlorine, chloramines, sulfur, bacterial iron, tannin, algae, oil, organic matter or other unusual substances, if special equipment has not been installed by Better Water LLC to remove such contaminants
- Damage to or caused by filters/membranes or other replacement parts not purchased from Better Water LLC or damage caused by modification, alteration, repair or service of the equipment or any of its parts by anyone other than Better Water LLC or its expressly authorized representatives.

APPENDIX B

TECHNICAL SERVICE BULLETINS

TECHNICAL SERVICE BULLETIN

PB1/PB2 Low PSI / Monitor Modification

TSB# **TSB2012001**	Date **01/11/12**	Page 1 of 6

In response to questions concerning operations of Better Water LLC Portable ROs without dialysis personnel/trained operators in attendance (within visual or audible range of the units) during the entire treatment, Better Water LLC issues the following:

Currently, on all PB1 and PB2 Portable RO units manufactured prior to Jan. 12, 2012, the following occurs during a low pressure default condition:

1) A visual alarm light is illuminated.
2) The inlet solenoid valve remains open / energized.
3) The pump motor is turned off (this is to protect the pump head from running dry).
4) The Water Quality Monitor is turned off.
5) The water feeding the dialysis machine continues to flow through the Pretreatment, RO membrane and .05 final filter (PB2 only).

If the customer desires changes to their unit allowing the Water Quality Monitor to remain on and the Inlet Solenoid Valve to close in a low water pressure default condition, shutting off water to the dialysis machine, see the following instructions.

In order to determine whether your Portable RO unit can be modified, see Illustrations 1 and 2.
Your control box must match exactly, having either
a Contactor Relay (Illustration 1 – see Page 2)
or a Blade-type Relay (Illustration 2 – see Page 4), to be modified.
Any deviation in appearance from Illustration 1 or 2 prevents the unit from being modified.

For units matching exactly either Illustration 1 or 2, modifications are available:

Field modifications are simple wire relocations taking about 15 minutes to complete. See illustrations and instructions.

*** Should you wish Better Water LLC to make these wire relocation modifications, verification and testing, please call Better Water LLC to receive a RGA, then issue a Purchase Order for Labor / Testing charge of $125.00 (as of 1/11/12).

If you have identified your unit as having a Contactor Relay, see Pages 2, 3 and 6.
If you have identified your unit as having a Blade-type Relay, see Pages 4, 5 and 6.

If you would like to speak to Technical Support prior to making modifications or need assistance during the process, please call (615) 355-6063, and press "1".

All Better Water LLC Portable RO units manufactured on or after Jan. 12, 2012 will include this modification as a standard.

TECHNICAL SERVICE BULLETIN

PB1/PB2 Low PSI / Monitor Modification

TSB# **TSB2012001** | Date **01/11/12** |

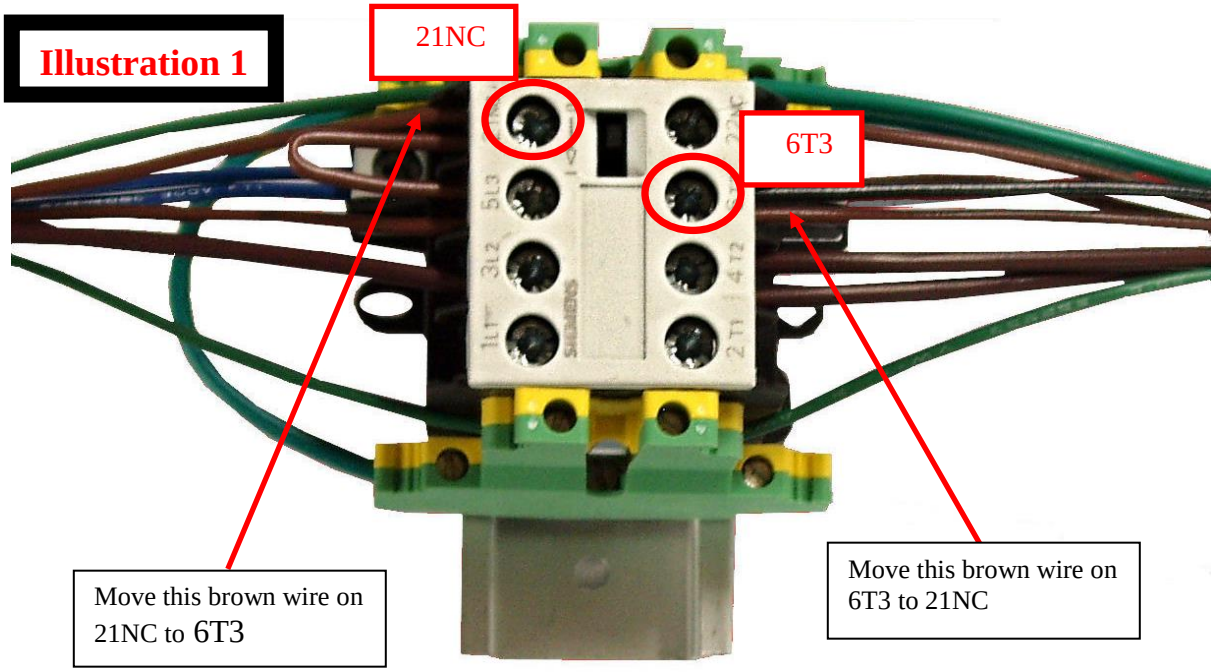
Contactor type

Note: Before performing any maintenance or modification on a PB2, ensure the unit has been removed from the power source and water source.

TOOLS / PARTS REQUIRED: Voltmeter, Phillips screwdriver, 7" 18ga wire, and 1 wire nut or Butt splice.
For your convenience you can order these parts from Better Water LLC, specifying Part # EQPB2RETROFIT

1) Unplug portable RO from outlet
2) On PB1 models, remove 4 screws in top cover of control box to access relay block. On PB2 models, remove 2 bolts in top corners of cabinet to access relay block.
3) On portables with a contactor locate 21NC on the contactor block. There should be 2 brown wires there.
 a) Locate the brown wire connecting 21NC to 16 pin connector #5 using volt meter set to continuity. See Illus. 1
 b) Remove that wire from position 21NC.
 c) Locate the brown wire at position 6T3.
 d) Remove that wire.
 e) Add the 7" wire extension to the brown wire removed from 21NC using the wire nut.
 f) Connect this assembly to 6T3.
 g) Locate the brown wire removed from 6T3.
 h) Connect to position 21NC.

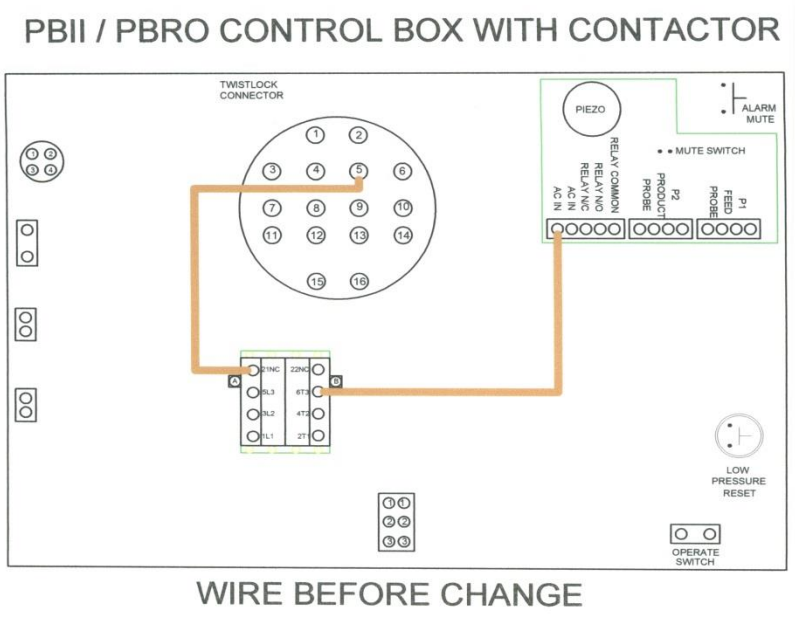
Illustration 1

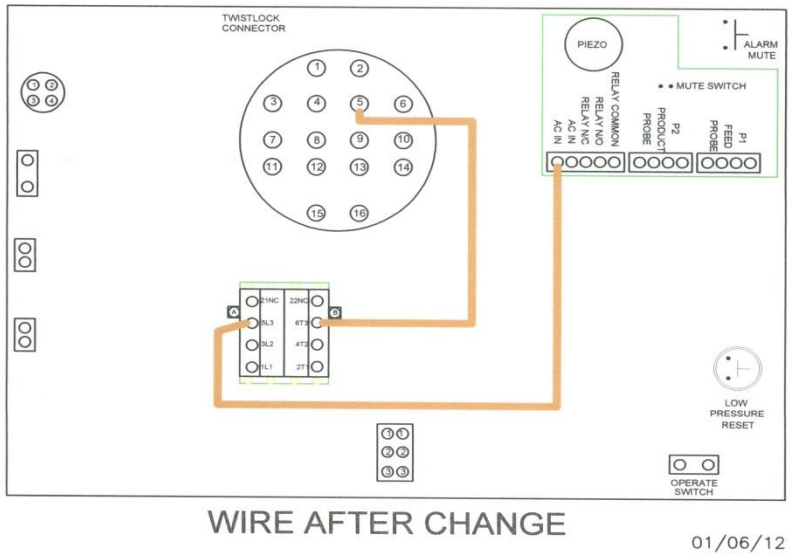


TECHNICAL SERVICE BULLETIN		
PB1/PB2 Low PSI / Monitor Modification		
TSB# **TSB2012001**	Date **01/11/12**	Page 3 of 6

Note: There are 2 brown wires on 21NC currently. To locate the correct brown wire, a volt meter must be used to determine continuity between #5 on the twist lock connector and the target brown wire on 21NC.

Drawing 1





TECHNICAL SERVICE BULLETIN

PB1/PB2 Low PSI / Monitor Modification

TSB# **TSB2012001**	Date **01/11/12**	Page 4 of 6

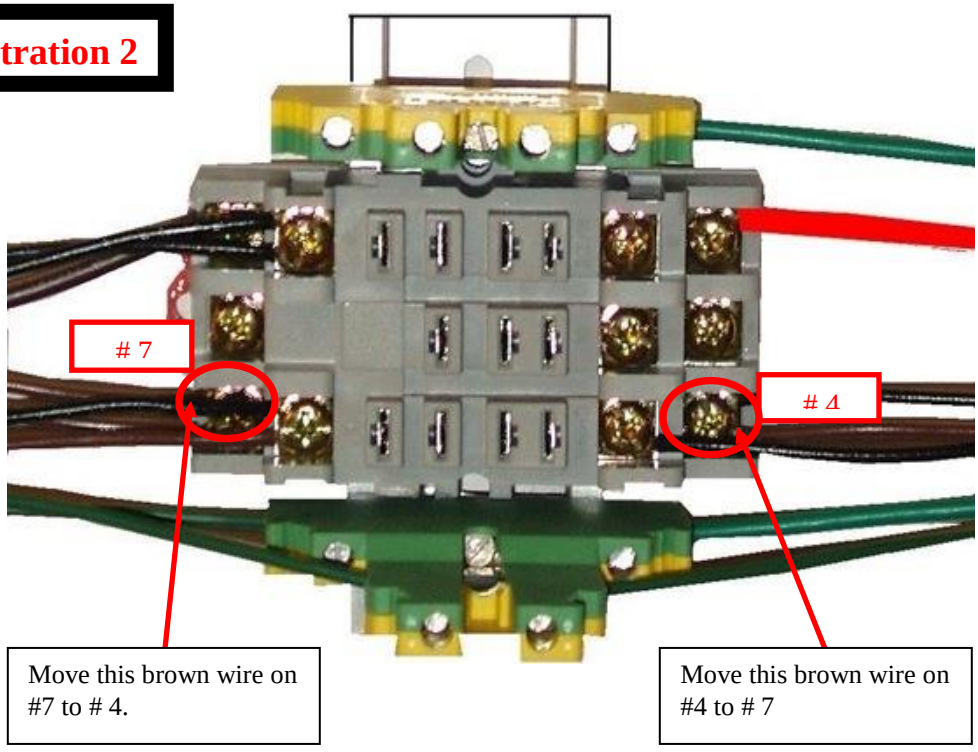
Blade-type Relay

Note: Before performing any maintenance or modification on a PB2, ensure the unit has been removed from the power source and water source.

TOOLS / PARTS REQUIRED: Voltmeter, Phillips screwdriver, 7" 18ga wire, and 1 wire nut or Butt splice. *For your convenience you can order these parts from Better Water LLC, specifying Part # EQPB2RETROFIT*

1) Unplug portable RO from outlet.
2) On PB1 models, remove 4 screws in top cover of control box to access relay block. On PB2 models, remove
bolts in top corners of cabinet to access relay block.
3) On portables with a relay locate #7 on the relay block. There should be 2 brown wires there.
a) Locate the brown wire connecting #7 to 16 pin connector #5 using volt meter set to continuity. See illus.2
b) Remove that wire from relay position #7.
c) Locate the brown wire at relay position #4.
d) Remove that wire.
e) Add the 7" wire extension to the brown wire removed from #7 using the wire nut.
f) Connect this assembly to #4.
g) Locate the brown wire removed from #4.
h) Connect to relay position #7.

Illustration 2

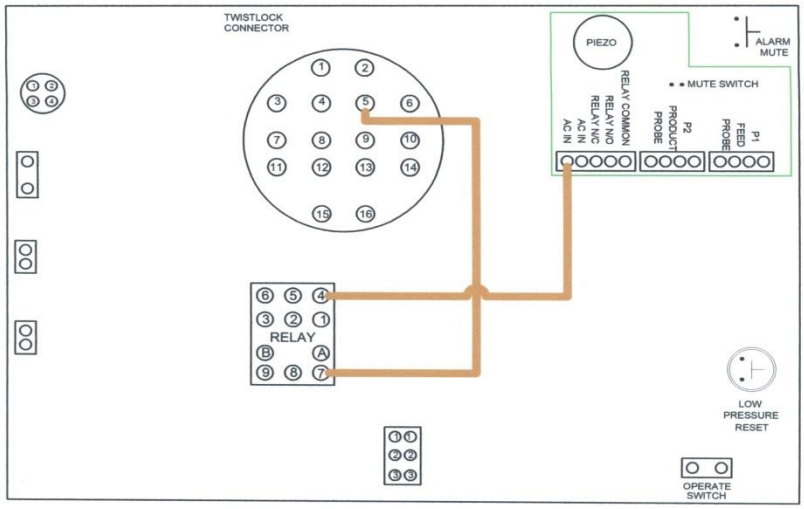


TECHNICAL SERVICE BULLETIN		
PB1/PB2 Low PSI / Monitor Modification		
TSB# **TSB2012001**	Date **01/11/12**	Page 5 of 6

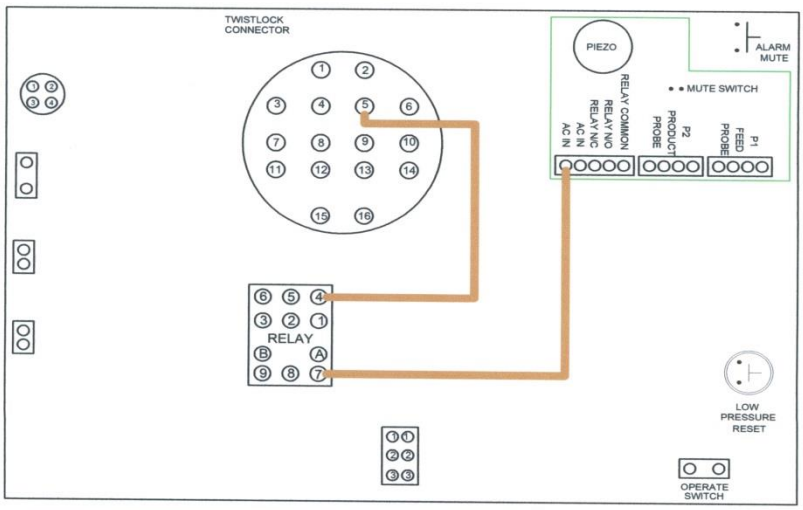
Note: There are 2 brown wires on #7 currently. To locate the correct brown wire, a volt meter must be used to determine continuity between #5 on the twist lock connector and the target brown wire on #7.

Drawing 2

PBII / PBRO CONTROL BOX WITH RELAY



WIRE BEFORE CHANGE



WIRE AFTER CHANGE

01/06/12

TECHNICAL SERVICE BULLETIN		
PB1/PB2 Low PSI / Monitor Modification		
TSB# **TSB2012001**	Date **01/11/12**	Page 6 of 6

Verifying Modifications:

After the modification is complete, BEFORE the cabinet is closed and put into service, you must ensure the accuracy of the work performed for safety and proper operation by doing the following:

1) When in operate mode, the Water Quality Monitor should power ON and remain ON after pressing the Reset Button.

2) Simulate a low water pressure condition by turning the tap water supply OFF to the RO unit. The following should happen:

- **a) Inlet Solenoid Valve should close,**
- **b) pump will shut down,**
- **c) Water Quality Monitor will remain on.**

3) Verify the Inlet Water Solenoid Valve is closed by removing red drain line from drain – after a few seconds, there should be no constant water flow.

4) After verification of the modification:

- **a) turn the tap water supply ON,**
- **b) close / replace the control box cover.**

IMPORTANT OPERATIONAL NOTE:

After this modification and BEFORE pressing the START button, during initial startup or filter change, air will need to be purged from the unit at the labcock on the inside of the cabinet.

TECHNICAL SERVICE BULLETIN

PB2 Low Pressure Issues When in Flush

TSB# **TSB2012002**	Date **04/27/12**	Page 1 of 2

ISSUE

A low pressure condition during flush has been observed, primarily in hospitals and home use applications because of insufficient water pressure and/or flow.

POSSIBLE CAUSES

1. **Insufficient flow.** The PB2 has a minimum incoming flow requirement of approximately 2.2 gpm and a minimum filter-in pressure of 20 psi during flush. The PB2 is set at 36 gph (0.60 gpm) or 2270 ml/min and 110 to 125 psi pump pressure during test. When the PB2 is put into full flush, the water volume required to flush the membrane should be approximately 2.2 gpm, product and reject flow combined. If the incoming flow is less than 2.2 gpm the PB2 may go into a low-pressure condition. If insufficient flow is the cause then this must be corrected at the tap source and the following solutions are not applicable.

2. **Insufficient tap water pressure.** If you have less than 20 psi at the PB2's filter-in gauge, while the PB2 is in flush, the PB2 may go into a low-pressure condition.

SOLUTIONS

1. Check for large pressure drops across external carbons and correct as necessary.

2. Check the following:
- Set the flush lever to a half open position.
- Adjust the pressure regulating valve, located inside the PB2 cabinet, by turning it clock-wise until fully open which may possibly increase the filter-in pressure.
- Monitor the pump pressure.
- Do not allow the pump pressure to go below 60 psi.
- If any pump cavitation is observed and/or heard (*the pump will make a distinct growling noise*) close the flush lever.

3. Do the following:
- Disconnect the product hose from the dialysis machine
- Do only one of the following:

a. If the PB2 is used or dedicated for a single dialysis machine application, set the pump to a minimum of 90 psi or look at the glass flow meter and set the product flow to a minimum of 25 gph (1575 ml/min), at 77º F.

b. If the PB2 is not used or dedicated for a single dialysis machine application, set the pump to a minimum of 100 psi or look at the glass flow meter and set the product flow to a minimum of 36 gph (2270 ml/min) at 77º F.

- In most cases this will allow the PB2 to flush with the flush lever fully open.

4. If this does not correct the problem you have one or two options:
Add a booster pump:

a. EQSUBPB2BP PB2 BOOSTER PUMP qty=1

* *Refer to the PB2 Service Manual for assistance on installing this pump. This manual is available online at www.betterwater.com/support.*

And/Or replace the feed line with the larger hose listed below:

b. PLFIPP00005 3/8" MPT x 1/2" HOSE BARB qty=1
c. PLHOST00322 1/2" STYLE 5000 HOST qty= 28 feet (*length as needed*)
d. PLFIOT00546 1/2" BARB x 3/4" GARDEN HOSE qty=1

TECHNICAL SERVICE BULLETIN		
PB2 Low Pressure Issues When in Flush		
TSB# **TSB2012002**	Date **04/27/12**	Page 2 of 2

e. PLHOCL001 1/2" HOSE CLAMP qty=2

5. If backflow preventers are used at the tap source it is recommended that a **WATTS MODEL 9D DOUBLE-CHECK (*BACKFLOW PREVENTER*)** be used with the PB2.
- For specifications go to **http://www.watts.com/pages/products_details.asp?pid=886**.

TECHNICAL SERVICE BULLETIN

PB2 Water Quality Monitor Adjustment to Alarm on %-Rejection for Nuisance Alarms

TSB# **TSB2012003**	Date **04/27/12**	Page 1 of 3

ISSUE

On occasion feed water quality changes for various reasons. This is sometimes due municipalities changing water sources, modifying pretreatment, or construction and repair to main water lines. These can cause erratic feed TDS changes and fluctuating pH.

The PB2 is set at the factory to alarm on %-Rejection. In this setting the water quality is more prone to a nuisance alarm due to the above mentioned changes in feed water quality. The PB2 can alternately be set to allow the alarm set-point to be set on Product TDS instead of %-Rejection.

WARNING

1. ELECTRICAL HAZARD: Be careful where and what is touched when making the changes described below inside the internal control box.

2. The following changes should not be done while a hemodialysis treatment is being performed.

SOLUTION

PRE-CHANGE VERIFICATION

1. Verify the feed and product TDS values displayed on the Water Quality Monitor with a hand-held TDS meter.
*- If out of calibration see the Operators Manual for the calibration procedure. This manual is available online and can be downloaded from **www.betterwater.com/support**.*

DIPSWITCH CHANGE

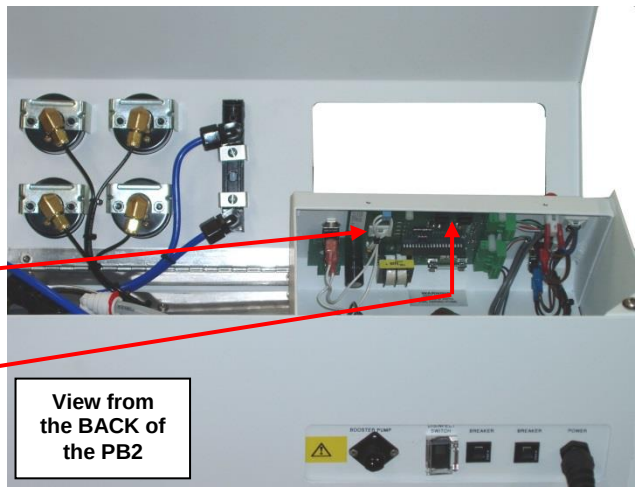
1. Turn the device **OFF**.

2. Unplug from the electrical receptacle

3. Open the **External Top Panel** and the remove the cover from the internal **Control Box** and locate the control board containing the…

… block of two **Dipswitches**…

…the **CAL-UP** and **CAL-DOWN buttons**



TECHNICAL SERVICE BULLETIN

PB2 Water Quality Monitor Adjustment to Alarm on %-Rejection for Nuisance Alarms

TSB# **TSB2012003**	Date **04/27/12**	Page 2 of 3

4. The **Left Dipswitch** is labeled: **OFF:PROD**
ON:%REJ
***-** The factory setting is on: **%REJ**, with the position of the dipswitch pushed down or in toward the board.*

- The **Right Dipswitch** is labeled: **OFF:µS**
ON:PPM
*- The factory setting is on: **PPM**, with the position of the dipswitch pushed down or in toward the board.*

5. Pull the **Left Dipswitch** up or toward the top back to set to **OFF: PROD**.

6. Plug the device back into the electrical receptacle and turn the device **ON**.

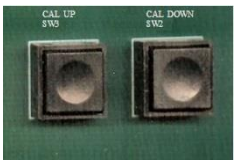
WATER QUALITY MONITOR ALARM SET-POINT CHANGE:

1. Monitor product TDS over a 15 minute period and periodically record several of the product values.

2. Average the recorded product values and then multiply by 4
- example: if the average product TDS=5.2 ppm
5.2 ppm x 4 = 20.8 ppm
round to the nearest whole number, so the new alarm set-point will be 21 ppm

3. On the Water Quality Monitor on the front of the PB2, push the **MODE switch button** until the **SET-POINT yellow-light** illuminates.
- The current Set-Point will display.
- The default set-point is 50 ppm.

4. Locate the **CAL-UP** and **CAL-DOWN buttons** on the Water Quality Monitor board inside the open Control Panel.



5. Change the set-point by pushing the **CAL-UP** or **CAL-DOWN buttons** until the desired set-point is displayed on the Water Quality Monitor display.

6. On the Water Quality Monitor on the front of the PB2, push the **MODE SWITCH button** until **CAL** is displayed.

7. Continue pressing the **MODE SWITCH button** to scroll through the different modes until the **SET-POINT yellow-light** is illuminated, then verify that the correct set-point is displayed.

TECHNICAL SERVICE BULLETIN		
PB2 Water Quality Monitor Adjustment to Alarm on %-Rejection for Nuisance Alarms		
TSB# **TSB2012003**	Date **04/27/12**	Page 3 of 3

8. Replace the cover on the internal **Control Box**, and close the outer **External Top Panel** cover.

NOTE: *This same product set-point procedure applies if the Water Quality Monitor's Right Dipswitch is set to* ***OFF:µS*** *which will display in micro Siemens rather than parts-per-million if the switch is set to ON:PPM.*

TECHNICAL SERVICE BULLETIN

Portable RO Current Leakage Values

TSB# **TSB2012004** | Date **05/25/12** | Page 1 of 1

SUMMARY OF RISK: Current Requirements in rms microamperes (de to 1 kHz)

Enclosure Risk Current			Earth Risk Current
Isolated	Category	Cord Connected or Battery Powered Class 2 type B	General Cord Connected
	Normal Condition	100 µA	500 µA
	Single Fault Condition	500 µA	1000 µA

The table above is the Better Water LLC recommended leakage test parameters. This table is derived from the IEC 60601-1 UL and AAMI 60601-1 3rd Addition (*Reaffirmed January 2012*) Standards.

The PB and PB2 RO units are a class 2 or type B Device. All PB2's are tested to these standards at the factory before ship out. Beginning January 2012 the complete check off data sheet for each individual PB2 in the information packet included with the PB2. This data includes all hydraulic and electrical data recorded at time of testing and QA.

TECHNICAL SERVICE BULLETIN

Replacing the 10” Carbon Block Filter Bowl with Replacement Short Bowl on Portable ROs

TSB# **TSB2012005**	Date **07/17/12**	Page 1 of 2

OVERVIEW:

If additional, external Carbon Blocks and/or Carbon Filters are used Better Water's PB1 and PB2 portable ROs, the internal, 10” Carbon Block Filter can be eliminated. A False Cartridge can be used in-place of the filter, inside the standard Filter Bowl.

Cut-Away of a Big Blue False Cartridge inside the standard Filter Bowl of a PB2.

Big Blue False Cartridge
part# SUFFOO00580

An alternative to using the False Cartridge is to use a Replacement Short Bowl, which will reduce the amount of water in the bowl. Again, this can only be done if additional external Carbon and/or Carbon Blocks are used in the pre-treatment of the feed water to the RO unit.

Replacement Short Bowl
part# PLFIS801951

NOTE

PB2s built prior to January 2012 can use either the False Cartridge or the Replacement Short Bowl. *PB2s built after January 2012* CANNOT use the false cartridge because it will NOT fit the end-cap of the Big Blue housing, but they can use the Replacement Short Bowl.

CAUTION

The Replacement Short Bowl *SHOULD NOT BE USED* if there are no additional external Carbon and/or Carbon Blocks are used in the pre-treatment of the feed water to the RO unit. It should only be used if additional Carbon and/or Carbon Blocks are used in the pre-treatment of the feed water to the RO unit.

NOTE ABOUT O-RING:

The replacement bowl uses the same O-Ring as the Standard Filter Bowl. When replacing the Standard Filter Bowl with the Replacement Short Bowl, the existing O-Ring can be used but it is recommended that a new O-Ring be installed. Part number for the Big Blue O-Ring is **SUMIOO00587.**

Big Blue O-Ring
part# SUMIOO00587

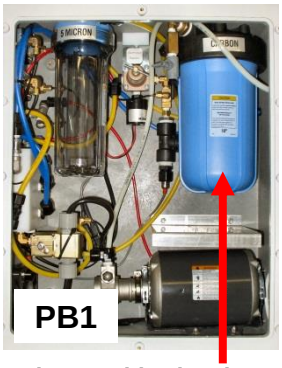
TECHNICAL SERVICE BULLETIN

Replacing the 10” Carbon Block Filter Bowl with Replacement Short Bowl on Portable ROs

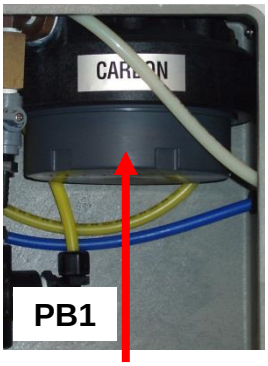
TSB# **TSB2012005**	Date **07/17/12**	Page 2 of 2

REPLACEMENT INSTRUCTIONS:

1. Turn the power to the RO unit OFF.
2. Turn the water supply to the RO unit OFF.
3. Open the lab-cock, located inside the RO cabinet, and relieve filter-in and filter-out pressure. It is advisable to use a small piece of tubing on the nipple of the lab-cock to route the draining water out of the cabinet.
4. Close the lab-cock once the drain is complete.
5. Using the Big Blue Filter Wrench remove the Big Blue Filter Bowl.
6. Remove and discard the Carbon Block Filter.
7. Ensure that the new Short Filter Bowl has the O-Ring in place.
8. Install the Short Filter Bowl by threading it into place, and hand-tighten. If necessary use the Big Blue Filter Wrench to tighten. Don't over-tighten.
9. Turn the water supply to the RO unit ON.
10. Open the lab-cock and allow water to flow until all air is purged. It is advisable to use a small piece of tubing on the nipple of the lab-cock to route the draining water out of the cabinet.
11. Close the lab-cock once all the air is purged.
12. The unit is now ready to run.



shown with Big-Blue Carbon Filter Bowl



shown with Replacement Short Bowl

TECHNICAL SERVICE BULLETIN

PB2 Bypass for Using External Nephros SSU Filter

TSB# **TSB2012008**	Date **10/15/12**	Page 1 of 1

OVERVIEW:

The PB2 (portable RO) comes standard with an internal .05 micron Pyrogen filter. Better Water has created a simple solution for those customers who have expressed an interest in using an external Nephros SSU Pyrogen capsule filter. This solution involves the removal of the standard internal .05 micron Pyrogen filter and replacing it with a bypass tube with quick-connect ends.

Nephros SSU Pyrogen Capsule Filter

This bypass tube, part# **EQSUBPB2FT** is available from Better Water.

NOTE

Better Water LLC recommends that one of these two filters must be used with the PB2 to ensure water quality.

PB2 .05 False Tube
part# EQSUBPB2FT

USE of the NEPHROS SSU CAPSULE FILTER:

When using the Nephros SSU capsule filter, it should be installed on the product hose between the PB2 and the dialysis machine. A sample port should also be installed after this filter to draw water to mix bicarb and for bacteria sampling,

REPLACEMENT INSTRUCTIONS:

1. Turn the power to the RO unit OFF.
2. Turn the water supply to the RO unit OFF.
3. Open the lab-cock, located inside the RO cabinet, and relieve filter-in and filter-out pressure. It is advisable to use a small piece of tubing on the nipple of the lab-cock to route the draining water out of the cabinet.
4. Close the lab-cock once the drain is complete.
5. Remove the .05 micron filter (*refer to the PB2 Operator Manual for instructions on how to remove the filter*)
6. Attach the false/bypass tube in place of the filter. The connections will only allow it to be installed one way.
7. Turn the water supply to the RO unit ON.
8. Open the lab-cock and allow water to flow until all air is purged. It is advisable to use a small piece of tubing on the nipple of the lab-cock to route the draining water out of the cabinet.
9. Close the lab-cock once all the air is purged.
10. Install the Nephros SSU capsule filter on the product hose coming from the PB2.
11. Install a sample port after the Nephros SSU capsule filter.
12. The unit is now ready to run.

TECHNICAL SERVICE BULLETIN

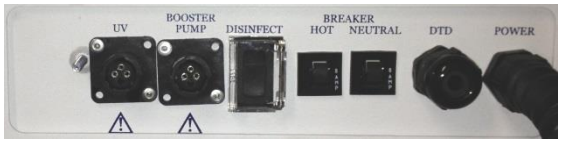
PB2 Conversion for New Control Box and Divert-to-Drain

TSB# **TSB2012011**	Date **12/26/12**	Page 1 of 5

OVERVIEW:

If a Divert-to-Drain is needed for PB2 models manufactured prior to 2013, a new control box must be installed in place of the original model. See the pictures to the right denoting the external differences between the two control boxes to determine which control box your PB2 has. A new bracket must also be installed on the cart on which the Divert-to-Drain will be mounted.

Older model control box that **is NOT** Divert-to-Drain capable.



New model control box that **IS** Divert-to-Drain capable

The following part number/kit is available which contains all the necessary items for retro-fitting older model PB2s with the Divert-to-Drain:

Part# EQSUBPB2CB/DTD

- New Control Box
- Divert-to-Drain
- Cart Mounting Bracket

The new Divert-to-Drain for the PB2 has been designed for renal dialysis applications

* The Divert-to-Drain has a 3-way solenoid valve and Good Water Quality LED Indicator light

* In good water conditions…
… the solenoid energizes
… the Good Water Quality LED indicator is lit

* In poor water conditions…
… the solenoid de-energizes
… product water from the PB2 is diverted to drain
… the Good Water Quality LED indicator is not lit

* The Divert-to-Drain is set to divert based on the PB2's Water Quality Monitor set-point setting

* If the Water Qualify Monitor fails, the Divert-to-Drain will divert the product water to drain

Top view of the Divert-to-Drain showing tube connections and the LED

TECHNICAL SERVICE BULLETIN

PB2 Conversion for New Control Box and Divert-to-Drain

TSB# **TSB2012011**	Date **12/26/12**	Page 2 of 5

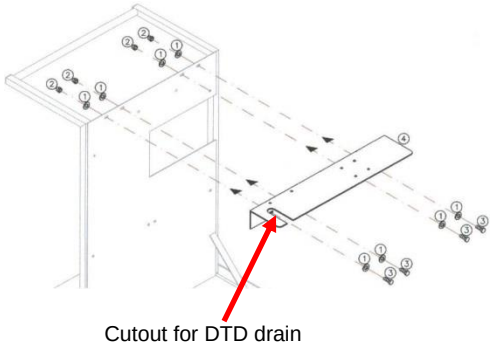
INSTRUCTIONS:

The following instructions detail how to remove and replace the control boxes as well as how to mount the bracket on the cart and the Divert-to-Drain onto the bracket.

WARNING

To avoid electrical shock, turn the power to the PB2 OFF, and unplug it from the electrical outlet.
A lock-out tag should be placed on the unit to prevent accidental use while this conversion is underway.

1. Turn the power to the PB2 **OFF**, and unplug it from the electrical outlet.



Cutout for DTD drain

MOUNT the BRACKET to the CART

2. Mount the bracket onto the cart, attaching with the four screws, washers and nuts as shown.

NOTE: *If Big Blue Filters are used, the same four screws that hold the filters on, can be undone and used to attach the bracket.*

NOTE: *The four holes for the bracket may have to be drilled on older model carts.*

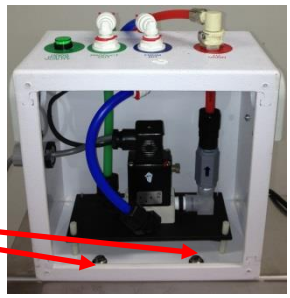
MOUNT the DIVERT-TO-DRAIN to the CART

3. Remove the front cover of the Divert-to-Drain, by removing the four screws that hold it in place.

4. Place the Divert-to-Drain onto the bracket, where the drain slides into the cutout on the bracket.

5. Attach the Divert-to-Drain using two screws, washers, and nuts, through the holes in the bottom.

6. Replace the Divert-to-Drain front cover using the four screws removed initially.



TECHNICAL SERVICE BULLETIN

PB2 Conversion for New Control Box and Divert-to-Drain

TSB# **TSB2012011** | Date **12/26/12** |

REMOVE OLD CONTROL BOX

7. Open the top cover of the PB2 to reveal the control box.

8. Remove the two screws that hold the top of the control box on, and remove that top.

9. Disconnect the **ground wire** that connects to the left side of the control box.

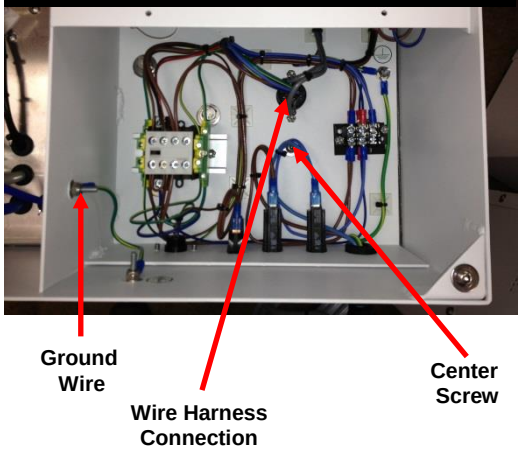
10. Locate the black **wire harness connector** inside the control box.

11. From inside the PB2 unscrew the **twist-lock** that holds that **wire harness** to the wire harness connection. Once the **twist-lock** is free, pull down on the **wire harness** to disconnect it from the **wire harness connection**.

12. Unscrew the **center screw** located in the center of the control box that holds the control box to the PB2 frame

13. Remove old control box, from the PB2 frame.

Top/Inside view of Control Box with the top of the control box removed



INSTALL NEW CONTROL BOX

14. Place new control box into top of PB2.

15. Replace the **center screw** to hold the control box to the PB2 frame.

16. From inside the PB2 reattach the **wire harness** to the **wire harness connection** in the control box by realigning the wire pins and re-screw the **twist-lock** on to hold it into place.

17. Reattach the **ground wire** to the side of the control box.

18. Connect the Divert-to-Drain wiring to the control box:

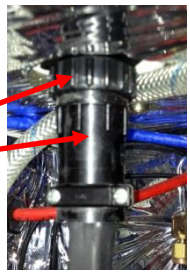
a. Locate the Hubble Strain Relief adaptor on the back of the control box and unscrew the Belden Compression Nut off.

b. Take the 5 wires from the Divert-to-Drain and pull through the compression nut, then through the Hubble adaptor into the control box.
- Red, Brown, Black, White, and Green wires

c. Cut the Red and Brown Wires as they will not be used.

d. Strip the Black, White, and Green wires back ¼" so they can be connected.

Inside view of the PB2 of the **twist-lock** for the **wire harness**



TECHNICAL SERVICE BULLETIN

PB2 Conversion for New Control Box and Divert-to-Drain

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e. Locate the Red, Blue, and Green/Yellow Phoenix Blade Connectors.

f. Place the Black Wire into the Red Phoenix Connector.

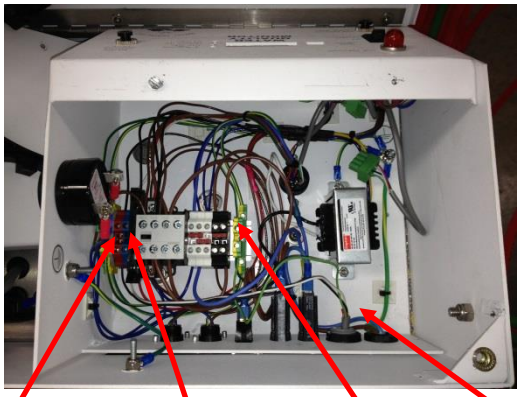
g. Place the White Wire into the Blue Phoenix Connector.

h. Place the Green Wire into the Green/Yellow Phoenix Connector.

i. Screw the Belden Compression Nut back on and hand-tighten.

19. Reattach the top cover to the control box using the 2 screws that hold it in place.

20. Close the top cover of the PB2.



CONNECT THE DIVERT-TO-DRAIN

21. Connect the DTD hoses…

a. Red Tube from the DTD **TO DRAIN port** to **DRAIN**

b. Blue Tube from the DTD **FROM RO port** to the PB2 **PRODUCT port**

c. Green Tube from the DTD **PRODUCT OUT Port** to the DIALYSIS MACHINE

22. Remove the lock-out tag from the PB2 and reconnect it to the electrical Outlet.

*** PB2 with Divert-to-Drain is ready to use.**

Top view of Divert-to-Drain showing tube connections

TEST the DIVERT-TO-DRAIN AFTER INSTALLING:

1. Place the Green Product Tube and the Red Drain Tube to Drain.

2. Before starting the PB2, make sure all air has been purged from the pretreatment.

3. Set the switch to OPERATE. The RO should start-up and the Water Quality Monitor should go into Poor Water Quality.

4. Verify that during this poor water quality condition that…
   a. No product water flow from the Green **PRODUCT OUT Tube**
   b. Product water is going to drain through the Red **TO DRAIN Tube**
   c. The **GOOD WATER QUALITY LED** should NOT be lit on the Divert-to-Drain during poor water quality

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PB2 Conversion for New Control Box and Divert-to-Drain		
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5. Verify that once the Water Quality Monitor gets above the set-point and there is a good water quality condition that…
   a. The Divert-to-Drain should have flow coming out of the Green **PRODUCT OUT Tube**
   b. No product flow should be going through the Red **TO DRAIN Tube**
   c. The **GOOD WATER QUALITY LED** should be lit green on the Divert-to-Drain

6. If the items as detailed in steps 4 and 5 can be verified, the Divert-to-Drain is functioning properly. If not recheck connections and contact technical support if necessary.

NOTES

NOTES


BETTER WATER LLC
Smyrna, Tennessee