



ENGLISH

# HydroNovation™ WP1 Series

**Residential & Commercial  
Water Treatment System**



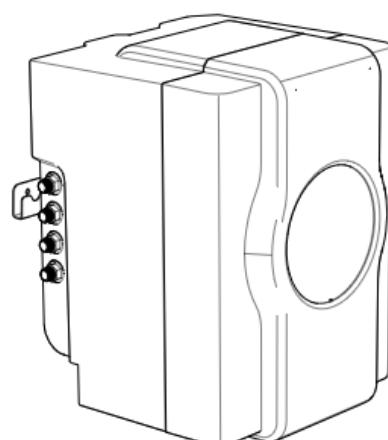
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**DEALER INSTALLATION, OPERATION  
& TROUBLESHOOTING MANUAL**



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**IMPORTANT:** This manual contains important Information. Please read this manual prior to Installing, Operating or Troubleshooting the **HydroNovation (HDI)** System.



## MODELS:

**WP1000**

**Processor**

**WP1001**

**System with 80G Tank**

**WP1002**

**System with 50G Tank**

**Electrodeionization Water Treatment  
System**

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### **Dealer Installation, Operation & Troubleshooting Manual**

**IMPORTANT:**

For future reference, record the HydroNovation(HDI) model and serial numbers in the space provided. The numbers are located on the side of the HDI enclosure.

Model No:

Serial No:

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## **IMPORTANT INFORMATION**

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**WARNING: TO REDUCE THE RISK OF FIRE OR ELECTRIC SHOCK, DO NOT EXPOSE THIS PRODUCT TO RAIN OR MOISTURE.**



**CAUTION**  
RISK OF ELECTRIC SHOCK  
DO NOT OPEN



CAUTION: TO REDUCE THE RISK OF ELECTRIC SHOCK,  
DO NOT REMOVE COVER (OR BACK).  
NO USER-SERVICEABLE PARTS INSIDE.  
REFER SERVICING TO QUALIFIED SERVICE  
PERSONNEL.



The lightning flash with arrow-head symbol, within an equilateral triangle, is intended to alert the user to the presence of uninsulated "dangerous voltage" within the product's enclosure that may be of sufficient magnitude to constitute a risk of electric shock to persons.



The exclamation point within a triangle is intended to alert the user to the presence of important operating and maintenance (servicing) instructions in the literature accompanying the product.

**CAUTION: TO PREVENT ELECTRIC SHOCK, MATCH WIDE BLADE OF PLUG TO WIDE SLOT, FULLY INSERT.**

# IMPORTANT INFORMATION

**WARNING:** FCC Regulations state that any unauthorized changes or modifications to this equipment not expressly approved by the manufacturer could void the user's authority to operate this equipment.

**CAUTION:**

This product satisfies FCC regulations when shielded cables and connectors are used to connect the unit and the device is connected to the grounding conductor.

**DECLARATION OF CONFORMITY:**

**HYDRONATION ELECTRODEIONIZATION DEVICE, MODEL WP1001R & WP1002C**

This device complies with Part 15 of the FCC Rules. Operation is subject to the following two conditions:

(1) This device may not cause harmful interference, and (2) this device must accept any interference received, including interference that may cause undesired operation.

**RESPONSIBLE PARTY:**

HYDRONATION CORPORATION

20 Centerpointe Drive, Suite 110, La Palma, CA 90623

TEL: 1-800-778-5092

For Business Customers: URL <http://www.hydronation.com>

**INFORMATION:**

This equipment has been tested and found to comply with the limits for a Class B digital device, pursuant to Part 15 of the FCC

Rules. These limits are designed to provide reasonable protection against harmful interference in a residential installation. This equipment generates, uses and can radiate radio frequency energy and, if not installed and used in accordance with the instructions, may cause harmful interference to radio communications. However, there is no guarantee that interference will not occur in a particular installation. If this equipment does cause harmful interference to radio or television reception, which can be determined by turning the equipment off and on, the user is encouraged to try to correct the interference by one or more of the following measures:

Reorient or relocate the receiving antenna.

Increase the separation between the equipment and receiver.

Consult the dealer or an experienced radio technician for help.

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The USB interface is for factory debugging only... and the USB standard is enforced on the FTDI chip which is part of the cable.

# TRADEMARKS

- Wi-Fi:

Wi-Fi (or Wi-Fi) is a local area wireless computer networking technology that allows electronic devices to connect to the network, mainly using the 2.4 gigahertz (12 cm) UHF and 5 gigahertz (6 cm) SHF ISM radio bands. This technology is developed by Wi-Fi Alliance.

- Bluetooth LE:

Bluetooth low energy (Bluetooth LE, BLE, marketed as Bluetooth Smart) is a wireless personal area network technology designed and marketed by the Bluetooth Special Interest Group aimed at novel applications in the healthcare, fitness, beacons, security, and home entertainment industries.

- FCC:

NOTE: This equipment has been tested and found to comply with the limits for a Class B digital device, pursuant to Part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference in a residential installation. This equipment generates, uses and can radiate radio frequency energy and, if not installed and used in accordance with the instructions, may cause harmful interference to radio communications. However, there is no guarantee that interference will not occur in a particular installation. If this equipment does cause harmful interference to radio or television reception, which can be determined by turning the equipment off and on, the user is encouraged to try to correct the interference by one or more of the following measures:

- Reorient or relocate the receiving antenna.
- Increase the separation between the equipment and receiver.
- Connect the equipment into an outlet on a circuit different from that to which the receiver is connected.
- Consult the dealer or an experienced radio/TV technician for help.

- NSF:

This mark is user assurance that the product has been tested by NSF. All rights reserved. All text, images, graphics and other materials on this site are subject to the copyrights and other intellectual property rights of NSF International. NSF International owns the copyrights in the selection, coordination and arrangement of the materials on this site.

- CE,

CE marking is a mandatory conformity marking for certain products sold within the European Economic Area (EEA) since 1985. The CE marking is also found on products sold outside the EEA that are manufactured in, or designed to be sold in, the EEA.

- **IOS & Android**

**IOS** (originally iPhone OS) is a mobile operating system created and developed by Apple Inc. and distributed exclusively for Apple hardware. It is the operating system that presently powers many of the company's mobile devices, including the iPhone, iPad, and iPod touch.

**Android** is a mobile operating system (OS) currently developed by Google, based on the Linux kernel and designed primarily for touchscreen mobile devices such as smartphones and tablets.

## IMPORTANT SAFETY INSTRUCTIONS

Electricity is used to perform many useful functions, but it can also cause personal injury and property damage if improperly handled. This product has been engineered and manufactured with the highest priority on safety.

However, improper use can result in electric shock and/or fire. In order to prevent potential danger, please observe the following instructions when installing, operating and cleaning the product. To ensure your safety and prolong the service life of the HydroNovation Water Processor, please read the following precautions carefully before using the product.

- 1) Read these instructions.
- 2) Heed all warnings.
- 3) Follow all instructions.
- 5) Clean only with dry cloth.
- 6) Do not block any ventilation openings. Install in accordance with the manufacturer's instructions.
- 7) Do not install near any heat sources such as radiators, heat registers, stoves, or other apparatus (including amplifiers) that produce heat.
- 8) Do not defeat the safety purpose of the polarized or grounding-type plug. A polarized plug has two blades with one wider than the other. A grounding type plug has two blades and a third grounding prong. The wide blades and the third prong are provided for your safety. If the provided plug does not fit into your outlet, consult an electrician for replacement of the obsolete outlet.
- 9) Protect the power cord from being walked on or pinched particularly at the plug, convenience receptacles, and the point where they exit from the HDI.
- 10) Only use attachments/accessories specified by the manufacturer.
- 11) Use only with the screws, cable, fittings, bracket, or tubing specified by the manufacturer.
- 12) Unplug this HDI during lightning storms or when unused for long periods of time.
- 13) Servicing is required when the HDI has been damaged in any way, such as power-supply cord or plug is damaged, liquid has been spilled onto the HDI or objects have fallen into the HDI, the HDI has been exposed to rain or moisture, does not operate normally, or has been dropped.

**Additional Safety Information:**

- 14) Power Sources—this product should be operated only from the type of power source indicated on the marking label. If you are not sure of the type of power supply at the installation site, consult the local power company. For a system to operate from other alternate power sources, contact the manufacturer for compatibility.
- 15) Overloading—do not overload wall outlets, extension cords, or integral convenience receptacles as this can result in a risk of fire or electric shock.
- 16) Object and Liquid Entry—never push objects of any kind into this product through openings as they may touch dangerous voltage points or short-out parts that could result in a fire or electric shock. Never spill liquid of any kind on the product.
- 17) Damage Requiring Service—unplug the Processor from the wall outlet when the following conditions exist and provide the necessary service as specified in this manual or instructed by the HydroNovation Technical Service Department:
  - a) When the AC cord or plug is damaged,
  - b) If liquid has been spilled, or objects have fallen into the product,
  - c) If the product has been exposed to rain or water,
  - d) If the product does not operate normally by following the operating instructions.

Adjust only those controls that are covered by the operating instructions as an improper adjustment of other controls may result in damage and will often require extensive work by a qualified technician to restore the product to its normal operation.

  - e) If the product has been dropped or damaged in any way.
  - f) When the product exhibits a distinct change in performance - this indicates a need for service.

- 18) Replacement Parts— when replacement parts are required for the Processor, ONLY use replacement parts specified by the manufacturer or have the same characteristics as the original part.  
Unauthorized substitutions may result in fire, electric shock, or other hazards.
- 19) Safety Check—Upon completion of any service or repairs to this product, perform safety checks to determine that the Processor is in proper operating condition.
- 20) Wall mounting—when mounting the HDI to the wall, be sure to install the Processor according to the method recommended by the manufacturer.
- 21) The system must be installed on a cold-water supply line only, and the system will be damaged if frozen. Failure to do so may cause system damage, leading to personal injury and/or physical damage and VOID the Warranty.
- 22) The system's maximum allowable inlet feed water pressure is 85psi. If daytime pressure is over 80psi, nighttime pressure may exceed the maximum pressure. Install an inline pressure reducing valve when necessary in front of the System. (Adding the pressure reducing valve may reduce the flow)
- 23) System works on 115-240 VAC@50/60Hz electrical power only. It is recommended to use this appliance on a dedicated breaker circuit.

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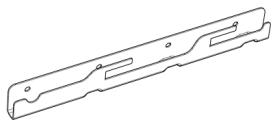
Dimensional HDI System Drawings

HydroNovation Glossary & Abbreviations

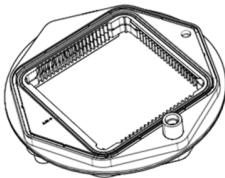
Warranty

# Supplied Accessories

Make sure the following accessories are provided prior to installation of the HDI.



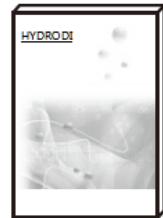
Wall bracket unit (x1)



Cassette unit (x1)



Mounting screw (x4)



Manual (x1)



Power cord (x1)

**NOTE**

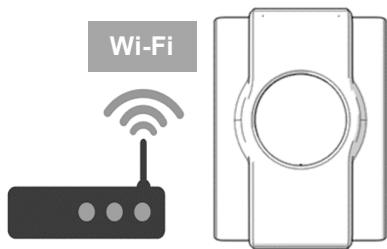
- The illustrations above are for explanation purposes and may vary slightly from the actual accessories.

# PREPARATION

## Wi-Fi and Bluetooth

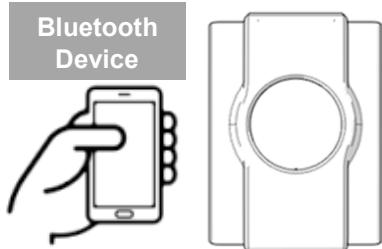
The HDI will communicate water quality data and service notifications to a cloud database by Wi-Fi. Please connect a 2.4 GHz IEEE 802.11b/g Wi-Fi router to your modem and connect a port via Ethernet cable.

Set your wireless settings (SSID and Passphrase) and make sure you enable the wireless signal. The security authentication should be using either WEP-128, WAP-PAK (TKIP), or WAP2-PSK (AES). You will then enter this SSID and Passphrase into the HydroNovation system using the HydroNovation APP.



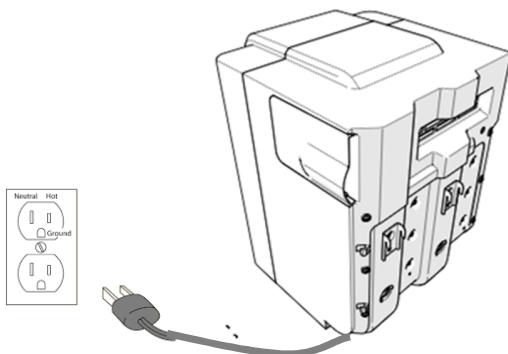
The HydroNovation APP provides three main functions through Bluetooth: Diagnostics, Service and Settings.

Install the HydroNovation APP on to your mobile device. (available for most IOS and Android devices) Search for the "HydroNovation" in the appropriate APP store to download the free APP). Enable the Bluetooth on your mobile device. Open the APP, and then tap the search button to find nearby HDI devices.



## Power Supply to HDI Unit

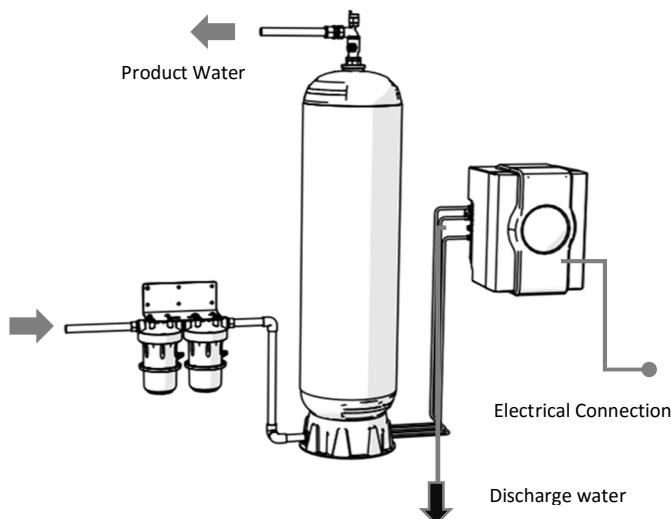
115~240 VAC@ 50/60Hz@5A/2.5A power output is needed for HDI device.



## Select Installation Location

Select a location for the system that provides:

1. Ample space for pre & optional post filtration, the PST and the HDI. Provide ample room for the tubing to and from the HDI and space for service access.
2. An inlet water supply.
3. A drain location for the concentrated discharge water.
4. A drain location within 20 feet and no more than 8ft above the system. An air-gap device should be used at the drain location
5. Operating pressure: A minimum of 40psi and a maximum of 85psi.
6. Protection from temperatures below freezing. (35°)
7. Protection from direct sunlight.
8. Easy accessibility for cassette maintenance.
9. AC power source within close proximity of the HDI.
10. HDI should be mounted at eye level for ease of service (top of the system 6ft from ground) for case of service and cassette change.



## Water Analysis

A recent water analysis is important prior to Installation.

1. Review the HDI Pre-Installation Site Survey Form.
2. The water analysis should include hardness, TDS, alkalinity, chlorine and pH. Water temperature is also important for optimal operation of the system. The information must be entered into the system via the APP during installation.
3. Refer to the Maximum Feed Water Conditions Chart on page 24 for a total listing of water parameters.

### Measuring Conductivity:

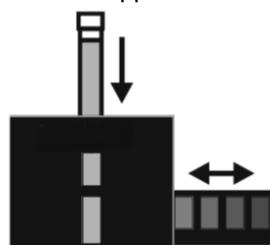
Place the probe into the sample and make sure the slot on the end of the probe is totally immersed. Agitate the sample with the probe for 5-10 seconds to remove bubbles that may be trapped in the slot. (make sure temperature doesn't change during measuring process).

### Measuring pH:

1. Calibrate the probe and meter according to the manufacturer's directions. Use of two buffers (pH 7 and 10) for calibration is recommended.
2. Sample water can be collected in any glass or plastic container. Collect enough sample water so that you can submerge the tip of the probe. Rinse the probe with sample water before placing it in the sample.
3. Place the probe in the sample and wait for the meter to equilibrate. The meter will have come to equilibrium when the signal becomes steady.
4. Read the pH directly from the meter according to the manufacturer's directions.

### Measuring Chlorine:

1. Fill a test tube to 5 mL line with sample water
2. Add one \*Chlorine DPD #1R Tablet. Cap tube and mix until disintegrates.
3. Immediately insert test tube into the top of the device. Slide the Chlorine Slide Bar into the Viewer. Match sample color to a color standard. Record as ppm Free Available Chlorine.



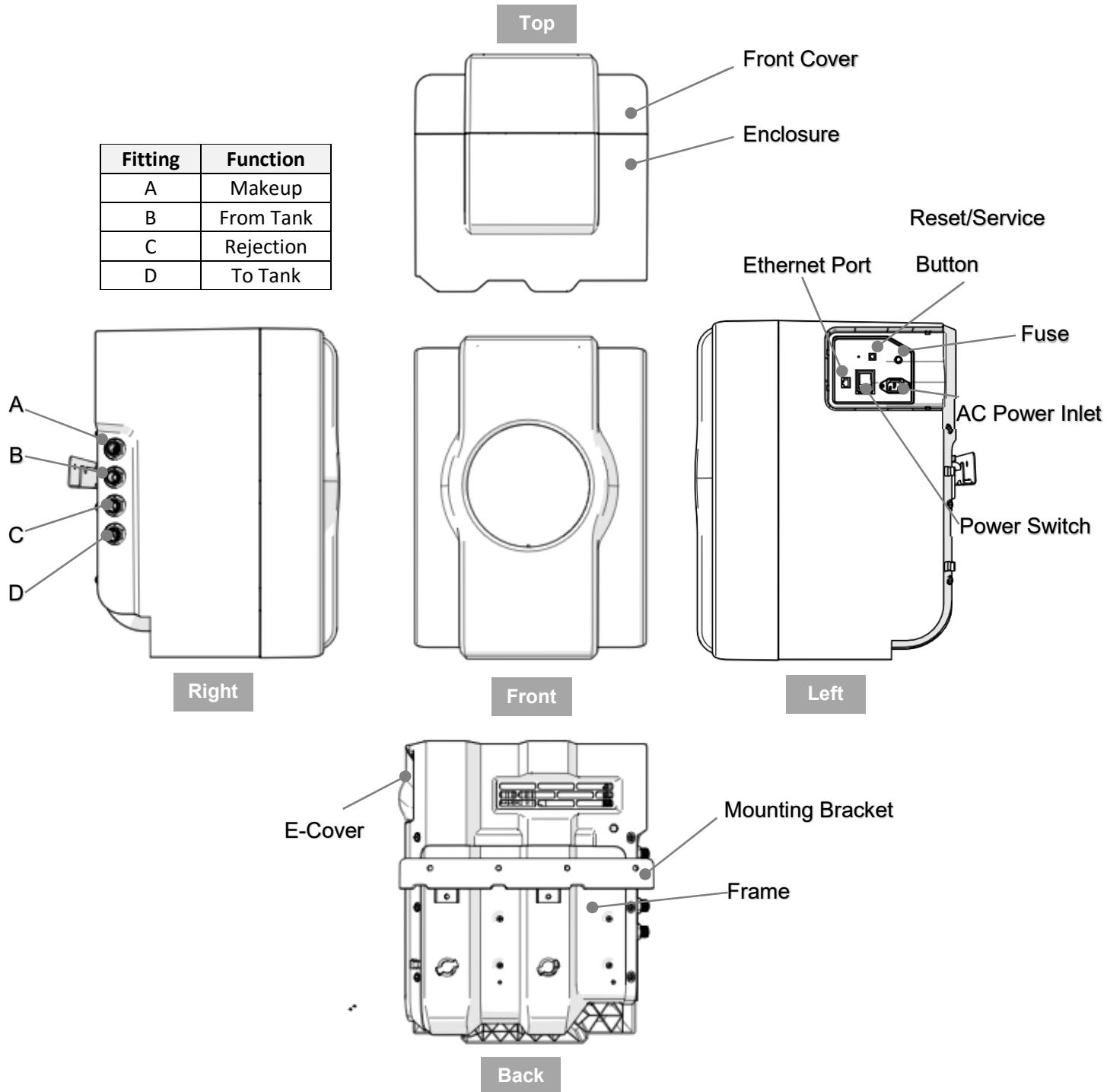
### Measuring Hardness:

1. Fill test tube to the top with sample (5~6ml).
2. Pour sample into mixing bottle.
3. Add 1 level spoonful of hardness reagent.
4. Add the hardness 3 solution to mixing bottle dropwise while swirling the mixing bottle. When the sample color changes from pink to blue, record the number of drops added.

Number of drops = total sample hardness in grains per gallon as CaCO<sub>3</sub>.

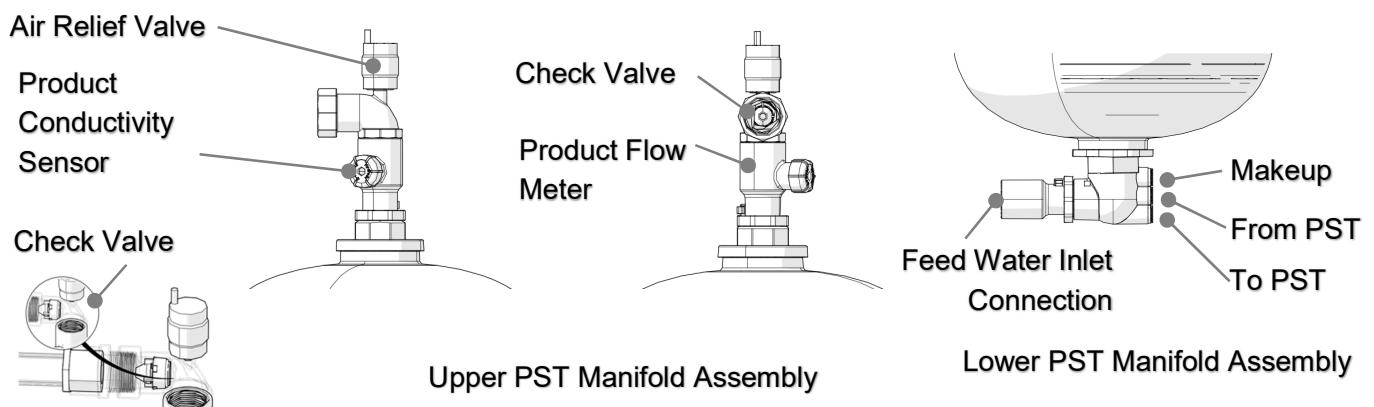
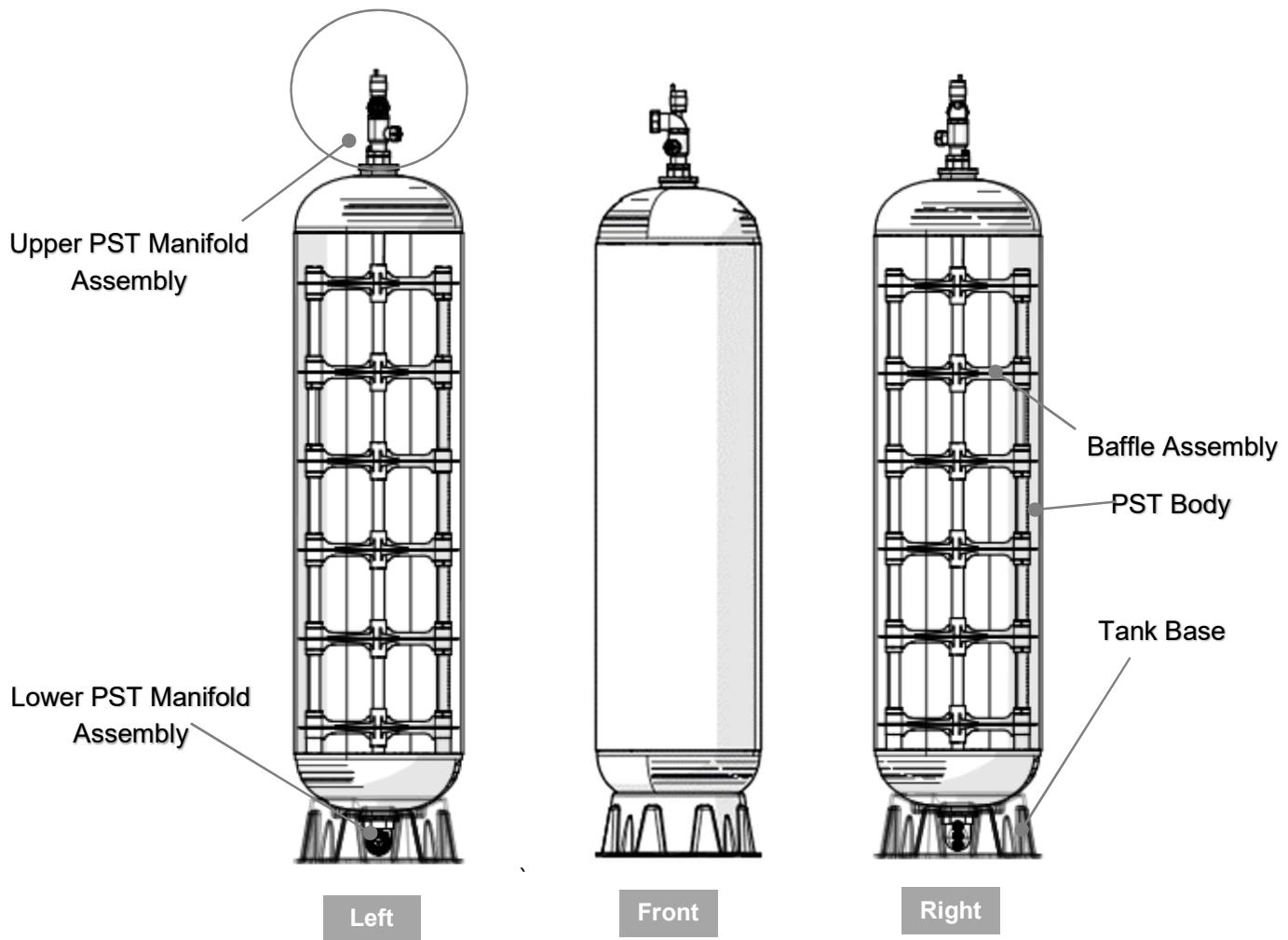
# COMPONENT & PORT CONNECTION IDENTIFICATION

HydroNovation (HDI):



# PST COMPONENT IDENTIFICATION

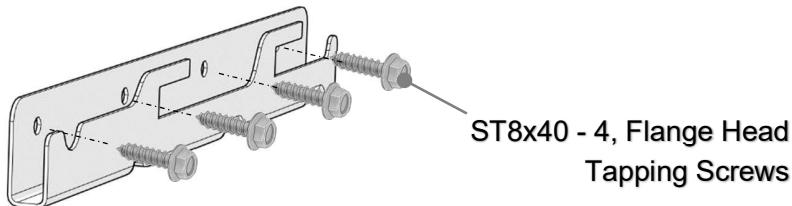
## Storage Tank Assembly (PST):



# QUICK INSTALLATION

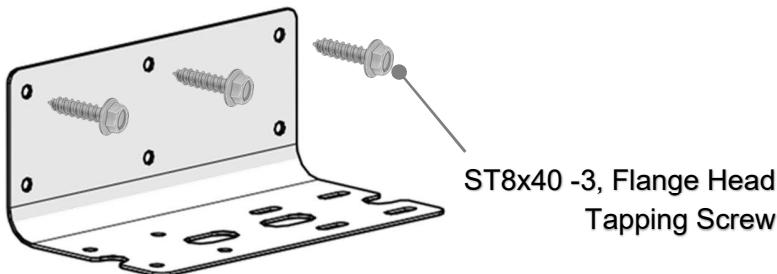
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## Attaching Mounting Bracket for the Hydronovation:



1. Attach the Wall Mounting Bracket horizontally with the screws provided. It is important that the bracket is attached to wall studs when possible in order to accommodate the weight of the HDI. The HDI must hang level and vertically on the wall.
2. Four screws are needed to mount the bracket onto the wall. The screws insert through the bracket holes and then into the wall.
3. Use sheetrock/drywall anchors when installing bracket to sheetrock. Even if the HDI is being placed near the floor, the mounting bracket **MUST** be used. It is recommended that the HDI sits at least 4" above the floor or sit on a stand in commercial sites.

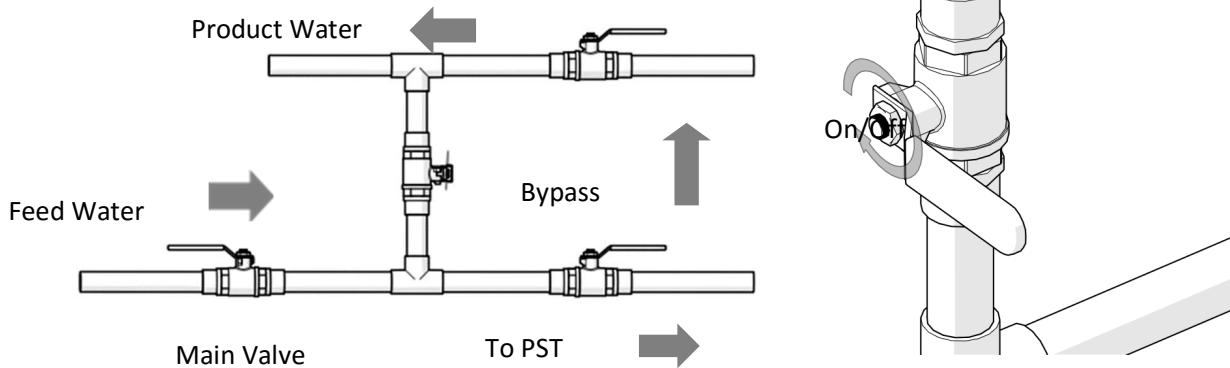
## Attaching Mounting Bracket for Pre / Optional Post Filter:



1. Attach the Wall Mounting Bracket horizontally (Filter Housing must hang vertically) to wall with screws provided. It is very important that the bracket is attached to wall to allow for filter weight and torque needed to close and open filter housing. Do not attach bottom right screw at this time.
2. Three screws are needed to mounting on the wall. The screw should go through the wall bracket into the wall.

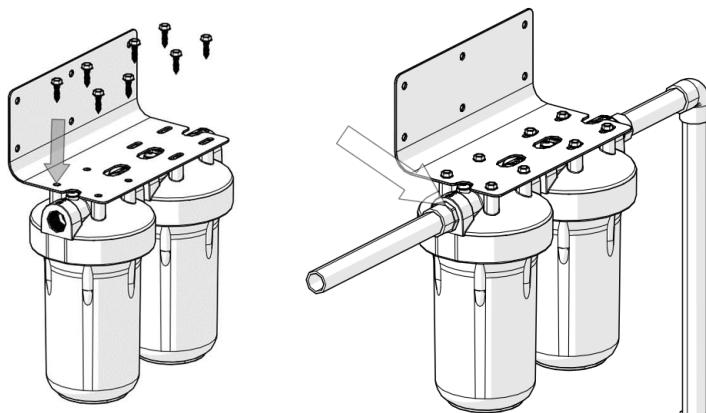
## Bypass Assembly:

1. Shut off main water source.
2. Depressurize plumbing system by opening a faucet.
3. Install a three valve Bypass as illustrated below.



## Install 5 Micron Pre-Filter (Required) / Post-Filter (Optional):

1. Turn off the water supply and bypass the facility.
2. Install connector fitting to housing head (In/outlet) in accordance to local plumbing guidelines.
3. Mount the housing head onto the bracket.
4. Install housing using proper filter wrench.
5. Connect the water lines with in/outlet port of housing head. (max 1.25")

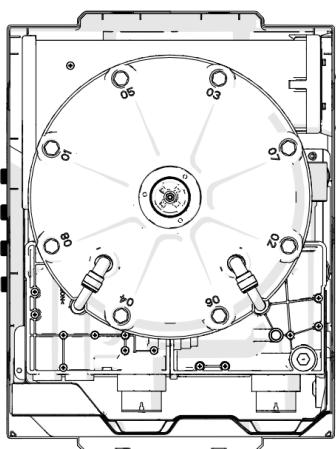
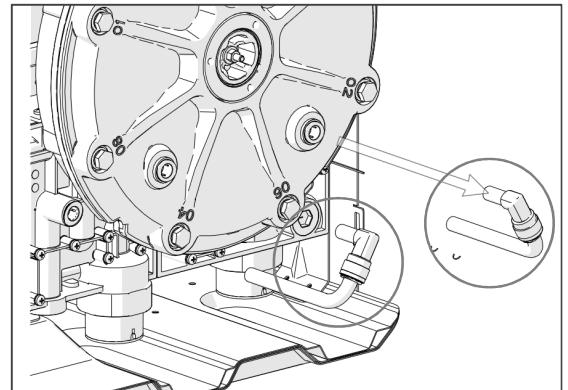
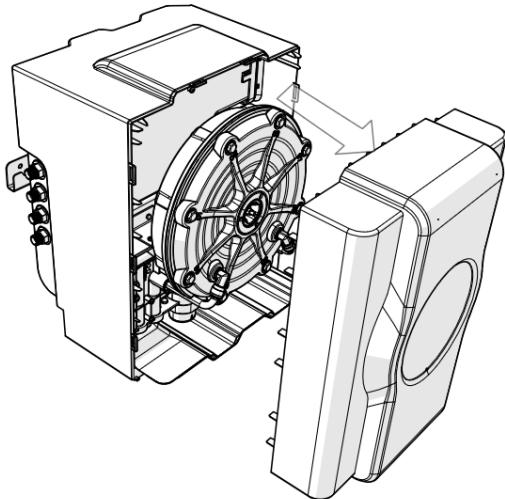


6. Possible options for the pre-filter:

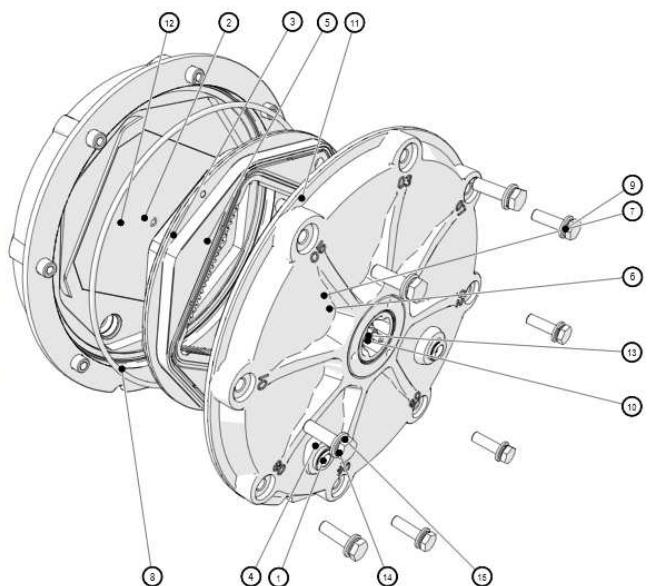
Filter	Media				Claim
	PP	Disruptor	GAC	KDF	
#1	●				Normal
#2		●	●	●	Medium
#3		●		●	Heavy

## Install Cassette / Enclosure:

1. Remove the Front Cover. Then remove the "L" Tube as shown in illustration below.
2. Un-screw the 8/M8 bolts from the Cassette Enclosure in numbered order, then remove the Enclosure Top.
3. Carefully install Cassette into Enclosure observing proper O-Ring placement. An FDA water compatible silicone lubricant is required on the O-Ring.
4. Reinstall Cover and tighten bolts. 26 lbf-in or 2.2 lbf-ft (30 kgf-cm) of torque is required on the bolts.



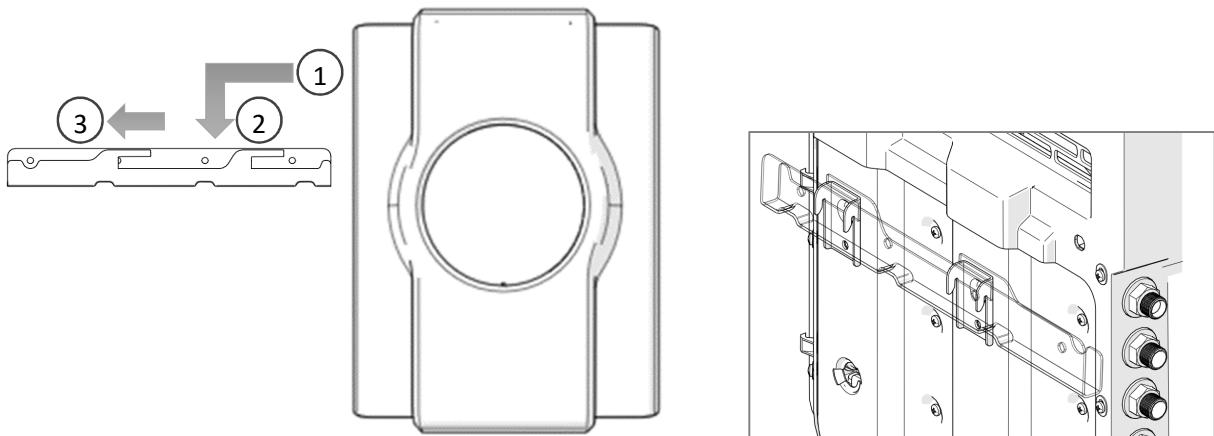
Description	Bolt ID	Qty
AS4-70000-51004-2		2
AS4-70000-51004-30N		2
AS-210-BP-C	1	4
AS-112-BP-C	4	4
AS-114-BP-C	5	4
AS-120-BP-C	6	2
AS-273-BP-C	7	2
AS-300-BP-C	8	1
HD2-200-385	9	3
HD2-200-380	10	2
HD2-200-390	11	2
HD2-200-395	12	4
HD2-30000-13000	13	2
HD2-30000-13000	14	8
HD2-30000-13000	15	8



## Mount HDI:

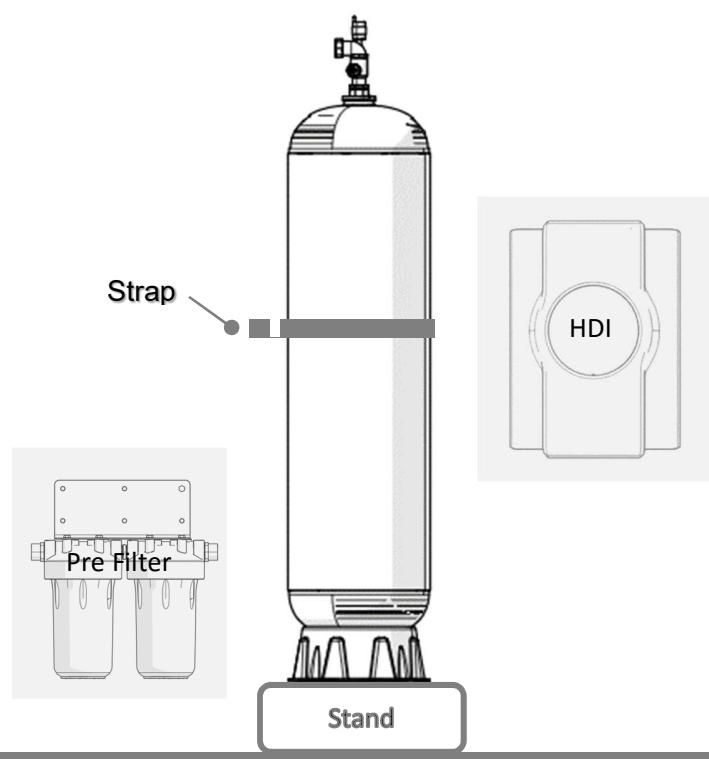
1. Carefully lift the HDI and position the HDI so that the prongs are a few inch above the mounting bracket.
2. Slowly lower the HDI until the prongs engage with the mounting bracket.
3. Move the HDI to the left to engage the bracket slots. Confirm that the mounting bracket slots and the prongs are engaged in the secure position.

4. Adjust levelers on the rear of the HDI back frame.
5. **IMPORTANT:** If the spacing between the HDI and PST is narrow, you may consider connecting the tubing first, then mount Processor onto the wall. However, this is not the recommended procedure and should only be considered when absolutely necessary.



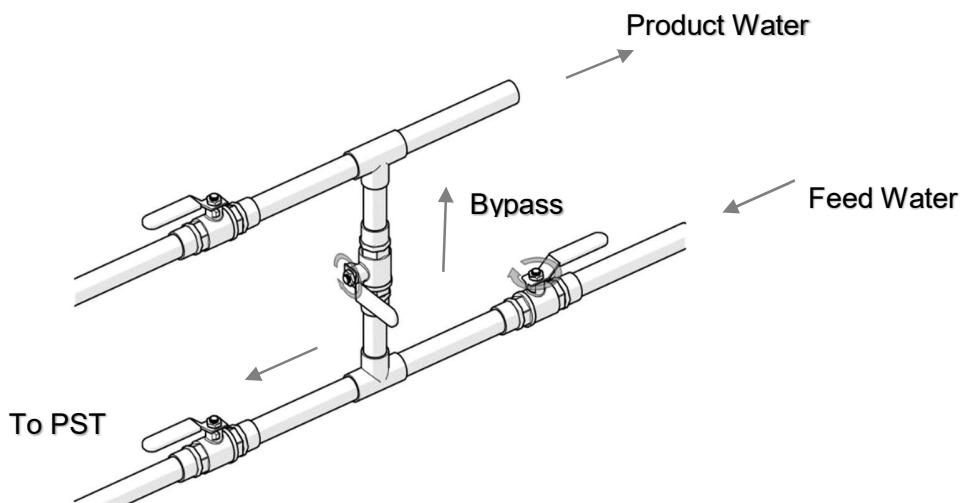
### Process Storage Tank Installation (PST):

1. Un-package the PST from the shipping carton.
2. Place an optional PST stand at the desired location for commercial applications.
3. Place the tank on the stand.
4. Fasten the tank to the wall with a strapping mechanism for safety considerations. **Important:** Secure PST as mandated by local plumbing codes.

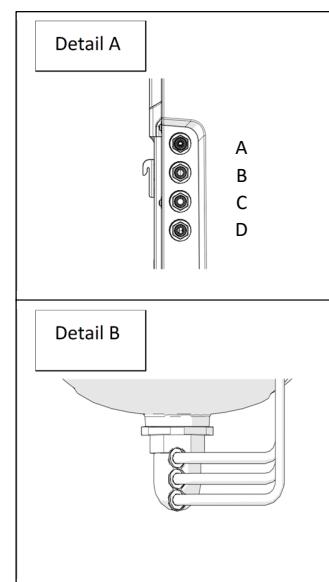


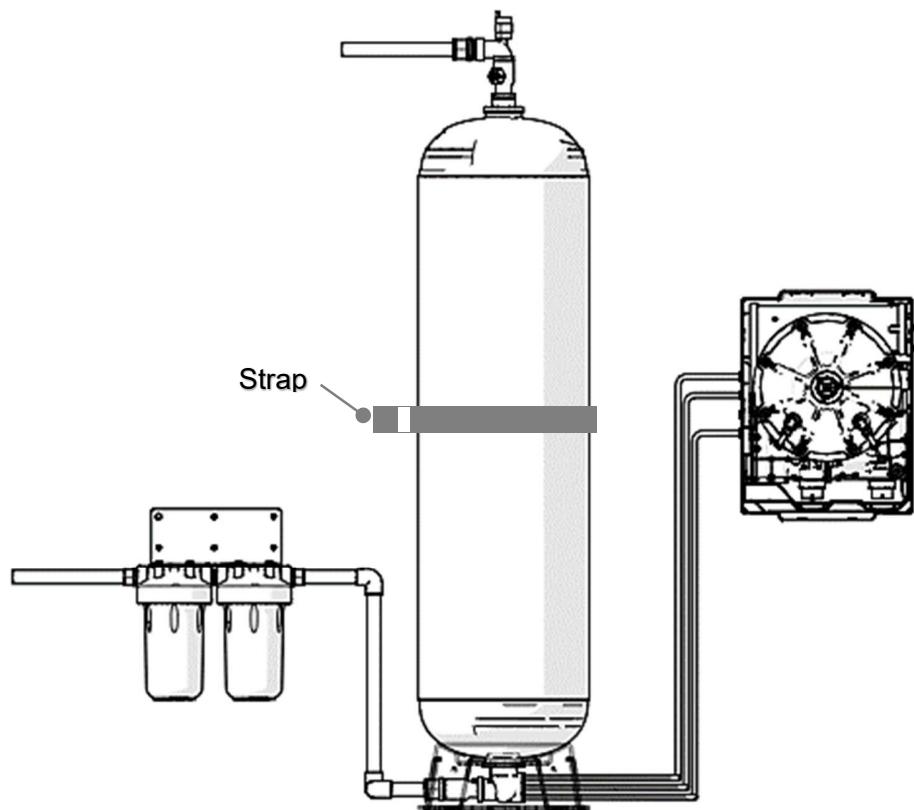
## Plumbing Connections:

1. Make sure the placement of the Bypass Valves is visible and easily accessible.
2. Check the arrows on the bypass valves to ensure that the water flows in proper direction.  
(Illustration show system "In Service")



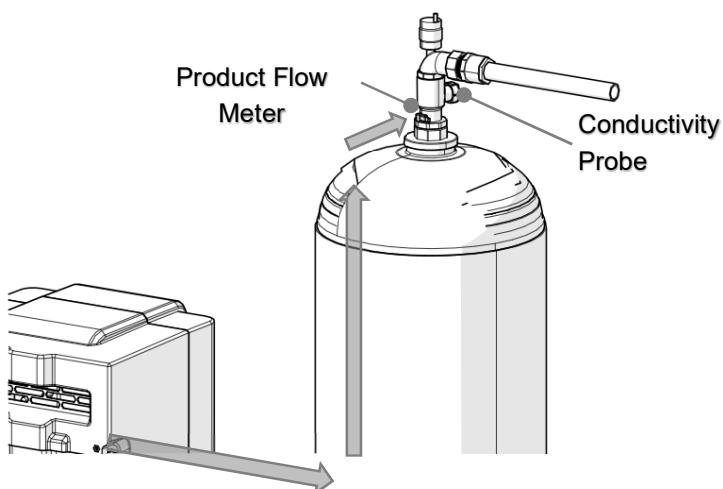
3. Connect the Pre-Filter Out port to Feed port on the bottom of the PST.
4. Connect  $\frac{1}{2}$ " tube to A (discharge make-up) and C (discharge water);  $\frac{5}{8}$ " tube to B (from Tank); and  $\frac{5}{8}$ " tube to D (to Tank). **NOTE:** Confirm that sufficient length of tubing is available to reach the HDI, without any tension/pull on the tubing. **IMPORTANCE:** Leave some slack in the tubing. Absolutely no tension on the tubing between HDI and the PST.
5. Plug the three tubes (A, B, D) coming from the bottom of the tank.
6. Fill the PST so water is visible from the top opening; and then STOP the flow into the tank. **Do not install the Upper PST Manifold Assembly until PST is almost completely filled with water.**
7. Install the Upper Manifold Assembly and connect the top port to product port or POST-FILTER ("IN").
8. Connect the outlet of post filter (option) to the supply line to the residence/business.
9. Install the air-relief valve on the product manifold fitting at the top of the PST.
10. Be sure system Bracket, connect and test for load and stability.



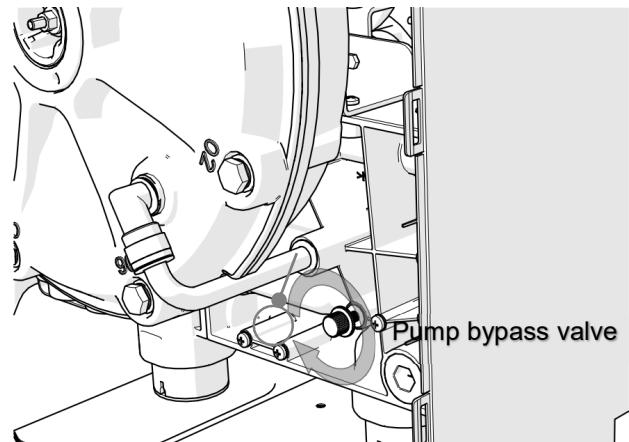


## Wire Connections:

1. Connect the Conductivity Probe Cable from the HDI to the Upper PST Manifold Assembly.
2. Connect the Product Flow Meter Cable from the HDI to the Upper PST Manifold Assembly on top of the PST.



## Pressurization:

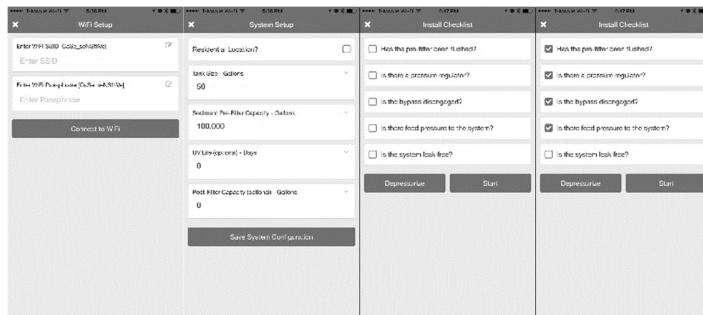
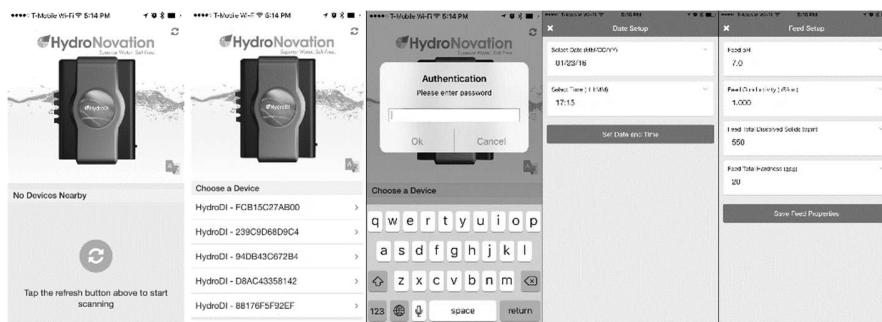


1. Confirm that pump bypass on the HDI is OPEN.
2. With the HDI bypass open, slowly OPEN the main bypass before the pre-filter so water flows through the tank and then to the house.
3. Open air relief valve and open a tap in the hose to allow the air to escape. Run at least 10 gallons from the tap.
4. Fill tank slowly.
5. Once pressurized, confirm that there are no leaks at the fittings/connectors/system/tank top and bottom, pre-filter, or post-filter.
6. If no leaks, connect the electrical cord to the system and turn on the power switch.
7. **IMPORTANT:** If a leak is observed, bypass the system (actuate main bypass), depressurize the system using the blue button (reset button) on the right. Hold the button until a click is heard which is opening of the reject solenoid. Re-press the button to stop the depressurizing action.
8. Once observed leaks are fixed, pressurize the system and recheck for leaks on fixed locations.

# START UP

## Bluetooth Connection & APP Setup:

1. Enable the Bluetooth feature on your (BLE= Bluetooth Low Energy) Smartphone: iPhone or Android.
2. Open the Hydronovation APP (Both IOS and Android Apps are available for download).
3. Tap the screen button of your BLE to find the appropriate Processor.
4. Select the appropriate Processor. On most installation sites you should see a single Processor Identification.
5. Select New Device Password, tap to Enter Password.
6. Input your Password and click OK button.
7. APP syncs phone time and HDIP time.
8. Input Feed Water properties as measured. Selections are limited to approximate numbers, please round up.
9. Enter Wi-Fi SSID and Password as given by homeowner. (Verify the system is in AQUADASH properly later.)
10. Select your specific system's parameters.
11. Select all of boxes when ready. **IMPORTANT:** You have to check all boxes according to the actual situation.
12. Run prep cycling on application. The prep cycle is 4 minutes long and will automatically stop.
13. Press Start on APP
14. Once START is pressed, the system will automatically start processing the tank water.
15. Verify system is registering data to the website by logging into AquaDash® (<http://hydrodi-monk.herokuapp.com>)
16. Go on AquaDash® to look at two cycles for 30 mins. Review system status and operation, no error.



17. Other optional settings under the settings tab
  - a. Network: DHCP setting if Wi-Fi is not available.
  - b. Sleep settings (hours) if system needs to be shut off automatically between certain times.

# AquaDash

## Related Standards & Policies:

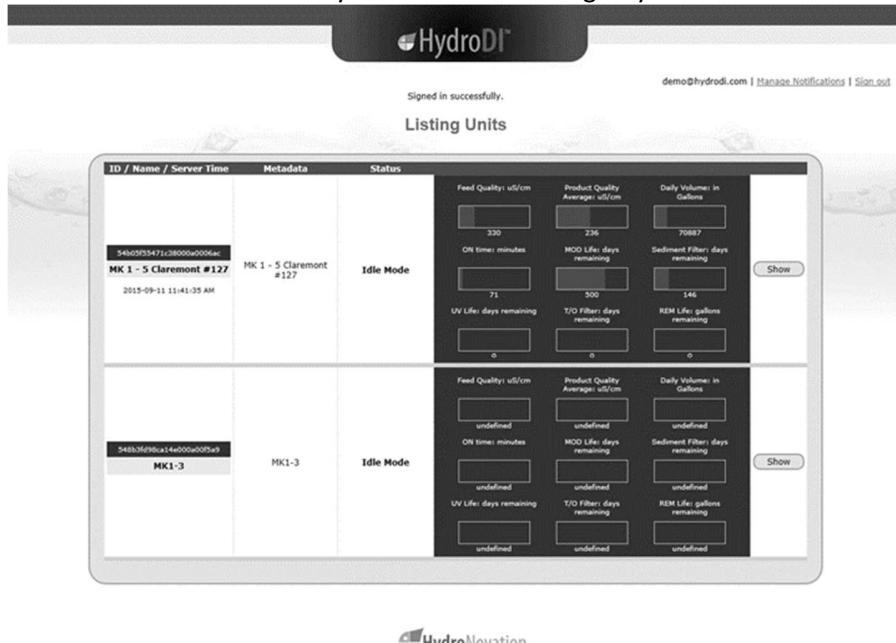
- Supported operating systems: Windows 8, Windows 7, Windows Vista, Mac OS X (v10.7 Lion or newer)
- Supported browsers:
  - Mozilla Firefox: 24 ESR (Extended Support Release), and the latest version
  - Internet Explorer: Version 8 or newer
  - Google Chrome: Latest version
  - Apple Safari: Latest version
- Supported mobile device browsers:
  - Amazon Silk for Kindle Fire, Fire HD, Fire HDX
  - Safari Mobile for iPhone, iPad, and iPod, iOS version 6 or newer

## How to Login:

1. Go to <http://hydrodi-monk.herokuapp.com/>

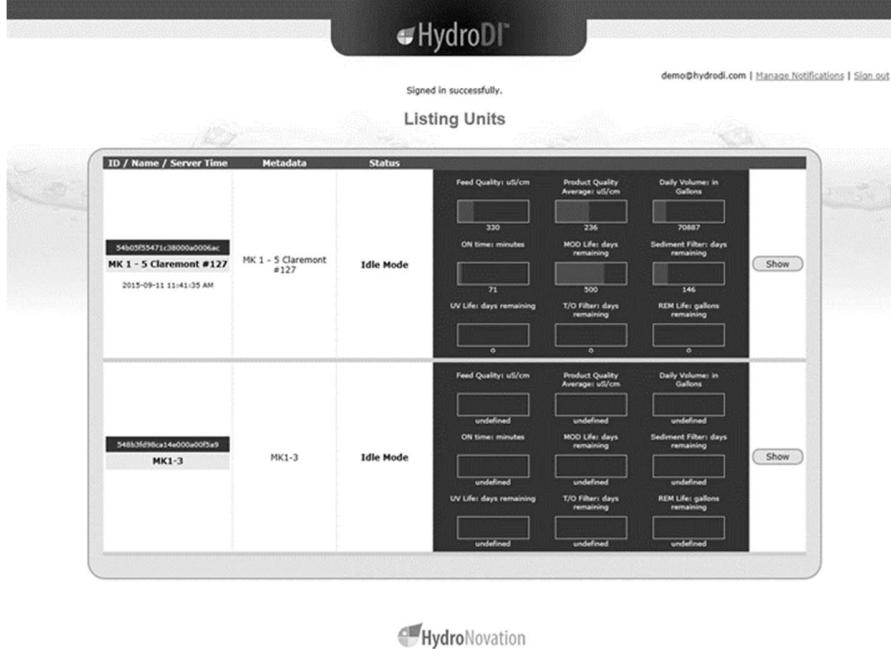


2. You will then be directed to your Dashboard listing all your units.



## How to Logout:

1. Click on the Sign Out link on the top right.



Signed in successfully.  
demo@hydrodi.com | Manage Notifications | Sign out

### Listing Units

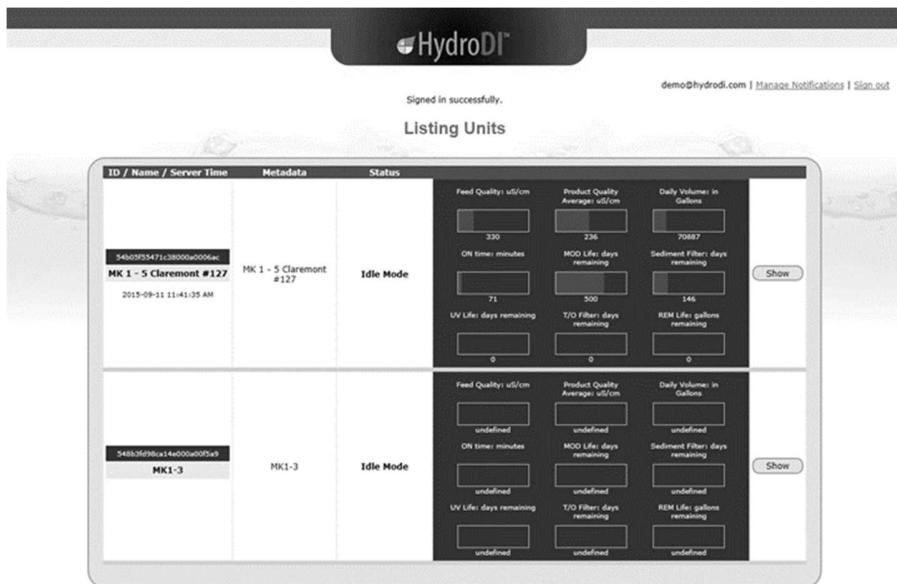
ID / Name / Server Time	Metadata	Status
54b0355471c38000a0006ac MK 1 - 5 Claremont #127 2015-09-11 11:41:35 AM	MK 1 - 5 Claremont #127	Idle Mode
54b0355471c38000a0006ac MK1-3	MK1-3	Idle Mode

Feed Quality: uS/cm	Product Quality: Average: uS/cm	Daily Volume: in Gallons
230	236	70887
ON time: minutes	MOD Life: days remaining	Sediment Filter: days remaining
71	500	146
UV Life: days remaining	T/O Filter: days remaining	REM Life: gallons remaining
0	0	0
UV Life: days remaining	T/O Filter: days remaining	REM Life: gallons remaining
undefined	undefined	undefined
UV Life: days remaining	T/O Filter: days remaining	REM Life: gallons remaining
undefined	undefined	undefined

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## Dashboard Information:

1. When you first login, you will be directed to the Dashboard. The Dashboard displays the list of units an End User has access. Each row represents a unit that has for 4 columns:
  - a. ID/Name/Server Time
  - b. Metadata
  - c. Status
  - d. Indicators



Signed in successfully.  
demo@hydrodi.com | Manage Notifications | Sign out

### Listing Units

ID / Name / Server Time	Metadata	Status
54b0355471c38000a0006ac MK 1 - 5 Claremont #127 2015-09-11 11:41:35 AM	MK 1 - 5 Claremont #127	Idle Mode
54b0355471c38000a0006ac MK1-3	MK1-3	Idle Mode

Feed Quality: uS/cm	Product Quality: Average: uS/cm	Daily Volume: in Gallons
230	236	70887
ON time: minutes	MOD Life: days remaining	Sediment Filter: days remaining
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UV Life: days remaining	T/O Filter: days remaining	REM Life: gallons remaining
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UV Life: days remaining	T/O Filter: days remaining	REM Life: gallons remaining
undefined	undefined	undefined
UV Life: days remaining	T/O Filter: days remaining	REM Life: gallons remaining
undefined	undefined	undefined

HydroNovation

2. ID/Name/Server Time displays the following:
  - a. ID – Unit ID that was generated by the system during creation.
  - b. Name – Name of the Unit given by the Administrator.
  - c. Server Time – Time of the server last sync to the unit.
3. Metadata – Metadata name of the unit set by the administrator during creation.

<b>ID / Name / Server Time</b>	<b>Metadata</b>
<b>54b05f55471c38000a0006ac</b> <b>MK 1 - 5 Claremont #127</b>  2015-09-11 11:57:42 AM	<b>MK 1 - 5 Claremont #127</b>

# Appendix

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## Product Specifications:

Item	Unit	Model#	
		Hydronovation WP1	
Product Flow Rates	Minimum	gpm	NA
	Normal	gpm	NA
	Maximum at full tank, (depends on pressure)	gpm	NA
Typical Recovery		%	75
Minimum Operating Pressure	Processor	psi	40
Maximum Operating Pressure	Processor	psi	85
Maximum Pressure Drop	Cassette	psi	4
Feed Water Temperature Range	Processor	F°	35-100
Cell Processing Time	From feed to product water	GPH	30
Power Supply Characteristics	DC Voltage	V	24
	DC Amperage	A	5A/2.5A
	Power supply	watts	350
	Power at peak consumption	watts	250
	Power at standby mode	watts	5
	Input AC Voltage	VAC	115/230@ 50/60Hz
Daily Energy Consumption	300 gpd @ 10hr	kwh	2.5
	Efficiency	%	85
Ionized substances removed by cassette			
Cations	Sodium	%	70
	Calcium	%	80
	Magnesium	%	80
Anions	Chlorides	%	80
	Sulfates	%	80
	Bicarbonate	%	80
	Nitrates	%	80
Others	Arsenic	ppb	10
	Ionized Organics		
TDS reduction	All	%	75-80

**IMPROTANCE:** Weakly ionized substances such as silica and carbon dioxide are not removed. Particles, Organics, Bacteria and Pyrogens, any more than that.

<b>Maximum Feed Water Conditions</b>	Conductivity	µS/cm	1500
	Temperature	F°	35-85
	Inlet Pressure	psi	40-85
	Total Chlorine (as Cl2)	ppm	0.05
	Iron	ppm	0.01
	Manganese	ppm	0.01
	Sulfide	ppm	?
	pH	range	4-9
	Total Hardness	gpg	23
	Total Dissolved Solids	ppm	750
	Dissolved Organics	ppm	0.01
	Silica	ppm	5
	Particulates	microns	5

<b>Physical Dimensions</b>	Weight	lbs.	65
	Depth	inch	17.6
	Width	inch	16.4
	Height	inch	22.2

Process Storage Tank (The height includes tank base and top fitting.)

Size	Weight, lbs.		Height, in	Diameter, in
	Empty	Full Filled		
80 Gal	62.7	726	74.3	22
50 Gal	44	459.8	77.2	16

## Troubleshooting:

Problem / Situation	Area						Possible cause	Possible Solution
	TK	MO	FM	RM	MP	OT		
Tank system leaks water	●						Leak from bottom fitting, check if bottom fitting was not installed correctly to thread damage	Re-install or replace new bottom fitting set with Teflon tape. Do not reuse Teflon tape
	●						Leak from bottom fitting of outlet port, check if bottom fitting was missing O-Ring or O-Ring damage	Replace O-Ring with grease, check the O-Ring is in place, is clean and is intact
	●						Leak from bottom fitting of outlet port, check if bottom fitting was missing collect or retainer damage	Replace new bottom fitting unit. Rewrap thread connections with new Teflon tape
	●						Leak from top fitting, check if top fitting was not installed correctly or thread damage	Re-install or replace new top fitting set or connector with Teflon tape. Do not reuse Teflon tape.
	●						Leak from conductivity sensor, check if the sensor was not installed correctly or thread damage	Re-install or replace conductivity sensor set with Teflon tape
	●						Leak from air relief valve, check if the valve was not installed correctly or thread damage	Re-installation or replace air relief valve with Teflon tape
Module leaks water		●					Leak form in/outlet port, check if the O-Ring was not on the position or damage or deformation or particle on the surface	Replace O-Ring with grease, check the O-Ring is in place, is clean and is intact
		●					Leak from outside die-casting, check if the torque of bolt was not correctly	Re-install the module and tighten front lid
		●					Leak from outside die-casting, check if the radial seal was damaged or not on the correctly position	Replace O-Ring with grease, check the O-Ring is in place, is clean and is intact
		●					Leak from outside die-casting, check if there are any creak on the die-casting component	Replace Die-Casting part if necessary
Front Manifold leaks water			●				Leak form the connection port, check if the sealing O-Ring was twisted or damage	Replace O-Ring with grease, check the O-Ring is in place, is clean and is intact
			●				Leak form the Manifold body, check if there are any crack on the where are the water coming	Change Front Manifold

<b>MPV leaks water</b>					●		Leak form the connection port, check if the sealing O-Ring was twisted or damage	Replace O-Ring with grease, check the O-Ring is in place, is clean and is intact
					●		Leak form the MPV body, check if there are any crack on the where are the water coming	Change MPV valve
					●		Leak form the Actuator of MPV, check if U pin was not in place	Re-install U-Pin on the correct position
					●		Leak form the Actuator of MPV, check if O-Ring was wearing or particle issue	Replace O-Ring with grease, check the O-Ring is in place, is clean and is intact
<b>Rear Manifold leaks water</b>				●			Leak form the connection port, check if the sealing O-Ring was twisted or damage	Replace O-Ring with grease, check the O-Ring is in place, is clean and is intact
				●			Leak form the Manifold body, check if there are any crack on the where are the water coming	Change Front Manifold
				●			Leak form the connection port, check if the sealing O-Ring was twisted or damage	Replace O-Ring with grease, check the O-Ring is in place, is clean and is intact
				●			Leak from Flow Meter, check if the O-Ring is not in place or crack on the sealing surface	Replace O-Ring with grease, check the O-Ring is in place, is clean and is intact. Or replace new Rear Manifold L
<b>System water flow is noticeably reduced</b>					●		Check if the pre-file is clogged	Depressurize system, remove cartridge cap and replace internal filter if necessary
	●						Check if the inlet pressure is low or the ball valve was not open completely	manual flush and verify the valve is working. Replace the valve if necessary
<b>Water does no flow through system</b>	●						Check if the bypass valve is close	Close the bypass valve
<b>The noise of machine is very loud</b>			●				Check if the pump head was installed correctly or bearing was wearied	Re-install the pump on the Front manifold or replace new pump if necessary
					●		Check if the enclosure was not closed completely	Re-place the Front Cover
<b>System current does not register above known value</b>					●		Harness correctly plugged into board <-> device	Manually flip component confirms operation/current draw
			●		●		Component is damaged (coil, actuation)	Change component
					●		PCB output circuit is damaged	Change/Service PCB
					●		Current sense circuit (on board) is damaged	Turn on component and confirm current reading
<b>Pump current is outside of control</b>		●					High pressure drop on module	Bypass module (plumbing), turn on pump and confirm system current draw

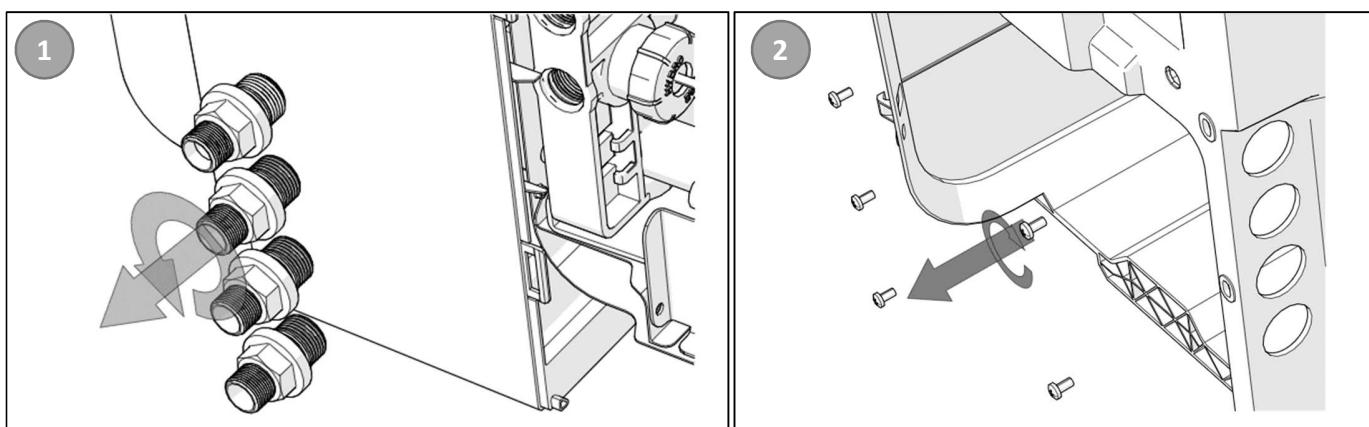
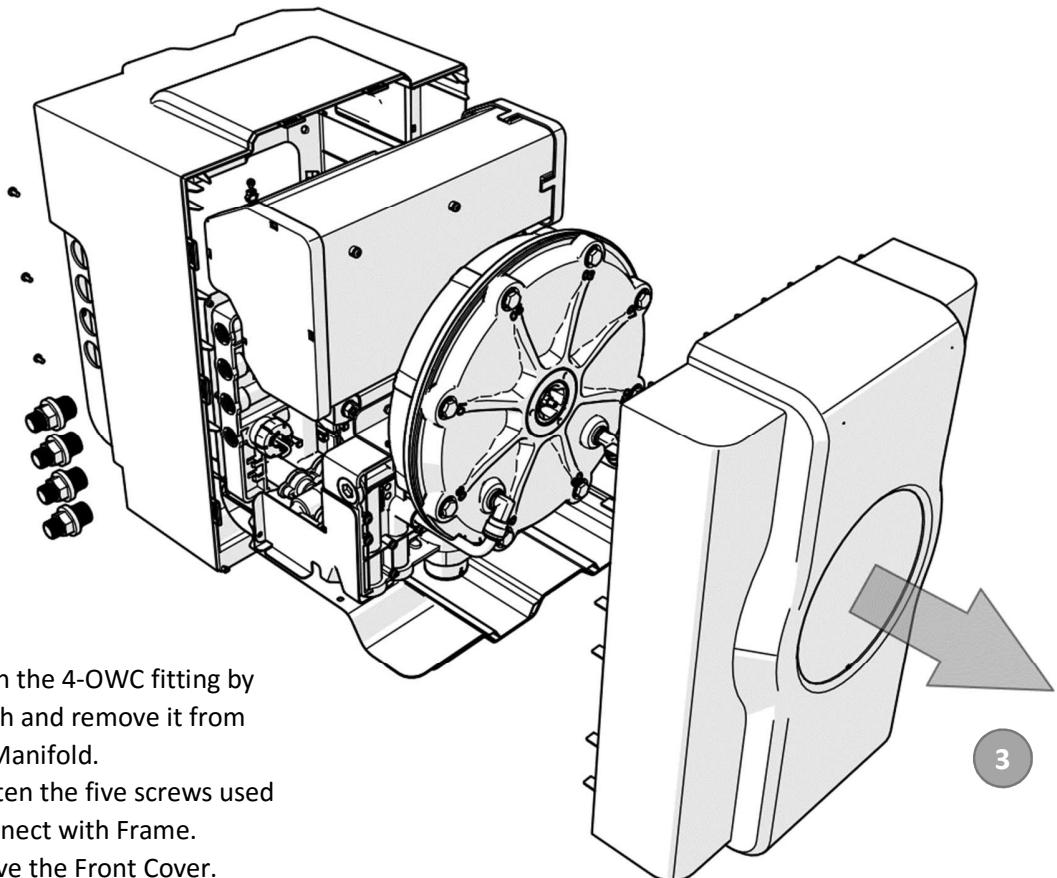
<b>limits 1000 &lt; mA &lt; 2500</b>	●	●				Blockage in system plumbing	Bypass system (plumbing) by close-looping pump heads (in-out), turn on pump and confirm system current draw
	●	●	●	●	●	Leak in plumbing	Find leak, fix
				●		Seized pump head (debris)	close-loop pump heads and confirm operation
<b>Module life counter on board runs out (&gt;720 days)</b>		●				Module life has been exceeded	Change module
<b>program gets lost, hits a trap</b>					●	Programming errors	watchdog timer resets system
<b>Internal pre-filtration counter runs out</b>					●	-	Change pre-filter, reset counter values (See commands)
<b>In process mode, after 20 seconds if there is no module current</b>					●	Electrode not connected	Verify connection between stack and power supply
		●			●	Power supply saturated	Disconnect module leads, manually turn on power. Voltage should be read. If there is no voltage, restart system and repeat test.
					●	Polarity failed to switch	Re-connection or replace new PCBA
			●			Pump failed, module current will plummet to 0 as dilute compartment is fully de-ionized	Verify pump operation*
<b>In process mode, when the cut is below the control level (statics)</b>			●			Pump failed, cut will plummet to 0 as dilute compartment is fully de-ionized	Verify pump operation*
		●			●	Module is badly scaled	check pressure drop <20 psi per side, if scaled, replace module or wash with REM
				●	●	MPV failed to switch D and C loops	Verify MPV and Stager operation*
	●		●			Conductivity sensor calibration is off	Verify conductivity reading at Mod-In and Mod-Out*
<b>Failure reported by conductivity circuit OR sensor is reading 0uS or &gt;1500uS</b>	●		●			No Conductivity Read	Verify that the sensor is plugged in, verify there is water in the line, no air bubbles
					●	PCB failed to start	PCB boot issue..., replace PCBA
					●	>1500uS	Verify reading with external tool, this can also happen when the process is stopped in the middle of a cycle and the valves switch, placing the concentrate loop into the dilute loop, which is greater than 1500uS

<b>Low flow reading on reject/flush (Makeup Flowmeter) / Low Pressure Reading</b>	●					System feed is off	Verify pressure to the system
					●	Flowmeter sensors disconnected at board	Verify connection at board, check reading on factory interface
			●			Flowmeter turbine is stuck	Verify sensor operation (w/magnet), if it reads, then the turbine is probably stuck. Replace, re-verify
			●			Reject Solenoid Valve is damaged	Verify solenoid operation / Replace
			●			Membrane pack is damaged (xleak)	Check xleak on module*
			●			Pressure Sensor is damaged / not connected	Check connection / verify sensor reading
			●			Flowmeter calibration is off	Start with default values re-calibrate flowmeters through factory interface*
	●	●	●	●	●	blown fitting on system	Bypass system, repair leak
<b>Failure reported by conductivity circuit OR sensor is reading 0uS or &gt;1500uS</b>	●		●			No Conductivity Read	Verify that the sensor is plugged in, verify there is water in the line, no air bubbles
			●		●	PCB failed to start	PCB boot issue...
					●	>1500uS	Verify reading with external tool, this can also happen when the process is stopped in the middle of a cycle and the valves switch, placing the concentrate loop into the dilute loop, which is greater than 1500uS
	●		●			No Conductivity Read	Verify that the sensor is plugged in, verify there is water in the line, no air bubbles
<b>Failure reported by conductivity circuit OR sensor is reading 0uS or &gt;1500uS</b>					●	PCB failed to start	PCB boot issue...
					●	>1500uS	Verify reading with external tool, this can also happen when the process is stopped in the middle of a cycle and the valves switch, placing the concentrate loop into the dilute loop, which is greater than 1500uS
					●	PCB communication error	Reset system, confirm function
<b>Real Time Clock not reading</b>					●	RTC not set	Set RTC through Hydronovation APP

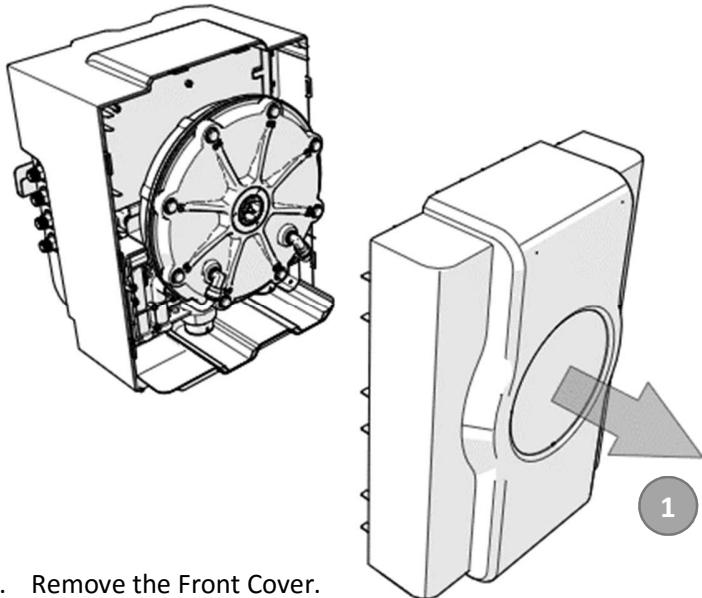
- TK- Tank Unit
- MO- Module
- FM- Front Manifold

- RM- Rear Manifold
- MP- Multiport Valve
- OT- Others, Electronic....

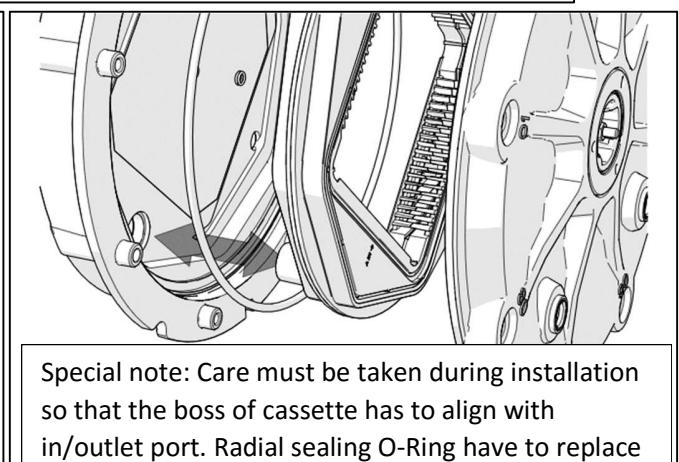
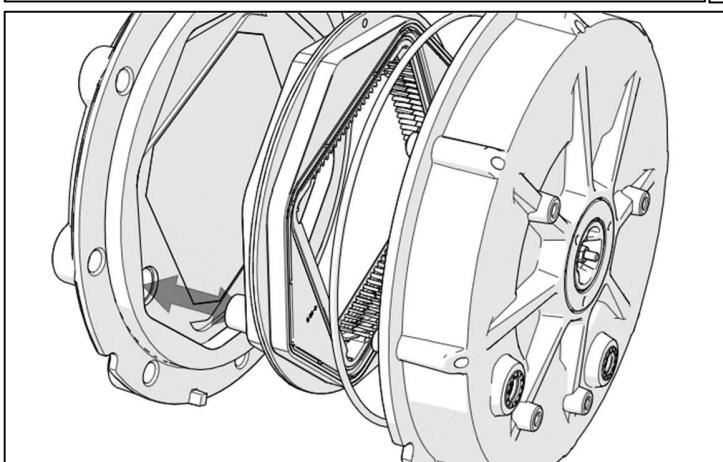
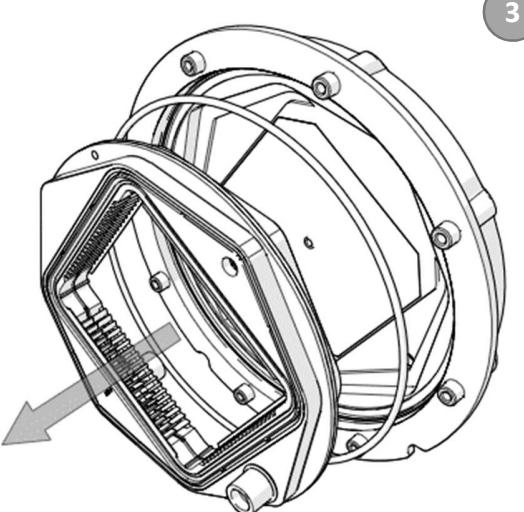
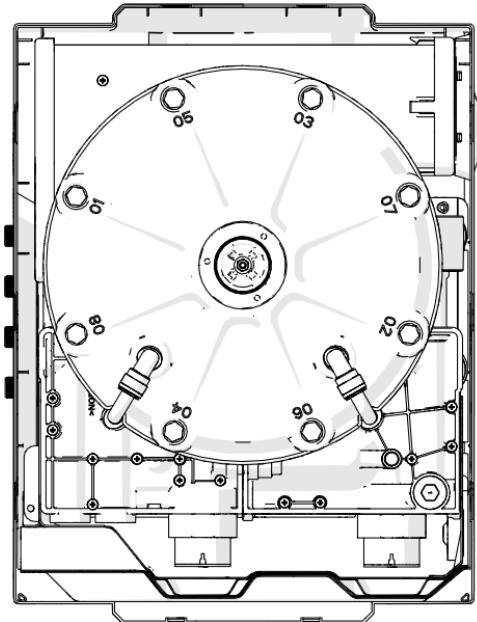
## Removing the HDI Rear Enclosure & Front Cover:



## Removing the Cassette:

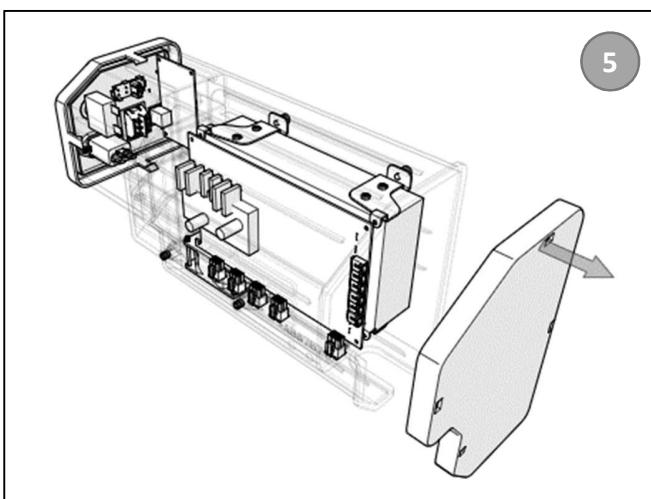
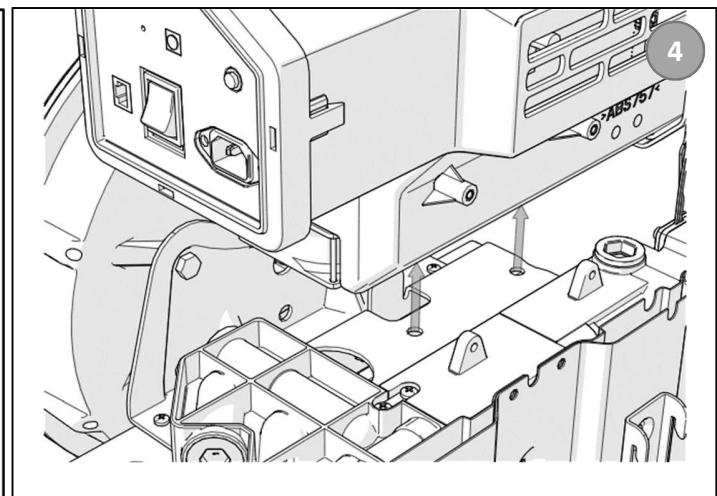
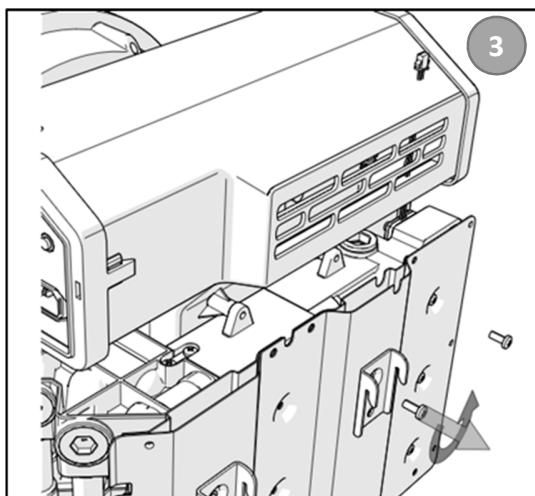
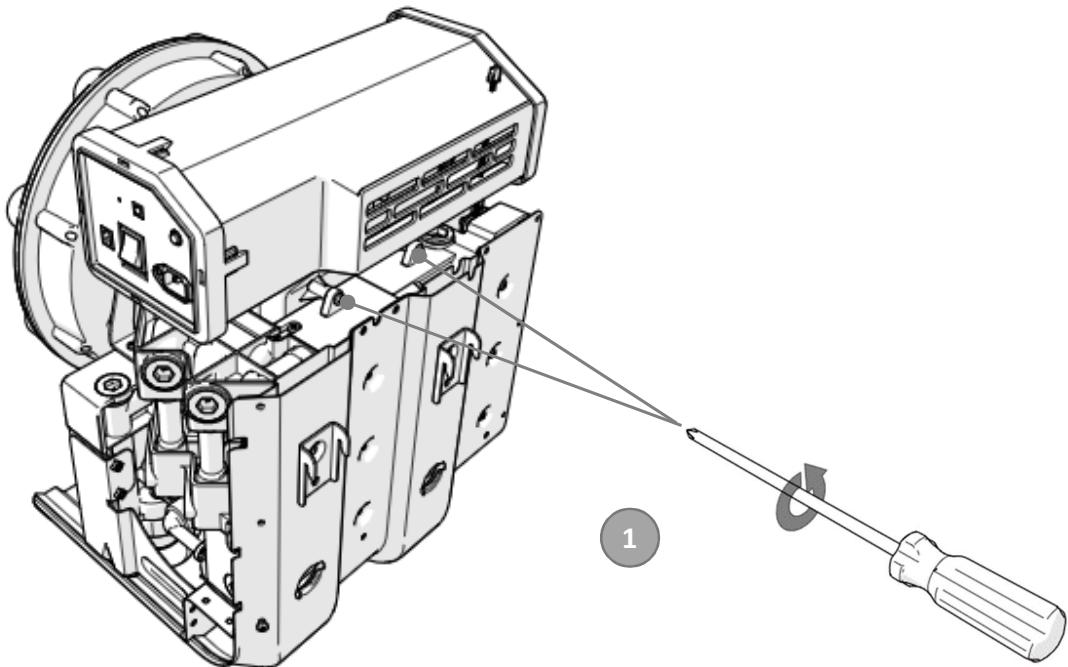


1. Remove the Front Cover.
2. Unfasten the eight bolt with washer following in number order.
3. Remove the Front Module and pull the Cassette out of Bottom of Module.



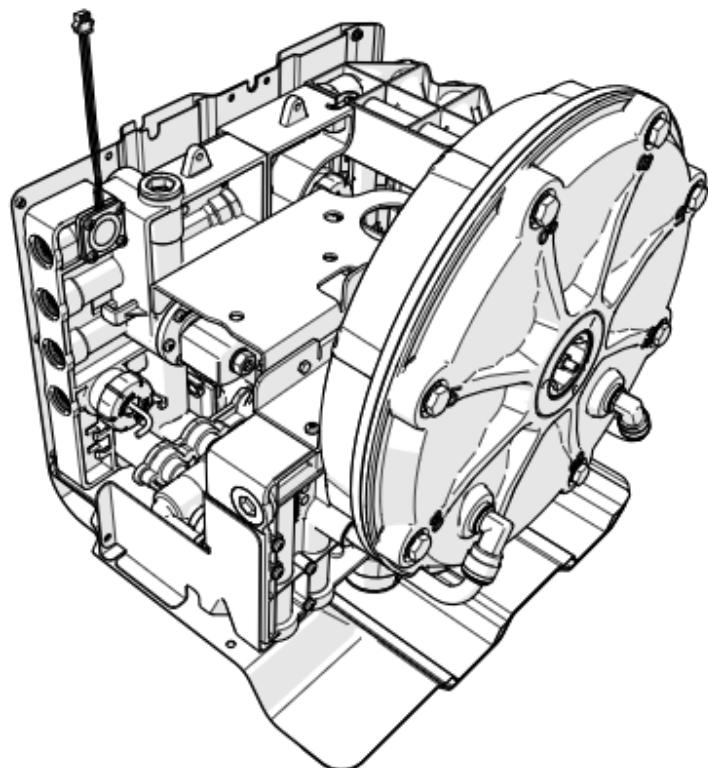
Special note: Care must be taken during installation so that the boss of cassette has to align with in/outlet port. Radial sealing O-Ring have to replace new one when cassette is installed.

## Removing the E-Box:



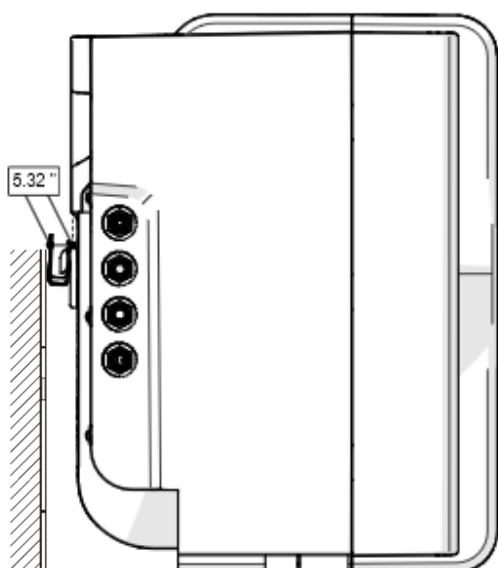
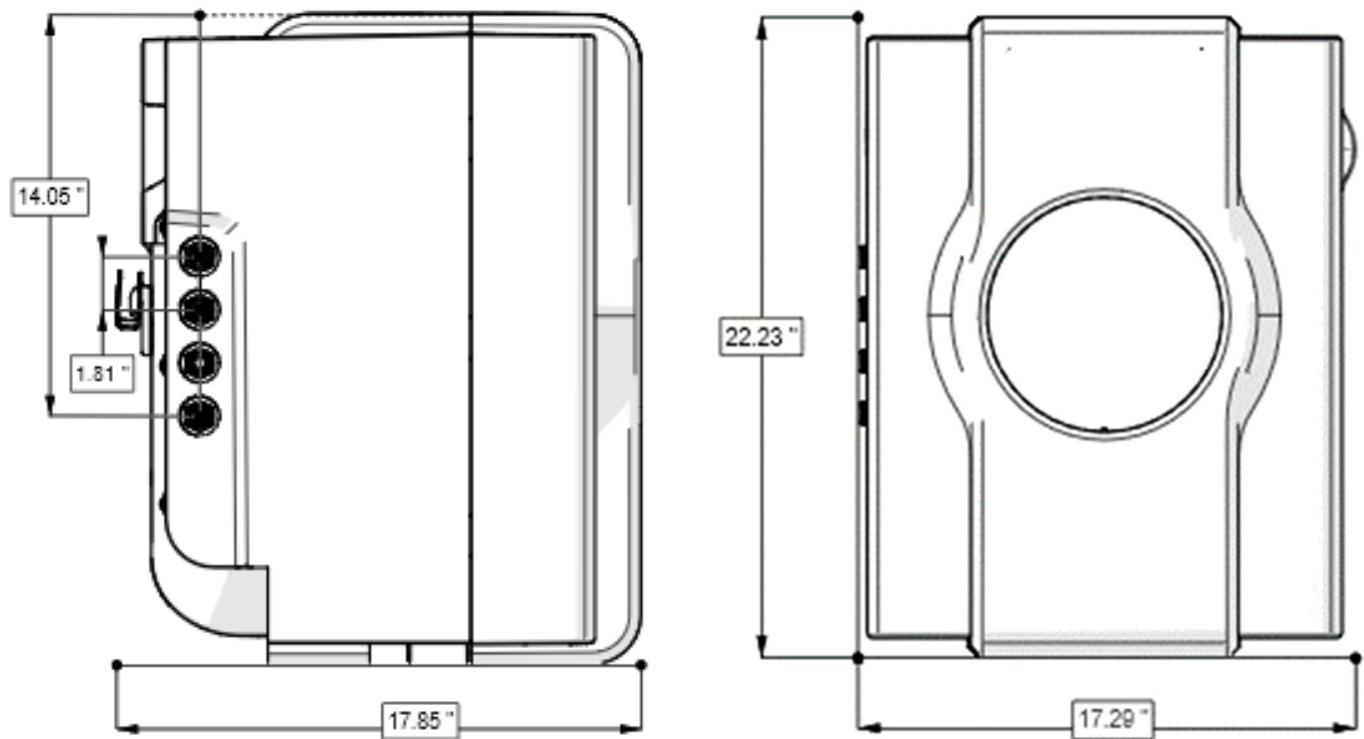
1. There are two screws have to unfasten before remove the E-Box.
2. Disconnect the wire connector.
3. Unfasten the two screws by screw driver.
4. Pull up the E-Box.
5. Open the side cover.

**Removing the Manifold:**



## Dimensional HDI Drawings:

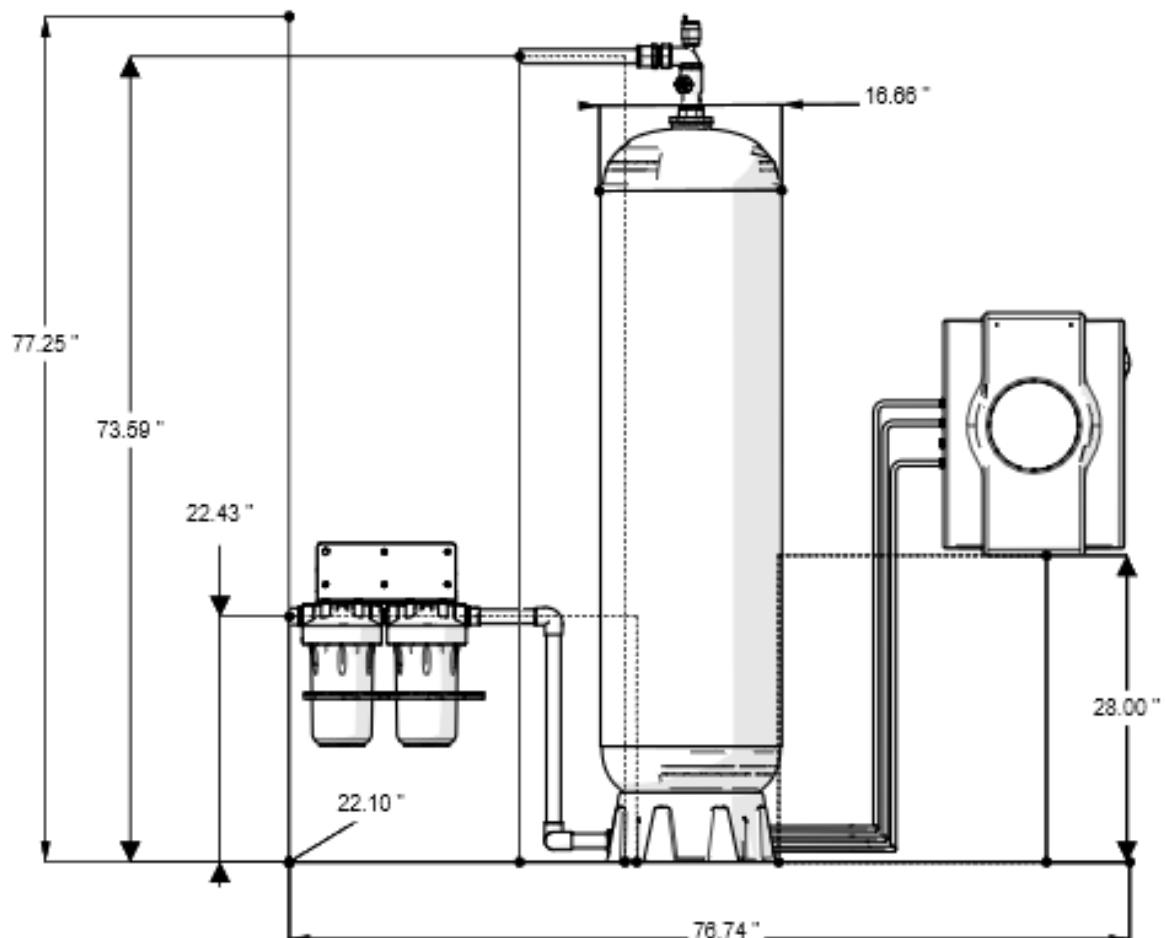
### Hydronovation:



Unit: Inch

## Dimensional HDI System Drawings:

### Connection:



Unit: Inch

## HydroNovation Glossary & Abbreviations

**WP1:** Model designation for the first series of production Hydronovation Processors

**HydroNovation™ Water Processor (HDI):** the electromechanical device where the EDI process is orchestrated using electrodes and a membrane cassette consisting of anion and cation membranes.

**Process Storage Tank (PST):** PST-XX where X is storage capacity (gal). Available in 50 or 80 gallon capacities

**HydroNovation™ Technology:** the technology utilized to remove ions from water in the PST using electricity for ion transference.

**HydroNovation™ System:** includes **HydroNovation™ Water Processor (HDI)** and **Process Storage Tank (PST)**

**Pressure Regulator:** a device that controls inlet water pressure to a specified pressure setting.

**Cassette Enclosure:** permanent enclosure that encases the **HydroNovation™ cassette**

**HDI Cassette or HydroNovation™ Cassette:** replaceable HydroNovation™ membrane assembly comprising of the flat sheet anion & cation membranes.

**8-way spool valve:** proprietary valve used within the HydroNovation™ processor

**Feed water:** influent water to the HydroNovation™ system

**Processed Water aka Product Water:** effluent water produced by the HydroNovation™ system

**Controller (E-Box):** circuit board module or “brains” of the HydroNovation™ processor

**Power supply:** uses 120 or 240 volt electricity for the HydroNovation™ processor

**MCM1:** multi-component manifold containing only interconnects pump to the HDI module

**MCM2:** multi-component manifold containing pressure, conductivity, flow meters and flow control valves

**Discharge water:** concentrate stream reaching a set point that is discharged to a drain or to a collection tank for re-purposing

**Dilute stream:** reduced ion constituents resulting in product or processed water

**Concentrate stream:** removed ion constituents collect in a concentrating loop

**Flow switching:** flipping of the dilute and concentrate loops within the HDI process.

**Polarity reversal:** changing of polarity on electrodes to opposite charge

**Lower PST Manifold Assembly:** component that is installed on the bottom of the PST. Allows for the feed water connection for the system and tubing connections for discharge water make-up and Mod-In & Mod-Out connections to HDI.

**Upper PST Manifold Assembly:** component that is installed on the top of the PST. Allows for the product water connection.

**Product Water Manifold Assembly:** assembly that is attached to the Product Water Manifold and includes the Air Relief Valve, Flow Meter Sensor, Product Conductivity Sensor and Check Valve.

**Baffle Assembly:** proprietary baffle assembly installed within the PST. Consists of internal distributors and baffle plates.

**Bypass Assembly:** three valves installed prior to PST that allows for the HydroNovation System to be circumvented by opening the center valve and closing valves to and from plumbing to PST.

**AquaDash:**

**HydroNovation APP:** downloaded application from the APP Store. HydroNovation APP provides three main functions through Bluetooth between Smartphone and the HDI Processor. The functions being Diagnostics, Service & Settings.