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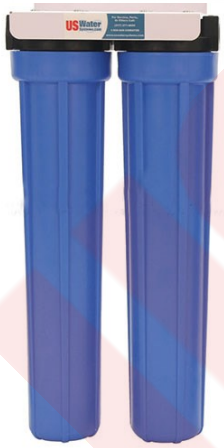
www.uswatersystems.com

US Water Systems DI Installation Guide
10” and 20” Singles, Doubles and Triples





Owners Manual

Models:

320-DI210, 320-DI-220-EC, 505-DI724, 320-DI220-B, 320-DI320, 320-DI320-BB, 320-DI-POD-S, 505-DI942, 320-DI-QUAD-P, 505-DI1447

REVISION # 1.2
REVISION DATE May 21, 2015

US Water Systems Corporate Office
1209 Country Club Road
Indianapolis, IN 46234
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www.uswatersystems.com
1-800-608-8792

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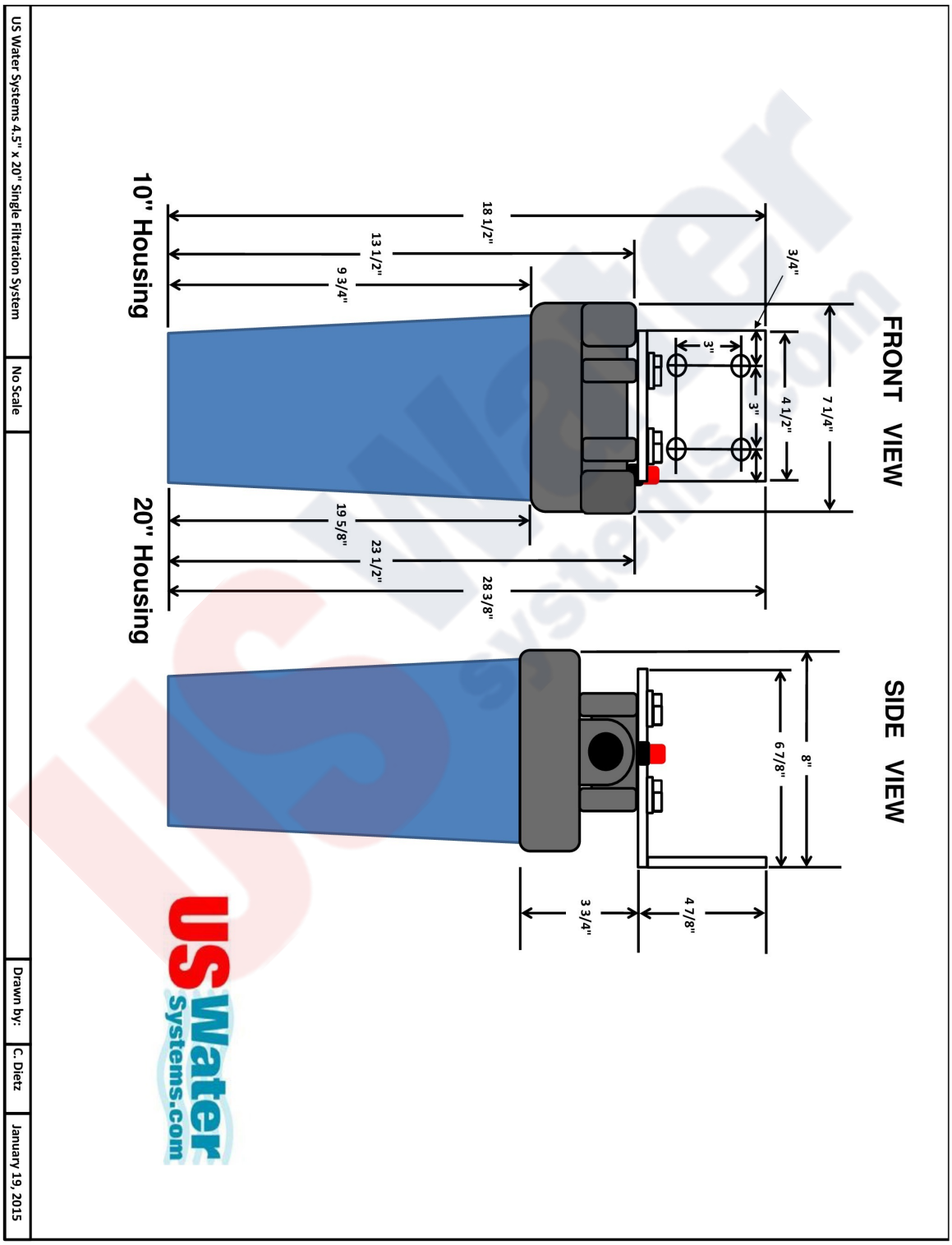
Unpacking / Inspection

Be sure to check the entire system for any shipping damage or parts loss. Also note damage to the shipping cartons. Contact US Water Systems at 1-800-608-8792 to report any shipping damage within 24 hours of delivery. Claims made after 24 hours may not be honored.
Small parts, needed to install the system, are in a parts bags. To avoid loss of the small parts, keep them in the parts bag until you are ready to use them.

Safety Guide

- Check and comply with your provincial / state and local codes. You must follow these guidelines.
- Use care when handling the filter system. Do not turn upside down, drop, drag or set on sharp protrusions.
- **WARNING**: This system does not remove biological contaminants. US Water Systems recommends that bacteria levels be checked periodically to ensure there is no bacteria present. Coliform and E.coli most importantly.

System Dimensions



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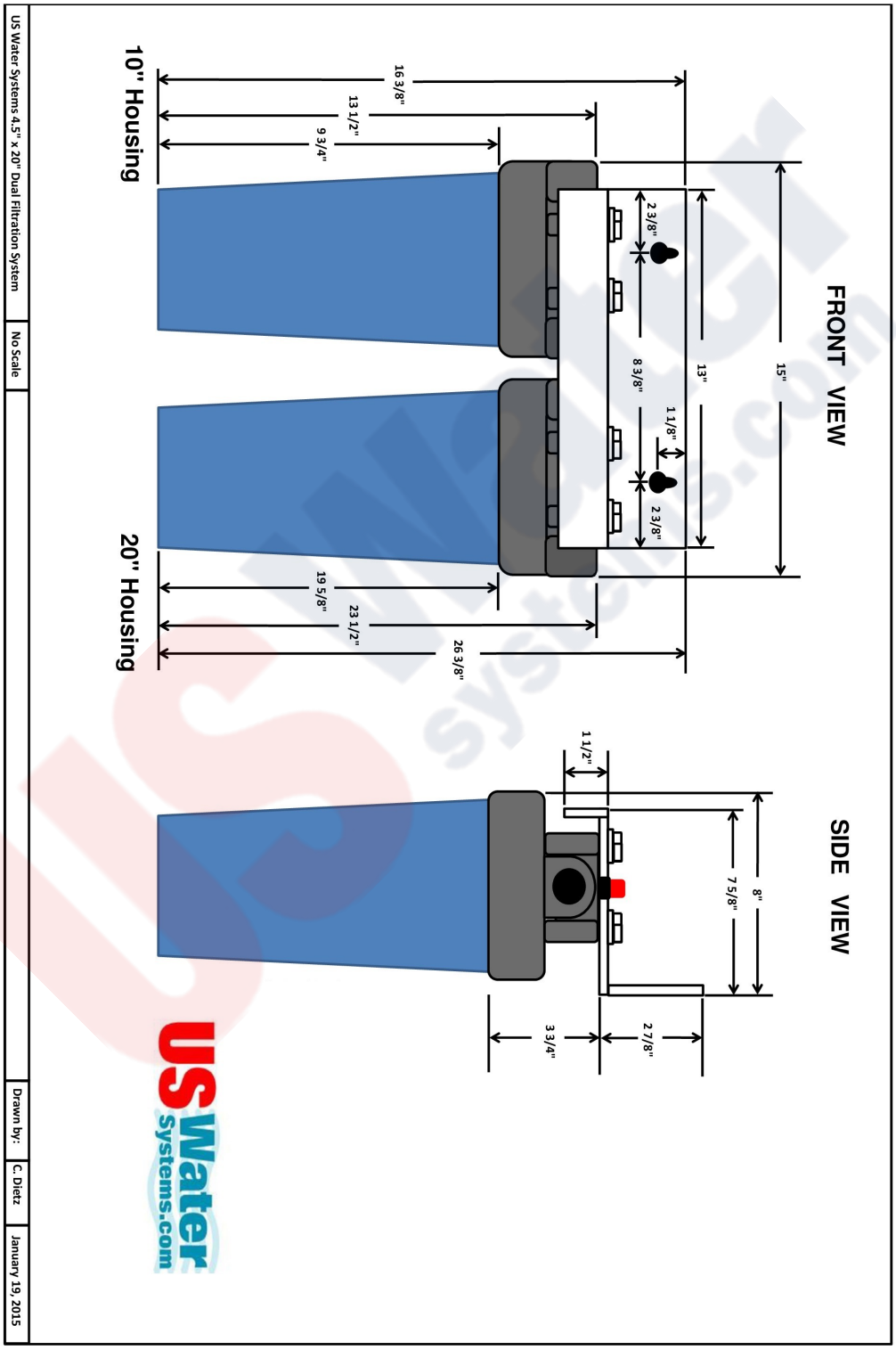

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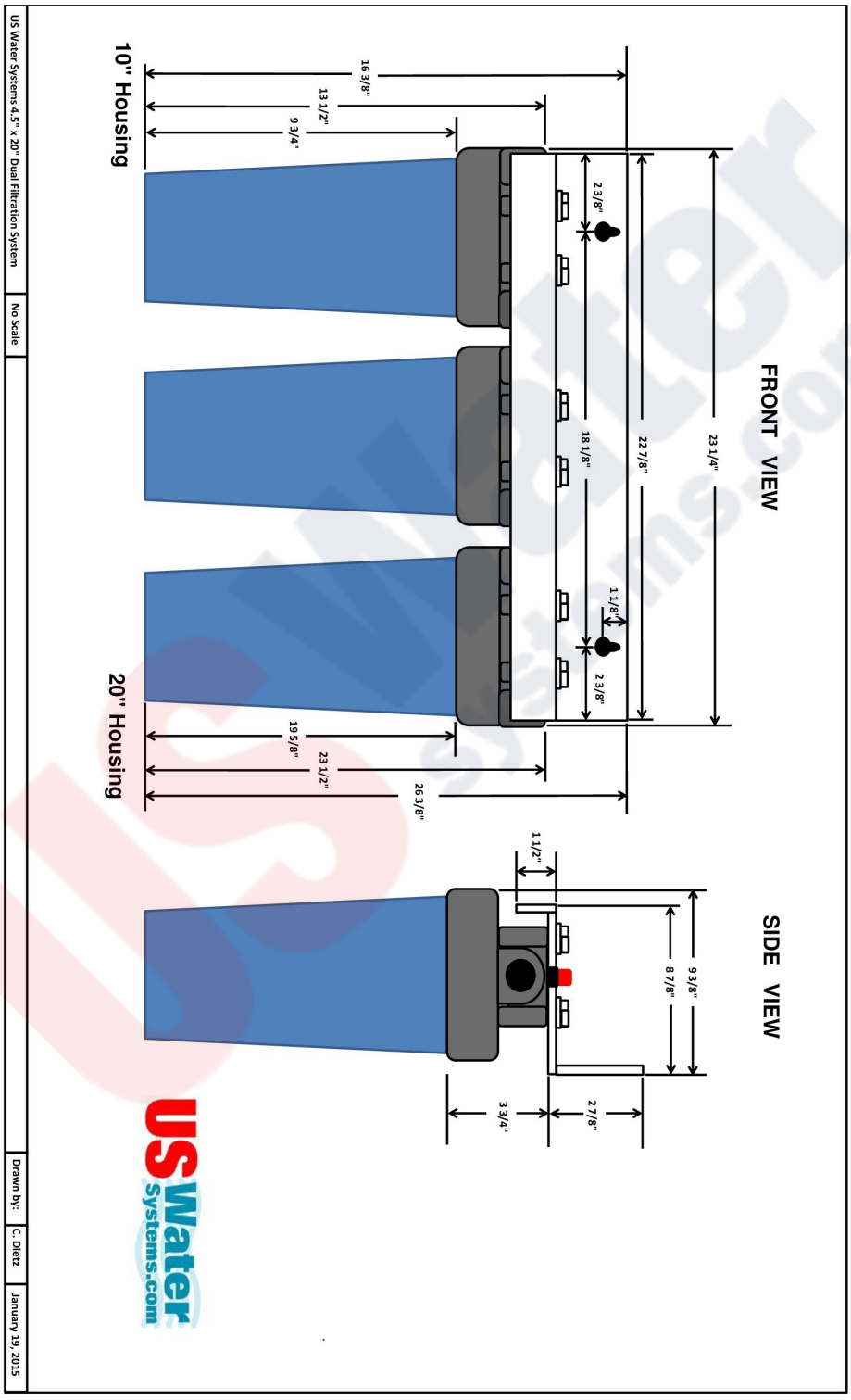

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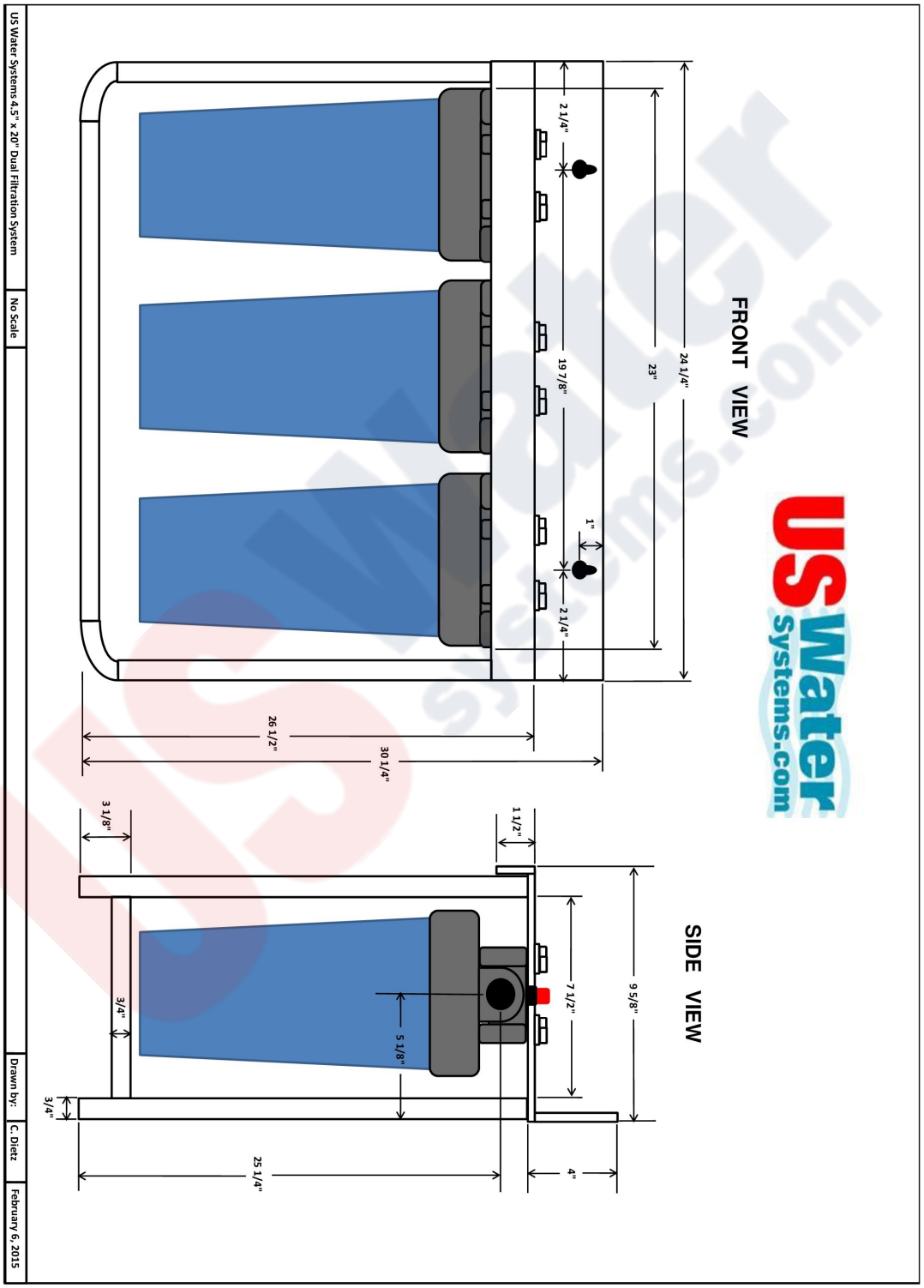

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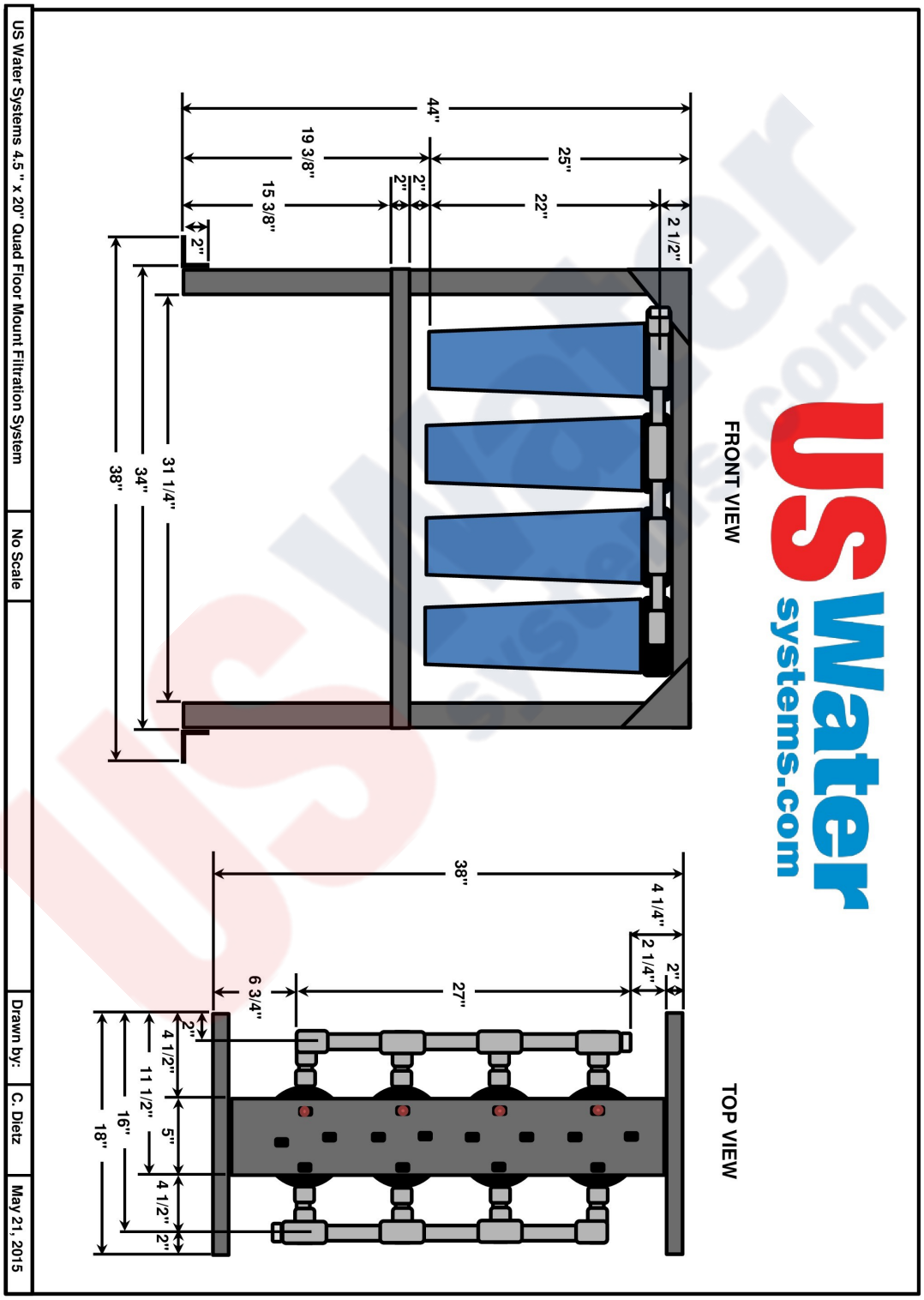
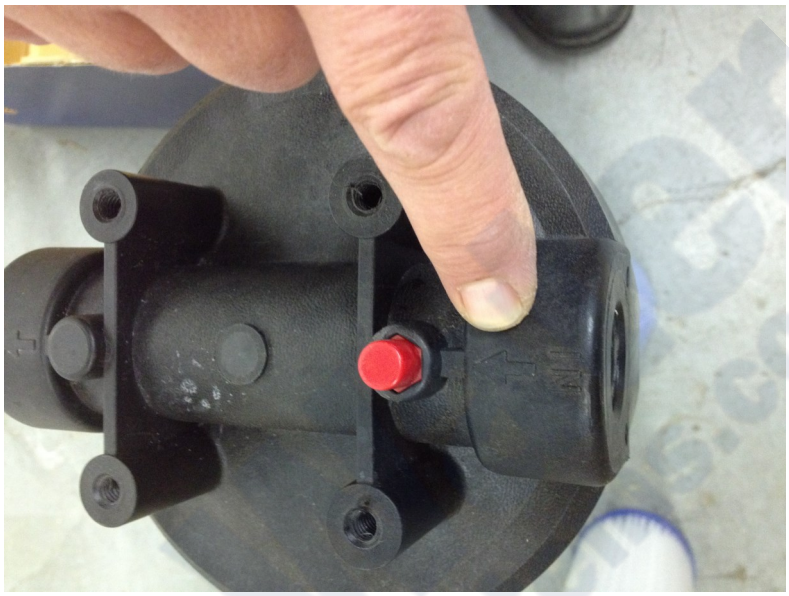


DI Filtration System Installation Instructions

1. Install the DI filtration system in the desired location in the water treatment system. The cap are marked “IN” and “OUT” on the top of the housing.

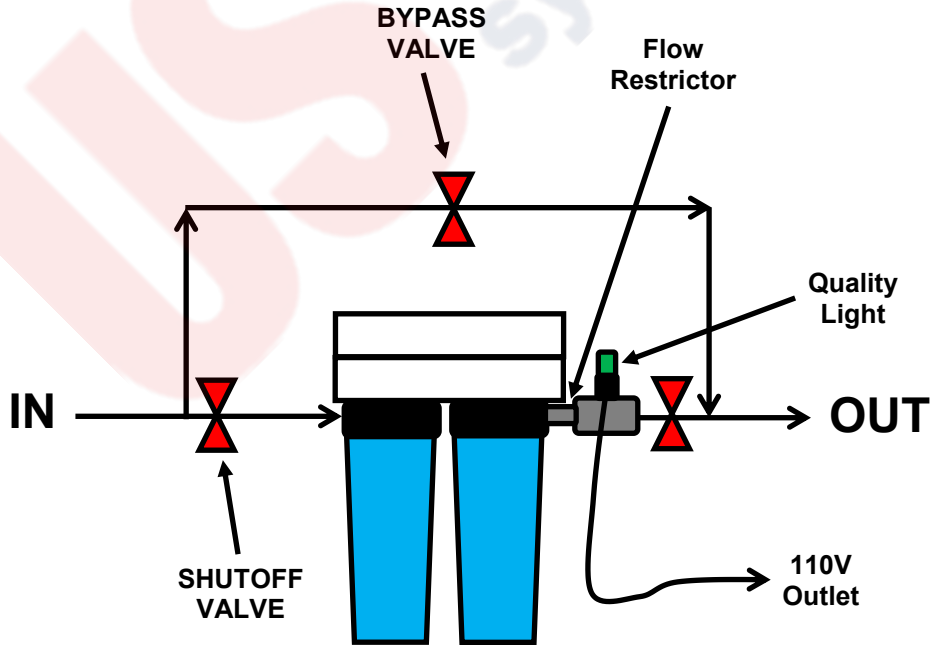


2. Mount the housing to the bracket using the supplied screws, orienting the housing to match the applications desired flow direction. Double and Triple housings are pre-assembled. However, if your applications flow direction is right to left, the bracket will need to be turned 180 degrees.

DI Filtration System Installation Instructions

The DI filtration systems can be installed by attaching a pipe to the inlet and out the outlet ports. In some cases, filters are changed using a frequency. In other cases filters are changed using output quality. It is a good practice to install a quality indicator after a filtration unit. This quality indicator can be used to determine when the filter/filters in the system have become exhausted. Most systems will use a quality light (Resilite). This light uses “red” and “green” as quality indicators. When water passes by the quality light, the sensor in the light will determine the color of the light. When the water is at quality, the light will be green. When the water is below quality the light will be red. Systems that sit dormant will often show a red light after long periods without flow. This is normal. Water should be run through the system and quality light for a few minutes before a red light condition is considered accurate. The DI systems also utilize a flow restrictor to ensure the highest quality. The restrictor is used to limit the flow rate through the filters. This will prolong the contact time and produce water at a higher quality. Some system will have a carbon filter as the initial step. This filter should be changed every 6-12 months.

Shutoff valves can be installed before and after a filtration system to isolate it for a filter change. The red button on top of the filtration system can be used to release the pressure in the housing. A bypass valve can also be plumbed in if desired. This will allow untreated water to be bypassed during a filter change or leak within the system. This should only be temporary as the water will be untreated if the system is in bypass. See below.



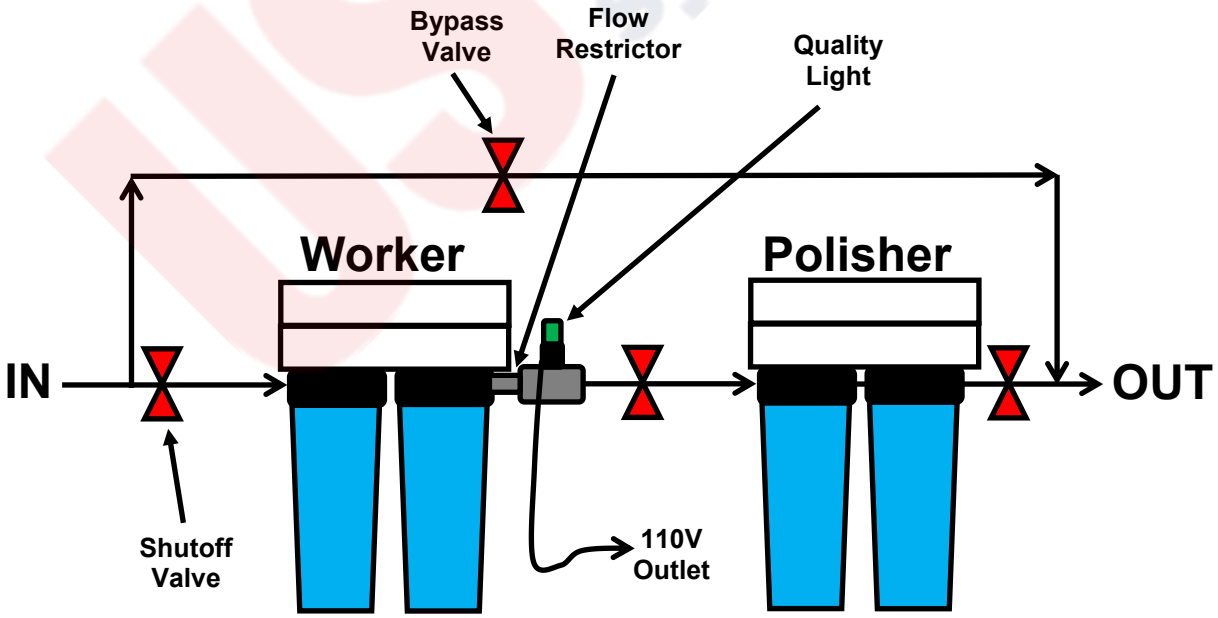
DI Filtration Typical Configuration

DI filtration systems are used for high purity water requirements. To maintain high quality most applications call for a “worker” and “polisher” configuration. This configuration utilizes two filtration systems plumbed in series. This allows the first filtration system (worker) to remove the majority of the contaminants and the second filtration system (polisher) to bring the water to final quality. A quality light is used between the worker and polisher systems to determine when the worker filters need to be replaced.

Filter replacement in this configuration utilizes the “counter-flow cartridge change” procedure. This procedure ensures that the DI cartridges are utilized to their full potential. The following procedure should be used;

1. Remove the exhausted worker filters and discard them.
2. Remove the polishing cartridges for the polisher system and install them in the worker system.
3. Install the new filters in the polisher system.

This procedure should be used to get the maximum life out of each DI cartridge. Single system configurations (shown on the previous page) do not utilize this procedure.



3. Now mount the filter system to the wall using the appropriate fasteners for your wall material. It is preferred that this is mounted on a secured board or wall stud as it will be heavy when full of water. Double an triple systems can be very heavy when full. Floor mounted systems can be secured to the wall as well. To secure them for filter changes.

4. The inlet plumbing will be attached to the “IN” port on the filter system. The outlet plumbing from the system will be attached to the distribution system or additional treatment equipment from the “OUT” port. A bypass pipe and shutoff valve, Inlet and Outlet shutoff valves and quality light may be installed at this time if desired. Parallel systems will be plumbed when received. The inlet and outlet piping should be marked when the equipment is received.

DO NOT REMOVE THE FLOW RESTRICTOR OR THE WATER QUALITY WILL BE COMPRIMISED.





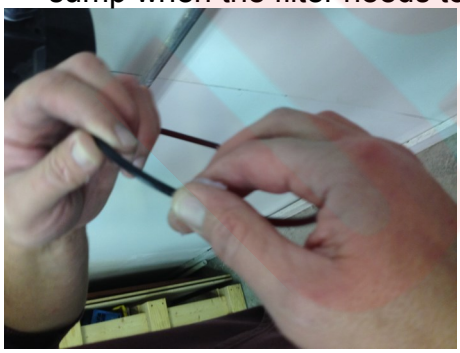
DI Filter Cartridge Installation Instructions

1. Now install the DI cartridge/s in the filtration system by removing the sump from the housing.
2. There is a notch in the bottom of the sump that will center the cartridge in the housing. Unwrap the filter and install it in the sump. If you are using a carbon filter or specialty filter, be sure the rubber washer seal(s) are in place when you install the filter cartridge. The carbon filters have a seal on the top and the bottom. The DI filters will only have the seal on the top.

BOTTOM **TOP WITH SEAL**



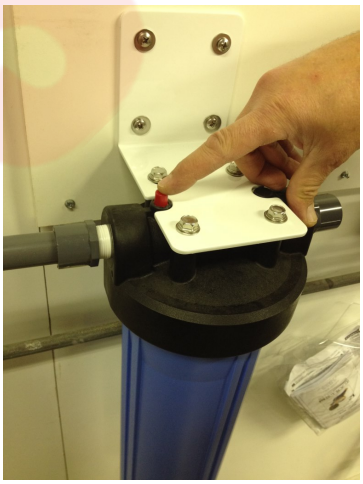
3. Coat the O-ring and threads on the sump with food grade silicone grease and install the O-ring in the filter sump. Applying lubrication to the sump threads will aid in removing the sump when the filter needs to be changed.



DI Filter Cartridge Installation Instructions

4. Now install the sump in the filter cap and turn it clockwise to tighten the filter. Once it is hand tight, use the supplied wrench to tighten it an additional 1/4-1/2 turn. Repeat this step for each filter sump in the system.

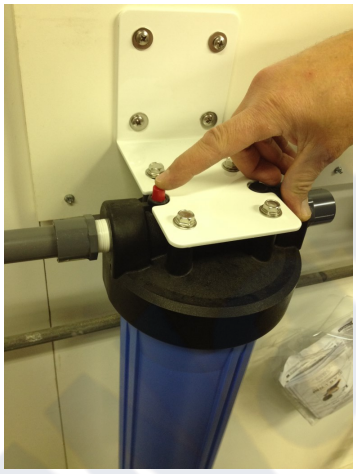

5. Once the filter is installed the red button on the top of the filter can be used bleed the air out of the chamber when the water is turned on to the system.



NOTE: Carbon and other specialty filters may need to be flushed before use. It is a good practice to flush new filters and check for discolored water and/or quality.

DI Filter Cartridge Replacement Instructions

1. Shutoff the water supply.
2. Open a faucet of spigot closest to the filter housing and allow all the water to empty from the plumbing system.
3. Push the red button on the top of the filter housing to release the remaining water pressure.



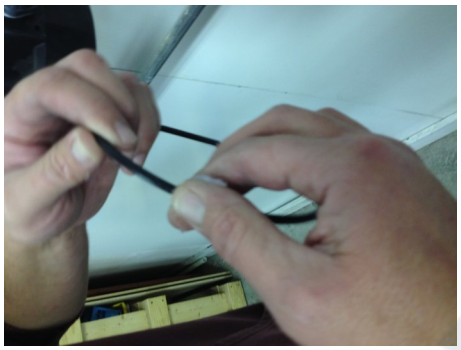
4. Use the supplied filter wrench to remove the sump by turning it counterclockwise.

WARNING! If the pressure is not released, the filter sump will be very difficult to get loose. It is imperative that the water pressure is released prior to attempting to remove the filter sump.

5. Remove the sump by spinning it counterclockwise until the sump is completely removed.

DI Filter Cartridge Replacement Instructions

6. Remove the old filter and discard.
7. Install the new filter in the sump.
8. Lubricate the o-ring and sump threads with food grade silicone grease.



DI Filter Cartridge Replacement Instructions

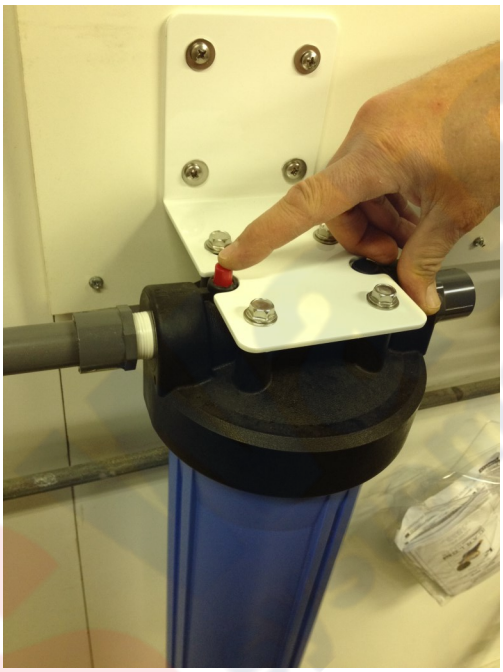
9. Install the filter sump in the filter cap by turning it clockwise until it is hand tight.

NOTE: The housing should spin tight fairly easily. If not, add more lubrication to the sump threads. This will aid with removing the sump when the filter needs to be replaced again.

10. Once the filter sump is hand tight, tighten it an additional 1/4-1/2 turn with the supplied filter wrench.

DI Filter Cartridge Replacement Instructions

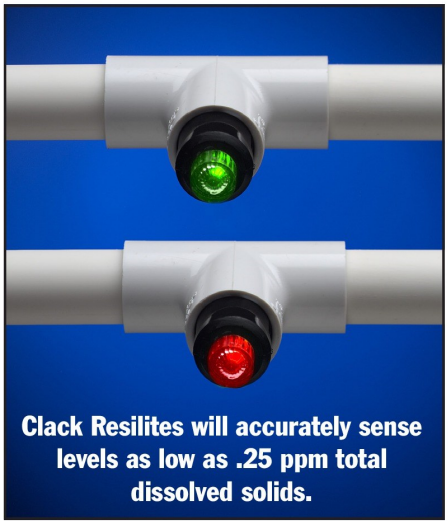
11. Turn on the water supply and open a spigot downstream of the Big Blue filter to release the air.
12. Once the air has been released, push the red button on top of the filter housing to release any additional air in the filter housing.



13. Check the housing for leaks and repair as necessary.
14. Flush the new filters until the quality stabilizes.

The reliable and economical method of monitoring water quality via conductivity.

Resilite®



Clack Resilites will accurately sense levels as low as .25 ppm total dissolved solids.

RESISTIVITY (ohm/cm)	CONDUCTIVITY (mho/cm)	PPM
2 MEG	0.5	.25
1 MEG	1	.50
500K	2	1.0
200K	5	2.5
50K	20	10
20K	50	24
10K	100	48
5K	200	95

SPECIFICATIONS

Available Thresholds: 5K to 2 Meg ohms/cm
Accuracy: ± 15%
Thread: ½" NPT with o-ring or ¾" NPT
Weight: 200 gm
Housing Material: ABS Black
Electrode Material: Tungsten
Sampling Frequency: 150 Hz
Sampling Voltage: 2.2 volts peak at threshold
Supply Voltage: 120 VAC
Supply Frequency: 60 Hz
Output Voltage: 9 VDC
Output Current: 200 mA
Cord Length: 9 feet
Working PSI: 125 psi
Maximum Temperature: 100°F
Typical DC Current: 35mA
Typical Lumen Output: Green 80 mcd
Red 200 mcd

Stock thread sizes are ½" NPT and ¾" NPT. Custom threads are available. Fully encapsulated probes ensure uniform cell contact.

U.S. Patent No. 4,496,906

Resilite with Control Module

The patented square wave Resilite is a reliable and economical method of monitoring water quality via conductivity.

The bright red or green visual output is easy to read. The monitoring is simple; the green light indicates the water conductivity is below the threshold value; the red light warns that it is above. The solid state circuitry utilizes a symmetrical square wave sampling voltage to eliminate plating and extend electrode life.

The LED output and solid state circuitry will outlast conventional neon lamps by thousands of hours. The Resilite uses a wall transformer to convert 120 VAC to 9 VDC to ensure safer operation and longer life. Remote control lights, horns and solenoids can be controlled by an optional, in-line Control Module which switches a SPDT relay at the threshold value. With values from 5,000 ohms/cm to 2 Meg ohms/cm, the Resilite series covers a wide range of applications and processes.

Resilite®

ACCESSORIES

The **RA201 890 Plastic Distributor Head** is designed for installation of a ½" Resilite, Test Light or Remote Test Light Sensor in single in-out applications on deionizers. The threaded opening on the outlet side places the monitor electrodes into the water flow for greatest accuracy. This economical head is molded of rugged ABS plastic, fits a standard 2½"- 8 tank opening, adapts to a 13⁄16" riser and has ¾" NPT inlet and outlet for straight line installation.

The **RA102 Plastic Tee** is designed for in-line installation of a ½" Resilite, Test Light or Remote Test Light Sensor. The threaded center opening places the monitor electrodes into the water flow for greatest accuracy. The inlet and outlet of the tee are ¾" socket joints (solvent weld).

ORDER INFORMATION

RESILITES®

ORDER NUMBER	DESCRIPTION	QTY/CTN
R7031-5K	110V 5K ohm ½"	1
R7031-10K	110V 10K ohm ½"	1
R7031-20K	110V 20K ohm ½"	1
R7031-50K	110V 50K ohm ½"	1
R7031-200K	110V 200K ohm ½"	1
R7031-500K	110V 500K ohm ½"	1
R7031-1MEG	110V 1 Meg ohm ½"	1
R7031-2MEG	110V 2 Meg ohm ½"	1
R7046-5K	110V 5K ohm ¾"	1
R7046-10K	110V 10K ohm ¾"	1
R7046-20K	110V 20K ohm ¾"	1
R7046-50K	110V 50K ohm ¾"	1
R7046-200K	110V 200K ohm ¾"	1
R7046-500K	110V 500K ohm ¾"	1
R7046-1MEG	110V 1 Meg ohm ¾"	1
R7046-2MEG	110V 2 Meg ohm ¾"	1

RESILITES® WITH CONTROL MODULE

ORDER NUMBER	DESCRIPTION	QTY/CTN
R7035-5K	110V 5K ohm ½"	1
R7035-10K	110V 10K ohm ½"	1
R7035-20K	110V 20K ohm ½"	1
R7035-50K	110V 50K ohm ½"	1
R7035-200K	110V 200K ohm ½"	1
R7035-500K	110V 500K ohm ½"	1
R7035-1MEG	110V 1 Meg ohm ½"	1
R7035-2MEG	110V 2 Meg ohm ½"	1
R7048-10K	110V 10K ohm ¾"	1
R7048-50K	110V 50K ohm ¾"	1
R7048-200K	110V 200K ohm ¾"	1
R7048-500K	110V 500K ohm ¾"	1
R7048-1MEG	110V 1 Meg ohm ¾"	1
R7048-2MEG	110V 2 Meg ohm ¾"	1

ACCESSORIES

ORDER NUMBER	DESCRIPTION	QTY/CTN
R7009	RA201 890 Plastic Head w/Adaptor	1
R7011	RA102 Plastic Tee	1

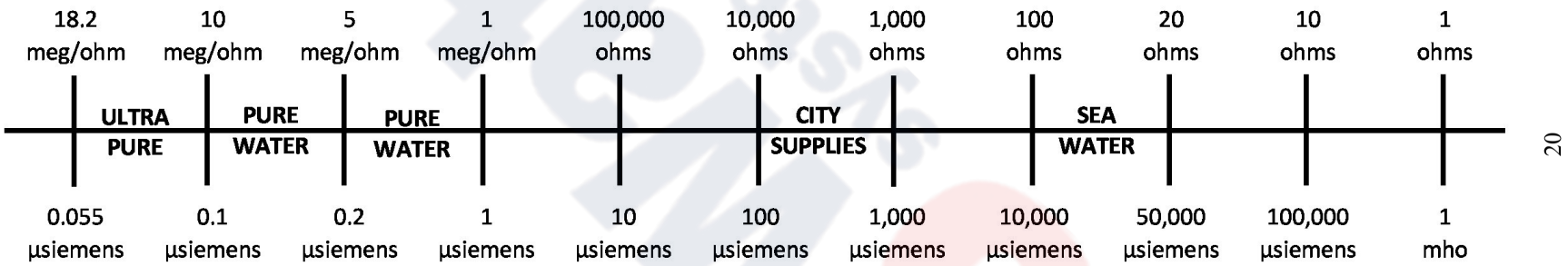
GENERAL INFORMATION:
The Resilite monitor requires that the water be flowing for greatest accuracy. Ions tend to migrate to the testing cell and affect the reading if the water is not flowing.

Not recommended as primary indicator for critical or medical applications.

Clack®
www.clackcorp.com

Clack Corporation
4462 DURAFORM LANE • WINDSOR, WISCONSIN 53598-9716 USA
PHONE (608) 846-3010 FAX (608) 846-2586 SALES/CUSTOMER SERVICE FAX (800) 755-3010

Form No. 2735 • 10/14/2008


18.2 meg/ohm
10 meg/ohm
5 meg/ohm
1 meg/ohm
100,000 ohms
10,000 ohms
1,000 ohms
100 ohms
20 ohms
10 ohms
1 ohms
ULTRA PURE
PURE WATER
PURE WATER
CITY SUPPLIES
SEA WATER
0.055 µsiemens
0.1 µsiemens
0.2 µsiemens
1 µsiemens
10 µsiemens
100 µsiemens
1,000 µsiemens
10,000 µsiemens
50,000 µsiemens
100,000 µsiemens
1 mho

CONVERSION CHART				
Conductivity µsiemens		**Resistivity Ohms**		**Total Dissolved Solids ppm**
0.056		18 Meg		0.0277
0.059		17 Meg		0.0294
0.063		16 Meg		0.0313
0.067		15 Meg		0.0333
0.072		14 Meg		0.0357
0.077		13 Meg		0.0384
0.084		12 Meg		0.0417
0.091		11 Meg		0.0455
0.1		10 Meg		0.05
0.111		9 Meg		0.0556
0.125		8 Meg		0.0625
0.143		7 Meg		0.0714
0.167		6 Meg		0.0833
0.2		5 Meg		0.1
0.25		4 Meg		0.125
0.333		3 Meg		0.167
0.5		2 Meg		0.25
1		1 Meg		0.5
1.11		900,000		0.556
1.25		800,000		0.625
1.43		700,000		0.714
1.67		600,00		0.833
2		500,000		1
2.5		400,000		1.25
3.33		300,000		1.67
5		200,000		2.5
10		100,000		5
11.1		90,000		5.58
12.5		80,000		6.25
14.3		70,000		7.14
16.7		60,000		8.33
20		50,000		10
25		40,000		12.5
33.3		30,000		16.7
50		20,000		25
100		10,000		50
111		9,000		55.6
125		8,000		62.5
143		7,000		71.4
167		6,000		83.3
200		5,000		100
250		4,000		125
333		3,000		167
500		2,000		250
1,000		1,000		500
1,110		900		556
1,250		800		625
1,430		700		714
1,670		600		833
2,000		500		1,000
2,500		400		1,250
3,330		300		1,670
5,000		200		2,500
10,000		100		5,000