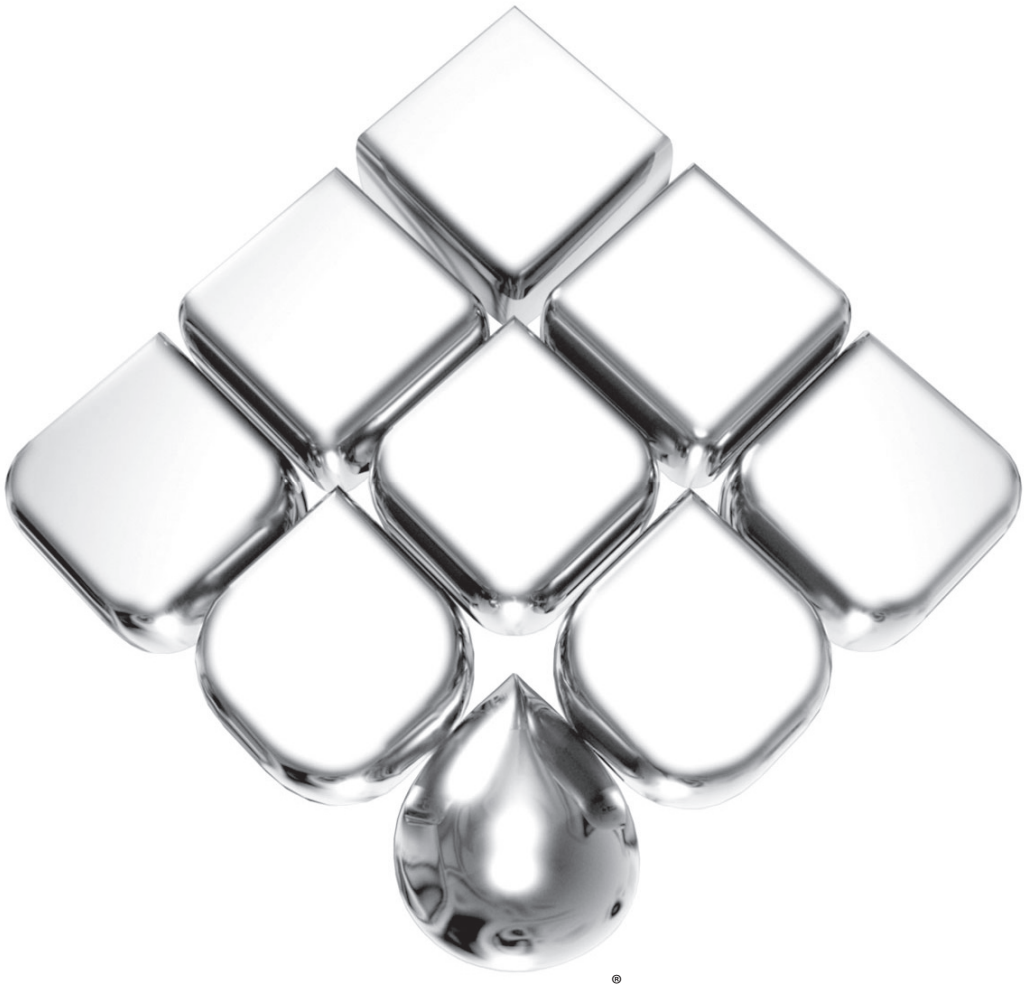

Sea Recovery®

AquaMatic™ 450 - 1800

(U.S. Patent Pending)

Owner's Manual

Installation, Operation, Maintenance, & Repair

v3.00 May 2007

Sea Recovery Corporation, P.O. Box 5288, Carson, California 90745-5288 U.S.A.
Tel: 1-310-637-3400 • Fax: 1-310-637-3430
Email: srcsales@searecovery.com • Web: http://www.searecovery.com

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© COPYRIGHT NOTIFICATION

Terms and Conditions

Your use of this Owner's Manual acknowledges acceptance of the terms and conditions provided herewith and your agreement to comply with all applicable laws and regulations pertaining to the use of this Owner's Manual.

In addition, you agree not to use Sea Recovery's trademarked name or Sea Recovery's trademarked logo mark in any form or manner except with Sea Recovery Corporation's written permission. Sea Recovery Corporation holds all rights to its copyrights and trademarks, and to the material contained in this Owner's Manual. Any use of such requires the written permission from Sea Recovery Corporation.

PATENT NOTIFICATION

Certain aspects of the Sea Recovery Aqua Matic Reverse Osmosis Desalination System are protected by U.S. Patent Laws. Sea Recovery has applied for a Patent relating to aspects of the Sea Recovery Aqua Matic Reverse Osmosis Desalination System.

Sea Recovery's Reverse Osmosis Desalination Systems are Type Accepted by the American Bureau of Shipping, ABS.

ABS

American Bureau of Shipping.

Safety, Service, Solutions

These three goals define the activities of ABS. They are the bedrock upon which the American Bureau of Shipping's commitment to set standards of excellence as one of the world's leading ship classification societies is founded.

From its inception in 1862, setting safety standards for the marine industry has been the core commitment of ABS. This is achieved through the establishment and application of technical standards, known as Rules, for the design, construction and operational maintenance of ships and other marine structures. Classification is a process that certifies adherence to these Rules.
The core competencies of this worldwide network of ABS professionals lie in the fields of survey, engineering and auditing. Backing these field representatives is an unequivocal commitment to research and development.

The ABS Type Approval Program

The ABS Type Approval program has existed in some form since 1983. Today it is formalized in the Rules. Two basic processes and certificates establish the validity of a product and all other certificates that may be issued in the program. The format imitates the format of the European Marine Equipment Directive (MED).

- Satisfactory evaluation of a product to a set of Rules or standards is recorded in the issue of a "Product Design Assessment (PDA)" certificate. The process is the same as would be followed for an ABS Design Review Letter. It imitates the Module B category of the MED.
- Satisfactory evaluation of the manufacturing (Works) facility to confirm their ability to consistently manufacture the product in accordance with the PDA is recorded in the issue of a "Manufacturing Assessment (MA)" certificate. This was previously known in ABS as the MMEC program. This imitates the modules D and E of the MED.

The IACS Ad-Hoc Committee for the Certification of Materials and Components have consensus that Type Approval requires; 1) an evaluation of the product including prototype tests (if necessary), 2) a witness of the manufacture of the product (type test), and 3) an assessment of the manufacturer's ability to consistently manufacture the product in accordance with the approved specifications. There are a multitude of derivations of this process; following is an abbreviated outline of the basic certificates:

A **Type Approved Product** has satisfied the processes of:

1. An Engineer's evaluation of a design to determine conformance with specifications. The manufacturer should submit sufficient information to allow ABS to determine if the product meets specification. This results in a Product Design Assessment Certificate (PDA).

2. Witnessing manufacture and testing of a type of the product to determine compliance with the specification

3. A Surveyor's evaluation of the manufacturing arrangements to confirm that the product can be consistently produced in accordance with the specification. This results in the issue of a Manufacturing Assessment Certificate

CERTIFICATE NUMBER
06-HS159834E-PDA

DATE
17 May 2006

ABS TECHNICAL OFFICE
Houston SED - Ship Systems

CERTIFICATE OF
Design Assessment

This is to Certify that a representative of this Bureau did, at the request of

Sea Recovery Corporation

assess design plans and data for the below listed product. This assessment is a representation by the Bureau as to the degree of compliance the design exhibits with applicable sections of the Rules. This assessment does not waive unit certification or classification procedures required by ABS Rules for products to be installed in ABS classed vessels or facilities. This certificate, by itself, does not reflect that the product is Type Approved. The scope and limitations of this assessment are detailed on the pages attached to this certificate. It will remain valid as noted below or until the Rules or specifications used in the assessment are revised (whichever occurs first).

PRODUCT:	Reverse Osmosis Desalinator
MODEL:	Aqua Matic
ABS RULE:	2006 Steel Vessel Rules 1-1-4/7.7, 4-6-2/5.7
OTHER STANDARD:	None.;

AMERICAN BUREAU OF SHIPPING

Hans P. Haendler
Engineering Type Approval Co-ordinator

AB258(07/03)

NOTE: This certificate evidences compliance with one or more of the Rules, Guides, standards or other criteria of American Bureau of Shipping or a statutory, industrial or manufacturer's standard and is issued solely for the use of the Bureau, its committees, its clients or other authorized entities. Any significant changes to the aforementioned product without ABS approval will result in this certificate becoming null and void. **This certificate is governed by the terms and conditions on the reverse side hereof.**

TX 05/05 5099A
LTR 1000

Sea Recovery's Reverse Osmosis Desalination Systems comply with FCC FCC § 15.105

United States Federal Communications Commission Compliance

FCC § 15.105

This equipment has been tested and found to comply with the limits for a Class A digital device, pursuant to Part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference when the equipment is operated in a commercial environment. This equipment generates, uses, and can radiate radio frequency energy and, if not installed and used in accordance with the instruction manual, may cause harmful interference to radio communications. Operation of this equipment in a residential area is likely to cause harmful interference in which case the user will be required to correct the interference at his own expense.

Sea Recovery's Reverse Osmosis Desalination Systems have been independently tested and determined to be in compliance with European CE (Conformité Européne)

CE The CE Mark ('Trade Passport to Europe') is a visible declaration by the manufacturer (or his representative, importer, etc.) that the equipment which is marked complies with all the requirements of all the applicable directives. This mark allows manufacturers and exporters to circulate products freely within the 15 European Union (EU) members. Having ensured that the equipment does indeed meet all these requirements (including all the administrative requirements involved in being able to demonstrate compliance), the CE Mark may then be affixed and the product released.

The letters, "CE", indicate that the manufacturer has undertaken all assessment procedures required for the product. The CE mark indicates conformity to the legal requirements of the EU Directives.

The "CE" mark is now mandatory for regulated products sold in the European Union.

Declaration Of Conformity

CE

CONFORMITY DECLARATION

Manufacturer's Name: **Sea Recovery Corp.**

Manufacturer's Address: **19610 South Rancho Way**
Rancho Dominguez, Ca.
90220 U.S.A.

SEA RECOVERY CORP. Declares that the:

Product Series: **Aqua Series and**
High Sea Series of
Revese Osmosis Desalinators

Model Names: **Aqua Matic, Aqua Whisper,**
Aqua Mini, Ultra Whisper,
Coral Sea, Tasman Sea,
and North Sea

Conforms to the following Standard(s): EN 55011A and EN 50082-2

SUPPLEMENTARY INFORMATION:

"The product complies with the requirements of the EMC Directive 89/336/EEC."

SEA RECOVERY CORPORATION
Seal of Quality
GARDENA, CALIFORNIA

Official Seal

CHRIS ROLLINS
VP Director of Quality Assurance, SRC
Manufacturer's Contact

Sea Recovery®
REVERSE OSMOSIS DESALINATORS

Sea Recovery Aqua Matic 450 - 1800 LIMITED WARRANTY

Sea Recovery warrants that the Sea Recovery Desalination System performs according to specifications for a period of twelve (12) months from the date of shipment. Sea Recovery's liability under this warranty is limited to repair or replacement of the Aqua Matic Desalination System at Sea Recovery's discretion. Under no circumstances is Sea Recovery liable for consequential damages arising out of or in any way connected with the failure of the system to perform as set forth herein. This limited warranty is in lieu of all other expressed or implied warranties, including those of merchantability and fitness for a particular purpose.

Warranty Period starts from the date of original shipment by Sea Recovery, or with proof of purchase from the date of sale to the original retail purchaser:

1. System and accessories: 1 (one) year
2. Repairs made by Sea Recovery after the original warranty period has expired: 3 (three) months

Normal reoccurring user maintenance listed below is not covered by this or any Sea Recovery limited warranty:

1. Sea Strainer Element
2. Cartridge Filter Elements
3. Fuses
4. Centrifugal Pump Seal Assemblies
5. Instrument Calibration

This or any Sea Recovery limited warranty does not cover installation components not supplied by Sea Recovery.

Improper installation resulting in the Sea Recovery System or component failure or decline in performance is not covered by this or any Sea Recovery limited warranty.

The Sea Recovery Reverse Osmosis Membrane Element is guaranteed to be cleanable for a minimum of one year from date of shipment, providing cleaning periods are adhered to, and fouling is acid soluble metal hydroxides and calcium carbonates or alkaline soluble organic, inorganic substances and microbiological slimes. The Sea Recovery R.O. Membrane Element is not guaranteed against iron fouling (rust), chemical or petroleum products attack, extreme temperatures (over 120° F/under 32° F), drying out, or extreme pressures (over 1000 psig).

In the event of a defect, a malfunction, or failure specifically covered by this warranty and during the warranty period, Sea Recovery will repair or replace, at its option, the product or component therein which upon examination by Sea Recovery appears to be defective.

To obtain warranty service, the defective product or part must be returned to an authorized Sea Recovery Service Center or direct to Sea Recovery. An updated listing of Sea Recovery Factory Service Centers can be found on the Sea Recovery web site at http://www.searecovery.com. The purchaser must pay any transportation or labor expenses incurred in removing and returning the product to the service center or to Sea Recovery.

The limited warranty does not extend to any system or system component which has been subjected to alteration, misuse, neglect, accident, improper installation, inadequate or improper repair or maintenance or subject to use in violation of instructions furnished by Sea Recovery, nor does the warranty extend to components on which the serial number has been removed, defaced, or changed.

Sea Recovery reserves the right to make changes or improvements in its product, during subsequent production, without incurring the obligation to incorporate such changes or improvements on previously manufactured equipment.

The implied warranties, which the law imposes on the sale of this product, are expressly LIMITED in duration to the time period above. Sea Recovery shall not be liable for damages, consequential or otherwise, resulting from the installation, use, and/or operation of this product or from the breach of this LIMITED WARRANTY.

CAUTION: Use of non Sea Recovery supplied parts and accessories, including but not limited to, maintenance parts, pre-filter elements, cleaning and storage chemical, spare parts, replacement parts, system components, installation components and/or system accessories, shall void all warranty expressed or implied.

Sea Recovery Corporation
P.O. Box 5288
Carson, California 90745-5288 U.S.A.

Tel: 1-310-637-3400 • Fax: 1-310-637-3430
e-mail: srcsales@searecovery.com • Web: http://www.searecovery.com

Sea Recovery®

Aqua Matic™ 450 - 1800
System Warranty Registration

INSTRUCTIONS: At the time of purchase of the Sea Recovery Reverse Osmosis water maker, please complete the warranty information listed below. After completing this form, please make a copy, and mail it to the address provided at the bottom of this form.

System Information: Aqua Matic 450 - 1800

Model Number:
Aqua Matic _____450-1; _____700-1, _____900-1; _____900-2; _____1400-2; _____1800-2
Model Style: _____ Compact; _____ Vertical; _____ Modular

Serial Number: _____

Operating Voltage:
Single Phase: ___ 110/115 VAC or ___ 220/230 VAC Cycles: ___50 Hz or ___ 60 Hz
Three Phase: ___ 220 VAC; ___ 380 VAC; ___ 415 VAC; or ___ 460 VAC Cycles: ___50 Hz or ___ 60 Hz

Date Purchased: _____
Date Commissioned: _____ (First tested or operated)

Dealer Information:
Dealer's Name: _____
Address: _____
City: _____ State: _____
Country: _____ Postal Code: _____
Dealer's Invoice Number: _____

Customer Information:
Customer's Name: _____
Address: _____
City: _____ State: _____
Country: _____ Postal Code: _____
Telephone Number: _____ E-Mail Address: _____

If Vessel Installation:
Boat's Manufacture: _____
Boat's Model: _____, Length: _____ Feet or _____ Meters.
Boat's Name: _____

Mail a copy to:
Sea Recovery Corporation
P.O. Box 5288
Carson, California 90745-5288 U.S.A.
Attention: Warranty Registration

Tel: 1-310-637-3400 • Fax: 1-310-637-3430
e-mail: srcsales@searecovery.com • Web: http://www.searecovery.com

Customer's comments: _____

Mail a copy to:

Sea Recovery Corporation
P.O. Box 5288
Carson, California 90745-5288 U.S.A.
Attention: Warranty Registration

Sea Recovery®
Aqua Matic™ 450 - 1800
System Identification Information

INSTRUCTIONS: It is important that this form is completely filled in by the owner at the time of purchase of the Sea Recovery Reverse Osmosis Desalinator. This information will be requested by our Service Department and Parts Order Desk whenever contacting Sea Recovery for technical assistance or by the Sales Department whenever ordering parts.

System Information: Aqua Matic 450 - 1800

Model Number:

Aqua Matic _____450-1; _____700-1, _____900-1; _____900-2; _____1400-2; _____1800-2

Model Style: _____ Compact; _____ Vertical; _____ Modular

Serial Number: _____

Operating Voltage:

Single Phase: ___ 110/115 VAC or ___ 220/230 VAC Cycles: ___50 Hz or ___ 60 Hz

Three Phase: ___ 220 VAC; ___ 380 VAC; ___ 415 VAC; or ___ 460 VAC Cycles: ___50 Hz or ___ 60 Hz

Date Purchased: _____

Date Commissioned: _____ (First tested or operated)

Dealer Information:

Dealer's Name: _____

Address: _____

_____

City: _____ State: _____

Country: _____ Postal Code: _____

Telephone Number: _____

Dealer's Invoice Number: _____

Sea Recovery Corporation
P.O. Box 5288
Carson, California 90745-5288 U.S.A.

Tel: 1-310-637-3400 • Fax: 1-310-637-3430
e-mail: srcsales@searecovery.com • Web: http://www.searecovery.com

PREFACE

Thank you for your purchase of a Sea Recovery Aqua Matic Reverse Osmosis Desalination System. This manual contains instructions for the installation, operation, maintenance, and repair of the Sea Recovery Desalination System. This information is provided to ensure extended life and safe operation of your Sea Recovery system.

Please read this manual thoroughly before installation or operation, and keep it for future reference. A better understanding of the system ensures optimum performance and longer service life.

Sea Recovery's Reverse Osmosis Desalination Systems are designed and engineered to function as a complete working unit. Generally speaking, the performance of each component within the System is dependent on the component prior to it and governs the performance of all components after it. Proper performance of the system is thus dependent upon proper operation of every single component within the system.

The intent of this manual is to allow the operator to become familiar with each component within the Sea Recovery system. By understanding the function, importance, and normal operation of each component within each subsystem of the unit, the operator can readily diagnose minor problems, which if detected early are usually easily corrected. However, if left unattended, a problem in one component eventually affects the rest of the system and leads to further repairs.

The manual is divided into sections that address different subject matter. Each section should be reviewed before operating the Reverse Osmosis Desalination system.

The major documented cause of failures and problems are from the use of third party, non Sea Recovery, parts, from improper installation, and from improper operation:

The use of third party, non Sea Recovery, consumables, spares, and assemblies have, can, and will damage the Sea Recovery system and/or specific components within the system. Do not use parts, components, consumables, or assemblies from any source other than Sea Recovery. Use of third party, non Sea Recovery, components, consumables, or assemblies will void any and all warranty of the system and/or the effected component within the system.

Sea Recovery maintains inventory for immediate shipment and our Service Dealers throughout the world maintain stock of Sea Recovery parts. Always insist on Sea Recovery supplied parts for your system in order to avoid failures, eliminate problems, and maintain your Sea Recovery Warranty.

Follow the Installation Instructions within this Owner's Manual.

Follow the Operation Instructions within this Owner's Manual.

From time to time, Sea Recovery may make programming changes to the Control Logic (CONTROL VER), Display Logic (DISPLAY VER), and the Display Operating System (DISPLAY OS).

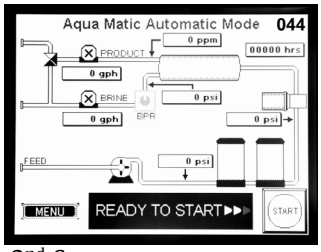
Other physical production changes may also be made from time to time and are tracked by Sea Recovery through the System Serial Number.

Troubleshooting and repair methods and results can vary depending on the information that is displayed at the SYSTEM INFORMATION screen.

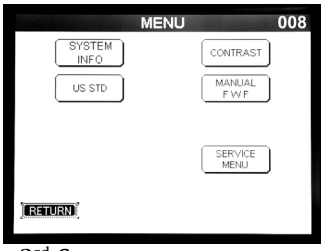
When requesting assistance from Sea Recovery or one of Sea Recovery's service dealers,

ALWAYS PROVIDE ALL INFORMATION DISPLAYED AT THE SYSTEM INFORMATION SCREEN.

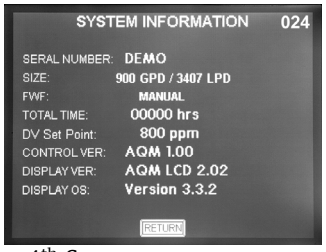
1st Screen007
Touch the Logo



2nd Screen044
Touch MENU



3rd Screen008
Touch SYSTEM INFO



4th Screen024
INFORMATION

SERIAL NUMBER helps us to determine the latest physical version and configuration of your system which is necessary to ensure that we provide you with the correct information or parts.

SIZE tells us the production capacity of your system which gives us a bench mark in diagnosing product water flow and pressure concerns.

FWF tells us if you have installed and are utilizing the Fresh Water Flush feature.

TOTAL TIME assists us in diagnosing abnormalities that can occur at given operational time intervals such as required pump maintenance, or R.O. Membrane Element condition.

DV Set Point helps us to determine if the R.O. Membrane Element is losing its rejection capabilities or if the 3-Way Product Water Diversion Solenoid Valve Set Point is simply adjusted too high or too low.

CONTROL VER allows us to determine the specific sequential operation of the system based on the version of the programmed control logic.

DISPLAY VER and DISPLAY OS assists us in diagnosing problems associated with the Main and Remote Touch Screen(s).

Notes: _____

_____

_____

_____

_____

_____

SPECIFICATIONS

PERFORMANCE:

PRODUCT WATER PRODUCED PER HOUR AND PER DAY OF OPERATION:

(+-15% at 850 psig / 56 BAR, 77°F / 25°C & 35,000 PPM TDS Feed Water Salinity)

Model Number	per 1 hour of operation: U.S. Gallons	/ Liters	per 24 hours of operation: U.S. Gallons	/ Liters
SRC Aqua Matic 450-1	18.8	71	450	1703
SRC Aqua Matic 700-1	29.2	110.4	700	2650
SRC Aqua Matic 900-1	37.5	142	900	3407
SRC Aqua Matic 900-2	37.5	142	900	3407
SRC Aqua Matic 1400-2	58.3	220.8	1400	5300
SRC Aqua Matic 1800-2	75	283.9	1800	6814

SALT REJECTION (CHLORIDE ION): 99.4%

PRODUCT WATER TEMPERATURE: Ambient to feed water temperature

SPECIFICATIONS:

SALINITY MONITORING: Automatic computer controlled electronic monitoring. The salinity monitoring components of the system give a continuous readout in micromhos per cubic centimeter, are temperature compensated and of a fail-safe design.

SALINITY RANGE OF FEED WATER:
Seawater up to 50,000 PPM TDS (NaCl) (typical seawater salinity is 35,000 PPM)

TEMPERATURE RANGE: Max. 122°F / 50°C, Min. 33°F / .5°C

SYSTEM FEED WATER:

	Alternating Current 50 Hz	Alternating Current 60 Hz
Feed Water Flow Per Hour:	225 U.S. Gallons / 852 Liters	270 U.S. Gallons / 1,022 Liters

REVERSE OSMOSIS MEMBRANE:

TYPE: Specifically selected High Rejection / High Yield aromatic tri-polyamide, thin film composite, spiral wound, single pass reverse osmosis membrane element.

CHLORINE TOLERANCE: 0.1 PPM.

pH RANGE: 3-11 (typical seawater pH is 8)

SYSTEM PRESSURE:

FEED WATER: Minimum 6 psi / .42 Kg/cm2. / 41.4 kPa Maximum 40 psi / 2.8 Kg/cm^2 / 275.8 kPa

OPERATION: Seawater @ 35,000 PPM & 77° F / 25 C: Nominal 800 psi / / 56.25 Kg/cm^2 / 5516 kPa

EXTERNAL INSTALLATION WATER CONNECTIONS:

Pipe sizes to be supplied by the installer for connection of the Sea Recovery supplied components

Aqua Matic

Feed Inlet:	3/4" MNPT Male National Pipe Thread U.S. Standard
Brine Discharge	3/4" MNPT Male National Pipe Thread U.S. Standard
Product	1/2" FNPT Female National Pipe Thread U.S. Standard

WEIGHT:

MODEL

	Compact Style	Vertical Style	Modular Style
Aqua Matic 450-1	159 lbs / 72 kg	164 lbs / 74 kg	149 lbs / 67 kg
Aqua Matic 700-1	162 lbs / 73 kg	167 lbs / 75 kg	152 lbs / 68 kg
Aqua Matic 900-1	171 lbs / 77 kg	176 lbs / 79 kg	161 lbs / 73 kg
Aqua Matic 900-2	171 lbs / 77 kg	176 lbs / 79 kg	161 lbs / 73 kg
Aqua Matic 1400-2	177 lbs / 80 kg	182 lbs / 82 kg	167 lbs / 75 kg
Aqua Matic 1800-2	182 lbs / 82 kg	187 lbs / 84 kg	172 lbs / 78 kg

ELECTRICAL MOTOR SPECIFICATIONS:

(H.P. = Horse Power; RPM = Revolutions Per Minute; FLA = Full Load Amperes; LRA = Locked Rotor Amperes @ Start Up)

ALTERNATING CURRENT SYSTEMS:

Single Phase Alternating Current:

		High Pressure Pump Motor				Booster Pump Motor			
VAC	Hz	H.P	RPM	FLA	LRA	H.P	RPM	FLA	LRA
110	50	3	2850	23	89	.5	2850	7.4	20
220	50	3	2850	11.5	44	.5	2850	3.7	10
115	60	3	3450	25.4	86	.5	3450	9.4	20
230	60	3	3450	12.7	43	.5	3450	4.7	10

Three Phase Alternating Current:

		High Pressure Pump Motor				Booster Pump Motor			
VAC	Hz	H.P	RPM	FLA	LRA	H.P	RPM	FLA	LRA
220	50	2.5	2850	7.9	24.9	.5	2850	2.5	8.2
380	50	2.5	2850	4.6	14.4	.5	2850	1.5	4.7
230	60	3	3450	7.6	23.8	.5	3450	2.4	7.9
460	60	3	3450	3.8	11.9	.5	3450	1.2	3.9

RECOMMENDED CIRCUIT BREAKER SUPPLYING POWER TO SYSTEM AMPERAGE RATING:

Operating AC Voltage	Phase	Recommended Circuit Breaker
110 - 115 VAC	Single	50 Ampere
220 - 230 VAC	Single	25 Ampere
220 VAC	Three	15 Ampere
380 VAC	Three	10 Ampere
460 VAC	Three	10 Ampere

RECOMMENDED POWER WIRE SIZE TO Aqua Matic SYSTEM:

Operating Voltage	Phase	Maximum Load	Recommended Minimum Wire Size for Length of run		
			10 Ft / 3 meter	25 Ft / 8 meter	50 Ft / 15 meter
110-115 VAC	Single	34.8 Ampere	10 AWG / 6 mm^2	8 AWG / 10 mm^2	8 AWG / 10 mm^2
220-230 VAC	Single	17.4 Ampere	12 AWG / 4 mm^2	12 AWG / 4 mm^2	12 AWG / 4 mm^2
220-230 VAC	Three	10.4 Ampere	14 AWG / 2.5 mm^2	14 AWG / 2.5 mm^2	14 AWG / 2.5 mm^2
380 VAC	Three	6.1 Ampere	14 AWG / 2.5 mm^2	14 AWG / 2.5 mm^2	14 AWG / 2.5 mm^2
460 VAC	Three	5 Ampere	14 AWG / 2.5 mm^2	14 AWG / 2.5 mm^2	14 AWG / 2.5 mm^2

RECOMMENDED POWER WIRE SIZE TO Aqua Matic BOOSTER PUMP:

Operating Voltage	Phase	Maximum Load	Recommended Minimum Wire Size for Length of run		
			10 Ft / 3 meter	25 Ft / 8 meter	50 Ft / 15 meter
110-115 VAC	Single	9.4 Ampere	14 AWG / 2.5 mm^2	14 AWG / 2.5 mm^2	14 AWG / 2.5 mm^2
220-230 VAC	Single	4.7 Ampere	14 AWG / 2.5 mm^2	14 AWG / 2.5 mm^2	14 AWG / 2.5 mm^2
220-230 VAC	Three	2.5 Ampere	16 AWG / 1.5 mm^2	16 AWG / 1.5 mm^2	16 AWG / 1.5 mm^2
380 VAC	Three	1.5 Ampere	16 AWG / 1.5 mm^2	16 AWG / 1.5 mm^2	16 AWG / 1.5 mm^2
460 VAC	Three	1.2 Ampere	16 AWG / 1.5 mm^2	16 AWG / 1.5 mm^2	16 AWG / 1.5 mm^2

RECOMMENDED POWER WIRE SIZE TO Aqua Matic HIGH PRESSURE PUMP:

Operating Voltage	Phase	Maximum Load	Recommended Minimum Wire Size for Length of run		
			10 Ft / 3 meter	25 Ft / 8 meter	50 Ft / 15 meter
110-115 VAC	Single	25.5 Ampere	12 AWG / 4 mm^2	10 AWG / 6 mm^2	10 AWG / 6 mm^2
220-230 VAC	Single	12.7 Ampere	14 AWG / 2.5 mm^2	12 AWG / 4 mm^2	12 AWG / 4 mm^2
220-230 VAC	Three	7.9 Ampere	14 AWG / 2.5 mm^2	14 AWG / 2.5 mm^2	14 AWG / 2.5 mm^2
380 VAC	Three	4.6 Ampere	14 AWG / 2.5 mm^2	14 AWG / 2.5 mm^2	14 AWG / 2.5 mm^2
460 VAC	Three	3.8 Ampere	14 AWG / 2.5 mm^2	14 AWG / 2.5 mm^2	14 AWG / 2.5 mm^2

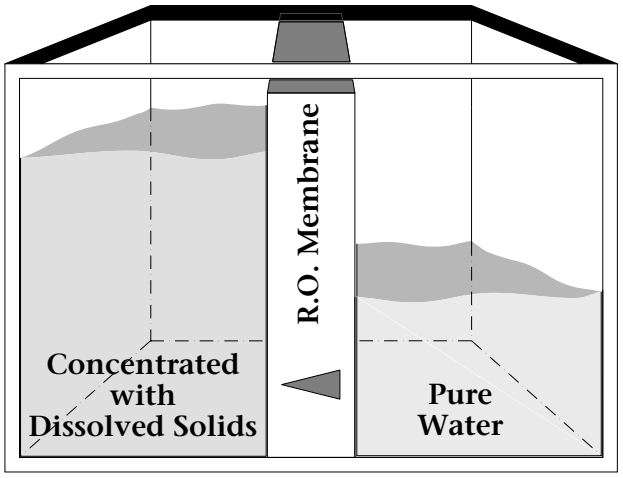
Section 1

Introduction
&
Component Descriptions

Notes: _____

Sea Recovery's Approach to Water Desalination:

The Challenge:

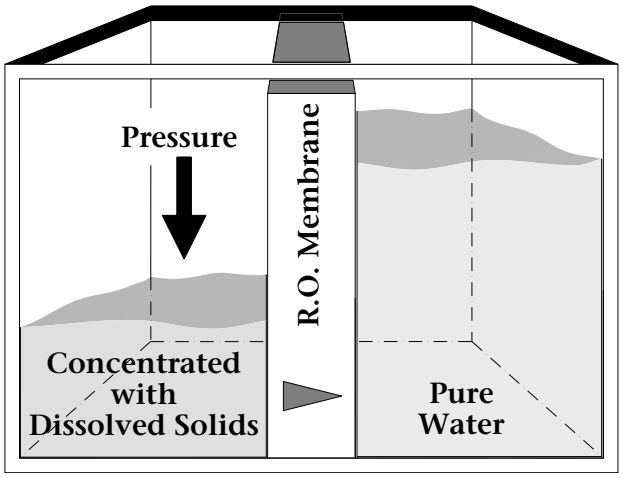


Osmosis is the diffusion of two mixable solutions through a semi permeable membrane in such a manner as to equalize their concentration. This diffusion occurs by allowing a lesser concentration, potable water, to naturally diffuse through a semi permeable membrane into a higher concentration, sea or brackish water.

Sea water or brackish water is a high concentration solution. Potable water is a low concentration solution.

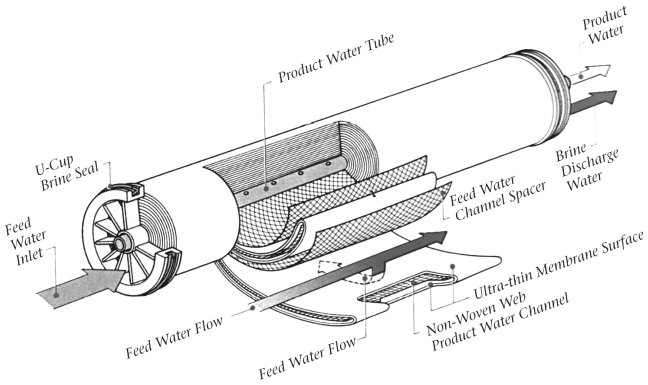
Therefore, sea water or brackish water cannot naturally diffuse through a semi permeable membrane to provide potable, drinking water.

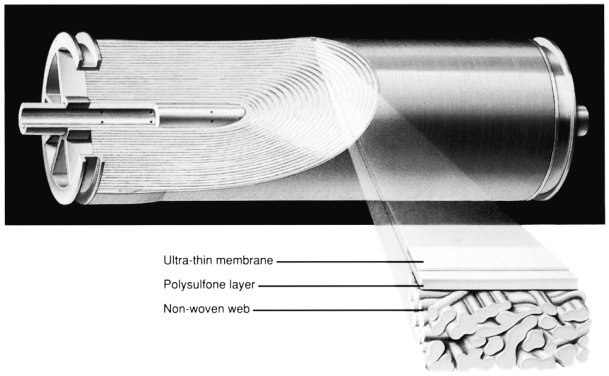
The Solution:



Reverse Osmosis, overcomes this natural phenomenon. By forcing sea or brackish water at high pressure through a semi permeable membrane potable water is realized. Reverse Osmosis Desalination Systems by Sea Recovery make possible the once impossible, potable water from undrinkable water sources.

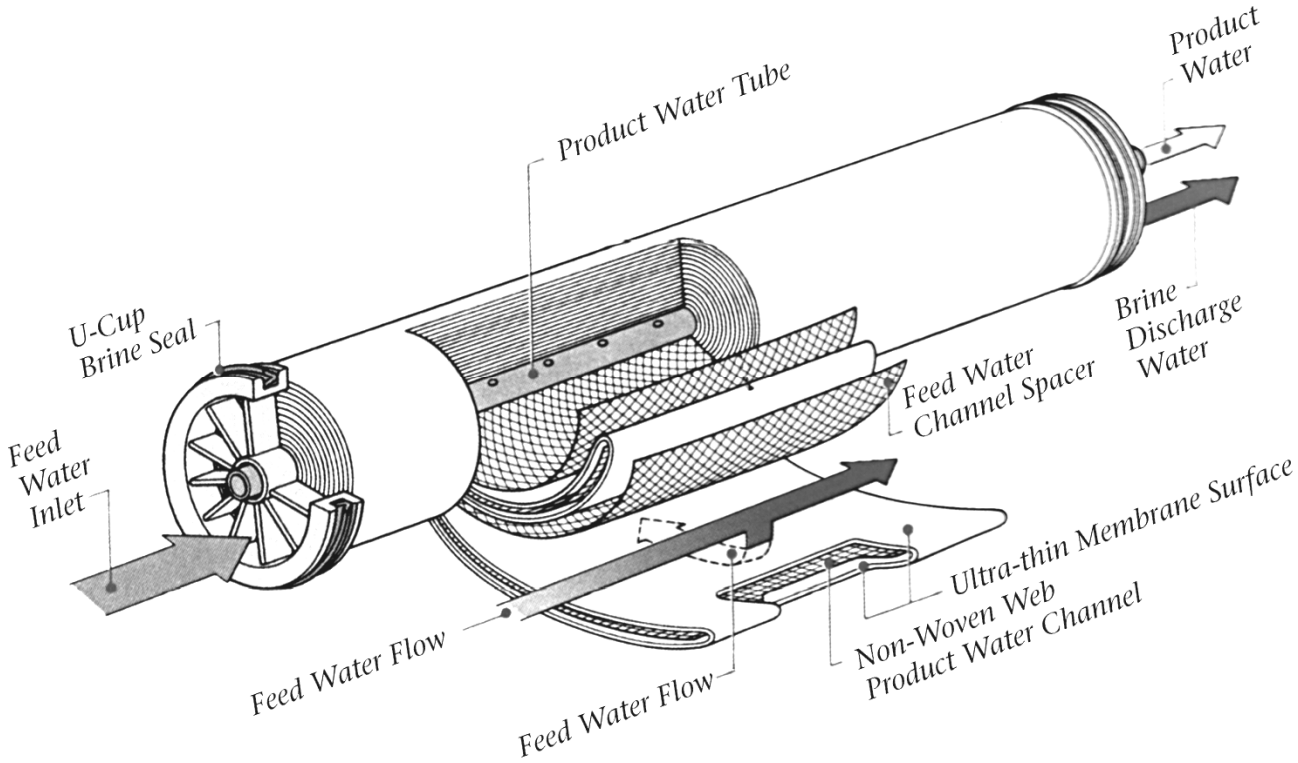
SPIRAL-WOUND REVERSE OSMOSIS MEMBRANE ELEMENT: (larger illustration on the following page)

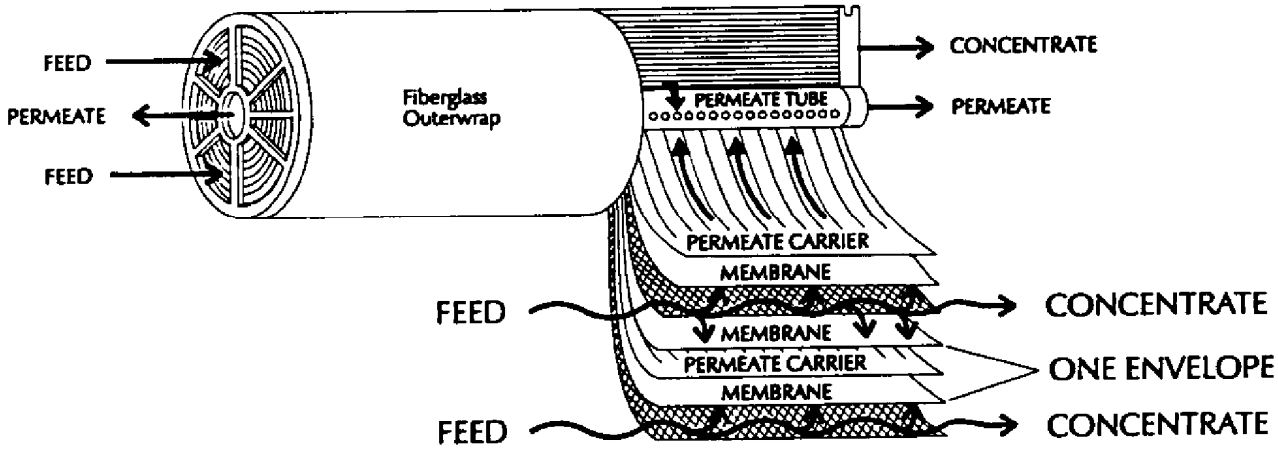




The spiral-wound membrane consists of one or more membrane envelopes each formed by enclosing a channelized product water carrying material between two large flat membrane sheets. The membrane envelope is sealed on three edges with a special adhesive and attached with the adhesive to a small diameter pipe to form a cylinder. A polypropylene screen is used to form the feed water channel between the membrane envelopes. A wrap is applied to the membrane element to maintain the cylindrical configuration. The center tube is also the permeate (product water) collecting channel. Several elements may be connected in series within a single or multiple pressure vessel(s).

ANATOMY OF A SPIRAL-WOUND REVERSE OSMOSIS MEMBRANE ELEMENT





1. INTRODUCTION

COMPONENT DESCRIPTIONS

All components supplied by Sea Recovery, both standard and optional, are described in this section along with items required or desired by the installer. The location, operation, and purpose of each major component are briefly explained in this section.

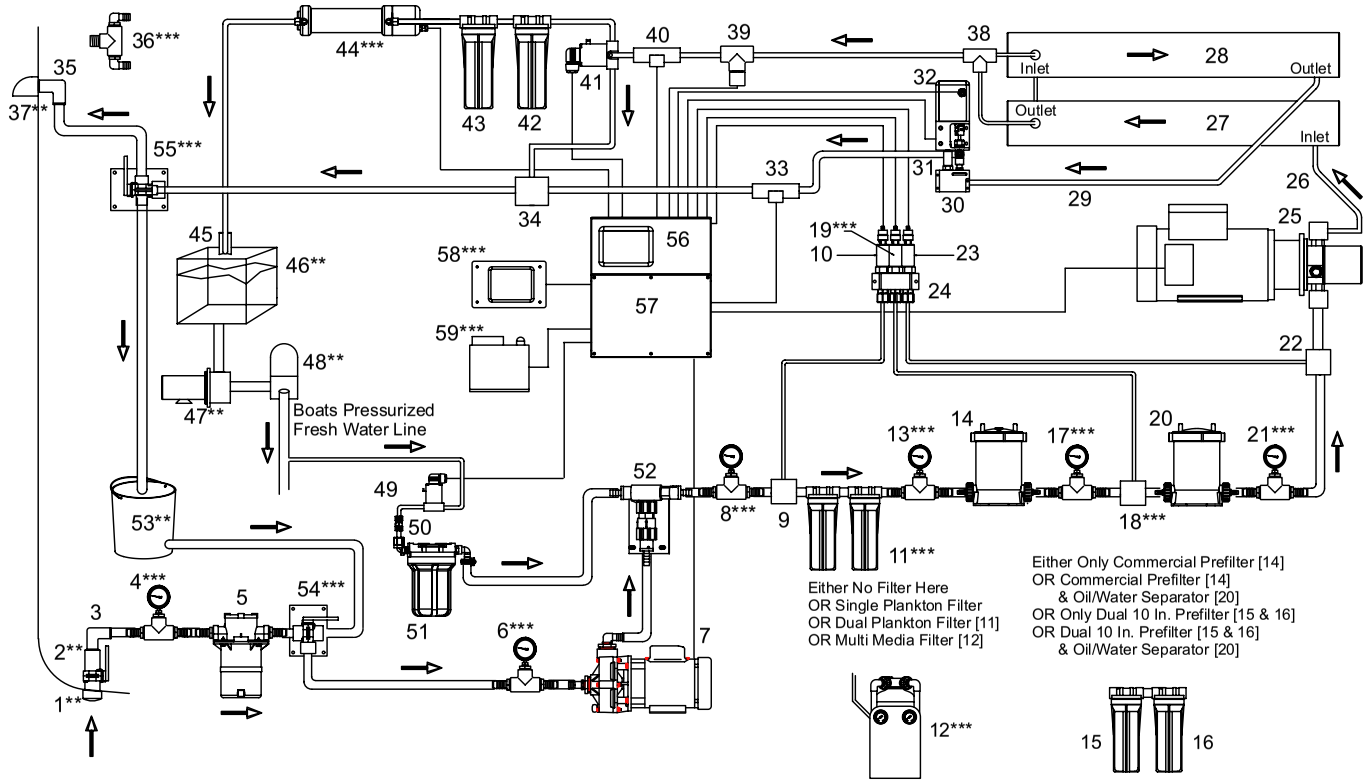
The descriptions in this section are listed according to the ID numbers each component is assigned in the System Piping and Interconnect Diagrams throughout this Owner's Manual such as the illustration on the following page.

The ID numbers follow the component's descriptive name and are shown in brackets. i.e., "Sea Strainer [4]".

** Indicates items supplied by installer
*** Indicates optional equipment.

Throughout this Owners Manual cautions are given to the technician, operator, and owner to ensure that you use only Sea Recovery supplied components, consumables, spares, and replacement parts. Since 1981, Sea Recovery has shipped over 10,000 R.O. Systems, and most of them are still in use today. Of all the reported problems that we help our customers with, the majority are problems caused by using third party replacement parts and consumables. Use of third party, Non Sea Recovery, components will lead to premature failure, added operating and maintenance costs, and increased labor. Using 3rd party, Non Sea Recovery, components will void any and all Sea Recovery Warranty. We only wish to help you enjoy the luxury of owning a Sea Recovery R.O. System. Treat it properly by using only Sea Recovery supplied parts, consumables, and accessories.

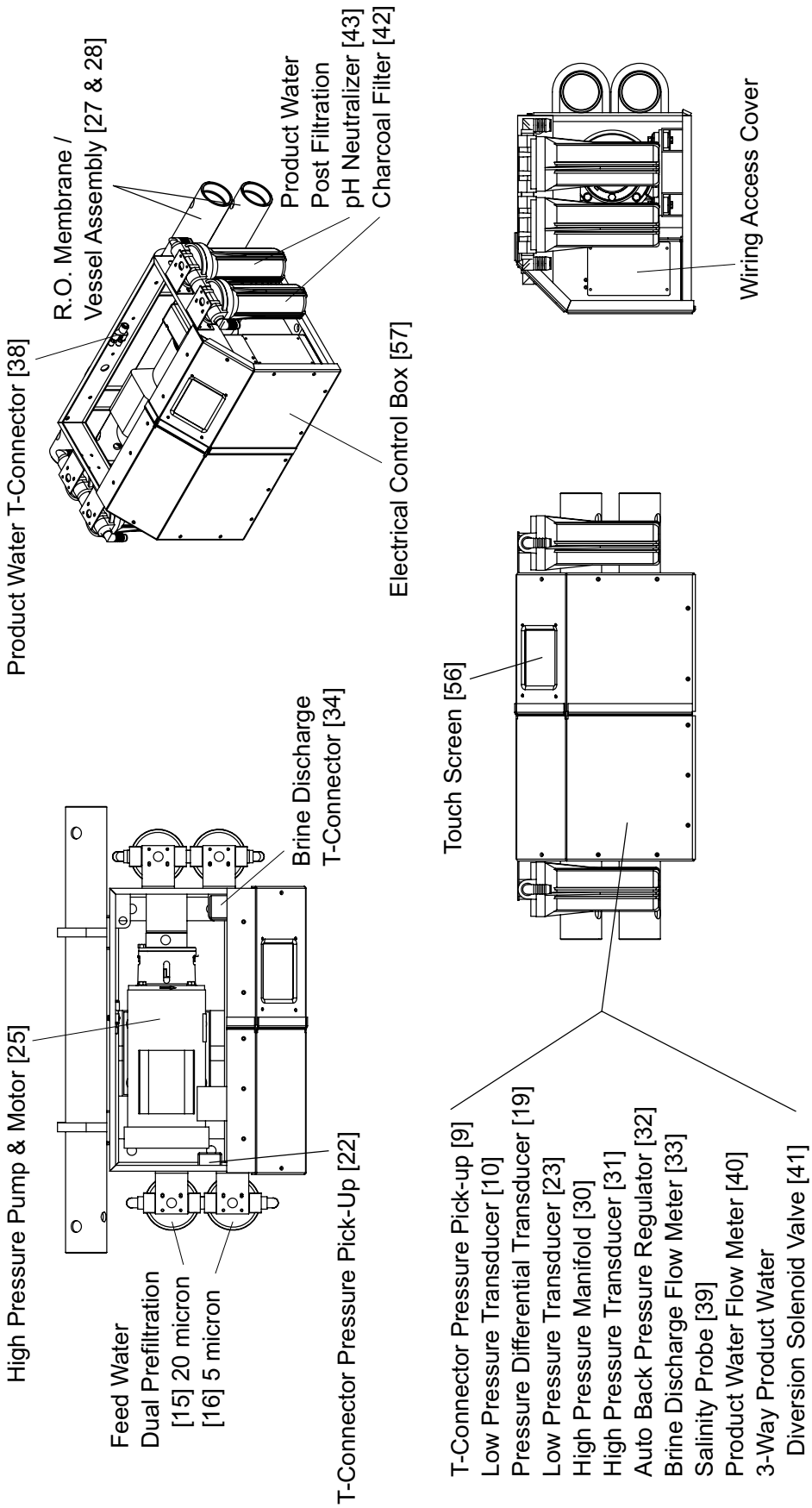
Aqua Matic v3.00 Component Identification Piping and Interconnect Diagram
Illustrated with "either / or" Prefiltration Options, and the following additional options: Ultra Violet Sterilizer, Rinse/Clean Valves, Remote Touch Pad, Soft Motor Starter, and Inline Pressure Gauges.



I.D. of Components & Options ** = Owner/Installer supplied, *** = Optional

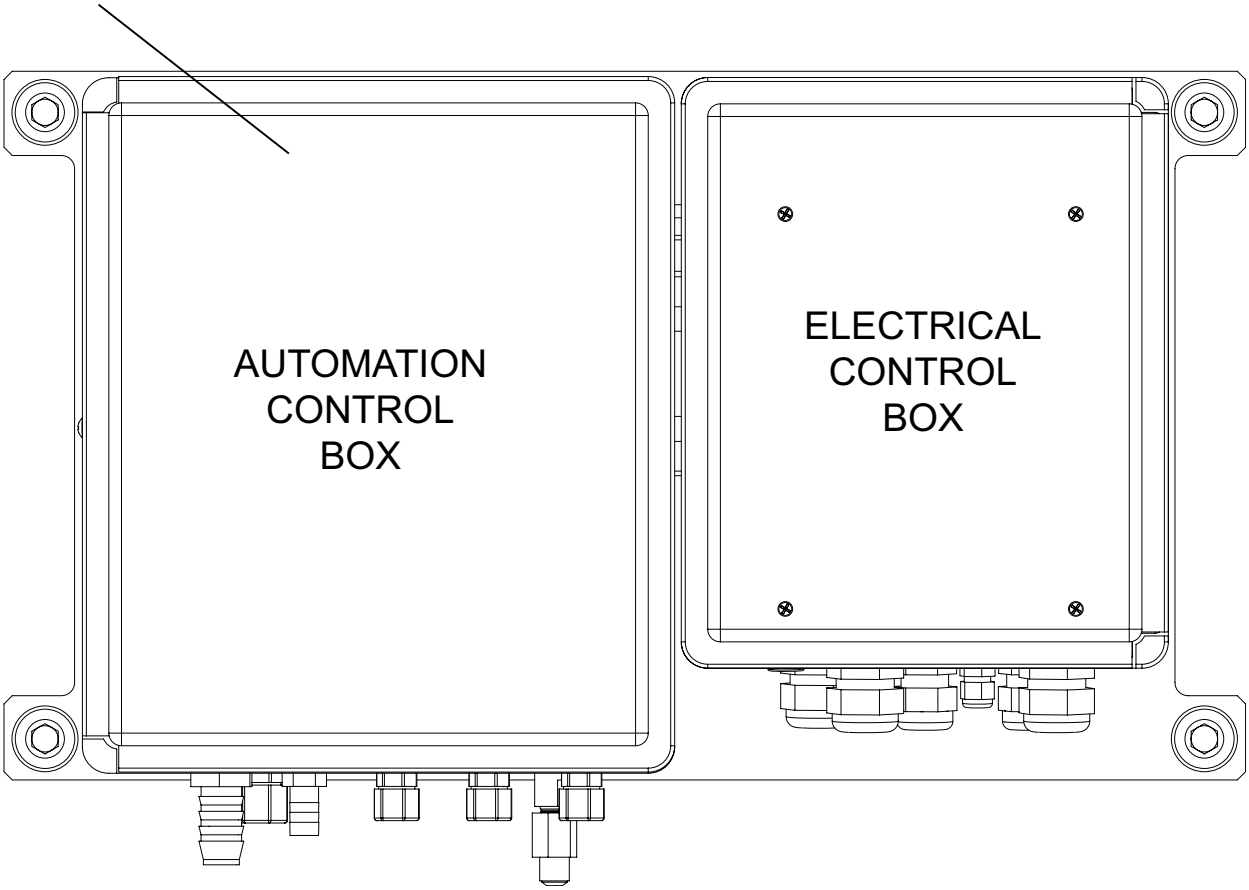
1. Inlet Thru Hull**
2. Sea Cock Valve**
3. Inlet Connection
4. Inline Pressure Gauge***
5. Sea Strainer
6. Inline Pressure Gauge***
7. Booster Pump
8. Inline Pressure Gauge***
9. T-Connector Pressure Pick-up
10. Low Pressure Transducer #1
11. Plankton Filter***
12. Multi-Media Filter
13. Inline Pressure Gauge***
14. Commercial Pre-Filter
15. Dual Pre-Filter 20 micron
16. Dual Pre-Filter 5 micron
17. Inline Pressure Gauge***
18. T-Connector Pressure Pick-up***
19. Differential Pressure Transducer***
20. Oil Water Separator
21. Inline Pressure Gauge***
22. T-Connector Pressure Pick-up
23. Low Pressure Transducer #2
24. Transducer Manifold
25. High Pressure Pump & Motor
26. High Pressure Hose
27. Membrane & Vessel #1
28. Membrane & Vessel #2
29. High Pressure Hose
30. High Pressure Manifold
31. High Pressure Transducer
32. Auto. Back Pressure Regulator
33. Flow Meter - Brine Discharge
34. Brine Discharge T-Connection
35. Brine Discharge Connector
36. MM Filter Discharge Fitting***
37. Thru Hull Discharge Fitting**
38. T-Connector Product Water
39. Salinity Probe
40. Flow Meter - Product Water
41. 3-way Diversion Valve
42. Charcoal Filter
43. pH Neutralizer
44. U.V. Sterilizer***
45. Product Water Connector
46. Potable Water Storage Tank**
47. Fresh Water Pressure Pump**
48. Air Entrainment Tank (Accumulator) **
49. Fresh Water Flush 2-Way Solenoid Valve
50. Fresh Water Flush Check Valve
51. Fresh Water Flush Carbon Filter
52. Fresh Water Flush Feed Check Valve
53. Cleaning Bucket**
54. Rinse Clean Inlet Valve***
55. Rinse Clean Outlet Valve***
56. System Touch Panel
57. Electrical Control Box
58. Remote Control Touch Panel***
59. Soft Start***

Aqua Matic Compact
COMPONENT IDENTIFICATION



Aqua Matic MODULAR STYLE
Control Panel

AUTOMATION CONTROL BOX CONTENTS:
Low Pressure Transducer [10]
Pressure Differential Transducer [19]
Low Pressure Transducer [23]
High Pressure Manifold [30]
High Pressure Transducer [31]
Auto Back Pressure Regulator [32]
Brine Discharge Flow Meter [33]
Salinity Probe [39]
Product Water Flow Meter [40]
3-Way Product Water Diversion Solenoid Valve [41]



A. PREFILTRATION SECTION:

This section of the system filters and delivers the feed water into the system. The raw feed water is filtered to remove suspended solids larger than 5 Micron size (5/1,000,000 of a meter). The pre-filtration protects the High Pressure Pump from premature wear and the Reverse Osmosis Membrane Element from premature fouling.

1. **Inlet Thru Hull Fitting with Forward Facing Scoop** ** is the point at which the feed water enters the system. It is important that the installer utilizes a forward facing scoop so that the system receives a positive flow of water as the boat is under way.

   CAUTION: A flat inlet thru-hull fitting will cause a vacuum as the boat is under way, and this will cause loss of feed water flow and cavitation of the feed water pump and high pressure pump resulting in continual system shut down due to low feed water flow and pressure. The resulting failure of the system to remain in operation is attributed to improper installation, is the liability of the installer, and is not covered by the Sea Recovery warranty.

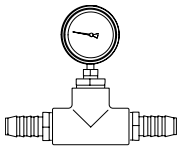
   CAUTION: If the thru-hull fitting is placed in a position on the underside of the hull that allows air to continually enter the thru-hull fitting, this will cause the system to continually shut down due to loss of feed water. The resulting failure of the system to remain in operation is attributed to improper installation, is the liability of the installer, and is not covered by the Sea Recovery warranty.

2. **Sea Cock Valve** ** is used in a ship installation for safety reasons to close the feed water line during repair, maintenance, and disuse of the system.

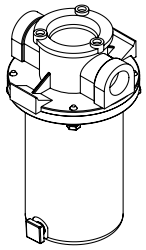
3. **Inlet Connector** is a 90º elbow with a hose barb fitting for attachment to the Sea Cock Valve.

Inlet Connection

4. **Inline Vacuum/Pressure Gauge** *** allows the operator to easily monitor the condition of the inlet thru-hull fitting to determine if it has a blockage.

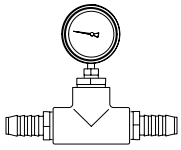


5. **Sea Strainer** has a clear bowl with bronze body filter housing containing a cleanable monel filter screen. The Sea Strainer filters out large particulate matter and suspended particles that would otherwise damage the Booster Pump and prematurely foul the cartridge Prefilter Element.

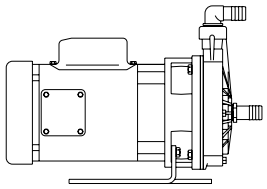


Sea Strainer

6. **Inline Vacuum/Pressure Gauge** *** allows the operator to easily monitor the condition of the Sea Strainer to determine if the mesh screen requires cleaning.



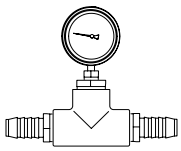
7. **Booster Pump** supplies a positive pressure to the Pre-filters and onward to the High Pressure Pump. The Booster Pump has a performance curve of 85 Ft Head (35 PSI) @ 60 Hz with a feed water flow of 4.5 GPM.



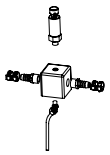
Centrifugal Booster Pump

   The resulting pressure at the High Pressure Pump depends on the final installation configuration and condition of Prefiltration elements.

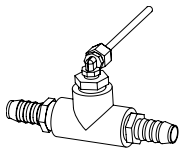
8. **Inline Vacuum/Pressure Gauge** *** allows the operator to easily monitor the condition of the Booster Pump outlet pressure to determine if the Booster Pump requires maintenance.



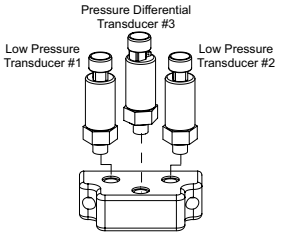
9. **T-Connector Pressure Pick-up Booster Pump Outlet/Prefilter Inlet** for line pressure pick up from the outlet of the Booster Pump to the Low Pressure Transducer #1 [10]. Depending on the Aqua Matic style and perfiltration configuration the Pressure Pick-Up Tee may be either style illustrated to the right.



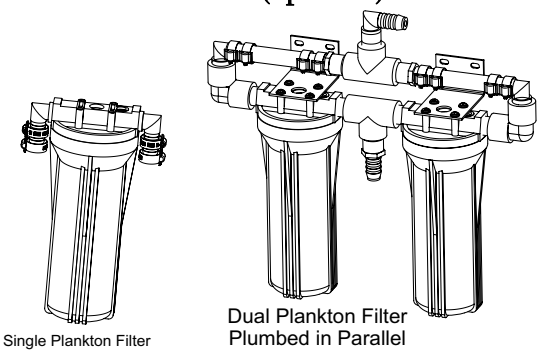
T-Connector For Low Pressure Transducers



10. Low Pressure Transducer #1 Booster Pump Outlet/ 1st Prefilter Inlet (shown on the left of the illustration) for line pressure pick up from the outlet of the Booster Pump to the 1st Prefiltration component

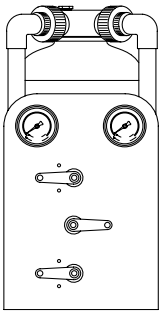


11. Plankton Filter *** (optional)

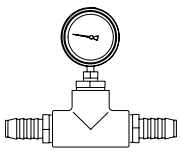


This optional filter assembly contains a cleanable ultra fine monel mesh screen. The mesh screen removes suspended solids or biological growth such as plankton. It also provides longer life to the Pre-filter Elements and in turn provides lower system maintenance costs. The Plankton Filter is available as a single housing (shown to the left) or dual (double) housing (shown to the right).

12. Multi Media Filter *** (optional) This optional filter assembly contains a back-washable bed of sand and gravel. The sand traps suspended solids larger than 30 micron which provides longer life to the pleated cartridge prefilter elements minimizing maintenance intervals, maintenance labor, and filter element cost.

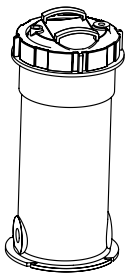

Multi Media Filter

13. Inline Pressure Gauge *** allows the operator to easily monitor the condition of the Plankton Filter outlet pressure to determine if the Plankton Filter Mesh Screen(s) require cleaning.



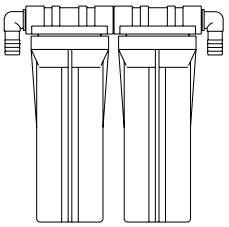
PREFILTER ELEMENT WARNING: Do not use third party prefilter elements, use only Sea Recovery prefilter elements. Third party prefilter elements do not properly fit and the seams fall apart. They also allow by-pass resulting in extensive and very costly damage to the High Pressure Pump [25] as well as premature fouling of the R.O. Membrane Element(s) [27 & 28].

14. Commercial Prefilter takes the place of the Dual Prefilter [15 & 16]. The 5 micron Commercial Prefilter cartridge element contains 37.5 square feet of filtering surface area. This oversize cartridge gives much longer filter element life greatly extending the time interval between required maintenance and reduces maintenance labor and prefilter element replacement cost.

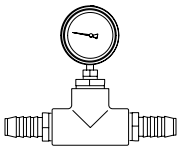

Commercial Prefilter

PREFILTER ELEMENT CAUTION: Do not use "string wound" or "fiber" prefilter elements. String wound and fiber filter elements are designed for the Photographic Film Developing Industry. When used in sea water, they will plug up rapidly in 1/10th or less the time of a Sea Recovery supplied prefilter cartridge element. This will cause frequent shut downs of the system and very frequent changing which will result in very high cost of maintenance, and user frustration.

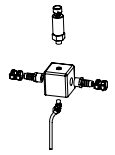
15 & 16. Dual Pre-Filter removes suspended solids in two stages. The feed water passes first through a 20 micron cartridge then a 5 micron cartridge. By stepping the filtration both prefilter elements gain longer life and require less maintenance labor and prefilter element replacement cost.

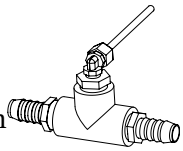

Dual 10 Inch Prefilter

17. Inline Vacuum/Pressure Gauge *** allows the operator to easily monitor the condition of the Prefilter element(s) to determine if it (they) require changing.

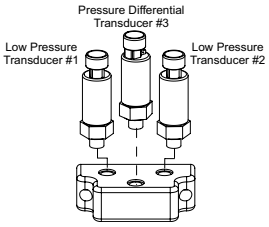


18. **T-Connector Pressure Differential Pick-up ***** (included with Pressure Differential Transducer #3 [19]) for line differential pressure pick up between optional prefiltration components to the Low Differential Pressure Transducer [19]. Depending on Prefiltration configuration this T-Connector may not be necessary as illustrated in Section 2 of this Owner's Manual. Depending on the Aqua Matic style and perfiltration configuration the Pressure Pick-Up Tee may be either style illustrated to the right.


T-Connector For Low Pressure Transducers

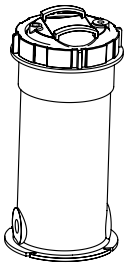


19. **Pressure Differential Transducer #3 ***** (optional) (shown in the center of the drawing) for line differential pressure across prefiltration components. Allows the operator to determine which prefiltration component requires servicing.

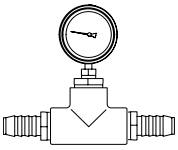


OIL WATER SEPARATOR ELEMENT WARNING: Use only Sea Recovery supplied filter elements. Third party oil water separator elements do not properly fit and the seams fall apart. They also allow by-pass resulting in extensive and very costly damage to the High Pressure Pump [25] as well as premature fouling of the R.O. Membrane Element(s) [27 & 28].

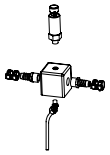
20. **Oil/Water Separator Filter** removes oil present in the feed water. **CAUTION:** Oil permanently destroys the R.O. Membrane element. It is recommended that the user avoid operating the Sea Recovery R.O. System in oil polluted waters if the Oil/Water Separator Filter is not installed.

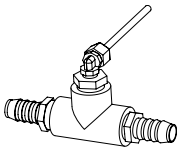

Oil/Water Separator

21. **Inline Vacuum/Pressure Gauge** allows the operator to monitor the condition of the Oil Water Separator Element to determine if it require changing.

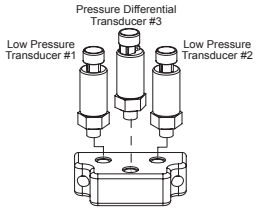


22. **T-Connector Pressure Pick-up High Pressure Pump Inlet** for line pressure pick up to the 3rd Low Pressure Transducer [23] after all prefiltration and prior to the inlet of the High Pressure Pump [25]. Depending on Prefiltration configuration this T-Connector may not be necessary as illustrated in Section 2 of this Owner's Manual. Depending on the Aqua Matic style and perfiltration configuration the Pressure Pick-Up Tee may be either style illustrated to the right.


T-Connector For Low Pressure Transducers



23. **Low Pressure Transducer #2** measures line pressure after all prefiltration and prior to the inlet of the High Pressure Pump [25]

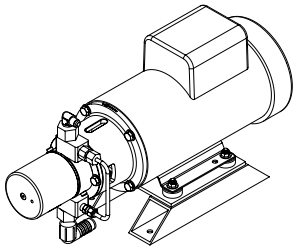


24. **Low Pressure Transducer Manifold** supports the Low Pressure and Differential Pressure Transducers, shown at the bottom of the above illustration.

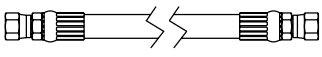
B. PRESSURIZATION SECTION:

Provides the necessary pressure to force the product water through the R.O. Membrane Element.

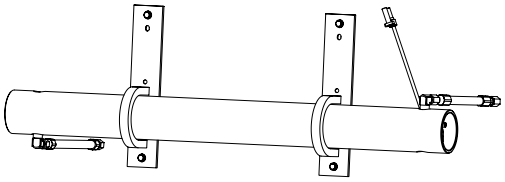
25. **High Pressure Pump & Motor Assembly** is a Radial Axial Positive Displacement Plunger Pump made of high grade Duplex material specifically designed for sea water Reverse Osmosis applications. The Pump is self lubricated and does not require oil. The Pump is connected to the attached electric motor with a flex coupler and safety bell housing.



26. **High Pressure Hose,** HP Pump Outlet to R.O. Membrane & Vessel Assembly Inlet, transfers pressurized sea water from the High Pressure Pump to the inlet of the R.O. Membrane Element.


High Pressure Hose

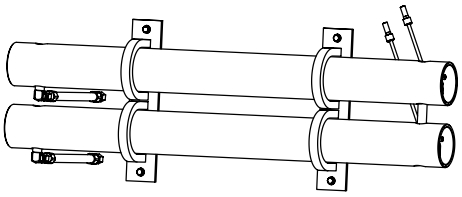
27. **R.O. Membrane Element & Vessel #1**



Single R.O. Membrane and Vessel Assembly

The Membrane Element allows potable water molecules to pass through while rejecting the salt ions. Only 7% to 28%, depending on specific model, of the Seawater Feed becomes fresh Product Water. The remainder carries the rejected salt ions out of the R.O. Membrane Element in a concentrated brine stream. The R.O. System may have one or two R.O. Membrane Element & Vessel in series depending on the specific model and system capacity.

28. **R.O. Membrane Element & Vessel #2** is



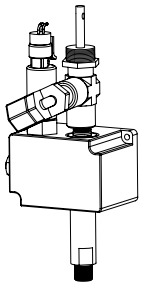
Double R.O. Membrane & Vessel Assembly

connected in series with the first R.O. Membrane Element & Vessel as shown in the above drawing. The Sea Recovery R.O. System will have either one or two R.O. Membrane Element & Vessel depending on exact model. The 2nd R.O. Membrane Element & Vessel may be added at any time to a system with only one. Adding the 2nd R.O. Membrane Element & Vessel will double the System's production.

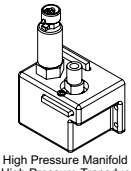
29. **High Pressure Hose** R.O. Membrane Vessel Assembly Outlet to High Pressure Manifold Inlet.

High Pressure Hose

30. **High Pressure Manifold** connects the High Pressure Hose, High Pressure Transducer, and Back Pressure Regulator. The illustration at the top right shows the High Pressure Manifold for the Aqua Matic Compact Style System. The illustration at the bottom right shows the High Pressure Manifold for the Aqua Matic Modular Style System.

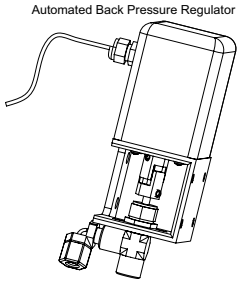


31. **High Pressure Transducer** measures the System Operating Pressure from the Outlet of the High Pressure Pump [25] through the R.O. Membrane & Vessel(s) [27 & 28].



High Pressure Manifold & High Pressure Transducer

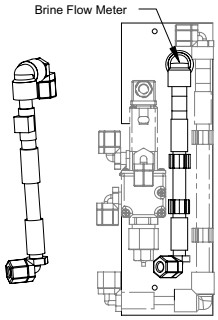
32. **Automatic Motor Actuated Back Pressure Regulator** is a U.S. Patent Pending device that automatically adjusts the system operating pressure to varying feed water temperatures and salinities making the Sea Recovery Aqua Matic a truly self functioning and fully automatic water maker.



C. BRINE DISCHARGE SECTION:

This section of the System carries the Brine Discharge water, exiting from the R.O. Membrane Element, back to the feed source.

33. **Brine Discharge Flow Meter** measures the brine water rate of flow from the R.O. Membrane Element in gallons or liters per hour. By adding the amount of Product Water flow to the Brine Discharge Flow the operator is able to determine the total Feed Water Flow.

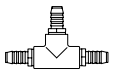


34. **Brine Discharge T Connector** collects the brine discharge water and unpotable product water.

35. **Brine Discharge Connector** attaches to the over board thru-hull fitting for connecting the brine discharge hose.

Brine Discharge Connector

36. **Multi Media Filter Waste "T" ***** is included with the Multi Media Filter. This waste T is installed in line at the Brine Discharge fitting to allow discharge of the waste from the Multi Media Filter during the back wash and rinse procedure, and the brine discharge water from the system.

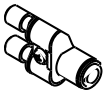

Multi Media Filter Waste "T"

37. **Thru Hull Brine Discharge Fitting **** should be installed above water level for discharge of the Brine Discharge Water from the system.

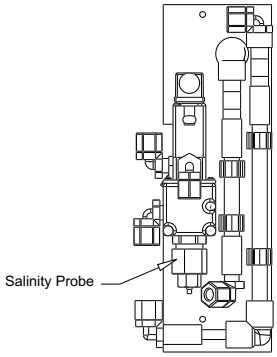
D. PRODUCT WATER SECTION:

This section of the system gives a visual indication of the clarity, quantity, and quality of the product water. Post Filtration is the final step in Product Water quality control. The Post Filtration Subsystem is designed to limit unpleasant odor and taste, adjust the pH to neutral, and sterilize biological matter which may have passed through the R.O. Membrane Element.

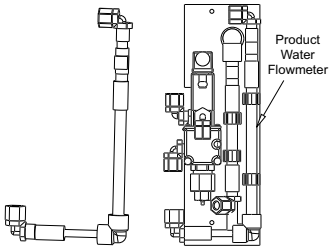
38. **Product Water T Collector** combines the product water from the two individual R.O. Membrane Elements [27 & 28]


Product Water T-Collector

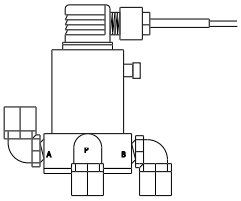
39. **Temperature Compensated Salinity Probe** electronically determines whether the salinity content of the Product Water is acceptable. This Salinity Probe is temperature compensated and provides an accurate measurement of Product Water quality.



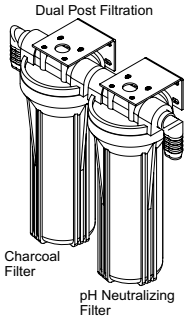
40. **Flow Meter, Product Water** electronically measures the rate of Product Water flow, in gallons or liters per hour.



41. **3-Way Product Water Diversion Valve, Electric Solenoid Actuated.** The Controller energizes this valve to the "Potable" position when the system produces water which meets the low salinity requirement. If the Product Water being produced is "Un-potable", high in salinity, then no signal is sent to the valve, and it thus remains in the normal open position. The "fail safe" normal open position diverts the un-potable Product Water to discharge.


Three Way Product Water Diversion Solenoid Valve

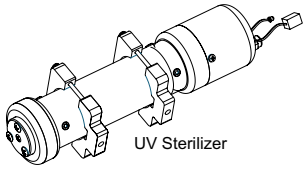
42. **Charcoal Filter** (shown on the left of the illustration) removes foul odors from the Product Water. Sulfurous odor (rotten egg smell) is caused when biological matter dies and decays in the feed water section. Fresh water flushing of the system helps to minimize this.



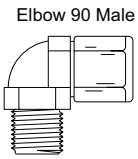
43. **pH Neutralizer Filter** (shown to the right in the above illustration). The **pH value** of pure water is pH7 which is regarded as neutral. **pH** values from 0-7 indicate acidity and **pH** values from 7-14 indicate alkalinity.

The product water from an R.O. system will be slightly acidic because most of the naturally occurring high pH calcium carbonate has been removed. The product water from an R.O. system will also be very soft for the same reason. The product water pH will be approximately 6.5 pH. The pH Neutralizer Filter dissolves calcium carbonate back into the product water bringing the pH level to neutral at approximately pH 7.

44. **Ultra Violet Sterilizer ***** (optional) sterilizes at least 99.9% of any virus, bacteria, and other micro-organisms which may pass through the R.O. Membrane Element. The U.V. sterilizer is recommended if the Product Water Storage Tank is not otherwise treated by means such as chlorination.


UV Sterilizer

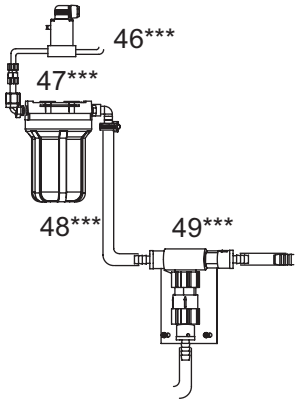
45. **Product Water Connector** attaches to the Potable Water unpressurized tank for connection of the Product Water hose.



E. FRESH WATER FLUSH SECTION: Includes a Carbon Filter and an Automatic Motor Actuated Ball Valve that automatically flushes the system with fresh water. This process is automatic at each shut down of the system and repeats automatically every 7 days. Fresh Water Flushing replaces the seawater in the system with less corrosive fresh water, and this also reduces the biological growth and subsequent decay that naturally occur if the feed water (sea water) is not flushed from the system with fresh water.

49. **Fresh Water Flush 2-way solenoid valve** ***automatically actuates at system shut down and every 7 days there after to flush the system with fresh water.

50. **Fresh Water Flush Check Valve ***** prevents feed water from entering the fresh water line.

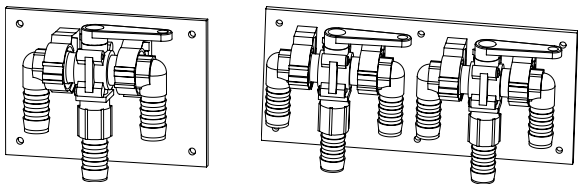


51. **Fresh Water Flush Charcoal Filter ***** removes chlorine, if present, in the fresh water prior to flowing through the R.O. Membrane Element.

52. **Fresh Water Flush Check Valve ***** routs the fresh water through the system.

53. **Cleaning Bucket **** can be any non ferrous container capable of holding at least 10 U.S. Gallons of water. This container is used during the R.O. Membrane Element cleaning, storing, or winterizing process.

54. **Rinse Clean Inlet Valve *****



These Optional Valves are available from Sea Recovery mounted separately on singular individual plates as shown in the illustration above on the left, or together on a double plate as illustrated above on the right.

The Rinse Clean Inlet Valve is used in conjunction with the Rinse Clean Outlet Valve [43] simplifies the storage and cleaning procedures by allowing the operator to turn

a valve rather than disconnect a hose. Also used for a manual fresh water flush if the Automatic Fresh Water Flush System [40 & 41] is not installed. The Rinse Clean Valves are available on single mounting plates or together on a double valve mounting plate.

55. **Rinse Clean Outlet Valve ***** (optional) used in conjunction with and identical to the Rinse Clean Inlet Valve [42] simplifies the storage and cleaning procedures by allowing the operator to turn a valve rather than disconnect a hose.

The Aqua Matic COMPACT STYLE Low Pressure Plate Assembly Contents:

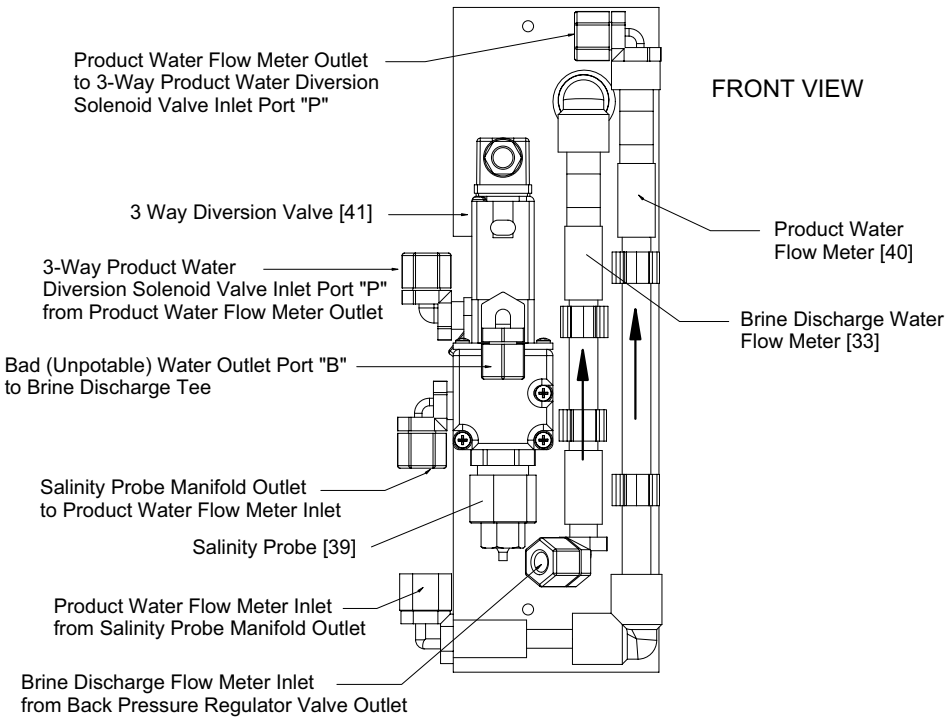
[33] Brine Discharge Water Flow Meter

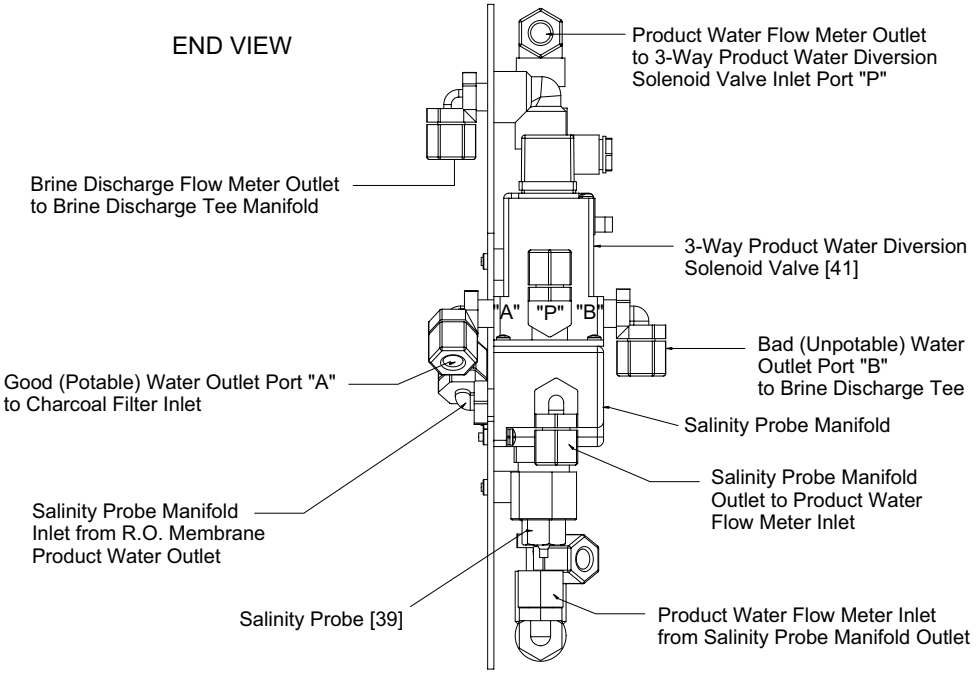
[39] Salinity Probe

[40] Product Water Flow Meter

[41] 3-Way Product Water Diversion Solenoid Valve

LOW PRESSURE PLATE ASSEMBLY





The Aqua Matic COMPACT STYLE High Pressure Plate Assembly Contents:

[10] Low Pressure Transducer #1

[19] Differential Pressure Transducer #3

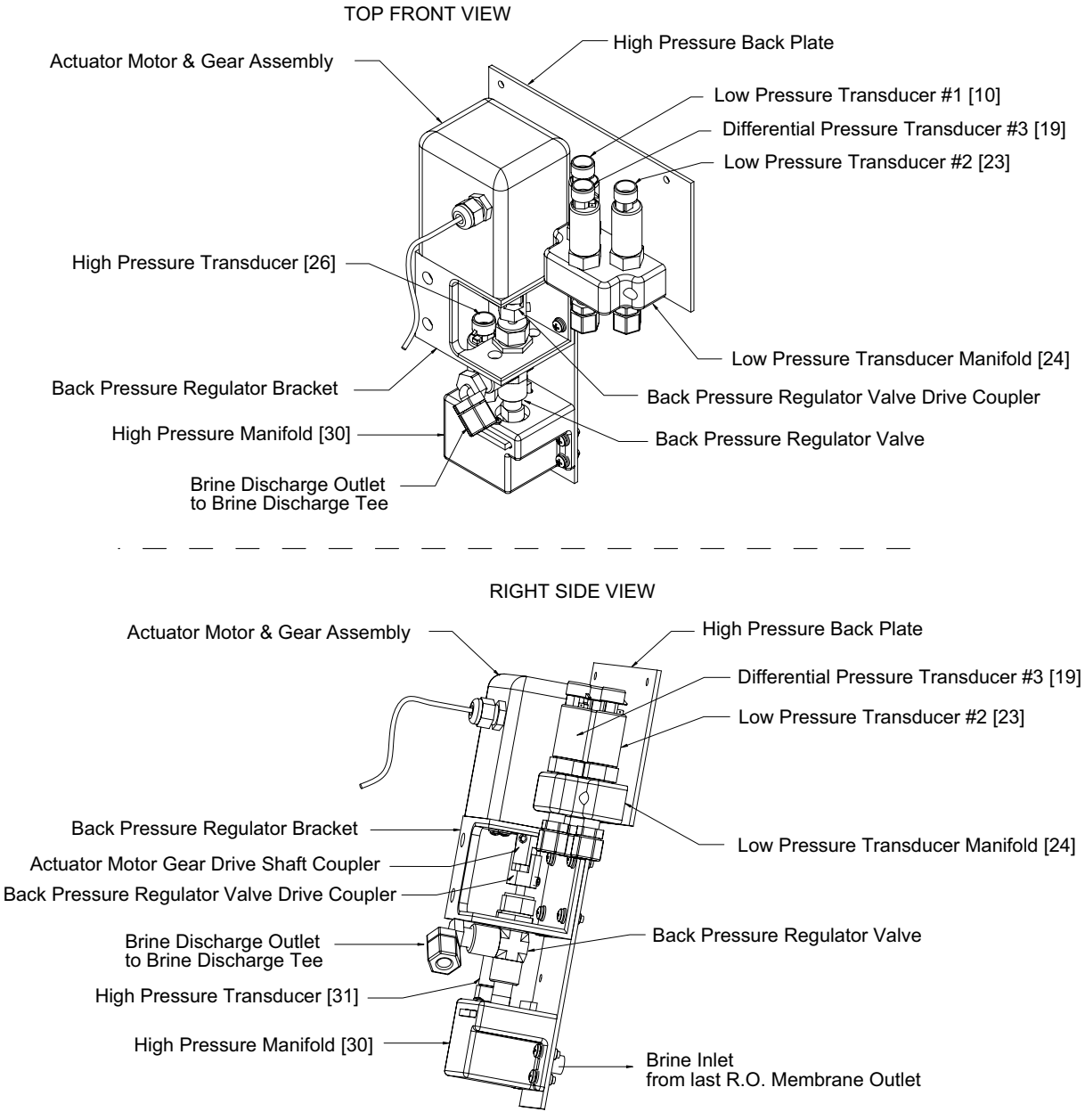
[23] Low Pressure Transducer #2

[30] High Pressure Manifold

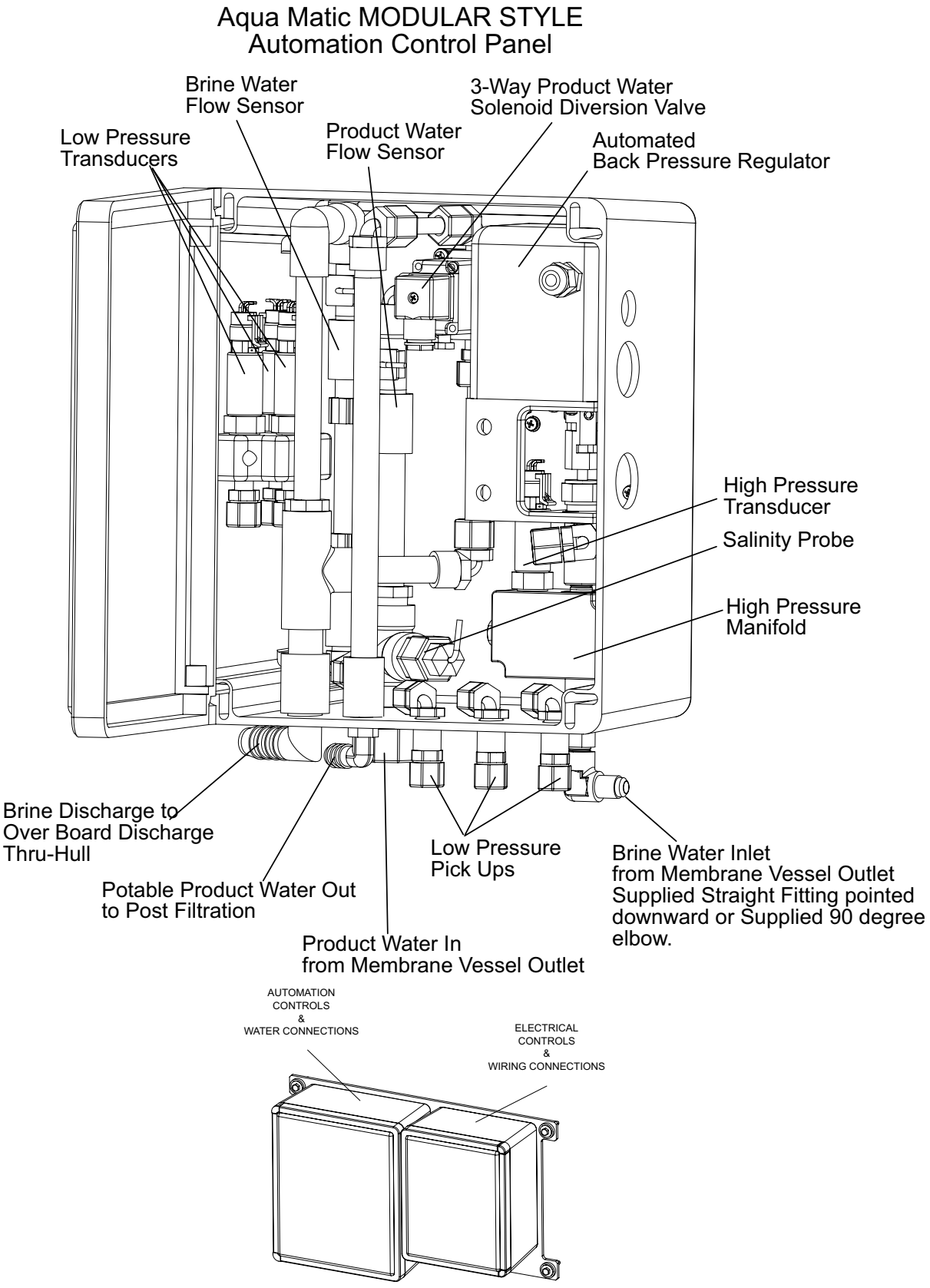
[31] High Pressure Transducer

[32] Automated Back Pressure Regulator Assembly

HIGH PRESSURE PLATE ASSEMBLY



Aqua Matic MODULAR STYLE Automation Control Panel Contents:



F. FRESH WATER SYSTEM:

This represents the boat or home's fresh water pressurized system. Pressurized fresh water is required to supply the Aqua Matic Fresh Water Flush.

46. **Potable Water Storage Tank**** may be any container suitable for storing Potable Water, i.e. existing water storage tank on a boat or cistern for a home.

47. **Fresh Water Pressure Pump**** delivers fresh water throughout the boat, or home. In order to provide the required flow of water to the Aqua Matic System during the Fresh Water Flush cycle, this pump must deliver up to 1 U.S. Gallons Per Minute at minimum 25 PSI and maximum 60 PSI (3.8 Liters per minute at minimum 172 kPa and maximum 414 kPa)

48. **Air Entrainment Tank**** (accumulator) is sometimes installed into the boat or home's fresh water line to eliminate pulsations from and reduce demand on the Fresh Water Pressure Pump [47]. This tank stores pressurized fresh water for delivery to the boat or home's fresh water piping.

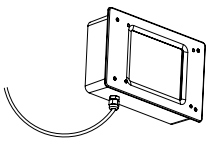
G. ELECTRONIC SECTION:

This subsystem measures water quality, controls the direction of Product Water flow, Starts and Stops the pumps, and contains the central electrical connection point of the system. It also ensures only potable Product Water passes into the Product Water Storage Tank.

56. **System Touch Panel** is where all system functions are accessed by touching the user friendly intuitive screen and where all operating conditions are monitored.

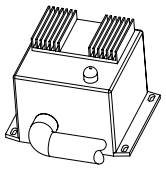
57. **Electrical Control Box** contains all electrical and electronic components that control the system.

58. **Remote Control Touch Panel ***** (optional) allows for remote control, operation, and monitoring of the system.



Remote Touch Screen

59. **Soft Start ***** (optional) The soft start, used only in AC (Alternating Current) Single Phase systems, reduces the initial startup amperes required to start the High Pressure Pump Motor and in turn allows a smaller sized KW generator to start the system. Starting amperage is reduced by 40% with the Soft Start installed.



Soft Motor Starter

Not Numbered:

Fresh Water Tank Low Level Switch **

owner/installer supplied provides an optional feature to the System Control Logic that works in conjunction with the Automatic Fresh Water Flush option.

When installed and connected to the Main Printed Circuit Board, the Fresh Water Tank Low Level Switch must be connected as a N.O. (Normally Open) 1PST (One Pole Single Throw) switch.

When the Fresh Water Tank [46] is empty the switch is Open. As water rises a few inches in the tank the switch Closes. This informs the System Control Logic that there is sufficient Fresh Water to perform the Automatic Fresh Water Flush Cycle.

Fresh Water Tank High Level Switch **

owner/installer supplied provides an optional feature to the System Control Logic that allows the System to shut off automatically when the Fresh Water Tank [46] is full, when the System is operated in the Automatic mode. Additionally, the System will not start in the Automatic mode when the Fresh Water Tank High Level Switch signals the System Control Logic that the Fresh Water Tank [45] is full.

When installed and connected to the Main Printed Circuit Board, the Fresh Water Tank High Level Switch must be connected as a N.C. (Normally Closed) 1PST (One Pole Single Throw) switch.

When the Fresh Water Tank [46] is several inches below the full mark the switch is Closed. As water rises and reaches the top of the full mark the switch Opens. This informs the System Control Logic that the Fresh Water Tank is full.

If operation of the System is desired when the Fresh Water Tank Switch signals the System Control Logic that the Fresh Water Tank is full then the System may be operated in the Manual mode.

Helpful Terms to become familiar with:

BOUNDARY LAYER / CONCENTRATION POLARIZATION: When water permeates through the membrane, nearly all the salt is left behind in the brine channel. In any dynamic hydraulic system, the fluid adjacent to the wall of the vessel is moving relatively slowly. Even though the main body of the stream is turbulent, a thin film adjacent to the wall (membrane) is laminar. This thin film is called the boundary layer.

BRINE DISCHARGE: The concentrated solution, original feed water less the recovered product water, that is ejected from the System.

BRINE VELOCITY: The brine flow over the membrane surface is very important to both product water quality and quantity. At low flows, concentration polarization occurs, causing the water quality to decline. In addition to inferior product water quality, low brine flow can increase the precipitation of sparingly soluble salts which will foul the membrane surface. If this occurs, the product water flux (production) will decline.

COMPACTION: Some densification of the membrane structure may take place while operating at elevated pressures, above 1000 PSI. The change is known as compaction and is accompanied by a reduction in the water permeation rate.

FEED WATER: The raw water that enters the system

OSMOTIC PRESSURE: The transfer of the water from one side of the membrane to the other will continue until the head (pressure) is great enough to prevent any net transfer of the solvent (water) to the more concentrated (feed water) solution. At equilibrium, the quantity of water passing in either direction is equal (no passage), and the pressure is then defined as the **"Osmotic Pressure"** of the solution having that particular concentration of dissolved solids.

PRESSURE: The operating pressure has a direct effect on product water quality and quantity. Both factors will increase as the system pressure increases (within design limits). The system must be operated at the lowest pressure required to achieve the designed product water flow rate. This parameter also affects compaction, which proceeds at a faster rate at higher pressures as well as at higher temperatures.

PRODUCT WATER (PERMEATE): The potable water produced from the Reverse Osmosis Membrane Element.

RECOVERY: The percentage of product water recovered from the feed water.

REJECTION: The percentage of Dissolved Solids rejected from the Feed Water to Brine Discharge by the R.O. Membrane Element.

TDS - TOTAL DISSOLVED SOLIDS: All dissolved solids in water (everything except H^2O (water). When referring to Product Water from the R.O. System the TDS is generally expressed as NaCl (Sodium Chloride - Salt).

WATER TEMPERATURE EFFECT: The product water that flows through the membrane is significantly affected by the water temperature. At any given pressure this flow increases with increasing water temperature and is reduced at lower temperatures.

Section 2

Pre-Installation R.O. Membrane Care

Boat System Installation

&

Land Installation

Notes: _____

1. SYSTEM STORAGE AND INSTALLATION PRECAUTIONS AND INFORMATION:

A. STORAGE PRIOR TO UNCRATING:

1. Adhere to crate markings:
   - **DO NOT** store in direct sunlight;
   - **DO NOT** store above 120 degrees F / 50 degrees C;
   - **DO NOT** freeze;
   - **DO NOT** store longer than 4 months without flushing with storage chemical;
   - **STORE ONLY** on base with ARROWS UP.
   - **KEEP THE R.O. MEMBRANE ELEMENT(S) WET AT ALL TIMES.**

2. Refer to Chapter 6 of this manual for further cautions of the R.O. Membrane Element.

B. REVERSE OSMOSIS MEMBRANE ELEMENT SUSCEPTIBILITY TO CHEMICAL ATTACK:

CAUTION: Do Not expose the Sea Recovery System to intake Feed Water containing:

Hydrogen peroxide	chloramines	chloramines-T	N-chlorioisocyanurates
Chlorine dioxide	hypochlorite	chlorine	iodine
Bromine	Bromide	phenolic disinfectants	petroleum products

Any chemical, not approved in writing by Sea Recovery.

USE OF NON-AUTHORIZED OR MISUSE OF AUTHORIZED CHEMICALS VOIDS SYSTEM WARRANTY. Do not connect any water line to the System that may contain any of the above listed chemicals. Example: Do not connect the inlet of the System to the ship's potable water system if the system contains chlorinated or brominated water. These chemicals destroy the copolymer components within the system. These oxidants and others also damage the R.O. Membrane Element. The Sea Recovery Optional Fresh Water Flush Accessory removes chlorine and bromine from the ship's potable water system.

C. ARE YOU INSTALLATION COMPETENT?

Installing this Reverse Osmosis Desalination System will require understanding of:

- Thru-Hull under water fitting installation
- Thru-Hull above water fitting installation
- Electrical Circuits
- Electronic Circuits
- Electric Motors
- Hydraulic Systems and Pumps
- Liquid Pressures and Flows
- Electro Mechanical Systems
- Mechanical knowledge and skills
- Piping and Plumbing knowledge and skills

Do not attempt installation if you are not familiar with or are not proficient in the above fields of expertise.

D. CAUTION, DO NOT PERFORM INSTALLATION UNLESS:

1. The System Feed Water Sea Cock Valve [2] is closed.
2. The system main electrical disconnect switch is switched **"OFF"**, **LOCKED**, and **TAGGED**.

WARNING: ELECTRICAL SHOCK HAZARD. A Volt / Ohm Meter will be necessary. The following installation procedures expose the installer to High Voltage and electrical shock hazard. Only attempt this if you are a qualified electrician and only if surrounding conditions are safe.

2. SPECIAL CONSIDERATIONS:

LAND INSTALLATION NOTE: REFER TO PAGES 37 and 38 REGARDING FEED WATER INSTRUCTIONS FOR LAND INSTALLATIONS. OTHER THAN THE FEED WATER PICK UP REFER TO THE REST OF THIS SECTION FOR INSTALLATION.

A. INSTALLATION CAUTIONS:

1. Do not over tighten PVC fittings. If threaded pipe fittings leak after installation, remove the fitting, clean the mating threads, apply 3 to 4 wraps of Teflon tape to the male threads, apply liquid Teflon pipe sealer sparingly, and thread the parts back together. PVC fittings should only be hand tightened without the aid of a wrench.

2. The Sea Cock Valve [2], Inline Pressure Gauge [4] Sea Strainer [5], Rinse Clean Inlet Valve [54], Inline Pressure Gauge [6], and Booster Pump [7] should be installed below water level. This will aid the Booster Pump in priming.

3. Always allow hoses and tubes to enter and exit straight from the connection for a minimum of one inch prior to a bend. If stress is placed on the fitting due to a tight bend the fitting will leak and may break.

4. Avoid skin and eye contact with the membrane packaging solution. In case of skin contact, rinse the skin thoroughly with water. In case of eye contact, flush repeatedly with water and notify a physician immediately. R.O. Membrane Elements are stored in “sodium bisulfite”.

5. NEVER mount any liquid holding component of the system above an electrical or electronic circuit or device. Extensive damage to the electrical or electronic device or circuit will result if water spills from the system during maintenance and or component failure.

B. CONNECTION LINE CAUTIONS:

1. All connection lines should be as short and straight as possible using minimum fittings.
   Increased length causes line pressure loss in the Feed Water line.
   Increased length causes excessive pressure build up in the Brine Discharge line.
   Increased length causes excessive pressure build up in the Product Water line.

2. The connection lines must not be “kinked”.
   Kinks in the Feed Water line cause cavitation and continual System shut down.
   Kinks in the Brine Discharge line cause excessive pressure build up and damage.
   Kinks in the Product Water line cause excessive pressure build up and damage.

C. ACCESSIBILITY CAUTIONS:

1. This is a simple rule: Install the system and its supporting components in an accessible manner. The Aqua Matic system requires regular operator maintenance such as filter element changing. As with any Electro Mechanical system utilized in the Marine environment the Aqua Matic system will require repair from time to time. Hidden or out of reach items may become forgotten, not maintained, and cause damage to other system components. Sea Recovery will refer any end user customer complaints regarding accessibility or installation problems back to the installer.

2. The Electrical Control Touch Panel must be accessible for operation and monitoring of the system.

D. ELECTRICAL POWER REQUIREMENTS:

1. Refer to the Specifications and to the specific electrical information provided in Section 9 of this Owner's Manual and ensure that the power source is sufficiently sized to provide the correct voltage and cycles during Start Up and Operation of the Sea Recovery Aqua Matic Reverse Osmosis Desalination System.

3. DISTANCE BETWEEN COMPONENTS:

1. 50 feet (15 meters) of 3/4" (19 mm) I.D. clear braided hose is supplied for connecting the Suction Line, Low Pressure Line, and Brine Discharge Line.
2. 50 feet (15 meters) of 1/2" (12.7mm) I.D. clear braided hose is supplied for connecting the Product Water Line.
3. 1/4" (6.35 mm) OD nylon tubing is supplied with applicable components for connecting Pressure Pick Up points for the Low Pressure Transducers.
4. 20 feet (6 meters) of 3/8" (9.5mm) OD nylon tubing is supplied with Fresh Water Flush for connection to the boats pressurized fresh water line.

4. TOOLS REQUIRED FOR INSTALLATION:

Not all installations are typical, therefore, it is recommended to have a full set of Mechanic's and Electrician's tools available. No special system tools are required for installation. A separate TDS Meter, available from Sea Recovery will assist in confirming system product water quality. A volt/ohm meter (VOM) is required for system installation and commissioning to ensure proper electrical power and connection.

5. COMPONENTS SUPPLIED BY INSTALLER OR OWNER:

CAUTION: All fittings, valving, and piping installed prior to, within, and after the Sea Recovery system must not contain iron. They must be non-ferrous material (not containing iron). Iron fittings or piping will cause rust fouling and failure of the R.O. Membrane Element. The resulting failure of the R.O. Membrane Element is attributed to improper installation, is the liability of the installer, and is not covered by the Sea Recovery warranty.

1. **Water Connections to be supplied by the installer:**

Feed Inlet at [2]:	3/4" MNPT (Male National Pipe Thread U.S. Standard)
Brine Discharge at [31]:	3/4" MNPT (Male National Pipe Thread U.S. Standard)
Product at [45]:	1/2" FNPT (Female National Pipe Thread U.S. Standard)
Pressurized Fresh Water at [49]:	3/8" FNPT (Female National Pipe Thread U.S. Standard)

2. **Inlet Thru Hull Fitting** [1] with Forward Facing Scoop. The inlet Thru Hull Fitting must be minimum 3/4" and dedicated to only the Sea Recovery system. It is important that the installer utilizes a forward facing scoop so that the system receives a positive flow of water as the boat is under way. The fitting must be installed on the boats hull in a position that provides continual feed water flow without air to the system.

   CAUTION: A flush inlet thru-hull fitting will cause a vacuum as the boat is under way, and this will cause loss of feed water flow and cavitation of the Booster Pump and High Pressure Pump resulting in continual system shut down due to low feed water flow and low pressure. The resulting failure of the system to remain in operation is attributed to improper installation, is the liability of the installer, and is not covered by the Sea Recovery warranty.

   CAUTION: The Sea Recovery System must receive an uninterrupted supply of feed water without air. If the thru-hull fitting is placed in a position on the underside of the hull that allows air to

continually enter the thru-hull fitting, this will cause the system to continually shut down due to loss of feed water. The resulting failure of the system to remain in operation is attributed to improper installation, is the liability of the installer, and is not covered by the Sea Recovery warranty.

CAUTION: The Sea Recovery System must not be tied into another existing auxiliary water line already supplying another accessory on the boat. Using one Thru Hull fitting for other equipment will cause the Sea Recovery System to draw air or cavitate leading to continual system shut down. The resulting failure of the system to remain in operation is attributed to improper installation, is the liability of the installer, and is not covered by the Sea Recovery warranty.

CAUTION: If the Sea Recovery System is connected to a Sea Chest or Stand Up Pipe, **do not plumb the Sea Recovery System feed line to the "top" of the Sea Chest or Stand Up Pipe.** If plumbed into the top of these feed water arrangements, the Sea Recovery System will experience continual shut down due to air inducement into the system. The resulting failure of the system to remain in operation is attributed to improper installation, is the liability of the installer, and is not covered by the Sea Recovery warranty. **Plumb the Sea Recovery System to the "bottom" of such feed water arrangements to ensure a continual air free supply of feed water to the system.**

3. **Inlet Sea Cock Valve** [2] Quarter turn ball valve min.3/4" size, with a 3/4" MNPT connection for mating to the supplied 3/4" FNPT Inlet Connection [3] fitting.

4. **Brine Discharge Thru Hull Fitting** [37] minimum 3/4" size with a 3/4" MNPT connection for mating to the supplied 3/4" FNPT Brine Discharge Connector [30] fitting. The Brine Discharge Thru Hull Fitting must be installed above water level. If the System is installed above water level and the Brine water is discharged below water level this will cause a vacuum at the feed line when the system is not in operation which will cause the transducers to send a fault signal to the control logic which will prevent the system from starting. Always install the Brine Discharge Thru Hull Fitting ABOVE WATER LEVEL. to ensure the Brine Discharge Water exits to atmospheric pressure. Do not install a valve in the Brine Discharge line. A blockage or closed valve will cause damage to the System. The resulting damage to the system or failure of the system to start is attributed to improper installation or operation, is the liability of the installer or operator, and is not covered by the Sea Recovery warranty.

5. **Connection of the Sea Recovery Product Water Line to the boat's UNPRESSURIZED Potable Water Storage Tank [46]** requires a 1/2" FNPT connection for mating to the supplied 1/2" MNPT Product Water Connector [45] fitting. In order to avoid problems such as reverse flow (osmosis) from the tank to the system and chlorination attack of the R.O. Membrane Element, the fitting must terminate above the maximum water level. No valves should be installed in this line. A blockage or closed valve in the Product Water Line will cause extensive damage to the System and R.O. Membrane Element. The resulting damage to the system and R.O. Membrane Element is attributed to improper installation or operation, is the liability of the installer or operator, and is not covered by the Sea Recovery warranty.

6. **Connection of the Sea Recovery Fresh Water Flush sub assembly to the boat's PRESSURIZED Potable Water Line [48]** requires a 3/4" FNPT connection for mating to the 3/4" MNPT fitting supplied with the Fresh Water Flush sub assembly.

7. **Circuit Breaker** with appropriate Amperage Rating. Refer to Section 9 of this Owner's Manual.

8. **Properly sized Power Cables**. Refer to Section 9 of this Owner's Manual.

9. **An electrical power source** capable of delivering the required constant voltage and cycles during start up and operation of the System. Refer to Section 9 of this Owner's Manual.

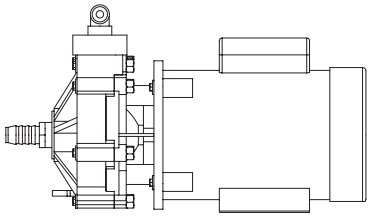
6. VISUAL PACKING LIST Aqua Matic COMPACT STYLE:

A. UNCRATING:

1. **DO NOT DISCARD ANY PACKAGING UNTIL YOU HAVE FOUND & IDENTIFIED ALL PARTS!**
2. Remove the Aqua Matic system from the shipping carton.
3. Some of the components are loose or separately packaged in the shipping container.

CONTENTS OF AQUA MATIC COMPACT SYSTEM SHIPPING CRATE

BOOSTER PUMP
P/N B016120001

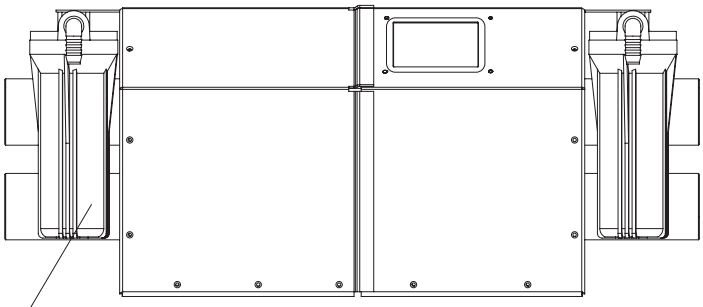


SC HEX "A"
1/4" x 1" SS
QTY: 4

WIRE NUT
YELLOW
QTY: 2

WASHER FLAT
OS 1/4" SS
QTY: 4

AQUA-MATIC COMPACT



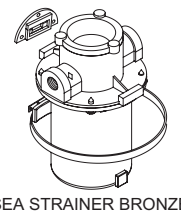
SC HEX "A"
5/16" x 2 1/4" SS
QTY: 4

WASHER FENDER
5/16" SS
QTY: 4

RUBBER MOUNT
90 LB AQM
QTY:4

Note: If the Commercial Prefilter is included
the System will not include the standard 10" Prefilters
shown on the left of the above illusstration

INSTALLATION KIT AQMC P/N B001120001

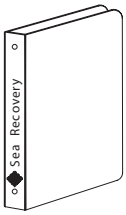


SEA STRAINER BRONZE
3/4" FNPT PORTS
P/N 041051239
QTY: 1

ADAP 3/4" MNPT x 3/4"
BARB PVC
QTY: 2

WASHER FLAT #10 SS
QTY: 5

SC PHIL PAN"A" #10 X 1 SS
QTY: 5



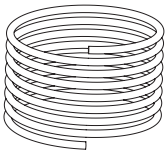
OWNERS MANUAL AQMC-
P/N B65112001
QTY:1

Feed, Brine Discharge,
& Fresh Water Flush
Connection

ELBOW 90º 3/4" FNPT
QTY: 2

ELBOW 90º
3/4" MNPT x 3/4" BARB PVC
QTY: 2

HOSE CLAMP 3/4" SS
QTY: 10



HOSE CLEAR BRAID 3/4" I.D.
QTY: 50 FEET (15.24 METERS)

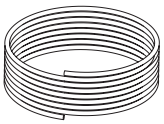
Product Water Connection

ELBOW 90º 1/2 FNPT
QTY: 1

NIPPLE 1/2" MNPT x CLOSE PVC
QTY: 1

ADAP 1/2" MNPT x 1/2" BARB NYLON
QTY: 1

HOSE CLAMP 1/2" SS
QTY: 4



HOSE CLEAR BRAID 1/2" I.D.
QTY: 50 FEET (15.24 METERS)

7. VISUAL PACKING LIST Aqua Matic MODULAR STYLE:

A. UNCRATING:

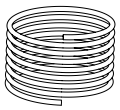
1. DO NOT DISCARD ANY PACKAGING UNTIL YOU HAVE FOUND & IDENTIFIED ALL PARTS!
2. Remove the Aqua Matic Modular system's components from the shipping carton.
3. The components are loose or separately packaged in the shipping container.

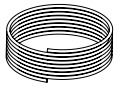
CONTENTS OF SHIPPING CRATE
Aqua Matic v3.00 MODULAR STYLE

OWNER'S MANUAL AQM
QTY 1
P/N B65112001

INSTALLATION KIT AQM MODULAR QTY 1 P/N B011130001

HOSE CLEAR BRAID 3/4" I.D.
QTY 50 FEET / 15.24 METERS
P/N 0328066666





HOSE CLEAR BRAID 1/2" I.D.
QTY 50 FEET / 15.24 METERS
P/N 0328065066

TUBE 1/4" O.D. BLACK
QTY 25 FEET / 7.62 METERS
P/N 0312121969

TUBE 3/8" O.D. BLACK
QTY 20 FEET / 6 METERS
P/N 0312123569

PRESSURE PICK-UP MANIFOLD 3/4 X 1/4
QTY 2 P/N

ELBOW 90 3/4 MNPT X 3/4 BARB PVC
QTY 2 P/N 0101073783

ADAP 3/4 MNPT X 3/4 BARB PVC
QTY 6 P/N 0101653783

SC PHIL PAN "A" 10 X 1 SS
QTY 5 P/N 061170628016

WASHER FENDER 5/16" SS
QTY 4 P/N 061110049000

SC HEX "A" 5/16 X 2 1/4 SS
QTY 4 P/N 061172149036

ADAP 3/4" MNPT X 3/4" BARB PVC
QTY 2

ELBOW 90º 3/4" FNPT
QTY 2

SC HEX "A" 1/4 X 1 SS
QTY 16 P/N 061172143016

WASHER FLAT #10 SS
QTY 5 P/N 061080028000

WASHER SPLIT LOCK 1/4" SS
QTY 16

WASHER FLAT OS 1/4" SS
QTY 16 P/N 061100043000

ADAP 1/2 MNPT X 1/2 BARB NYLON
QTY 1 P/N 0112652500

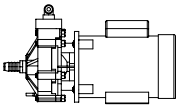
HOSE CLAMP 3/4" SS
QTY 18 P/N 05181434AA

HOSE CLAMP 1/2 SS
QTY 4 P/N 05181432AA

REDUCER 3/8 TUBE X 1/4 TUBE JQ
QTY 1 P/N 0204690100

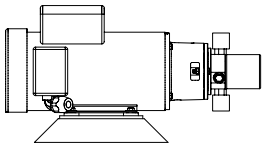
RUBBER MOUNT 90LB AQM
QTY 4 P/N 2115031700

SEA STRAINER 3/4" BRONZE
QTY 1
P/N 0421051239



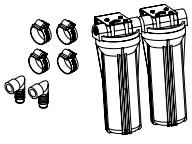
BOOSTER PUMP
P/N B016120001

SC HEX "A" 1/4 X 1 SS QTY 4
WASHER FLAT OS 1/4 SS QTY 4
WIRE NUT YELLOW QTY 2



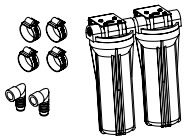
HIGH PRESSURE PUMP & MOTOR

SC HEX 1/4 X 1 1/2 SS QTY 4
WASHER FENDER 1/4 SS QTY 4
RUBBER MOUNT 90LB AQM QTY 4



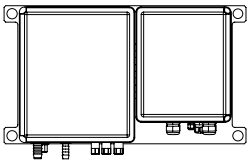
DUAL PREFILTER
NOT SUPPLIED IF SYSTEM
WAS ORDERED WITH
COMMERCIAL PREFILTER

HOSE CLAMP 3/4" SS QTY 4
ELB90 3/4 MNPT X 3/4 BARB PVC QTY 2



DUAL POST FILTER
CHARCOAL FILTER & pH FILTER

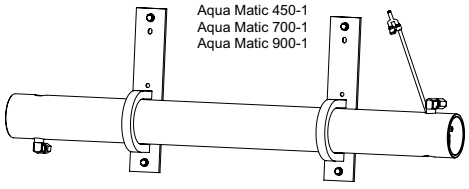
HOSE CLAMP 1/2" SS QTY 4
ELB90 3/8 MNPT X 1/2 BARB PVC QTY 2



CONTROL PANEL

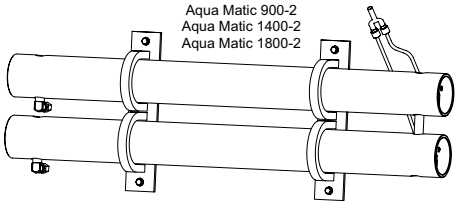
SC HEX 1/4 X 2 1/4 SS QTY 4
WASHER FENDER 1/4 SS QTY 4
RUBBER MOUNT 90LB AQM QTY 4

REVERSE OSMOSIS MEMBRANE ELEMENT & PRESSURE VESSEL
Aqua Matic 450-1
Aqua Matic 700-1
Aqua Matic 900-1



OR

REVERSE OSMOSIS MEMBRANE ELEMENT & PRESSURE VESSEL
Aqua Matic 900-2
Aqua Matic 1400-2
Aqua Matic 1800-2



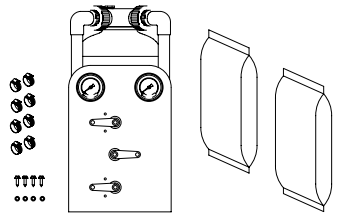
SC HEX "A" 1/4 X 1 SS
QTY 4 061172143016

WASHER SPLIT LOCK 1/4" SS
QTY 4

WASHER FLAT OS 1/4" SS
QTY 4 P/N 061100043000

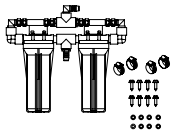
HIGH PRESSURE HOSE 6 FEET
QTY 3

OPTIONAL ACCESSORIES FOR THE AQUA MATIC



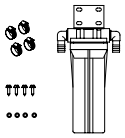
MULTI-MEDIA FILTER ASSY P/N B071080002

MEDIA SAND A100	QTY: 25 LBS
MEDIA GARNET 8-12	QTY: 17 LBS
HOSE CLAMP 3/4" SS	QTY: 8
SC HEX "A" 1/4" x 1 SS	QTY: 4
WASHER FLAT OS 1/4" SS	QTY: 4



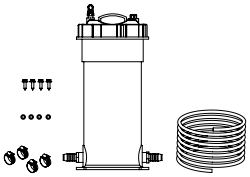
DUAL PLANKTON FILTER P/N B008800002

HOSE CLAMP 3/4" SS	QTY: 4
SC HEX "A" 1/4" x 1" SS	QTY: 8
SC HEX "A" 1/4" x 1" SS	QTY: 8



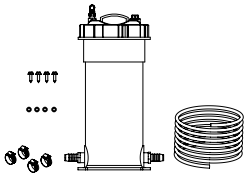
PLANKTON FILTER SINGLE P/N B008800001

HOSE CLAMP 3/4" SS	QTY: 8
SC HEX "A" 1/4 x 1" SS	QTY: 4
WASHER FLAT OS 1/4" SS	QTY: 4



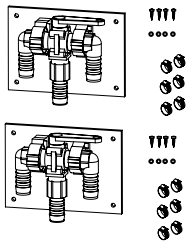
COMMERCIAL PREFILTER P/N B109120001

ADAP 3/4" MNPT x 3/4" BARB	QTY: 2
HOSE CLAMP 3/4" SS	QTY: 4
SC HEX "A" 1/4" x 1" SS	QTY: 4
WASHER FLAT OS 1/4" SS	QTY: 4
TUBE 1/4" OD BLACK NYLON	QTY: 15 FT



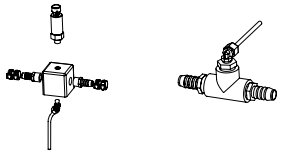
OIL/WATER SEPERATOR P/N B111120001

ADAP 3/4" MNPT x 3/4" BARB	QTY: 2
HOSE CLAMP 3/4" SS	QTY: 4
SC HEX "A" 1/4" x 1" SS	QTY: 4
WASHER FLAT OS 1/4" SS	QTY: 4
TUBE 1/4" OD BLACK NYLON	QTY: 15 FT



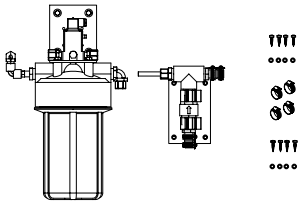
CLEANING & RINSE VALVE KIT P/N B591080001

HOSE CLAMP 3/4" SS	QTY: 12
SC PHIL PAN "A" #10 X 1 SS	QTY: 8
WASHER FLAT OS #10 NYLON	QTY: 8



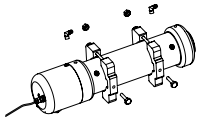
DIFFERENTIAL LOW PRESSURE TRANSDUCER ASSY P/N B14740001

TRANSDUCER 0-200 PSI SS	QTY: 1
MANIFOLD DIFFERENTIAL PRESSURE TEE	QTY: 1
ADAP3/4" MNPT x 3/4" BARB PVC	QTY: 2
HOSE CLAMP 3/4" SS	QTY: 4
TUBE 1/4" OD BLACK	QTY: 10 FT
ELBOW 90º 1/4" OD TUBE x 1/4" MPT PLASTIC	QTY: 1



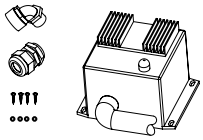
FRESH WATER FLUSH SYS AW-AT (B598000002)

CARBON FILTER WITH ATTACHED BRACKET	QTY: 1
CHECK VALVE WITH BRACKET	QTY: 1
BOWL TIGHTENING WRENCH	QTY: 1
HOSE CLAMP 3/4" SS	QTY: 4
SC HEX "A" 5/16" x 1 1/4" SS	QTY: 4
WASHER FLAT OS 5.16" SS	QTY: 4
SC PHIL PAN "A" 10 x 1" SS	QTY: 4
WASHER FLAT OS #10 SS	QTY: 4



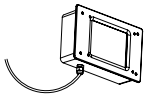
UV STERLIZER 1 GPM 12 VDC B52680000B

UV STERILIZER 1 GPM 12 VDC	QTY: 1
ELBOW 90º 3/8" TUBE x 1/4" MNPT PLASTIC	QTY: 2
BOLT HEX 1/4-20 x 1 1/4" SS	QTY: 2
NUT LOCKING 1/4-20 x 1 1/4" SS	QTY: 2

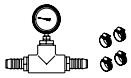


SOFT START ASSY AW P/N B59680006

SOFT START ASSY W/ 10 FOOT CABLE	QTY: 1
STRAIN RELIEF 90º CG90-6250 (FOR HPP MOTOR)	QTY: 1
STRAIN RELIEF PG-21 (FOR CONTROL BOX)	QTY: 1
SC PHIL PAN "A" #10 X 1 SS	QTY: 4
WASHER FLAT OS #10 SS	QTY: 4

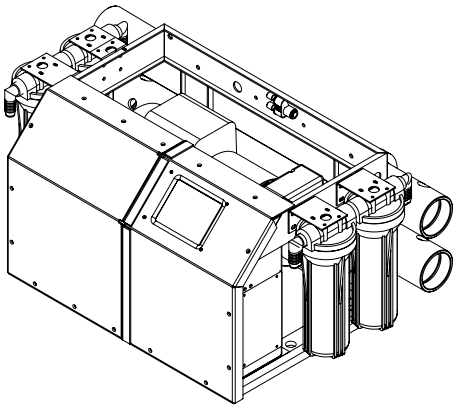


REMOTE AQUA-MATIC P/N B612120001

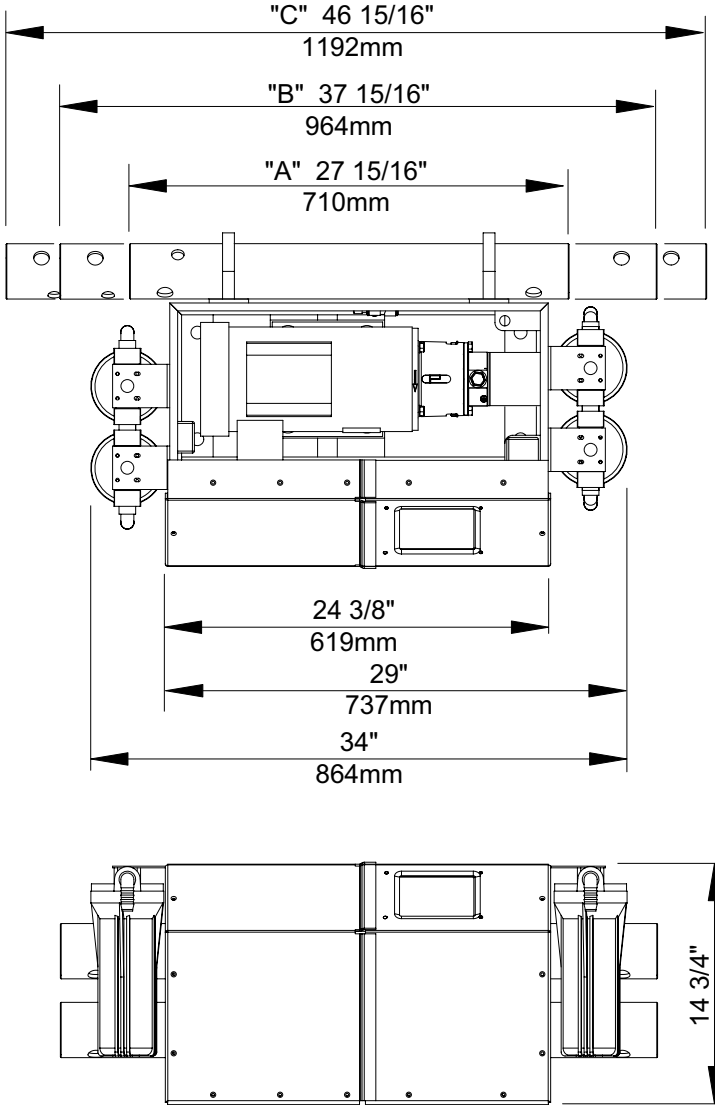


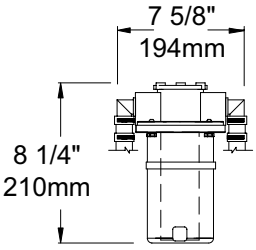
B148000001 DIFFERENTIAL LOW PRES GAUGE ASSY

8. DIMENSIONS Aqua Matic COMPACT STYLE:

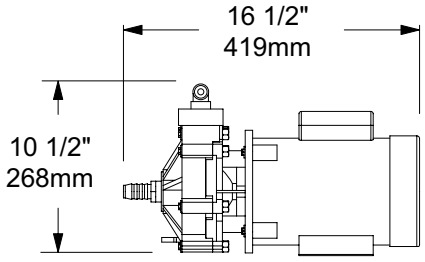


Overall Width (length of R.O. Membrane Vessel)
"A" Aqua Matic Compact 450-1 & 900-2
"B" Aqua Matic Compact 700-1 & 1400-2
"C" Aqua Matic Compact 900-1 & 1800-2

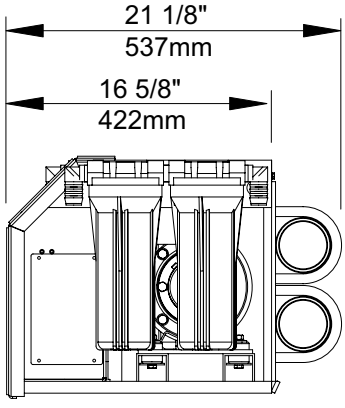




SEA STRAINER



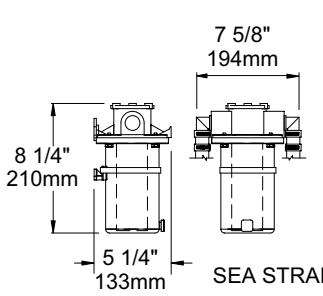
BOOSTER PUMP



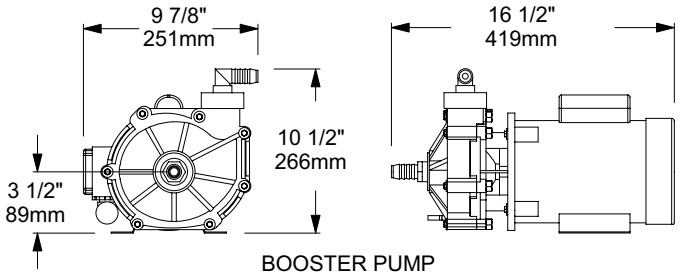
9. DIMENSIONS Aqua Matic MODULAR STYLE:

a. Aqua Matic Modular Component Dimensions are Illustrated below.
b. Other Aqua Matic Modular Individual Component Dimensions, standard and optional, are Illustrated on page 14 of this section.

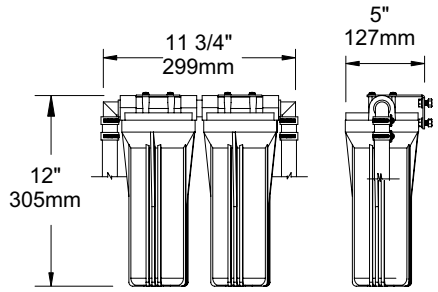
AQUA MATIC MODULAR STYLE COMPONENT DIMENSIONS



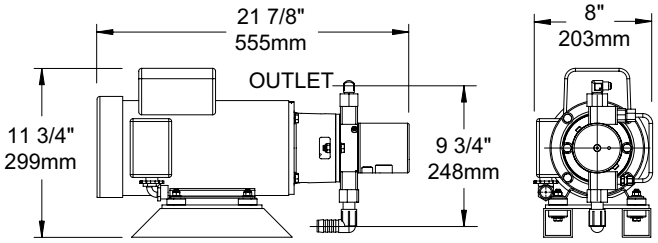
SEA STRAINER



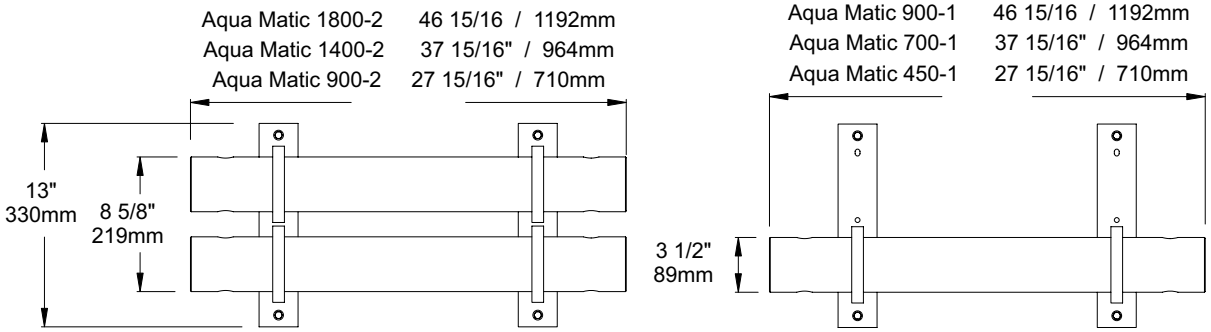
BOOSTER PUMP



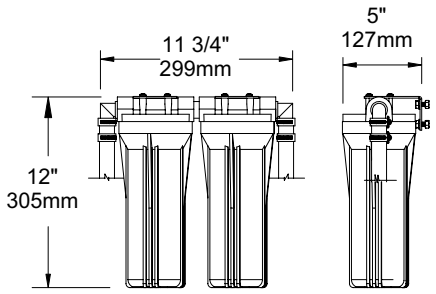
DUAL PRE-FILTER



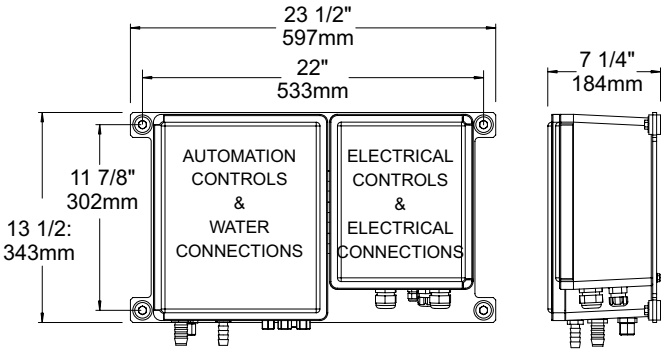
HIGH PRESSURE PUMP



REVERSE OSMOSIS MEMBRANE & VESSEL ASSEMBLY



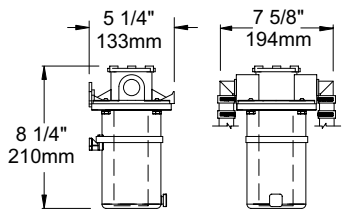
DUAL POST FILTERS
CHARCOAL & pH NEUTRALIZER



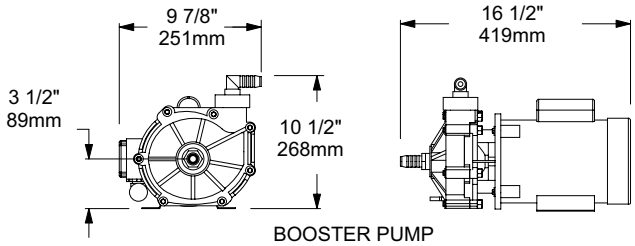
CONTROL PANEL

10. DIMENSIONS Aqua Matic Separate Components and Optional Accessories:

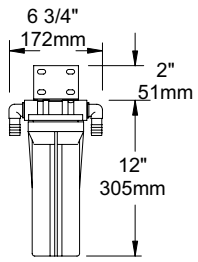
AQUA MATIC STANDARD AND OPTIONAL INDIVIDUAL COMPONENT DIMENSIONS



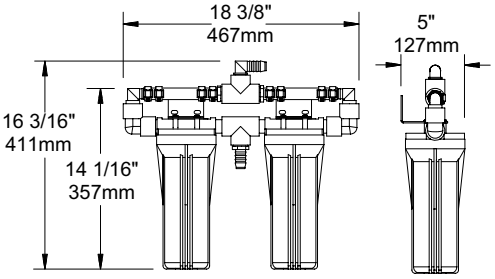
SEA STRAINER



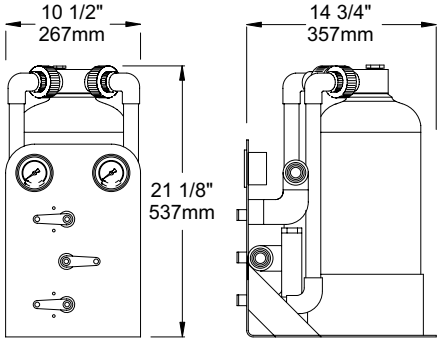
BOOSTER PUMP



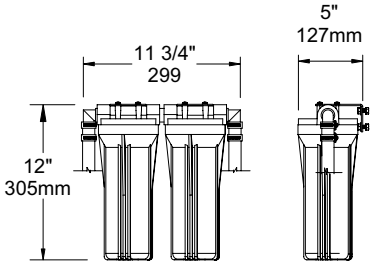
SINGLE
PLANKTON FILTER



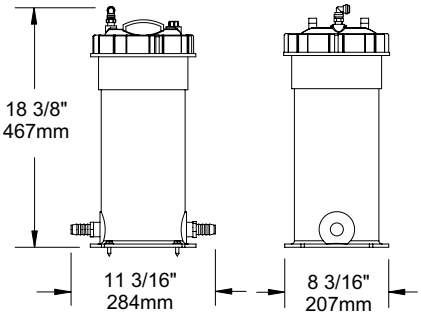
DUAL PLANKTON FILTER



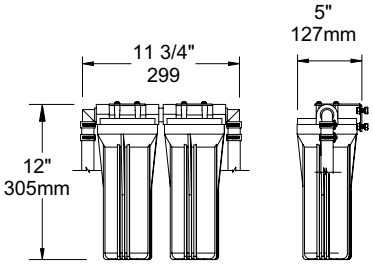
MULTI-MEDIA FILTER



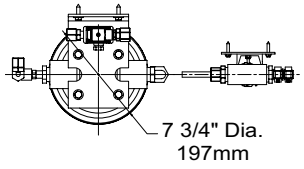
DUAL PRE-FILTERS

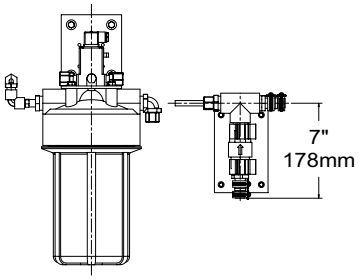


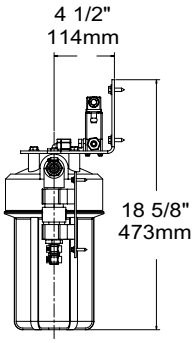
COMMERCIAL FILTER / OWS



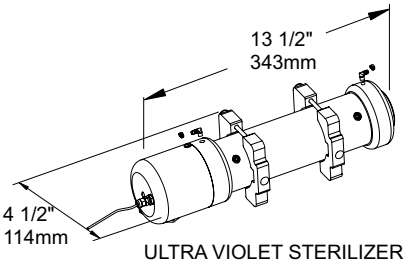
DUAL POST-FILTERS
CHARCOAL & pH NEUTRALIZER



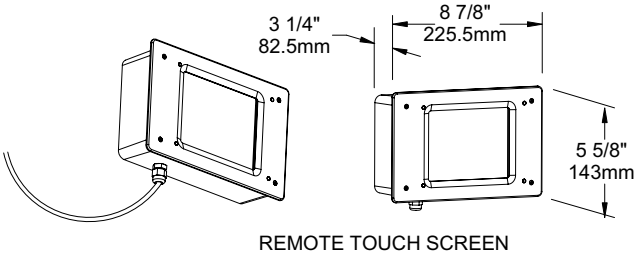




FRESH WATER FLUSH
ACTUATED 2-WAY VALVE,
CARBON FILTER,
AND CHECK VALVE



ULTRA VIOLET STERILIZER



REMOTE TOUCH SCREEN

11. PIPING AND INTERCONNECT DIAGRAMS

Several different Piping and Interconnect Diagrams are illustrated on the following pages. These illustrations include Standard configurations as well as various Optional Accessory configurations.

Determine the Prefiltration and Post Filtration components that were supplied with the Aqua Matic being installed. Locate the appropriate diagram from the following pages. Interconnect the components as per the appropriate diagram.

Following these Piping and Interconnect Diagrams are additional illustrations showing all possible Prefiltration configurations.

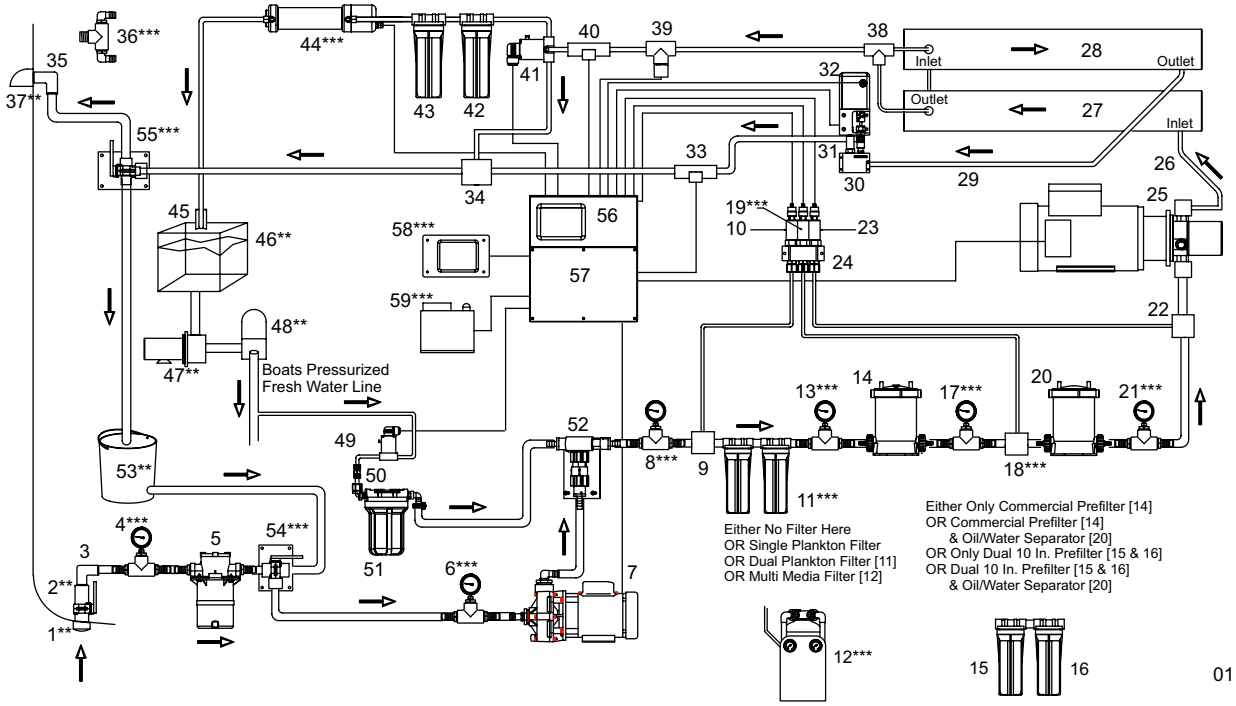
All in all, there are nine (9) possible Prefiltration configurations using standard and optional accessories.

I.D. of Components & Options

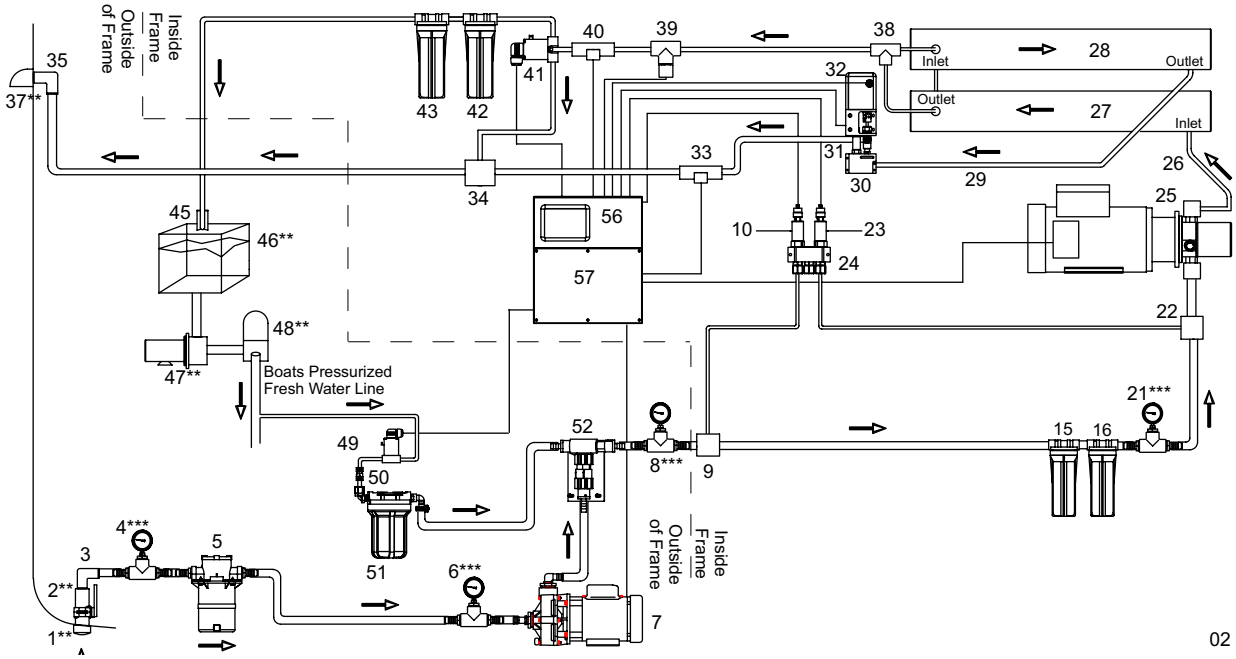
1. Inlet Thru Hull**
2. Sea Cock Valve**
3. Inlet Connection
4. Inline Pressure Gauge***
5. Sea Strainer
6. Inline Pressure Gauge***
7. Booster Pump
8. Inline Pressure Gauge***
9. T-Connector Pressure Pick-up
10. Low Pressure Transducer #1
11. Plankton Filter***
12. Multi-Media Filter
13. Inline Pressure Gauge***
14. Commercial Pre-Filter
15. Dual Pre-Filter 20 micron
16. Dual Pre-Filter 5 micron
17. Inline Pressure Gauge***
18. T-Connector Pressure Pick-up***
19. Differential Pressure Transducer***
20. Oil Water Separator
21. Inline Pressure Gauge***
22. T-Connector Pressure Pick-up
23. Low Pressure Transducer #2
24. Transducer Manifold
25. High Pressure Pump & Motor
26. High Pressure Hose
27. Membrane & Vessel #1
28. Membrane & Vessel #2
29. High Pressure Hose
30. High Pressure Manifold
31. High Pressure Transducer
32. Auto. Back Pressure Regulator
33. Flow Meter - Brine Discharge
34. Brine Discharge T-Connection
35. Brine Discharge Connector
36. MM Filter Discharge Fitting***
37. Thru Hull Discharge Fitting**
38. T-Connector Product Water
39. Salinity Probe
40. Flow Meter - Product Water
41. 3-way Diversion Valve
42. Charcoal Filter
43. pH Neutralizer
44. U.V. Sterilizer***
45. Product Water Connector
46. Potable Water Storage Tank**
47. Fresh Water Pressure Pump**
48. Air Entrainment Tank (Accumulator) **
49. Fresh Water Flush 2-Way Solenoid Valve
50. Fresh Water Flush Check Valve
51. Fresh Water Flush Carbon Filter
52. Fresh Water Flush Feed Check Valve
53. Cleaning Bucket**
54. Rinse Clean Inlet Valve***
55. Rinse Clean Outlet Valve***
56. System Touch Panel
57. Electrical Control Box
58. Remote Control Touch Panel***
59. Soft Start***

** = Owner/Installer supplied, *** = Optional

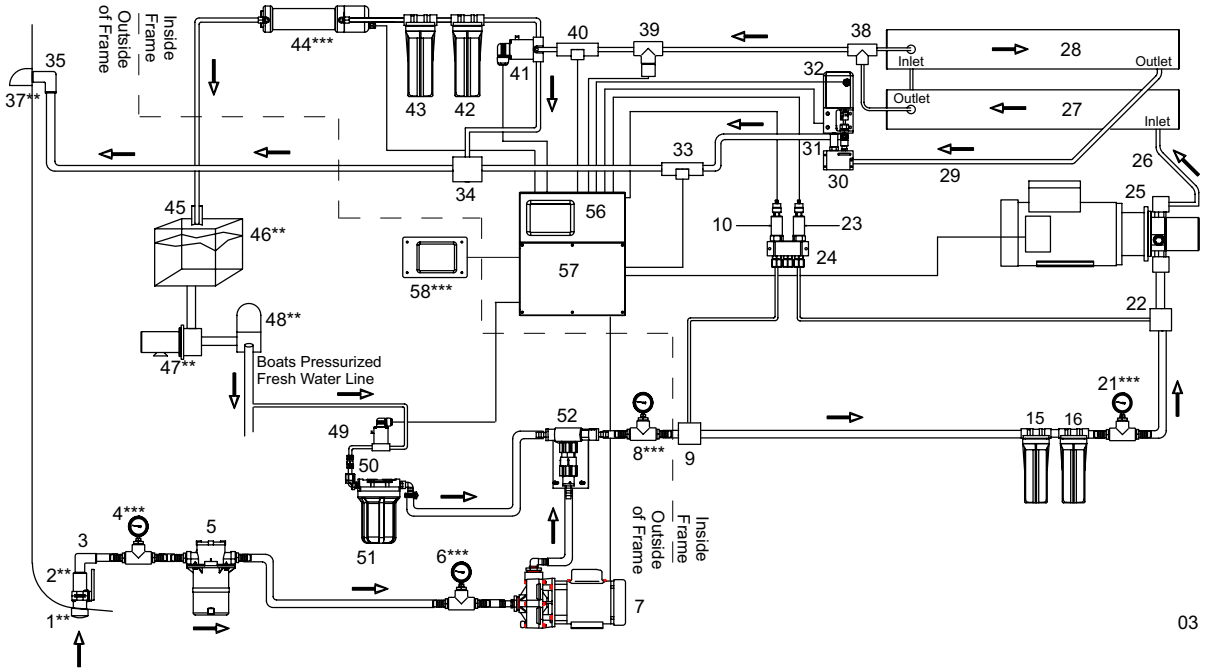
Aqua Matic v3.00 Component Identification Piping and Interconnect Diagram
This diagram is for reference only to illustrate "either / or Prefiltration Options, all Post Filtration Options, Differential Pressure Transducer, the Rinse Clean Valves, Fresh Water Flush, Remote Touch Pad, and Soft Motor Starter.
Note: Placement of Pressure Pick-Up Ts depends on specific Prefiltration Configuration.



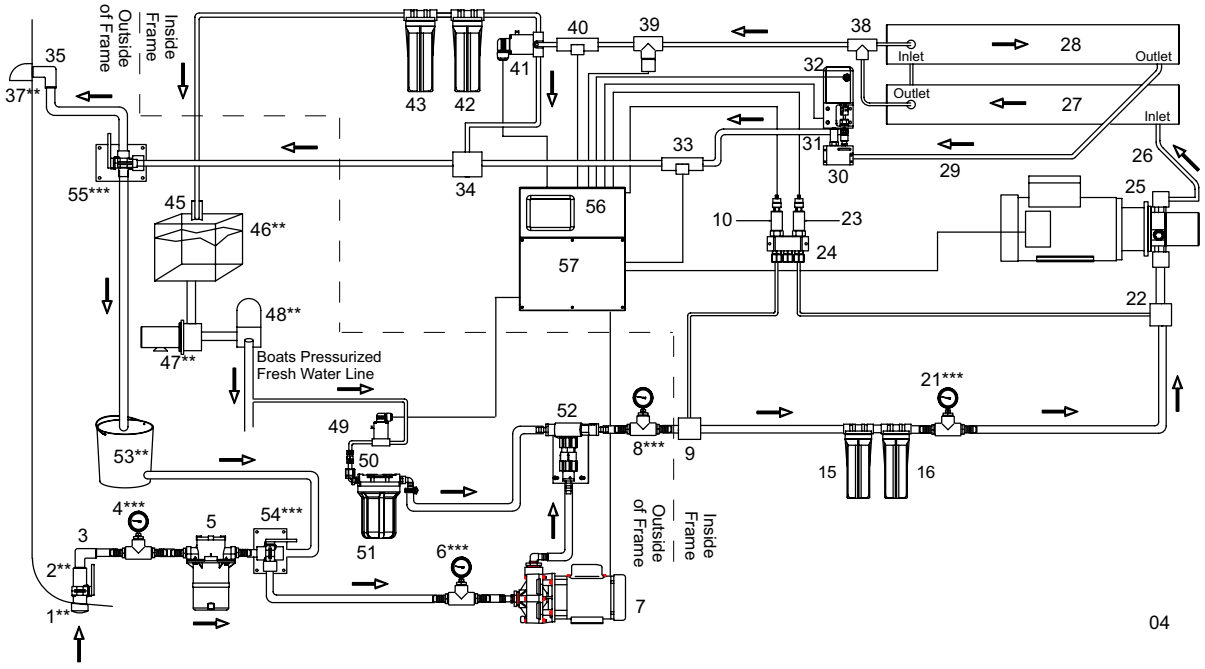
Aqua Matic v 3.0 Piping & Interconnect Diagram with the following Configuration & Options:
Prefiltration: Dual 10 inch Prefilters [15 & 16], Inline Vacuum/Pressure Gauges [4, 6, 8, & 21]
Pressure Transducers: [10, 23, & 31]
Post Filtration: Charcoal Filter [42], and pH Neutralizer [43]
Automatic Fresh Water Flush System
Cleaning System: none
Electrical Options: none



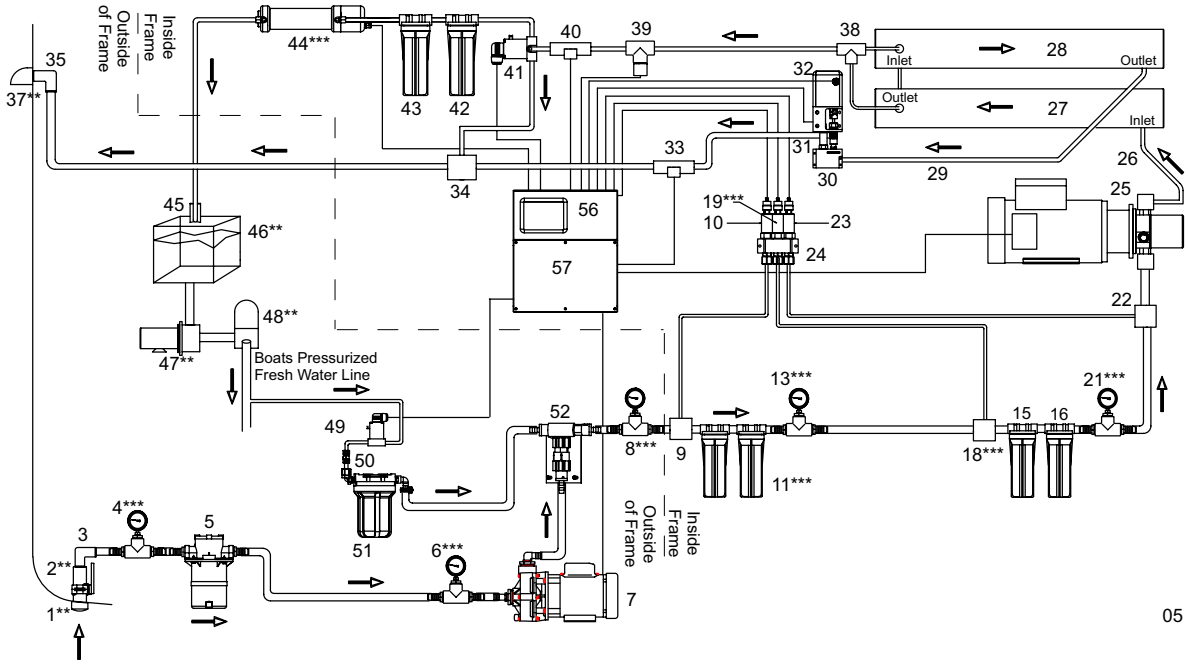
Aqua Matic v 3.0 Piping & Interconnect Diagram with the following Configuration & Options:
Prefiltration: Dual 10 inch Prefilters [15 & 16], Inline Vacuum/Pressure Gauges [4, 6, 8, & 21]
Pressure Transducers: [10, 23, & 31]
Post Filtration: Charcoal Filter [42], pH Neutralizer [43], and Ultra Violet Sterilizer [44]
Automatic Fresh Water Flush System
Cleaning System: none
Electrical Options: Touch Pad Remote Control



Aqua Matic v 3.0 Piping & Interconnect Diagram with the following Configuration & Options:
Prefiltration: Dual 10 inch Prefilters [15 & 16], Inline Vacuum/Pressure Gauges [4, 6, 8, & 21]
Pressure Transducers: [10, 23, & 31]
Post Filtration: Charcoal Filter [42], and pH Neutralizer [43]
Automatic Fresh Water Flush System
Cleaning System: Inlet Rinse/Clean Valve [54], and Outlet Rinse/Clean Valve [55]
Electrical Options: none

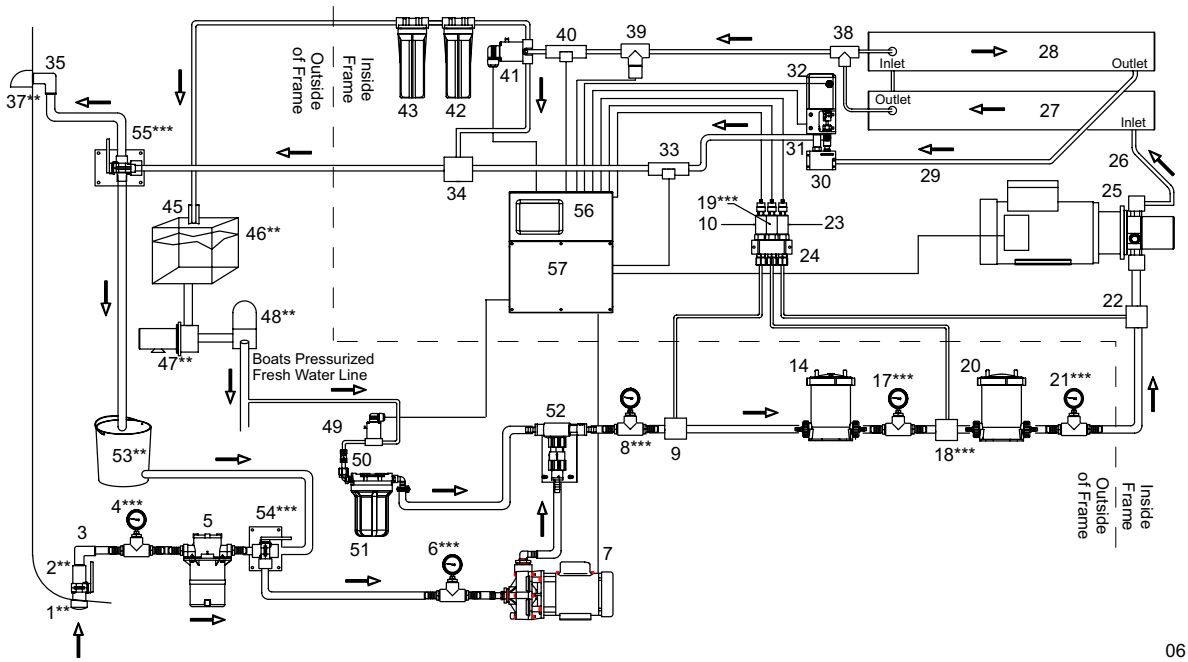


Aqua Matic v 3.0 Piping & Interconnect Diagram with the following Configuration & Options:
Prefiltration: Dual Plankton Filter [11], Dual 10 inch Prefilters [15 & 16], Inline Vacuum/Pressure Gauges [4, 6, 8, 13 & 21]
Pressure Transducers: [10, 23, & 31], and Differential Pressure Transducer [19]
Post Filtration: Charcoal Filter [42], pH Neutralizer [43], and Ultra Violet Sterilizer [44]
Automatic Fresh Water Flush System
Cleaning System: none
Electrical Options: none



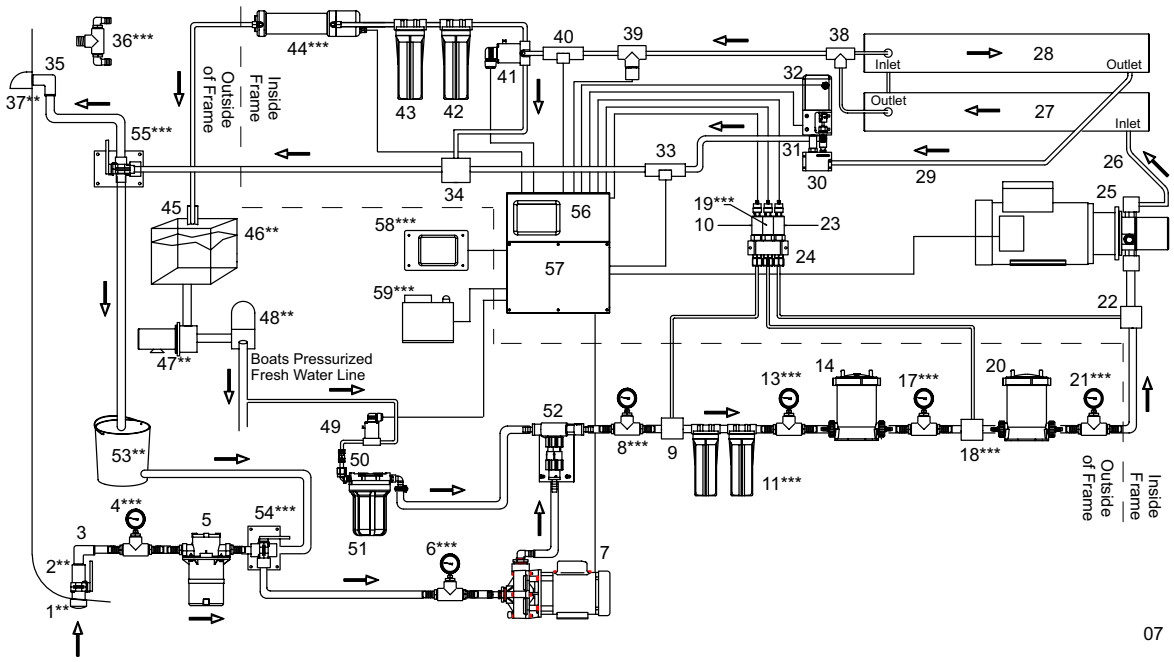
05

Aqua Matic v 3.0 Piping & Interconnect Diagram with the following Configuration & Options:
Prefiltration: Commercial Prefilter [14], Oil/Water Separator [20], and Inline Vacuum/Pressure Gauges [4, 6, 8, 17, & 21]
Pressure Transducers: [10, 19, 23, & 31]
Post Filtration: Charcoal Filter [42], and pH Neutralizer [43]
Automatic Fresh Water Flush System
Cleaning System: Inlet Rinse/Clean Valve [54], and Outlet Rinse/Clean Valve [55]
Electrical Options: none



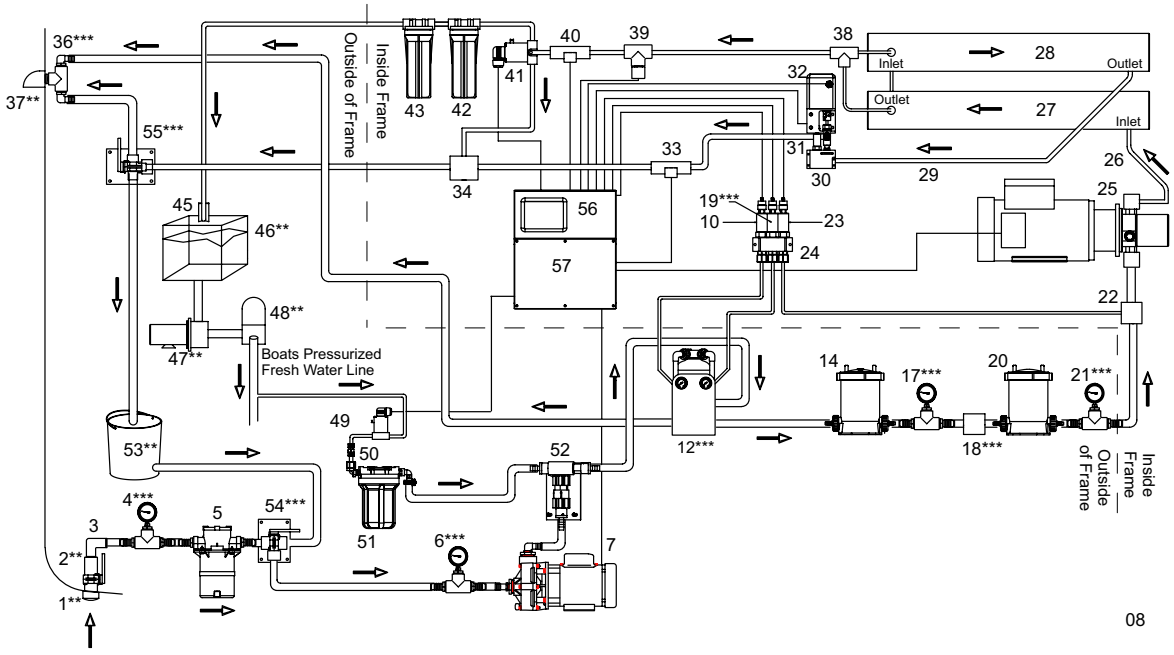
06

Aqua Matic v 3.0 Piping & Interconnect Diagram with the following Configuration & Options:
Prefiltration: Dual Plankton Filter [11], Commercial Prefilter [14], Oil/Water Separator [20], and Inline Vacuum/Pressure Gauges [4, 6, 8, 13, 17, & 21]
Pressure Transducers: [10, 19, 23, & 31]
Post Filtration: Charcoal Filter [42], pH Neutralizer [43], and Ultra Violet Sterilizer [44]
Automatic Fresh Water Flush System
Cleaning System: Inlet Rinse/Clean Valve [54], and Outlet Rinse/Clean Valve [55]
Electrical Options: Touch Pad Remote Control [58], and Soft Motor Starter [59]



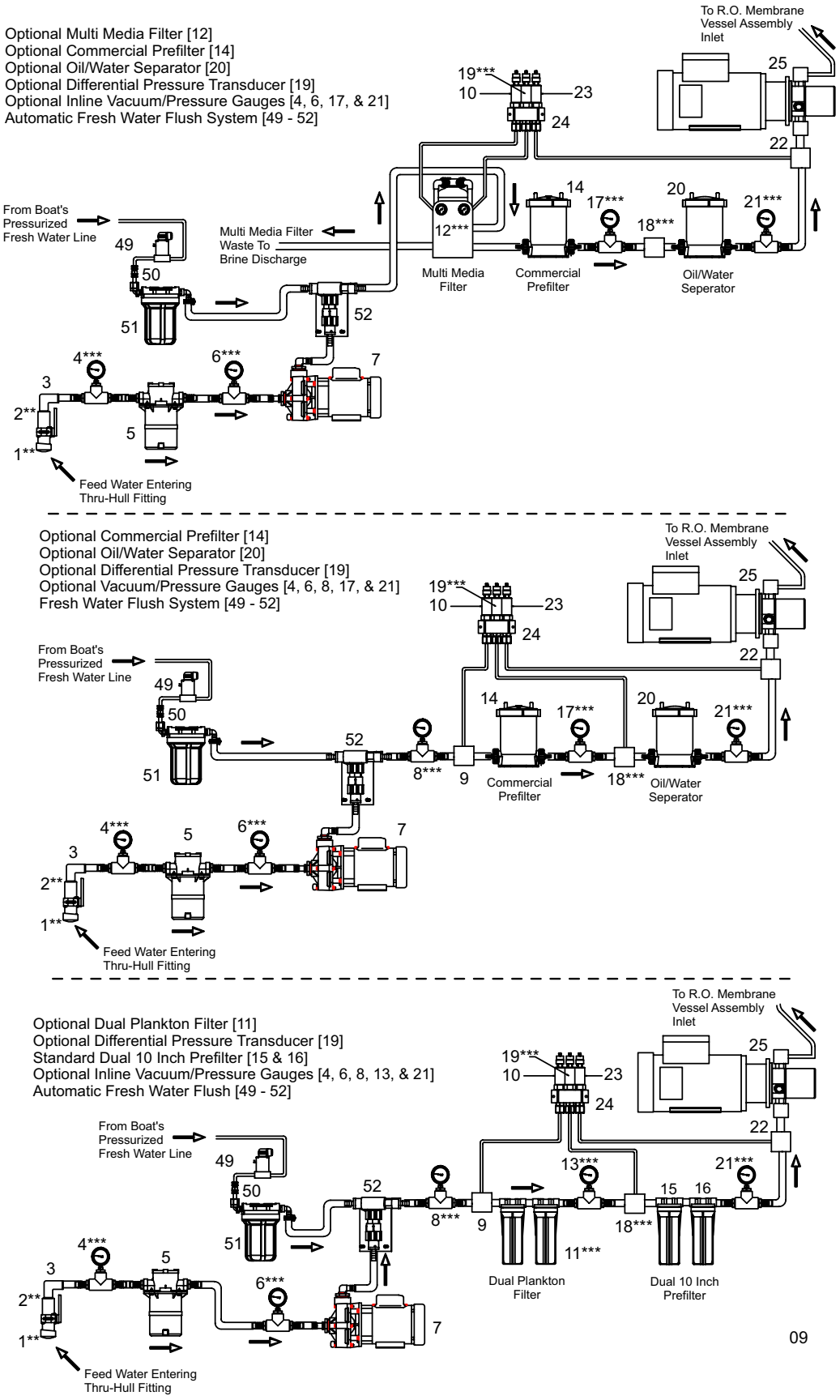
07

Aqua Matic v 3.0 Piping & Interconnect Diagram with the following Configuration & Options:
Prefiltration: Multi Media Filter [12], Commercial Prefilter [14], Oil/Water Separator [20], and Inline Vacuum/Pressure Gauges [4, 6, 17, & 21]
Pressure Transducers: [10, 19, 23, & 31]
Post Filtration: Charcoal Filter [42], and pH Neutralizer [43]
Automatic Fresh Water Flush System
Cleaning System: Inlet Rinse/Clean Valve [54], and Outlet Rinse/Clean Valve [55]
Electrical Options: none



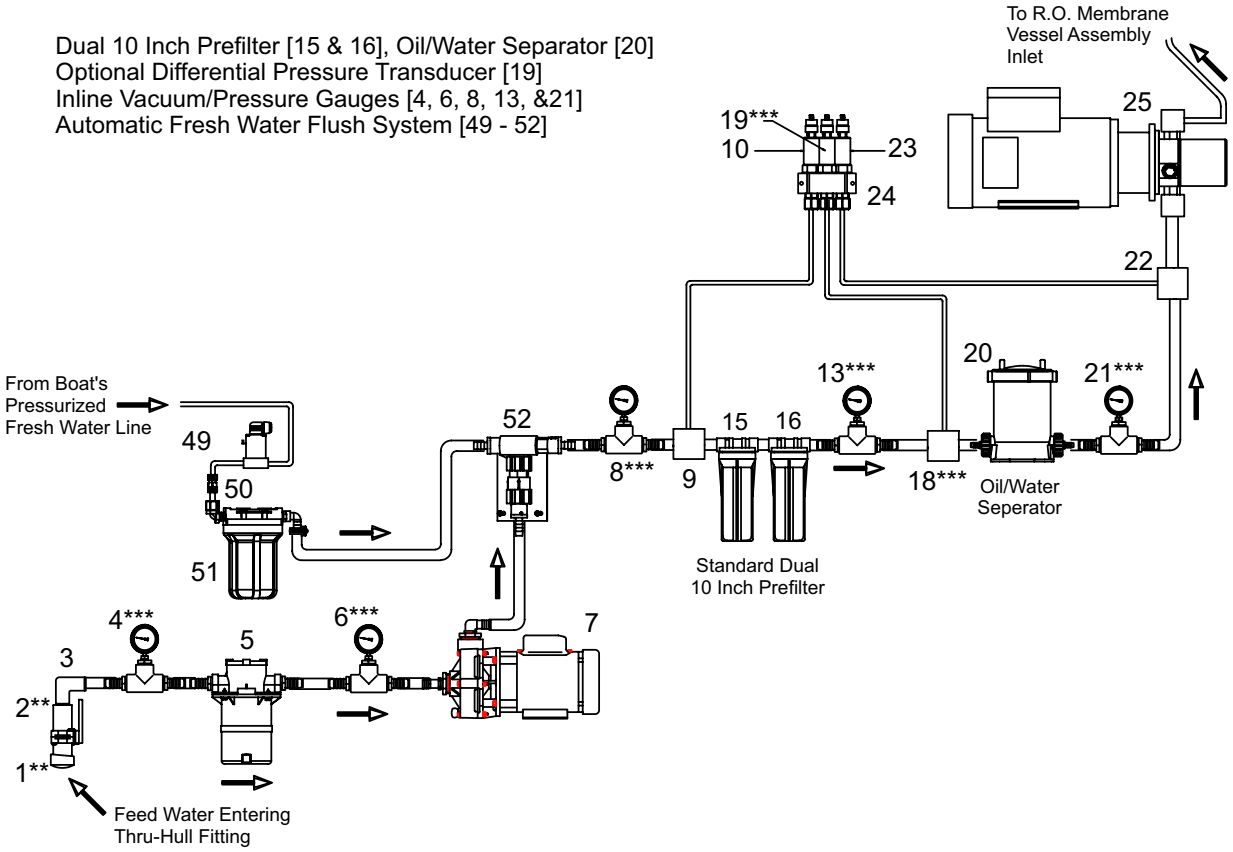
08

Most Common Prefiltration Options and Configurations

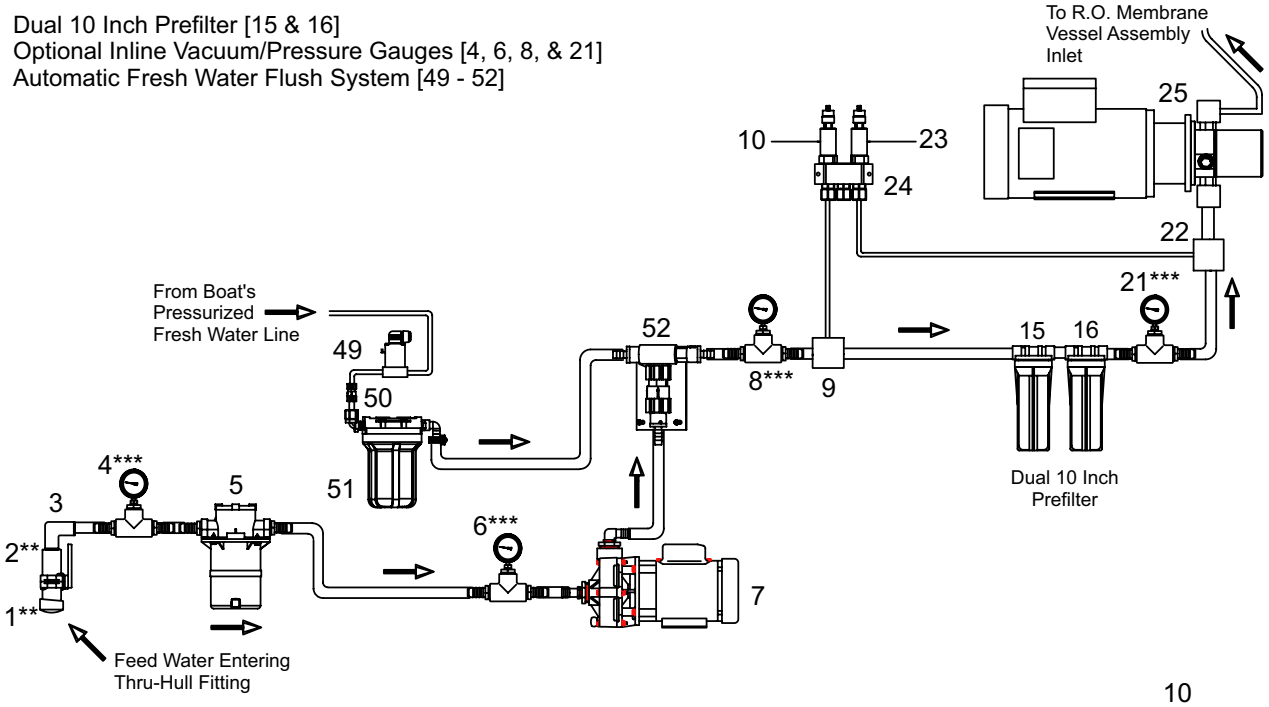


Other Prefiltration Configurations

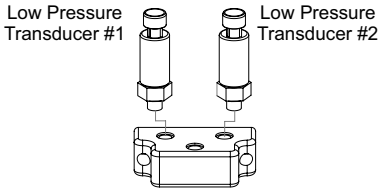
Dual 10 Inch Prefilter [15 & 16], Oil/Water Separator [20]
Optional Differential Pressure Transducer [19]
Inline Vacuum/Pressure Gauges [4, 6, 8, 13, &21]
Automatic Fresh Water Flush System [49 - 52]



Dual 10 Inch Prefilter [15 & 16]
Optional Inline Vacuum/Pressure Gauges [4, 6, 8, & 21]
Automatic Fresh Water Flush System [49 - 52]



12. EXPLANATION OF PRESSURE TRANSDUCERS:



Standard Transducers: The Illustration to the right shows the Standard Low Pressure Transducers included with each Aqua Matic System.

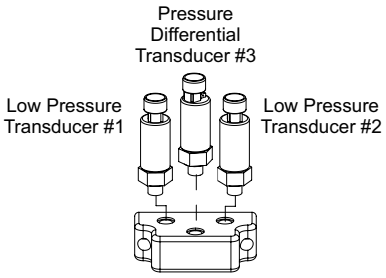
a. Low Pressure Transducer #1 [8] measures the pressure into the Prefiltration. This is the pressure exiting from the Booster Pump.

Depending on Optional Prefiltration Configuration the Pressure Pick Up T [7] for Low Pressure Transducer #1 [8] is sometimes located inside the System Frame, sometimes located outside the System Frame, and sometimes replaced by a pressure pick up at the first individual prefiltration component as illustrated and described in the previous 10 pages and the following 4 pages.

b. Low Pressure Transducer #2 [17] measures the pressure exiting the last Prefilter. This is the pressure entering the High Pressure Pump.

The difference of pressure registered by Low Pressure Transducer #1 [8] and Low Pressure Transducer #2 [17] equates to the amount of line loss, or pressure loss, across the prefiltration. As the Prefiltation elements become fouled the pressure registered by Low Pressure Transducer #1 [8] increases and the pressure registered by Low Pressure Transducer #2 [17] decreases.

The Pressure Pick Up T [16] for Low Pressure Transducer #2 [17] is always located inside the System Frame and always pre-plumbed to the Low Pressure Transducer #2 [17].



The **Optional Differential Pressure Transducer**, located in the center of the Illustration to the right, measures the pressure between two Prefiltration components. The difference of the pressure into and out of a Prefiltration component is the "differential" across that given Prefilter.

When the System is equipped with two (2) or more prefiltration components, such as a Commercial Prefilter [14] and Oil/Water Separator [15] it is helpful to know the pressure across each of them. Knowing the pressure across each filter allows the operator to easily diagnose which of the filters is dirty and requires changing.

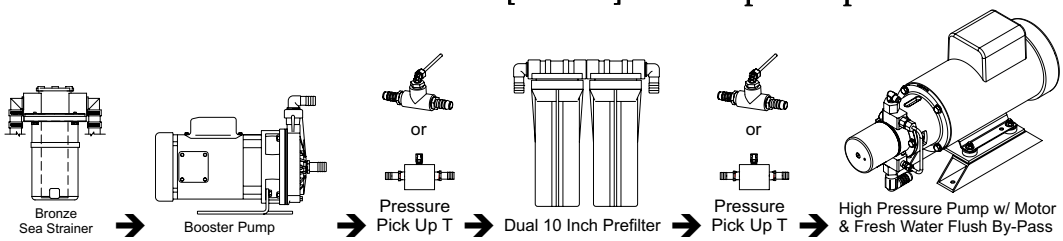
The Differential Pressure Transducer #3 [12] will pay for itself in a very short period of time through less time spent troubleshooting dirty filter elements.

Pick Up T [11] for Differential Pressure Transducer #3 [12] is always plumbed in the Feed Line at the appropriate location by the Installer and connected to the Differential Pressure Transducer #3 [12] with a 1/4" OD Tube by the Installer.

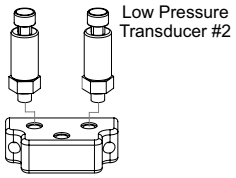
13. PREFILTRATION CONFIGURATIONS:

The following Illustrations show various Prefiltration and Pressure Transducer Options, Placement, and Configuration in a more simplified manner. Determine which prefiltration configuration your system has been supplied with and plan component placement accordingly.

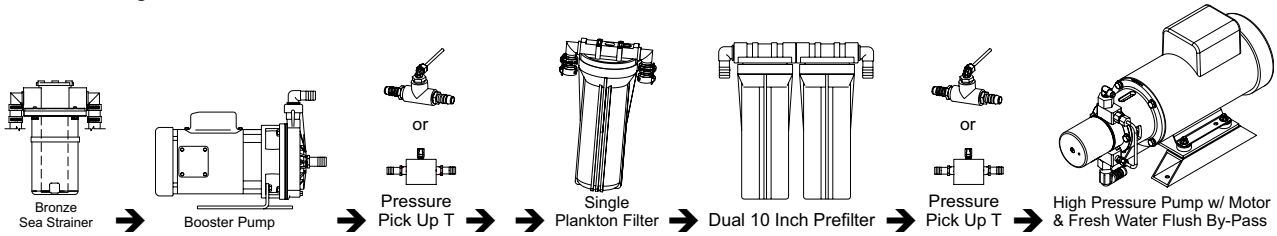
EITHER
With Standard Dual 10 Inch Prefilters [15 & 16] and no optional prefiltration:



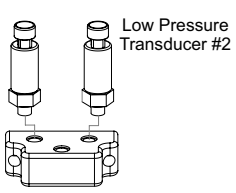
This configuration utilizes two (2) Low Pressure Transducers: Pressure Pick Up [9 & 22] are pre-plumbed to Low Pressure Transducers [10 & 23] respectively and are located inside System Frame.



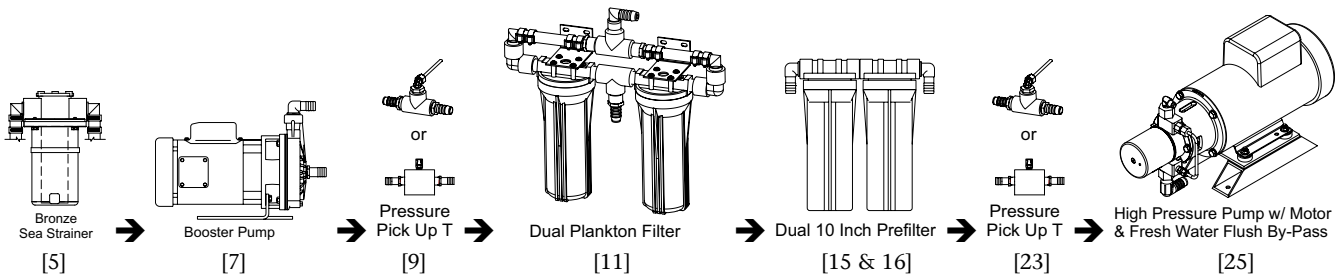
OR
With Single Plankton Filter [11] and Standard Dual 10 Inch Prefiltration [15 & 16]:



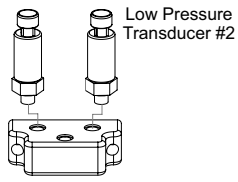
This configuration utilizes two (2) Low Pressure Transducers: Pressure Pick Up [9 & 22] are pre-plumbed to Low Pressure Transducers [10 & 23] respectively and are located inside System Frame.



OR
With Dual Plankton Filter [11] and Standard Dual 10 Inch Prefiltration [15 & 16]:

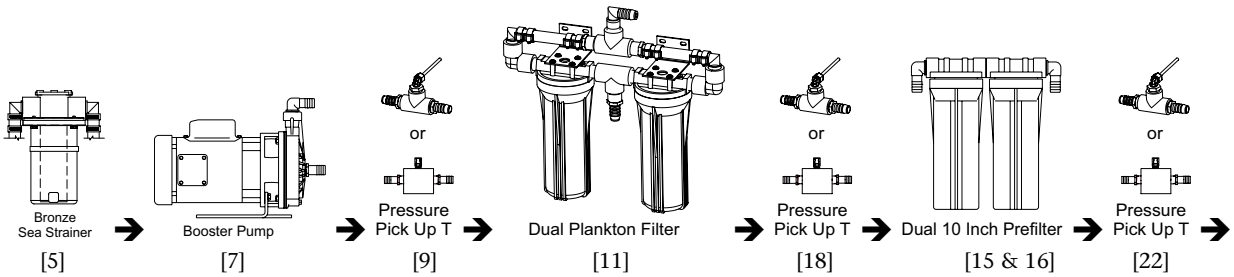


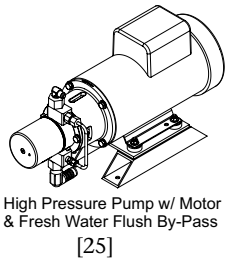
This configuration utilizes two (2) Low Pressure Transducers: Pressure Pick Up [9 & 22] are pre-plumbed to Low Pressure Transducers [10 & 23] respectively and are located inside System Frame.

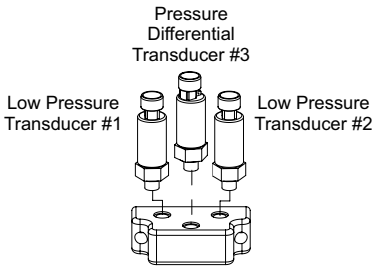


OR

With Dual or Single Plankton Filter [11], Pressure Differential Transducer [19], and Standard Dual 10 Inch Prefiltration [15 & 16]:



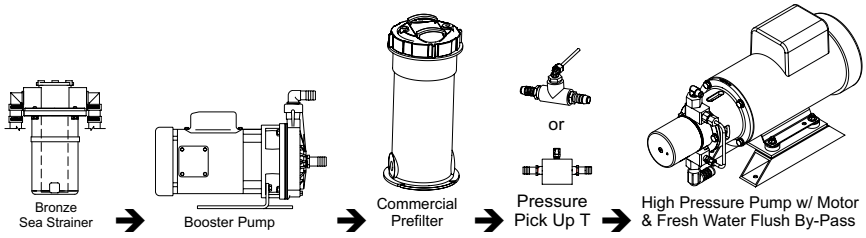


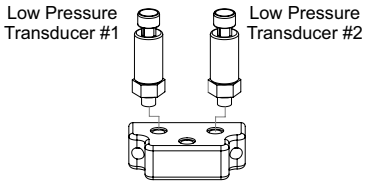


This configuration utilizes two (2) Low Pressure Transducers and one (1) Differential Pressure Transducer: Pressure Pick Up [9] is plumbed in the Feed Line by the Installer and located outside of the System Frame. The Installer connects the 1/4" OD tube from Pressure Pick Up [9] to Low Pressure Transducer #1 [10] located inside System Frame. Pressure Pick Up [18] is located inside System Frame and pre-plumbed to Differential Pressure Transducer #3 [19]. Pressure Pick up [22] is located inside System Frame and pre-plumbed to Low Pressure Transducer #2 [23].

OR

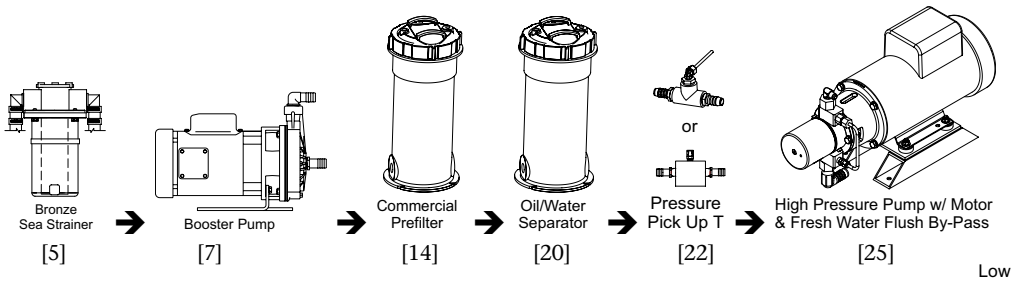
With Optional Commercial Prefilter [14] Prefiltration:

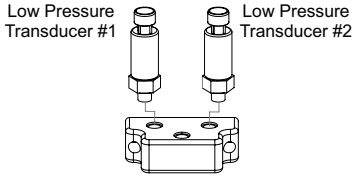




This configuration utilizes two (2) Low Pressure Transducers: Pressure Pick Up [9] is replaced with a 1/4" tube fitting at the top of the Commercial Prefilter [14] and connected by the Installer with 1/4" OD Tube to Low Pressure Transducer #1 [10] located inside System Frame. Pressure Pick up [22] is located inside System Frame and pre-plumbed to Low Pressure Transducer #2 [23].

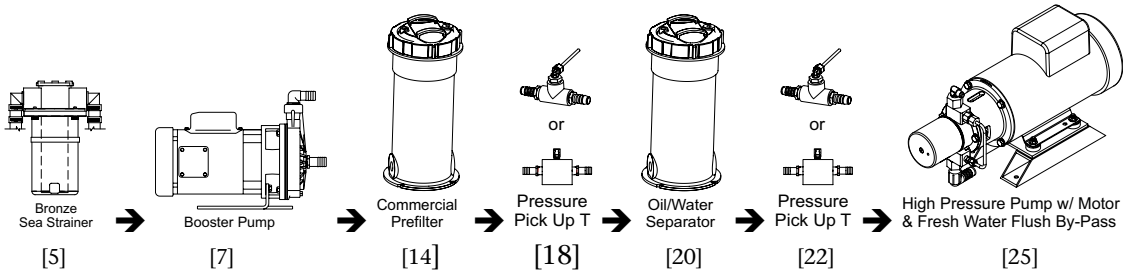
OR
With Optional Commercial Prefilter [14] and Oil/Water Separator [20] Prefiltration:

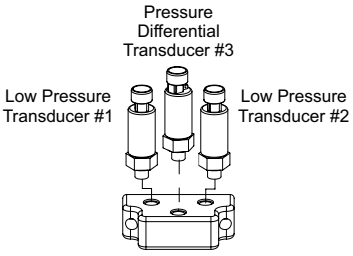




This configuration utilizes two (2) Low Pressure Transducers: Pressure Pick Up [9] is replaced with a 1/4" tube fitting at the top of the Commercial Prefilter [14] and connected by the Installer with 1/4" OD Tube to Low Pressure Transducer #1 [10] located inside System Frame. Pressure Pick up [22] is located inside System Frame and pre-plumbed to Low Pressure Transducer #2 [23].

OR
With Optional Commercial Prefilter [14], Pressure Differential Transducer [19], and Oil/Water Separator [20] Prefiltration:

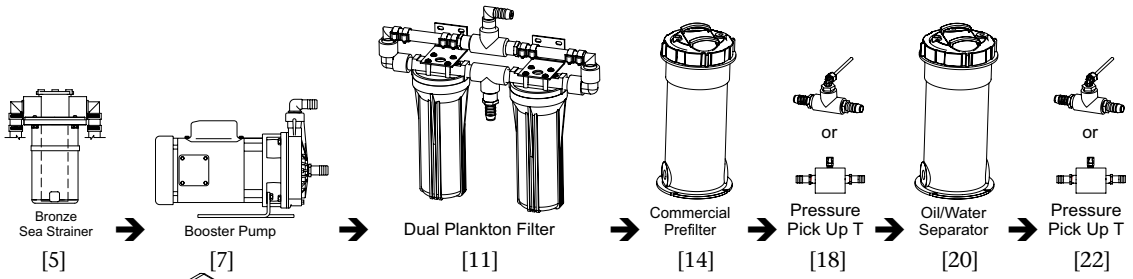


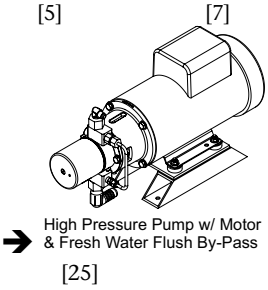


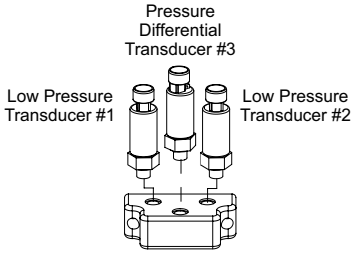
This configuration utilizes two (2) Low Pressure Transducers and one (1) Differential Pressure Transducer: Pressure Pick Up [9] is replaced with a 1/4" tube fitting at the top of the Commercial Prefilter [14] and connected by the Installer with 1/4" OD Tube to Low Pressure Transducer #1 [10] located inside System Frame. Pressure Pick up [18] is installed in the Feed Line by the Installer. The Installer connects the 1/4" OD tube from Pressure Pick Up [18] to Differential Pressure Transducer #3 [19] located inside System Frame. Pressure Pick up [22] is located inside System Frame and pre-plumbed to Low Pressure Transducer #2 [23].

OR

With Optional Single or Dual Plankton Filter [9], Commercial Prefilter [14], Pressure Differential Transducer [12], and Oil/Water Separator [15] Prefiltration:



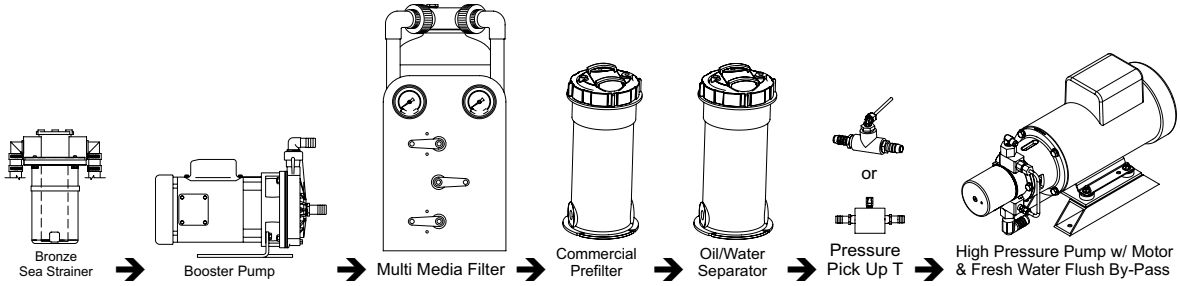




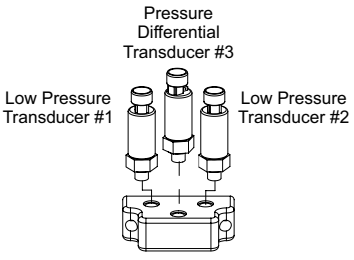
This configuration utilizes two (2) Low Pressure Transducers and one (1)Differential Pressure Transducer: Pressure Pick Up [9] is replaced with a 1/4" tube fitting at the top of the Commercial Prefilter [14] and connected by the Installer with 1/4" OD Tube to Low Pressure Transducer #1 [10] located inside System Frame. Pressure Pick up [18] is installed in the Feed Line by the Installer. The Installer connects the 1/4" OD tube from Pressure Pick Up [18] to Differential Pressure Transducer #3 [19] located inside System Frame. Pressure Pick up [22] is located inside System Frame and pre-plumbed to Low Pressure Transducer #2 [23].

OR

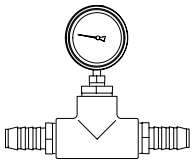
With Optional Multi Media Filter [10], Commercial Prefilter [14], Pressure Differential Transducer [12], and Oil/Water Separator [15] Prefiltration:



This configuration utilizes two (2) Low Pressure Transducers and one (1) Differential Pressure Transducer: Pressure Pick Up [9] is replaced with a 1/4" tube fitting inside the Multi Media Filter [12] Frame and connected by the Installer with 1/4" OD Tube to Low Pressure Transducer #1 [10] located inside System Frame. Pressure Pick Up [18] is replaced with a 1/4" tube fitting inside the Multi Media Filter [12] Frame and connected by the Installer with 1/4" OD Tube to Differential Pressure Transducer #3 [19] located inside System Frame. Pressure Pick up [22] is located inside System Frame and pre-plumbed to Low Pressure Transducer #2 [23].



Optional Vacuum/Pressure Gauges may be added before and after each component in the feed water line to give the operator accurate differential pressure across each component. This simplifies diagnosis of feed water line abnormalities and allows the operator to pin-point which component is in need of service. **Order Part Number: B148000001, Description: DIFFERENTIAL LOW PRES GAUGE ASSY**



Inline Vacuum / Pressure Gauge

13. REVERSE OSMOSIS MEMBRANE ELEMENT NOTE:

CAUTION: Some systems are shipped WITHOUT the Reverse Osmosis Membrane Element. This is to accommodate, for example, Boat Builders that install the system well in advance of commissioning the boat and the Aqua Matic.

DOES THIS Sea Recovery Aqua Matic System HAVE R.O. MEMBRANE(S) INSTALLED OR NOT?

If not, is it your intention to install the R.O. Membrane(s) at this time, or do you wish to install them at a later date when the boat is commissioned?

If the Reverse Osmosis Membrane Element has been installed, there will be a Reverse Osmosis Membrane Element Serial Number tag, illustrated below, attached to the High Pressure Vessel(s). Find this Serial Number tag to ensure that the R.O. Membrane Element(s) has been installed.

If the R.O. Membrane Element Serial Number tag is missing or does not contain a serial number and date then the R.O. Membrane(s) is (are) not installed. If the R.O. Membrane Element(s) is (are) are not installed and you wish to install them at this time contact Sea Recovery and supply us with your original Purchase Order Number, Sea Recovery's Invoice Number, and this Aqua Matic's Serial Number.

Sea Recovery
Rancho Dominguez, California 90220 U.S.A.
Tel: 1-310-637-3400 ¦ Fax: 1-310-637-3430
Email: srcsales@searecovery.com

SERIAL NO:	087945021505
FLOW: -->	BRINE INLET END
DATE:	October 15, 2005

WARNING: IF THE REVERSE OSMOSIS MEMBRANE ELEMENT IS NOT TO BE INSTALLED AT THIS TIME ENSURE THAT YOU LEAVE A VISIBLE NOTE AT THE SYSTEM CONTROLLER AND AT THE FRONT OF THE CONTROL PANEL INFORMING THE END USER THAT: THE REVERSE OSMOSIS MEMBRANE ELEMENT(S) IS/ARE NOT INSTALLED; TO CONTACT THE FACTORY FOR THE R.O. MEMBRANE ELEMENT(S); AND DO NOT OPERATE THE SYSTEM WITHOUT THE R.O. MEMBRANE ELEMENT(S) INSTALLED.

EXTENSIVE DAMAGE WILL OCCUR IF THE AQUA TOUCH SYSTEM IS OPERATED WITHOUT THE R.O. MEMBRANE ELEMENT(S) INSTALLED. DAMAGE TO THE SYSTEM CAUSED BY THE OPERATION OF THE SYSTEM WITHOUT R.O. MEMBRANE ELEMENT(S) INSTALLED IS: NOT COVERED BY THE SEA RECOVERY WARRANTY; IS THE LIABILITY OF THE INSTALLER IF THE INSTALLER DID NOT NOTIFY THE END USER; OR IS THE LIABILITY OF THE END USER IF THE INSTALLER NOTIFIED THE END USER THAT THE R.O. MEMBRANE(S) WERE NOT INSTALLED AND TO NOT OPERATE THE SYSTEM WITHOUT THE R.O. MEMBRANE ELEMENT(S) INSTALLED.

Installation of Aqua Matic COMPACT STYLE

REFER TO:

ITEM 14. SPECIFIC TO Aqua Matic COMPACT STYLE SYSTEM
ON PAGES 27 - 37

or

Installation of Aqua Matic MODULAR STYLE

REFER TO:

ITEM 15. SPECIFIC TO Aqua Matic MODULAR STYLE SYSTEM
ON PAGES 38 - 53

or

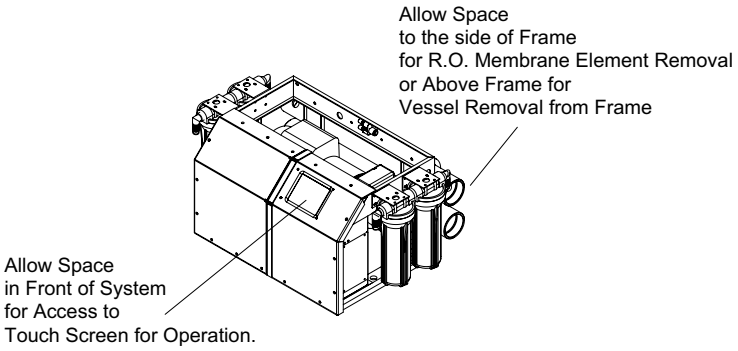
LAND INSTALLATION REFER TO:

ILLUSTRATIONS ON PAGES 54 & 55

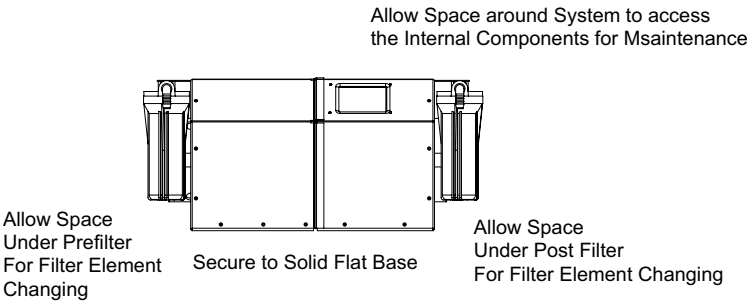
14. SPECIFIC TO Aqua Matic COMPACT STYLE SYSTEM pages 33 - 42:

A. PLACEMENT AND SECURING THE MAIN SYSTEM FRAME:

The System Frame must be placed in a location that allows access for operation and maintenance. Allow sufficient room for filter bowl removal. Allow access to the right side of the frame for electrical wire attachment. Ensure that the Touch Pad is reachable and readable.



The System Frame is mounted in place with 4 supplied rubber isolation mounts. 4 Threaded bolts and 4 sheet metal screws are provided for attachment. Set the System in place onto a flat surface and mark the mounting holes.



Move the System Frame out of the way and drill the appropriate hole depending on which hardware will be used, bolts or screws. Place the System Frame over the drilled holes and attach the rubber isolation grommet under the frame at each of the 4 mounting holes. Place the mating rubber isolation grommet over the top of the frame hole and attach with the appropriate supplied washers, and bolts or screws.

B. COMPONENT MOUNTING:

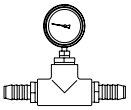
All mounting surfaces must be flat in order to avoid warping of brackets and frames. Any damage caused by attaching the system or its components to an uneven surface is attributed to improper installation, is the liability of the installer, and is not covered by the Sea Recovery warranty. Grind flat or use appropriate shims on uneven surfaces to ensure that mounting of the system components does not cause bending or warping.

Do not connect the water lines or electrical lines to the various components until each of the components are in place and secure. After all components are in place and secure visually inspect the layout to ensure that the plumbing hoses and tubes will connect kink free, in short and straight segments, and will avoid heat and abrasions from surrounding surfaces.

1. Attach the supplied **Inlet Connection [3]** to the Sea Cock Valve and rotate it towards the location of the Sea Strainer [4] Inlet.

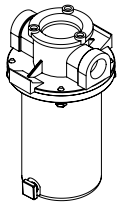
Inlet
Connection

2. Allow sufficient space between the Inlet Connection [3] and Sea Strainer [5] for the **Inline Vacuum/Pressure Gauge [4]**, if used.



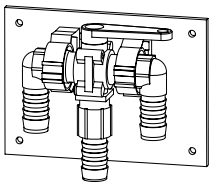
Inline Vacuum /
Pressure Gauge

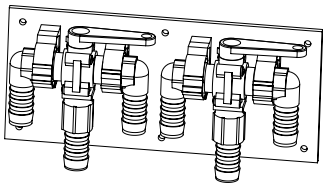
3. The Sea Strainer [5] is mounted to a flat vertical surface, below water level, between the Inlet Sea Cock Valve [3] or the Inline Vacuum/Pressure Gauge [4] and Rinse Clean Inlet Valve [54] or the Inline Vacuum/Pressure Gauge [6] or Booster Pump [7]. Allow clearance above the bowl to access the mesh screen for cleaning or replacement.



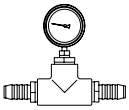
Sea Strainer

4. The optional **Rinse Clean Inlet Valve [55]** with attached Rinse Clean Outlet Valve [55] is mounted below water level between the outlet of the Sea Strainer [4] and the Rinse/Clean Bucket or Container [53] and the Inline Vacuum/Pressure Gauge [6] or Booster Pump [7]. Allow access for the operator to reach and turn the valve handles.



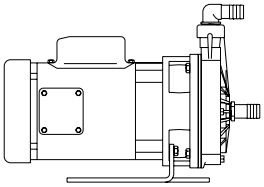


5. Allow sufficient space between the Sea Strainer [5] or Inlet Rinse/Clean Valve [54] and Booster Pump [7] for the **Inline Vacuum/Pressure Gauge [6]**, if used.



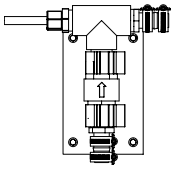
Inline Vacuum / Pressure Gauge

6. The **Booster Pump [7]** is mounted to a flat horizontal surface using the 4 supplied #10 x 1 1/4" long Type "A" screws. The Booster Pump is mounted below water level to assist priming, and in an accessible location to allow access for maintenance. Mount the Booster Pump in an accessible location for Seal maintenance. Keep the Booster Pump close to the Inlet Thru Hull Seacock Valve [2], Sea Strainer [5] Rinse Clean Inlet Valve [54], and Inline Vacuum/Pressure Gauge [6] if used.. If the Booster Pump is mounted Vertical place the Pump Head at the bottom and the electric motor at the top. If the pump head is above the electric motor salt water damage to the electric motor will occur when the pump seal weeps or leaks.



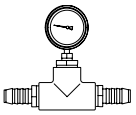
Centrifugal Booster Pump

7. The **Automatic Fresh Water Flush Check Valve [52]** is mounted to a flat vertical surface, below water level, after the Booster Pump [7] outlet and prior to the first prefiltration component. Mount the Automatic Fresh Water Flush Check Valve vertical with the arrow pointing UP. Mounting the valve horizontal or with arrow pointing down may cause it to not properly function.



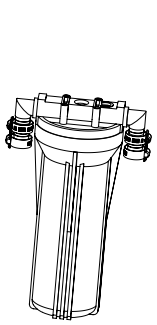
Fresh Water Flush Check Valve

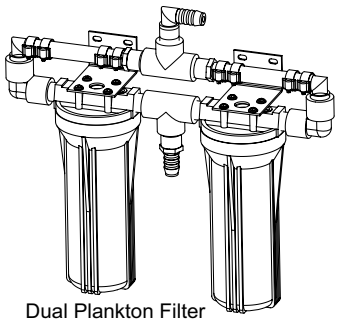
8. Allow sufficient space after the Booster Pump Outlet [7] or Fresh Water Flush Check Valve [52] for the **Inline Vacuum/Pressure Gauge [8]**, if used. If the Multi Media Filter is installed this Inline Vacuum/Pressure Gauge [8] is not required as the Multi Media Filter includes inlet and outlet pressure gauges.



Inline Vacuum / Pressure Gauge

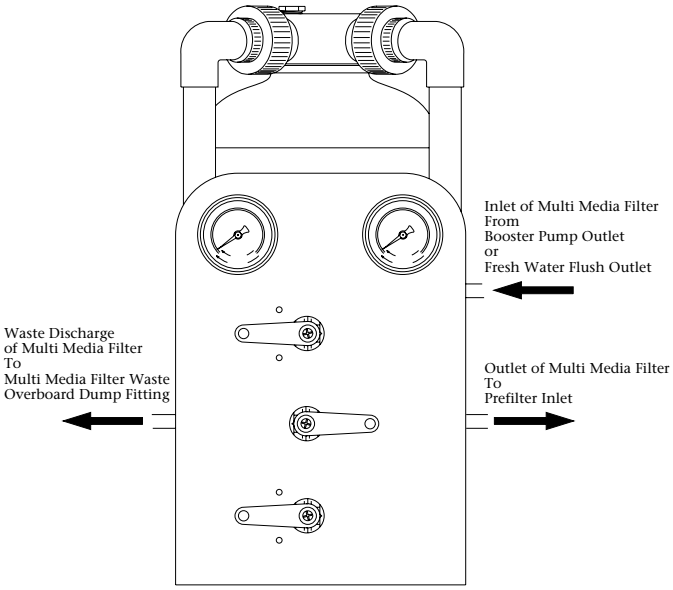
9. The optional **Plankton Filter [11],** either the single or double housing version, is mounted to a flat vertical surface using the supplied screws. Allow minimum 4 inches (10 cm) below the bowl, and allow accessibility to the Plankton Filter for mesh screen removal and maintenance. Mount the Plankton Filter in close proximity to the outlet of the Booster Pump


Single Plankton Filter

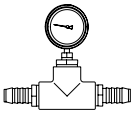

Dual Plankton Filter
Plumbed in Parallel

or (either install the Plankton Filter or the Multi Media Filter. Installing both is redundant and will lead to line pressure loss).

The optional **Multi Media Filter [12]** is mounted to a flat horizontal surface using the supplied screws. Maintain an orientation and accessibility that allows the operator to view the pressure gauges, and adjust the valves mounted to the Multi Media Filter. Mount the Multi Media Filter in close proximity to the outlet of the Booster Pump. Refer to the illustration on the following page for Multi Media Filter Port orientation.

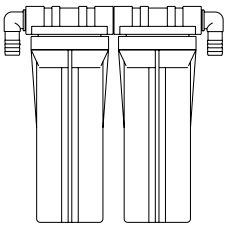


10. Allow sufficient space after the Plankton Filter [11] Outlet for the **Inline Vacuum/Pressure Gauge [13]**, if used. If the Multi Media Filter is installed this Inline Vacuum/Pressure Gauge [11] is not required as the Multi Media Filter includes inlet and outlet pressure gauges.


Inline Vacuum /
Pressure Gauge

11. Prefilter. The **10 inch Dual Prefilters [15 & 16] and the Commercial Prefilter [14]** serve the same function. Use either the 10 inch Dual Prefilters or the Commercial Prefilter. Do not use both. Using both is redundant and will lead to line pressure loss.

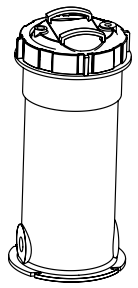
    The **Dual Prefilters [15 & 16]** are mounted to the Aqua Touch Compact System frame. Remote mounting is permissible to a flat vertical surface. If remote mounted, allow minimum 4 inches (10 cm) below the bowl, and allow accessibility to the Filters for element removal and maintenance.



Dual 10 Inch Prefilter

    or (either install the Dual Prefilters or Commercial Prefilter. Installing both is redundant and will lead to line pressure loss).

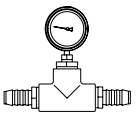
    The no-charge optional **Commercial Prefilter [14]** replaces the 10 inch Dual Prefilters [15 & 16]. The Commercial Prefilter is mounted to a flat horizontal surface using the supplied screws. Maintain an orientation and accessibility that allows the operator access to remove the filter element for maintenance. Allow minimum 12 inches above the top of the housing for filter element removal. Mount the Commercial Prefilter in close proximity to the outlet of the Booster Pump and the System frame. The commercial prefilter is plumbed as per the raised arrow and Inlet & Outlet letters molded into the filter housing. The correct water flow enters the outer surface of the filter element and migrates to the center core.



Commercial Prefilter

REFER TO THE ILLUSTRATION ON PAGE 31 OF THIS SECTION.

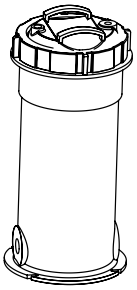
12. Allow sufficient space after the Commercial Prefilter [14] for the **Inline Vacuum/Pressure Gauge [17]**, if used.



Inline Vacuum / Pressure Gauge

13. The no-charge optional **Oil/water Separator [20]** is mounted to a flat horizontal surface using the supplied screws. Maintain an orientation and accessibility that allows the operator access to remove the filter element for maintenance. Allow minimum 12 inches above the top of the housing for filter element removal. Mount the Oil/water Separator in close proximity to the outlet of the Booster Pump and the System frame.

    WARNING NOTE: The Oil/water Separator utilizes the same filter housing as the Commercial Prefilter. However, the Oil/water Separator is plumbed opposite of (backwards from) the Commercial Prefilter. This filter housing has a raised arrow molded into the housing indicating flow and the inlet and outlet ports are also marked with raised lettering Inlet & Outlet molded into the housing. **For the Oil/water Separator these markings are INCORRECT.** The Oil/water Separator's correct water flow enters the center core of the filter element and migrates to the outer surface of the filter element (opposite that of the Commercial prefilter).

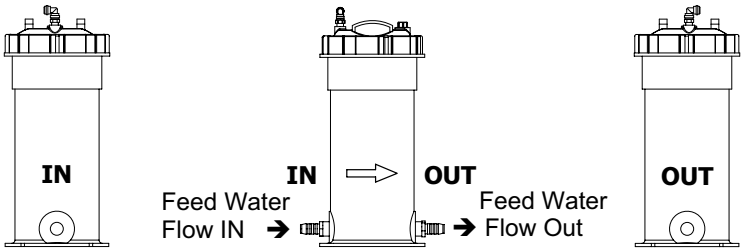


Oil/Water Separator

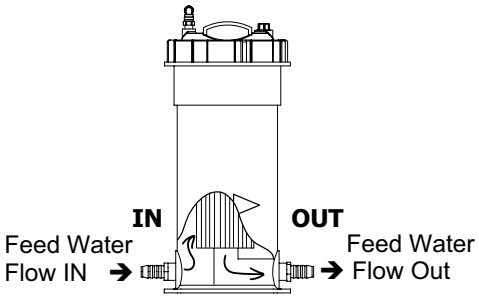
    Prior to shipping Sea Recovery has placed Inlet and Outlet labels (stickers) indicating the correct plumbing. Follow the stickers, not the molded arrow and lettering.

REFER TO THE ILLUSTRATION ON PAGE 31 OF THIS SECTION.

COMMERCIAL PREFILTER CONNECTION AND WATER FLOW



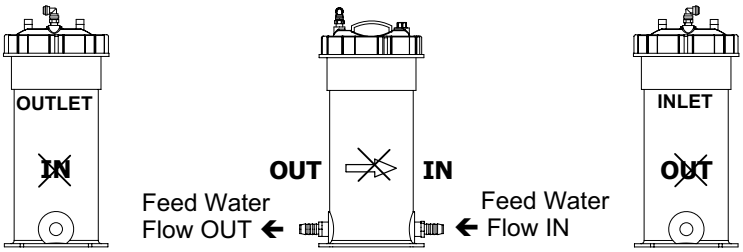
Commercial Prefilter is plumbed
as per the raised arrows and markings IN and OUT



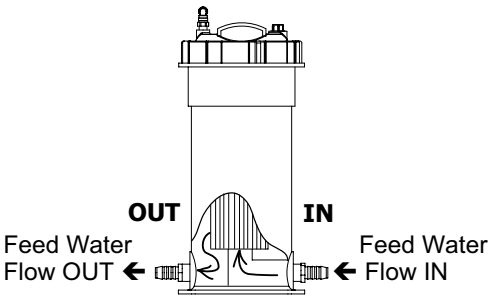
Feed Water Flow through the Commercial Prefilter Element
is from the OUTSIDE of the Element to the INSIDE CENTER of the Element

— — — — — — — — — — — — — — — — — — — —

OIL/WATER SEPARATOR CONNECTION AND WATER FLOW



Oil/Water Separator utilizes the same housing as the Commercial Prefilter, however it is plumbed
OPPOSITE of the Commercial Prefilter and OPPOSITE of the raised arrows and markings IN and OUT
Separate Labels are placed on the Oil/Water Separator indicating correct INLET and OUTLET



Feed Water Flow through the Oil/Water Separator Element
is from the INSIDE CENTER of the Element to the OUTSIDE of the element

14. Pressure Differential Transducer [19].

The optional Pressure Differential Transducer [19] threads into the center port of the Low Pressure Transducer Manifold.

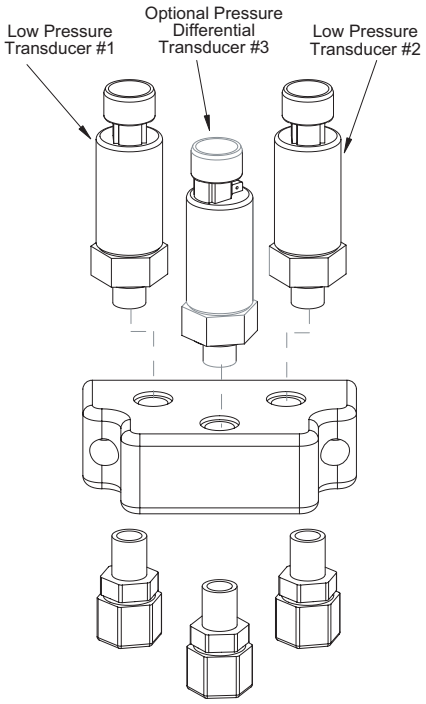
CAUTION: Take care to NOT cross the fine female threads in the manifold.

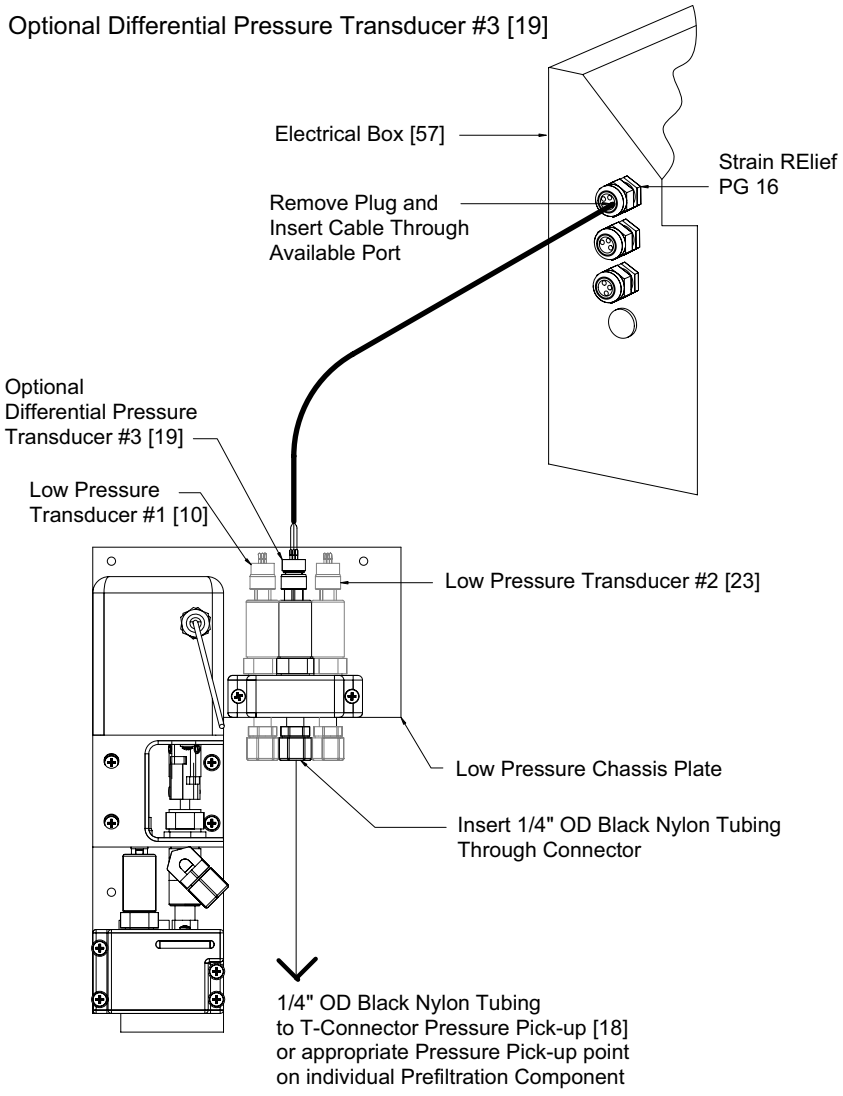
Thread in clockwise finger tight. Using a wrench tighten an additional 45 degrees.

DO NOT OVER TIGHTEN.

OVER TIGHTENING WILL STRIP THE MANIFOLD FEMALE THREADS.

Using the supplied 1/4 inch O.D. tubing connect the center Pressure Differential Transducer Tube Fitting to the T-Connector Pressure Pick-Up [18] or to the Pressure Pick Up port of the respective Prefiltration component. Refer to the various Piping and Interconnect Diagrams Illustrated in the prior pages of this Section.



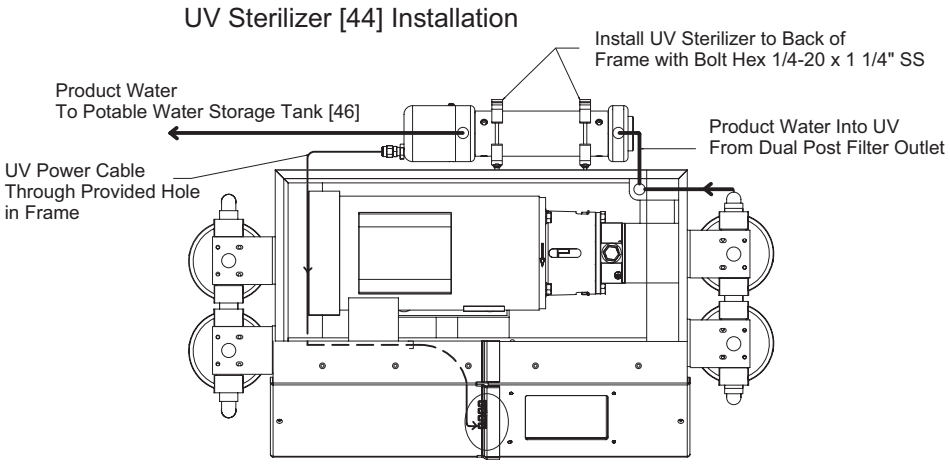


Note: Refer to appropriate Piping and Interconnect Diagram for Tubing Connection to Manifold.

15. Ultra Violet Sterilizer [44] Installation.

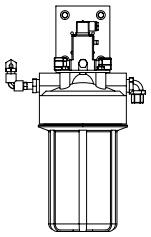
The Ultra Violet Sterilizer will be mounted, by the factory, to the System Frame if ordered with the Aqua Matic System.

If the U.V. Sterilizer was not installed at the factory refer to the Illustration to the right.



16. The **Fresh Water Flush Carbon Filter [51]**, with attached Fresh Water Flush 2-Way Solenoid Valve [49] and Fresh Water Flush Check Valve [50] is mounted to a flat vertical surface in an accessible location for filter element changing. Choose a location between the Automatic Fresh Water Flush Check Valve [52] and a pressurized line from the boat's fresh water pressure system.

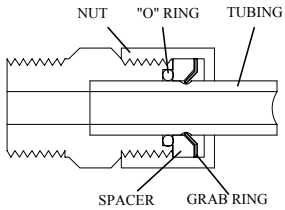
CAUTION: In order to provide the required flow of water to the Aqua Matic System during the Fresh Water Flush cycle, the Boat or Home's fresh water pressure system must deliver minimum 1 U.S. Gallons Per Minute at minimum 25 PSI and maximum 60 PSI (3.8 Liters per minute at minimum 172 kPa and maximum 414 kPa)



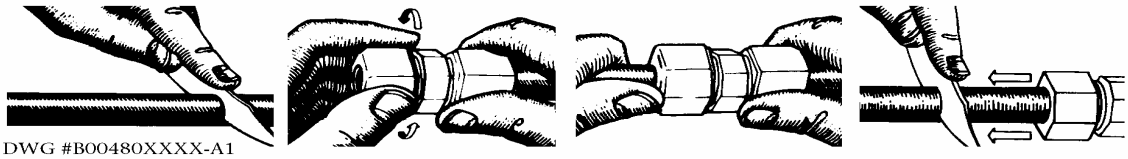
Fresh Water Flush Carbon Filter, Check Valve & 2-Way Solenoid Valve

C. TUBING & HOSE PRECAUTIONS

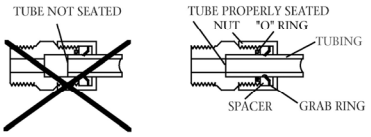
TUBE FITTING CONNECTIONS ASSEMBLY

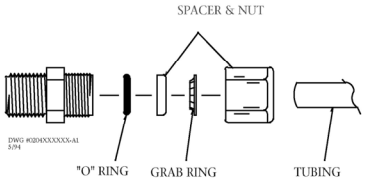


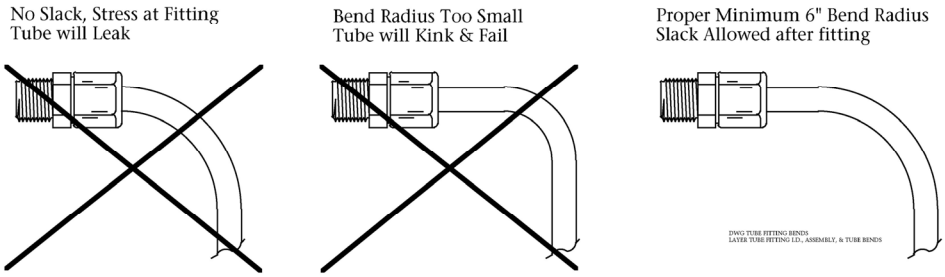
a. Cut tube end square and clean.
b. Loosen nut on fitting three turns.
c. Insert tube into fitting until it bottoms.
d. Loosen nut completely & remove tube with attached parts from body.
e. Check to ensure that the O-Ring is seated onto the tube under the spacer (and not pinched into the body).
f. Insert tube with attached parts into the body and tighten nut finger tight.



CAUTION: Refer to the following illustrations. Always allow slack in all tube and hose lines. Never cause the tube or hose to immediately bend from the fitting. Allow the line to enter or leave from the fitting in a straight manner for several inches to ensure proper connection, to relieve stress to the fitting and tube or hose, and to allow ease of detachment and reattachment during maintenance or repair.





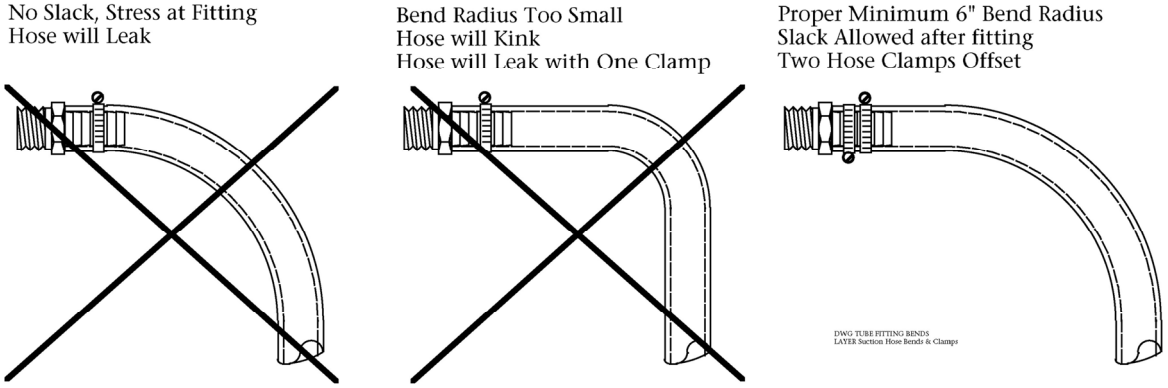


If water lines are pulled tight causing them to bend at the fitting they will leak, allow air to enter, fail prematurely, and or break the fitting that they are attached to.

D. INTERCONNECTING COMPONENTS WITH SUPPLIED HOSE

1. Using the 3/4" (19 mm) I.D. clear braided hose supplied connect the Suction Line components, Low Pressure line components, and Brine Discharge Line components:

   Secure each connection with the supplied hose clamps. Ensure all Suction Hose connections use two hose clamps rotated 180 degrees with the screw heads facing the same direction. Remove any flash on the Hose Barb fittings using fine sandpaper.



If your Aqua Matic is not supplied with a mentioned optional component then skip it and connect to the next supplied component. Refer to the illustrations on pages 14 - 24 of this section.

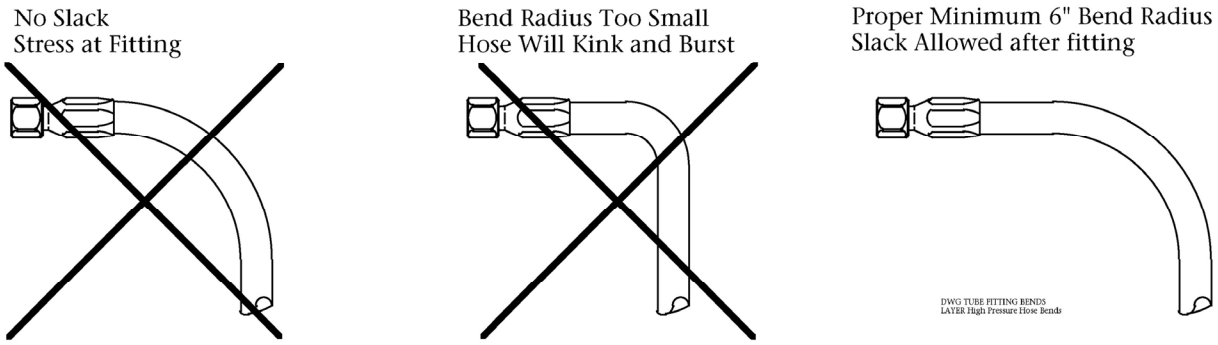
Outlet of	to	Inlet of
Inlet Connection [3]		Inline Vacuum/Pressure Gauge [4]
Inline Vacuum/Pressure Gauge [4]		Sea Strainer [5]
Sea Strainer [5]		Rinse Clean Inlet Valve [54] left or right port
Rinse Clean Inlet Valve [54] unused left or right port		Rinse/Clean container [53]
Rinse Clean Inlet Valve [54] center port		Inline Vacuum/Pressure Gauge [6]
Inline Vacuum/Pressure Gauge [6]		Booster Pump [7]
Booster Pump [7]		Fresh Water Flush Check Valve [52] bottom
Fresh Water Flush Check Valve [49] top Hose Barb		Inline Vacuum/Pressure Gauge [8]
Inline Vacuum/Pressure Gauge [8]		
Booster Pump [7]		Inline Vacuum/Pressure Gauge [8]
Inline Vacuum/Pressure Gauge [8]		Find the Illustration in this Section on pages 24 through 30 that coincides to your system's Prefiltration Options and connect the components accordingly as illustrated.
Brine Discharge Tee [34]		Rinse Clean Discharge Valve [55]
Rinse Clean Discharge Valve [55]		Cleaning Bucket [53]
Rinse Clean Discharge Valve [55]		Brine Discharge Connector [35 or 36]
Multi Media Filter [12] Waste Line if used		Multi Media Filter Discharge Fitting separate Thru-Hull or Tee at Brine Discharge Connector [36]

2. With the supplied 50 feet (15 meters) of 1/2" (12.7 mm) I.D. clear braided hose connect the Product Water Line components and secure each connection with the supplied hose clamps, placing 1 hose clamp onto each hose barb fitting:

Outlet of	to	Inlet of
pH Neutralizing Filter [43]		Ultra Violet Sterilizer [44]
Ultra Violet Sterilizer [44]		Potable Water Storage Tank or Cistern [45]

3. 1/4" (6.35 mm) OD nylon tubing is supplied with applicable components for connecting Pressure Pick Up points to the Low Pressure Transducers [10, 19 & 23]. Use or non use of the 1/4" OD nylon tubing is dependent upon Prefiltration Options installed as illustrated and explained on pages 14 through 24 of this Section.

4. If remote mounting the Reverse Osmosis Membrane and Pressure Vessel Assembly [27 & 28] ensure all High Pressure Hoses have sufficient slack and are not pulled tight into a sharp or immediate bend.



E. CUSTOMER SUPPLIED FRESH WATER TANK [46] HIGH AND LOW LEVEL SWITCHES and CUSTOMER SUPPLIED ALARM

Not Numbered on the Piping and Interconnect Diagram. Installed inside the Fresh Water Tank [46].

These two tank level switches are not necessary for operation of the System. They do add additional features to the Automatic mode of the System. The choice of make, model, and style are left up to the Installer or Owner. They must meet the electrical requirement and operation as explained below.

The customer may also connect an external alarm to the System which will alert the operator that they system has shut down.

Fresh Water Tank Low Level Switch ** owner/installer supplied provides an optional feature to the System Control Logic that works in conjunction with the Automatic Fresh Water Flush option.

When installed and connected to the Main Printed Circuit Board, the Fresh Water Tank Low Level Switch must be connected as a N.O. (Normally Open) 1PST (One Pole Single Throw) switch.

When the Fresh Water Tank [46] is empty the switch is Open. As water rises a few inches in the tank the switch Closes. This informs the System Control Logic that there is sufficient Fresh Water to perform the Automatic Fresh Water Flush Cycle.

Fresh Water Tank High Level Switch ** owner/installer supplied provides an optional feature to the System Control Logic that allows the System to shut off automatically when the Fresh Water Tank [45] is full, when the System is operated in the Automatic mode. Additionally, the System will not start in the Automatic mode when the Fresh Water Tank High Level Switch signals the System Control Logic that the Fresh Water Tank [46] is full.

When installed and connected to the Main Printed Circuit Board, the Fresh Water Tank High Level Switch must be connected as a N.C. (Normally Closed) 1PST (One Pole Single Throw) switch.

When the Fresh Water Tank [46] is several inches below the full mark the switch is Closed. As water rises and reaches the top of the full mark the switch Opens. This informs the System Control Logic that the Fresh Water Tank is full, the System will shut down if operating in the Automatic mode, and the System will not start in the Automatic mode.

If operation of the System is desired when the Fresh Water Tank Switch signals the System Control Logic that the Fresh Water Tank is full then the System may be operated in the Manual mode.

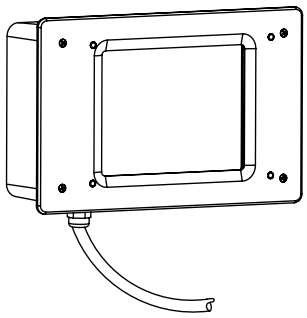
Alarm ** owner/installer supplied provides an optional feature to the System Control Logic that audibly or visually signals the operator that the System has stopped operating.

The output of this alarm circuit form the Main Printed Circuit Board is 12 VDC with MAXIMUM allowable current consumption of 1 (one) Ampere.

This alarm will signal if a fault occurs. It will not signal with a normal shut down that was not associated with a fault.

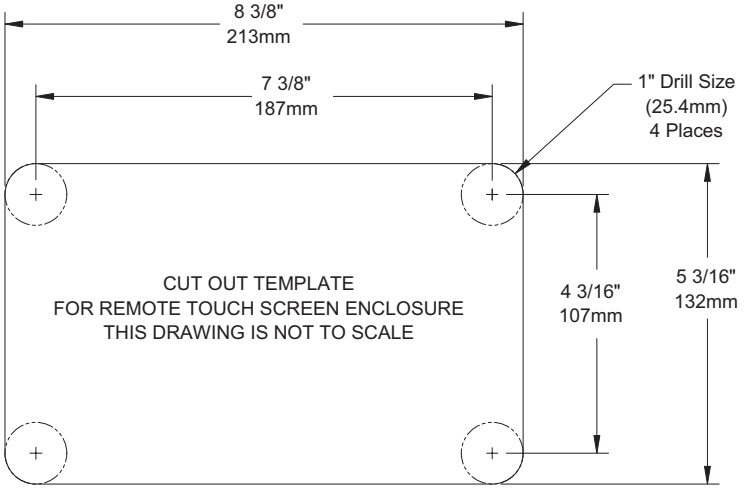
F. Placement and securing the Remote Touch Screen Enclosure Assembly [58]

The Remote Touch Screen Enclosure Assembly is supplied with a 75 foot long (22.9m) cat 5 cable for connection to the Main Control Panel.



Place and install the Remote Touch Screen Enclosure in a location that is:
- Away from water lines and hoses
- Away from locations subject to water spray
- In an accessible and viewable location
- Within 75 feet of the Main Control Panel

Cut-Out Illustration shown is NOT PRINTED TO SCALE



G. ELECTRICAL CONNECTIONS

Refer to Section 9 of this Owner's Manual for all electrical wire routing and connection.

H. CAUTION: The Reverse Osmosis Membrane Element(s) [27 & 28] must be kept wet else severe loss of production will occur. Refer to Section 6 of this Owner's Manual for further information and instructions.

15. SPECIFIC TO Aqua Matic MODULAR STYLE SYSTEM pages 38 - 53:

A. MODULAR SYSTEM INDIVIDUAL COMPONENT MOUNTING:

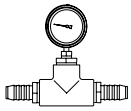
All mounting surfaces must be flat in order to avoid warping of brackets and frames. Any damage caused by attaching the system or its components to an uneven surface is attributed to improper installation, is the liability of the installer, and is not covered by the Sea Recovery warranty. Grind flat or use appropriate shims on uneven surfaces to ensure that mounting of the system components does not cause bending or warping.

Do not connect the water lines or electrical lines to the various components until each of the components are in place and secure. After all components are in place and secure visually inspect the layout to ensure that the plumbing hoses and tubes will connect kink free, in short and straight segments, and will avoid heat and abrasions from surrounding surfaces.

1. Attach the supplied **Inlet Connection [3]** to the Sea Cock Valve and rotate it towards the location of the Inline Vacuum/Pressure Gauge [4] if used, or Sea Strainer [5] Inlet.

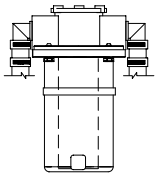
Inlet Connection

2. Allow sufficient space between the Inlet Connection [3] and Sea Strainer [5] for the **Inline Vacuum/Pressure Gauge [4]**, if used.



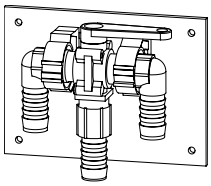
Inline Vacuum / Pressure Gauge

3. The **Sea Strainer [5]** is mounted to a flat vertical surface, below water level, after the Inlet Connection [3], or Inline Vacuum/Pressure Gauge [4] if used. Allow clearance above the bowl to access the mesh screen for cleaning or replacement.

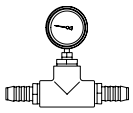


Bronze Sea Strainer

4. The **Rinse Clean Inlet Valve [54]** is mounted below water level after the Sea Strainer [5]. Allow access for the operator to reach and turn the valve handles.

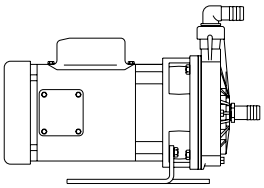


5. Allow sufficient space between the Sea Strainer [5] outlet or if used the Rinse Clean Inlet Valve [54] and or **Inline Vacuum/Pressure Gauge [6]**, if used, or Booster Pump Inlet [7].



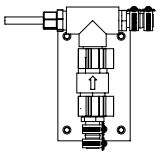
Inline Vacuum / Pressure Gauge

6. The **Booster Pump [7]** is mounted to a flat horizontal surface using the 4 supplied #10 x 1 1/4" long Type "A" screws. The Booster Pump is mounted below water level to assist priming, and in an accessible location to allow access for maintenance. Keep the Booster Pump close to the Inlet Thru Hull Connection [3], Sea Strainer [5], Rinse/Clean Inlet Valve [54] if used, and Inline Vacuum/Pressure Gauge [6] if used. If the Booster Pump is mounted Vertical place the Pump Head at the bottom and the electric motor at the top. **WARNING:** If the pump head is above the electric motor salt water damage to the electric motor will occur when the pump seal weeps or leaks.



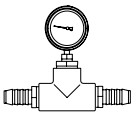
Centrifugal Booster Pump

7. The **Automatic Fresh Water Flush Check Valve [52]** is mounted to a flat vertical surface, below water level, after the Booster Pump [7] Outlet and prior to the first prefiltration component. Mount the Automatic Fresh Water Flush Check Valve vertical with the arrow pointing UP. Mounting the valve horizontal or with arrow pointing down may cause it to not properly function.



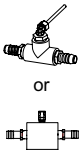
Fresh Water Flush Check Valve

8. Allow sufficient space after the Booster Pump [7] Outlet or the Automatic Fresh Water Flush Check Valve [52] for the **Inline Vacuum/Pressure Gauge [8]**, if used. If the Multi Media Filter is installed this Inline Vacuum/Pressure Gauge [8] is not required as the Multi Media Filter includes inlet and outlet pressure gauges.



Inline Vacuum / Pressure Gauge

9. Place the **Inline Pressure Pick Up T [9],** for connection to the Low Pressure Transducer [10], after the Booster Pump Outlet [7] or Automatic Fresh Water Flush Check Valve [52] if used.



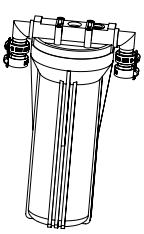
or

Pressure Pick Up T

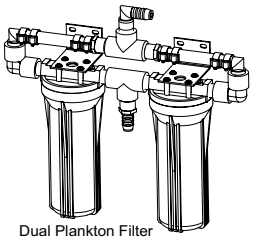
10. **If desired, install either the Multi Media Filter [12] or the Plankton Filter [11] single or dual.**

The Multi Media Filter and Plankton Filter serve the same function. The Multi Media filter has greater loading capacity but takes up more space for installation. When installing the Plankton Filter do not install a Multi Media Filter. When installing a Multi Media Filter do not install a Plankton Filter.

The **Plankton Filter [11]**, either the single or double housing version, is mounted to a flat vertical surface using the supplied screws. Allow minimum 4 inches (10 cm) below the bowl, and allow accessibility to the Plankton Filter for mesh screen removal and maintenance. Mount the Plankton Filter in close proximity to the outlet of the Booster Pump



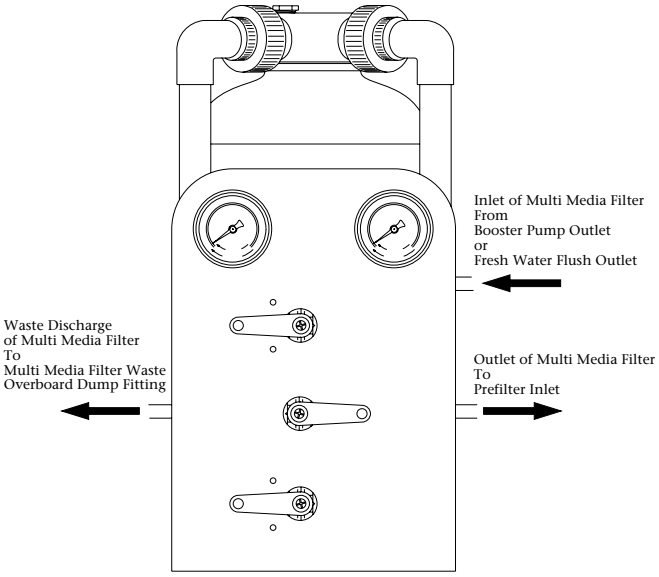
Single Plankton Filter



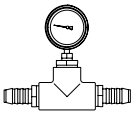
Dual Plankton Filter Plumbed in Parallel

OR

The optional **Multi Media Filter [12]** is mounted to a flat horizontal surface using the supplied screws. Maintain an orientation and accessibility that allows the operator to view the pressure gauges, and adjust the valves mounted to the Multi Media Filter. Mount the Multi Media Filter in close proximity to the outlet of the Booster Pump. Refer to the illustration on the following page for Multi Media Filter Port orientation.

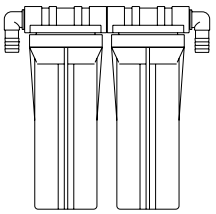


11. Allow sufficient space after the Plankton Filter [11] Outlet for the Inline Vacuum/Pressure Gauge [13], if used. If the Multi Media Filter is installed this Inline Vacuum/Pressure Gauge [13] is not required as the Multi Media Filter includes inlet and outlet pressure gauges.


Inline Vacuum / Pressure Gauge

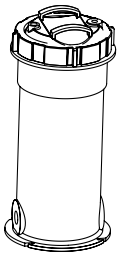
12. Prefilter. The **10 inch Dual Prefilters [15 & 16] and the Commercial Prefilter [14]** serve the same function. Use either the 10 inch Dual Prefilters or the Commercial Prefilter. Do not use both. Using both is redundant and will lead to line pressure loss.

    The **Dual Prefilters [15 & 16]** are mounted to a flat vertical surface. Allow minimum 4 inches (10 cm) below the bowl, and allow accessibility to the Filters for element removal and maintenance.


Dual 10 Inch Prefilter

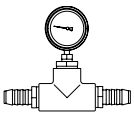
    or (either install the Dual Prefilters or Commercial Prefilter. Installing both is redundant and will lead to line pressure loss).

    The no-charge optional **Commercial Prefilter [14]** replaces the 10 inch Dual Prefilters [15 & 16]. The Commercial Prefilter is mounted to a flat horizontal surface using the supplied screws. Maintain an orientation and accessibility that allows the operator access to remove the filter element for maintenance. Allow minimum 12 inches above the top of the housing for filter element removal. Mount the Commercial Prefilter in close proximity to the outlet of the Booster Pump and the System frame. The commercial prefilter is plumbed as per the raised arrow and Inlet & Outlet letters molded into the filter housing. The correct water flow enters the outer surface of the filter element and migrates to the center core.

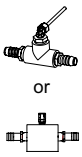

Commercial Prefilter

REFER TO THE ILLUSTRATION ON PAGE 42 OF THIS SECTION.

13. Allow sufficient space after the Commercial Prefilter [14] for the **Inline Vacuum/Pressure Gauge [17]**, if used.


Inline Vacuum / Pressure Gauge

14. If the Oil Water Separator will be installed and if the optional Differential Pressure Transducer [19] will be installed, Place the **Inline Pressure Pick Up T [18]**, for connection to the Differential Pressure Transducer [19], after the Commercial Prefilter [14]. See additional information regarding the Differential Pressure Transducer [19] on the following page.

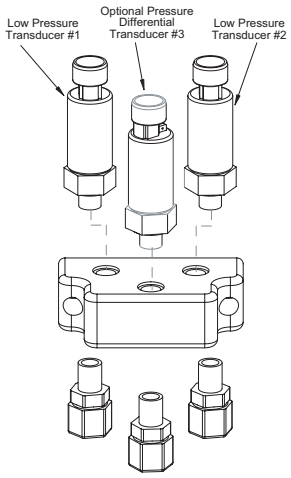

or
Pressure Pick Up T

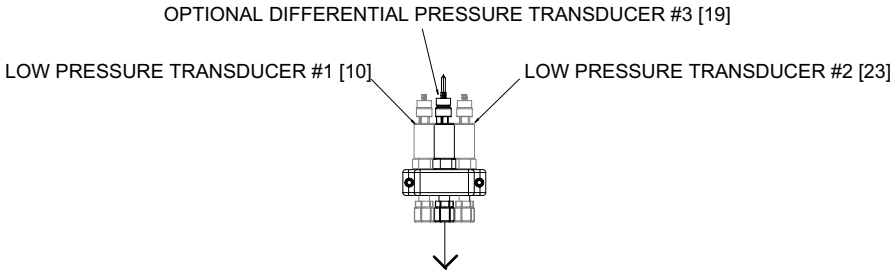
Pressure Differential Transducer [19] Notes:

The optional Pressure Differential Transducer [19] threads into the center port of the Low Pressure Transducer Manifold.

CAUTION: Take care to NOT cross the fine female threads in the manifold. Thread in clockwise finger tight. Using a wrench tighten an additional 45 degrees. DO NOT OVER TIGHTEN. OVER TIGHTENING WILL STRIP THE MANIFOLD FEMALE THREADS.

Using the supplied 1/4 inch O.D. tubing connect the center Pressure Differential Transducer Tube Fitting to the T-Connector Pressure Pick-Up [18] or to the Pressure Pick Up port of the respective Prefiltration component. Refer to the various Piping and Interconnect Diagrams Illustrated in the prior pages of this Section.

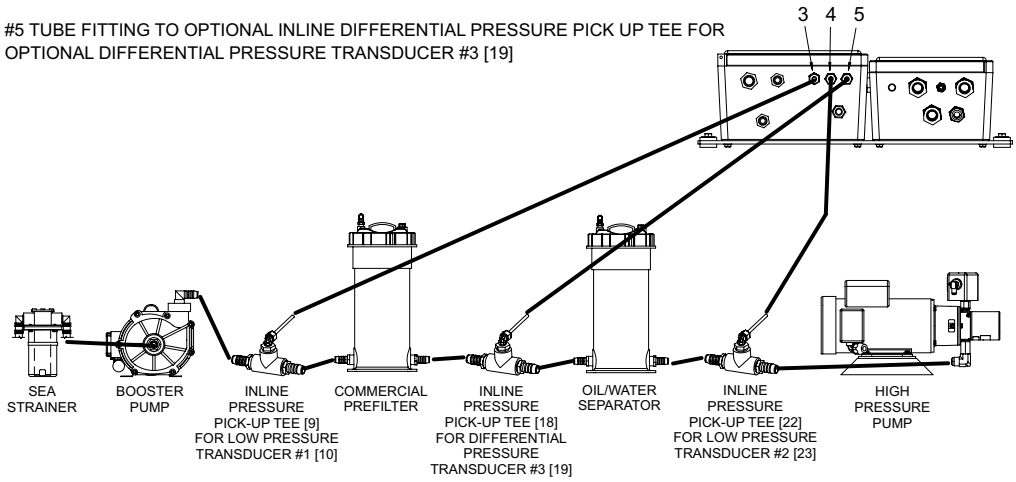


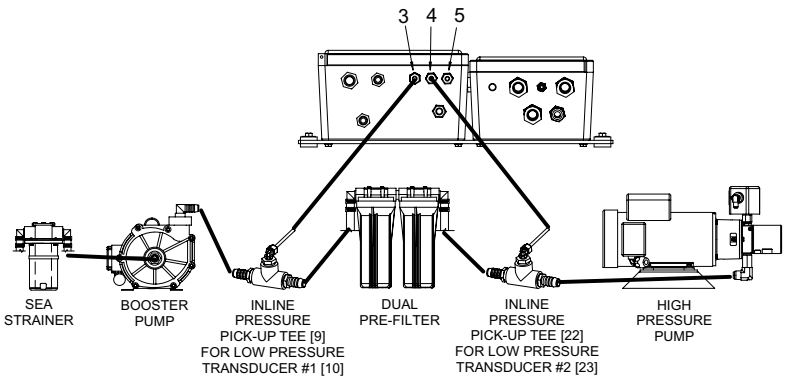


#3 TUBE FITTING TO INLINE LOW PRESSURE PICK UP TEE FOR LOW PRESSURE TRANSDUCER #1 [10]

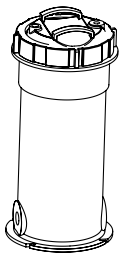
#4 TUBE FITTING TO INLINE LOW PRESSURE PICK UP TEE FOR LOW PRESSURE TRANSDUCER #2 [23]

#5 TUBE FITTING TO OPTIONAL INLINE DIFFERENTIAL PRESSURE PICK UP TEE FOR OPTIONAL DIFFERENTIAL PRESSURE TRANSDUCER #3 [19]





15. The no-charge optional **Oil/water Separator [20]** is mounted to a flat horizontal surface using the supplied screws. Maintain an orientation and accessibility that allows the operator access to remove the filter element for maintenance. Allow minimum 12 inches above the top of the housing for filter element removal.

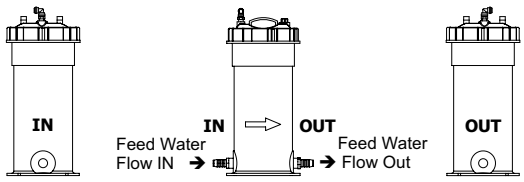

Oil/Water Separator

WARNING NOTE: The Oil/water Separator utilizes the same filter housing as the Commercial Prefilter. However, the Oil/water Separator is plumbed opposite of (backwards from) the Commercial Prefilter. This filter housing has a raised arrow molded into the housing indicating flow and the inlet and outlet ports are also marked with raised lettering Inlet & Outlet molded into the housing. **For the Oil/water Separator these markings are INCORRECT.** The Oil/water Separator's correct water flow enters the center core of the filter element and migrates to the outer surface of the filter element (opposite that of the Commercial prefilter).

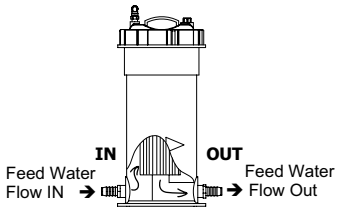
Prior to shipping Sea Recovery has placed Inlet and Outlet labels (stickers) indicating the correct plumbing. Follow the stickers, not the molded arrow and lettering.

REFER TO THE ILLUSTRATION BELOW.

COMMERCIAL PREFILTER CONNECTION AND WATER FLOW



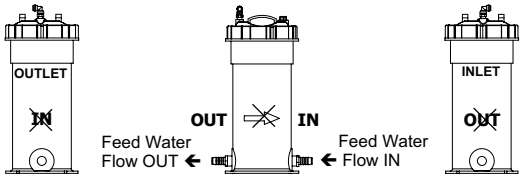
Commercial Prefilter is plumbed
as per the raised arrows and markings IN and OUT



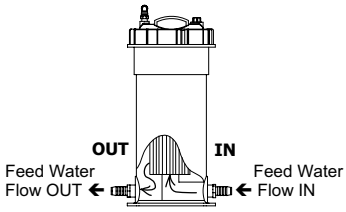
Feed Water Flow through the Commercial Prefilter Element
is from the OUTSIDE of the Element to the INSIDE CENTER of the Element

— — — — — — — — — — — — — — — — — — —

OIL/WATER SEPARATOR CONNECTION AND WATER FLOW

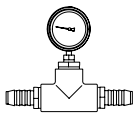


Oil/Water Separator utilizes the same housing as the Commercial Prefilter, however it is plumbed
OPPOSITE of the Commercial Prefilter and OPPOSITE of the raised arrows and markings IN and OUT
Separate Labels are placed on the Oil/Water Separator indicating correct INLET and OUTLET



Feed Water Flow through the Oil/Water Separator Element
is from the INSIDE CENTER of the Element to the OUTSIDE of the element

16. Allow sufficient space after the Oil Water Separator [20] for the Inline Vacuum/Pressure Gauge [21], if used.



Inline Vacuum / Pressure Gauge

17. Place the **Inline Pressure Pick Up T [22]**, for connection to the Differential Pressure Transducer [23], after the last prefiltration component and prior to the Inlet of the High Pressure Pump [25].

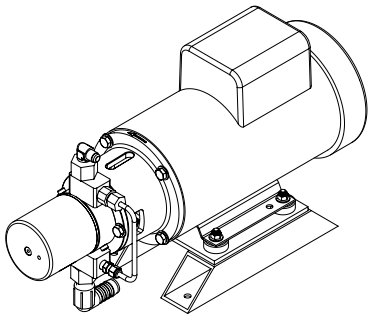
or

Pressure Pick Up T

18. Placement and securing the **High Pressure Pump [25]:**

The High Pressure Pump and Motor assembly [25] must be placed inline between the last prefiltration component and the R.O. Membrane Vessel Assembly. A 6 Foot long (1829mm) High Pressure Hose [26] is supplied to attach the Outlet of the High Pressure Pump to the Inlet of the R.O. Membrane Vessel Assembly. Longer length High Pressure Hoses are available from Sea Recovery.

The High Pressure Pump and Motor is mounted in place with 4 supplied rubber isolation mounts. 4 sets of hardware are supplied for attachment. Set the High Pressure Pump and Motor in place onto a flat surface and mark the mounting holes.

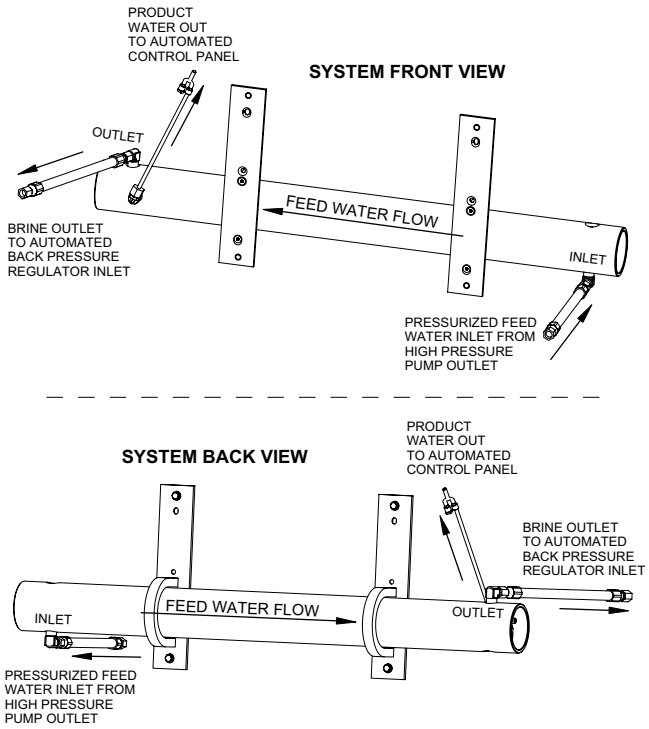


High Pressure Pump w/ Motor & Fresh Water Flush By-Pass

Move the High Pressure Pump and Motor out of the way and drill the appropriate hole depending on which hardware will be used, bolts or screws. Place the High Pressure Pump and Motor over the drilled holes and attach the rubber isolation grommet under the motor mounting foot at each of the 4 mounting holes. Place the mating rubber isolation grommet over the top of the motor mounting foot hole and attach with the appropriate supplied washers, and bolts or screws.

19. Placement and securing the **R.O. Membrane and Vessel Assembly [27] or [27 & 28]**

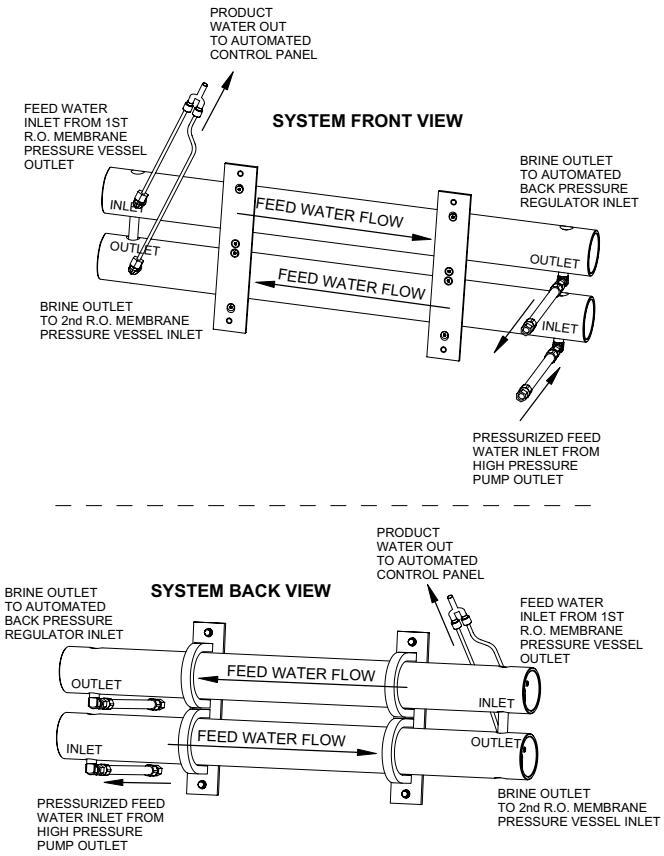
WATER FLOW OF SINGLE R.O. MEMBRANE ELEMENT PRESSURE VESSEL



Single R.O. Membrane Pressure Vessel Assembly [27]

Aqua Matic Modular 450-1
Aqua Matic Modular 700-1
Aqua Matic Modular 900-1

WATER FLOW OF DUAL R.O. MEMBRANE ELEMENT PRESSURE VESSEL



Double R.O. Membrane Pressure Vessel Assembly [27 & 28]

Aqua Matic Modular 900-2
Aqua Matic Modular 1400-2
Aqua Matic Modular 1800-2

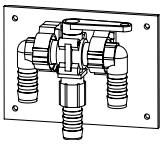
It is preferable to mount the R.O. Membrane Vessel Assembly in a horizontal position. It is mounted either to the floor, the wall, or over head. If mounting horizontally to a wall (vertical surface) The first R.O. Membrane Vessel is mounted at the bottom and the second R.O. Membrane Vessel is mounted at the top. This allows air to be displaced with feed water.

Note regarding Vertical Mounting of a Single R.O. Membrane Vessel Assembly: When Vertically mounting the single R.O. Membrane Pressure Vessel Assembly always position the Inlet at the bottom and the Outlet at the top. This allows air to be displaced with feed water.

Note regarding Vertical Mounting of a double R.O. Membrane Vessel Assembly: When Vertically Mounting the double R.O. Membrane Pressure Vessel Assembly always position the Inlet of the first R.O. Membrane Pressure Vessel at the bottom. By default, the Outlet of the second R.O. Membrane Pressure Vessel will also be at the bottom. Vertically mounting a double R.O. Membrane Pressure Vessel Assembly will cause air to become trapped in the second vessel. When the system pressurizes this air will eventually pass through the R.O. Membrane Element and into the product water. Product water flow fluctuations will occur until all of the air passes through.

With the supplied hardware attach the R.O. Membrane Vessel Assembly in line between the Outlet of the High Pressure Pump and the Control Panel. Two High Pressure Hoses are supplied for attachment of the R.O. Membrane Vessel Assembly to the High Pressure Pump and the Automation Control Panel. Each of these High Pressure Hoses are 6 Feet long (1829mm). Plan accordingly so that these supplied High Pressure Hoses will reach. Longer High Pressure Hoses can be ordered from Sea Recovery. DO NOT USE THIRD PARTY HIGH PRESSURE HOSES. Use of 3rd party, non Sea Recovery supplied, high pressure hoses will void warranty of those components that they connect to as well as any item damaged as a result of third party high pressure hose failure.

20. The **Rinse Clean Outlet Valve [55]** is mounted below water level after the System Brine Discharge Tee [34] located at the Automation Control Panel and before the Brine Discharge Connector [35 or 36].



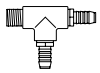
21. **Brine Discharge Connector [35]** or **Multi Media Filter Waste "T" [36]**

Attach the supplied **Brine Discharge Connector [35]** to the over board thru-hull connector [37].

Brine Discharge Connector

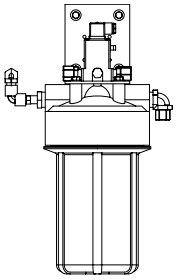
or

if the Multi Media Filter [12] is installed then attach the supplied **Multi Media Filter Waste "T" [36]** to the over board thru-hull connector [37].



Multi Media Filter Waste "T"

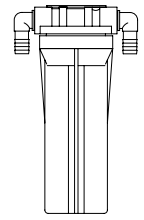
22. The **Fresh Water Flush Carbon Filter [51]**, with attached Fresh Water Flush 2-Way Solenoid Valve [49] and Fresh Water Flush Check Valve [50] is mounted to a flat vertical surface in an accessible location for filter element changing. Choose a location between the Automatic Fresh Water Flush Check Valve [52] and a pressurized line from the boat's fresh water pressure system [48].



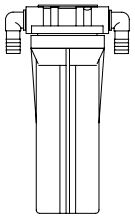
Fresh Water Flush Carbon Filter, Check Valve & 2-Way Solenoid Valve

23. Placement and securing the Post Filters: **Charcoal Filter [42]** and **pH Neutralizing Filter [43]**

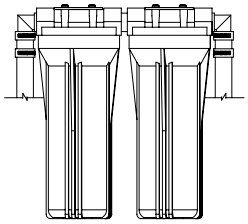
Separately Mounted **Attached together and mounted as one unit**



Single 10 Inch Carbon Filter



Single 10 Inch pH Neutralizing Filter

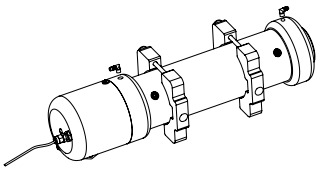


Dual Post Filters Charcoal Filter & pH Neutralizer

These two filters may be screwed together using a national pipe threaded close nipple. They may also be left as separate components and mounted separately. The Dual Post Filter Assembly [42 & 43] (screwed together) or the individual Post Filters is/are mounted to a flat vertical surface using the supplied screws. Allow minimum 4 inches (100mm) below the bowl, and allow accessibility to the Dual Post Filter Assembly for cartridge element removal and maintenance. Mount the Dual Post Filter Assembly between the Product Water Outlet port of the Automation Control Panel and the Inlet of the Ultra Violet Sterilizer if used or the potable water storage tank.

24. Placement and securing the **Ultra Violet Sterilizer [44]**

The Ultra Violet Sterilizer is mounted either vertically or horizontally to the floor, wall or overhead. If mounted vertically position the electronic section, where power cord is attached, at the top so that the air will be displaced with product water. If mounted horizontally position the Inlet and Outlet Ports on top so that air will be displaced with product water. Do not mount in any position that will allow air to become trapped inside the U.V. chamber.



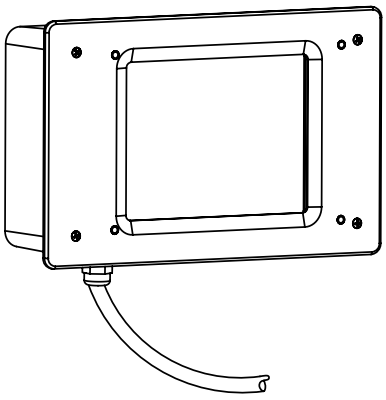
Ultra Violet Sterilizer

25. Secure the **Product Water Connector [45]** to the top of the potable water storage tank [46] or potable water storage tank fill line.

Product Water Tank Connector

26. Placement and securing the Main Touch Screen Enclosure Assembly [56]

The Main Touch Screen Enclosure Assembly is supplied with a 25 foot long (7.6m) cat 5 cable for connection to the Main Control Panel described in item 14 above.



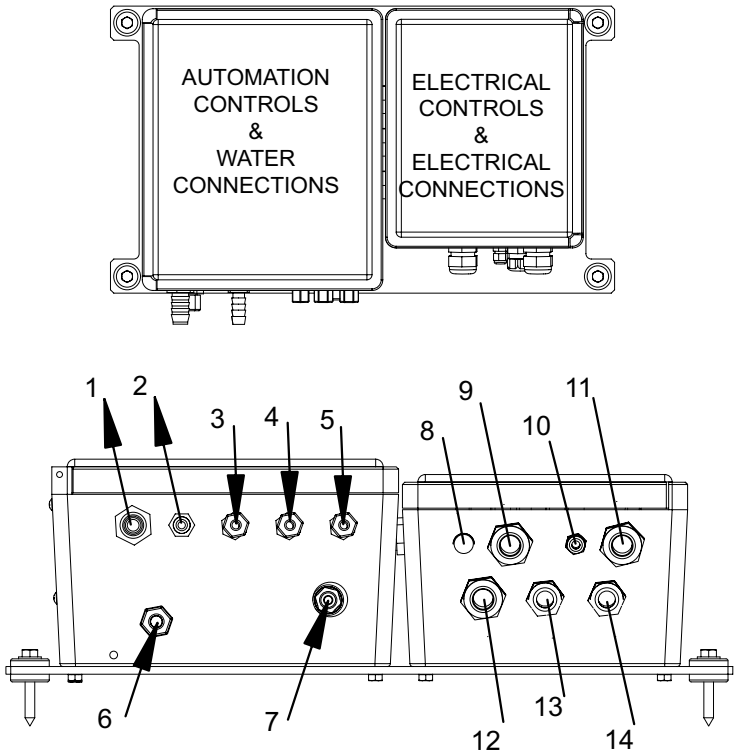
Place and install the Main Touch Screen Enclosure in a location that is:

- Attached with the supplied hardware
- Away from water lines and hoses
- Away from locations subject to water spray
- In an accessible and viewable location
- In view of the major components of the system
- Within 25 feet of the Main Control Panel

27. Placement and securing the Control Panel Assembly

The Control Panel requires water and electrical line connections from the other components of the system. Note the required connections illustrated and described below and locate the control panel in a logical placement that allows connection of these water and electrical lines. Ensure that both enclosure lids are able to fully open to allow access to the inside of them.

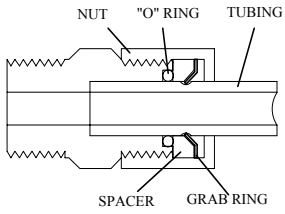
AQUA MATIC MODULAR STYLE
CCONTROL PANEL
AUTOMATION AND ELECTRICAL CONTROLS



1. BRINE DISCHARGE OUT TO OVER BOARD DISCHARGE THRU-HULL FITTING
2. POTALBE PRODUCT WATER OUT TO POST FILTRATION
3. LOW PRESSURE TRANSDUCER #1 [8] PRESSURE PICK UP FROM INLINE TEE
4. LOW PRESSURE TRANSDUCER #2 [17] PRESSURE PICK UP FROM INLINE TEE
5. DIFFERENTIAL PRESSURE TRANSDUCER #3 [12] PRESSURE PICK UP FROM INLINE TEE
6. PRODUCT WATER IN FROM MEMBRANE VESSEL OUTLET
7. HIGH PRESSURE BRINE WATER INLET FROM MEMBRANE VESSEL OUTLET
8. REMOTE TOUCH PAD
9. SOFT MOTOR STARTER
10. LOCAL/MAIN TOUCH PAD
11. MAIN POWER
12. HIGH PRESSURE PUMP MOTOR
13. BOOSTER PUMP MOTOR
14. FRESH WATER FLUSH

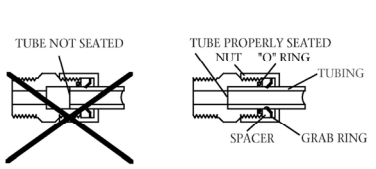
B. TUBING & HOSE PRECAUTIONS

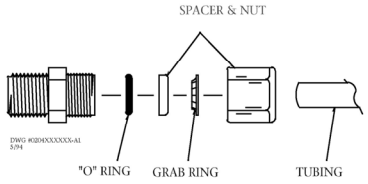
TUBE FITTING CONNECTIONS ASSEMBLY

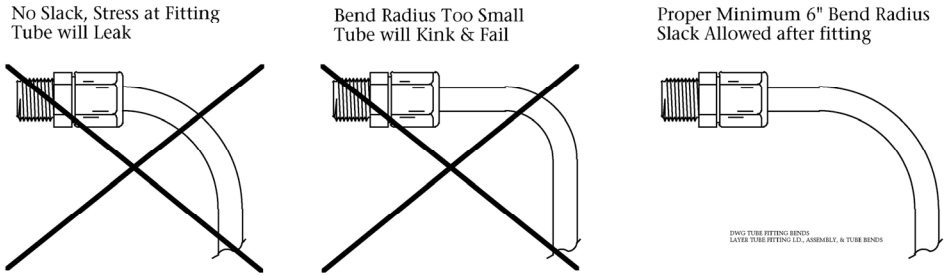


a. Cut tube end square and clean.
b. Loosen nut on fitting three turns.
c. Insert tube into fitting until it bottoms.
d. Loosen nut completely & remove tube with attached parts from body.
e. Check to ensure that the O-Ring is seated onto the tube under the spacer (and not pinched into the body).
f. Insert tube with attached parts into the body and tighten nut finger tight.

CAUTION: Refer to the following illustrations. Always allow slack in all tube and hose lines. Never cause the tube or hose to immediately bend from the fitting. Allow the line to enter or leave from the fitting in a straight manner for several inches to ensure proper connection, to relieve stress to the fitting and tube or hose, and to allow ease of detachment and reattachment during maintenance or repair.

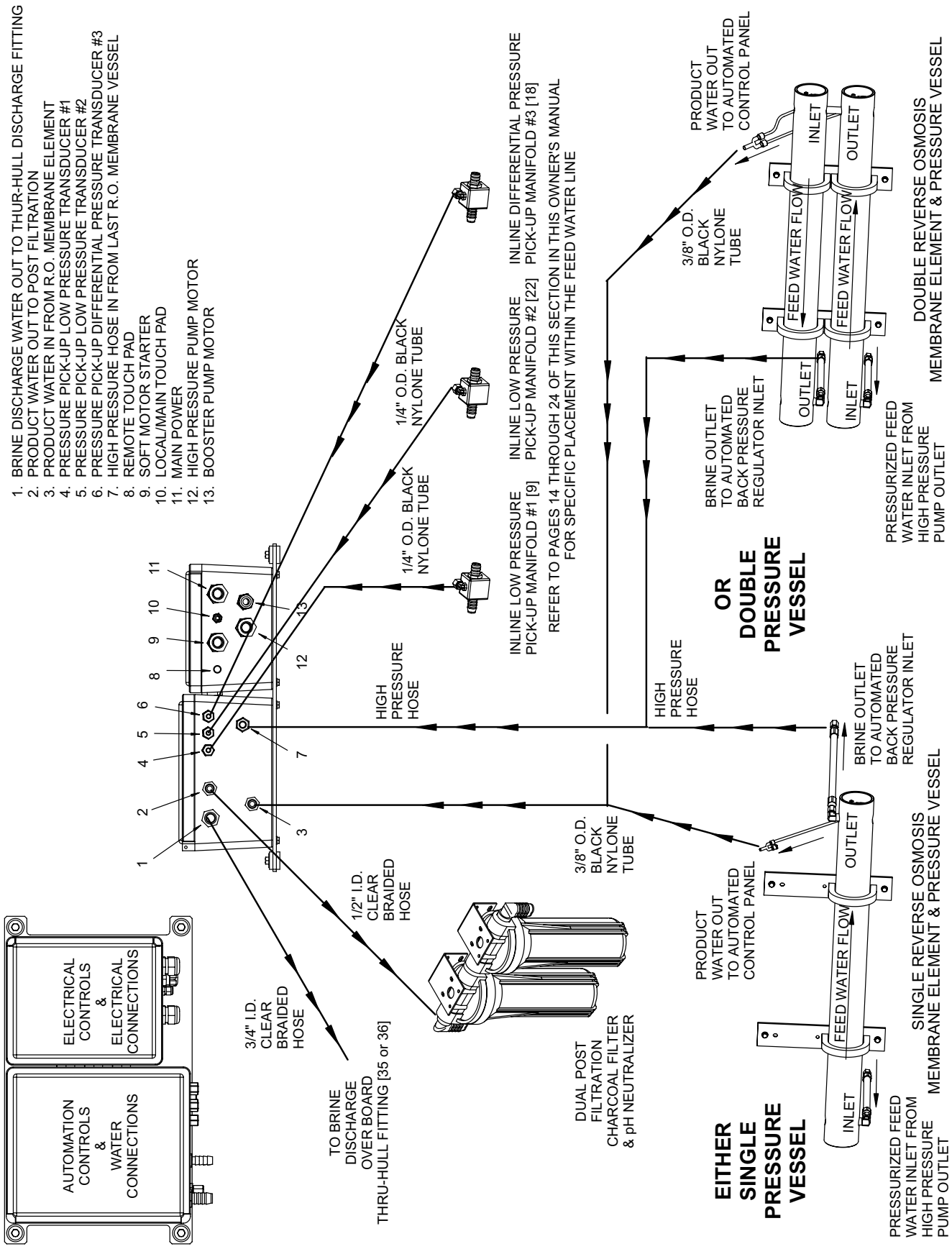






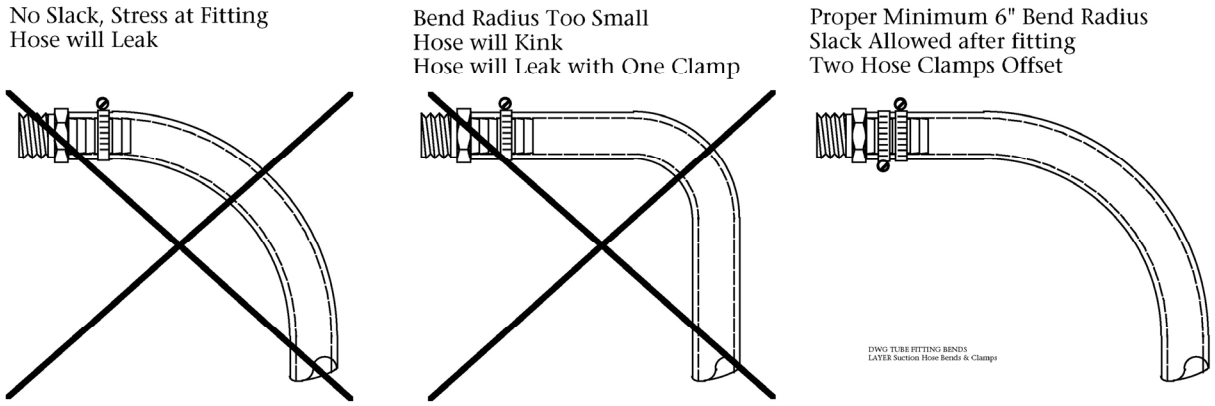
If water lines are pulled tight causing them to bend at the fitting they will leak, allow air to enter, fail prematurely, and or break the fitting that they are attached to.

C. INTERCONNECTING COMPONENTS WITH SUPPLIED HOSE REFER TO FOLLOWING PAGES.


1. BRINE DISCHARGE WATER OUT TO THUR-HULL DISCHARGE FITTING
2. PRODUCT WATER OUT TO POST FILTRATION
3. PRODUCT WATER IN FROM R.O. MEMBRANE ELEMENT
4. PRESSURE PICK-UP LOW PRESSURE TRANSDUCER #1
5. PRESSURE PICK-UP LOW PRESSURE TRANSDUCER #2
6. PRESSURE PICK-UP DIFFERENTIAL PRESSURE TRANSDUCER #3
7. HIGH PRESSURE HOSE IN FROM LAST R.O. MEMBRANE VESSEL
8. REMOTE TOUCH PAD
9. SOFT MOTOR STARTER
10. LOCAL/MAIN TOUCH PAD
11. MAIN POWER
12. HIGH PRESSURE PUMP MOTOR
13. BOOSTER PUMP MOTOR
AUTOMATION CONTROLS & WATER CONNECTIONS
ELECTRICAL CONTROLS & ELECTRICAL CONNECTIONS
3/4" I.D. CLEAR BRAIDED HOSE
TO BRINE DISCHARGE OVER BOARD THRU-HULL FITTING [35 or 36]
1/2" I.D. CLEAR BRAIDED HOSE
DUAL POST FILTRATION CHARCOAL FILTER & pH NEUTRALIZER
3/8" O.D. BLACK NYLONE TUBE
1/4" O.D. BLACK NYLONE TUBE
1/4" O.D. BLACK NYLONE TUBE
INLINE LOW PRESSURE PICK-UP MANIFOLD #1 [9]
INLINE LOW PRESSURE PICK-UP MANIFOLD #2 [22]
INLINE DIFFERENTIAL PRESSURE PICK-UP MANIFOLD #3 [18]
REFER TO PAGES 14 THROUGH 24 OF THIS SECTION IN THIS OWNER'S MANUAL FOR SPECIFIC PLACEMENT WITHIN THE FEED WATER LINE
HIGH PRESSURE HOSE
HIGH PRESSURE HOSE
OR DOUBLE PRESSURE VESSEL
EITHER SINGLE PRESSURE VESSEL
PRODUCT WATER OUT TO AUTOMATED CONTROL PANEL
PRODUCT WATER OUT TO AUTOMATED CONTROL PANEL
3/8" O.D. BLACK NYLONE TUBE
BRINE OUTLET TO AUTOMATED BACK PRESSURE REGULATOR INLET
BRINE OUTLET TO AUTOMATED BACK PRESSURE REGULATOR INLET
FEED WATER FLOW
FEED WATER FLOW
FEED WATER FLOW
INLET
OUTLET
INLET
OUTLET
INLET
OUTLET
PRESSURIZED FEED WATER INLET FROM HIGH PRESSURE PUMP OUTLET
PRESSURIZED FEED WATER INLET FROM HIGH PRESSURE PUMP OUTLET
SINGLE REVERSE OSMOSIS MEMBRANE ELEMENT & PRESSURE VESSEL
DOUBLE REVERSE OSMOSIS MEMBRANE ELEMENT & PRESSURE VESSEL

1. Using the 3/4" (19 mm) I.D. clear braided hose supplied connect the Suction Line components, Low Pressure line components, and Brine Discharge Line components:

   Secure each connection with the supplied hose clamps. Ensure all Suction Hose connections use two hose clamps rotated 180 degrees with the screw heads facing the same direction. Remove any flash on the Hose Barb fittings using fine sandpaper.



If your Aqua Matic is not supplied with a mentioned optional component then skip it and connect to the next supplied component.

Outlet of	to	Inlet of
Inlet Connection [3]		Inline Vacuum/Pressure Gauge [4]
Inline Vacuum/Pressure Gauge [4]		Sea Strainer [5]
Sea Strainer [5]		Rinse Clean Inlet Valve [54] left or right port
Rinse Clean Inlet Valve [54] unused left or right port		Rinse/Clean container [53]
Rinse Clean Inlet Valve [54] center port		Inline Vacuum/Pressure Gauge [6]
Inline Vacuum/Pressure Gauge [6]		Booster Pump [7]
Booster Pump [7]		Fresh Water Flush Check Valve [52] bottom
Fresh Water Flush Check Valve [49] top Hose Barb		Inline Vacuum/Pressure Gauge [8]
Inline Vacuum/Pressure Gauge [8]		
Booster Pump [7]		Inline Vacuum/Pressure Gauge [8]
Inline Vacuum/Pressure Gauge [8]		Find the Illustration in this Section on pages 24 through 30 that coincides to your system's Prefiltration Options and connect the components accordingly as illustrated.
Brine Discharge Tee [34]		Rinse Clean Discharge Valve [55]
Rinse Clean Discharge Valve [55]		Cleaning Bucket [53]
Rinse Clean Discharge Valve [55]		Brine Discharge Connector [35 or 36]
Multi Media Filter [12] Waste Line if used		Multi Media Filter Discharge Fitting separate Thru-Hull or Tee at Brine Discharge Connector [36]

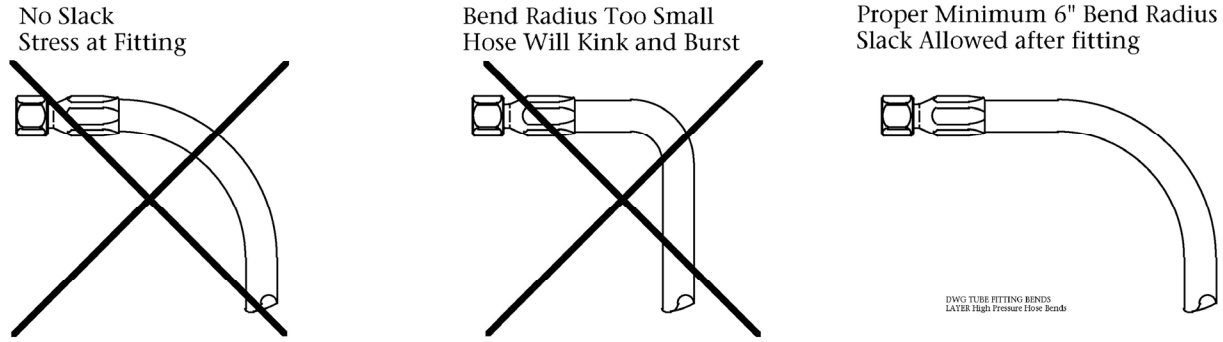
2. With the supplied 25 feet (7.6 meters) of 3/8" (9.5 mm) O.D. black nylon tubing connect the Product Water Tee [38] to the Automation Control Box Product Water Inlet Fitting as illustrated at page 49 of this section.

3. With the supplied 50 feet (15 meters) of 1/2" (12.7 mm) I.D. clear braided hose connect the Product Water Line components and secure each connection with the supplied hose clamps, placing 1 hose clamp onto each hose barb fitting:

Outlet of	to	Inlet of
Automation Control Box Product Water		Charcoal Filter [42]
pH Neutralizing Filter [43]		Ultra Violet Sterilizer [44]
Ultra Violet Sterilizer [44]		Potable Water Storage Tank or Cistern [45]

4. 1/4" (6.35 mm) OD nylon tubing is supplied with applicable components for connecting Pressure Pick Up points to the Low Pressure Transducers [10, 19 & 23]. Use or non use of the 1/4" OD nylon tubing is dependent upon Prefiltration Options installed as illustrated and explained on pages 14 through 214 of this Section.

5. Ensure all High Pressure Hoses have sufficient slack and are not pulled tight into a sharp or immediate bend. Ensure all High Pressure Hoses are not rubbing on abrasive surfaces. Ensure that all High Pressure Hoses are not directly attached to the hull or other surfaces in the boat that would amplify or enhance any noise or vibrations from the High Pressure Pump through the High Pressure Hose.



Locate one of the supplied High Pressure Hoses. Connect one end to the High Pressure Outlet fitting at the High Pressure Pump and connect the other end to the Inlet of the first R.O. Membrane Vessel [27]. Secure finger tight. Using two wrenches, hold in place the high pressure fitting at the High Pressure Pump and rotate the High Pressure Hose swivel fitting 1/4 turn to tighten. Again, using two wrenches, hold in place the high pressure fitting at the first R.O. Membrane Vessel Inlet and rotate the High Pressure Hose swivel fitting 1/4 turn to tighten.

Locate the other supplied High Pressure Hoses. Connect one end to the High Pressure Outlet fitting at the last R.O. Membrane Vessel connect the other end to the Inlet of the Back Pressure Regulator high pressure fitting located at the bottom of the Automation Control Box. Secure finger tight. Using two wrenches, hold in place the high pressure fitting at the last R.O. Membrane Vessel Outlet and rotate the High Pressure Hose swivel fitting 1/4 turn to tighten. Again, using two wrenches, hold in place the high pressure fitting at the Back Pressure Regulator high pressure fitting and rotate the High Pressure Hose swivel fitting 1/4 turn to tighten.

D. CUSTOMER SUPPLIED FRESH WATER TANK [46] HIGH AND LOW LEVEL SWITCHES and CUSTOMER SUPPLIED ALARM

Not Numbered on the Piping and Interconnect Diagram. Installed inside the Fresh Water Tank [46].

These two tank level switches are not necessary for operation of the System. They do add additional features to the Automatic mode of the System. The choice of make, model, and style are left up to the Installer or Owner. They must meet the electrical requirement and operation as explained below.

The customer may also connect an external alarm to the System which will alert the operator that they system has shut down.

Fresh Water Tank Low Level Switch ** owner/installer supplied provides an optional feature to the System Control Logic that works in conjunction with the Automatic Fresh Water Flush option.

When installed and connected to the Main Printed Circuit Board, the Fresh Water Tank Low Level Switch must be connected as a N.O. (Normally Open) 1PST (One Pole Single Throw) switch.

When the Fresh Water Tank [46] is empty the switch is Open. As water rises a few inches in the tank the switch Closes. This informs the System Control Logic that there is sufficient Fresh Water to perform the Automatic Fresh Water Flush Cycle.

Fresh Water Tank High Level Switch ** owner/installer supplied provides an optional feature to the System Control Logic that allows the System to shut off automatically when the Fresh Water Tank [46] is full, when the System is operated in the Automatic mode. Additionally, the System will not start in the Automatic mode when the Fresh Water Tank High Level Switch signals the System Control Logic that the Fresh Water Tank [46] is full.

When installed and connected to the Main Printed Circuit Board, the Fresh Water Tank High Level Switch must be connected as a N.C. (Normally Closed) 1PST (One Pole Single Throw) switch.

When the Fresh Water Tank [45] is several inches below the full mark the switch is Closed. As water rises and reaches the top of the full mark the switch Opens. This informs the System Control Logic that the Fresh Water Tank is full, the System will shut down if operating in the Automatic mode, and the System will not start in the Automatic mode.

If operation of the System is desired when the Fresh Water Tank Switch signals the System Control Logic that the Fresh Water Tank is full then the System may be operated in the Manual mode.

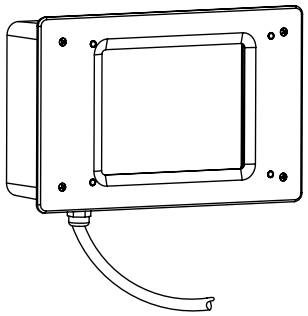
Alarm ** owner/installer supplied provides an optional feature to the System Control Logic that audibly or visually signals the operator that the System has stopped operating.

The output of this alarm circuit form the Main Printed Circuit Board is 12 VDC with MAXIMUM allowable current consumption of 1 (one) Ampere.

This alarm will signal if a fault occurs. It will not signal with a normal shut down that was not associated with a fault.

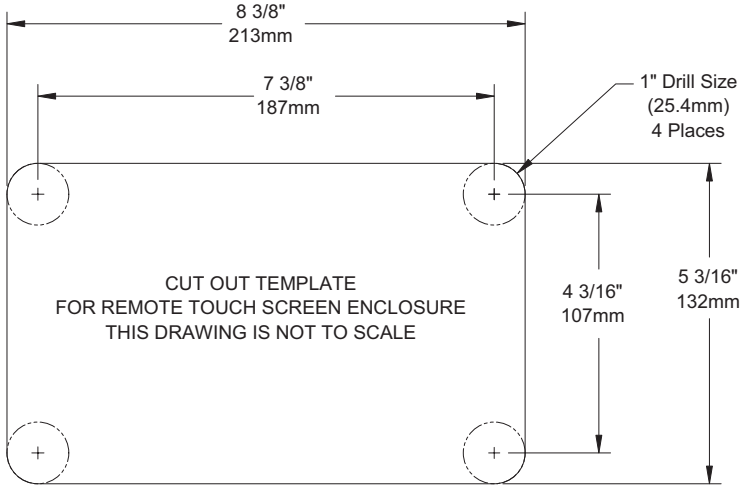
E. Placement and securing the Remote Touch Screen Enclosure Assembly [58]

The Remote Touch Screen Enclosure Assembly is supplied with a 75 foot long (22.9m) cat 5 cable for connection to the Main Control Panel.



Place and install the Remote Touch Screen Enclosure in a location that is:
- Away from water lines and hoses
- Away from locations subject to water spray
- In an accessible and viewable location
- Within 75 feet of the Main Control Panel

Cut-Out Illustration shown is NOT PRINTED TO SCALE



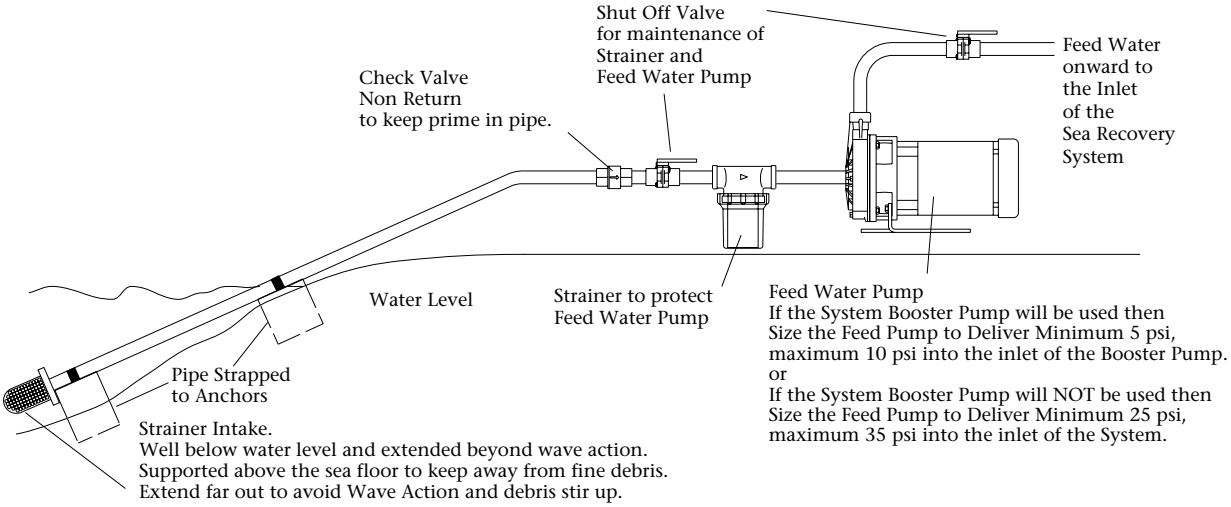
F. ELECTRICAL CONNECTIONS

Refer to Section 9 of this Owner's Manual for all electrical wire routing and connection.

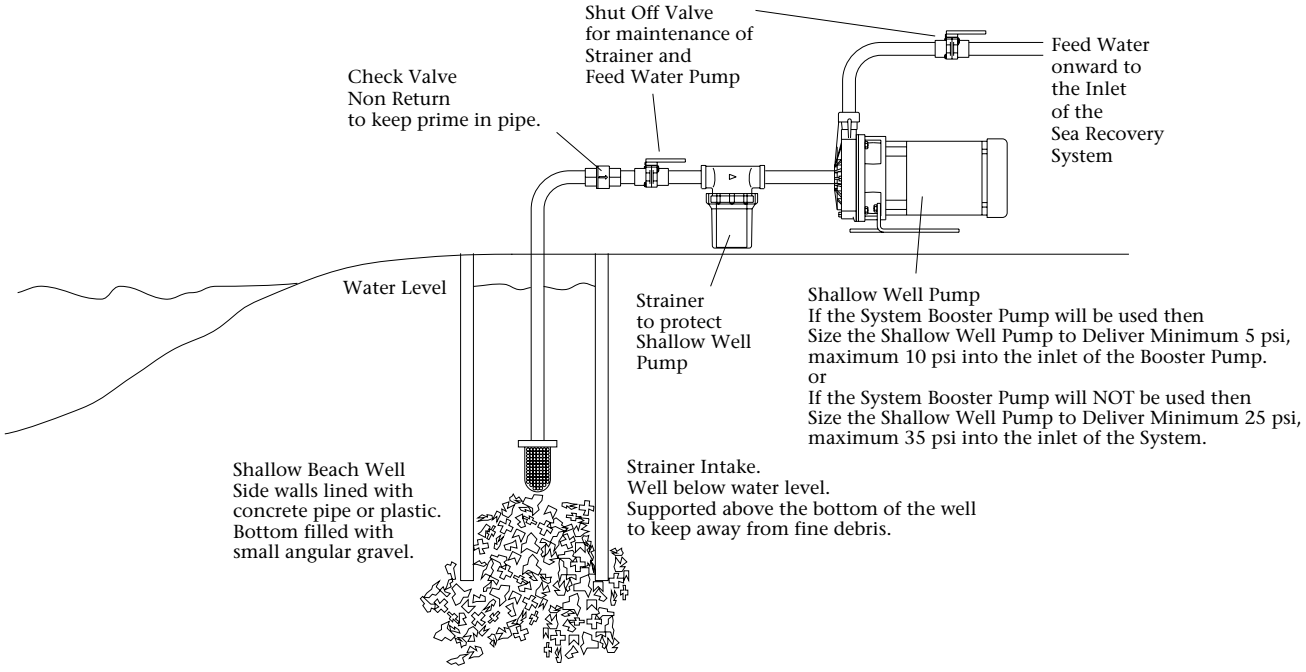
G. CAUTION: The Reverse Osmosis Membrane Element(s) [27 & 28] must be kept wet else severe loss of production will occur. Refer to Section 6 of this Owner's Manual for further information and instructions.

16. LAND INSTALLATION FEED WATER PICK-UP INFORMATION:

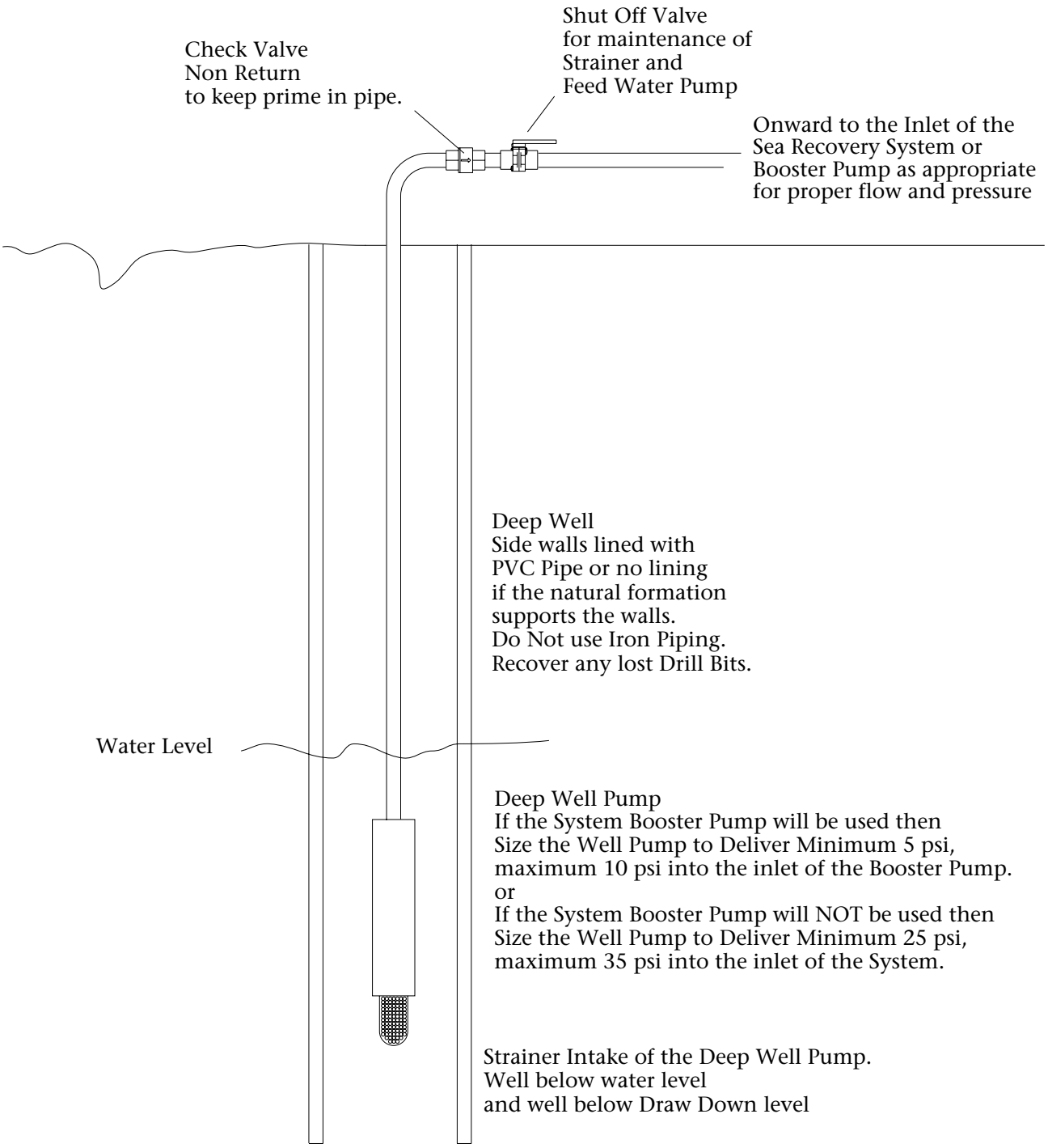
Example of Feed Water Intake Direct from the Feed Source for a Land Installation.



Example of Feed Water Intake from a Shallow Beach Well for a Land Installation.



Example of Feed Water Intake from a Deep Well for a Land Installation.



Notes: _____

Section 3

Features Set Up

Programing the System

Calibrations

&

Function Tests

Notes: _____

1. Features Set Up & Programming the Control Logic

The Aqua Matic computer logic is set by Sea Recovery prior to shipping based on the features and optional equipment that shipped with the System at the time of ordering.

Addition of the Fresh Water Flush to the System after it has shipped from Sea Recovery will require new set up of the Aqua Matic computer logic.

Addition of, removal of, or changes in the length of the R.O. Membrane / Pressure Vessel Assembly will require new set up of the Aqua Matic computer logic.

The following is an explanation of features that are programmable by the operator. It is required that each feature be set properly in order to gain maximum performance of the Aqua Matic.

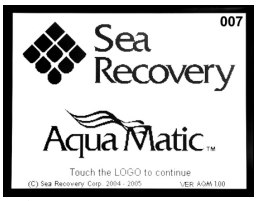
A. Features of the Aqua Matic that are programmable by the operator:

1. **SCREEN CONTRAST**
   Changes the viewing angle of the Touch Pad for easy viewing
2. **U.S. STANDARD MEASUREMENTS OR METRIC STANDARD MEASUREMENTS**
   Toggles the measurement standards between U.S. Standards and Metric Standards
   Pressure: U.S. Standard = PSI (Pounds Per square Inch); Metric Standard = kPa (kilo Pasquel)
   Flow: U.S. Standard = GPM (Gallons Per Minute) or GPH (Gallons Per Hour); Metric Standard = LPM (Liters Per Minute) or LPH (Liters Per Hour).
3. **DIVERSION VALVE SET POINT**
   Sets the Aqua Matic control logic to energize the 3-Way Product Water Diversion Valve [35] at a specific product water quality, in PPM (Parts Per Million). The factory setting is 800 PPM TDS (eight hundred Parts Per Million Total Dissolved Solids expressed as NaCl [sodium chloride - salt]).
4. **MODEL SETUP**
   Sets the Aqua Matic control logic for the proper amount of product water based on the quantity and size of the R.O. Membrane Element(s) installed in the system.

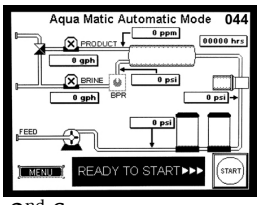
   WARNING: If this feature is improperly setup the System will either operate at a lower than required pressure producing less than specified product water and at poor quality, or it will operate at a higher than required pressure producing too much product water which will prematurely foul the R.O. Membrane Element(s).
5. **FRESH WATER FLUSH OPTION SETUP**
   Informs the Aqua Matic control logic that the Fresh Water Flush Option [49-52]is installed or is not installed.
6. **DIFFERENTIAL PRESSURE TRANSDUCER OPTION SETUP**
   Informs the Main Control Logic that the Differential Pressure Transducer #3 [12] is installed and connected.
7. **SALINITY CALIBRATION**
   Synchronizes the Salinity Probe with the Main Control Logic. Calibrates the Salinity Probe.
8. **FLOW CALIBRATION**
   Synchronizes the Flow Meters with the Main Control Logic. Calibrates the Flow Meters.
9. **DETECT REMOTE.**
   Informs the Main Control Logic that a Remote Touch Screen has been connected and requests the Control Logic to communicate with the Remote Touch Screen.

B. Programming the Aqua Matic computer logic:

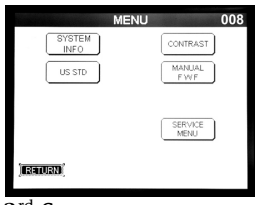
1. **SCREEN CONTRAST**
   Changes the viewing angle of the Touch Pad for easy viewing



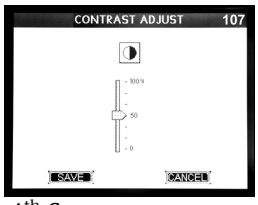
1st Screen007
Touch the Logo



2nd Screen044
Touch MENU

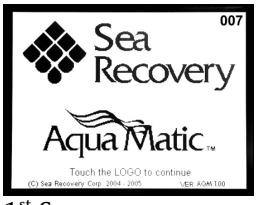


3rd Screen008
Touch CONTRAST

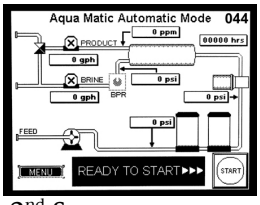


4th Screen107
Touch & Move the BAR up or down
Touch SAVE to save the change
or
Touch CANCEL to revert to original setting.

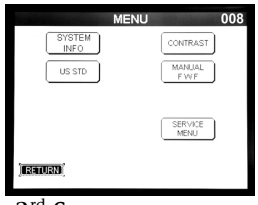
2. **U.S. STANDARD MEASUREMENTS OR METRIC STANDARDS MEASUREMENTS SCREEN 438**
   Toggles the measurement standards between U.S. Standards and Metric Standards
   Pressure: U.S. Standard = PSI (Pounds Per square Inch); Metric Standard = kPa (kilo Pasquel)
   Flow: U.S. Standard = GPM (Gallons Per Minute) or GPH (Gallons Per Hour); Metric Standard = LPM (Liters Per Minute) or LPH (Liters Per Hour).



1st Screen007
Touch the Logo



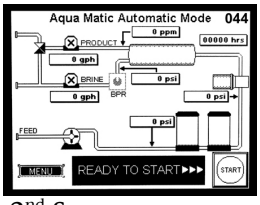
2nd Screen044
Touch MENU



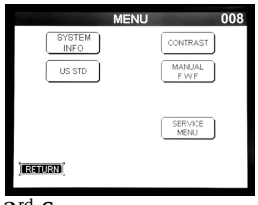
3rd Screen008
Touch US STD to revert to METRIC
Touch METRIC STD to revert to US
Touch RETURN to confirm

3. **DIVERSION VALVE SET POINT**
   Sets the Aqua Matic control logic to energize the 3-Way Product Water Diversion Valve [41] at a specific product water quality, in PPM (Parts Per Million). The factory setting is 800 PPM TDS (eight hundred Parts Per Million Total Dissolved Solids expressed as NaCl [sodium chloride - salt]).

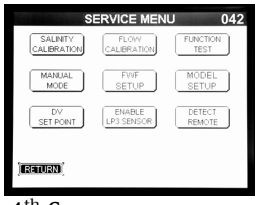
1st Screen007
Touch the Logo



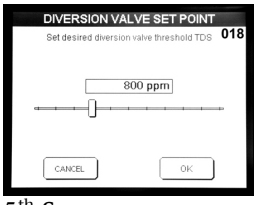
2nd Screen044
Touch MENU



3rd Screen008
Touch SERVICE MENU



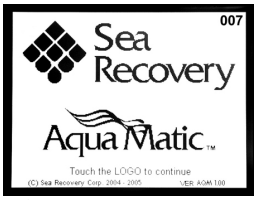
4th Screen042
Touch DV SET POINT



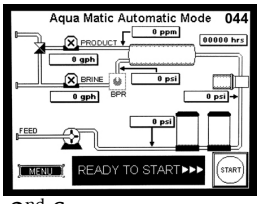
5th Screen018
Touch the BAR & move it to the desired setting.
Touch OK to confirm the new setting.
or
Touch CANCEL to revert to original setting.

4. **MODEL SETUP.**

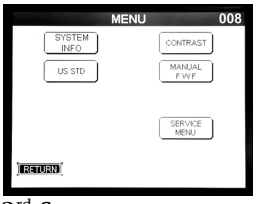
WARNING: The System logic must be informed as to the length and quantity of R.O. Membrane Elements that are installed in the System. If this information is incorrect the System will operate out of specifications with lower than required pressure producing less than specified amount of Product Water, or higher than required pressure which will prematurely foul the R.O. Membrane Element(s) [27 or 27 & 28].



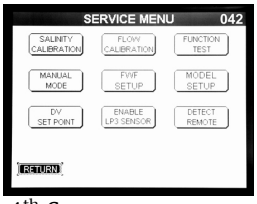
1st Screen007
Touch the Logo



2nd Screen044
Touch MENU



3rd Screen008
Touch SERVICE MENU

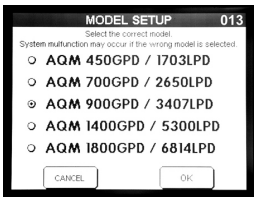


4th Screen042
Touch MODEL SET UP

WHICH MODEL ARE YOU COMMISSIONING?

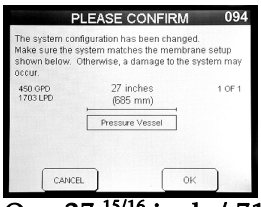
Viewing the System, determine the length and quantity of R.O. Membrane Pressure Vessels installed and relate that to the Model Production.

Quantity of Pressure Vessels	Length of Pressure vessels	Model Production
1	27 15/16 inches / 710 mm	450 GPD / 1703 LPD
1	37 15/16 inches / 964 mm	700 GPD / 2650 LPD
1	46 15/16 inches / 1192 mm	900 GPD / 3407 LPD
2	27 15/16 inches / 710 mm	900 GPD / 3407 LPD
2	37 15/16 inches / 964 mm	1400 GPD / 5300 LPD
2	46 15/16 inches / 1192 mm	1800 GPD / 6814 LPD

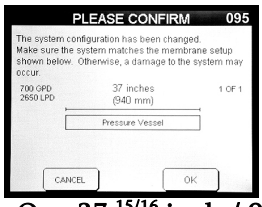


5th Screen013

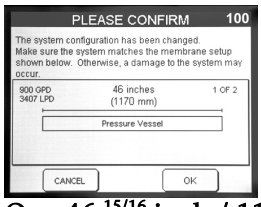
If you changed the Model and pressed OK at the MODEL SETUP Screen, one of 6 different Screens will appear asking you to confirm your choice. If the information at the PLEASE CONFIRM Screen is correct, PRESS OK. If the information at the PLEASE CONFIRM Screen is not correct, PRESS CANCEL.



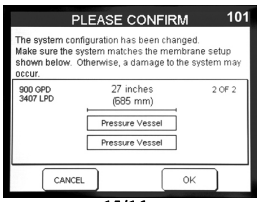
One 27 15/16 inch / 710 mm Pressure Vessel 450 GPD / 1703 LPD



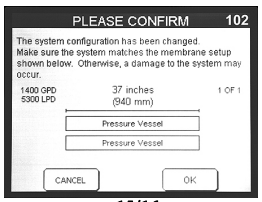
One 37 15/16 inch / 964 mm Pressure Vessel 700 GPD / 2650 LPD



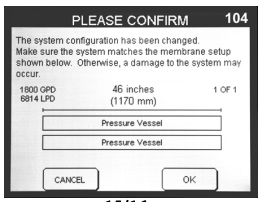
One 46 15/16 inch / 1192 mm Pressure Vessel 900 GPD / 3407 LPD



Two 27 15/16 inch / 710 mm Pressure Vessel 900 GPD / 3407 LPD



Two 37 15/16 inch / 964 mm Pressure Vessel 1400 GPD / 5300 LPD

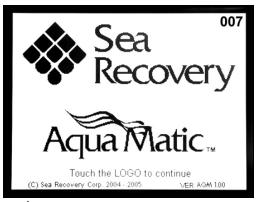


Two 46 15/16 inch / 1192 mm Pressure Vessel 1800 GPD / 6814 LPD

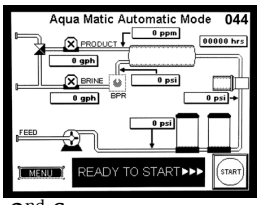
5. FRESH WATER FLUSH OPTION SETUP

Inform the Aqua Matic control logic if the Fresh Water Flush Option [49 - 52] is installed or is not installed.

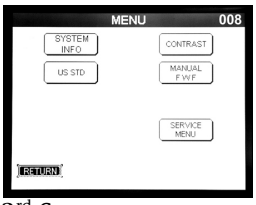
WARNING: The System will perform a Fresh Water Flush automatically each time the System is shut down. Fresh Water must be available for this cycle, and power must be connected to the System.



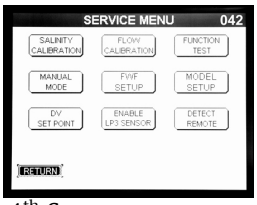
1st Screen007
Touch the **Logo**



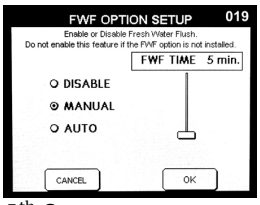
2nd Screen044
Touch MENU



3rd Screen008
Touch SERVICE MENU



4th Screen042
Touch FWF SETUP



5th Screen019

Touch DISABLE to inform the control logic that the Fresh Water Flush option is NOT installed or to disable this feature if it is not desired.

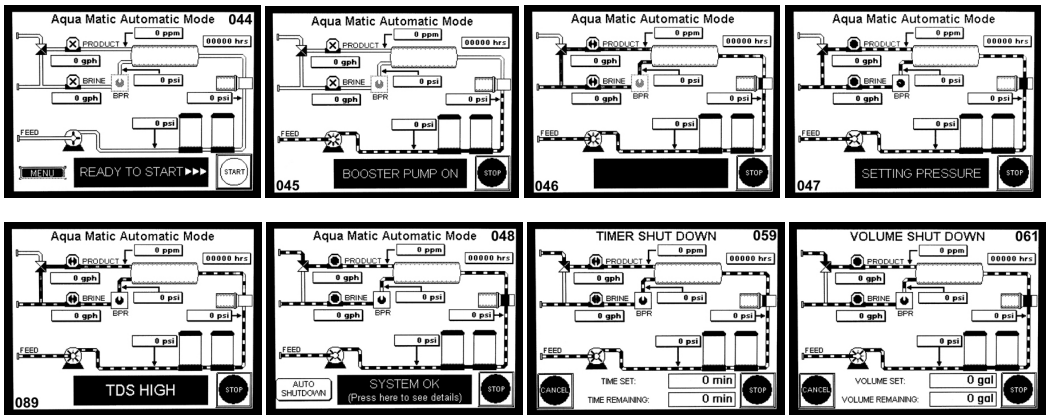
Touch MANUAL to inform the control logic that the Fresh Water Flush option IS installed & you DO NOT wish for the Fresh Water Flush cycle to perform Automatically. You wish to perform Fresh Water Flushing manually.

Touch AUTO to inform the control logic that the Fresh Water Flush option IS installed and you wish the System to perform the Fresh Water Flush cycle Automatically each time the System is shut down and every 7 days during non operation of the Aqua Matic.

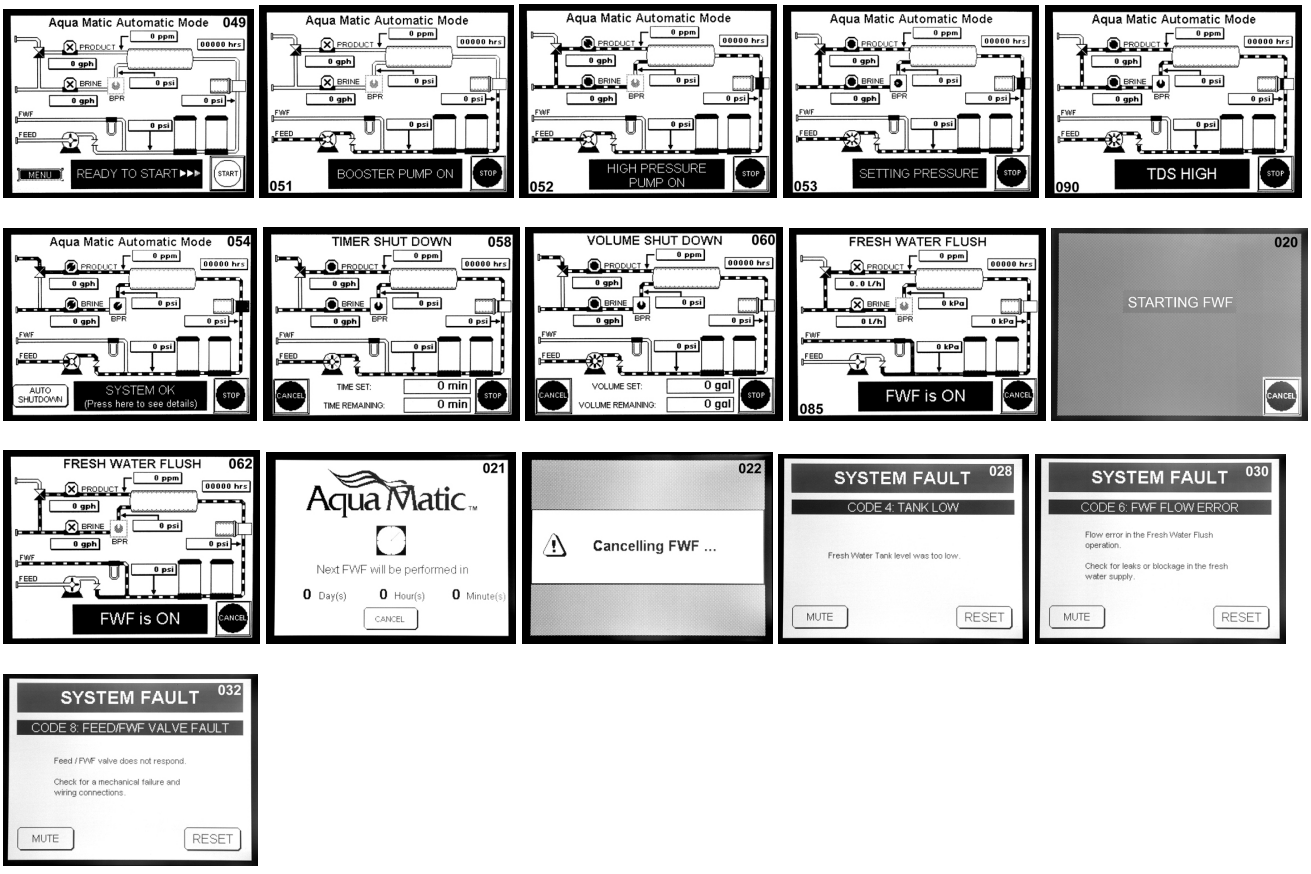
Touch CANCEL if the FWF Option SETUP is correct

Touch OK to confirm the change made.

If the System Control Logic has been informed that the System DOES NOT include the Automatic Fresh Water Flush option, the operating screens will not display the Fresh Water Flush Charcoal Filter [51] and the Fresh Water Flush cycle screens. If the Fresh Water flush feature has been DISABLED during the FRESH WATER FLUSH SETUP, as explained on the previous page, then the information screens displayed above will appear.

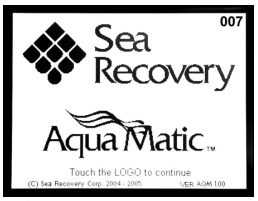


If the System Control Logic has been informed that the System DOES include the Automatic Fresh Water Flush option, the operating screens will display the Fresh Water Flush Charcoal Filter [51] and the Fresh Water Flush cycle screens. If the Fresh Water flush feature has been set to MANUAL or AUTO during the FRESH WATER FLUSH SETUP, as explained on the previous page, then the information screens displayed below will appear:

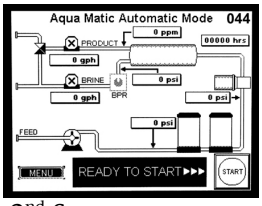


6. DIFFERENTIAL PRESSURE TRANSDUCER OPTION SETUP

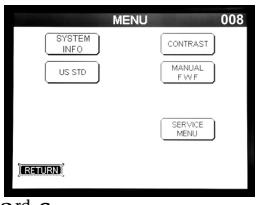
Inform the Aqua Matic control logic if the Differential Pressure Transducer #3 [19] Option has been installed and connected.



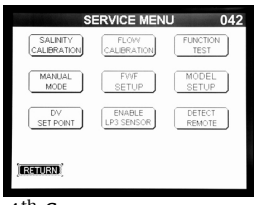
1st Screen007
Touch the **Logo**



2nd Screen044
Touch MENU



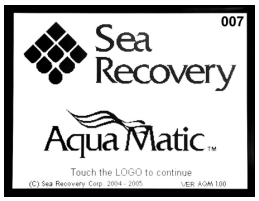
3rd Screen008
Touch SERVICE MENU



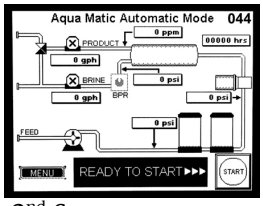
4th Screen042
Touch ENABLE LP3 SENSOR

7. SALINITY CALIBRATION

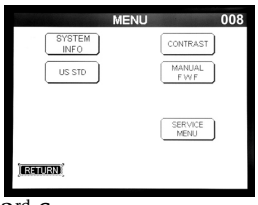
Calibrates the Salinity Probe [39] with the Control Logic. For this calibration procedure the operator must have on hand Test Solution calibrated to 800 PPM TDS NaCl, available from Sea Recovery



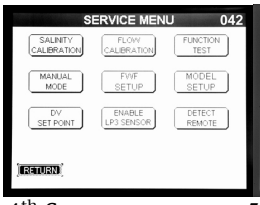
1st Screen007
Touch the **Logo**



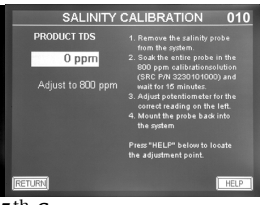
2nd Screen044
Touch MENU



3rd Screen008
Touch SERVICE MENU



4th Screen042
Touch SALINITY CALIBRATION

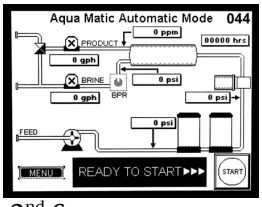


5th Screen010
Follow the screen instructions

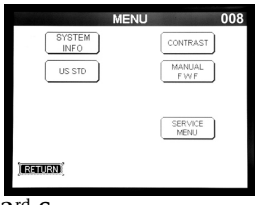
8. BRINE WATER AND PRODUCT WATER FLOW METER CALIBRATION

Calibrates the Brine Water Flow Meter [33] and Product Water Flow Meter [40] with the Control Logic.

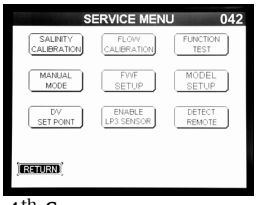
1st Screen007
Touch the **Logo**



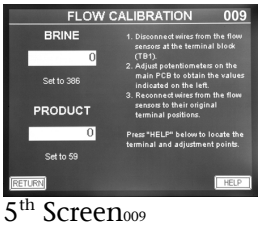
2nd Screen044
Touch MENU



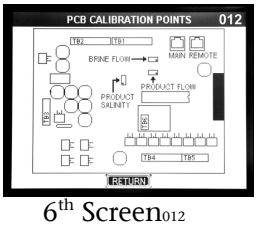
3rd Screen008
Touch SERVICE MENU



4th Screen042
Touch FLOW CALIBRATION



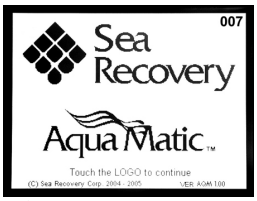
5th Screen009
Follow Screen Instructions.
Press HELP to view PCB CALIBRATION POINTS SCREEN



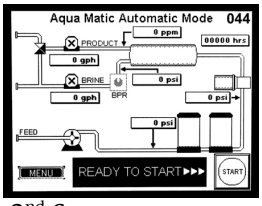
6th Screen012
PCB CALIBRATION POINTS SCREEN

9. DETECT REMOTE.

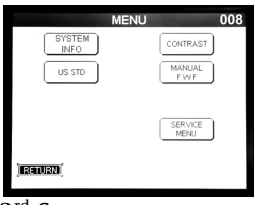
Informs the Main Control Logic that a Remote Touch Screen [58] has been connected and requests the Control Logic to communicate with the Remote Touch Screen.



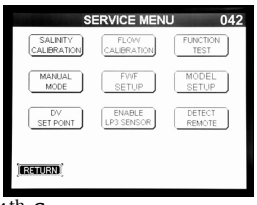
1st Screen007
Touch the **Logo**



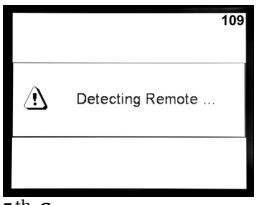
2nd Screen044
Touch MENU



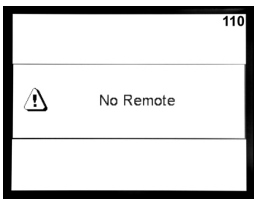
3rd Screen008
Touch SERVICE MENU



4th Screen042
Touch DETECT REMOTE

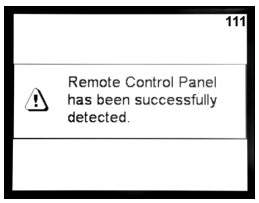


5th Screen109
Information



6th Screen110
No Remote is displayed if the Remote is not Connected

or



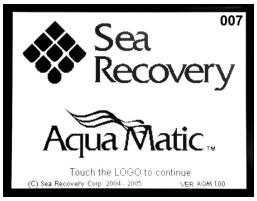
6th Screen111
Remote Control Panel has been successfully detected.

C. Function Tests of Electric Components:

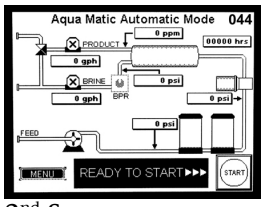
PRIOR TO ASSUMING THAT AN ELECTRICAL COMPONENT IS BROKEN OR NON FUNCTIONAL PERFORM A FUNCTION TEST TO DETERMINE IF IT IS OPERABLE OR NOT.

Function Tests can be performed at the Touch Screen for the following Electrical Components:

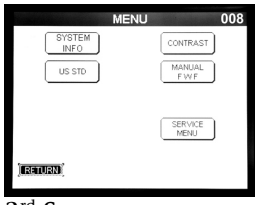
- Booster Pump [7] Electric Motor
- High Pressure Pump [25] Electric Motor
- 3-Way Product Water Diversion Valve [41] energize solenoid
- Fresh Water Flush Valve [49] energize solenoid
- Back Pressure Regulator Electric Motor [32] Actuator
- U.V. Sterilizer [44] Ballast and Lamp



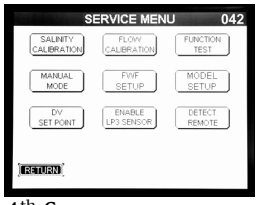
1st Screen007
Touch the **Logo**



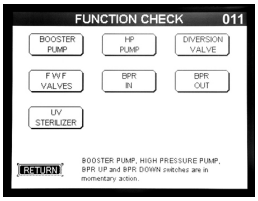
2nd Screen044
Touch MENU



3rd Screen008
Touch SERVICE MENU



4th Screen042
Touch FUNCTION TEST



5TH Screen011 **Touch**:

BOOSTER PUMP — Booster Pump [7] Electric Motor will Jog momentarily. At the Controller Printed Circuit Board the CONTROL STATUS LED "BP" will illuminate momentarily.

HP PUMP — High Pressure Pump [25] Electric Motor will Jog momentarily. At the Controller Printed Circuit Board the CONTROL STATUS LED "HP" will illuminate momentarily.

DIVERSION VALVE — 3-Way Product Diversion Valve Solenoid [41] will energize momentarily. At the Controller Printed Circuit Board the CONTROL STATUS LED "DV" will illuminate momentarily.

FWF VALVE — Fresh Water Flush Solenoid Valve [49] will energize to the Fresh Water Flush position. Pressing the switch a second time will cause the Fresh Water Flush Solenoid Valve to revert to the Normal Feed position. At the Controller Printed Circuit Board the CONTROL STATUS LED "FWF" will illuminate momentarily.

BPR IN — Back Pressure Regulator [32] Motor Actuator will rotate clock wise momentarily. At the Controller Printed Circuit Board the BPR STATUS LED "FORWARD" will illuminate momentarily. The actuator motor will not rotate in if the valve is less than one turn open.

BPR OUT — Back Pressure Regulator [32] Motor Actuator will rotate counter clock wise momentarily. At the Controller Printed Circuit Board the BPR STATUS LED "REVERSE" will illuminate momentarily. The actuator motor will not rotate out if the valve is greater than 8 turns open.

U.V. STERILIZER — U.V. Sterilizer [44] will flicker. Check for illumination. At the Controller Printed Circuit Board the CONTROL STATUS LED "UV" will illuminate momentarily.

D. Pressing **RETURN** reverts to the **READY TO START** Screen

THE SYSTEM INFORMATION SCREEN:

From time to time, Sea Recovery may make programming changes to the Control Logic (CONTROL VER), Display Logic (DISPLAY VER), and the Display Operating System (DISPLAY OS).

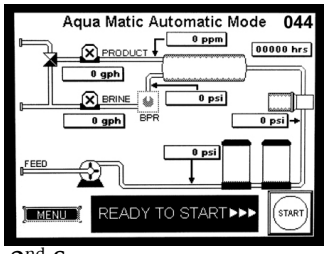
Other physical production changes may also be made from time to time and are tracked by Sea Recovery through the System Serial Number.

Troubleshooting and repair methods and results can vary depending on the information that is displayed at the SYSTEM INFORMATION screen.

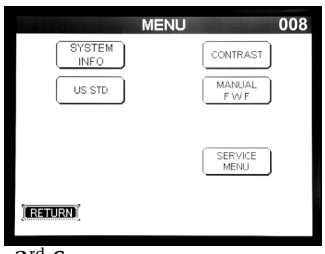
When requesting assistance from Sea Recovery or one of Sea Recovery's service dealers,

ALWAYS PROVIDE ALL INFORMATION DISPLAYED AT THE SYSTEM INFORMATION SCREEN.

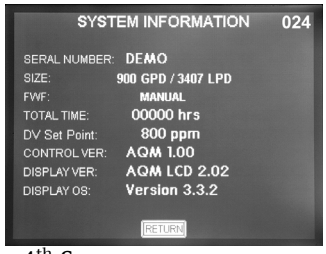
1st Screen007
Touch the Logo



2nd Screen044
Touch MENU



3rd Screen008
Touch SYSTEM INFO



4th Screen024
INFORMATION

SERIAL NUMBER helps us to determine the latest physical version and configuration of your system which is necessary to ensure that we provide you with the correct information or parts.

SIZE tells us the production capacity of your system which gives us a bench mark in diagnosing product water flow and pressure concerns.

FWF tells us if you have installed and are utilizing the Fresh Water Flush feature.

TOTAL TIME assists us in diagnosing abnormalities that can occur at given operational time intervals such as required pump maintenance, or R.O. Membrane Element condition.

DV Set Point helps us to determine if the R.O. Membrane Element is losing its rejection capabilities or if the 3-Way Product Water Diversion Solenoid Valve Set Point is simply adjusted too high or too low.

CONTROL VER allows us to determine the specific sequential operation of the system based on the version of the programmed control logic.

DISPLAY VER and DISPLAY OS assists us in diagnosing problems associated with the Main and Remote Touch Screen(s).

Notes:

Section 4

New System Commissioning
(First Time Start Up of a New System)

Notes: _____

1. SYSTEM COMMISSIONING NOTES:

Throughout this Manual, Numbers in [brackets] refer to the I.D. numbers Illustrated in the various Piping and Interconnect Diagrams throughout this manual.

These Commissioning instructions must be carried out for initial start-up of a NEW system. For every day use starting procedures, refer to Section 4 Operation.

Failure to follow these instructions exactly leads to system failure and causes damage to components within the System. Read this section and other appropriate sections of the manual in order to gain familiarity with the requirements of the system and functions of each component.

2. CHECK THE INSTALLATION TO ENSURE CONFORMANCE TO INSTRUCTIONS IN SECTION 2 OF THIS MANUAL:

1. Ensure that the installation has been properly performed as per the instructions in Section 2 of this Owner's Manual. Do not rely on the installer's word, do not assume the Aqua Matic has been installed correctly.

WARNING: Damage caused to the system due to operation of an improperly installed system is attributed to improper installation and subsequent operation, is the liability of the installer and the operator, and is not covered by the Sea Recovery warranty.

Check each water connection to the system to ensure that the installer has properly connected and properly routed each tube. Improper routing and any blockage in any line causes damage to the system. Improperly connected or loose connected lines resulting in leaks causing damage is the liability of the installer and the operator, and is not covered by the Sea Recovery warranty.

Do not assume and do not rely on the installer's word; check it yourself.

Make sure that the Electrical Power Source, boat's circuit breaker to the system, is switched "OFF".

Open the Electrical Control Box and check all electrical and electronic connections for proper wiring and attachment. Refer to the wiring diagrams in Section 9 of this Owner's Manual.

After checking all wiring for correct and tight connection, close the Electrical Control Box.

Switch the Electrical Power Source, boat's circuit breaker to the system, to the "ON" position.

3. REVERSE OSMOSIS MEMBRANE ELEMENT:

Check to ensure that the Reverse Osmosis Membrane Element(s) is (are) installed within the Pressure Vessel(s).

CAUTION: Some systems are shipped WITHOUT the Reverse Osmosis Membrane Element. This is to accommodate, for example, Boat Builders that install the system well in advance of commissioning the boat and the Aqua Matic.

If the Reverse Osmosis Membrane Element has been installed, there will be a Reverse Osmosis Membrane Element Serial Number tag, illustrated below, attached to the High Pressure Vessel. Find this Serial Number tag to ensure that the R.O. Membrane Element has been installed.

If the R.O. Membrane Element Serial Number tag is missing or does not contain a serial number and date, then immediately contact the company that sold the system to you, the installer, or Sea Recovery.

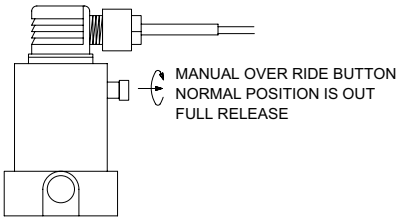
DO NOT attempt to operate the system without a Reverse Osmosis Membrane Element installed in the system otherwise extensive damage will result. WARNING: Damage caused to the system due to operation of the System without an R.O. Membrane Element correctly installed in each Pressure Vessel attributed to improper installation and subsequent operation, is the liability of the installer and the operator, and is not covered by the Sea Recovery warranty.

Sea Recovery Rancho Dominguez, California 90220 U.S.A.
Tel: 1-310-637-3400 ¦ Fax: 1-310-637-3430
Email: srcsales@searecovery.com

SERIAL NO:	**087945021505**
FLOW: -->	**BRINE INLET END**
DATE:	**February 15, 2005**

4. INITIAL COMMISSIONING AND START-UP PROCEDURE OF A NEW Aqua Matic:

1. Ensure that the manual By-Pass lever on the 3-Way Product Water Diversion Valve [41] is positioned outward (away from the coil body).



2. Open any auxiliary valve within the incoming Feed Line, Outgoing Brine Discharge Line, and Outgoing Product Water Line.

   WARNING: If any auxiliary valve is installed in these lines, it will damage the Aqua Matic if left closed during starting and/or operation of the system. The resulting damage to the system is attributed to improper installation, is the liability of the operator, and is not covered by the Sea Recovery warranty.

3. Position Rinse Clean Inlet Valve [54] to normal operation towards the Sea Strainer [4]

4. Position Rinse Clean Outlet Valve [55] to normal operation towards the Thru Hull Discharge Fitting [30]

5. Check all filter housings to ensure that they contain the proper filter element:
   a. Sea Strainer [5] check for monel screen
   b. Plankton Filter [11] if installed check for monel fine mesh screen filter element
   c. Multi Media Filter [12] if installed check for media (#20 silica sand).
   d. Dual Prefilter [15 & 16] or Commercial Prefilter [14] check for pleated cartridge filter elements
   e. Oil/water Separator [20] check for Oil/water Separator filter element
   f. R.O. Membrane(s) [27 or 27 & 28] check for Sea Recovery Serial Number and Date on the label attached to each pressure vessel.
   g. Charcoal Filter [42] check for charcoal filter element
   h. pH Neutralizer [43] check for pH Neutralizer cartridge
   i. Fresh Water Flush Carbon Filter [51] check for Carbon element.

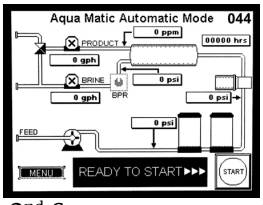
6. Function Tests of Electric Components:

PRIOR TO ASSUMING THAT AN ELECTRICAL COMPONENT IS BROKEN OR NON FUNCTIONAL PERFORM A FUNCTION TEST TO DETERMINE IF IT IS OPERABLE OR NOT.

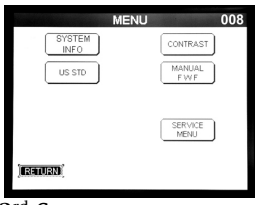
Function Tests should be performed as part of the commissioning procedure. Function tests can be performed from the Touch Screen for the following Electrical Components:

- Booster Pump [7] Electric Motor
- High Pressure Pump [25] Electric Motor
- Diversion Valve [41] energize solenoid
- Fresh Water Flush Valve [49] energize solenoid
- Back Pressure Regulator [32] Electric Motor Actuator
- U.V. Sterilizer [44] Ballast and Lamp

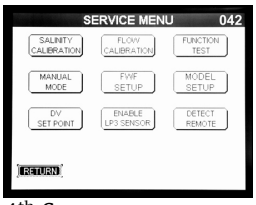
1st Screen007
Touch the **Logo**



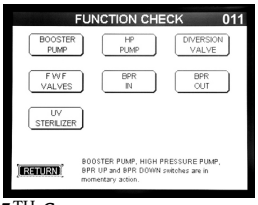
2nd Screen044
Touch MENU



3rd Screen008
Touch SERVICE MENU

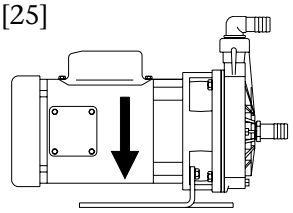


4th Screen042
Touch FUNCTION TEST

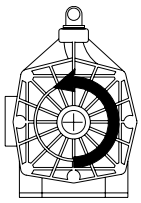


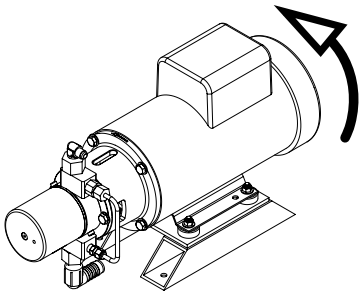
5TH Screen011
Touch as appropriate to perform function

a. **ELECTRIC MOTOR ROTATIONAL CHECK**: Ask an assistant to view the fan section of the Booster Pump Motor [7] and High Pressure Pump Motor.[25] while you "Jog" each of these electric motors. These Illustrations show the proper rotation of each electric motor. Rotation is clockwise when viewing the back of the electric motor (fan), counter clock wise when viewing the front of the pump



BOOSTER PUMP Rotation Direction





HIGH PRESSURE PUMP Rotation Direction

b. AT THIS TIME CHECK THE FUNCTION OF THE FOLLOWING ELECTRICAL COMPONENTS:

BOOSTER PUMP: Booster Pump [7] Electric Motor will Jog momentarily. At the Controller Printed Circuit Board the CONTROL STATUS LED "BP" will illuminate momentarily.

HP PUMP: High Pressure Pump [25] Electric Motor will Jog momentarily. At the Controller Printed Circuit Board the CONTROL STATUS LED "HP" will illuminate momentarily.

DIVERSION VALVE: 3-Way Product Diversion Valve [41] Solenoid will energize momentarily. At the Controller Printed Circuit Board the CONTROL STATUS LED "DV" will illuminate momentarily.

FWF VALVE: Fresh Water Flush Solenoid Valve [49] will actuate to the Fresh Water Flush position. Pressing the switch a second time will cause the Fresh Water Flush Solenoid Valve to revert to the Normal Feed position. At the Controller Printed Circuit Board the CONTROL STATUS LED "FWF" will illuminate momentarily.

BPR IN: Back Pressure Regulator [32] Motor Actuator will rotate clock wise momentarily. At the Controller Printed Circuit Board the BPR STATUS LED "FORWARD" will illuminate momentarily. The actuator motor will not rotate in if the valve is less than one turn open.

BPR OUT: Back Pressure Regulator [32] Motor Actuator will rotate counter clock wise momentarily. At the Controller Printed Circuit Board the BPR STATUS LED "REVERSE" will illuminate momentarily. The actuator motor will not rotate out if the valve is greater than 8 turns open.

U.V. STERILIZER: U.V. Sterilizer [44] will flicker. Check for illumination. At the Controller Printed Circuit Board the CONTROL STATUS LED "UV" will illuminate momentarily.

c. Correct any abnormalities.

d. Press **RETURN** and go back to the **READY TO START** Screen

7. Features of the Aqua Matic that are programmable by the operator are listed and explained below. Instructions for changing or programming these features can be found in Section 3 of this Owner's Manual. Refer to Section 3 of this Owner's Manual to ensure that the Aqua Matic control logic has been properly programmed for the features and options that are installed in this System.

a. **SCREEN CONTRAST**
Changes the viewing angle of the Touch Pad for easy viewing

b. **U.S. STANDARD MEASUREMENTS OR METRIC STANDARDS MEASUREMENTS**
Toggles the measurement standards between U.S. Standards and Metric Standards
Pressure: U.S. Standard = PSI (Pounds Per square Inch); Metric Standard = kPa (kilo Pasquel)
Flow: U.S. Standard = GPM (Gallons Per Minute) or GPH (Gallons Per Hour); Metric Standard = LPM (Liters Per Minute) or LPH (Liters Per Hour).

c. **DIVERSION VALVE SET POINT**
Sets the Aqua Matic control logic to energize the 3-Way Product Water Diversion Valve [41] at a specific product water quality, in PPM (Parts Per Million). The factory setting is 1,000 PPM TDS (one thousand Parts Per Million Total Dissolved Solids expressed as NaCl [sodium chloride - salt]).

d. **MODEL SETUP**
Sets the Aqua Matic control logic for the proper amount of product water based on the quantity and size of the R.O. Membrane Element(s) [27 or 27 & 28] installed in the system.

WARNING: If this feature is improperly setup the System will either operate at a lower than required pressure producing less than specified product water and at poor quality, or it will operate at a higher than required pressure producing too much product water which will prematurely foul the R.O. Membrane Element(s).

e. **FRESH WATER FLUSH OPTION SETUP**
Informs the Aqua Matic control logic that the Fresh Water Flush Option [49 - 52] is installed or is not installed.

f. DIFFERENTIAL PRESSURE TRANSDUCER OPTION SETUP

g. **SALINITY CALIBRATION**
Synchronizes the Salinity Probe [39] with the Main Control Logic. Calibrates the Salinity Probe.

h. **FLOW CALIBRATION**
Synchronizes the Flow Meters [33 & 40] with the Main Control Logic. Calibrates the Flow Meters.

i. DETECT REMOTE.
Informs the Main Control Logic that a Remote Touch Screen [58] has been connected and requests the Control Logic to communicate with the Remote Touch Screen.

8. Prime the System. The Aqua Matic requires proper Feed Water Pressure signal from the Low Pressure Transducer [23] and proper Brine Discharge Water Flow signal from the Flow Meter Brine Discharge [33]. If the Low Pressure Transducer [23] does not receive pressure indicating that the Booster Pump [7] is not delivering feed water the System will shut down within 10 seconds. If the Flow Meter Brine Discharge [33] does not sense minimum 90 GPH / 340 LPH Brine Discharge water flow the System will shut down within 10 seconds. The LOW PRESSURE fault screen or the FLOW ERROR fault screen will appear indicating that feed water is not being delivered to the system.

   In order to save time and make the initial start easy, when starting the Aqua Matic for the first time, the feed water lines and each component in the prefiltration section should be filled with either feed water or fresh water. This will prime the feed water section including the Booster Pump [7] so that it will be able to pick up and continue delivering feed water.

9. Operational Information and Notes. Read BEFORE starting the System:

   Note: During operation, touching **EMERG STOP** at any time immediately stops all functions of the System. Touch EMERG STOP ONLY in case of an emergency such as human safety concern, substantial water leak, electrical safety issue, etc.

   NOTES REGARDING THE OPERATIONAL SEQUENCE:

   Be prepared for the following Automatic sequence. After the System has been started the following will occur:

   Note: During operation, touching **EMERG STOP** at any time immediately stops all functions of the System. Touch EMERG STOP ONLY in case of an emergency such as human safety concern, substantial water leak, electrical safety issue, etc.

   Be prepared for the following Automatic sequence. After the System has been started the following will occur:

   1. Booster Pump [7] electric motor will start and a screen will indicate that it has started.

   2. Low Pressure Transducers[10, 19 & 23] will signal the System Control Logic which will look for adequate feed water pressure from the Booster Pump.

   3. High Pressure Pump [25] electric motor will start and a screen will indicate that it has started.

   4. Feed Water Flow Meter [33] will signal the System Control Logic which will look for adequate feed water flow through the System.

   5. Automatic Back Pressure Regulator [32] will rotate clockwise to build up operating pressure, and a screen will indicate that this is being performed.

   6. Product Water Flow Meter [40] will register product water flow, as operating pressure exceeds the osmotic pressure of the feed water. Product Water Flow will take priority to inform the control logic to increase or decrease operating pressure in order to maintain the product water flow specification.

   7. Salinity Probe [39] will register the quality of the Product Water. When the salinity of the Product Water lowers to the set point the U.V. Sterilizer [44] will energize if this option is installed.

   8. The 3-Way Product Water Diversion Valve [41] will energize sending the Product Water to the Post Filtration section. This may take up to 30 minutes as the Product Water channel flushes

storage chemical from the System. A Screen will appear stating that the System is OK.

9 Feed Pressure, Feed Flow, Operating Pressure, Brine Flow, Product Flow, and Product Salinity are all being monitored and the values of these readings cause the System Control Logic to perform various tasks to maintain proper functioning of the System.

10. The System may be manually stopped, or it may be programmed to stop at a given time or given volume of Product Water production.

11. If the EMERG STOP is touched the System will immediately stop all functions.

12. When the System is signaled to perform a non-emergency stop the Automatic Back Pressure Regulator Valve [32] will rotate counter clockwise to lower operating pressure.

13. The 3-Way Product Water Diversion Valve [41] will revert to unpotable water.

14. The U.V. Sterilizer [44] will stop.

15. The High Pressure Pump [25] will stop.

16. The Booster Pump [7] will stop.

17. If the System does not include the Automatic Fresh Water Flush option this ends the stop sequence.

or

If the System includes the Automatic Fresh Water Flush the Automatic Fresh Water Flush Valve [49] will energize to Fresh Water.

18. After 7 to 15 minutes the Fresh Water Flush Valve [49] will de-energize.

19. The Stop sequence is complete.

20. The System will go to a Fresh Water Flush Stand-by mode and count down the days and minutes until the next automatic Fresh Water Flush Cycle will begin. The Fresh Water Flush Cycle will automatically initiate every 7 days until canceled or power is disconnected from the System.

10. MULTI MEDIA FILTER BACK WASH AND RINSE:

If the System is equipped with a Multi Media Filter [12] it must be back washed and rinsed. New gravel and sand contain fines that must be backwashed from the multi media filter prior to operating the System.

Instructions for Backwashing of the Multi Media Filter:

a. Open the Inlet Sea Cock Valve [2].

b. Position the Rinse Clean Inlet Valve [54], if installed, to the normal operating position towards the Sea Strainer [5].

c. Position the Rinse Clean Outlet Valve [55], if installed, to the normal operating position towards the Multi Media Filter Brine Discharge Thru-Hull Fitting [36].

d. Position the Multi Media Filter valves to Backwash.

e. Set the controller into the Manual mode of operation, and operate only the Booster Pump. See Screen Information at the top of the following page.

f. After 10 minutes of back washing Stop the Booster Pump.

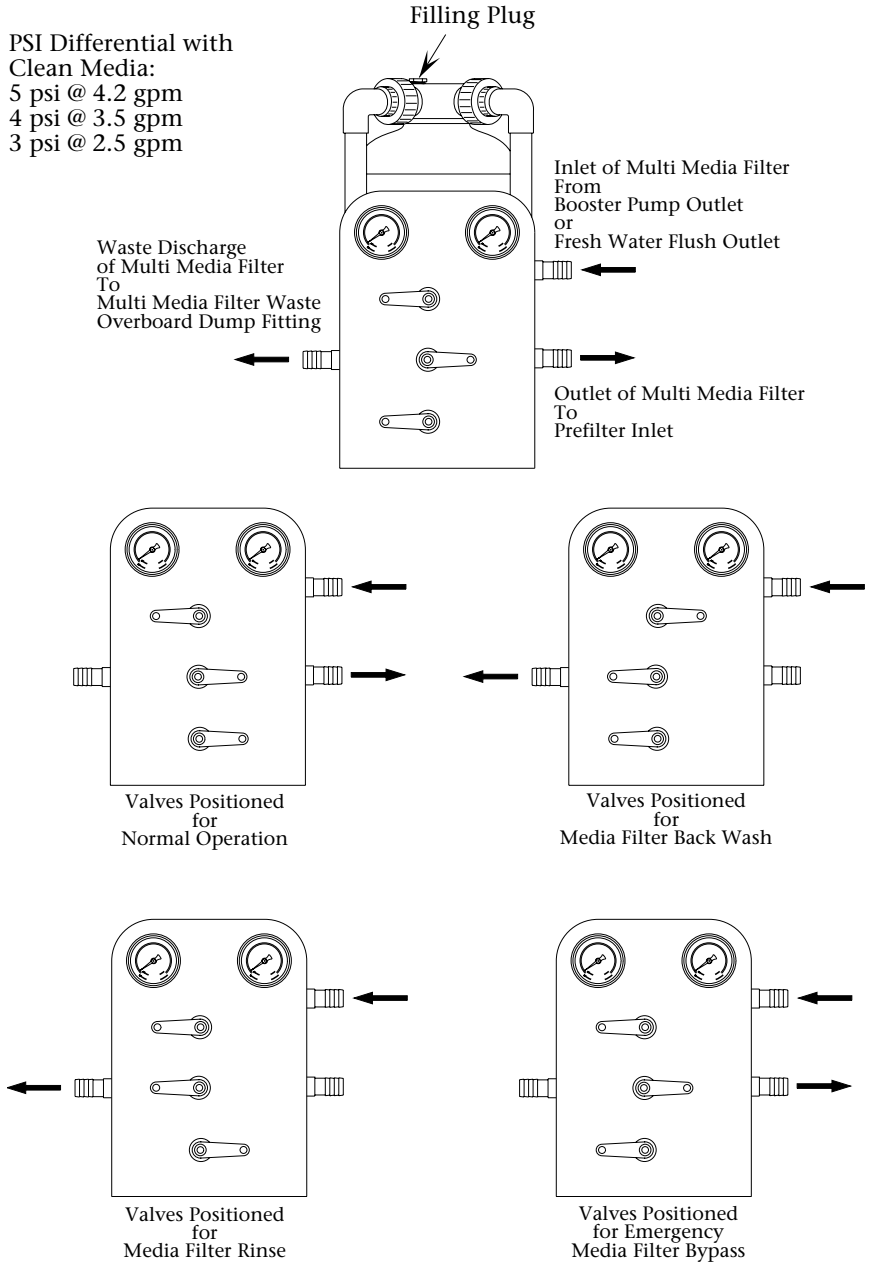
g. Position the Multi Media Filter Valves to Rinse.

h. In the Manual mode of operation, operate only the Booster Pump.

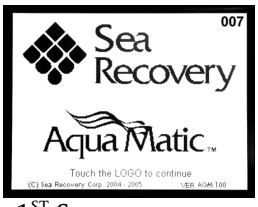
i. After 5 minutes of Rinsing Stop the Booster Pump.

j. Position the Multi Media Filter Valves to Normal Operation.

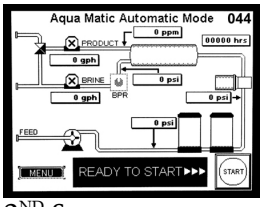
VALVE POSITIONING OF THE MULTI MEDIA FILTER
DURING 4 SEPARATE MODES OF OPERATION



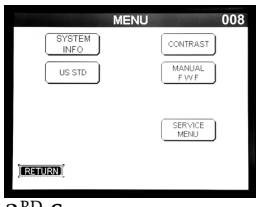
OPERATING THE SYSTEM IN THE MANUAL MODE FOR MULTI MEDIA FILTER BACK WASH:



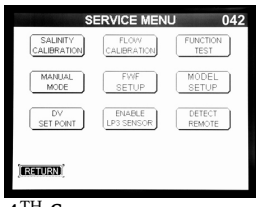
1ST Screen007
Touch THE LOGO



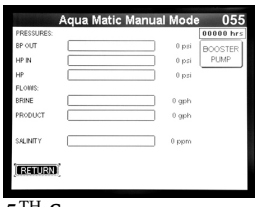
2ND Screen044
Touch MENU MENU



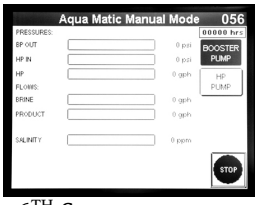
3RD Screen008
Touch SERVICE MODE



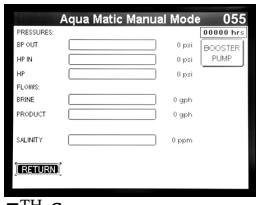
4TH Screen042
Touch MANUAL



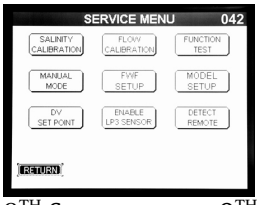
5TH Screen055
Touch BOOSTER PUMP



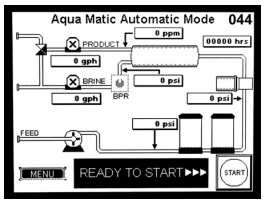
6TH Screen056
Touch STOP



7TH Screen055
Touch RETURN



8TH Screen042
Touch RETURN



9TH Screen044
INFO

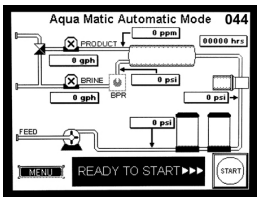
11. Ready to Start System for Commissioning. Position Valves:

VALVE	POSITION
a. Inlet Sea Cock Valve [2]	FULL OPEN
b. Rinse Clean Inlet Valve [54]	FROM SEA STRAINER TO FRESH WATER FLUSH VALVE
c. Rinse Clean Outlet Valve [55]	FROM BRINE DISCHARGE OF SYSTEM TO THRU HULL DISCHARGE FITTING [35 or 36]
d. Multi Media Filter [12] Valves	NORMAL OPERATION (see illustration on previous page)
e. ANY auxiliary valve in the Feed Line, Brine Discharge Line, or Product Water Line	FULL OPEN

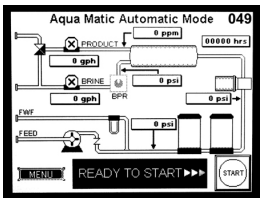
WARNING: If any auxiliary valve is installed in these lines, it will damage the Aqua Matic if left closed during starting and/or operation of the system. The resulting damage to the system is attributed to improper installation, is the liability of the operator, and is not covered by the Sea Recovery warranty.

12. **START** the System.

1st Screen007
Touch the **Logo**



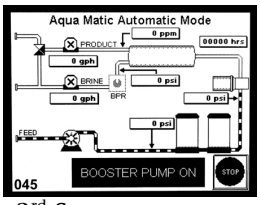
If the **READY TO START** Screen looks like this, **without** the Automatic Fresh Water Flush Charcoal Filter [51] then the System Control Logic has been set without the Automatic Fresh Water Flush option. If the Automatic Fresh Water Flush option is **not** installed this screen **is** correct. If the Automatic Fresh Water Flush option **is** installed this screen is **not** correct, refer to section 3 of this Owner's Manual to properly set the System Control Logic .



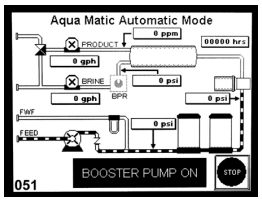
If the **READY TO START** Screen looks like this, **with** the Automatic Fresh Water Flush Charcoal Filter [51] then the System Control Logic has been set with the Automatic Fresh Water Flush option. If the Automatic Fresh Water Flush option **is** installed this screen **is** correct. If the Automatic Fresh Water Flush option **is not** installed this screen is **not** correct, refer to section 3 of this Owner's Manual to properly set the System Control Logic.

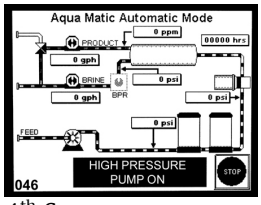
2nd Screen 044 or 049
Touch START

All Operating Screens will include the Automatic Fresh Water Flush components or not depending on if this option was set in the System Control logic. Both Screens are shown for the remainder of the commissioning operation:

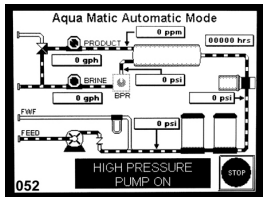


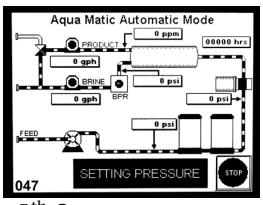
3rd Screen045 or Screen051
Info **Info**
BOOSTER PUMP ON



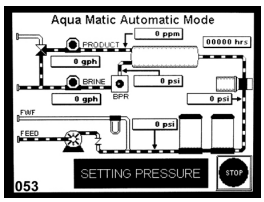


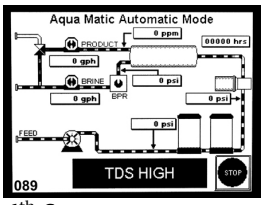
4th Screen046 or Screen052
Info **Info**
HIGH PRESSURE PUMP ON



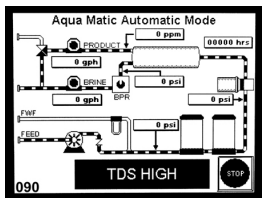


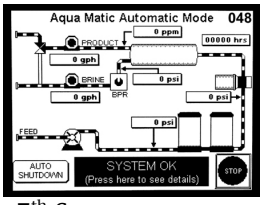
5th Screen047 or Screen053
Info **Info**
SETTING PRESSURE



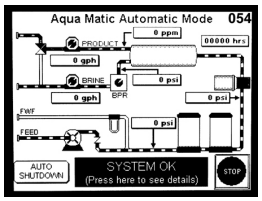


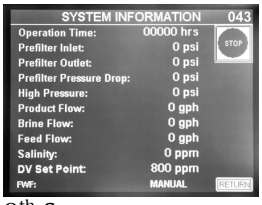
6th Screen089 or Screen090
Info **Info**
TDS HIGH





7th Screen048 or Screen054
Info **Info**
SYSTEM OK Press here to see details





8th Screen043
Info
SYSTEM INFORMATION

13. A **new System** may take up to 30 minutes to purge the R.O. Membrane Element of the storage chemical that it was shipped in, and produce Potable Water. Even after the storage chemical is purged, although the system is producing "Product Water", the Product Water may not be "Potable" for up to 30 minutes. The salinity of the Product Water diminishes gradually, until it

reaches the factory setting at which time the Touch Screen will change from TDS HIGH Screen to the SYSTEM OK Screen. When the SYSTEM OK Screen appears the Product Water is Potable and is diverted by the 3-way Product Water Diversion Valve [41] to the "Potable" (good water) position and into the Post Filtration components onward to the Ship's Storage Tank [46]. At this point the U.V. Sterilizer [44] will also illuminate.

All System readings, pressures, flows, and salinity will be displayed on the Touch Screen.

14. If any abnormality develops PRESS STOP and correct the problem. Refer to Section 7 of this Owner's Manual for an explanation of each fault screen and troubleshooting instructions.

15. Check for:
    a. A constant feed water flow.
    b. A consistent system pressure.
    c. Leaks in the system.
    d. Abnormal noises or other occurrences.

16. REVERSE OSMOSIS MEMBRANE ELEMENT(S) WARNING:

PRIOR TO STOPPING THE SYSTEM REVIEW AND ADHERE TO THE FOLLOWING WARNINGS AND RESPECTIVE ACTIONS.

WARNING: The R.O. Membrane Element(s) must be kept wet at all times.

WARNING: The System must be protected from biological fouling if it will not be operated within the next 2 weeks.

FREEZING TEMPERATURE WARNING: The System must be protected from freezing if it will be exposed to temperatures below 32º Fahrenheit / 0º Celsius. Freezing temperatures, temperatures below 32º Fahrenheit / 0º Celsius, **will cause extensive damage** to the Aqua Matic as the water expands within the System during the freezing process. Resulting damage to the Aqua Matic System caused by freezing temperatures is attributed to improper operator care and protection, is the liability of the operator, and is not covered by the Sea Recovery warranty.

DO NOT subject the Aqua Matic to temperatures below 32º Fahrenheit / 0º Celsius unless the Aqua Matic has been rinsed with a solution of product water with twenty percent food grade glycerin (propylene glycol) as described in Section 6 of this Owner's Manual.

LONG TERM STORAGE CAUTION: If the System will not be operated for an extended period of time, 3 months or longer, refer to Section 6 of this Owner's Manual for Long Term Storage Procedures.

If the Automatic Fresh Water Flush option is not installed and is not selected in the System Control Logic pressing Stop will place the System into the Automatic Shut Down mode. The pressure will be reduced, the High Pressure Pump will stop, and the Booster Pump will stop, the 3-Way Product Water Diversion Solenoid Valve will de-energize, and the Ultra Violet Sterilizer will de-energize.

If the Automatic Fresh Water Flush option is installed, after the sequence listed above

The Fresh Water Flush Solenoid Valve [49] will energize for 7 to 15 minutes, allowing fresh water from the boat's fresh water system to enter the Aqua Matic System and flush it with fresh water.

After the Fresh Water Flush cycle has finished (7 to 15 minutes) the Fresh Water Flush Solenoid Valve will de-energize and the System will go into a stand by mode for 7 days. At the end of 7

days the Fresh Water Flush cycle will repeat and do so every 7 days.

This automatic 7 day cycle will stop if the power has been interrupted of if **CANCEL** has been Touched

FRESH WATER FLUSH WARNING: There must be sufficient Fresh Water in the Potable Water Storage Tank: In order to provide the required flow of water to the Aqua Matic System during the Fresh Water Flush cycle, the Boat or Home's fresh water pressure system must deliver minimum 1 U.S. Gallons Per Minute at minimum 25 PSI and maximum 60 PSI (3.8 Liters per minute at minimum 172 kPa and maximum 414 kPa)

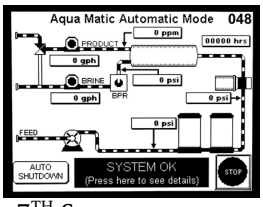
- If the Minimum of 1 U.S. Gallons Per Minute at minimum 25 PSI (minimum 3.8 Liters per minute at minimum 172 kPa) is not achieved the Aqua Matic may not fully flush the system with sufficient fresh water required to displace the feed water (sea water).

- If the Maximum 60 PSI (maximum 414 kPa) is exceeded the Aqua Matic System will shut down and revert to a fault mode due to excess pressure. In this event, the Owner or Installer must install a Pressure Reduction Valve from the Boat or Home's Pressurized Fresh Water Line prior to the inlet of the Aqua Matic Fresh Water Flush Charcoal Filter Inlet.

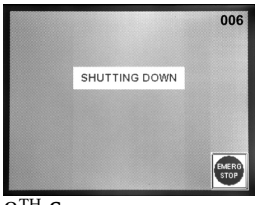
Refer to Section 6 of this Owner's Manual for proper Storage of the System and protection of the R.O. Membrane Element(s).

17. Stop the System

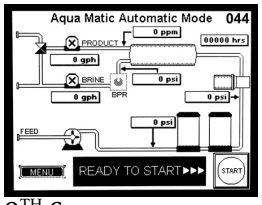
If the Automatic Fresh Water Flush option is **not** installed the following screens appear during the shut down sequence:



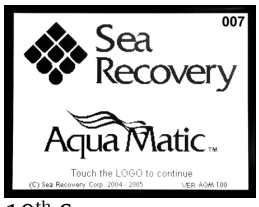
7TH Screen048
Touch STOP



8TH Screen006
INFO

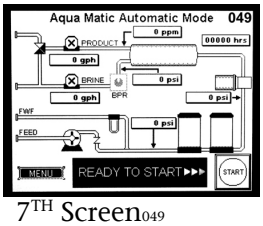


9TH Screen044
INFO

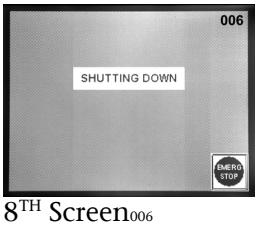


10th Screen007
AFTER SEVERAL MINUTES of inactivity

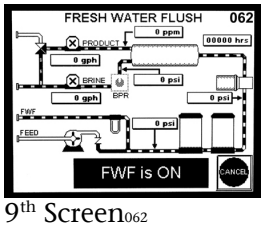
If the Automatic Fresh Water Flush option **is** installed the following screens appear during the Automatic Fresh Water Flush cycle:



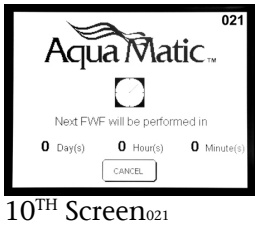
7TH Screen049
Touch STOP



8TH Screen006
INFO



9th Screen062
INFO



10TH Screen021
Next scheduled FWF

18. **R.O. MEMBRANE ELEMENT PROTECTION CAUTION:**

    SHORT STORAGE: If the System is not equipped with the Automatic Fresh Water Flush option perform a manual fresh water flush. Refer to Section 6 of this Owner's Manual for Short Term Storage Procedures.

    LONG TERM STORAGE: If the System will not be operated for an extended period of time, 3 months or longer, refer to Section 6 of this Owner's Manual for Long Term Storage Procedures.

19. **FREEZING TEMPERATURE WARNING:** Freezing temperatures, temperatures below 32º Fahrenheit / 0º Celsius, **will cause extensive damage** to the Aqua Matic as the water expands within the System during the freezing process. Resulting damage to the Aqua Matic System caused by freezing temperatures is attributed to improper operator care and protection, is the liability of the operator, and is not covered by the Sea Recovery warranty.

    DO NOT subject the Aqua Matic to temperatures below 32º Fahrenheit / 0º Celsius unless the Aqua Matic has been rinsed with a solution of product water with twenty percent food grade glycerin (propylene glycol). Refer to Section 6 of this Owner's Manual for proper care and protection against freezing.

20. **BOAT SAFETY WARNING:** The Inlet Thru-Hull Sea Cock Valve [2] is in the Open position. It is recommended for the safety of the boat to close the Sea Cock Valve when ever the System is not in use. This will protect the boat from water flooding should a hose or component fail.

21. Fill in the Sea Recovery Aqua Matic NEW SYSTEM INITIAL READINGS form on the following page.

Sea Recovery Aqua Matic
NEW SYSTEM INITIAL READINGS

At the time of commissioning the NEW system, record the following information after one hour of continuous proper operation of the system.

Retain this form in this Owner's Manual for the owner and operator's future reference. This information is valuable to the servicing technicians in providing technical support to the owner and future operators of the Aqua Matic. Provide this information to service technicians when requesting technical assistance.

Date Installed: _____ Date Commissioned: _____
Model Information:
System Serial Number: _____
Style: ___ Compact ___ Vertical _____ Modular
R.O. Membrane/Vessel Assy Quantity: ___ 1 (one) ___ 2 (two)
System Capacity: ___ 450 GPD ___ 700 GPD ___ 900 GPD ___ 1400 GPD ___ 1800 GPD

Who Installed the System:
Company _____
Street Address _____
City, State _____
Country, postal code _____ Telephone _____
Name of Installer _____

Who Commissioned the System:
Company _____
Street Address _____
City, State _____
Country, postal code _____ Telephone _____
Name of Installer _____

System Power: _____ Volts AC _____ Hz _____ Phase
Feed Water Temperature: _____ ° Fahrenheit or _____ ° Celsius
Hour Meter Reading: _____ Hours

PRESSURE READINGS:
Low Pressure Transducer #1 [8] _____ psi or _____ kPa
Pressure Differential Pressure [12] _____ psi or _____ kPa
Low Pressure Transducer #2 [17] _____ psi or _____ kPa
High Pressure Transducer [26] _____ psi or _____ kPa

WATER FLOW METER READINGS:
Flow Meter Product Water [34]: _____ US Gallons Per Hour or _____ Liters Per Hour
Flow Meter Brine Discharge [28]: _____ US Gallons Per Minute or _____ Liters Per Minute

WATER QUALITY:
Feed Water Salinity: _____ ppm or Location of use: _____
Product Water Salinity: _____ ppm
Problems, Unusual Occurrences, or Unusual Noises: _____

_____

_____

_____

_____

_____

Notes: _____

Section 5

System Operation

Automatic Mode WITHOUT the Fresh Water Flush option
refer to pages 3 through 4, and 5 through 7

Automatic Mode WITH the Fresh Water Flush option
refer to pages 3 through 4, 8 through 10

Manual Mode
refer to pages 3 through 4, and 11 through 14

Notes: _____

IMPORTANT Notes regarding the Automated operational sequence:

Note: During operation, touching **EMERG STOP** at any time immediately stops all functions of the System. Touch EMERG STOP ONLY in case of an emergency such as human safety concern, substantial water leak, electrical safety issue, etc.

Be prepared for the following Automatic sequence. After the System has been started the following will occur:

1. Booster Pump [7] electric motor will start and a screen will indicate that it has started.
2. Low Pressure Transducers[10, 19 & 23] will signal the System Control Logic which will look for adequate feed water pressure from the Booster Pump.
3. High Pressure Pump [25] electric motor will start and a screen will indicate that it has started.
4. Feed Water Flow Meter [33] will signal the System Control Logic which will look for adequate feed water flow through the System.
5. Automatic Back Pressure Regulator [32] will rotate clockwise to build up operating pressure, and a screen will indicate that this is being performed.
6. Product Water Flow Meter [40] will register product water flow, as operating pressure exceeds the osmotic pressure of the feed water. Product Water Flow will take priority to inform the control logic to increase or decrease operating pressure in order to maintain the product water flow specification.
7. Salinity Probe [39] will register the quality of the Product Water. When the salinity of the Product Water lowers to the set point the U.V. Sterilizer [44] will energize if this option is installed.
8. The 3-Way Product Water Diversion Valve [41] will energize sending the Product Water to the Post Filtration section. This may take up to 30 minutes as the Product Water channel flushes storage chemical from the System. A Screen will appear stating that the System is OK.
9. Feed Pressure, Feed Flow, Operating Pressure, Brine Flow, Product Flow, and Product Salinity are all being monitored and the values of these readings cause the System Control Logic to perform various tasks to maintain proper functioning of the System.
10. The System may be manually stopped, or it may be programmed to stop at a given time or given volume of Product Water production.
11. If the EMERG STOP is touched the System will immediately stop all functions.
12. When the System is signaled to perform a non-emergency stop the Automatic Back Pressure Regulator Valve [32] will rotate counter clockwise to lower operating pressure.
13. The 3-Way Product Water Diversion Valve [41] will revert to unpotable water.
14. The U.V. Sterilizer [44] will stop.
15. The High Pressure Pump [25] will stop.
16. The Booster Pump [7] will stop.
17. If the System does not include the Automatic Fresh Water Flush option this ends the stop sequence.
    or
    If the System includes the Automatic Fresh Water Flush the Automatic Fresh Water Flush Valve [49] will energize to Fresh Water.
18. After 7 to 15 minutes the Fresh Water Flush Valve [49] will de-energize.
19. The Stop sequence is complete.
20. The System will go to a Fresh Water Flush Stand-by mode and count down the days and minutes until the next automatic Fresh Water Flush Cycle will begin. The Fresh Water Flush Cycle will automatically initiate every 7 days until canceled or power is disconnected from the System.

REVERSE OSMOSIS MEMBRANE ELEMENT(S) WARNING:

PRIOR TO OPERATION AND DURING NON-OPERATION OF THE SYSTEM REVIEW AND ADHERE TO THE FOLLOWING WARNINGS AND RESPECTIVE ACTIONS.

WARNING: The R.O. Membrane Element(s) must be kept wet at all times.

WARNING: The System must be protected from biological fouling if it will not be operated within the next 2 weeks.

FREEZING TEMPERATURE WARNING: The System must be protected from freezing if it will be exposed to temperatures below 32º Fahrenheit / 0º Celsius. Freezing temperatures, temperatures below 32º Fahrenheit / 0º Celsius, **will cause extensive damage** to the Aqua Matic as the water expands within the System during the freezing process. Resulting damage to the Aqua Matic System caused by freezing temperatures is attributed to improper operator care and protection, is the liability of the operator, and is not covered by the Sea Recovery warranty.

DO NOT subject the Aqua Matic to temperatures below 32º Fahrenheit / 0º Celsius unless the Aqua Matic has been rinsed with a solution of product water with twenty percent food grade glycerin (propylene glycol) as described in Section 6 of this Owner's Manual.

LONG TERM STORAGE CAUTION: If the System will not be operated for an extended period of time, 3 months or longer, refer to Section 6 of this Owner's Manual for Long Term Storage Procedures.

If the Automatic Fresh Water Flush option is not installed and is not selected in the System Control Logic pressing Stop will place the System into the Automatic Shut Down mode. The pressure will be reduced, the High Pressure Pump will stop, and the Booster Pump will stop. All in that order.

If the Automatic Fresh Water Flush option is installed, after the Booster Pump stops the Fresh Water Flush Valve [49] will energize for 7 to 15 minutes allowing fresh water to flush the System.

FRESH WATER FLUSH WARNING: There must be sufficient Fresh Water in the Potable Water Storage Tank: In order to provide the required flow of water to the Aqua Matic System during the Fresh Water Flush cycle, the Boat or Home's fresh water pressure system must deliver minimum 1 U.S. Gallons Per Minute at minimum 25 PSI and maximum 60 PSI (3.8 Liters per minute at minimum 172 kPa and maximum 414 kPa)

- If the Minimum of 1 U.S. Gallons Per Minute at minimum 25 PSI (minimum 3.8 Liters per minute at minimum 172 kPa) is not achieved the Aqua Matic may not fully flush the system with sufficient fresh water required to displace the feed water (sea water).

- If the Maximum 60 PSI (maximum 414 kPa) is exceeded the Aqua Matic System will shut down and revert to a fault mode due to excess pressure. In this event, the Owner or Installer must install a Pressure Reduction Valve from the Boat or Home's Pressurized Fresh Water Line prior to the inlet of the Aqua Matic Fresh Water Flush Charcoal Filter Inlet.

After the Fresh Water Flush cycle has finished the Fresh Water Flush Valve [49] will de-energize and the System will go into a stand by mode for 7 days. At the end of 7 days the Fresh Water Flush cycle will repeat and do so every 7 days.

This automatic 7 day cycle will stop if the power has been interrupted of if **CANCEL** has been Touched

Refer to Section 6 of this Owner's Manual for proper Storage of the System and protection of the R.O. Membrane Element(s).

A. OPERATION IN THE AUTOMATIC MODE

WITHOUT the FRESH WATER FLUSH OPTION Installed or set:

1. Position Valves:

VALVE	POSITION
a. Inlet Sea Cock Valve [2]	FULL OPEN
b. Rinse Clean Inlet Valve [54]	FROM SEA STRAINER TO FRESH WATER FLUSH VALVE
c. Rinse Clean Outlet Valve [55]	FROM BRINE DISCHARGE OF SYSTEM TO THRU HULL DISCHARGE FITTING [35 or 36]
d. Multi Media Filter [12] Valves	NORMAL OPERATION (see Illustration in Section 4 page 9)
e. ANY auxiliary valve in the Feed Line, Brine Discharge Line, or Product Water Line	FULL OPEN

WARNING: If any auxiliary valve is installed in these lines, it will damage the Aqua Matic if left closed during starting and/or operation of the system. The resulting damage to the system is attributed to improper installation, is the liability of the operator, and is not covered by the Sea Recovery warranty.

2. Switch the Electrical Power Source, boat or home's circuit breaker to the system "ON".

   All Operating Screens WILL NOT include the Automatic Fresh Water Flush components if the Fresh Water Flush Option is not installed and the control logic has been informed that the Fresh Water Flush Option is not installed.

3. After the control logic has initiated itself, the first interactive screen with the Sea Recovery and Aqua Matic Logos will appear indicating that the System is ready to Start

4. After the System has started, although the system is producing "Product Water", the Product Water may not be "Potable" for up to 30 minutes. The salinity of the Product Water diminishes gradually, until it reaches the factory setting at which time the Touch Screen will change from TDS HIGH Screen to the SYSTEM OK Screen. When the SYSTEM OK Screen appears, indicating that the Product Water is Potable, the Ultra Violet Sterilizer [44] energizes. The Potable Water is then diverted by the 3-way Product Water Diversion Valve [41] to the "Potable" (good water) position and into the Post Filtration components onward to the Ship's Storage Tank [46].

   All System readings, pressures, flows, and salinity will be displayed on the Touch Screen.

4. If any abnormality develops PRESS STOP and correct the problem.

5. During operation, check for:

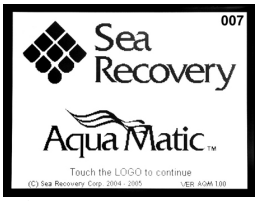
   a. A constant feed water flow.

   b. A consistent system pressure.

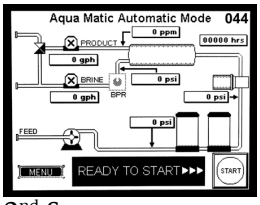
   c. Leaks in the system.

   d. Abnormal noises or other occurrences.

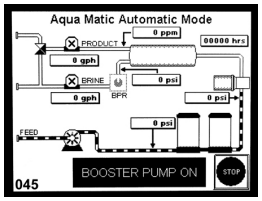
6. Operating the System in the Automated mode <u>WITHOUT the FRESH WATER FLUSH OPTION Installed or set:</u>



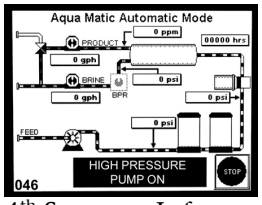
1st Screen007
Touch the **Logo**



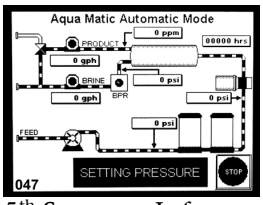
2nd Screen044
Touch START



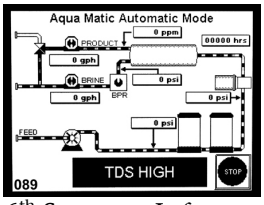
3rd Screen045 Info
BOOSTER PUMP ON



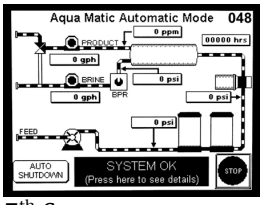
4th Screen046 Info
HIGH PRESSURE PUMP ON



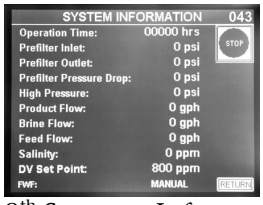
5th Screen047 Info
SETTING PRESSURE



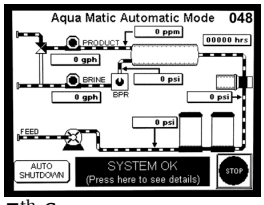
6th Screen089 Info
TDS HIGH



7th Screen048
Touch Press here to see details



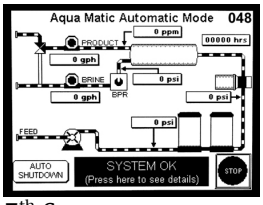
8th Screen043 Info
SYSTEM INFORMATION
Touch RETURN to toggle back to the previous Screen



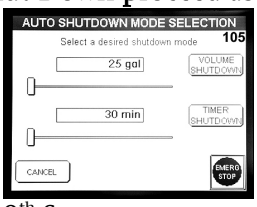
7th Screen048

The Screen may be toggled back and forth from SYSTEM INFORMATION TO SYSTEM OK Screens.

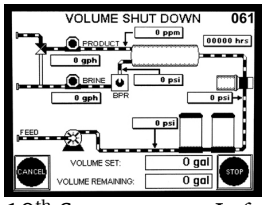
To Set Automated Shut Down proceed as follows:

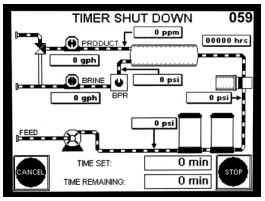


7th Screen048
Touch AUTO SHUTDOWN



9th Screen105
Touch and slide Volume or Timer Bar then Touch VOLUME or TIMER SHUTDOWN





10th Screen061 or 059 Info
System will automatically shut down at set Volume or Time
Touch CANCEL to abort the automatic shutdown

7. Information prior to Stopping the System:

a. **FREEZING TEMPERATURE WARNING:** Freezing temperatures, temperatures below 32º Fahrenheit / 0º Celsius, **will cause extensive damage** to the Aqua Matic as the water expands within the System during the freezing process. Resulting damage to the Aqua Matic System caused by freezing temperatures is attributed to improper operator care and protection, is the liability of the operator, and is not covered by the Sea Recovery warranty.

DO NOT subject the Aqua Matic to temperatures below 32º Fahrenheit / 0º Celsius unless the Aqua Matic has been rinsed with a solution of product water with twenty percent food grade glycerin (propylene glycol) as described in Section 6 of this Owner's Manual.

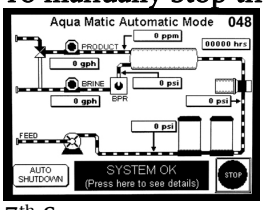
b. **R.O. MEMBRANE ELEMENT PROTECTION CAUTION:**

SHORT STORAGE: If the System is not equipped with the Automatic Fresh Water Flush option perform a manual fresh water flush. Refer to Section 6 of this Owner's Manual for Short Term Storage Procedures.

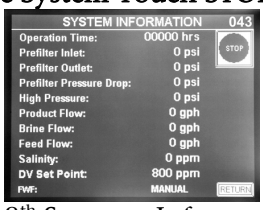
LONG TERM STORAGE: If the System will not be operated for an extended period of time, 3 months or longer, refer to Section 6 of this Owner's Manual for Long Term Storage Procedures.

8. Stopping the System:

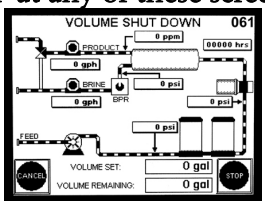
To manually Stop the System Touch STOP at any of these screens:



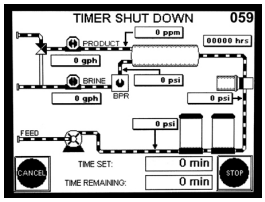
7th Screen048
Touch STOP

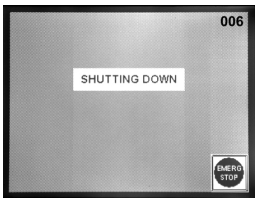


8th Screen043 Info
Touch STOP

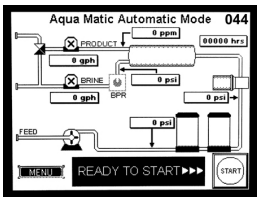


10th Screen061 or 059 Info
Touch STOP

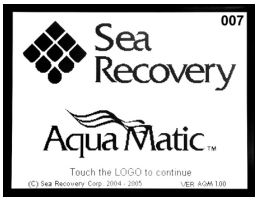




11th Screen006 Info
SHUTTING DOWN



12th Screen044
System has Stopped



13th Screen007
After several minutes of inactivity the screen will change to the Logo Screen

8. **BOAT SAFETY WARNING:** The Inlet Thru-Hull Sea Cock Valve [2] is in the Open position. It is recommended for the safety of the boat to close the Sea Cock Valve when ever the System is not in use. This will protect the boat from water flooding should a hose or component fail.

B. OPERATION IN THE AUTOMATIC MODE

WITH the FRESH WATER FLUSH OPTION Installed and set:

1. Position Valves:

VALVE	POSITION
a. Inlet Sea Cock Valve [2]	FULL OPEN
b. Rinse Clean Inlet Valve [54]	FROM SEA STRAINER TO FRESH WATER FLUSH VALVE
c. Rinse Clean Outlet Valve [55]	FROM BRINE DISCHARGE OF SYSTEM TO THRU HULL DISCHARGE FITTING [35 or 36]
d. Multi Media Filter [12] Valves	NORMAL OPERATION (see Illustration in Section 4 page 9)
e. ANY auxiliary valve in the Feed Line, Brine Discharge Line, or Product Water Line	FULL OPEN

WARNING: If any auxiliary valve is installed in these lines, it will damage the Aqua Matic if left closed during starting and/or operation of the system. The resulting damage to the system is attributed to improper installation, is the liability of the operator, and is not covered by the Sea Recovery warranty.

2. Switch the Electrical Power Source, boat or home's circuit breaker to the system "ON".

   All Operating Screens will include the Automatic Fresh Water Flush components if the Fresh Water Flush Option is installed and the control logic has been set to include the Fresh Water Flush Option.

3. After the control logic has initiated itself, the first interactive screen with the Sea Recovery and Aqua Matic Logos will appear indicating that the System is ready to Start

4. After the System has started, although the system is producing "Product Water", the Product Water may not be "Potable" for up to 30 minutes. The salinity of the Product Water diminishes gradually, until it reaches the factory setting at which time the Touch Screen will change from TDS HIGH Screen to the SYSTEM OK Screen. When the SYSTEM OK Screen appears, indicating that the Product Water is Potable, the Ultra Violet Sterilizer [44] energizes. The Potable Water is then diverted by the 3-way Product Water Diversion Valve [41] to the "Potable" (good water) position and into the Post Filtration components onward to the Ship's Storage Tank [46].

   All System readings, pressures, flows, and salinity will be displayed on the Touch Screen.

4. If any abnormality develops PRESS STOP and correct the problem.

5. During operation, check for:

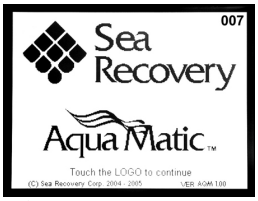
   a. A constant feed water flow.

   b. A consistent system pressure.

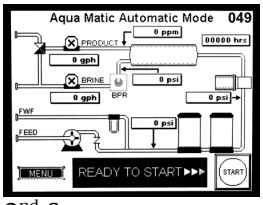
   c. Leaks in the system.

   d. Abnormal noises or other occurrences.

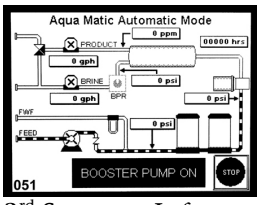
6. Operating the System in the Automated mode <u>WITH the FRESH WATER FLUSH OPTION Installed and set:</u>



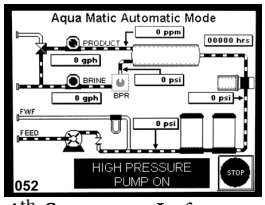
1st Screen007
Touch the **Logo**



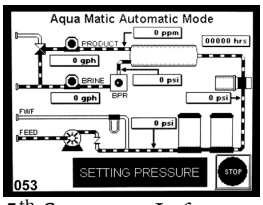
2nd Screen049
Touch START



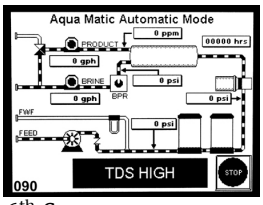
3rd Screen051 Info
BOOSTER PUMP ON



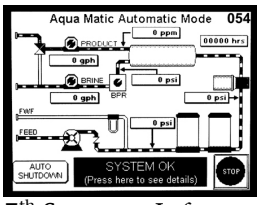
4th Screen052 Info
HIGH PRESSURE PUMP ON



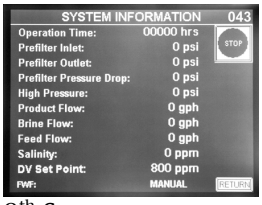
5th Screen053 Info
SETTING PRESSURE



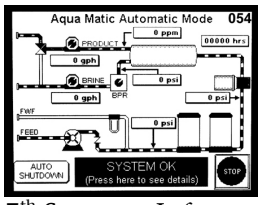
6th Screen090
TDS HIGH



7th Screen054 Info
Touch Press here to see details



8th Screen043
SYSTEM INFO
Touch RETURN to toggle back to the previous Screen



7th Screen054 Info

The Screen may be toggled back and forth from SYSTEM INFORMATION TO SYSTEM OK Screens.

7. Information prior to Stopping the System:

a. **FREEZING TEMPERATURE WARNING:** Freezing temperatures, temperatures below 32º Fahrenheit / 0º Celsius, **will cause extensive damage** to the Aqua Matic as the water expands within the System during the freezing process. Resulting damage to the Aqua Matic System caused by freezing temperatures is attributed to improper operator care and protection, is the liability of the operator, and is not covered by the Sea Recovery warranty.

DO NOT subject the Aqua Matic to temperatures below 32º Fahrenheit / 0º Celsius unless the Aqua Matic has been rinsed with a solution of product water with twenty percent food grade glycerin (propylene glycol) as described in Section 6 of this Owner's Manual.

b. **LONG TERM STORAGE CAUTION:** If the System will not be operated for an extended period of time, 3 months or longer, refer to Section 6 of this Owner's Manual for Long Term Storage Procedures.

c. **SHORT TERM STORAGE:** If the Automatic Fresh Water Flush option is installed, after the System has stopped operating, the Fresh Water Flush Solenoid Valve [49] will energize and flush the System with fresh water for 7 to 15 minutes.

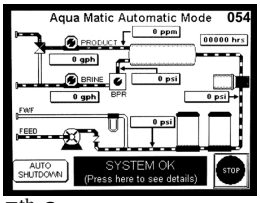
WARNING: There must be sufficient Fresh Water in the Potable Water Storage Tank and the Pressure System (Pressure Pump [47] and Air Entrainment Tank [48] if used must be pressurized to minimum 25 PSI. The Fresh Water System Piping must be capable of delivering minimum 1 U.S. Gallons Per Minute 3.8 Liters Per Minute at 25 PSI during the Fresh Water Flush cycle.

After the Fresh Water Flush cycle has finished the Fresh Water Flush Solenoid Valve [49] will de-energize and the System will go into a stand by mode for 7 days. At the end of 7 days the Fresh Water Flush cycle will repeat and do so every 7 days. This Automated Fresh Water Flush cycle will protect the System and R.O. Membrane element for short term shut downs.

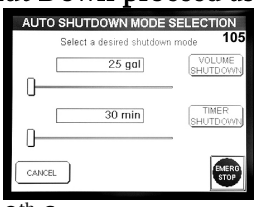
This automatic 7 day cycle will stop if the power has been interrupted of if **CANCEL** has been Touched

8. Stopping the System:

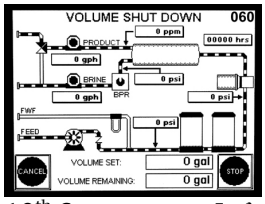
To Set Automated Shut Down proceed as follows:

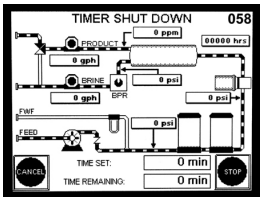


7th Screen054
Touch AUTO SHUTDOWN



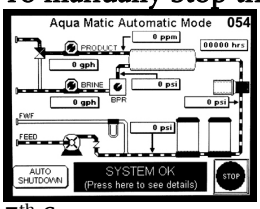
9th Screen105
Touch and slide Volume or Timer Bar then Touch VOLUME or TIMER SHUTDOWN



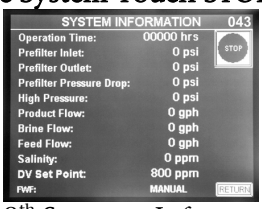


10th Screen060 or 058 Info
System will automatically shut down at set Volume or Time
Touch CANCEL to abort the automatic shutdown

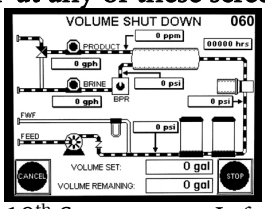
To manually Stop the System Touch STOP at any of these screens:



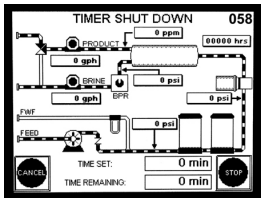
7th Screen054
Touch STOP

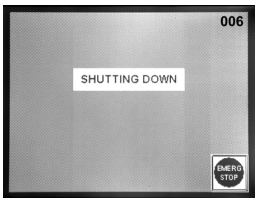


8th Screen043 Info
Touch STOP



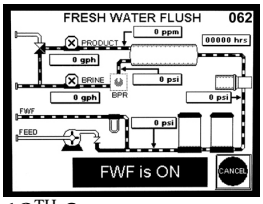
10th Screen060 or 058 Info
Touch STOP





11th Screen006 Info
SHUTTING DOWN

12TH Screen020
INFO



13TH Screen062
INFO

14th Screen021
Next scheduled FWF

9. BOAT SAFETY WARNING:

The Inlet Thru-Hull Sea Cock Valve [2] is in the Open position. It is recommended for the safety of the boat to close the Sea Cock Valve when ever the System is not in use. This will protect the boat from water flooding should a hose or component fail.

10. AUTOMATIC OPERATION WARNING:

The Automatic Fresh Water Flush option in installed and if the System Control Logic has been set to perform Automatic Fresh Water Flushing every 7 days. The Touch Pad will inform the operator when this automatic cycle will be performed.

C. OPERATION IN THE MANUAL MODE

CAUTION: When the System is operated in the MANUAL Mode Safety features will still be controlled by the System Logic, however AUTOMATED features will not be controlled by the System Logic and must be controlled by the operator.

SAFETY features that **will be** controlled by the System Logic during MANUAL operation include:

Shut Down due to low feed pressure
Shut Down due to high operating pressure
Shut Down due to low feed flow

AUTOMATED features that **will not be** controlled by the System Logic during MANUAL operation, and must be controlled by the operator include:

Booster Pump operation
High Pressure Pump operation
Operating Pressure adjustment
3-Way Product Water Solenoid Diversion Valve operation
Ultra Violet Sterilizer operation
Fresh Water Flush operation
Fresh Water Flush 7 day cycle

AUTOMATED features that **will not be** controlled by the System Logic during MANUAL operation, and are not available to the operator include:

Automated Timer Shut Down
Automated Volume Shut Down
Remote Touch Screen operation

1. Position Valves:

VALVE	POSITION
a. Inlet Sea Cock Valve [2]	FULL OPEN
b. Rinse Clean Inlet Valve [54]	FROM SEA STRAINER TO FRESH WATER FLUSH VALVE
c. Rinse Clean Outlet Valve [55]	FROM BRINE DISCHARGE OF SYSTEM TO THRU HULL DISCHARGE FITTING [35 or 36]
d. Multi Media Filter [12] Valves	NORMAL OPERATION (see Illustration in Section 4 page 9)
e. ANY auxiliary valve in the Feed Line, Brine Discharge Line, or Product Water Line	FULL OPEN

WARNING: If any auxiliary valve is installed in these lines, it will damage the Aqua Matic if left closed during starting and/or operation of the system. The resulting damage to the system is attributed to improper installation, is the liability of the operator, and is not covered by the Sea Recovery warranty.

2. Switch the Electrical Power Source, boat or home's circuit breaker to the system "ON".

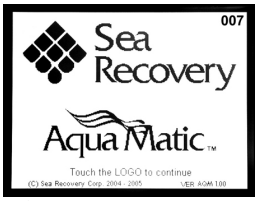
3. After the control logic has initiated itself, the first interactive screen with the Sea Recovery and Aqua Matic Logos will appear indicating that the System is ready to Start

4. After the System has started and proper operating pressure has been manually set by the operator, although the system is producing "Product Water", the Product Water may not be "Potable" for up

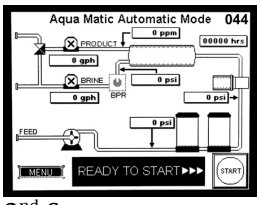
to 30 minutes. The salinity of the Product Water diminishes gradually, until it reaches the factory setting at which time the Touch Screen will change from TDS HIGH Screen to the SYSTEM OK Screen. When the SYSTEM OK Screen appears, indicating that the Product Water is Potable, the Diversion Valve switch may be Touched to energize the Ultra Violet Sterilizer [44] and the 3-way Product Water Diversion Valve [41].

All System readings, pressures, flows, and salinity will be displayed on the Touch Screen.

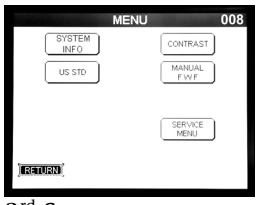
5. **Operating the System in the MANUAL mode:**



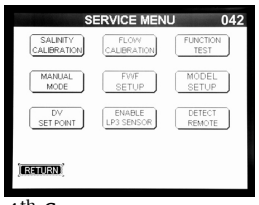
1st Screen007
Touch the **Logo**



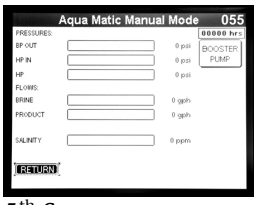
2nd Screen044
Touch MENU



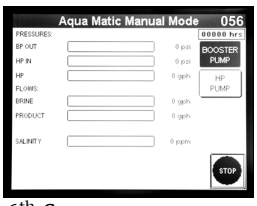
3rd Screen008
Touch
SERVICE MENU



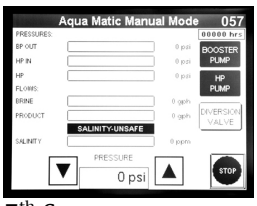
4th Screen042
Touch
MANUAL MODE



5th Screen055
Touch
BOOSTER PUMP



6th Screen056
Touch
H P PUMP



7th Screen057
Touch ▲ to increase operating pressure
Touch ▼ to decrease operating pressure

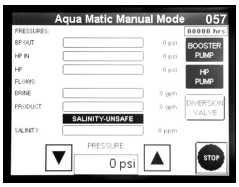
CAUTION: When adjusting the System Operating Pressure, monitor the Product Water Flow and DO NOT exceed the PRODUCT Water Flow Specifications for this System. Refer to table below.

Do not exceed PRODUCT Water Production as listed below:

Model Number	per 1 hour of operation: U.S. Gallons	Liters
SRC Aqua Matic 450-1	19 GPH	71 LPH
SRC Aqua Matic 700-1	29 GPH	110 LPH
SRC Aqua Matic 900-1	38 GPH	142 LPH
SRC Aqua Matic 900-2	38 GPH	142 LPH
SRC Aqua Matic 1400-2	58 GPH	221 LPH
SRC Aqua Matic 1800-2	75 GPH	284 LPH

6. Although the system is producing "Product Water", the Product Water may not be "Potable" for up to 30 minutes. The salinity of the Product Water diminishes gradually, until it reaches the factory setting at which time the Touch Screen will change from **SALINITY UNSAFE** to **SALINITY SAFE**. When the **SALINITY SAFE** message appears the Product Water salinity has diminished to the Set point or lower.

   SALINITY UNSAFE simply means that the dissolved solids in the Product Water have not yet decreased to the set point. In situations where the water is necessary, regardless of the exact PPM, the **DIVERSION VALVE** may be activated to route the Produce water to the boat's potable water storage tank. This can be accomplished at the Touch Screen or manually at the valve.



7th Screen057

Touch DIVERSION VALVE

The 3-Way Product Water Diversion Valve may now be activated by **Touching DIVERSION VALVE.** This will cause the U.V. Sterilizer [44] to energize, and the 3-Way Product Water Diversion Valve [41] to energize which will cause potable water to be diverted by the 3-way Product Water Diversion Valve to the "Potable" (good water) position and into the Post Filtration components onward to the Ship's Storage Tank [46].

7. All System readings, pressures, flows, and salinity will be displayed on the Main Touch Screen.

8. The Remote Touch Screen will be blocked during operation in the Manual Mode.

Screen014 Remote Touch Screen display during access into the Service Menu and during Manual Operation

9. If any abnormality develops PRESS STOP and correct the problem.

10. Check for:
    a. A constant feed water flow.
    b. A consistent system pressure.
    c. Leaks in the system.
    d. Abnormal noises or other occurrences.

11. **IMPORTANT Information prior to Stopping the System:**

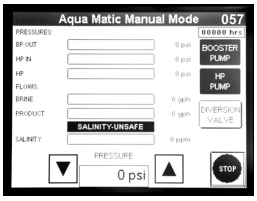
    a. **FREEZING TEMPERATURE WARNING:** Freezing temperatures, temperatures below 32º Fahrenheit / 0º Celsius, **will cause extensive damage** to the Aqua Matic as the water expands within the System during the freezing process. Resulting damage to the Aqua Matic System caused by freezing temperatures is attributed to improper operator care and protection, is the liability of the operator, and is not covered by the Sea Recovery warranty.

    DO NOT subject the Aqua Matic to temperatures below 32º Fahrenheit / 0º Celsius unless the Aqua Matic has been rinsed with a solution of product water with twenty percent food grade glycerin (propylene glycol) as described in Section 6 of this Owner's Manual.

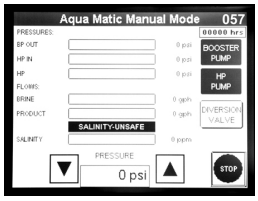
    b. **LONG TERM STORAGE CAUTION:** If the System will not be operated for an extended period of time, 3 months or longer, refer to Section 6 of this Owner's Manual for Long Term Storage Procedures.

    c. **SHORT TERM STORAGE CAUTION:** If the System will not be operated for up to a few weeks the System should be rinsed with fresh water. Refer to Section 6 of this Owner's Manual for Short Term Fresh Water Rinsing Procedures.

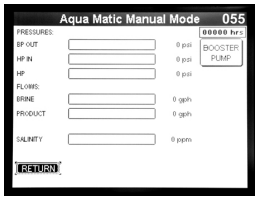
12. **Stopping the System from MANUAL Mode operation:**



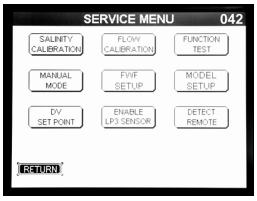
7th Screen057
Touch ▼ to decrease operating Pressure below 200 PSI



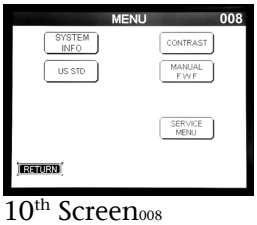
7th Screen057
Touch STOP



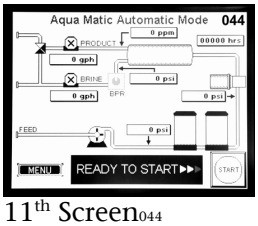
8th Screen055
Touch RETURN



9th Screen042
Touch RETURN



10th Screen008
touch RETURN

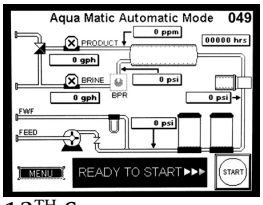


11th Screen044
INFO

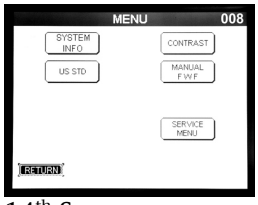
12th Screen007
After several minutes of inactivity the screen will change to the Logo Screen

13. The Automated Fresh Water Flush will NOT activate automatically because operation during the Manual Mode deactivates all Automated features. In order to perform a Fresh Water Flush follow the directions below:

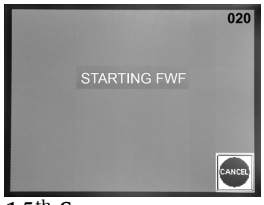
12TH Screen020
Touch the LOGO



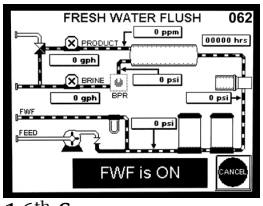
13TH Screen049
Touch MENU



14th Screen008
Touch MANUAL FWF



15th Screen020
INFO



16th Screen062
INFO

17TH Screen021
INFO
Next scheduled FWF

14. The Automated Fresh Water Flush 7 day Cycle will not be performed until the System is operated in the Automatic Mode.

15. **BOAT SAFETY WARNING:** The Inlet Thru-Hull Sea Cock Valve [2] is in the Open position. It is recommended for the safety of the boat to close the Sea Cock Valve when ever the System is not in use. This will protect the boat from water flooding should a hose or component fail.

Sea Recovery Aqua Matic

DAILY SYSTEM READINGS

Make Copies of this form and fill one in each time the System is operated. Record the following information after one hour of continuous proper operation of the system, or just prior to stopping the System.

Retain these forms in this Owner's Manual for future reference. This information is valuable to the servicing technicians in providing technical support of the Aqua Matic. Provide this information to service technicians when requesting technical assistance.

Date Installed: _____ Date Commissioned: _____

Model Information:
System Serial Number: _____

Style: ___ Compact ___ Vertical _____ Modular

R.O. Membrane/Vessel Assy Quantity: ___ 1 (one) ___ 2 (two)

System Capacity: ___ 450 GPD ___ 700 GPD ___ 900 GPD ___ 1400 GPD ___ 1800 GPD

System Power: _____ Volts AC _____ Hz _____ Phase
Feed Water Temperature: _____ ° Fahrenheit or _____ ° Celsius
Hour Meter Reading: _____ Hours

PRESSURE READINGS:

Low Pressure Transducer #1 [8] _____ psi or _____ kPa

Pressure Differential Pressure [12] _____ psi or _____ kPa

Low Pressure Transducer #2 [17] _____ psi or _____ kPa

High Pressure Transducer [26] _____ psi or _____ kPa

WATER FLOW METER READINGS:

Flow Meter Product Water [34]: _____ US Gallons Per Hour or _____ Liters Per Hour

Flow Meter Brine Discharge [28]: _____ US Gallons Per Minute or _____ Liters Per Minute

WATER QUALITY:

Feed Water Salinity: _____ ppm or Location of use: _____

Product Water Salinity: _____ ppm

Problems, Unusual Occurrences, or Unusual Noises: _____

_____

_____

_____

_____

_____

Notes: _____

Sea Recovery Aqua Matic
DAILY SYSTEM READINGS

Make Copies of this form and fill one in each time the System is operated. Record the following information after one hour of continuous proper operation of the system, or just prior to stopping the System.

Retain these forms in this Owner's Manual for future reference. This information is valuable to the servicing technicians in providing technical support of the Aqua Matic. Provide this information to service technicians when requesting technical assistance.

Date Installed: _____ Date Commissioned: _____

Model Information:
System Serial Number: _____

Style: ___ Compact ___ Vertical _____ Modular

R.O. Membrane/Vessel Assy Quantity: ___ 1 (one) ___ 2 (two)

System Capacity: ___ 450 GPD ___ 700 GPD ___ 900 GPD ___ 1400 GPD ___ 1800 GPD

System Power: _____ Volts AC _____ Hz _____ Phase
Feed Water Temperature: _____ ° Fahrenheit or _____ ° Celsius
Hour Meter Reading: _____ Hours

PRESSURE READINGS:

Low Pressure Transducer #1 [8] _____ psi or _____ kPa

Pressure Differential Pressure [12] _____ psi or _____ kPa

Low Pressure Transducer #2 [17] _____ psi or _____ kPa

High Pressure Transducer [26] _____ psi or _____ kPa

WATER FLOW METER READINGS:

Flow Meter Product Water [34]: _____ US Gallons Per Hour or _____ Liters Per Hour

Flow Meter Brine Discharge [28]: _____ US Gallons Per Minute or _____ Liters Per Minute

WATER QUALITY:

Feed Water Salinity: _____ ppm or Location of use: _____

Product Water Salinity: _____ ppm

Problems, Unusual Occurrences, or Unusual Noises: _____

_____

_____

_____

_____

Notes: _____

Section 6

System Storage
&
R.O. Membrane Element Cleaning

Notes:

SYSTEM STORAGE AND CLEANING

1. R.O. MEMBRANE ELEMENT HANDLING & SYSTEM STORAGE CAUTIONS:

1. **TEMPERATURE:** Never store the R.O. Membrane Element or Membrane/Vessel Assembly in direct sunlight. Never expose the R.O. Membrane Element or Membrane/Vessel Assembly to storage temperatures above 120° F / 50 C or below 32° F / 0 C. High temperatures cause up to 40% loss of production from the R.O. membrane element. This damage is irreversible. Freezing temperatures cause mechanical damage to the system and irreversible damage to the R.O. membrane element.

2. **DRYING OUT:** Never allow the R.O. membrane element to dry out, as 40% production loss occurs. This membrane damage may be irreversible. Some, but not all, production may be restored by saturating the R.O. Membrane Element in product water for several days and then operating the system using product water feed into the system for a continuous 48 hour period. The R.O. membrane element must remain wet at all times.

3. **BIOLOGICAL FOULING:** Protect the R.O. membrane element from biological fouling. Production loss occurs if the element becomes fouled by biological slimes. Some, but not all, production may be restored after cleaning.

4. **CHEMICAL FOULING:** Never expose the R.O. Membrane Element to chemicals other than those supplied by SRC. Use caution when operating the system in harbors that may be polluted with chemicals, oil, or fuel. Chemicals may damage the R.O. Membrane Element beyond repair.

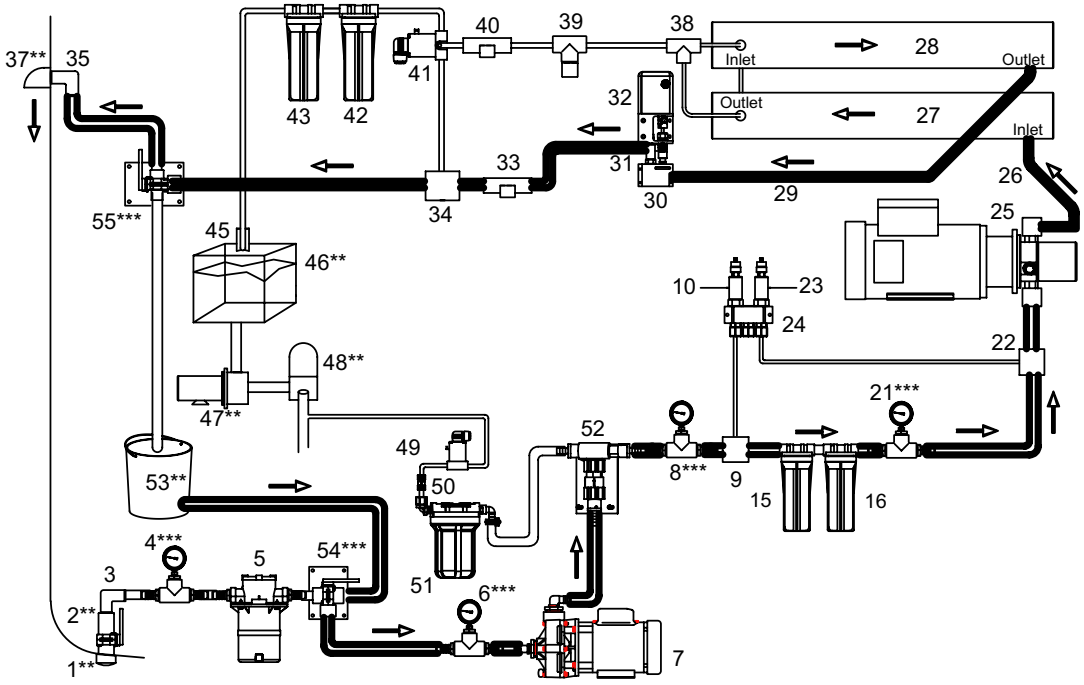
   WARNING: NEVER USE THIRD PARTY CHEMICALS, ONLY USE SEA RECOVERY SUPPLIED CHEMICALS. Third party chemicals are not compatible with various materials used in the Sea Recovery System. copolymer parts within the Sea Recovery System will be dissolved by third party chemicals. Third party chemicals will destroy the Sea Recovery R.O. Membrane Element. Damage to the Sea Recovery System or components within the System are not covered by the Sea Recovery Warranty.

5. **STORAGE:** The dark and moist interior of a membrane element is an excellent breeding ground for microorganisms. Simply operating the system does not protect the R.O. Membrane Element from production loss due to biological fouling. During short-term shutdowns, the system must be rinsed as explained in the following pages. During long-term shutdowns, the system must be rinsed as well as chemically treated as explained later in this chapter.

6. **NEW SYSTEM STORAGE:** If the R.O. Membrane Element(s) is (are) installed in the System and if the System will not be installed and commissioned within a 3 months from receipt refer to the procedures for either Short Term or Long Term storage within this Section.

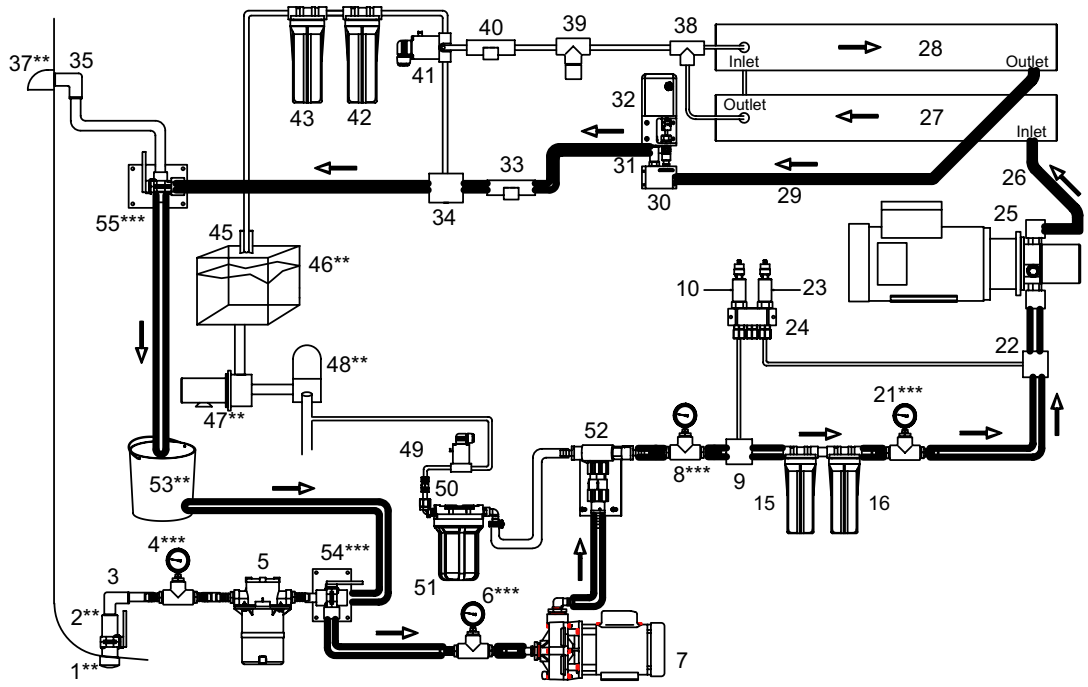
On the following page are two illustrations that show the flow of water in a Once-Through-Rinse operation and in a Closed Loop operation. These illustrations may be referred to during the Rinse, Clean, and Storage procedures.

Aqua Matic v3.00
ONCE THROUGH RINSE



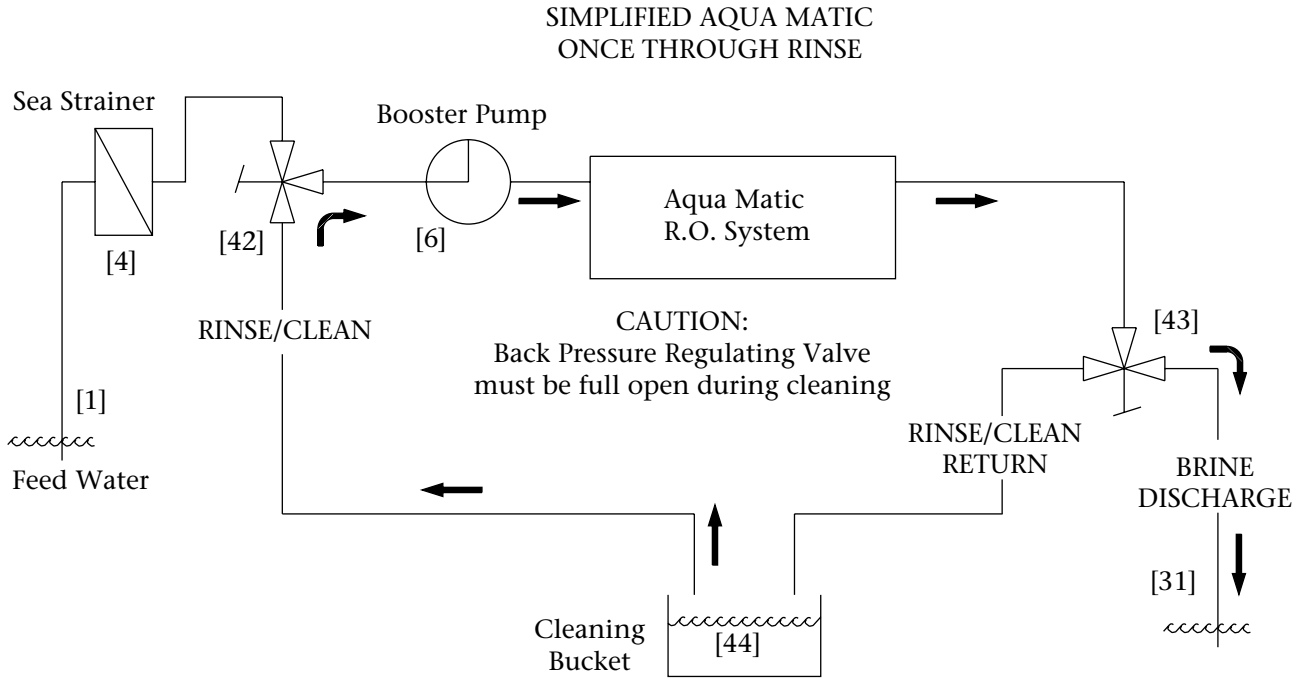
Illustrated above is the Aqua Matic Water Flow in a Once Through Configuration
This is used to Rinse the System with Fresh Water, to Winterize the System,
and also to Discharge the contents of the cleaning solution bucket.

Aqua Matic v3.00
RECIRCULATING CLOSED LOOP

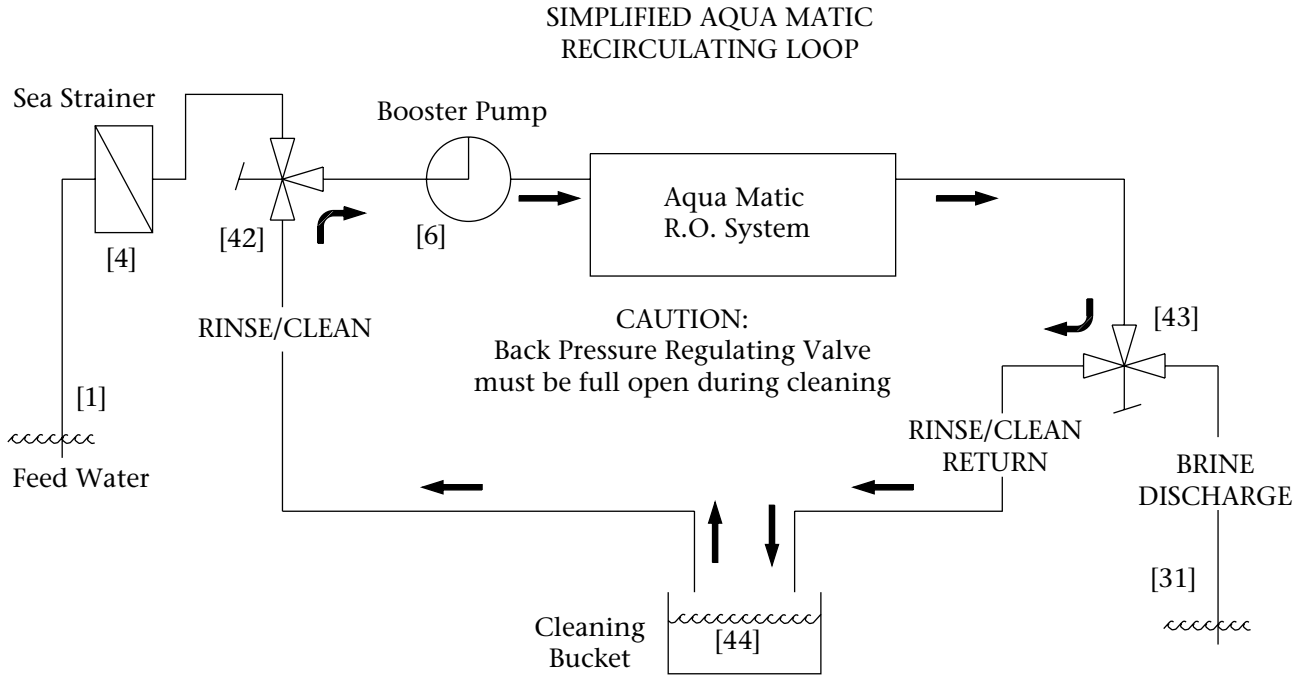


Illustrated above is the Aqua Matic Water Flow in a Recirculating Closed Loop Configuration
This is used to Circulate Cleaning or Storage Solution through the system.

The below Illustration demonstrates a simplified Once Through Configuration
This is used to Rinse the System with Fresh Water, to Winterize the System, and also to Discharge the contents of the cleaning solution bucket.



The below Illustration demonstrates a simplified Recirculating Closed Loop Configuration
This is used to Circulate Cleaning or Storage Solution through the system.



When the instructions within this section state "configure for Once Through Rinse" proceed as follows:

a. **Configure the Suction line** for a Once Through Configuration as illustrated in the drawings at the TOP of pages 4 and 5 of this section. Disconnect the outlet line from the Sea Strainer [5] and place it in the Rinse/Clean Bucket or Container [53]. Or if the system is equipped with the optional Rinse Clean Inlet Valve [54] then position this valve to draw from the Rinse/Clean Bucket or Container [53].

also

b. **Configure the Brine Discharge line** for a Once Through Configuration as illustrated in the drawings at the TOP of pages 4 and 5 of this section. Connect the Brine Discharge Line from the system to the Thru-Hull over board discharge fitting [35 or 36], normal connection for normal operation. Or if the system is equipped with the optional Rinse Clean Outlet Valve [55] then position this valve to discharge through the Thru-Hull fitting [35 or 36], normal connection for normal operation

When the instructions within this section state "configure for Closed Loop" proceed as follows:

a. **Configure the Suction line** for a Closed Loop Configuration as illustrated in the drawings at the BOTTOM of pages 4 and 5 of this section. Disconnect the outlet line from the Sea Strainer [5] and place it in the Rinse/Clean Bucket or Container [53]. Or if the system is equipped with the optional Rinse Clean Inlet Valve [54] then position this valve to draw from the Rinse/Clean Bucket or Container [53].

also

b. **Configure the Brine Discharge line** for a Closed Loop Configuration as illustrated in the drawings at the BOTTOM of pages 4 and 5 of this section. Disconnect the Brine Discharge Line from the Thru-Hull over board discharge fitting [35 or 36] and place it in the Rinse/Clean Bucket or Container [53]. Or if the system is equipped with the optional Rinse Clean Outlet Valve [55] then position this valve to return to the Rinse/Clean Bucket or Container [53].

A. SHORT-TERM SHUTDOWN:

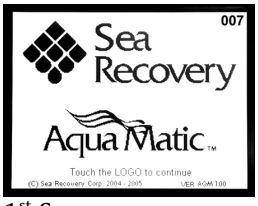
A short-term shutdown is defined as a period of time in which the system is not utilized for up to four weeks. An effective short-term protection for the system and R.O. membrane element is a Fresh Water Rinse of the entire system with fresh water (product water from the system). This prolongs the system life by minimizing electrolysis and retarding biological growth.

NOTE: If the system is equipped with the Automatic Fresh Water Flush option then it is not necessary to read this "A SHORT TERM SHUTDOWN". The Automatic Fresh Water Flush option rinses the system every 7 days automatically as described in the previous Section 5. However, see "Winterizing and Freezing" note below.

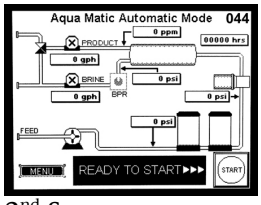
WARNING: WINTERIZING AND FREEZING TEMPERATURE STORAGE NOTE: If the system is exposed to freezing temperatures, DO NOT activate the Automatic Fresh Water Flush. Instead, perform a Manual Fresh Water Rinse as described below.

MANUAL FRESH WATER RINSE PROCEDURE: Follow the directions below if the system is not equipped with an Automatic Fresh Water Flush option [49 - 52], or if the Aqua Matic System is to be Winterized against freezing temperatures. This procedure displaces the system feed water with fresh water and allows a short-term shutdown for up to four weeks, and adds propylene glycol if Winterizing. Ten (10) gallons (38 liters) of fresh product or potable water is required for the fresh water rinse, and 2 gallons / 7.5 liters food grade glycerin (propylene glycol) is required for Winterizing.

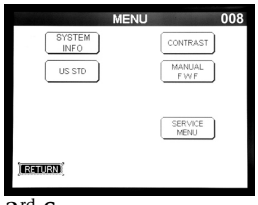
1. Close the Inlet Sea Cock Valve [2].
2. Fill a 10-gallon container [53] with clean, fresh water.
3. **WARNING: IF THE SYSTEM WILL BE EXPOSED TO FREEZING TEMPERATURES** add twenty percent (2 gallons / 7.5 liters) food grade glycerin (propylene glycol) to the fresh water in the Bucket [53]. This prevents the water in the system from freezing.
4. Configure the system for a **Once Through Rinse** as illustrated at the TOP of pages 4 and 5 of this Section.
5. Start the System in the **MANUAL MODE**



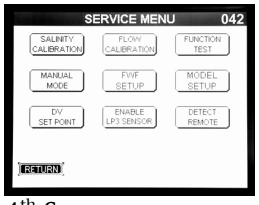
1st Screen007
Touch the **Logo**



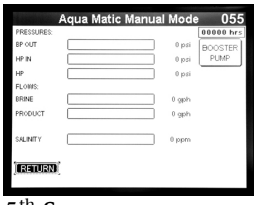
2nd Screen044
Touch MENU



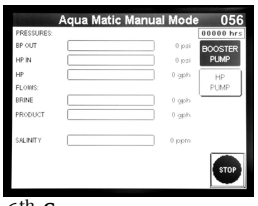
3rd Screen008
Touch
SERVICE MENU



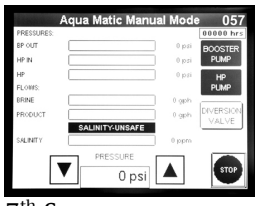
4th Screen042
Touch
MANUAL MODE



5th Screen055
Touch
BOOSTER PUMP

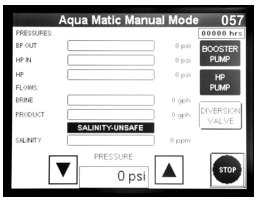


6th Screen056
Touch
H P PUMP

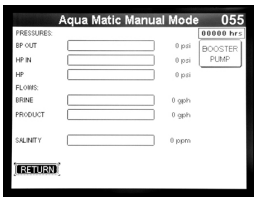


7th Screen057
WARNING: DO NOT INCREASE PRESSURE
Touch ▼ to decrease operating pressure to minimum

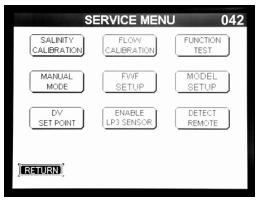
6. Operation of the System will deplete the Fresh Water or Water and Propylene Glycol mixture in the bucket [53]. Just prior to depleting the Water or mixture in the Bucket [53] Stop the System. Proceed as follows:



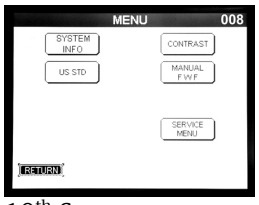
7th Screen057
Touch STOP



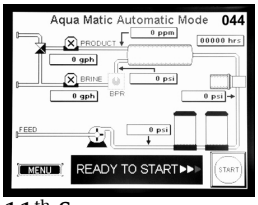
8th Screen055
Touch RETURN



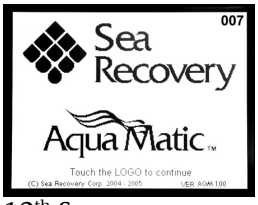
9th Screen042
Touch RETURN



10th Screen008
touch RETURN



11th Screen044
INFO



12th Screen007
After several minutes of inactivity the screen will change to the Logo Screen

7. **FREEZING TEMPERATURE WARNING**: The Product Water Post Filtration Section of the System must be drained of all Product Water if the System will be exposed to freezing temperatures.

   a. Charcoal Filter [42]
   Remove the Charcoal Filter bowl.
   Empty the water from the bowl.
   Replace the Charcoal Filter Element with a New Charcoal Filter Element.
   Replace the bowl back onto the lid.

   b. pH Neutralizing Filter [43]
   Remove the pH Neutralizing bowl.
   Remove the water from the bowl.
   Replace the bowl and pH element back onto the lid.

   c. U.V. Sterilizer [44]
   Disconnect the product water line from the U.V. Sterilizer filter and drain the product water from it.

8. Switch the Power to the System OFF.

9. Lock and Tag the Power Breaker to ensure that no one will accidentally operate the System and displace the Winterizing Mixture with Feed or Fresh Water.

B. LONG TERM SHUTDOWN:

A Long Term or Prolonged Shutdown is a period in which the system goes un-used for longer than three months, depending on conditions. For this interval, the system should first be rinsed with fresh water then stored with system and Membrane Element Storage Chemical (SRC SC). This chemical inhibits bacterial growth while maintaining the high flux and salt rejection of the R.O. Membrane Element. The Long Term Shutdown procedure requires 20 gallons (76 liters) of potable water.

Items Required:

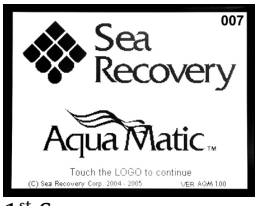
Sea Recovery Storage Chemical SRC SC
2 Gallons / 7.5 liters of food grade glycerin (propylene glycol) if the System will be Winterized

NOTE: If the system is equipped with an automatic Fresh Water Flush Accessory then it is not necessary to read this Chapter A as long as the Automatic 7 day Fresh Water Flush cycle remains active. The Automatic Fresh Water Flush option rinses the system every 7 days automatically as described in the previous Section 5. However, see "Winterizing and Freezing" note below.

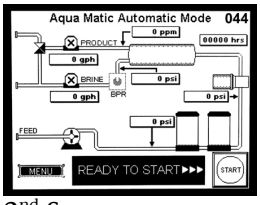
WINTERIZING AND FREEZING TEMPERATURE STORAGE NOTE: If the system is exposed to freezing temperatures, DO NOT activate the Automatic Fresh Water Flush. Instead, perform a Manual Fresh Water Rinse as described below.

Follow the directions below if the system will not be used for several months or if the system is not equipped with an Automatic Fresh Water Flush option [40 & 41], or if the Aqua Matic System is to be Winterized against freezing temperatures. This procedure displaces the system feed water with Storage Chemical or Storage Chemical and propylene glycol.

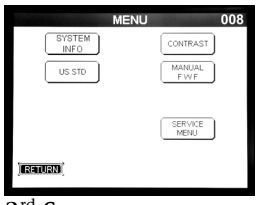
1. Close the Inlet Sea Cock Valve [2].
2. Fill a 10-gallon container [53] with clean, fresh water.
3. Configure the system for a **Once Through Rinse** as illustrated at the TOP of pages 4 and 5 of this Section.
4. Start the System in the **MANUAL MODE**



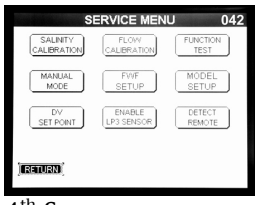
1st Screen007
Touch the **Logo**



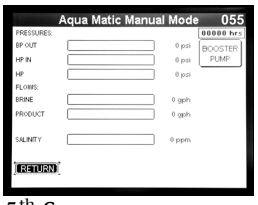
2nd Screen044
Touch MENU



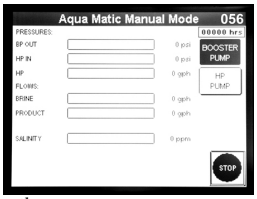
3rd Screen008
Touch SERVICE MENU



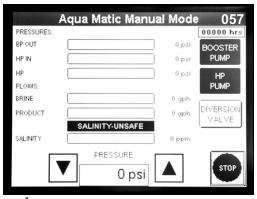
4th Screen042
Touch MANUAL MODE



5th Screen055
Touch BOOSTER PUMP

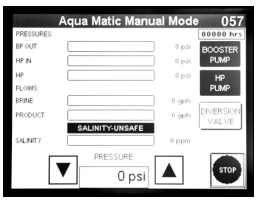


6th Screen056
Touch H P PUMP

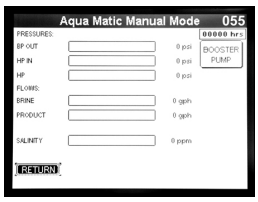


7th Screen057
WARNING: DO NOT INCREASE PRESSURE
Touch ▼ to decrease operating pressure to minimum

5. Operation of the System will deplete the Fresh Water in the bucket [53]. Just prior to depleting the Water in the Bucket [53] **Touch STOP.**



7th Screen057
Touch STOP



8th Screen055
INFO

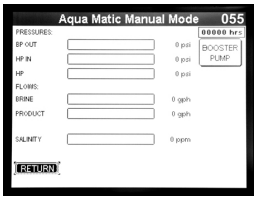
6. Once again, fill a 10-gallon container [53] with 10 gallons (38 liters) clean, fresh water.

7. **WARNING: IF THE SYSTEM WILL BE EXPOSED TO FREEZING TEMPERATURES** add twenty percent (2 gallons / 7.5 liters) food grade glycerin (propylene glycol) to the fresh water in the Bucket [53]. This prevents the water in the system from freezing.

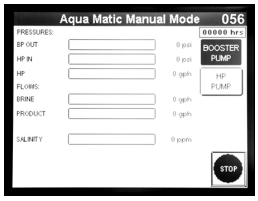
8. Add to the Fresh Water in the bucket or Fresh Water and Propylene glycol 4 ounces of Sea Recovery Storage Chemical SRC SC.

9. Configure the system for a **Recirculating Closed Loop** configuration as illustrated at the BOTTOM of pages 4 and 5 of this Section.

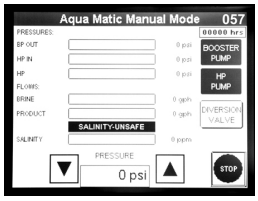
10. Start the System in the **MANUAL MODE**



8th Screen055
Touch BOOSTER PUMP

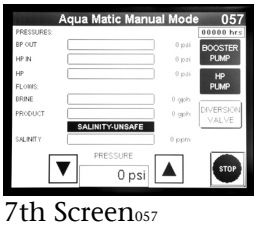


9th Screen056
Touch H P PUMP

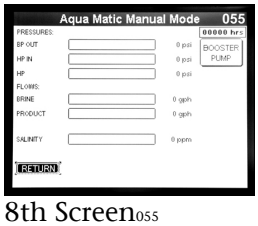


10th Screen057
WARNING:
DO NOT INCREASE PRESSURE

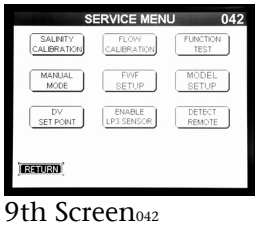
11. Operate the System in the Recirculating Closed Loop configuration for 10 minutes. After 10 minutes stop the system as follows:



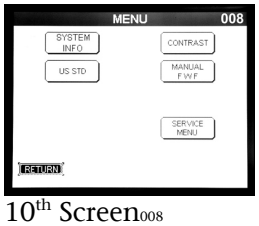
7th Screen057
Touch STOP



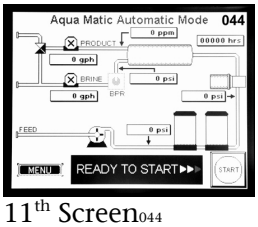
8th Screen055
Touch RETURN



9th Screen042
Touch RETURN



10th Screen008
touch RETURN



11th Screen044
INFO

12th Screen007
After several minutes of inactivity
the screen will change to the Logo Screen

12. **FREEZING TEMPERATURE WARNING**: If the System will be exposed to freezing temperatures the Post Filtration Section of the System must be drained of all Product Water.

    a. Charcoal Filter [42]
    Remove the Charcoal Filter bowl.
    Remove the water from the bowl.
    Replace the Charcoal Filter Element with a New Charcoal Filter Element.
    Replace the bowl back onto the lid.

    b. pH Neutralizing Filter [43]
    Remove the pH Neutralizing bowl.
    Remove the water from the bowl.
    Replace the bowl and pH element back onto the lid.

    c. U.V. Sterilizer [44]
    Disconnect the product water line from the U.V. Sterilizer filter and drain the product water from it.

13. Switch the Power to the System OFF.

14. Lock and Tag the Power Breaker to ensure that no one will accidentally operate the System and displace the Winterizing Mixture with Feed or Fresh Water.

15. Discard the Storage Chemical in an environmentally safe manner.

C. R.O. MEMBRANE ELEMENT CLEANING PROCEDURES

Do not arbitrarily clean the R.O. Membrane in a NEW system. The R.O. Membrane Element(s) in a NEW System will not be fouled with any substance that is cleanable. Low production or high salinity of the Product water from a NEW System will be attributed to factors other than fouling. If a NEW system experiences low production this would indicate that there is a blockage in the Product Water Line, the feed water temperature is low, the operating pressure is low, or the R.O. Membrane Element has dried out prior to use. A NEW System experiencing low production should be operated for up to 48 hours ***continuously*** to clear and saturate the R.O. Membrane Element and product water channel. Correlate and compensate operating pressure, feed water temperature, and feed water salinity as charted in the last section of this Owner's Manual. If a NEW System still experiences low production after 48 hours of **continual operation,** then contact the factory. If a NEW System experiences poor quality Product Water, high in salinity, this would be attributed to a mechanical failure such as a broken or missing O-ring and will be accompanied with high production at low operating pressure. For problems with a NEW System refer to the Troubleshooting Section 7 of this Owner's Manual.

The membrane element requires cleaning from time to time. Biological growth and salt accumulation eventually make replacement necessary. The frequency of required cleaning depends on the amount of production loss and salt rejection loss resulting from normal use. In order to properly assess performance changes, it is important to maintain daily log readings for comparison.

During performance comparisons, Feed Water Temp, Feed Water Salinity, and System Operating Pressure must be taken into consideration (See Section 11 of this Owner's Manual) and compensated for. After compensations, a 10% decline in productivity (GPH Flow) and/or a 10% increase in salt passage indicate that the R.O. Membrane Element may require cleaning.

If production rate has dropped dramatically since the last time the system was used, this may be due to drying out of the R.O. Membrane Element and/or fouling during storage. If the system has not been used for several months and the production rate has dropped dramatically since the last time used, try operating the system for 48 or more continuous hours to saturate the Product Water Channel within the R.O. Membrane Element.

If production rate drops dramatically from one day to another, this may be due to chemical attack which is not cleanable. Sewage chemicals or petroleum products cause irreparable damage to the R.O. Membrane Element. Suspended solids fouling resulting from silt, coral dust, iron (rust), river or inland waterway debris, or other small solid matter may not be cleanable.

1. R.O. MEMBRANE ELEMENT CLEANING WATER AND CHEMICAL REQUIREMENTS:

a. The system must be rinsed with fresh water before any cleaning procedure, cleaned, and then rinsed again.

b. The process of rinsing and cleaning the R.O. Membrane Elements with just one cleaning compound requires 30 gallons / 114 liters of fresh non- chlorinated product water. If a second cleaning is performed using a different cleaning compound an additional 20 gallons / 75 liters will be required per additional cleaning.

c. The Sea Recovery Reverse Osmosis cleaning compounds are designed to clean in a closed loop configuration moderate fouling from the R.O. membrane element. If the R.O. Membrane Element is excessively fouled and in-field cleaning is not successful, the R.O. Membrane Element may be returned to Sea Recovery or to one of Sea Recovery's many Service Dealers for professional chemical cleaning. If your membrane requires professional cleaning, please contact Sea Recovery for a Return Authorization Number, price quotation, and return instructions. Due to the complexity of and time involvement in professionally cleaning the R.O. Membrane Element it can be more cost effective to replace a heavily fouled R.O. Membrane Element. Always compare the cost of cleaning vs the cost of replacement in order to make the proper decision to clean or replace.

d. **SRC MCC-1**, Membrane Cleaning Compound "# 1" is an alkaline cleaner designed to clean biological fouling and slight oil fouling from the R.O. Membrane Element. Biological fouling is usually the first cause of the R.O. Membrane Element fouling. The system is constantly exposed to seawater and biological growth occurs from the first day forward. If exposed to seawater and left to sit, the R.O. Membrane Element becomes fouled even with no actual system use. This fouling is minimized with fresh water rinsing whenever the system is not in use.

e. **SRC MCC-2,** Membrane Cleaning Compound "# 2" is an acid cleaner designed to clean calcium carbonate and other mineral deposits from the R.O. Membrane Element. Mineral fouling is a slow process which takes place during use of the system. Therefore, if the system has relatively few hours of use yet shows signs of R.O. Membrane Element fouling then that fouling is likely biological fouling. If the system has several thousand hours of use then there may be some mineral fouling combined with biological fouling.

f. **SRC MCC-3,** Membrane Cleaning Compound "# 3" is used for iron fouling. It is not included in the SRC Membrane Cleaning Chemical kit. If the system's R.O. membrane element is fouled with rust from iron piping, then SRC CC-3 may be used for effective removal of light or moderate rust fouling. Heavily rust fouled RO Membranes may not be recoverable as rust not only fouls the Membrane Element but also damages the membrane surface.

WARNING: DO NOT MIX DIFFERENT CLEANING CHEMICALS TOGETHER. DO NOT USE DIFFERENT CLEANING CHEMICALS TOGETHER AT THE SAME TIME. MIX THE CLEANING CHEMICALS SEPARATELY AND USE THEM SEPARATELY. USE ONLY SEA RECOVERY SUPPLIED CHEMICALS. NEVER USE THIRD PARTY, NON SEA RECOVERY, CHEMICALS.

2. R.O. MEMBRANE ELEMENT CLEANING INSTRUCTIONS:

Product Water Required, in U.S. Gallons for Cleaning of the R.O. Membrane Element:

Chemical water required	Rinse water required	Cleaning water required	Second rinse water required	Total water required
CC-1	10	10	10	30
CC-2		10	10	20
CC-3		10	10	20

a. Close the Inlet Sea Cock Valve [2].

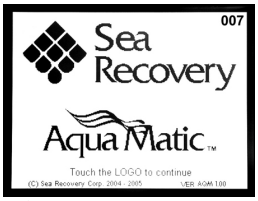
b. If installed, position the Multi Media Filter Valves in the Multi Media Filter By-Pass position to by-pass it during the cleaning procedures (see section 4 page 9 of this manual for Multi Media Filter Valve positioning illustration).

c. Replace the Pre-filtration Cartridge with a new SRC supplied Pre-filtration Element.

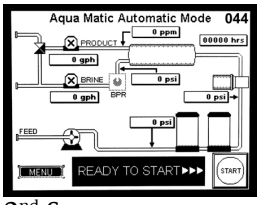
d. Fill a 10-gallon container [53] with clean, fresh water.

e. Configure the system for a **Once Through Rinse** as illustrated at the TOP of pages 4 and 5 of this Section.

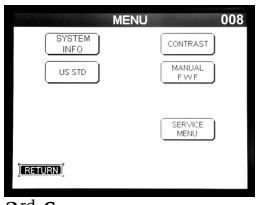
f. Start the System in the **MANUAL MODE**



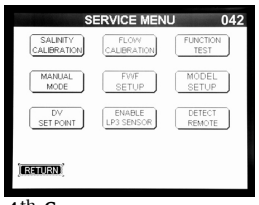
1st Screen007
Touch the **Logo**



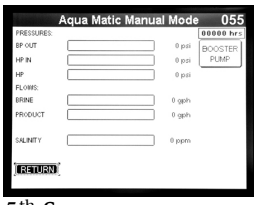
2nd Screen044
Touch MENU



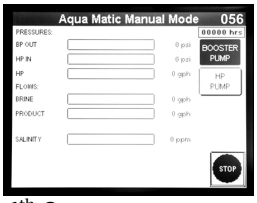
3rd Screen008
Touch SERVICE MENU



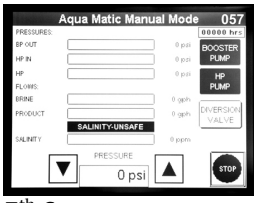
4th Screen042
Touch MANUAL MODE



5th Screen055
Touch BOOSTER PUMP

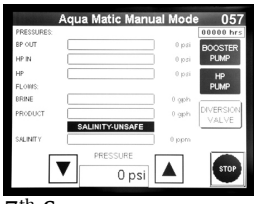


6th Screen056
Touch H P PUMP

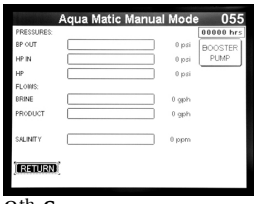


7th Screen057
WARNING: DO NOT INCREASE PRESSURE
Touch ▼ to decrease operating pressure to minimum

g. Operation of the System will deplete the Fresh Water in the bucket [53]. Just prior to depleting the Water in the Bucket [53] **Touch STOP.**



7th Screen057
Touch STOP



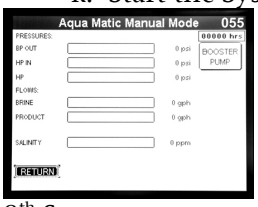
8th Screen055
INFO

h. Once again, fill a 10-gallon container [53] with 10 gallons (38 liters) clean, fresh water.

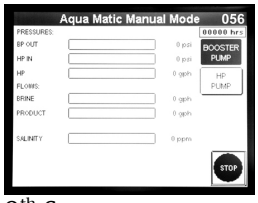
i. Add to the 10 gallons of fresh water 1.5 lbs of Sea Recovery Membrane Cleaning Compound MCC 1, MCC 2 or MCC 3. Thoroughly mix the solution until the cleaning compound has dissolved.

j. Configure the system for a **Recirculating Closed Loop** configuration as illustrated at the BOTTOM of pages 4 and 5 of this Section.

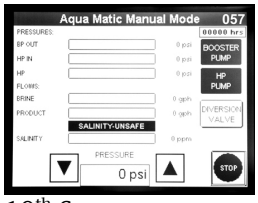
k. Start the System in the **MANUAL MODE**



8th Screen055
Touch
BOOSTER PUMP

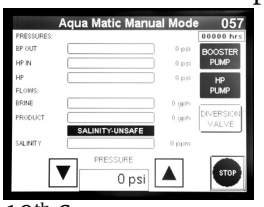


9th Screen056
Touch
H P PUMP

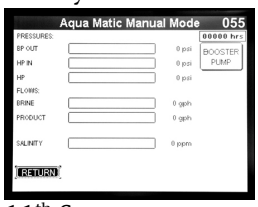


10th Screen057
WARNING:
DO NOT INCREASE PRESSURE

l. Operate the System in the Recirculating Closed Loop configuration for 60 minutes. After 60 minutes stop the system as follows:



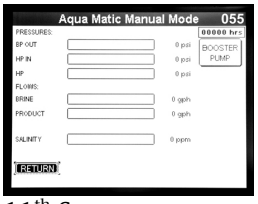
10th Screen057
Touch STOP



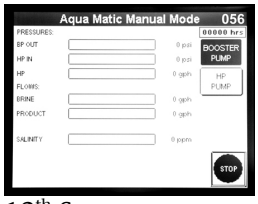
11th Screen055
INFO

m. Configure the system for a **Once Through Rinse** configuration as illustrated at the TOP of pages 4 and 5 of this Section.

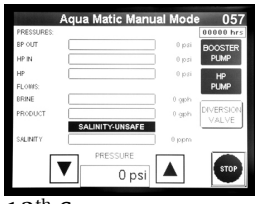
n. Start the System in the **MANUAL MODE** to discharge the cleaning chemical to waste.



11th Screen055
Touch
BOOSTER PUMP

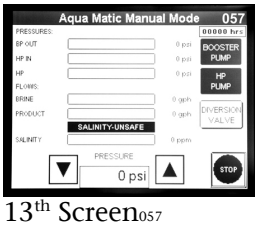


12th Screen056
Touch
H P PUMP

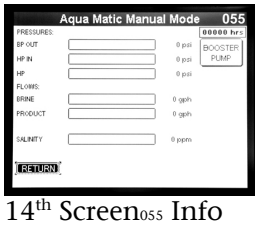


13th Screen057
WARNING:
DO NOT INCREASE PRESSURE

o. Operation of the System will deplete the cleaning solution in the bucket [53]. Just prior to depleting the solution in the Bucket [53] stop the System.



13th Screen057
Touch STOP



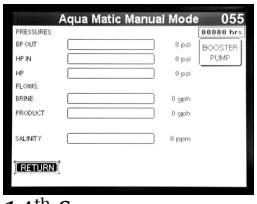
14th Screen055 Info

p. One final time, fill a 10-gallon container [53] with 10 gallons (38 liters) clean, fresh water.

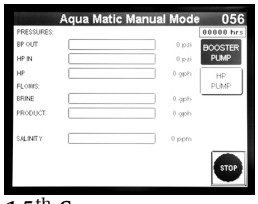
q. **WARNING: IF THE SYSTEM WILL BE EXPOSED TO FREEZING TEMPERATURES** add twenty percent (2 gallons / 7.5 liters) food grade glycerin (propylene glycol) to the fresh water in the Bucket [53]. This prevents the water in the system from freezing.

r. Configure the system for a **Recirculating Closed Loop** configuration as illustrated at the BOTTOM of pages 4 and 5 of this Section.

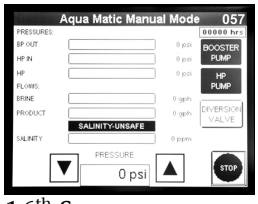
s. Start the System in the **MANUAL MODE**



14th Screen055
Touch
BOOSTER PUMP

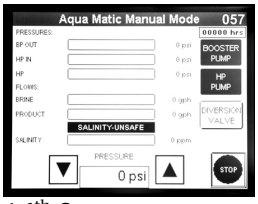


15th Screen056
Touch
H P PUMP

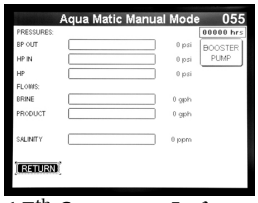


16th Screen057
WARNING:
DO NOT INCREASE PRESSURE

t. Operate the System in the Recirculating Closed Loop configuration for 10 minutes. After 10 minutes stop the system as follows:



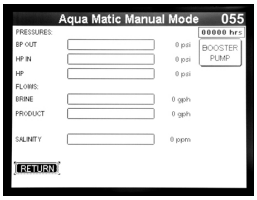
16th Screen057
Touch STOP



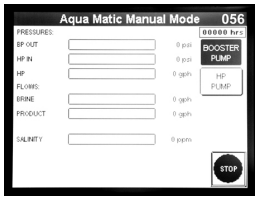
17th Screen055 Info

u. Configure the system for a **Once Through Rinse** configuration as illustrated at the TOP of pages 4 and 5 of this Section.

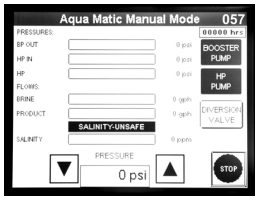
v. Start the System in the **MANUAL MODE** to discharge the rinse water to waste.



17th Screen055
Touch
BOOSTER PUMP

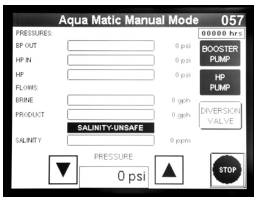


18th Screen056
Touch
H P PUMP

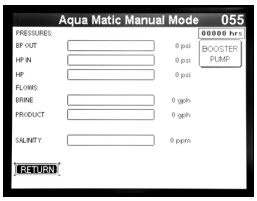


19th Screen057
WARNING:
DO NOT INCREASE PRESSURE

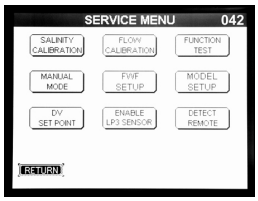
x. Operation of the System will deplete the cleaning solution in the bucket [53]. Just prior to depleting the solution in the Bucket [53] Stop the System as follows:



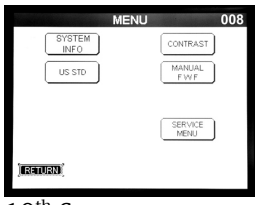
7th Screen057
Touch STOP



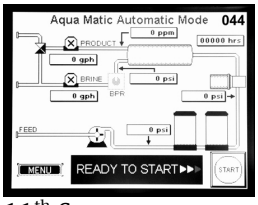
8th Screen055
Touch RETURN



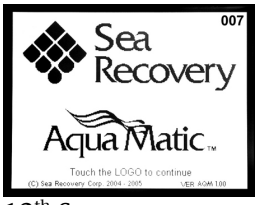
9th Screen042
Touch RETURN



10th Screen008
touch RETURN



11th Screen044
INFO



12th Screen007
After several minutes of inactivity
the screen will change to the Logo Screen

The system is now ready for additional cleaning, use, or storing.

y. If further membrane cleaning is necessary, repeat Steps C.2.d. through C.2.x. for each additional cleaning.

z. **FREEZING TEMPERATURE WARNING**: If the System will be exposed to freezing temperatures the Post Filtration Section of the System must be drained of all Product Water.

1. Charcoal Filter [42]
   Remove the Charcoal Filter bowl.
   Remove the water from the bowl.
   Replace the Charcoal Filter Element with a New Charcoal Filter Element.
   Replace the bowl back onto the lid.

2. pH Neutralizing Filter [43]
   Remove the pH Neutralizing bowl.
   Remove the water from the bowl.
   Replace the bowl and pH element back onto the lid.

3. U.V. Sterilizer [44]
   Disconnect the product water line from the U.V. Sterilizer filter and drain the product water from it.

Notes: _____

Section 7

Version 2

Troubleshooting of Abnormalities

Notes: _____

Troubleshooting

This section deals with abnormal occurrences of the Aqua Matic system. Some occurrences may have many different causes. For each symptom, one or more causes are given. In turn, each cause has one or more corresponding tests to help identify whether the cause of the occurrence is the correct one. When the test(s) has confirmed the source of the problem, the appropriate remedy is given to correct it.

There may be more than one cause of a problem. In the following guide, when there is more than one cause of a problem, the causes are listed in the most likely to occur order. The tests given are designed to determine whether the cause of the problem is the correct one. When diagnosing the causes of a problem in this case, eliminate the listed causes one by one until the correct cause is found. Then the appropriate remedy is performed. Diagnosing and correcting the various occurrences in this manner makes troubleshooting easier and less time consuming.

Troubleshooting and subsequent correction or repair will require understanding of:

- Electrical Circuits
- Electronic Circuits
- Electric Motors
- Hydraulic Systems
- Liquid Pressures and Flows
- Electro Mechanical Systems
- Mechanical knowledge and skills

Do not attempt troubleshooting and/or subsequent correction or repair if you are not familiar with or are not proficient in the above fields of expertise.

USE CAUTION WHEN TROUBLESHOOTING.

DO NOT PERFORM MAINTENANCE UNLESS:

1. The System Feed Water Sea Cock Valve [2] is closed.

2. The electrical power to the system is switched **"OFF"**, **LOCKED**, and **TAGGED**.

3. Chapter 9, "EXPLODED PARTS VIEWS" of this Owners Manual is available.

CAUTION: ELECTRICAL SHOCK HAZARD. A Volt / Ohm Meter will be necessary. The following procedures expose the technician to High Voltage and electrical shock hazard. Only attempt this if you are a qualified electrician and only if surrounding conditions are safe.

From time to time, Sea Recovery may make changes to the Control Logic (CONTROL VER), Display Logic (DISPLAY VER), and the Display Operating System (DISPLAY OS).

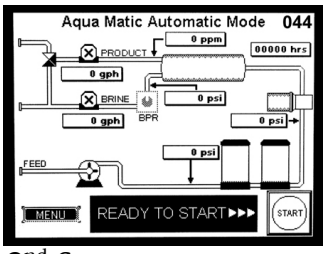
Other production changes are tracked by Sea Recovery through the System Serial Number.

Troubleshooting methods and results can vary depending on the information that is displayed at the SYSTEM INFORMATION screen.

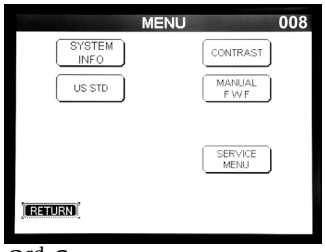
When ever requesting assistance from Sea Recovery or one of Sea Recovery's service dealers,

ALWAYS PROVIDE ALL INFORMATION DISPLAYED AT THE SYSTEM INFORMATION SCREEN.

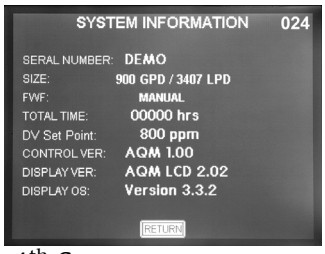
1st Screen007
Touch the Logo



2nd Screen044
Touch MENU



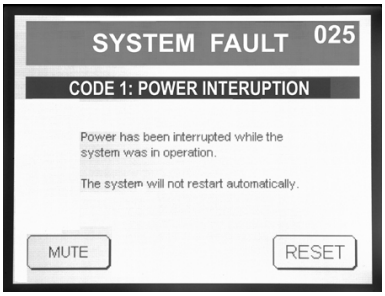
3rd Screen008
Touch SYSTEM INFO



4th Screen024
INFORMATION

Please! Be specific when reporting problems with the System. You must inform us of your specific System Model Number and Serial Number. This allows us to look up your particular System's test records and expedites our ability to assist you. If we are given a wrong model number or wrong serial number this will lead to frustration for you, wrong troubleshooting information from us, and failure to diagnose or correct the problem.

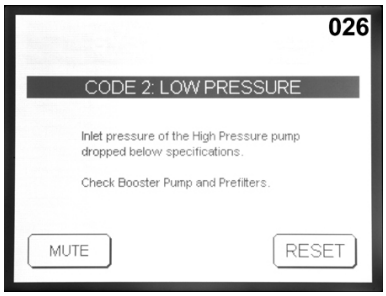
A. SYSTEM SHUTS DOWN DURING OPERATION AND A SYSTEM FAULT SCREEN APPEARS:



Screen025 **SYSTEM FAULT CODE 1 POWER INTERRUPTION**
Power has been interrupted while the system was in operation. The system will not restart automatically.

Proceed in this order:

a. Determine why the Alternating Current Power supplying the System was interrupted.
b. Loose wire between the Power Source and the System.
c. Weak Circuit Breaker supplying power to the System.
d. Generator power output dropped below specifications while supplying power to other equipment.



Screen026 **SYSTEM FAULT CODE 2 LOW PRESSURE**
Inlet Pressure of the High Pressure Pump dropped below specifications. Check Booster Pump and Prefilters.

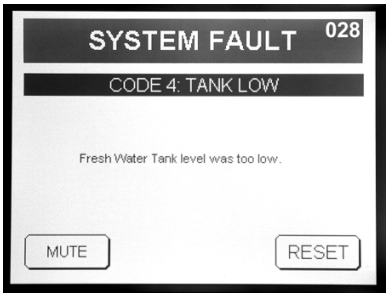
Proceed in this order:

a. Clean Sea Strainer Filter Screen
b. Back Wash Multi Media Filter if installed.
c. Clean Plankton Filter Screen if installed.
d. Change Prefilter Elements
e. Change Oil/Water Separator Element
f. Clear debris and growth from Inlet Thru-Hull Fitting
g. Check for Air Suction Leaks at all joints and connections between Inlet Thru-Hull Fitting [1] and inlet of Booster Pump [6].
h. Check for proper positioning of Valves [2, 54, 55, and Multi Media Filter Valves.[12]]
i. Check Booster Pump for proper operation. Refer to Booster Pump Repair in section 8 of this Owner's Manual.

Screen027 **SYSTEM FAULT CODE 3 HIGH PRESSURE**
Outlet pressure of the High Pressure Pump exceeded the specifications. Check Brine Discharge, Product Water lines and Post Filtration

Proceed in this order:

a. Check Brine Discharge Line for kinks, blockages, valve(s) closed. This line must be clear and open.
b. Check Product Water Line for kinks, blockages, valve(s) closed. This line must be clear and open.
c. Change Charcoal Filter Element
d. Change pH Neutralizing Cartridge
e. The Back Pressure Regulating Valve may have debris blocking the brine flow causing excess pressure build up. Or it may not be opening. Refer to Back Pressure Regulator Repair in section 8 of this Owner's Manual.



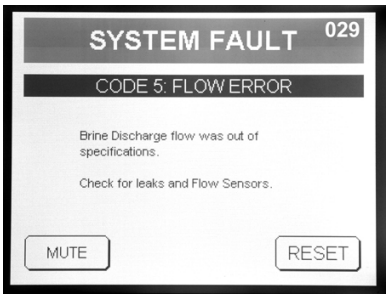
Screen028 **SYSTEM FAULT CODE 4 TANK LOW**

Fresh Water Tank level was too low.

During the Fresh Water Flush Cycle the customer installed Tank Level Switch opened signaling the System Control Logic that the Fresh Water Storage Tank [46] is low and does not contain sufficient Fresh Water for the System to perform a Fresh Water Flush Cycle.

Proceed in this order:

a. Fill the Fresh Water Storage Tank [46] with Fresh Water.
b. Troubleshoot the customer installed Tank Level Switch. Refer to section 8 of this Owner's Manual.



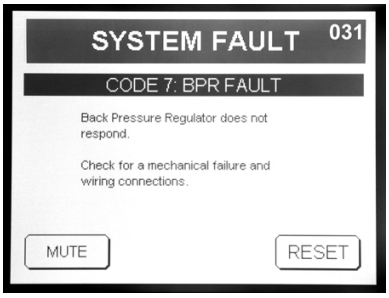
Screen029 **SYSTEM FAULT CODE 5: FLOW ERROR**

Brine Discharge flow was out of specifications.

Brine Discharge water, at the Brine Discharge Flow Meter [33], has dropped below 1.5 U.S. Gallons Per Minute. The cause may be due to a significant leak or blockage anywhere in the Feed Line, High Pressure Line, or Brine Discharge Line prior to the Flow Meter [33]. Another cause could be due to a problem with the Booster Pump and or High Pressure Pump.

Proceed in this order:

a. Check for a significant water leak anywhere in the system prior to the Brine Discharge Flow Meter [33].
b. Troubleshoot the Brine Discharge Flow Meter [33]. Refer to Troubleshooting Brine Discharge Flow Meter later in this section.
c. Booster Pump [7] is not delivering the specified flow. Refer to Booster Pump Repair in section 8 of this Owner's Manual.
d. High Pressure Pump [25] is not delivering the specified flow. Refer to High Pressure Pump Repair in section 8 of this Owner's Manual.
e. Clean Sea Strainer Filter Screen
f. Back Wash Multi Media Filter if installed
g. Clean Plankton Filter Screen if installed
h. Change Prefilter Elements
i. Change Oil/Water Separator Element if installed
j. Clear debris and growth from Inlet Thru-Hull Fitting
k. Check for Air Suction Leaks at all joints and connections between Inlet Thru-Hull Fitting [1] and inlet of Booster Pump [7].
l. Check for proper positioning of Valves [2, 54, 55, and Multi Media Filter Valves.[12]]



Screen031 **SYSTEM FAULT CODE 7: BPR FAULT**

Back Pressure Regulator does not respond. Check for a mechanical failure and wiring connections.

The System Control Logic senses high current draw from the Back Pressure Regulator's Electric Actuator Motor and lack of valve rotation.

When the actuator motor starts, it momentarily draws high current (this is normal). Once the motor begins to rotate, with no restrictions, the current lowers to normal running current. The motor, in turn, rotates the gear box, sensing POT (potentiometer) and valve stem.

If the motor movement is blocked or restricted and does not rotate it will draw high current and the sensing POT will not rotate. The System Control Logic receives the high current signal and the lack of sensing POT movement. This results in the stopping of the System and display of "SYSTEM FAULT CODE 7: BPR FAULT".

Determine what is restricting the movement of the Valve.

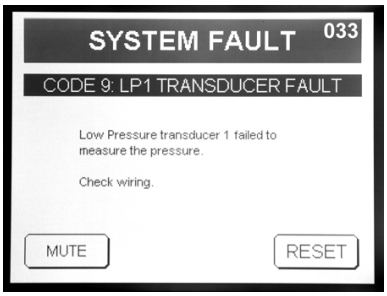
Proceed in this order:

a. Check the brass coupling that connects the valve stem and gear box shaft to ensure it allows free movement and turning.

b. Check for external signs of corrosion or water intrusion into the Actuator housing.

c. Ensure that the Valve Stem packing nut is not over tightened causing friction and resistance.

d. Refer to Back Pressure Regulator Repair in section 8 of this Owner's Manual.

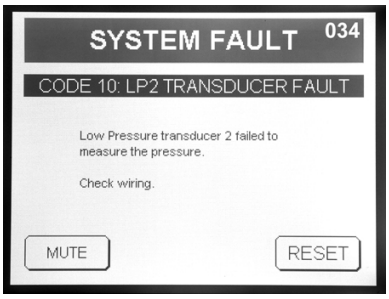


Screen033 **SYSTEM FAULT CODE 9: LPT 1 TRANSDUCER FAULT**

Low Pressure Transducer #1 [10] failed to measure the pressure. Check Wiring.

Proceed in this order:

a. Refer to Transducer repair in section 8 of this Owner's Manual.

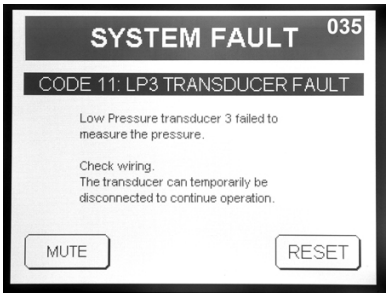


Screen034 **SYSTEM FAULT CODE 10: LPT 2 TRANSDUCER FAULT**

Low Pressure Transducer #2 [23] failed to measure the pressure. Check Wiring.

Proceed in this order:

a. Refer to Transducer repair in section 8 of this Owner's Manual.

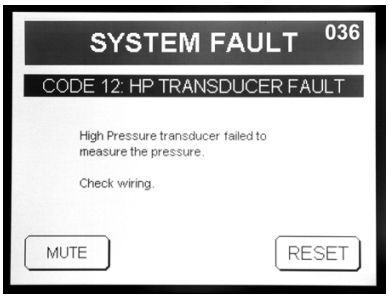


Screen035 **SYSTEM FAULT CODE 10: LPT 3 TRANSDUCER FAULT**

Differential Pressure Transducer #3 [19] failed to measure the pressure. Check Wiring.

Proceed in this order:

a. Refer to Transducer repair in section 8 of this Owner's Manual



Screen036 **SYSTEM FAULT CODE 12: HP TRANSDUCER FAULT**

High Pressure Transducer [31] failed to measure the pressure. Check Wiring.

Proceed in this order:

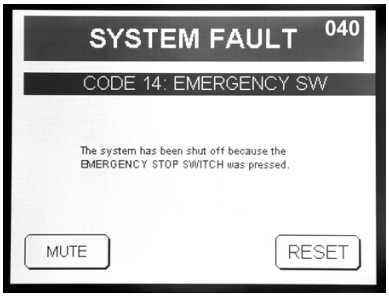
a. Refer to Transducer repair in section 8 of this Owner's Manual

Screen037 **SYSTEM FAULT CODE 13: TANK SWITCH FAULT**

The customer supplied Fresh Water Tank Level switches failed. Check the wiring and operation of switches. If Tank Level Switches are not in use, terminals must be jumpered.

Proceed in this order:

a. Refer to Tank Level Switch repair in section 8 of this Owner's Manual



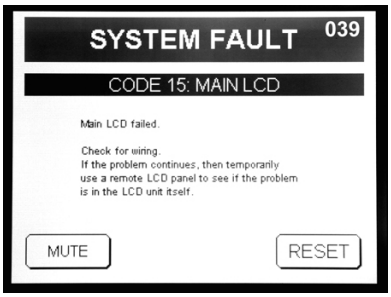
Screen040 **SYSTEM FAULT CODE 14: EMERGENCY SW**

The System has been shut off because the EMERG STOP switch was pressed

Proceed in this order:

a. Determine who stopped the System in the Emergency mode and why.

b. Press RESET to clear after determining who stopped the System in the Emergency mode and why.



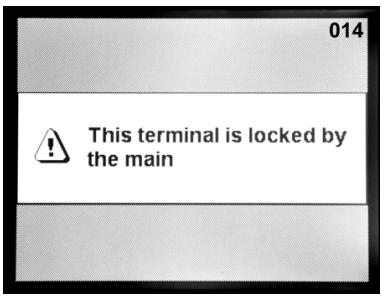
Screen039 **SYSTEM FAULT CODE 15: MAIN LCD**

Main LCD failed. Check for wiring. If the problem continues then temporarily use a remote LCD panel to see if the problem is in the LCD unit itself.

Proceed in this order:

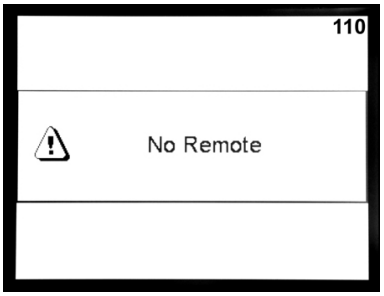
a. Unplug the Main LCD from the System Main Printed Circuit Board. If available, plug a Remote LCD into the Main LCD socket and attempt to operate the System. This will help determine if the Main LCD is not functioning or if the Main Printed Circuit Board is not functioning.

B. TROUBLE OR ERROR SCREENS:



Screen014 **This terminal is locked by the main.**
This is an information panel. This message will appear when the Remote Touch Pad is attempting to access a feature that is not allowed at the Remote Touch Pad and must only be performed at the Main Touch Pad.

This screen will also appear when the Main Controller is performing a function that must not be disturbed by the remote.

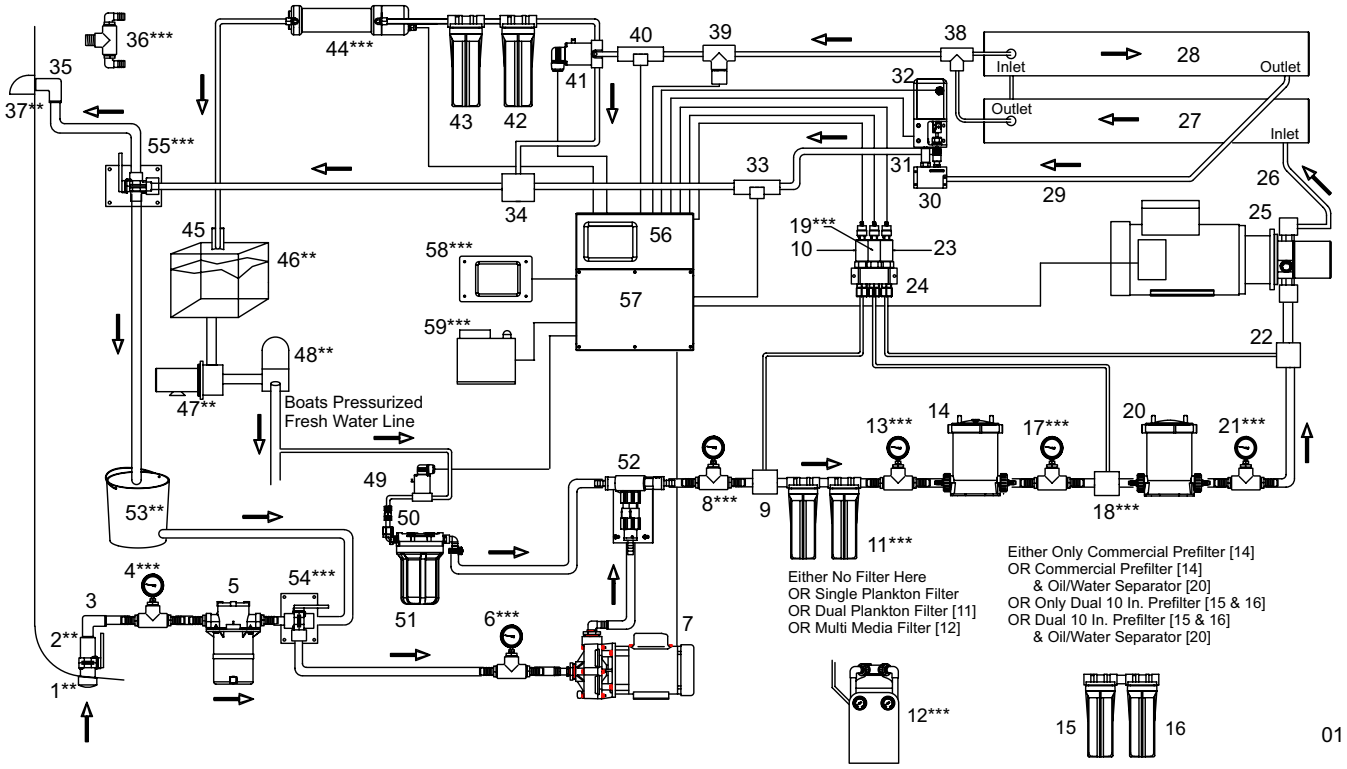


Screen110 **No Remote**
This screen appears momentarily when the "DETECT REMOTE" switch is touched by the operator requesting the System Control Logic to detect the Remote Control and the System Control Logic failed to locate the Remote Control.

Screen015 **TANK EMPTY**
This screen is informing the operator that the Automatic Fresh Water Flush cycle is unable to proceed because the Potable Water Storage Tank is empty.
Proceed in this order:
a. Fill the Potable Water Storage Tank with Potable Water.

Screen016 **TANK FULL**
This screen is informing the operator that the System will not start in the Automatic Mode because there is a High Level Product Water Tank Switch installed and the switch is sensing that the Product Water Tank is Full.

Aqua Matic v3.00 Component Identification Piping and Interconnect Diagram
This diagram is for reference only to illustrate "either / or Prefiltration Options, all Post Filtration Options,
Differential Pressure Transducer, the Rinse Clean Valves, Fresh Water Flush, Remote Touch Pad, and Soft Motor Starter.
Note: Placement of Pressure Pick-Up Ts depends on specific Prefiltration Configuration.



C. TROUBLESHOOTING BY COMPONENT ID NUMBER REFERENCED ON THE PIPING AND INTERCONNECT DIAGRAMS THROUGHOUT THIS OWNER'S MANUAL:

1. INLET THRU-HULL FITTING [1]

Blockage at the Inlet Thru-Hull Fitting causes the System to shut off due to lack of Feed Water Flow. Unfortunately, since it is under water operators are reluctant to thoroughly inspect the Inlet Thru-Hull Fitting for problems. This can cause time consuming frustrations in attempting to gain feed water flow by trouble shooting other components in the System.

The Inlet Thru-Hull Fitting must be free and clear allowing the System to draw 4.5 U.S. Gallons Per Minute / 17 Liters Per Minute through it with minimal resistance. Any blockage at the Inlet Thru-Hull Fitting will cause low pressure and low flow problems at the System. This Inlet Thru-Hull Fitting must be a Forward Facing Scoop so that the System receives a positive flow of water as the boat is under way. It must be minimum 3/4" inside diameter. It must be installed in a position on the bottom of the Hull so as to allow free flowing Feed Water without air.

CAUTION: A flat profile, flush mount, inlet thru-hull fitting will cause a vacuum as the boat is under way, and this will cause loss of feed water flow and cavitation of the Booster Pump and High Pressure Pump resulting in continual system shut down due to low feed water flow and pressure. The resulting failure of the system to remain in operation is attributed to improper installation, is the liability of the installer, and is not covered by the Sea Recovery warranty.

CAUTION: If the thru-hull fitting has been placed in a position on the underside of the hull that allows air to continually enter the thru-hull fitting, this will cause the system to continually shut down due to loss of feed water. The resulting failure of the system to remain in operation is

attributed to improper installation, is the liability of the installer, and is not covered by the Sea Recovery warranty.

CAUTION: The Sea Recovery System must not be tied into another existing auxiliary water line already supplying another accessory on the boat. Using one Thru Hull fitting for other equipment will cause the Sea Recovery System to draw air or cavitate leading to continual system shut down. The resulting failure of the system to remain in operation is attributed to improper installation, is the liability of the installer, and is not covered by the Sea Recovery warranty.

CAUTION: If the Sea Recovery System is connected to a Sea Chest or Stand Up Pipe, **do not plumb the Sea Recovery System feed line to the "top" of the Sea Chest or Stand Up Pipe.** If plumbed into the top of these feed water arrangements, the Sea Recovery System will experience continual shut down due to air inducement into the system. The resulting failure of the system to remain in operation is attributed to improper installation, is the liability of the installer, and is not covered by the Sea Recovery warranty. **Plumb the Sea Recovery System to the "bottom" of such feed water arrangements to ensure a continual air free supply of feed water to the system.**

Problems & Symptoms appearing and caused by the THRU-HULL INLET FITTING [1]:

a. Flat profile Inlet Thru Hull Fitting:

• System runs fine when at anchor. However, when under way the System shuts off due to low pressure or low feed water flow.

A flat profile Inlet Thru Hull Fitting will cause a vacuum at the System's feed line cavitating the Booster Pump and reducing the efficiency of the Booster Pump resulting in low feed water pressure and low feed water flow.

Solution: Change the flat profile Thru Hull Fitting to a forward facing scoop.

b. Debris is blocking the Inlet Thru Hull Fitting:

• System feed water pressure is low and insufficient to keep the System in operation.

Marine growth or debris such as a plastic bag or rag covering the Inlet Thru-Hull Fitting will cause a vacuum at the System's feed line cavitating the Booster Pump and reducing the efficiency of the Booster Pump resulting in low feed water pressure and low feed water flow.

Solution: Clean all marine growth and debris from the Inlet Thru-Hull Fitting.

• System is newly installed and operation is being performed for the first time. The feed water pressure is low and insufficient to keep the System in operation.

A NEW boat, or newly installed System, may have protective shipping tape covering the Inlet Thru-Hull Fitting. A New boat, or newly installed System, may have manufacturing debris such as caulking slopped over the Inlet Thru Hull or a rag may be stuffed into the Inlet Thru-Hull fitting. A NEW Inlet Thru-Hull Fitting may have casting slag, that has not been machined off, partially covering the "fingers" or the inside of the fitting.

Solution: Inspect the Inlet Thru-Hull Fitting and clean all manufacturing debris and casting slag from the fitting.

2. SEA COCK VALVE [2]

The Sea Cock Valve is usually a 1/4 turn Ball Valve although any positive closing and opening valve is acceptable.

Problems & Symptoms appearing and caused by the SEA COCK VALVE [2]:

a. The Sea Cock Valve is closed when attempting to Start the System.

System does not register feed water flow and feed water pressure when attempting to start. The **SYSTEM FAULT CODE 2 LOW PRESSURE** screen appears and the System shuts down.

When the System is not in use it is good practice, for the safety of the Boat, to close the Sea Cock Valve. Don't forget to open it prior to starting the System.

Solution: Open the Sea Cock Valve.

b. The Sea Cock Valve seal is worn or the seal adjustment is loose causing air to enter the System Feed Line.

- System feed water pressure is low and insufficient to keep the System in operation. This section of the Feed Line is under a vacuum condition when the System is in operation. If the valve's seal is worn or if the seal adjustment is loose air can enter the feed line causing the System to lose pressure.

Look for air bubbles moving through the Sea Strainer, or feed line.

Solution: Change the valve seals, tighten them, or if necessary replace the valve.

3. INLET CONNECTOR [3] AS WELL AS ALL FITTINGS AND CONNECTIONS PRIOR TO THE INLET OF THE BOOSTER PUMP [7]:

Problems & Symptoms appearing and caused by any fitting or connection in the Suction portion of the Feed Line:

a. One or more fittings or connections in the Suction portion of the Feed Line is causing air to enter the Feed Line.

- System feed water pressure is low and insufficient to keep the System in operation. This section of the Feed Line is under a vacuum condition when the System is in operation.

Look for air bubbles moving through the Sea Strainer, or feed line.

Solution: Tighten any loose fitting or connection at the Inlet of the Booster Pump or prior to it that is allowing air to enter the feed line.
Replace worn or broken seal or O-ring at the Inlet of the Booster Pump or prior to it that is allowing air to enter the feed line.
Check positioning of all valves at or prior to the Inlet of the Booster Pump that may be allowing air to enter the feed line.

4. INLINE VACUUM / PRESSURE GAUGES [4, 6, 8, 13, 17, & 21]:

Problems & Symptoms appearing and caused by the Inline Vacuum/Pressure Gauges:

a. A Vacuum/Pressure gauge needle does not move; or does not register proper vacuum or pressure.

- The Vacuum/Pressure Gauges have a very small orifice at the bottom of the pipe fitting end. This orifice can become plugged with debris or corrosion.

  Solution: Using a small diameter wire clean the debris from the orifice.

5. SEA STRAINER [5]:

Problems & Symptoms appearing and caused by the Sea Strainer:

a. The Sea Strainer O-Ring seal is not properly seated, is worn, or is not properly compressed allowing air to enter the Feed Line.

- System feed water pressure is low and insufficient to keep the System in operation. This section of the Feed Line is under a vacuum condition when the System is in operation. If the Sea Strainer O-Ring is not properly seated air will enter the feed line causing the System to loose pressure.

  Look for air bubbles moving through the Sea Strainer and into the Feed Line.

  Solution: Properly seat or replace the Sea Strainer O-Ring.

b. The Sea Strainer mesh screen element is the first line of defense to trap large suspended solids entering the Feed Line. Depending on Feed Water conditions the screen may plug up rapidly. Marine growth, plastic bags, jelly fish, and other debris can easily enter the feed line and plug up the Sea Strainer mesh screen.

- System feed water pressure is low and insufficient to keep the System in operation because the Sea Strainer mesh screen is blocking feed water flow.

  Solution: Regularly check and clean the Sea Strainer mesh screen. Keep it clear and free of debris.

6. BOOSTER PUMP [7]:

The Booster Pump is a centrifugal type pump. When mounted at or below feed water level it is able to draw feed water and deliver it with pressure into the prefiltration components and High Pressure Pump. If mounted above feed water level the Booster Pump may have trouble priming if air enters the feed line.

Prior to assuming that the Booster Pump's Electric Motor has failed, perform a Function Test as described in Section 3 of this Owner's Manual.

Problems & Symptoms appearing and caused by the Booster Pump:

a. The Booster Pump leaks feed water between the pump and motor.

- The Booster Pump has a ceramic and carbon seal. Ceramic and carbon seals will weep if the pump is not operated for extended periods of time. When used regularly the seal will give approximately 2000 hours of use. The seal continually wears during use and must be replaced approximately every 2000 hours of use. If left unused for extended periods of time seal replacement may be required sooner.

  Solution: Replace seal.

7. **T-CONNECTOR PRESSURE PICK-UP [9] Booster Pump Outlet/Prefilter Inlet** for line pressure pick up to Low Pressure Transducer #1 [10] between the outlet of the Booster Pump and the inlet of the first prefiltration component.

Problems & Symptoms appearing and caused by the T-Connector Pressure Pick-Up:

a. The Low Pressure Transducer #1 [10] does not register pressure.

- The 1/4 inch O.D. tube connecting the T-Connector to the Low Pressure Transducer Manifold may become kinked or debris may block the tube.

Solution: Replace any hose or tube that is kinked. Disconnect each end of the tube and blow air through the tube to ensure that it is not blocked.

8. **LOW PRESSURE TRANSDUCER #1 [10] Booster Pump Outlet/ 1st Prefilter Inlet** for line pressure pick up from the Outlet of the Booster Pump to the Inlet of the 1st Prefiltration component

The Low Pressure Transducer sends a DC voltage signal to the System Control Logic. The minimum value is .5 VDC when no pressure is applied to it, and the maximum value that the System will accept is 4.5 VDC. The variation of voltage output from the Transducer is converted to pressure value by the System Control Logic.

Problems & Symptoms appearing and caused by the Low Pressure Transducer #1 [10]:

a. The Low Pressure Transducer #1 [10] does not register pressure or the pressure displayed is inaccurate..

- The 1/4 inch O.D. tube connecting the T-Connector to the Low Pressure Transducer Manifold may become kinked or debris may block the tube.

Solution: Replace any hose or tube that is kinked. Disconnect each end of the tube and blow air through the tube to ensure that it is not blocked.

- The pressure readings at the Touch Pad are inaccurate. The minimum voltage output is below .5VDC and or the maximum voltage output is above 5 VDC.

Solution: Check wiring and connections to and from the Transducer.
Calibrate the Transducer.
Replace the Transducer.

9. **PLANKTON FILTER [11]:**

This optional filter assembly contains a cleanable ultra fine monel mesh screen. The mesh screen traps suspended solids or biological growth such as plankton. It also provides longer life to the Pre-filter Elements and in turn provides lower system maintenance costs. As with all prefiltration components the Plankton Filter mesh screen must be free of debris in order for the Feed Water to flow through it.

Problems & Symptoms appearing and caused by the Plankton Filter:

a. The Feed Water Pressure into the Plankton Filter is higher than normal, and the Feed Water Pressure into the High Pressure Pump is lower than normal.

- The pressure differential readings across the Plankton Filter indicate that the element is filled with debris blocking the feed water.

Solution: Clean the Plankton Filter Element.

10. MULTI MEDIA FILTER [12]

This optional filter assembly contains a back-washable bed of sand and gravel. The sand traps suspended solids larger than 30 microns which provides longer life to the pleated cartridge prefilter elements minimizing maintenance intervals, maintenance labor, and filter element cost. Pressure and flow will be restricted as the sand bed becomes clogged with debris and marine growth. The sand bed is washable by reversing the feed water flow across it. This process is referred to as Back Washing.

Problems & Symptoms appearing and caused by the Plankton Filter:

a. The Feed Water Pressure into the Multi Media Filter is higher than normal, and the Feed Water Pressure into the High Pressure Pump is lower than normal.

- The pressure differential readings across the Multi Media Filter indicate that the Multi Media Filter requires back washing.

Solution: Back wash the Multi Media Filter.

11. DUAL PRE-FILTER [15 & 16]

This two stage filter removes suspended solids first through a 20 micron cartridge filter element then through a 5 micron cartridge filter element. By stepping the filtration both prefilter elements gain longer life and require less maintenance labor and prefilter element replacement cost. As the cartridge filter elements become plugged up with debris pressure and flow drop resulting in System shut down due to low pressure into the High Pressure Pump [19]. The cartridge filter elements may be cleaned once to gain approximately 50% of the original life. After the first cleaning they must be discarded and replaced with new elements.

PREFILTER ELEMENT WARNING: Do not use third party prefilter elements, use only Sea Recovery prefilter elements. Third party prefilter elements do not properly fit and the seams fall apart. They also allow by-pass resulting in premature fouling of the R.O. Membrane Element and extensive damage to the High Pressure Pump. Damage to the R.O. Membrane Element or High Pressure Pump caused by the use of third party, non Sea Recovery, Prefilter Elements is the responsibility and liability of the operator and not covered by the Sea Recovery Warranty.

PREFILTER ELEMENT CAUTION: Do not use “string wound” or “fiber” prefilter elements. These types of elements are designed for the Photographic Film Developing Industry. When used in sea water, they will plug up rapidly in 1/10th or less the time. This will cause frequent shut downs of the system and very frequent changing which will result in very high cost of maintenance and user frustration.

CAUTION: Hand tighten the bowl onto the filter top housing. DO NOT over tighten. DO NOT use any wrench or device to tighten the bowl. It is O-ring sealed, hand tightening is adequate. Over tightening will stress the bowl and top causing it to crack.

Problems & Symptoms appearing and caused by the Prefilter:

a. The Feed Water Pressure into the Prefilter is higher than normal, and the Feed Water Pressure into the High Pressure Pump is lower than normal.

- The pressure differential readings across the Prefilter indicate that the elements are filled with debris blocking the feed water.

  Solution: Replace the Prefilter Elements.

12. COMMERCIAL PRE-FILTER [14]

The Commercial Prefilter housing contains a 5 micron cartridge filter element that has 38 square feet of filtering surface area. This over size cartridge provides extended life that greatly reduces maintenance and prefilter element replacement cost. As the cartridge filter element becomes plugged up with debris pressure and flow drop resulting is System shut down due to low pressure into the High Pressure Pump [19]. The cartridge filter element may be cleaned once to gain approximately 50% of the original life. After the first cleaning it must be discarded and replaced with a new element.

PREFILTER ELEMENT WARNING: Do not use third party prefilter elements, use only Sea Recovery prefilter elements. Third party prefilter elements do not properly fit and the seams fall apart. They also allow by-pass resulting in premature fouling of the R.O. Membrane Element and extensive damage to the High Pressure Pump. Damage to the Sea Recovery System caused by the use of third party, non Sea Recovery, Prefilter Elements is the responsibility and liability of the operator and not covered by the Sea Recovery Warranty.

CAUTION: Finger tighten the lid locking ring onto the base. **DO NOT** over tighten. **DO NOT** use any wrench or device to tighten the lid locking ring. The lid is O-ring sealed, two finger tightening is adequate. Over tightening will stress the threads on the base and the lid locking ring causing them to crack.

Problems & Symptoms appearing and caused by the Prefilter:

a. The Feed Water Pressure into the Prefilter is higher than normal, and the Feed Water Pressure into the High Pressure Pump is lower than normal.

- The pressure differential readings across the Prefilter indicate that the element is filled with debris blocking the feed water.

  Solution: Replace the Prefilter Element.

13. T-CONNECTOR PRESSURE DIFFERENTIAL PICK-UP [18]:

The T Connector is for line differential pressure pick up between optional prefiltration components to the Differential Pressure Transducer #3 [19]. This Transducer allows the operator to determine exactly which prefiltration component requires servicing.

Problems & Symptoms appearing and caused by the T-Connector Pressure Pick-Up:

a. The Pressure Differential Transducer [19] does not register pressure.

- The 1/4 inch O.D. tube connecting the T-Connector to the Low Pressure Transducer Manifold may become kinked or debris may block the tube.

  Solution: Replace any hose or tube that is kinked. Disconnect each end of the tube and blow air through the tube to ensure that it is not blocked.

14. PRESSURE DIFFERENTIAL TRANSDUCER #3 [19]

The Pressure Differential Transducer for line pressure reading across (between) prefiltration components allowing the operator to determine which prefiltration component requires servicing.

The Pressure Differential Transducer sends a DC voltage signal to the System Control Logic. The minimum value is .5 VDC when no pressure is applied to it, and the maximum value that the System will accept is 4.5 VDC. The variation of voltage output from the Transducer is converted to pressure value by the System Control Logic.

Problems & Symptoms appearing and caused by the Pressure Differential Transducer [12]:

a. The Pressure Differential Transducer does not display on the Touch Screen.

Solution: Refer to Section 3 of this Owner's Manual to Set Up and Inform the System Control Logic that the Pressure Differential Transducer has been installed and connected.

b. The Pressure Differential Transducer does not register pressure or the pressure displayed is inaccurate..

- The 1/4 inch O.D. tube connecting the T-Connector to the Pressure Differential Transducer may become kinked or debris may block the tube.

Solution: Replace any hose or tube that is kinked. Disconnect each end of the tube and blow air through the tube to ensure that it is not blocked.

- The pressure readings at the Touch Pad are inaccurate. The minimum voltage output is below .5VDC and or the maximum voltage output is above 5 VDC.

Solution: Check wiring and connections to and from the Transducer.
Calibrate the Transducer.
Replace the Transducer.

15. OIL/WATER SEPARATOR [20]

The Oil/Water Separator housing contains a 10 micron coalescing filter element. This Oil/Water Separator is positioned after the Prefilter in the Feed Water Line. Unlike a conventional cartridge filter element, the water flow is into the center and out ward. The purpose of this filter is to coalesce and trap oil so that it doesn't reach the R.O. Membrane Element. Oil will permanently foul the R.O. Membrane Element.

OIL/WATER SEPARATOR ELEMENT WARNING: Do not use third party Oil/Water Separator elements, use only Sea Recovery supplied elements. Third party elements do not properly fit and will not adequately coalesce the oil from the feed water...They also allow by-pass resulting in premature fouling of the R.O. Membrane Element and extensive damage to the High Pressure Pump. Damage to the Sea Recovery System caused by the use of third party, non Sea Recovery, Oil/Water Separator Elements is the responsibility and liability of the operator and not covered by the Sea Recovery Warranty.

CAUTION: Finger tighten the lid locking ring onto the base. **DO NOT** over tighten. **DO NOT** use any wrench or device to tighten the lid locking ring. The lid is O-ring sealed, two finger tightening is adequate. Over tightening will stress the threads on the base and the lid locking ring causing them to crack.

Problems & Symptoms appearing and caused by the Oil/Water Separator:

a. The Feed Water Pressure into the Oil/Water Separator is higher than normal, and the Feed Water Pressure into the High Pressure Pump is lower than normal.

- The pressure differential readings across the Oil/Water Separator indicate that the element is filled with debris blocking the feed water.

Solution: Replace the Oil/Water Separator Element.

16. **T-CONNECTOR PRESSURE PICK-UP [22] Outlet of Last Prefiltration component - Inlet of High Pressure Pump**

This T Connector is for line pressure pick up to Low Pressure Transducer #2 [23] between the outlet of the last prefiltration component and the inlet of the High Pressure pump.

Problems & Symptoms appearing and caused by the T-Connector Pressure Pick-Up:

a. The Low Pressure Transducer #2 [23] does not register pressure.

- The 1/4 inch O.D. tube connecting the T-Connector to the Low Pressure Transducer Manifold may become kinked or debris may block the tube.

Solution: Replace any hose or tube that is kinked. Disconnect each end of the tube and blow air through the tube to ensure that it is not blocked.

17. **LOW PRESSURE TRANSDUCER #2 [23] last prefiltration component Outlet / High Pressure Pump Inlet**

The Low Pressure Transducer #2 is for line pressure pick up at the Inlet of the High Pressure Pump.

The Low Pressure Transducer sends a DC voltage signal to the System Control Logic. The minimum value is .5 VDC when no pressure is applied to it, and the maximum value that the System will accept is 4.5 VDC. The variation of voltage output from the Transducer is converted to pressure value by the System Control Logic.

Problems & Symptoms appearing and caused by the Low Pressure Transducer #2 [23]:

a. The Low Pressure Transducer #2 [23] does not register pressure or the pressure displayed is inaccurate..

- The 1/4 inch O.D. tube connecting the T-Connector to the Low Pressure Transducer Manifold may become kinked or debris may block the tube.

Solution: Replace any hose or tube that is kinked. Disconnect each end of the tube and blow air through the tube to ensure that it is not blocked.

- The pressure readings at the Touch Pad are inaccurate. The minimum voltage output is below .5VDC and or the maximum voltage output is above 5 VDC.

Solution: Check wiring and connections to and from the Transducer.
Calibrate the Transducer.
Replace the Transducer.

18. **TRANSDUCER MANIFOLD [24]:**

The Transducer Manifold must be replaced if broken and allowing leakage.

19. **HIGH PRESSURE PUMP & MOTOR ASSEMBLY [25]:**

The Electric Motor is 3 horse power, Totally Enclosed Fan Cooled, 2 pole, dual Cycle, and dual Voltage.

WARNING: The High Pressure Pump MUST rotate in the COUNTER CLOCKWISE DIRECTION ONLY Rotating the High Pressure Pump in the clockwise direction will cause extensive damage to it. Never operate the High Pressure Pump in the clockwise direction.

WARNING: When switching from Three Phase Generator power to Three Phase Shore power ALWAYS check phases prior to operating the Aqua Matic System else Reverse Rotation along with extensive damage to the High Pressure Pump will occur should the power be out of phase.

This High Pressure Pump is a Quintiplex Radial Axial Positive Displacement Plunger Pump made of high grade Duplex material specifically designed for sea water Reverse Osmosis applications. The Pump is connected to the attached electric motor with a flex coupler and safety bell housing.

As with all Positive Displacement pumps it must receive a specified minimum amount of water at a positive pressure. A vacuum at the inlet of the pump will cause cavitation and damage. This pump does not use oil, it is self lubricated with the feed water. Internal components are designed for 8,000 hours of continual service in sea water. As with any component exposed to sea water, use is best.

Problems & Symptoms appearing and caused by the High Pressure Pump or its Electric Motor:

Prior to assuming that the High Pressure Pump's Electric Motor has failed, perform a Function Test as described in Section 3 of this Owner's Manual.

a. The **Single Phase** (115 or 230 VAC) Electric Motor "hums", pulls starting current (locked rotor) amperage, does not rotate, and trips the supply power circuit breaker when attempting to operate the System.

   The **Single Phase** Electric Motor is a capacitor start motor. If the motor was started with low voltage, a drop in voltage during starting, and if this was repeated several times in rapid concession the capacitor will short out. Without the aid of a working capacitor the motor will "hum", pull starting current (locked rotor) amperage, not rotate, and trip the supply power circuit breaker when attempting to operate the System.

   Low voltage will also cause the same symptom. Low voltage is caused by an undersized power supply or generator, undersized power lead wires to the System or motor, loose power wire, or connection at the motor or within the power supply line, and "burnt" contacts on the motor starter relay (contactor).

   Solutions:

   Check wiring size and connections to, from, and in between the Power Supply and the electric motor. Correct wire size or any loose wires.
   Check the capacitor on the motor, and replace it if it has shorted out.
   Measure voltage at the motor during attempt to start it. If voltage drops more than 10% locate and correct the reason.
   Check the motor starter relay, contactor, for "burnt" contacts.

b. The **Three Phase** (230 // 380 // 460 VAC) Electric Motor "hums", pulls starting current (locked rotor) amperage, does not rotate, and trips the supply power circuit breaker when attempting to operate the System.

The **Three Phase** Electric Motor requires all three power lines (all three phases) to be operative else it will "single phase" causing extensive damage to the motor's internal windings.

Low voltage will also cause the same symptom. Low voltage is caused by an undersized power supply or generator, undersized power lead wires to the System or motor, loose power wire, or connection at the motor or within the power supply line, and "burnt" contacts on the motor starter relay (contactor).

Solutions:

Check wiring size and connections to, from, and in between the Power Supply and the electric motor. Correct wire size or any loose wires.
Measure voltage at the motor during attempt to start it. If voltage drops more than 10% locate and correct the reason.
Check the motor starter relay, contactor, for "burnt" contacts.
Ensure all three phases have power.

c. The Electric Motor makes an unusual "grinding" sound when operated.

Solutions: Check and replace as necessary the front and rear bearings.
Check to see if the fan is rubbing against the fan guard.

d. The **High Pressure Pump** makes an unusual "grinding" noise.

The pump will make a grinding noise if its drive shaft has been forced into the pump body. The Electric Motor and Pump are coupled with a "Flex Coupler" specially designed for use with this specialized pump. Never replace the Flex Coupler with another make or style. ALWAYS leave 3/32 inch (2mm) spacing between the two mating Flex Couplers. ALWAYS ensure that the Safety Bell Housing attached to the electric motor and the pump seats evenly on both ends.

Internal spacing of moving components within the High Pressure Pump hold to very tight tolerance. Any debris larger than 10 micron entering the High Pressure Pump will cause abrasion to the pump's internal parts, and will cause an audible grinding noise. Hard debris, such as sand or metal, will cause the pump to "freeze up" and will cause extensive damage to the internal parts of the pump.

If the System incorporates a Multi Media Filter use caution to not allow sand to enter the High Pressure Pump. When changing Prefilter Elements use caution to not allow debris to enter the High Pressure Pump.

Damage to the High pressure Pump caused by debris is the responsibility of the person performing maintenance to the System, is the liability of the person performing maintenance to the System, and is not covered by the Sea Recovery warranty.

Solutions:

Check spacing between the motor's and pump's flex coupler. Spacing must be minimum 3/32 inch (2mm) and maximum 1/8 inch (3mm).
Check Safety Bell Housing to ensure it is flush and secured to both the motor and pump.
Check Pump for signs of foreign debris entering the inlet.

e. The **High Pressure Pump** flow and or pressure have decreased from normal.

As with all High Pressure Pumps, over time of operation flow and pressure will decline due to internal wear. Under normal use and care no significant pressure or flow loss will occur for 8,000 hours of operation or longer.

Do not confuse low feed water flow and low feed water pressure with a High Pressure Pump problem. All positive displacement pumps must receive a specific flow at a minimum pressure else cavitation will occur. Check to ensure that the Booster Pump is delivering at least 4.5 U.S. Gallons Per Minute (17 Liters Per Minute) of feed water at 10 to 40 PSI at the Inlet of the High Pressure Pump. Note: Systems operating on 50 Hz power will deliver 3.75 U.S. Gallons Per Minute (14.2 Liters Per Minute) of feed water.

Solutions: If Feed Water Flow and Pressure into the High Pressure Pump are within minimum specifications, and if the electric motor is rotating at the proper rotation (the proper cycles are present from the power source) yet the High Pressure Pump has lost Flow and or Pressure then return the High Pressure Pump to Sea Recovery for servicing.

f. The **High Pressure Pump** leaks water between the pump and motor.

- The High Pressure Pump has a ceramic and carbon seal. Ceramic and carbon seals will weep if the pump is not operated for extended periods of time. When used regularly the seal will give approximately 8000 hours of use. The seal continually wears during use and must be replaced approximately every 8000 hours or at the sign of leakage.

Solution: Return the High Pressure Pump to Sea Recovery for service and Seal replacement.

g. The **High Pressure Pump** makes an unusual "very loud knocking" noise.

All positive displacement pumps will make a very loud knocking noise if they do not receive sufficient flow at a positive pressure. This knocking noise results from cavitation which is caused by insufficient feed water flow at an insufficient pressure.

Solutions: Service the Prefiltration Section (Low Pressure Section) of the System. Check all components between the Inlet Thru-Hull Fitting and the Inlet of the High Pressure Pump to determine what is causing the loss in feed water flow and pressure to the High Pressure Pump.

20. **HIGH PRESSURE HOSE [26 & 29]:**

The High Pressure Hose has been assembled with crimp fittings by Sea Recovery. The High Pressure Hose is NOT repairable. Should a leak, damage, or failure develop replace the High Pressure Hose.

Solutions: Replace a damaged High Pressure Hose

21. **REVERSE OSMOSIS MEMBRANE AND VESSEL ASSEMBLY [27 & 28]:**

The Reverse Osmosis Membrane Element allows potable water molecules to pass through while rejecting the salt ions. Only a small percentage of the Seawater Feed becomes fresh Product Water. The remainder carries the rejected salt ions out of the R.O. Membrane Element in a concentrated brine stream. The R.O. System may have one or two R.O. Membrane Elements & Vessel in series depending on the specific model and system capacity.

Problems & Symptoms appearing and caused by the Reverse Osmosis Membrane and Vessel Assembly:

a. Prior to assuming that there is a problem with the R.O. Membrane Element(s) due to your observance that:

The System does not produce the correct amount of Product Water (too much or too little)
The System produces poor quality Product Water, high in Salinity
The System Operating Pressure is excessively higher than 800 PSI when operating in normal Sea Water at moderate temperatures (77 degrees F / 25 degrees Celsius)
The System Operating Pressure is excessively lower than 800 PSI when operating in normal Sea Water at moderate temperatures (77 degrees F / 25 degrees Celsius)

Go to Section 3 of this Owner's Manual to ensure that the Model Set-Up has been properly performed.

b. Product Water Flow suddenly & dramatically increases and Product Water Salinity increases making the Product Water unpotable:

- The Pressurized Feed Water and the Un-pressurized Product Water are separated by a "product water O-Ring" which seals on the Product Water Tube at each end of the R.O. Membrane Element and the End Plug at each end of the Pressure Vessel. Should this O-Ring fail Feed Water will mix with Product Water. If this happens the Product Water will be very salty, the Product Water Flow will increase dramatically, and the Brine Flow will decrease appropriately (by the increase in Product Water).

  Solution: Replace the O-Rings if wear or damage is present.

- Should the End Plug develop a crack, between the product water port and the pressurized feed water, similar increase in Product Water flow and high Product Water salinity will occur.

  Solution: Replace the End Plug if it is damaged or cracked.

- At ONE end only of the R.O. Membrane Element there is a "U" cup seal referred to as the "brine seal". NEVER use two Brine Seals. NEVER place a Brine Seal on both ends of the R.O. Membrane Element. This will cause an air pocket between the outer surface of the R.O. Membrane Element and the inner wall of the Pressure Vessel. The air pocket would allow the R.O. Membrane Element to expand outward during operation causing irreversible mechanical damage to the R.O. Membrane Element resulting in higher than normal Product Water Flow and High Product Water Salinity.

  Solution: Replace the R.O. Membrane Element. NEVER place two Brine Seals on one R.O. Membrane Element.

- NEVER Block the Product Water Line. NEVER place a valve in the Product Water Line that can close and block the Product Water Line. Blockage of the Product Water line will result in high pressure build up of 950 PSI (6550 kPa) within the line and within the product water tube and product water channel of the R.O. Membrane Element. If the System is shut down while the Product Water Line is blocked irreversible damage to the R.O. Membrane Element will occur.

  Solution: Determine what blocked the Product Water Line and correct the condition. Replace the R.O. Membrane Element.

- Chemical attack, one that will dissolve the membrane surface such as an oxidant like Chlorine, has destroyed the R.O. Membrane Element surface.

  Solution: Determine the source and correct the situation.
  Replace the R.O. Membrane Element.

c. Product Water Flow slowly, over months, decreases and Product Water Salinity, slowly over months, increases, quality decreases:

- As the Reverse Osmosis Membrane Element is exposed, operated or not, to Sea Water eventually biological matter will coat the membrane surface causing a drop in production, loss of product water flow accompanied by an increase in salt passage in the product water. Fresh Water Rinsing every 7 days will minimize and slow down the biological fouling that naturally occurs. Chemical Cleaning at appropriate intervals will remove the biological fouling and extend the life of the R.O. Membrane Element.

  Solution: Refer to Section 6 of this Owner's Manual for R.O. Membrane Element Cleaning procedures or replace the R.O. Membrane Element(s).

- As the Reverse Osmosis Membrane Element is operated eventually dissolved solids, salts or minerals, will build up on the membrane surface causing a drop in production, loss of product water flow accompanied by an increased percentage of dissolved solids, salt, in the product water. Chemical Cleaning at appropriate intervals will dissolve the salt and mineral fouling and extend the life of the R.O. Membrane Element.

  Solution: Refer to Section 6 of this Owner's Manual for R.O. Membrane Element Cleaning procedures or replace the R.O. Membrane Element(s).

d. Product Water Flow suddenly decreases and Product Water Salinity, suddenly increases, quality decreases:

- Chemical, one that will foul or plug up the membrane surface, or Oil attack to the R.O. Membrane Element will cause the production to suddenly decrease and the product water quality will suddenly worsen.

  Solution: Replace the R.O. Membrane Element(s) if they have been attacked by Chemicals or Oil.

e. Feed Water leaks from the Pressure Vessel:

- The High Pressure fittings entering the Pressure Vessel are O-Ring sealed at the End Plug that they attach to. Should a leak develop at a High Pressure Fitting inspect the respective O-Ring for signs of wear or damage.

  Solution: Replace the O-Rings if wear or damage is present.

- The End Plugs seal against the inner surface of the High Pressure Vessel. The O-Ring that creates this seal is the "Brine O-Ring". Should a leak develop between the End Plug and the inside wall of the Pressure Vessel remove the end plug and inspect the Brine O-Rings for wear or damage. Replace them if wear or damage is present.

  Solution: Replace the O-Rings if wear or damage is present.

22. **HIGH PRESSURE MANIFOLD [30]**.

There are no parts within the High Pressure Manifold that would require troubleshooting. If it is broken or leaks then replace it.

23. **HIGH PRESSURE TRANSDUCER [31]:**

The High Pressure Transducer attaches to the High Pressure Manifold [30] measures the System Operating Pressure from the Outlet of the High Pressure Pump [19] through the R.O. Membrane & Vessel(s) [27 & 28] and into the Automatic Back Pressure Regulator [32].

The High Pressure Transducer sends a DC voltage signal to the System Control Logic. The minimum value is .5 VDC when no pressure is applied to it, and the maximum value that the System will accept is 4.5 VDC. The variation of voltage output from the Transducer is converted to pressure value by the System Control Logic.

Problems & Symptoms appearing and caused by the High Pressure Transducer:

a. The High Pressure Transducer does not register pressure or the pressure displayed is inaccurate..

- The pressure readings at the Touch Pad are inaccurate. The minimum voltage output is below .5VDC and or the maximum voltage output is above 5 VDC.

Solution: Check wiring and connections to and from the Transducer.
Calibrate the Transducer.
Replace the Transducer.

24. **AUTOMATIC MOTOR ACTUATED BACK PRESSURE REGULATOR [32]:**

Automatic Motor Actuated Back Pressure Regulator is a U.S. Patent Pending device that automatically adjusts the system operating pressure to varying feed water temperatures and salinities making the Sea Recovery Aqua Matic a truly self functioning and fully automatic water maker.

The Motor Control is sealed against moisture and encased within an anodized aluminum housing. The Motor Control is not serviceable. Do not attempt to remove the anodized aluminum housing from the bracket base. Electrical troubleshooting may be performed to determine if it is damaged, functional, or non functional.

The Back Pressure Regulator Valve contains a seal that is serviceable.

When the System is operated in the Automatic mode the Automatic Motor Actuated Back Pressure Regulator will rotate clock wise to increase operating pressure until the specified flow of Product water is achieved or until the System Operating Pressure reaches 950 PSI which ever comes first. The System Control Logic will not allow Product Water production to exceed the specific set flow rate. This protects the R.O. Membrane Element(s) from prematurely fouling. The System Control Logic will also not allow the System Operating pressure to exceed 950 PSI. This protects the R.O. Membrane Element(s) and the High Pressure Pump Electric Motor.

CAUTION: Should the set screws loosen causing the coupler, between the Motor shaft and or the Back Pressure Regulator shaft, to become loose the Motor and Valve shafts MUST be calibrated and Synchronized prior to tightening the set screws to the shafts, refer to Section 8 of this Owner's Manual.

Problems & Symptoms appearing and caused by the Automatic Motor Actuated Back Pressure Regulator:

Prior to assuming that the Back Pressure Regulator's Electric Motor Actuator has failed, perform a Function Test as described in Section 3 of this Owner's Manual.

a. The Operating Pressure is higher than normal when the System is operated in the Automatic mode.

- When the System Feed Water is higher than normal in salinity and/or lower than normal in temperature the operating pressure will automatically increase in an attempt to produce the specified amount of Product Water. Pressure will increase until the Product Water flow is achieved or until the operating pressure reaches 950 PSI.

  Solution: The System is programmed to not exceed 950 PSI operating pressure. No correction is necessary.

b. The Operating Pressure is lower than normal when the System is operated in the Automatic mode.

- The Product Water Flow reading at the Touch Pad indicates that the System is producing the specified amount of Product Water. However, the Operating Pressure is lower than normal.

  When the System Feed Water is lower than normal in salinity and/or higher than normal in temperature the operating pressure will automatically decrease to not exceed the specified amount of product water. Pressure will decrease until the specified product water flow is achieved.

  Solution: The System is programmed to not exceed the specified amount of Product Water Flow. No correction is necessary.

c. The Operating Pressure does not increase when the System is operated or does not decrease when the System is stopped when operated in the Automatic Mode.

- The Back Pressure Regulator Valve is controlled by a gear motor arrangement. The Valve is coupled to the gear shaft with a female coupler. The set screws holding the gear shaft or Valve shaft to the coupler may have become loose. The gear shaft is turning but the valve shaft is not.

  When the System Feed Water is lower than normal in salinity and/or higher than normal in temperature the operating pressure will automatically decrease to not exceed the specified amount of product water. Pressure will decrease until the specified product water flow is achieved.

  Solution: Tighten the set screws to secure the gear shaft and valve shaft to the coupler if they are loose.

c. The gear shaft does not rotate at all.

- The Electric Motor and or gear assembly may not be functioning.

  Solution: Refer to Section 8 of this Owner's Manual for Back Pressure Regulator repair.

25. **BRINE DISCHARGE FLOW METER [33]:**

The Brine Discharge Flow Meter measures the brine water rate of flow from the R.O. Membrane Element & Vessel. By adding the amount of Product Water flow to the Brine Discharge Flow the operator is able to determine the total Feed Water Flow which is helpful in diagnosing problems with the High Pressure Pump.

Problems & Symptoms appearing and caused by the Brine Discharge Flow Meter:

Prior to assuming that the Brine Discharge Water Flow Meter has failed, check the Flow Meter's Calibration as described in Section 3 of this Owner's Manual.

a. The Brine Flow Meter does not register the proper Brine Water Flow at the Touch Pad.

- Debris may be trapped within the flow meter body causing false readings.

  Solution: Remove the Flow Meter from the System. Using a water hose force water into the outlet of the flow meter to dislodge any trapped debris.

- The Flow Meter Requires Calibration.

  Solution: Calibrate the Brine Flow Meter, refer to Section 8 of this Owner's Manual.

- There may be a water substantial leak prior to the Brine Flow Meter resulting in a lower than normal reading.

  Solution: Correct and repair any water leaks.

- Feed Water may be exiting the Product Water Line resulting in lower than normal Brine Water Flow. Abnormalities that would allow Feed Water to by-pass into the Product Water Line would include: The R.O. Membrane Element is not installed; the R.O. Membrane Element is damaged allowing brine water to mix with product water; a damaged O-Ring or cracked End Plug is allowing brine water to mix with product water. All of these abnormalities result in higher than normal Product Water Flow reading and lower than normal Brine Flow reading.

  Solution: Ensure that the R.O. Membrane Element(s) is installed.
  Replace any damaged R.O. Membrane Element(s)
  Replace any damaged Product Water O-Rings.
  Replace any cracked End Plugs.

b. The Brine Flow Meter does not register any flow at all at the Touch Pad.

- There may be a loose wire, loose connection, broken wire, or damaged Flow Meter.

  Solution: Check all wiring and plug connections.
  Replace the Flow Meter if determined to be non functional.

26. **BRINE DISCHARGE T-CONNECTOR [34]**

This T connector collects the brine discharge water and unpotable product water for routing out of the System in one line. If it breaks or leaks replace it.

27. **BRINE DISCHARGE CONNECTOR [35 or 36]**

This 90 degree elbow fitting or Multi Media Filter Waste T fitting attaches to the over board thru-hull fitting for connecting the brine discharge hose. If it breaks or cracks replace it.

28. THRU HULL DISCHARGE FITTING [37] **

The Discharge Thru-Hull Fitting should be installed above water level for discharge of the Brine Discharge Water from the system. If it breaks or cracks replace it.

29. PRODUCT WATER T COLLECTOR [38]

The T collector combines the product water from the two individual R.O. Membrane Elements [27 & 28]. If it breaks or cracks replace it.

30. SALINITY PROBE [39]

The Salinity Probe electronically measures, with temperature compensation, the salinity content of the Product Water. The Salinity Probe is calibrated at the factory to 800 PPM TDS NaCl at 25 degrees Celsius. Although the Salinity Probe is temperature compensated, it is not 100% linear across the full range that it must measure. The full range of salinity that the probe must attempt to measure is from 5 to 2000 PPM at 1 to 50 degrees Celsius. Always reference the probe accuracy and calibration to 800 PPM TDS NaCl at 25 degrees Celsius.

- Debris or biological growth can cause the Salinity Probe to give incorrect measurement of the Product Water Salinity.

  Solution: Clean the Salinity Probe contact pins annually or at any sign of incorrect reading.

- The Salinity Probe may have drifted from it's original calibration point.

  Solution: Calibrate the Salinity Probe. Refer to Section 3 of this Owner's Manual.

31. PRODUCT WATER FLOW METER [40]:

The Product Water Flow Meter measures the Product water rate of flow from the R.O. Membrane Element & Vessel. By adding the amount of Product Water flow to the Brine Discharge Flow the operator is able to determine the total Feed Water Flow which is helpful in diagnosing problems with the High Pressure Pump.

Problems & Symptoms appearing and caused by the Product Water Flow Meter:

Prior to assuming that the Product Water Flow Meter has failed, check the Flow Meter's Calibration as described in Section 3 of this Owner's Manual.

a. The Product Flow Meter registers higher than System Product Water Flow specification at the Touch Pad.

- Model set up was performed incorrectly at the Touch Pad.

  Solution: At the Touch Pad go to Menu / Service Menu / Model Set Up and select the proper System R.O. Membrane Element set up that the System is configured for.

- One of the following abnormalities is causing High Product Water Flow: Damage to the R.O. Membrane Element; a Product Water O-Ring; an End Plug is cracked and allowing Brine Water by-pass into the Product Water; a blockage in the Brine Discharge Line is causing reverse flow of Brine Water into the 3-way Product Water Diversion Valve.

  Solution: Locate the damaged R.O. Membrane Element(s) and replace it/them.
  Locate the damaged or missing Product Water O-Ring and replace it.
  Locate the cracked End Plug and replace it.
  Locate the blockage in the Brine Discharge Line.

- The Product Water Flow rate is lower than normal because the Feed Water temperature is lower than normal, the Feed Water salinity is higher than normal, or the R.O. Membrane Element is fouled.

  Solution: If Temperature or Salinity of the Feed Water are the cause of the lower than normal Product Water Flow rate this is normal and no corrective action is required.

  If the reason for lower than normal Product Water Flow rate is due to fouled R.O. Membrane Element(s) refer to R.O. Membrane Element cleaning procedures in Section 6 of this Owner's Manual, or replace the R.O. Membrane Element(s).

32. **3-WAY PRODUCT WATER DIVERSION SOLENOID VALVE [41]:**

The 3-Way Product Water Diversion Solenoid Valve, Electric Solenoid Actuated, is energized by the System Electronic Controller to the "Potable" position when the system produces water which meets the set salinity requirement. If the Product Water being produced is "Un-potable", high in salinity, then no signal is sent to the valve, and it thus remains in the normal open position. The "fail safe" normal open position diverts the un-potable Product Water to discharge.

Problems & Symptoms appearing and caused by the 3-Way Product Water Diversion Solenoid Valve:

Prior to assuming that the 3-Way Product Water Diversion Valve's Solenoid has failed, perform a Function Test as described in Section 3 of this Owner's Manual.

a. The 3-Way Product Water Diversion Solenoid Valve is allowing Brine Discharge Water to mix with Potable Water.

- There is a blockage in the Brine Discharge line creating pressure on the Brine Water. This abnormal pressure is forcing open the seat of the 3-Way Product Water Diversion Solenoid Valve allowing Brine Water to mix with Product Water.

  Solution: Determine the cause of excess pressure in the Brine Discharge Line and correct it so that no back pressure is present in the Brine Discharge Line.

- The 3-Way Product Water Diversion Solenoid Valve seat is not properly adjusted allowing Brine Water to mix with Product Water.

  Solution: Adjust the Valve's seats, refer to Section 8 of this Owner's Manual.

b. The 3-Way Product Water Diversion Solenoid Valve does not switch to Potable Water even though the Touch Pad indicates that the System is OK performing normally and producing Potable Product Water.

- The Solenoid is not actuating the Valve's seat.

  Solution: Check for 12 VDC at the valve's Solenoid, and at the Main Printed Circuit Board.
  Check for loose Wire and correct it.
  Check the valve's solenoid continuity and functionality, refer to Section 8 of this Owner's Manual. Replace the Solenoid Valve if the Solenoid is found to be non-functional.

c. The 3-Way Product Water Diversion Solenoid Valve is always in the "good water" position even when the Touch Pad indicates that the Product Water is high in salinity.

- The Manual By-Pass button located on the side of the solenoid is in the Manual By-Pass position.

  Solution: Release the button to the normal position. Refer to Section 8 of this Owner's Manual.

33. **CHARCOAL FILTER [42]:**

The Charcoal Filter is designed to remove foul odors from the Product Water. Sulfurous odor (rotten egg smell) transmitted to the Product Water is caused when biological matter decays in the feed water section. Fresh water flushing of the system helps to minimize this.

Problems & Symptoms appearing and caused by the Charcoal Filter:

a. The Product Water has a smell of rotten egg.

- The smell originates in the Feed Water and passes through the R.O. Membrane Element into the Product Water.

  Solution: Change Prefilter Elements with new elements and Fresh Water Flush the System to minimize the decaying biological matter.
  Change the Charcoal Filter Element with a new element.
  Drain and replace the Product water in the Fresh Water Tank [45]

34. **pH NEUTRALIZING FILTER [43]**

The product water from the system will be slightly acidic, approximately pH 6.5. This is normal for any Reverse Osmosis System. The pH Neutralizer Filter replaces alkaline, calcium carbonate, which neutralizes the pH of the product water back to a normal of 7.5. The life of the neutralizing cartridge depends on the amount of use, amount of product water flowing through it. Replace the element as necessary. CAUTION: Use only Sea Recovery replacement pH cartridges. Third party pH cartridges are for use with very low flow rates and cause excessive restriction resulting in Product Water Line pressure build up. These third party cartridges will damage the R.O. Membrane Element and components in the Product Water Line. Damage to the Sea Recovery System caused by the use of Non Sea Recovery supplied pH Neutralizing Cartridge is the liability and responsibility of the operator and not covered by the Sea Recovery Warranty.

35. **ULTRA VIOLET STERILIZER [44]*****

The U.V. Sterilizer destroys at least 99.9% of any virus, bacteria, and other micro-organisms which may pass through the R.O. Membrane Element. The U.V. sterilizer is recommended if the Product Water Storage Tank is not otherwise treated by means such as chlorination.

The U.V. Lamp is rated for approximately 2,000 hours of use. When the intensity of the lamp diminishes replace the lamp.

Problems & Symptoms appearing and caused by the Ultra Violet Sterilizer:

Prior to assuming that the U.V. Sterilizer Ballast and or Lamp have failed, perform a Function Test as described in Section 3 of this Owner's Manual.

a. The U.V. Lamp is not properly functioning:

- The U.V. Lamp flickers on and off and does not remain illuminated steady.

  Solution: Replace the U.V. Lamp with a new lamp.

- The U.V. Lamp illuminated steady but has lost it's original intensity.

  Solution: Replace the U.V. Lamp with a new lamp.

- The U.V. Lamp does not illuminate at all.

  Solution: Replace the U.V. Lamp with a new lamp.
  Check the condition of the U.V. Lamp Ballast to ensure its functionality, refer to Section 8 of this Owner's Manual.

36. PRODUCT WATER CONNECTOR [45]:

The Product Water Connector attaches to the Potable Water unpressurized tank for connection of the Product Water hose. Replace it if it is damaged or cracked.

37. **POTABLE WATER STORAGE TANK [46]**** may be any non pressurized container suitable for storing Potable Water, i.e. existing water storage tank on a boat or cistern for a home. This container must not be pressurized.

38. **FRESH WATER PRESSURE PUMP [47]****

This pump must deliver a minimum of 4.5 U.S. Gallons Per Minute at minimum 25 PSI (minimum 17 liters per minute at minimum 173 kPa) If the Fresh Water Flush cycle is unable to perform due to insufficient Fresh Water flow and pressure replace the Pressure Pump with a pump capable of meeting the minimum standards stated above.

39. **AIR ENTRAINMENT TANK [48]** (accumulator)**

Some Fresh Water Pressure Systems rely only on the Pressure Pump to deliver pressurized Fresh Water to the boat or home piping. Other Fresh Water Pressure Systems incorporate an Air Entrainment Tank. It is not important to the Aqua Matic System which configuration the boat or home has. The only requirement to the Aqua Matic System, for Fresh Water Flushing, is that the Fresh Water Pressure System in the boat or home must deliver to the Aqua Matic System during the Fresh Water Flush cycle a minimum of 4.5 U.S. Gallons Per Minute at minimum 25 PSI (minimum 17 liters per minute at minimum 173 kPa) If the Fresh Water Flush cycle is unable to perform due to insufficient Fresh Water flow and pressure replace the Pressure Pump with a pump capable of meeting the minimum standards stated above.

40. AUTOMATIC FRESH WATER FLUSH [49 – 52]:

Includes a 2-Way Solenoid Valve [49], potable water Check Valve [50], Carbon Filter [51], and feed water Check Valve [52] that allow automated flushing of the System with Fresh Water. This process is automatic at each shut down of the system and repeats automatically every 7 days. Fresh Water Flushing replaces the seawater in the system with less corrosive fresh water, and this also reduces the biological growth and subsequent decay that naturally occur if the feed water (sea water) is not flushed from the system with fresh water during disuse.

49. **Fresh Water 2-Way Solenoid Valve** energizes to allow fresh water to flush the System at shut down and every 7 days. In the de-energized position the valve isolates the feed water from the fresh water.

50. **Potable water Check Valve** is another safe guard to isolate the fresh water from the feed water.

51. **Fresh Water Flush Carbon Filter** removes chlorine, if present, in the fresh water prior to flowing through the R.O. Membrane Element.

52. Feed water **Check Valve** ensures that the fresh water used to flush the system travels through the system and prevents it from exiting the inlet thru hull fitting [1].

Fresh Water Flush 2-Way Solenoid Valve [49] is normally closed and actuates to open during the fresh water flush cycle to allow fresh water into the system.

Problems & Symptoms appearing and caused by the Fresh Water Flush 2-Way Solenoid Valve:

a. The Fresh Water Flush Cycle is off but fresh water is passing through the Fresh Water Flush 2-Way Solenoid Valve

- The valve ports may be improperly adjusted allowing by-pass.

  Solution: Adjust the valve ports. Refer to Section 8 of this manual.

a. The Fresh Water Flush Cycle is on but fresh water does not pass through the Fresh Water Flush 2-Way Solenoid Valve

- The valve ports may be improperly adjusted allowing by-pass.

  Solution: Adjust the valve ports. Refer to Section 8 of this manual.

- The valve's solenoid may be electrically non functional.

  Solution: Check for 12 VDC. If present, replace the valve. If 12 VDC is not present troubleshoot the electronics.

Fresh Water Flush Check Valve [50] stops feed water from entering the potable water line.

Problems & Symptoms appearing and caused by the Fresh Water Flush 2-Way Solenoid Valve:

a. The Fresh Water Flush Check Valve [50] is allowing feed water to mix with potable water.

  Solution: Replace the Fresh Water Flush Check Valve [50].

Fresh Water Flush Charcoal Filter [51] removes chlorine, if present, in the fresh water prior to flowing through the R.O. Membrane Element.

Problems & Symptoms appearing and caused by the Fresh Water Flush Charcoal Filter:

a. The Charcoal Filter is no longer removing the chlorine form the Fresh Water.

- As the Charcoal Filter becomes saturated it looses its ability to remove chlorine from the Fresh Water.

Solution: Replace the Charcoal Filter Element every 3 months.

Fresh Water Flush Tee Connector and Check Valve [52] stops fresh water from exiting the Inlet Thru Hull Fitting [1] and routes the fresh water through the system during the Fresh Water Flush Cycle. If debris causes the valve to not properly seat clean the internal components of the valve.

41. **RINSE CLEAN INLET VALVE [54]*** and RINSE CLEAN OUTLET VALVE [55]*****

These two 3-way PVC Ball Valves are used in conjunction with each other to simplify the storage and cleaning procedures by allowing the operator to turn a valve rather than disconnect a hose. Also used for a manual fresh water flush if the Automatic Fresh Water Flush System [40 & 41] is not installed.

Problems & Symptoms appearing and caused by the Rinse Clean Inlet and Outlet Valves:

a. The position of these valves cause the feed and brine water to travel in a specific direction.

- If the direction of feed water and or brine water travel is incorrect then one or both of the valves are positioned incorrectly for the given operation or cycle.

Solution: Refer to the Piping and Interconnect Diagrams throughout this Owner's Manual to determine the proper positioning of these valves.

42. **CLEANING BUCKET [53] ****

This can be any non ferrous (non iron) container capable of holding at least 10 U.S. Gallons of water. This container is used during the R.O. Membrane Element cleaning, storing, or winterizing process.

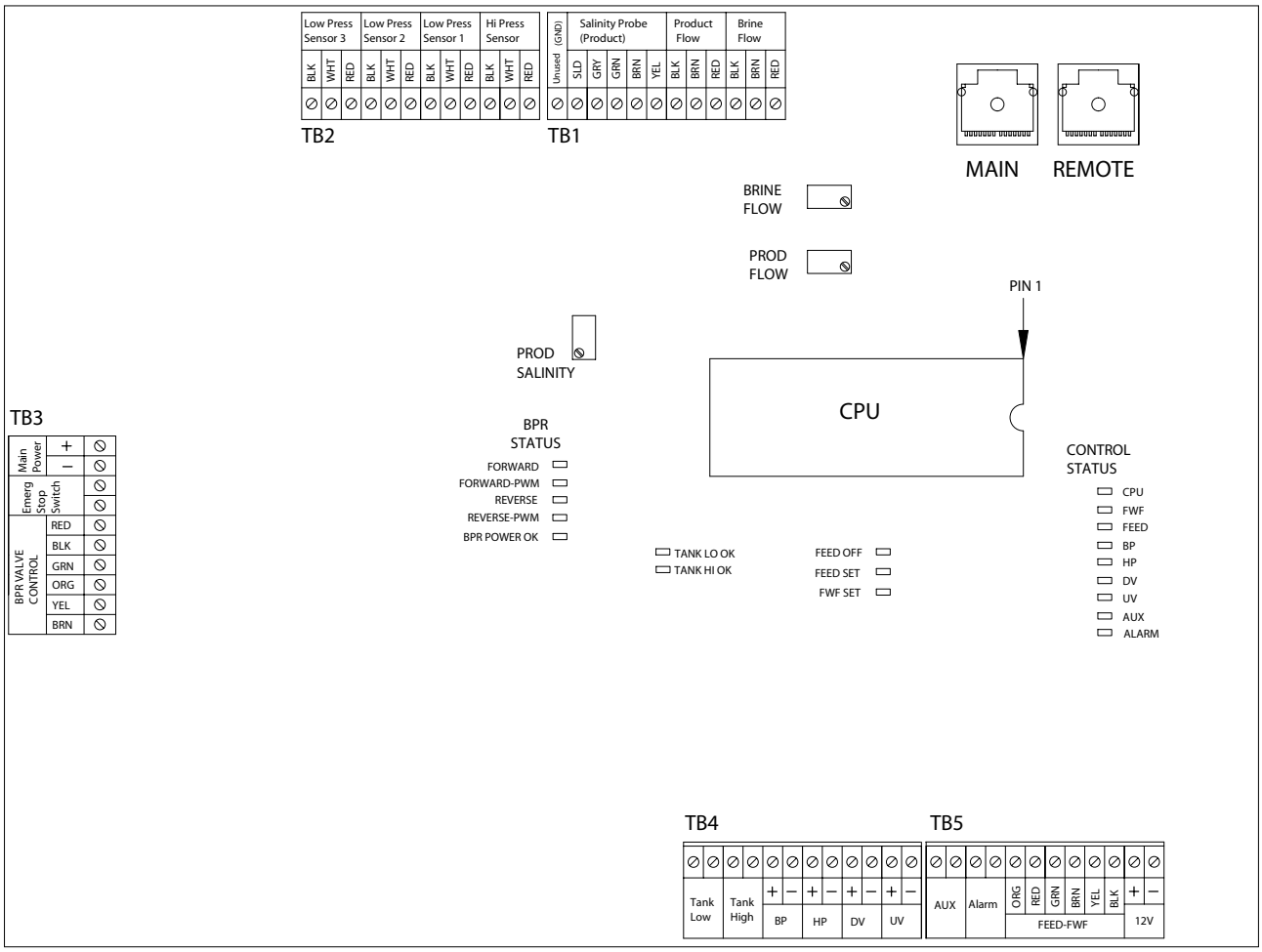
a. The bucket or container must not leak.

- The bucket or container leaks.

Solution: Replace the leaky bucket or container.

D. AQUA MATIC SYSTEM OPERATION CONTROL SEQUENCE & PROCESS:

The following Control Sequence & Process explanation is a technical sequence which refers to positions on the Main Printed Circuit Board illustrated below.



Controller Board VERSION: 2

MAIN = Main Touch Screen Connector
REMOTE = Remote Touch Screen Connector
TB = Terminal Block (TB1, TB2, etc)
BRINE FLOW = Brine Flow Meter Calibration, adjustment, potentiometer
PROD FLOW = Product Water Flow Meter Calibration, adjustment, potentiometer
PROD SALINITY = Salinity Probe Calibration, adjustment, potentiometer
BPR STATUS = LED status of the valve's movements.

FORWARD = Back Pressure Regulator Closes
FORWARD-PWM = Back Pressure Regulator Closes
REVERSE = Back Pressure Regulator Opens
REVERSE-PWM = Back Pressure Regulator Opens
BPR POWER OK = Valve is operational when this LED is illuminated
Valve is NOT operational, it is locked up and unable to turn, when this LED is NOT illuminated.

CONTROL STATUS LEDs

CPU = CPU is functional
FWF = Fresh Water Flush Solenoid Valve
FEED = Feed Water Pump (for land installations) Electric Motor
BP = Booster Pump Electric Motor
HP = High Pressure Pump Electric Motor
DV = 3-Way Product Water Diversion Solenoid Valve
UV = Ultra Violet Sterilizer
AUX = Auxiliary output signal
ALM = Auxiliary output alarm signal

NOTES:

1. Voltage measurements listed in this subsection D are between the specific terminals for the function provided. Never measure the voltage between any terminals and ground.
2. Do not connect any terminals to the chassis ground.
3. The voltage indicated as "HIGH" means approx. 12V while "LOW" is 0V, unless otherwise noted.

INITIAL START-UP:

1. Upon cold start of the system, the controller and LCD display boot up.
2. The controller goes through an initial POST (Power On Self Test) process and starts to communicate with LCD panel(s).
3. Upon establishing communication with the main LCD panel, the controller checks for the presence of a remote LCD panel. If the remote LCD is not detected at this point, any further communications with the remote LCD will not take place. Additional remote LCD detection is provided in the SETUP menu described later.
4. After the above process, an optional low pressure transducer (LP3) is detected, and if it is found, then differential pressures on each prefilter are individually measured.
5. The standard sensors (LP1, LP2, HP, Brine Flow and Product Flow) are tested for proper signal output levels.
6. Finally, the Back Pressure Regulator (BPR) is initialized to its full open position.
7. If any error is detected in the above processes, then an error message, describing what is wrong, is displayed and an audible signal is issued.
8. When the POST and initialization completes, the display is changed to a stand-by screen.

STAND-BY:

1. When the system is in the stand-by mode, the LCD displays a stand-by screen, on which two logos are acting as switches that, when touched, cause the system to go into the AUTO mode.

AUTO MODE:

1. There are two switches available on this screen.
2. One is the START switch located in the lower right corner and the other is the MENU switch located in the lower left corner.
3. Press "START".
4. A 5 second warning with audible beeps is given before the system starts.
5. Booster Pump starts (BP terminal voltage becomes HIGH). (New Screen)
6. If low pressure > low limit then High Pressure Pump starts (HP terminal voltage becomes HIGH) in 2 seconds.
7. If low pressure < low limit then HP starts in 5 seconds. (New Screen)
8. When HP started, the low pressure is monitored and if it is below low limit, then a low pressure warning is issued. (New Screen) UV and DV are kept off (terminal voltages are LOW) in this condition.

9. If low pressure is below low limit for 10 seconds, the system shuts off with low pressure fault. (Fault Screen)
10. If low pressure is OK for 3 continuous seconds, then the system starts to pressurize. (New Screen)
11. DV and UV are kept off until product water flow reaches 1/3 of normal product flow and TDS indication is held at "TDS HIGH" (>3000 ppm). (Then new screen)
12. If low pressure < low limit for 10 seconds, then the system shuts down with fault.
13. If high pressure > high limit then system shuts down immediately with fault.
14. If feed flow < 140 gph for 15 seconds, then the system shuts down with fault.
15. If product flow > 120% of product limit for 5 seconds, then system shuts down with fault.
16. The system pressure is increased if the product flow is less than the limit up to the HP limit (900 psi + 3%). If the product flow is less than 80% of product limit, the BPR is activated for 750 mS, otherwise the BPR is activated for 110 mS.
17. The system pressure is decreased if the product flow is more than 110% of the limit.
18. Whenever the TDS exceeds the set level (setup menu), the DV is turned off (DV terminals LOW), then the UV turns off after 5 seconds with the screen reverted to "TDS HIGH".
19. When the product water TDS settles below the set level, the UV is activated (UV terminals go HIGH), then 5 seconds later the DV (DV terminals go HIGH).
20. Pressing "STOP" switch causes the system to perform a shutdown procedure. In a normal shutdown, DV and UV are turned off first. Then BPR is set to the minimum position, followed by HP and Booster pump to stop. During this operation, the STOP switch changes to an "EMERGENCY STOP" switch, which causes the system to shut-off completely without delay when pressed, followed by a fault screen that indicates the emergency stop has been pressed.
21. The MENU switch takes the system to its utility mode.

AUTO SHUTDOWN MODE:

1. When the system is operating in the auto mode and producing water, "AUTO SHUTDOWN" switch is displayed.
2. Pressing this switch causes a screen change to the shutdown mode selection.
3. The user can select one from either "TIMED" or "VOLUME" shutdown.
4. While this screen is up, the values for the time or volume can be set.
5. Pressing either "TIMER SHUTDOWN" or "VOLUME SHUTDOWN" switch causes the system to go into the automatic shutdown mode.
6. The system shuts down when specified time or production quantity is reached.
7. A "CANCEL" switch is provided to cancel this mode.
8. If the product TDS goes over the limit (1000 ppm), then the screen displays "TDS HIGH" and countdown is suspended until the TDS falls below the limit.

AUTOMATIC FRESH WATER FLUSH:

1. If the system is equipped with the FWF option and it is set to "AUTO", then the FWF operation starts automatically when the system operation stops.
2. Before the FWF starts, a 5 second warning is given.
3. If the low level tank switch is installed, this must be in the closed position for the FWF to start, and must be in closed position continuously throughout the FWF operation.
4. The fresh water flush solenoid valve energizes.
5. After 7 to 15 minutes of operation, the fresh water flush solenoid valve de-energizes and the valve is set to OFF.
6. Any fault similar to the normal operation results in the fault screen to be displayed with audible beeps.
7. Upon completion of a successful flushing, the system goes into 7-day wait mode.
8. The FWF operation is repeated every 7 days thereafter until;
   (a) The CANCEL switch is pressed
   (b) The power is removed from the system.

(c) The Fresh Water Storage Tank Low Level Switch, if set, goes to Open indicating an empty tank, no fresh water to flush the system.

MENU MODE:

1. When the system is off, the "MENU" switch is visible.
2. Pressing this switch causes the system to go to menu mode.
   a. In this mode the following functions can be selected:
      (a) System Information
      Displays the unit serial number, unit size, FWF option status, total hours of operation and firmware versions of both display and controller.
      (b) Contrast Adjust
      Adjust display contrast.
      (c) US/METRIC Unit change
      Changes measurement unit.
      (d) Manual FWF (w/ FWF option)
      Performs manual FWF if the option is installed.
      If FWF option is disabled, then this switch becomes invisible.
      (e) Service Menu
      This takes the system to service mode.
      This switch is invisible at the optional remote control.

SERVICE MODE:

1. Available only from the main control.
2. While in this mode, the remote control displays that the terminal is locked by the main control.
3. The following functions are available:
   (a) Salinity Meter calibration
   Press this switch to calibrate the salinity probe/meter.
   This operation requires calibrated 800 ppm test solution.
   A help screen is provided to locate the adjustment location on the main control circuit board.
   (b) Flow Sensor calibration
   Press this switch to calibrate flow meter.
   The flow sensors must be disconnected from the control board prior to this operation.
   A help screen is provided to locate the adjustment location on the main control circuit board.
   (c) Function Tests
   Booster pump, HP pump, DV, UV, BPR valve and FEED/FWF valve can be individually activated to test for a proper function. Booster and HP pumps are driven momentarily (jog). When activated, these functions provide high level signals to the corresponding terminals.
   (d) Manual Mode
   The manual mode permits the system to be operated as a conventional system. The system only has low and high pressure protection.
   (e) FWF Option setup
   FWF can be setup as AUTO, MANUAL or DISABLED.
   AUTO enables FWF to be performed each time the system stops and every 7 days. MANUAL FWF has to be activated whenever the system needs flush. No 7 day FWF is performed.
   DISABLE disables the FWF totally.
   (f) Model (Size) setup
   A proper size must be selected for the system to perform correctly.
   Choices are 450, 700, 900, 1400 and 1800 GPD production.
   (g) Diversion Valve switch level setup
   The TDS level, at which the diversion valve switches, can be set up in this mode. The selectable rage is between 200 ppm and 2,200 ppm.

(h) Detect Remote
The optional remote control can be detected in this mode, without going through a complete start-up sequence.

FAULT MODE:

Every time the system encounters a fault, that fault condition is memorized even if the system power is removed. In order to erase this fault condition, the RESET switch on the screen must be pressed (while the system is ON).

The fault conditions are:

CODE	DESCRIPTION
01	POWER INTERRUPT
02	LOW PRESSURE
03	HIGH PRESSURE
04	FRESH WATER TANK LEVEL LOW
05	FLOW ERROR
06	FWF FLOW ERROR
07	BPR FAULT
09	LP1 TRANSDUCER FAULT
10	LP2 TRANSDUCER FAULT
11	LP3 TRANSDUCER FAULT
12	HP TRANSDUCER FAULT
13	TANK SW FAULT
14	E-STOP PRESSED
15	MAIN LCD FAULT (ONLY DISPLAYED IN REMOTE)
16	

ADDITIONAL FEATURES:

1. HIGH level tank switch, when installed, will shutdown the system when the switch opens for 1 minute or longer.
2. Low level switch, when installed, will stop FWF operation when the switch opens for 1 minute or longer.
3. Alarm terminals provide 12V DC output (1A max.) when a fault condition occurs.
4. A mushroom type emergency stop switch can be hooked up to the controller to provide a remote emergency stop capability.

E. ELECTRICAL AND ELECTRONIC TROUBLESHOOTING

CAUTION: ELECTRICAL SHOCK HAZARD. A Volt / Ohm Meter will be necessary to Troubleshoot and Repair abnormalities or failures in the Electrical and Electronic circuits and components. The following procedures expose the technician to High Voltage and electrical shock hazard. Only attempt this if you are a qualified electrician and only if surrounding conditions are safe.

1. **SYSTEM TOUCH PAD [56]:**

The System Touch Pad is where all system functions are operated by touching the screen and where all operating conditions are monitored.

Problems & Symptoms appearing and caused by the Touch Pad:

a. The Touch Screen "blacks out" or "whites out".

- Extreme temperatures will cause an LCD Touch Screen to gain or loose contrast.

  Solution: Bring the temperature in the area to a more moderate setting.

b. The Touch Screen is sometimes slow in responding.

- The System Control Logic is continually processing a great amount of data while controlling various aspects and components within the System. Some of the data being processed is critical and takes priority, such as monitoring the System Operating Pressure. During data processing or control the Control Logic will process or control the critical aspects of operation prior to responding to commands from the Touch Screen. In other words, it places less priority on your command if it is involved in a critical process. However, the command given from the Touch Pad for Emergency Stop will take priority over all other functions.

  Solution: Delayed response to Touch commands is normal depending on the data being processed at that instant by the System Logic Controller.

c. The Touch Screen "freezes" or "locks up" on a specific screen and does not allow further Touch Commands.

- Control Logic has become scrambled and bi-directional communication between the Touch Screen logic and the Main Printed Circuit Board logic are corrupted.

  Solution: Re-boot the System. Switch power off to the System, wait at least 30 seconds, and re-apply power to the System. Start the System and operate normally.

d. The Touch Screen accepts some commands but not other commands. The commands that it does not accept are all physically located in the same area on the Touch Screen.

- The Touch Screen can become damaged in a specific physical area of the Screen, as well as the whole screen, causing no response from a Touch command.

  Solution: Confirm that a specific area of the screen, or entire screen, is non responsive. Replace the Touch Screen.

e. The Touch Screen does not illuminate when power is applied to the System.

- Power and control signals may not be reaching the Touch Screen.

  Solution: Check for a loose wire or connection between the Main Printed Circuit Board and the Touch Screen.

e. The Touch Screen does not respond when Touching a "switch" or feature directly over the outline of the "switch" or feature. However, the Touch Screen does respond if the Screen is Touched below, on top of, or to the side of the same "switch" or feature.

- The LCD Touch Screen must be calibrated (aligned) during the manufacturing assembly process. If the calibration (alignment) has drifted the active response area will not be in alignment with the "switch" or feature.

  Solution: Calibrate (adjust and align) the Touch Screen. Refer to Section 8 of this Owner's Manual.

2. **REMOTE CONTROL TOUCH PANEL [58]*****

Refer to 49. SYSTEM TOUCH PAD [49] above for similar troubleshooting.

3. **SOFT MOTOR STARTER [59]*****

The Soft Motor Starter, used only in AC (Alternating Current) Single Phase systems, reduces the initial startup amperes required to start the motor and in turn allows a smaller sized KW generator to start the system. Starting amperage is reduced by 40% with the Soft Start installed. The maximum design rated Horse Power that the Soft Motor Starter will accept is 3 Horse Power.

Should the Soft Motor Starter fail to function refer to wiring diagrams in Section 9 of this Owner's Manual. Check all wiring for correct position and tight connection. Check wiring from the incoming power, through the Soft Motor Starter, and at the Electric Motor that it is controlling.

Owner or Installer Supplied Items that are Not Numbered or shown on the Piping and Interconnect Diagrams but are included in the Electrical Diagrams in Section 9 of this Owner's Manual:

FRESH WATER TANK LOW LEVEL SWITCH **:

This owner/installer supplied Fresh Water Tank Low Level Switch provides an optional feature to the System Control Logic that works in conjunction with the Automatic Fresh Water Flush option.

When installed and connected to the Main Printed Circuit Board, the Fresh Water Tank Low Level Switch must be connected as a N.O. (Normally Open) 1PST (One Pole Single Throw) switch.

When the Fresh Water Tank [46] is empty the switch is Open. As water rises a few inches in the tank the switch Closes. This informs the System Control Logic that there is sufficient Fresh Water to perform the Automatic Fresh Water Flush Cycle.

If this Switch is Open, indicating that the Fresh Water Tank [46] is empty the Fresh Water Flush cycle will be automatically canceled by the System Control Logic.

FRESH WATER TANK HIGH LEVEL SWITCH **:

This owner/installer supplied Fresh Water Tank High Level Switch provides an optional feature to the System Control Logic that allows the System to shut off automatically when the Fresh Water Tank [45] is full, when the System is operated in the Automatic mode. Additionally, the System will not start in the Automatic mode when the Fresh Water Tank High Level Switch signals the System Control Logic that the Fresh Water Tank [46] is full.

When installed and connected to the Main Printed Circuit Board, the Fresh Water Tank High Level Switch must be connected as a N.C. (Normally Closed) 1PST (One Pole Single Throw) switch.

When the Fresh Water Tank [46] is several inches below the full mark the switch is Closed. As water rises and reaches the top of the full mark the switch Opens. This informs the System Control Logic that the Fresh Water Tank is full, the System will shut down if operating in the Automatic mode, and the System will not start in the Automatic mode.

If operation of the System is desired when the Fresh Water Tank Switch signals the System Control Logic that the Fresh Water Tank is full then the System may be operated in the Manual mode.

4. ELECTRICAL CONTROL BOX [57]:

The Electrical Control Box contains all of the Electronic and Electrical circuits and components. Troubleshooting of major components is described below:

1 Fuses
2 High Pressure Pump Contactor
3 Booster Pump Contactor
4 Fresh Water Flush Relay
5 Customer Supplied Alarm
6 12 VDC Power Supply
7 Main Printed Circuit Board
8 Step Down Transfer used in 3 phase systems only

Additional external devices connected to the Main Printed Circuit Board:
U.V. Sterilizer [44]
3-Way Product Water Diversion Solenoid Valve [41]

1 Fuses

There are 2 fuses protecting the 12 VDC Power Supply primary circuit. Should one or both of these fuses fail this is an indication of high current draw from any one of several 12 VDC devices in the System. Devices powered from the 12 VDC produced by the 12 VDC Power Supply include:

Main Printed Circuit Board
Main Touch Screen
Remote Touch Screen
High Pressure Pump Contactor
Booster Pump Contactor
Fresh Water Flush Relay
Automatic Fresh Water Flush Valve Motor Actuator
Automatic Back Pressure Regulator Valve Motor Actuator
3-Way Product Water Diversion Valve Solenoid
U.V. Sterilizer

Troubleshooting the cause of fuse failure must include physical inspection and electrical check of all of these devices and all wires connected to these devices in order to pinpoint the cause of the high current resulting in the failure of the fuse(s).

2 High Pressure Pump Contactor

Should the High Pressure Pump Electric Motor fail to start check for operating voltage at the following component and in the following order:

a. High Pressure Pump Electric Motor Power Leads at the Electric Motor Junction Box
b. Main Terminal Strip power from Contactor to Motor
c. High Pressure Pump Contactor T (Terminal)
d. High Pressure Pump Contactor L (Line)
e. Main Terminal Strip power from Power Source to Contactor

Check for Control Voltage at the following points

a. Terminal Strip "TB4" "HP"

Check for Illumination of Control Status LED

a. HP

3 Booster Pump Contactor

Should the Booster Pump Electric Motor fail to start check for operating voltage at the following component and in the following order:

a. Booster Pump Electric Motor Power Leads at the Electric Motor Junction Box
b. Main Terminal Strip power from Contactor to Motor
c. Booster Pump Contactor T (Terminal)
d. Booster Pump Contactor L (Line)
e. Main Terminal Strip power from Power Source to Contactor

Check for Control Voltage at the following points

a. Terminal Strip "TB4" "BP"

Check for Illumination of Control Status LED

a. BP

4 Fresh Water Flush Relay

Should the Automated Fresh Water Flush Actuator Valve fail to rotate check for operating voltage at the following component and in the following order:

a. Terminal Strip "TB5" "FWF"

Check for Illumination of Control Status LED

a. FWF

5 Customer Supplied Alarm

The maximum allowable current consumption at the customer's supplied alarm is 1 Ampere at 12 VDC.

6 12 VDC Power Supply

The 12 VDC Power Supply provides power to:

Main Printed Circuit Board
Main Touch Screen
Remote Touch Screen
High Pressure Pump Contactor
Booster Pump Contactor

Fresh Water Flush Relay
Automatic Fresh Water Flush Valve
Automatic Back Pressure Regulator Motor Actuator
3-Way Product Water Diversion Valve Solenoid
U.V. Sterilizer

If the 12 VDC Power Supply is not functional then all of the above components will not function, and the System will not function.

Should the 12 VDC Power Supply fail, check for allowable high voltage (64 to 264 VAC) into it and regulated low voltage (12 VDC) out of it:

a. Check for operating voltage at TS1 supplying voltage to the 2 fuses
b. Check for operating voltage at the input of the 2 fuses
c. Check for operating voltage at the output of the 2 fuses
d. Check for operating voltage at the input of the 12 VDC Power Supply
e. Check for 12 VDC at the output of the 12 VDC Power Supply.

7 Main Printed Circuit Board

The Main printed Circuit Board controls, supplies power to, and or receives signals from the various electronic and electrical components within the System. The Main Printed Circuit Board is clearly marked indicating connection points for each component along with 12 VDC polarity of each component receiving power from it.

The Main Printed Circuit Board also incorporates LED visual indications of the components it controls. When the respective LED is illuminated the controlled devise is receiving power and therefore is functioning. For example, when the Booster Pump is operating the “BP” CONTROL STATUS LED at the Main Printed Circuit Board will illuminate.

Always troubleshoot and track voltage at the end of the line first and work your way up to the start of the line. For example, when determining why a Booster Pump is not operating first check the voltage at the Booster Pump and work your way back to each component checking for voltage across each connection and each component.

8 Step Down Transformer used in 3 phase systems only

The Step Down Transformer is not required for single phase systems. It is only required for three phase systems. It accepts the high voltage operating power at its primary and steps the voltage down to 115 VAC out of the transformer’s secondary for primary input power to the 12 VDC Power Supply.

Section 8

Maintenance
&
Repair

Notes: _____

From time to time, Sea Recovery may make changes to the Control Logic (CONTROL VER), Display Logic (DISPLAY VER), and the Display Operating System (DISPLAY OS).

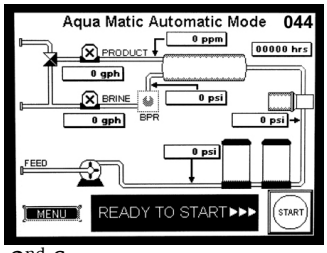
Other production changes are tracked by Sea Recovery through the System Serial Number.

Troubleshooting methods and results can vary depending on the information that is displayed at the SYSTEM INFORMATION screen.

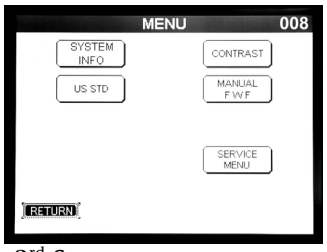
When ever requesting assistance from Sea Recovery or one of Sea Recovery's service dealers,

ALWAYS PROVIDE ALL INFORMATION DISPLAYED AT THE SYSTEM INFORMATION SCREEN.

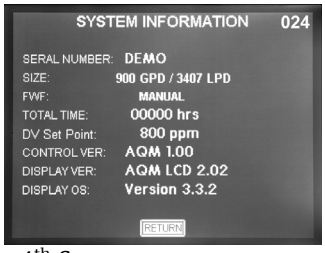
1st Screen007
Touch the Logo



2nd Screen044
Touch MENU



3rd Screen008
Touch SYSTEM INFO



4th Screen024
INFORMATION

SERIAL NUMBER helps us to determine the latest physical version and configuration of your system which is necessary to ensure that we provide you with the correct information or parts.

SIZE tells us the production capacity of your system which gives us a bench mark in diagnosing product water flow and pressure concerns.

FWF tells us if you have installed and are utilizing the Fresh Water Flush feature.

TOTAL TIME assists us in diagnosing abnormalities that can occur at given operational time intervals such as required pump maintenance, or R.O. Membrane Element condition.

DV Set Point helps us to determine if the R.O. Membrane Element is losing its rejection capabilities or if the 3-Way Product Water Diversion Solenoid Valve Set Point is simply adjusted too high or too low.

CONTROL VER allows us to determine the specific sequential operation of the system based on the version of the programmed control logic.

DISPLAY VER and DISPLAY OS assists us in diagnosing problems associated with the Main and Remote Touch Screen(s).

AND Always provide us with the System Operating Voltage, Cycles, and Phase

Notes: _____

_____

_____

_____

MAINTENANCE & REPAIR

Are you mechanically inclined? Troubleshooting and subsequent correction or repair of the Aqua Matic will require understanding of:

Electrical Circuits	Electronic Circuits	Electric Motors
Hydraulic Systems	Liquid Pressures and Flows	Electro Mechanical Systems

Mechanical knowledge and skills

Do not attempt troubleshooting and/or subsequent correction or repair if you are not familiar with, are not confident in performing, or are not proficient in the above fields of expertise.

USE CAUTION WHEN TROUBLESHOOTING. DO NOT PERFORM MAINTENANCE UNLESS:

1. The system Feed Water Sea Cock Valve [2] is closed.
2. The system main electrical disconnect switch is switched **"OFF"**, **LOCKED**, and **TAGGED**.
3. Chapter 9, "EXPLODED PARTS VIEWS" of the USERS MANUAL is available.

CAUTION: ELECTRICAL SHOCK HAZARD. A Volt / Ohm Meter will be necessary. The following procedures expose the technician to High Voltage and electrical shock hazard. Only attempt this if you are a qualified electrician and only if surrounding conditions are safe.

CAUTION AVOID CHEMICAL ATTACK TO THE SYSTEM: Do not use for storage and do not expose the Sea Recovery R.O. System to:

hydrogen peroxide	chloramine	chloramine-T	N-chloroisocyanurates
chlorine dioxide	hypochlorite	chlorine	iodine
bromine	bromide	phenolic disinfectants	petroleum products

or any other specific chemical not approved in writing by Sea Recovery Corp. Use of non authorized or misuse of authorized chemicals voids warranty. Never use third party so called “Reverse Osmosis Chemicals” for storage or cleaning. Third Party chemicals will dissolve copolymer components within the Sea Recovery System and will destroy the R.O. Membrane Element. Use of and subsequent damage caused by non Sea Recovery Chemicals are the liability and responsibility of the operator and are not covered by the Sea Recovery Warranty.

Do not connect any water line to the Sea Recovery R.O. System that may contain any of the above listed chemicals. Examples: Do not connect the Sea Recovery R.O. System to the ships potable product water tank if that tank has been treated with a Brominator as Bromine destroys the co-polymer components within the system. Do not connect the Sea Recovery R.O. System to any line that may contain chlorine or other oxidants as they destroy the R.O. Membrane Element.

If you use detergents to clean the internal wetted parts of the system ensure that they are rinsed thoroughly, wiped and dried prior to reassembly. After the components have been reassembled, product water can be used to remove any feed water residue from the exterior surfaces of the components.

Weekly Quick Check: The following steps ensure that potential problems are resolved preventing major repairs:

1. Inspect all fasteners for tightness including brackets, screws, nuts, and bolts. Pay special attention to the High Pressure Pump [25] and Electric Motor since they are subject to increased vibration.
2. Clean any salt water or salt deposits from the system with a wet rag.
3. Check for water leaks throughout the System and supporting water lines.
4. Check all tubing and high-pressure hoses for wear and abrasion against rough surfaces. The hoses must not contact heated or abrasive surfaces.

OPERATOR MAINTENANCE INTERVALS

The frequency of required maintenance is dependent on the regularity of usage, the condition of the intake water (the location of use), the length of time the system is exposed to water, the total running time and, in some cases, the manner in which the system is installed or operated. Because of these factors, it is virtually impossible to comprise an exact timetable for required maintenance. The following maintenance timetable is an estimate of the time intervals at which maintenance may be required on the various system components. This is based upon factual data compiled from Sea Recovery installations around the world. However, this schedule must be adjusted to each individual system depending upon the variables listed.

COMPONENT	MAINTENANCE REQUIRED	TIME INTERVAL CONTINUOUS	TIME INTERVAL INTERMITTENT DUTY
Sea Strainer	Inspect & Clean Screen & Housing	weekly	100 hours
Plankton Filter	Inspect & clean	weekly	100 hours
Multi Media Filter	Back wash & Rinse	when pressure drops 20 PSI across the filter	
Pre-filter	Replace element(s)	Low Pressure <6 psi	Low Pressure <6 psi
Oil/water Separator	Replace element	Low Pressure <6 psi	Low Pressure <6 psi
High Pressure Pump	Internal Service	Approximately 8000 hours of operation	
R. O. Membrane	Clean Element	When production or salt rejection decreases by 10%	
Salinity Probe	Clean Probes	Annually	Annually
Charcoal Filter	Replace Element	3 months	3 months
pH Neutralizing Cartridge	Replace Cartridge	when calcium carbonate granules are depleted	
U.V. Sterilizer	Replace lamp & clean quartz sleeve	2000 Hours	2000 Hours
Fresh Water Flush Charcoal Element	Replace Element	3 months	3 months

Other _____

Other _____

Other _____

Other _____

Other _____

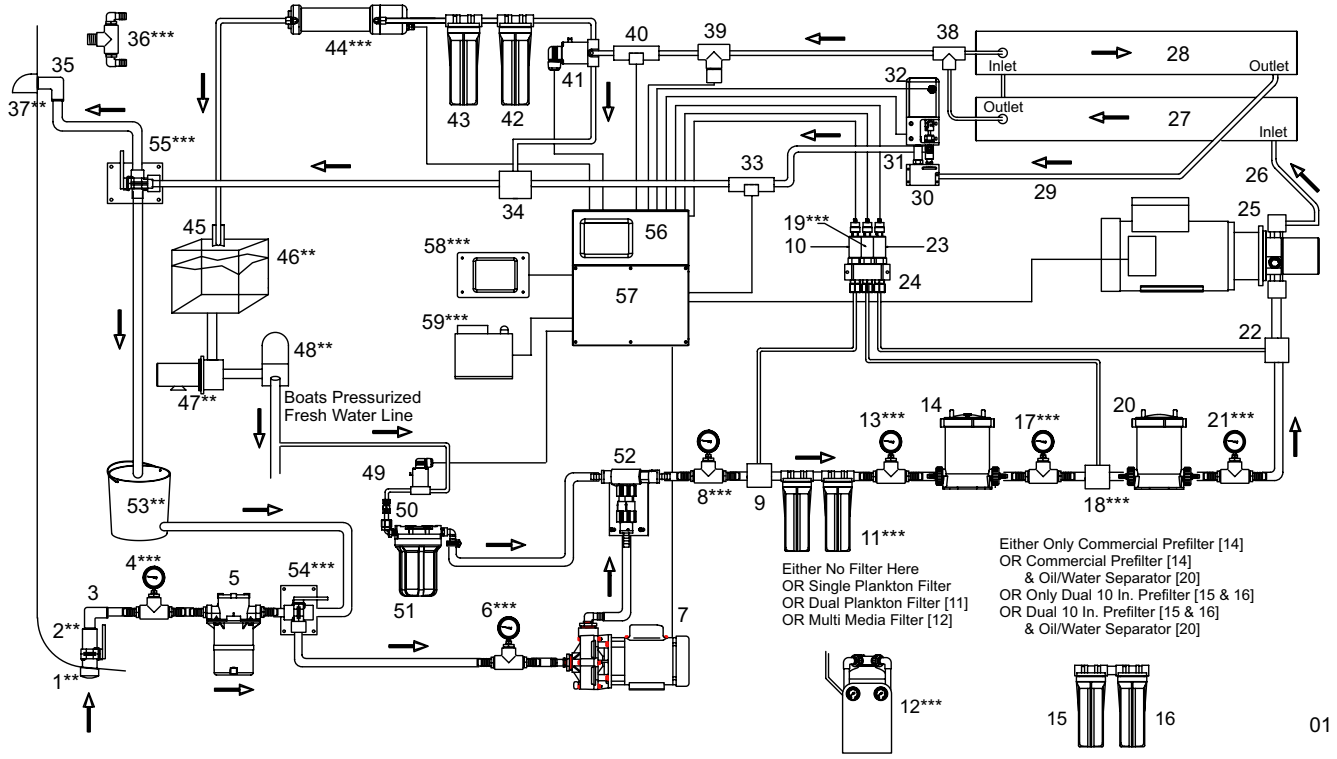
WARNING: Components, spares, and consumables utilized within the Sea Recovery Aqua Matic System can be specific to Sea Recovery specifications and are not commercially available from other sources. Other Components utilized within the Sea Recovery Aqua Matic System are modified by Sea Recovery for a specific purpose of compatibility and are not commercially available from other sources.

Many of these special components can appear to be similar to Sea Recovery components. Extensive and expensive damage to the Sea Recovery System WILL result if incompatible components are used in the Sea Recovery System. Damage caused to the Sea Recovery System as a result of third party components is the liability and responsibility of both the Marine Dealer that sold the component for use in the Sea Recovery System as well as the Owner/Operator that purchased and installed the third party component in the Sea Recovery System and is not covered by the Sea Recovery Warranty.

Always insist on only Sea Recovery supplied components, spares, and consumables.

INDIVIDUAL COMPONENT MAINTENANCE & REPAIR: The components are listed in order of their ID number assigned in the Piping and Interconnect Diagrams Illustrated through out this Owner's Manual.

Aqua Matic v3.00 Component Identification Piping and Interconnect Diagram
This diagram is for reference only to illustrate "either / or Prefiltration Options, all Post Filtration Options, Differential Pressure Transducer, the Rinse Clean Valves, Fresh Water Flush, Remote Touch Pad, and Soft Motor Starter.
Note: Placement of Pressure Pick-Up Ts depends on specific Prefiltration Configuration.



1. **Inlet Thru Hull Fitting:** Non Sea Recovery component. Keep the Inlet Thru Hull Fitting free and clear of debris and marine growth. If the Inlet Thru Hull Fitting is clogged, this results in a low feed pressure condition, which causes the system to shut off.

   Blockage at the Inlet Thru-Hull Fitting causes the System to shut off due to lack of Feed Water Flow. Unfortunately, since it is under water operators are reluctant to thoroughly inspect the Inlet Thru-Hull Fitting for problems. This can cause time consuming frustrations in attempting to gain feed water flow by trouble shooting other components in the System.

   The Inlet Thru-Hull Fitting must be free and clear allowing the System to draw 4.5 U.S. Gallons Per Minute / 17 Liters Per Minute through it with minimal resistance. Any blockage at the Inlet Thru-Hull Fitting will cause low pressure and low flow problems at the System. This Inlet Thru-Hull Fitting must be a Forward Facing Scoop so that the System receives a positive flow of water as the boat is under way. It must be minimum 3/4" inside diameter. It must be installed in a position on the bottom of the Hull so as to allow free flowing Feed Water without air.

   CAUTION: A flat profile, flush mount, inlet thru-hull fitting will cause a vacuum as the boat is under way, and this will cause loss of feed water flow and cavitation of the Booster Pump and High Pressure Pump resulting in continual system shut down due to low feed water flow and pressure. The resulting failure of the system to remain in operation is attributed to improper installation, is the liability of the installer, and is not covered by the Sea Recovery warranty.

   CAUTION: If the thru-hull fitting has been placed in a position on the underside of the hull that allows air to continually enter the thru-hull fitting, this will cause the system to continually shut down due to loss of feed water. The resulting failure of the system to remain in operation is attributed to improper installation, is the liability of the installer, and is not covered by the Sea Recovery warranty.

   CAUTION: The Sea Recovery System must not be tied into another existing auxiliary water line already supplying another accessory on the boat. Using one Thru Hull fitting for other equipment will cause the Sea Recovery System to draw air or cavitate leading to continual system shut down. The resulting failure of the system to remain in operation is attributed to improper installation, is the liability of the installer, and is not covered by the Sea Recovery warranty.

   CAUTION: If the Sea Recovery System is connected to a Sea Chest or Stand Up Pipe, **do not plumb the Sea Recovery System feed line to the "top" of the Sea Chest or Stand Up Pipe.** If plumbed into the top of these feed water arrangements, the Sea Recovery System will experience continual shut down due to air inducement into the system. The resulting failure of the system to remain in operation is attributed to improper installation, is the liability of the installer, and is not covered by the Sea Recovery warranty. **Plumb the Sea Recovery System to the "bottom" of such feed water arrangements to ensure a continual air free supply of feed water to the system.**

2. **Sea Cock Valve:** Non Sea Recovery component. The packing and connections of the Inlet Sea Cock Valve must be tight and must properly seal. Clean the valve cavity of debris or replace the seal and seat or the entire valve, as required. This section is under a vacuum condition while operating the system. Loose fittings or a worn seal will allow air to enter the Sea Recovery system causing continual shut down due to subsequent low feed water pressure.

3. **Inlet Connection:** Replace if damaged.

4. **Inline Vacuum / Pressure Gauges [4]:** If the Vacuum/Pressure gauge needle does not move; or does not register proper vacuum or pressure this may be caused by a plugged orifice. The Vacuum/Pressure Gauges have a very small orifice at the bottom of the pipe fitting end. This orifice can become plugged with debris or corrosion. Using a small diameter wire clean the debris from the orifice. Replace the gauge if cleaning of the orifice does not restore functionality.

5. **Sea Strainer:** Keep the mesh screen free and clear of debris. When the mesh screen is clogged, it results in a low-pressure condition causing system shut off. This section is under a vacuum condition while operating the system. If the Sea Strainer's bowl is loose or if the O-ring seal is worn

or not properly seated, air will enter the system causing continual shut down due to subsequent low feed water pressure.

6. **Inline Vacuum / Pressure Gauges [6]:** If the Vacuum/Pressure gauge needle does not move; or does not register proper vacuum or pressure this may be caused by a plugged orifice. The Vacuum/Pressure Gauges have a very small orifice at the bottom of the pipe fitting end. This orifice can become plugged with debris or corrosion. Using a small diameter wire clean the debris from the orifice. Replace the gauge if cleaning of the orifice does not restore functionality.

7. **Booster Pump[7]:** (centrifugal; counter clockwise rotation as viewed from volute end {front end} of pump)

   a. **Electric Motor:**

   Troubleshoot electric motor failure to ensure that any abnormality from the power, wiring, wiring connections, contactor, or control circuit are not at fault or at cause. If the electric motor has failed, it will require repair. However, depending upon failure, replacement may be more cost effective than repair. If failure of the motor is due to external source, not the motor itself, then correct the cause or else the replacement or repaired motor will fail again.

   Failures of the electric motor may be:
   - Bearing failure. Bearings are field replaceable.
   - Winding failure. Generally caused by low or high power, below or above the specified voltage requirements of the system. This is Not economically repairable.
   - Internal centrifugal switch. Generally mechanical failure of the switch. Field replaceable.
   - Capacitor failure. Generally caused by low power feeding the motor and or low cycles from the power source. Also caused by rapidly repeating starting and stopping of the motor. Field replaceable.

   The Electric Motor is 1/2 horse power, Totally Enclosed Fan Cooled, 2 pole, dual Cycle, and dual Voltage.

   WARNING: The Booster Pump MUST rotate in the COUNTER CLOCKWISE DIRECTION ONLY Rotating the Booster Pump in the clockwise direction will cause extensive damage to it. Never operate the Booster Pump in the clockwise direction.

   WARNING: When switching from Three Phase Generator power to Three Phase Shore power ALWAYS check phases prior to operating the Aqua Matic System else Reverse Rotation along with extensive damage to the Booster Pump will occur should the power be out of phase.

   Problems & Symptoms appearing and caused by the Booster Pump or its Electric Motor:

   1) The **Single Phase** (115 or 230 VAC) Electric Motor “hums”, pulls starting current (locked rotor) amperage, does not rotate, and trips the supply power circuit breaker when attempting to operate the System.

      The **Single Phase** Electric Motor is a capacitor start motor. If the motor was started with low voltage, a drop in voltage during starting, and if this was repeated several times in rapid concession the capacitor will short out. Without the aid of a working capacitor the motor will “hum”, pull starting current (locked rotor) amperage, not rotate, and trip the supply power circuit breaker when attempting to operate the System.

      Low voltage will also cause the same symptom. Low voltage is caused by an undersized power supply or generator, undersized power lead wires to the System or motor, loose

power wire, or connection at the motor or within the power supply line, and "burnt" contacts on the motor starter relay (contactor).

Solutions:
Check wiring size and connections to, from, and in between the Power Supply and the electric motor. Correct wire size or any loose wires.
Check the capacitor on the motor, and replace it if it has shorted out.
Measure voltage at the motor during attempt to start it. If voltage drops more than 10% locate and correct the reason.
Check the motor starter relay, contactor, for "burnt" contacts.

2) The **Three Phase** (230 // 380 // 460 VAC) Electric Motor "hums", pulls starting current (locked rotor) amperage, does not rotate, and trips the supply power circuit breaker when attempting to operate the System.

The **Three Phase** Electric Motor requires all three power lines (all three phases) to be operative else it will "single phase" causing extensive damage to the motor's internal windings.

Low voltage will also cause the same symptom. Low voltage is caused by an undersized power supply or generator, undersized power lead wires to the System or motor, loose power wire, or connection at the motor or within the power supply line, and "burnt" contacts on the motor starter relay (contactor).

Solutions:
Check wiring size and connections to, from, and in between the Power Supply and the electric motor. Correct wire size or any loose wires.
Measure voltage at the motor during attempt to start it. If voltage drops more than 10% locate and correct the reason. Cross check voltage across all 3 power leads.
Check the motor starter relay, contactor, for "burnt" contacts.

3) The Electric Motor makes an unusual "grinding" sound when operated.

Solutions:
Check and replace as necessary the front and rear bearings.
Check to see if the fan is rubbing against the fan guard.

b. Booster Pump:

Replace the ceramic seal approximately every 2000 hours, or at the sign of leakage P/N SRC BPSK-5:

DISASSEMBLY: Remove the four 3/8-16 Bolts holding the volute to the motor bracket. To remove the impeller, remove the bearing cap on the motor to expose the screwdriver slot on the motor shaft. Hold the motor shaft with a large screwdriver and remove the impeller by grasping it with your hand and turning the impeller counter clockwise. Remove the Seal. Two screwdrivers wedged into the seal at 180 degrees apart serve as tools to wedge the seal out. The ceramic seat is removed by removing the end bell gasket.

REASSEMBLY: Clean the motor shaft and the bracket of any corrosion or salt deposits. Replace the end bell gasket and the tap seat portion into the bracket cavity. Use a new gasket. Place the ceramic seat into the cavity over the shaft. Make sure that the polished side is toward the end of the shaft. Tap into place evenly using a hollow piece of wood or plastic tool. If a metal tool is used to tap it into place, protect the seat with cardboard or a clean cloth. Lubricate the shaft with water, water and soap or a light oil and slip the rotating portion of the seal over the shaft

with the carbon element toward the ceramic. Slide it down onto the shaft as far as possible. Apply blue Loctite to the motor shaft threads. Hold the Motor shaft and reinstall the impeller. Tighten the impeller by turning it clockwise until it is snug. Reinstall the volute. Tighten the bolts evenly. Thoroughly prime the pump.

Some Electric Motors supplied by Sea Recovery have permanently sealed and lubricated bearings. Others require lubrication from time to time. If your Electric Motor has grease jerks at each end of the motor, over the front and rear bearings, the bearings require lubrication every 6 months. Give three pumps of high temperature motor bearing lubricant into each grease jerk. Use a Polyurea Base Grease such as Chevron SRI (Polyurea Base) or Shell Dolium R (Polyurea Base). **DO NOT USE LITHIUM OR SILICONE BASE GREASE.**

8. **Inline Vacuum / Pressure Gauges [8]:** If the Vacuum/Pressure gauge needle does not move; or does not register proper vacuum or pressure this may be caused by a plugged orifice. The Vacuum/Pressure Gauges have a very small orifice at the bottom of the pipe fitting end. This orifice can become plugged with debris or corrosion. Using a small diameter wire clean the debris from the orifice. Replace the gauge if cleaning of the orifice does not restore functionality.

9. **T-Connector Pressure Pick-Up [9]:** Replace any hose or tube that is kinked. Disconnect each end of the tube and blow air through the tube to ensure that it is not blocked. Replace if damaged.

10. **Pressure Transducer [10]**: The Pressure Transducers are not repairable and can not be calibrated. If inoperative check connections at the Transducer and at the Printed Circuit Board to ensure there is no visible corrosion or loose connections.

11. **Plankton Filter [11]** Element Cleaning:

    1. Unscrew the bowl counter clockwise.
    2. Remove the Plankton Filter Element(s) from the bowl(s).
    3. Remove the O-Ring(s) from the top of the bowl(s).
    4. Clean the mesh screen filter element(s) with a bristle brush and water spray.
    5. Wipe the O-Ring(s) with a damp cloth.
    6. Lightly, sparingly, lubricate the O-Ring(s) with O-Ring lubricant.
    7. Place the O-Ring(s) back onto the bowl(s).
    8. Insert the cleaned or new plankton filter element(s) into the bowl(s).
    9. Screw the bowl(s) on clockwise.
    10. Hand snug to seal the O-Ring; **do not use a wrench or other tool to tighten; do not over tighten. Over tightening transfers stress to the lid and bowl threads causing the lid or bowl to fail (crack or break) and making subsequent disassembly difficult.**

12. **Multi Media Filter [12]** Backwash:

    The Multi Media Filter contains fine gravel and #20 silica sand. This silica sand traps suspended solids larger than 20 micron. The top layer of the silica sand within the Multi Media Filter becomes packed with suspended solids and restricts flow through it. When the silica sand becomes packed with suspended solids, as indicated by a loss of pressure across it, it must then be back washed to waste. This back washing procedure fluffs the silica sand and dislodges the suspended solids from the sand base. During back washing the suspended solids are discharged to waste through the Multi Media Filter Waste outlet [36].

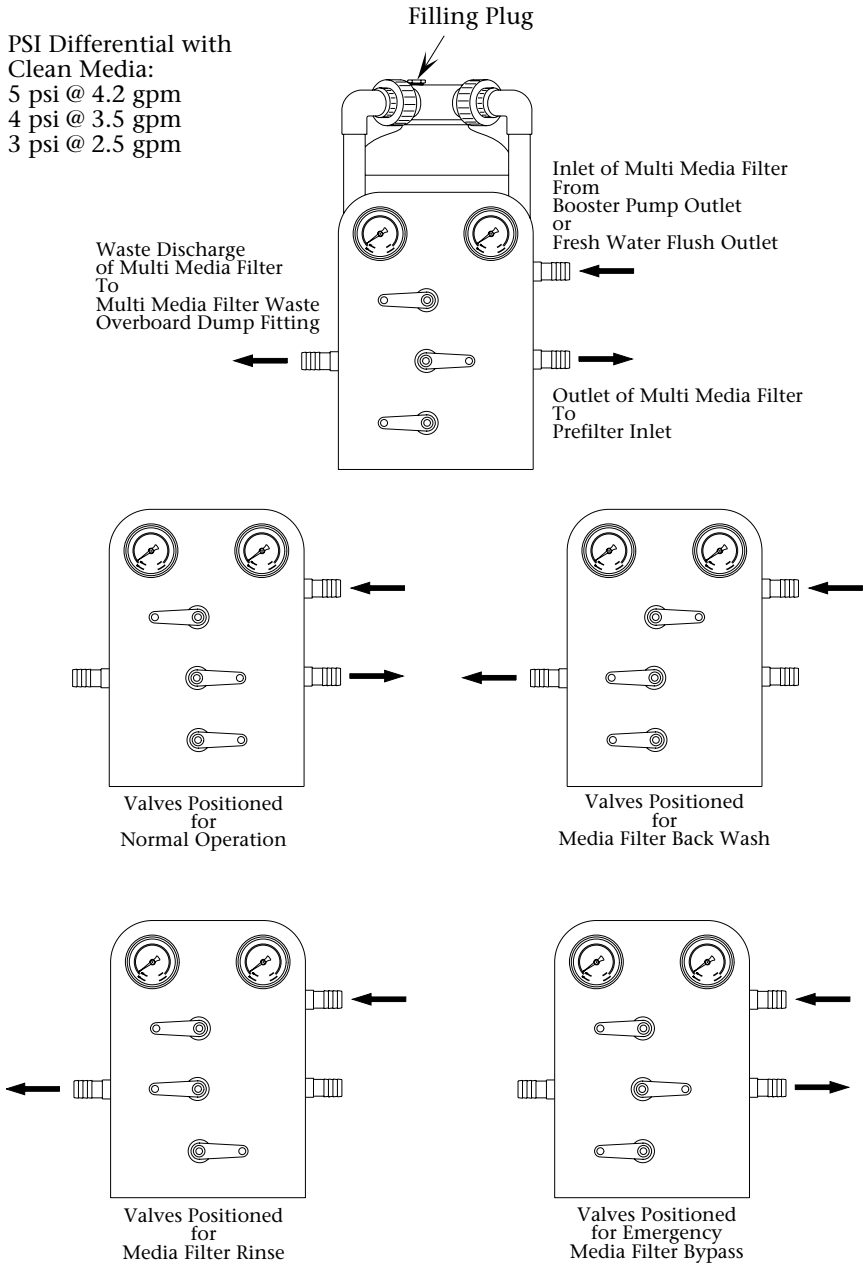
    If replacing the media, the Multi Media Filter requires approximately 15 lbs (7 kg) of small gravel (1/8 x 1/4 inch) first (on the bottom) then approximately 26 lbs (12 kg) of #20 silica sand last (on top of the small gravel).

    NOTE: the new gravel and sand contain fines and contaminates. The Multi Media Filter must be back washed prior to use.

Instructions for Backwashing of the Multi Media Filter:

a. Open the Inlet Sea Cock Valve [2].
b. Position the Rinse Clean Inlet Valve [54], if installed, to the normal operating position towards the Sea Strainer [5].
c. Position the Rinse Clean Outlet Valve [55], if installed, to the normal operating position towards the Brine Discharge Thru-Hull Fitting [35 or 36].
d. Position the Multi Media Filter valves to Backwash
e. In the Manual mode of operation, operate only the Booster Pump.
f. After 10 minutes of back washing Stop the Booster Pump.
g. Position the Multi Media Filter Valves to Rinse.
h. In the Manual mode of operation, operate only the Booster Pump.
i. After 5 minutes of Rinsing Stop the Booster Pump.
j. Position the Multi Media Filter Valves to Normal Operation.

VALVE POSITIONING OF THE MULTI MEDIA FILTER
DURING 4 SEPARATE MODES OF OPERATION



13. **Inline Vacuum / Pressure Gauges [13]:** If the Vacuum/Pressure gauge needle does not move; or does not register proper vacuum or pressure this may be caused by a plugged orifice. The Vacuum/Pressure Gauges have a very small orifice at the bottom of the pipe fitting end. This orifice can become plugged with debris or corrosion. Using a small diameter wire clean the debris from the orifice. Replace the gauge if cleaning of the orifice does not restore functionality.

14. **Commercial Prefilter [14] Element Replacement:** The Commercial Prefilter Pleated Cartridge Element may be cleaned with water spray once or twice. After cleaning the expected life will be reduced in half. Attempts to clean the element more than twice will result in a very short life and will damage the element rendering it useless. Change the element after the first or second

cleaning. Clean or replace the element when plugged to the extent that the pressure into the High Pressure Pump is 10 PSI (69 kPa) or less. At slightly below 6 PSI the System will turn off and display a fault screen indicating low pressure.

CAUTION: Do not use third party prefilter elements; use only Sea Recovery Prefilter Elements. Third party prefilter elements on the market do not properly fit, the seams fall apart, they will allow by-pass.

WARNING: By-pass of debris through the third party element will extensively damage the High Pressure Pump. By-pass of debris through the third party element will also prematurely foul the R.O. Membrane Element. Use of third party prefilter elements will void any and all Sea Recovery warranty to the High Pressure Pump and the R.O. Membrane Element.

IMPORTANT: Do not use "string wound" or "fiber" prefilter elements. These type of elements are designed for the Photographic Film Developing industry. When used in sea water, they will plug up rapidly in 1/10th or less the time causing frequent shut down of the system and very frequent changing which will also lead to very high cost of maintenance. **Use of String Wound or Fiber type elements will only lead to user frustration and very high maintenance costs. Use of third party prefilter elements will void any and all Sea Recovery warranty to the High Pressure Pump and the R.O. Membrane Element.**

DO NOT ACCEPT THIRD PARTY PREFILTER ELEMENTS FROM ANY MARINE DEALER. USE ONLY SEA RECOVERY SUPPLIED PREFILTER ELEMENTS. **The resulting failure of the system to remain in operation, and or damage to the Sea Recovery System caused by Third Party Prefilter Elements is attributed to improper maintenance and operation, is the liability of the operator and owner, and is not covered by the Sea Recovery warranty.**

a. Commercial Prefilter Element Replacement:

To clean or replace the Commercial Prefilter Element:

1. Unscrew the lid locking ring counter clockwise.
2. Remove and discard the used Commercial Prefilter Pleated Cartridge Element from the housing.
3. Thoroughly clean the inside of the bowl. The High Pressure Pump is manufactured to very tight tolerance spacing between moving parts. Any debris entering the Pump will cause extensive and expensive damage to the internal parts. The Sea Recovery Prefilter will stop any debris and protect the High Pressure Pump. Use caution when changing filter elements and do not allow any debris from the prefilter element to enter the outlet port of it's housing.
4. Inspect the O-Ring attached to the lid. Replace if damaged or if the lid leaks water.
5. Wipe the O-Ring with a damp cloth.
6. Sparingly lubricate the O-Ring with O-Ring lubricant.
7. Insert the cleaned or new Sea Recovery Commercial Prefilter Pleated Cartridge Element into the bowl.
8. Replace the lid into the top of the housing.
9. Replace the lid locking ring. Tighten ONLY two finger tight. Finger or lightly Hand snug to retain the lid in place. Do not use a wrench or other tool to tighten. Do not over tighten. Over tightening causes stress to the bowl and lid lock ring threads leading to cracks, breakage, and difficult disassembly at the next filter change.
10. Open the Sea Cock Valve, open the air bleed valve located on the lid. Bleed any air from the Commercial Prefilter Housing. After water appears close the air bleed valve. It may be necessary to operate the Booster Pump manually in order to purge the Commercial Prefilter housing of air.

WARNING: For safety reasons ALWAYS purge air from the Commercial Prefilter Housing.

15 & 16. Dual Prefilter [15 & 16] Element Replacement: The Prefilter Pleated Cartridge Element may be cleaned with water spray once or twice. After cleaning the expected life will be reduced in half. Attempts to clean the element more than twice will result in a very short life and will damage the element rendering it useless. Change the element after the first or second cleaning. Clean or replace the element when plugged to the extent that the pressure into the High Pressure Pump is 10 PSI (69 kPa) or less. At slightly below 6 PSI the System will turn off and display a fault screen indicating low pressure.

CAUTION: Do not use third party prefilter elements; use only Sea Recovery Prefilter Elements. Third party prefilter elements on the market do not properly fit, the seams fall apart, they will allow by-pass.

WARNING: By-pass of debris through the third party element will extensively damage the High Pressure Pump. By-pass of debris through the third party element will also prematurely foul the R.O. Membrane Element. Use of third party prefilter elements will void any and all Sea Recovery warranty to the High Pressure Pump and the R.O. Membrane Element.

IMPORTANT: Do not use "string wound" or "fiber" prefilter elements. These type of elements are designed for the Photographic Film Developing industry. When used in sea water, they will plug up rapidly in 1/10th or less the time causing frequent shut down of the system and very frequent changing which will also lead to very high cost of maintenance. **Use of String Wound or Fiber type elements will only lead to user frustration and very high maintenance costs. Use of third party prefilter elements will void any and all Sea Recovery warranty to the High Pressure Pump and the R.O. Membrane Element.**

DO NOT ACCEPT THIRD PARTY PREFILTER ELEMENTS FROM ANY MARINE DEALER. USE ONLY SEA RECOVERY SUPPLIED PREFILTER ELEMENTS. The resulting failure of the system to remain in operation, and or damage to the Sea Recovery System caused by Third Party Prefilter Elements is attributed to improper maintenance and operation, is the liability of the operator and owner, and is not covered by the Sea Recovery warranty.

a. 10 Inch Dual Prefilter [15 & 16] Element Replacement:

To clean or replace the Prefilter Element:

1. Unscrew the bowl counter clockwise.
2. Remove and discard the used Prefilter Pleated Cartridge Element from the bowl.
3. Remove the O-Ring from the top of the bowl.
4. Thoroughly clean the inside of the bowl. The High Pressure Pump is manufactured to very tight tolerance spacing between moving parts. Any debris entering the Pump will cause extensive and expensive damage to the internal parts. The Sea Recovery Prefilter will stop any debris and protect the High Pressure Pump. Use caution when changing filter elements and do not allow any debris from the prefilter element to enter the outlet port of it's housing.
5. Wipe the O-Ring with a damp cloth.
6. Sparingly lubricate the O-Ring with O-Ring lubricant.
7. Place the O-Ring back onto the bowl.
8. Insert the cleaned or new Sea Recovery Prefilter Pleated Cartridge Element into the bowl. 20 micron into filter housing [15] and 5 micron into filter housing [16]
9. Screw the bowl on clockwise.
10. Hand snug to seal the O-Ring; do not use a wrench or other tool to tighten; do not over tighten. Over tightening causes stress to the bowl and lid threads leading to cracks, breakage, and difficult disassembly at the next filter change.

17. **Inline Vacuum / Pressure Gauges [17]:** If the Vacuum/Pressure gauge needle does not move; or does not register proper vacuum or pressure this may be caused by a plugged orifice. The Vacuum/Pressure Gauges have a very small orifice at the bottom of the pipe fitting end. This orifice can become plugged with debris or corrosion. Using a small diameter wire clean the debris from the orifice. Replace the gauge if cleaning of the orifice does not restore functionality.

18. **T-Connector Pressure Pick-Up [18]:** Replace any hose or tube that is kinked. Disconnect each end of the tube and blow air through the tube to ensure that it is not blocked. Replace if damaged.

19. **Pressure Transducer [19]**: The Pressure Transducers are not repairable and can not be calibrated. If inoperative check connections at the Transducer and at the Printed Circuit Board to ensure there is no visible corrosion or loose connections.

20. **Oil/Water Separator [20] Filter Element Replacement:** The Oil/Water Separator Coalescing Filter Element is not cleanable. Replace the element when plugged to the extent that the pressure into the High Pressure Pump is 10 PSI (69 kPa) or less. At slightly below 6 PSI the System will turn off and display a fault screen indicating low pressure.

    CAUTION: Do not use third party oil/water separator coalescing elements; use only Sea Recovery Oil/Water Separator Elements. Third party Oil/Water Separator elements on the market do not properly fit, the seams fall apart, they will allow by-pass.

    WARNING: By-pass of debris through the third party element will extensively damage the High Pressure Pump. By-pass of debris through the third party element will also prematurely foul the R.O. Membrane Element. Use of third party filter elements will void any and all Sea Recovery warranty to the High Pressure Pump and the R.O. Membrane Element.

    DO NOT ACCEPT THIRD PARTY FILTER ELEMENTS FROM ANY MARINE DEALER. USE ONLY SEA RECOVERY SUPPLIED FILTER ELEMENTS. The resulting failure of the system to remain in operation, and or damage to the Sea Recovery System caused by Third Party Oil/Water Separator Elements is attributed to improper maintenance and operation, is the liability of the operator and owner, and is not covered by the Sea Recovery warranty.

    a. Oil/Water Separator Filter Element Replacement:

    To replace the Oil/Water Separator Filter Element:

    1. Unscrew the lid locking ring counter clockwise.
    2. Remove and discard the used Oil/Water Separator Filter Element from the housing.
    3. Thoroughly clean the inside of the bowl. The High Pressure Pump is manufactured to very tight tolerance spacing between moving parts. Any debris entering the Pump will cause extensive and expensive damage to the internal parts. The Sea Recovery Prefilter will stop any debris and protect the High Pressure Pump. Use caution when changing filter elements and do not allow any debris from the prefilter element to enter the outlet port of it's housing.
    4. Inspect the O-Ring attached to the lid. Replace if damaged or if the lid leaks water.
    5. Wipe the O-Ring with a damp cloth.
    6. Sparingly lubricate the O-Ring with O-Ring lubricant.
    7. Insert the new Sea Recovery Oil/Water Separator Filter Element into the bowl.
    8. Replace the lid into the top of the housing.
    9. Replace the lid locking ring. Tighten ONLY two finger tight. Finger or lightly Hand snug to retain the lid in place. Do not use a wrench or other tool to tighten. Do not over tighten. Over tightening causes stress to the bowl and lid lock ring threads leading to cracks, breakage, and difficult disassembly at the next filter change.

10. Open the Sea Cock Valve, open the air bleed valve located on the lid. Bleed any air from the Oil/Water Separator Filter Housing. After water appears close the air bleed valve. It may be necessary to operate the Booster Pump manually in order to purge the filter housing of air.

WARNING: For safety reasons ALWAYS purge air from the Oil/Water Separator Filter Housing.

21. Inline Vacuum / Pressure Gauges [21]: If the Vacuum/Pressure gauge needle does not move; or does not register proper vacuum or pressure this may be caused by a plugged orifice. The Vacuum/Pressure Gauges have a very small orifice at the bottom of the pipe fitting end. This orifice can become plugged with debris or corrosion. Using a small diameter wire clean the debris from the orifice. Replace the gauge if cleaning of the orifice does not restore functionality.

22. **T-Connector Pressure Pick-Up [22]:** Replace any hose or tube that is kinked. Disconnect each end of the tube and blow air through the tube to ensure that it is not blocked. Replace if damaged.

23. Pressure Transducers [23]: The Pressure Transducers are not repairable and can not be calibrated. If inoperative check connections at the Transducer and at the Printed Circuit Board to ensure there is no visible corrosion or loose connections.

24. **Transducer Manifold [24]** is not repairable. If broken or leaking replace it.

25. High Pressure Pump and Electric Motor [25]:

a. Electric Motor:

Troubleshoot electric motor failure to ensure that any abnormality from the power, wiring, wiring connections, contactor, or control circuit are not at fault or at cause. If the electric motor has failed, it will require repair. However, depending upon failure, replacement may be more cost effective than repair. If failure of the motor is due to external source, not the motor itself, then correct the cause or else the replacement or repaired motor will fail again.

Failures of the electric motor may be:

- Bearing failure. Bearings are field replaceable.
- Winding failure. Generally caused by low or high power, below or above the specified voltage requirements of the system. This is Not economically repairable.
- Internal centrifugal switch. Generally mechanical failure of the switch. Field replaceable.
- Capacitor failure. Generally caused by low power feeding the motor and or low cycles from the power source. Also caused by rapidly repeating starting and stopping of the motor. Field replaceable.

The Electric Motor is 3 horse power, Totally Enclosed Fan Cooled, 2 pole, dual Cycle, and dual Voltage.

WARNING: The High Pressure Pump MUST rotate in the COUNTER CLOCKWISE DIRECTION ONLY Rotating the High Pressure Pump in the clockwise direction will cause extensive damage to it. Never operate the High Pressure Pump in the clockwise direction.

WARNING: When switching from Three Phase Generator power to Three Phase Shore power ALWAYS check phases prior to operating the Aqua Matic System else Reverse Rotation along with extensive damage to the High Pressure Pump will occur should the power be out of phase.

Problems & Symptoms appearing and caused by the High Pressure Pump or its Electric Motor:

1) The **Single Phase** (115 or 230 VAC) Electric Motor "hums", pulls starting current (locked rotor) amperage, does not rotate, and trips the supply power circuit breaker when attempting to operate the System.

   The **Single Phase** Electric Motor is a capacitor start motor. If the motor was started with low voltage, a drop in voltage during starting, and if this was repeated several times in rapid concession the capacitor will short out. Without the aid of a working capacitor the motor will "hum", pull starting current (locked rotor) amperage, not rotate, and trip the supply power circuit breaker when attempting to operate the System.

   Low voltage will also cause the same symptom. Low voltage is caused by an undersized power supply or generator, undersized power lead wires to the System or motor, loose power wire, or connection at the motor or within the power supply line, and "burnt" contacts on the motor starter relay (contactor).

   Solutions:
   - Check wiring size and connections to, from, and in between the Power Supply and the electric motor. Correct wire size or any loose wires.
   - Check the capacitor on the motor, and replace it if it has shorted out.
   - Measure voltage at the motor during attempt to start it. If voltage drops more than 10% locate and correct the reason.
   - Check the motor starter relay, contactor, for "burnt" contacts.

2) The **Three Phase** (230 // 380 // 460 VAC) Electric Motor "hums", pulls starting current (locked rotor) amperage, does not rotate, and trips the supply power circuit breaker when attempting to operate the System.

   The **Three Phase** Electric Motor requires all three power lines (all three phases) to be operative else it will "single phase" causing extensive damage to the motor's internal windings.

   Low voltage will also cause the same symptom. Low voltage is caused by an undersized power supply or generator, undersized power lead wires to the System or motor, loose power wire, or connection at the motor or within the power supply line, and "burnt" contacts on the motor starter relay (contactor).

   Solutions:
   - Check wiring size and connections to, from, and in between the Power Supply and the electric motor. Correct wire size or any loose wires.
   - Measure voltage at the motor during attempt to start it. If voltage drops more than 10% locate and correct the reason. Cross check voltage across all 3 power leads.
   - Check the motor starter relay, contactor, for "burnt" contacts.

3) The Electric Motor makes an unusual "grinding" sound when operated.

   Solutions:
   - Check and replace as necessary the front and rear bearings.
   - Check to see if the fan is rubbing against the fan guard.

b. High Pressure Pump:

This High Pressure Pump is a Quintiplex Radial Axial Positive Displacement Plunger Pump made of high grade Duplex material specifically designed for sea water Reverse Osmosis applications. This Pump is not commercially available. This pump is specifically manufactured to Sea Recovery specifications.

WARNING: Two similar Pumps are commercially available. One has a higher flow rate and the other has a lower flow rate. Both of these pumps will cause damage to the Sea Recovery System because of excess flow or under flow. The use of any similar pump, not supplied by Sea Recovery, will either cause the Electric Motor to fail, or the R.O. Membrane Element to prematurely foul. USE ONLY SEA RECOVERY SUPPLIED PARTS AND COMPONENTS FOR THE SEA RECOVERY AQUA MATIC SYSTEM.

As with all Positive Displacement pumps it must receive a specified minimum amount of water at a positive pressure. A vacuum at the inlet of the pump will cause cavitation and damage. This pump does not use oil, it is self lubricated with the feed water. Internal components are designed for 8,000 hours of continual service in sea water. As with any component exposed to sea water, use is best.

The Pump is manufactured to very tight tolerance spacing between moving parts. Any debris entering the Pump will cause extensive and expensive damage to the internal parts. The Sea Recovery Prefilter will stop any debris and protect the High Pressure Pump. Use caution when changing filter elements and do not allow any debris from the prefilter element to enter the outlet port of it's housing.

The Aqua Matic High Pressure Pump is not field repairable. If the Aqua Matic High Pressure Pump fails to properly function return it to Sea Recovery, or to a Sea Recovery Authorized Dealer for return to Sea Recovery.

An Aqua Matic High Pressure Pump requiring maintenance within the warranty period, and if after examination by Sea Recovery is found to be non-operational due to a warranty failure, will be repaired or replaced with a rebuilt pump at Sea Recovery's option.

An Aqua Matic High Pressure Pump requiring maintenance that is not within the warranty period, or is damaged due to non warranty reasons, will be repaired or replaced with a rebuilt pump depending on the severity of damage.

For repair or replacement, contact Sea Recovery for a Material Return Authorization and shipping instructions.

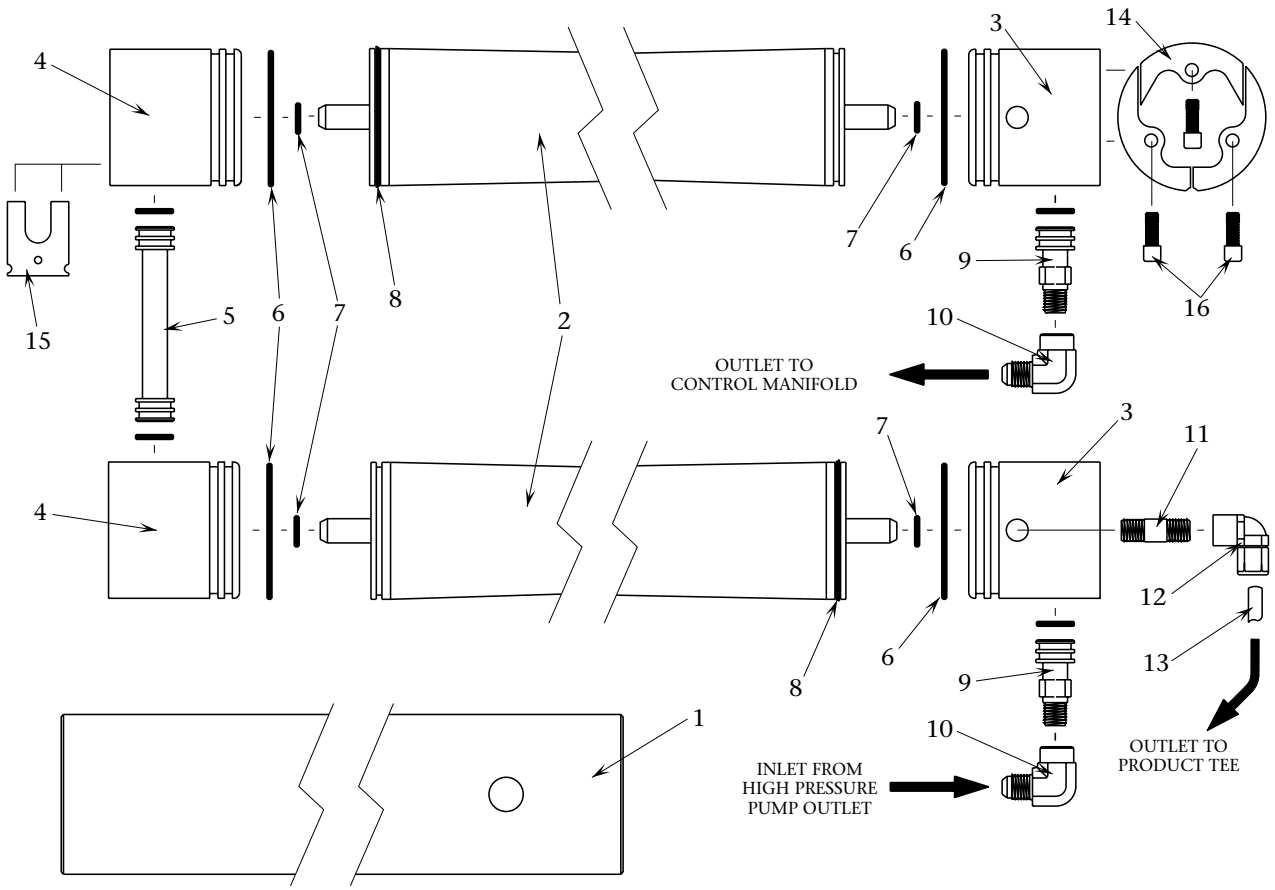
26. **High Pressure Hose [26]:**

The High Pressure Hose has been assembled with crimp fittings by Sea Recovery. The High Pressure Hose is NOT repairable. Should a leak, damage, or failure develop order a replacement hose from Sea Recovery.

27 & 28. **Reverse Osmosis Membrane and Pressure Vessel Assembly [27 & 28]:**

NOTES:

- The Aqua Matic Membrane Element is accessible with the Vessel still attached to the frame, provided there is sufficient room to the left and right of the System to remove the R.O. Membrane Element.
- Replace all Brine and Product Water O-Rings attached to the End Plugs within the High Pressure Vessel Assembly each time the Reverse Osmosis Membrane Element is removed or replaced. Ensure these O-Rings are on hand prior to repair.
- R.O. Membrane Elements are only installed and removed from the INLET end of the High Pressure Vessel.



a. Disassembly of the Reverse Osmosis Membrane and Vessel Assembly:

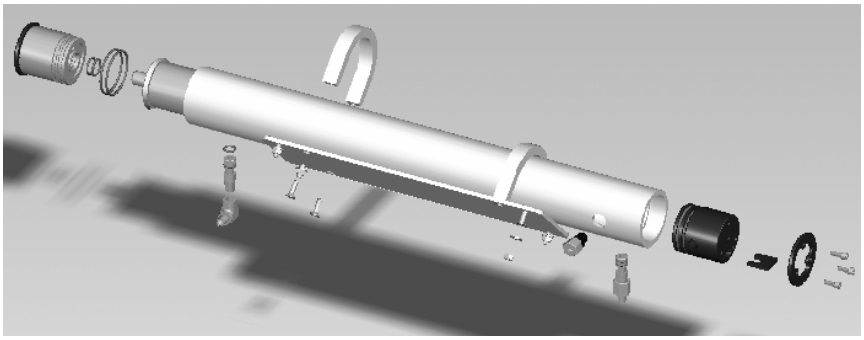
1. Disconnect the High Pressure Hose from each end of the High Pressure Vessel Assembly.
2. Using a 5/16" Allen wrench remove the 3 each Socket Head Cap Screws #16 from the three-piece Segment Rings #14 located at each end of the Pressure Vessel.
3. Push inward on the End Plug #3 & #4 and Remove the three-piece segment ring #14 from one end, repeat for the other end.
4. Remove the Port Retainer #15 from each end.
5. Remove the High Pressure Port #5 & #9 from each end.
6. Remove the product water tube #13 from the product water tube fitting #12.
7. Remove the product water tube fitting #12 and nipple #11 from the end plug.
8. Insert all three of the Socket Head Cap Screws #16 finger tight back into the End Plug #3 & #4. These screws are used as a grip to remove the End Plug.
9. Grasp one or more of the Socket Head Cap Screws with a pair of pliers and pull slowly outward to remove the End Plug. There is some resistance due to the two Brine O-Rings exerting friction against the Vessel wall. With the End Plug removed from the High Pressure Vessel, the Reverse Osmosis Membrane Element is visible.
10. Remove and discard the brine O-rings from each of the End Plugs #6.
11. Remove and discard the Product Water O-rings from each of the End Plugs #7.
12. Clean the end plugs with a cloth and inspect each for any sign of wear, cracks, or damage.
13. Sparingly, lightly, lubricate NEW Brine O-Rings and new Product Water O-Rings.

14. Place the NEW Product Water O-Rings into the product port inner O-Ring groove in each of the End Plugs.
15. Place the NEW Brine O-Rings onto the outer Brine O-Ring grooves of each of the End Plugs.
16. **CAUTION:** At each end of the Reverse Osmosis Membrane Element is a Product Water Tube approximately ¾" diameter by 1" long. The outside diameter surface of this product water tube is a sealing surface, which isolates the Product Water from the Feed Water. The surface of the Product Water Tube must be scratch free. Never use pliers or other grabbing tools on the Product Water Tube. Do not drop the R.O. Membrane onto a hard surface as the Product Water Tube may be damaged.

    With your fingers grasp the Product Water Tube attached to the R.O. Membrane Element from the INLET end of the Pressure Vessel and pull outward. If resistance is met then cup the INLET end of the High Pressure Vessel with one hand and shake downward to dislodge the R.O. Membrane Element. The R.O. Membrane Element may also be pushed from the Outlet end of the vessel towards the Inlet end.
17. Run a rag through the High Pressure Vessel to remove any biological film or debris from the inside of the vessel.
18. A new Sea Recovery R.O. Membrane Element comes complete with a "U" cup Brine Seal #8 at one end of the Element. **This Brine Seal must be positioned at the INLET end of the Pressure Vessel.**

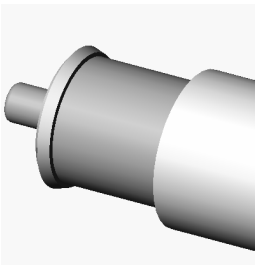
INLET End
Feed Water Entry End
R.O. Membrane Element Brine Seal End

OUTLET End
Brine Discharge End
no brine seal on this end



Install a new R.O. Membrane Element with attached "U" cup Brine Seal into the Pressure Vessel. Place the end of the R.O. Membrane Element that DOES NOT have the Brine Seal attached into the INLET end of the Pressure Vessel and slide it into the Pressure Vessel
(Insert the down stream end [end without a brine seal] of the Reverse Osmosis Membrane Element into the upstream inlet end of the High Pressure Vessel.)

Inlet end of Pressure Vessel
Brine Seal End of R.O. Membrane Element



19. Slide the Membrane Element into the High Pressure Vessel, past the brine seal, until the Membrane Element product water tube is 4 inches past the end lip of the High Pressure Vessel.
20. Insert the End Plug with new attached O-Rings into the High Pressure Vessel while aligning the High Pressure Port and Product Water Port to the respective holes in the High Pressure Vessel. Continue pushing inward on the End Plug until its exposed end travels just past the Segment Ring Groove in the Pressure Vessel. Ensure that the Ports of the End Plug are aligned with the Port Holes of the High Pressure Vessel.

21. Insert the High Pressure Port Fitting with attached O-Rings into the High Pressure Port.
22. Replace the Port Retainer.
23. Insert the three-piece Segment Ring Set into the Segment Ring Groove of the High Pressure Vessel. Align the Segment Ring Set with the tapped holes in the End Plug for insertion of the three Socket Head Cap Screws. Attach the three Socket Head Cap Screws and tighten.
24. Connect the High Pressure Hoses to the respective fitting on the Pressure Vessel.

29. **High Pressure Hose [29]:**

The High Pressure Hose has been assembled with crimp fittings by Sea Recovery. The High Pressure Hose is NOT repairable. Should a leak, damage, or failure develop order a replacement hose from Sea Recovery.

30. **High Pressure Manifold [30]**.

Replace the High Pressure Manifold if it is visibly cracked or broken and leaking. Replace High Pressure fitting O-rings if damaged, worn, or leaking.

31. **High Pressure Transducer [31]**: The Pressure Transducers are not repairable and can not be calibrated. If inoperative check connections at the Transducer and at the Printed Circuit Board to ensure there is no visible corrosion or loose connections.

32. **Automatic Motor Actuated Back Pressure Regulator [32]:** The Motor Actuator and Gear Assembly is not repairable. If the motor has been confirmed to be non operational replace it.

WARNING: Anytime the valve stem and or Motor gear shaft is rotated separately from the other they must be re-calibrated together. If the coupler set screws have become loose allowing the shafts to rotate independently, or if repair has been performed where in the valve has been separated from the coupler or the motor gear shaft, then the motor gear shaft and the valve stem MUST BE RE-CALIBRATED. If the valve stem has rotated separately from the motor gear shaft the control logic will not be able to maintain and control the system operating pressure.

a. **Motor Function Test:**

Perform a Function Test on the Electric Motor Actuator as described in Section 3 of this Owner's Manual.

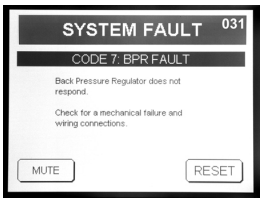
WARNING: DO NOT BENCH TEST the Electric Motor Actuator. DO NOT APPLY DIRECT VOLTAGE TO THE ACTUATOR. Bench testing of the motor can cause physical damage to the positioning signal device located within the Actuator assembly.

b. **Valve Packing Leak:**

If the Back Pressure Regulator valve leaks from the valve stem, lightly tighten the packing gland nut located below the valve stem. Should adjustment fail to stop the leak, replace the stem and internal packing or replace the entire valve. Refer to the exploded parts view in Section 10 of this Owner's Manual.

CAUTION: DO NOT over tighten the packing gland. Over tightening will cause premature wear and failure of the packing and stem.

WARNING: Over tightening will also cause excessive drag increasing the torque requirement of the valve's electric motor. Excessive drag resulting in increased torque requirement will cause the valve motor to draw high current. When the valve's motor draws high current the system Control Logic will stop the system and the touch screen will display a SYSTEM FAULT CODE 7 BPR FAULT.



When the actuator motor starts, it momentarily draws high current (this is normal). Once the motor begins to rotate, with no restrictions, the current lowers to normal running current. The motor, in turn, rotates the gear box, sensing POT (potentiometer) and valve stem.

If the motor movement is blocked or restricted and does not rotate it will draw high current and the sensing POT will not rotate. The System Control Logic receives the high current signal and the lack of sensing POT movement. This results in the stopping of the System and display of "SYSTEM FAULT CODE 7: BPR FAULT".

Determine what is restricting the movement of the Valve.

Proceed in this order:

a. Check the brass coupling that connects the valve stem and gear box shaft to ensure it allows free movement and turning.

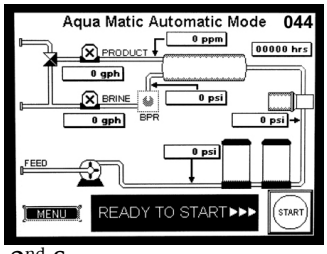
b. Check for external signs of corrosion or water intrusion into the Actuator housing.

c. Ensure that the Valve Stem packing nut is not over tightened causing friction and resistance.

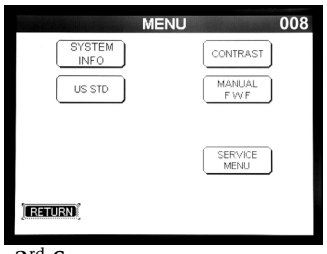
c. Calibration of the valve stem and motor gear shaft: CAUTION: Should one of the Couplers attached to either the Electric Motor Actuator Drive Shaft or the Back Pressure Regulator Valve Stem become loose, or if the Automatic Back Pressure Regulator and Actuator require disassembly they must be synchronized and calibrated together in the reassembly process.

Within the following procedures the valve stem positioning depends upon which CONTROL VER your system has. Prior to proceeding, check and make a note of your system's CONTROL VER which can be located at the SYSTEM INFORMATION Screen:

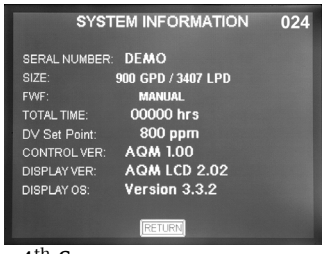
1st Screen007
Touch the Logo



2nd Screen044
Touch MENU



3rd Screen008
Touch SYSTEM INFO



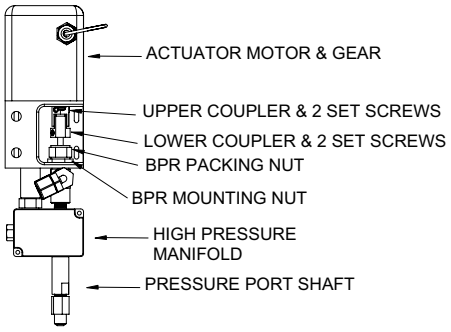
4th Screen024
INFORMATION

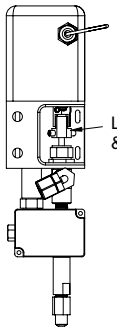
The Illustrations on the following 3 pages explains the disassembly and re-assembly and calibration procedures.

DISASSEMBLY INSTRUCTIONS

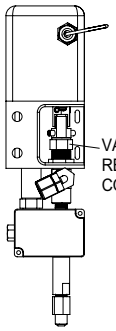
WARNING: DO NOT MANNUALLY ROTATE THE ACTUATOR SHAFT. DO NOT ELECTRICALLY ROTATE THE ACTUATOR SHAFT. UNREPAIRABLE DAMAGE TO THE ACTUATOR WILL OCCOUR IF THE ACTUATOR SHAFT IS MANUALLY ROTATED OR ELECTRICALLY ROTATED WITHOUT THE INTERFACE OF THE SYSTEM CONTROL LOGIC

ASSEMBLED

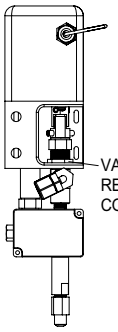




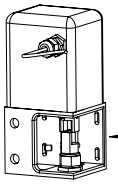
STEP 1
LOOSEN 2 EACH SET SCREWS AT THE LOWER COUPLER ALLOW THE COUPLER TO FALL LOOSE ONTO THE VALVE SHAFT.

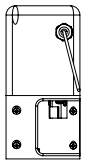


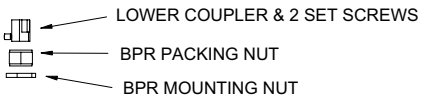
STEP 2
ROTATE COUNTER CLOCKWISE THE BPR PACKING NUT UNTIL IT DISSENGAUGES FROM THE SHAFT THREADS

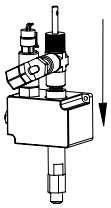


STEP 3
ROTATE COUNTER CLOCKWISE THE BPR MOUNTING NUT UNTIL IT DISSENGAUGES FROM THE SHAFT THREADS

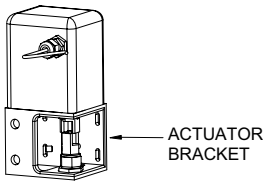




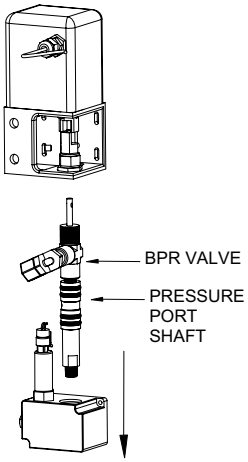




STEP 4
ALLOW THE BPR MANIFOLD TO DROP AWAY FROM THE ACTUATOR BRACKET

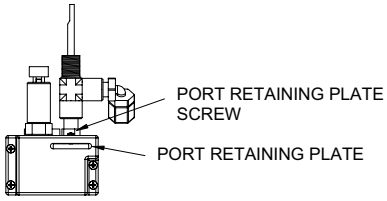


STEP 5
USING TWO OPEN END WRENCHES HOLD THE PRESSURE PORT AT THE SHAFT WRENCH FLAT AND REMOVE COUNTER CLOCKWISE THE HEX 37 DEGREE FLARE FITTING FROM THE PRESSURE PORT



AQUA MATIC MODULAR
STYLE SYSTEM HIGH PRESSURE MANIFOLD

STEP 6
AQUA MATIC MODULAR SYSTEM WITH THE HIGH PRESSURE 37 DEGREE FLARE FITTING REMOVED FROM THE BOTTOM OF THE PRESSURE PORT SHAFT, SLIDE HIGH PRESSURE MANIFOLD DOWN AND AWAY FROM PRESSURE PORT SHAFT



AQUA MATIC COMPACT
STYLE SYSTEM HIGH PRESSURE MANIFOLD

AQUA MATIC COMPACT SYSTEM
a. REMOVE THE PORT RETAINING PLATE SCREW.

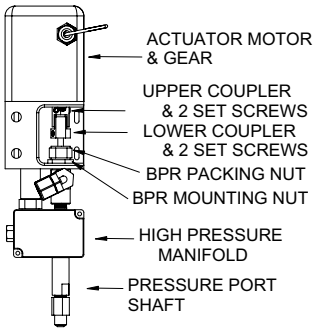
b. PULL THE PORT RETAINING PLATE OUTWARD.

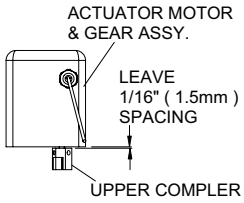
c. SLIDE HIGH PRESSURE MANIFOLD DOWN AND AWAY FROM THE PRESSURE PORT SHAFT

WARNING: DO NOT MANNUALLY ROTATE THE ACTUATOR SHAFT. DO NOT ELECTRICALLY ROTATE THE ACTUATOR SHAFT. UNREPAIRABLE DAMAGE TO THE ACTUATOR WILL OCCOUR IF THE ACTUATOR SHAFT IS MANUALLY ROTATED OR ELECTRICALLY ROTATED WITHOUT THE INTERFACE OF THE SYSTEM CONTROL LOGIC

REASSEMBLY INSTRUCTIONS

ASSEMBLED



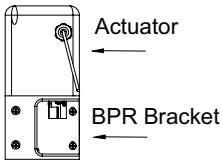


STEP 1

a. ATTACH THE ACTUATOR SHAFT COUPLER TO THE ACTUATOR SHAFT USING 2 EACH SET SCREWS.

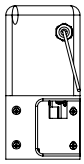
b. LEAVE 1/16" (1.5mm) SPACE BETWEEN THE BOTTOM OF THE ACTUATOR AND THE TOP OF THE COUPLER.

c. TIGHTEN THE SET SCREWS SECURELY



STEP 2

ATTACH THE ACTUATOR TO THE BPR BRACKET



STEP 3

a. WITH ELECTRICAL POWER DISCONNECTED FROM THE SYSTEM, CONNECT ALL ELECTRIC ACTUATOR WIRE LEADS TO THE ELECTRICAL CONTROL BOX AS PER WIRE DIAGRAMS LOCATED IN SECTION 9 OF THIS OWNER'S MANUAL.

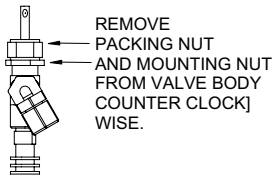
b. APPLY ELECTRICAL POWER TO THE SYSTEM.

c. AS THE SYSTEM CONTROL LOGIC BOOTS UP, AND INITIALIZES, THE ACTUATOR MOTOR MAY OR MAY NOT ROTATE DEPENDING ON ITS POSITION.

d. AFTER THE SYSTEM CONTROL LOGIC HAS INITIALIZED AND DISPLAYS THE LOGO SCREEN AT THE TOUCH SCREEN, GO TO THE "FUNCTION TEST" SCREEN AS EXPLAINED IN SECTION 3 OF THIS MANUAL
(TOUCH LOGO / TOUCH MENU / TOUCH SERVICE MENU / TOUCH FUNCTION TEST.

e. AT THE FUNCTION TEST SCREEN, TOUCH "BPR IN", WAIT SEVERAL SECONDS AND TOUCH "BPR IN" AGAIN. REPEAT THIS UNTIL THE ACTUATOR GEAR SHAFT HAS ROTATED COUNTER CLOCK WISE 2 1/2 TURNS.

f. AT THE FUNCTION TEST SCREEN TOUCH "RETURN". THE SYSTEM WILL INITIALIZE AND ROTATE THE ACTUATOR GEAR SHAFT TO ITS SET POSITION.



STEP 4

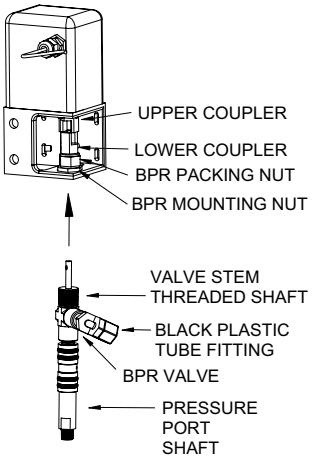
a. ENSURE THAT THE VALVE STEM DOES NOT ROTATE.

b. REMOVE THE PACKING NUT FROM THE VALVE BODY.

c. REMOVE THE MOUNTING NUT FROM THE VALVE BODY.

g. DISCONNECT ELECTRICAL POWER FROM THE SYSTEM. TURN THE CIRCUIT BREAKER TO THE OFF POSITION.

WARNING: DO NOT ROTATE THE ACTUATOR MOTOR GEAR SHAFT AGAIN DURING THIS REASSEMBLY PROCEDURE.



STEP 5

WARNING: ENSURE THAT THE VALVE STEM DOES NOT ROTATE DURING THE FOLLOWING PROCEDURES.

a. PLACE THE BPR MOUNTING NUT, BPR PACKING NUT, AND LOWER COUPLER WITH FORKS POINTED UP INTO THE BRACKET CHAMBER DIRECTLY BELOW THE UPPER COUPLER.

b. INSERT THE BPR VALVE STEM UP INTO THE BRACKET THROUGH THE PROVIDED HOLE, THROUGH THE BPR MOUNTING NUT, THROUGH THE BPR PACKING NUT, AND THROUGH THE LOWER COUPLER.

c. ROTATE THE BPR ASSY SO AS TO ALLIGN THE BLACK PLASTIC TUBE FITTING TO ITS MATING TUBE.

d. THREAD THE BPR MOUNTING NUT ONTO THE VALVE THREADED SHAFT AS FAR AS IT WILL TRAVEL FINGER TIGHT.

e. HOLD THE VALVE BODY WITH A WRENCH AND WITH A SECOND WRENCH TIGHTEN THE BPR MOUNTING NUT SECURELY.

F. THREAD THE BPR PACKING NUT ONTO THE VALVE THREADED SHAFT FINGER TIGHT UNTIL IT CAN NO LONGER BE TIGHTENED FINGER TIGHT

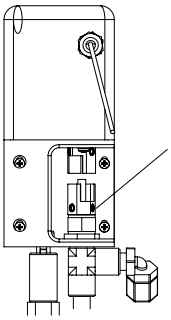
G. USING TWO WRENCHES, HOLD THE VALVE BODY WITH ONE WRENCH AND TIGHTEN THE BPR PACKING NUT 1/4 TURN OR UNTIL IT IS "LIGHTLY SNUG" IN ORDER TO SEAL THE PACKINGS AROUND THE VALVE STEM TO PREVENT LEAKAGE.

CAUTION: DO NOT OVER TIGHTEN THE BPR PACKING NUT. OVER TIGHTENING WILL CAUSE EXCESSIVE FRICTION AND DRAG RESULTING IN HIGH CURRENT DRAW AT THE ACTUATOR MOTOR AND TOUCH SCREEN FAULT READING (SYSTEM FAULT CODE 7: BPR FAULT).

UNDER TIGHTENING WILL ALLOW THE VALVE STEM PACKINGS TO LEAK WATER..

WARNING: DO NOT MANNUALLY ROTATE THE ACTUATOR SHAFT. DO NOT ELECTRICALLY ROTATE THE ACTUATOR SHAFT. UNREPAIRABLE DAMAGE TO THE ACTUATOR WILL OCCOUR IF THE ACTUATOR SHAFT IS MANUALLY ROTATED OR ELECTRICALLY ROTATED WITHOUT THE INTERFACE OF THE SYSTEM CONTROL LOGIC

REASSEMBLY INSTRUCTIONS CONTINUED



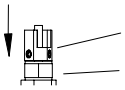
STEP 6

WITH THE PACKING NUT PROPERLY SNUGED ONTO THE BPR SHAFT THREADS, THE BPR VALVE STEM WILL TRAVEL EXACTL 9 TURNS FROM FULL CLOSED TO FULL OPEN.

FINAL POSITIONING OF THE BPR VALVE STEM IN RELATIONSHIP TO THE ACTUATOR MOTOR GEAR SHAFT IS CRITICAL. FOLLOW THESE INSTRUCTIONS EXACTLY.

THE BPR VALVE STEM MUST NOW BE POSITIONED IN RELATIONSHIP TO THE ACTUATOR GEAR SHAFT AS INSTRUCTED BELOW:

a. ALLOW THE LOWER COUPLER TO SLIDE DOWN AND TOUCH THE BPR PACKING NUT



b. TIGHTEN ONLY ONE SET SCREW

c. WITH FINGERS, ROTATE LOWER COUPLER, ATTACHED TO BPR VALVE STEM, COUNTERCLOCK WISE UNTIL THE VALVE STEM WILL NO LONGER MOVE, OR UNTIL THE LOWER COUPLER TOUCHES THE UPPER COUPLER.

d. IF THE LOWER VALVE COUPLER IS TOUCHING THE UPPER MOTOR COUPLER, LOOSEN THE SET SCREW ON THE VALVE STEM COUPLER AND ALLOW THE VALVE STEM, LOWER, COUPLER TO SLIDE DOWN AGAIN AND TOUCH THE BPR PACKING NUT.

e. AGAIN, TIGHTEN ONLY ONE SET SCREW

f. WITH FINGERS, ROTATE LOWER COUPLER, ATTACHED TO BPR VALVE STEM, COUNTERCLOCK WISE UNTIL IT WILL NO LONGER MOVE AND IS NOT TOUCHING THE UPPER COUPLER.

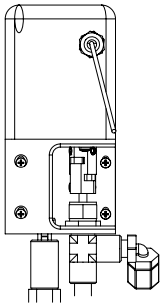
g. REPEAT STEPS d - f UNTIL YOU ARE SURE THAT THE VALVE STEM IS IN FACT FULL OPEN COUNTER CLOCK WISE.

THE VALVE STEM IS NOW IN THE FULL OPEN POSITION

IF THE "CONTROL VER" IS 1.00 THROUGH 2.03:
H. WITH FINGERS, ROTATE LOWER VALVE COUPLER EXACTLY 2 TURNS CLOCK WISE. THE VALVE STEM IS NOW AT 7 TURNS OPEN FROM FULL CLOSED OR 2 TURNS CLOSED FROM FULL OPEN.

OR

IF THE "CONTROL VER" IS 2.05 OR GREATER:
H. WITH FINGERS, ROTATE LOWER VALVE COUPLER, 1/2 (ONE HALF) TURN (180 DEGREES) CLOCK WISE. THE VALVE STEM IS NOW AT 8 1/2 TURNS OPEN FROM FULL CLOSED OR 1/2 TURN CLOSED FROM FULL OPEN.



STEP 7

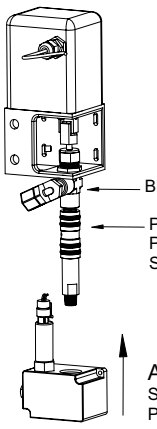
a. LOOSEN THE SET SCREW AT THE LOWER COUPLER.

b. ROTATE THE LOWER COUPLER UNTIL THE FORKS ALIGN WITH THE UPPER COUPLER RECESS AND ALSO ONE OF THE LOWER COUPLER SET SCREWS ALIGNS, AS CLOSE AS POSSIBLE TO THE RECESSED DIMPLE ON THE VALVE STEM.

c. SLIDE THE LOWER COUPLER FORKS UP INTO THE UPPER COUPLER RECESSES.

d. IF IT IS NECESSARY, THE VALVE STEM MAY BE ROTATED NOT MORE THAN 1/8 TURN (45 DEGREES) IN ORDER TO MATE THE VALVE STEM DIMPLE TO THE NEAREST SET SCREW.

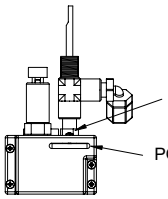
e. TIGHTEN THE 2 SET SCREWS SECURELY ONTO THE VALVE STEM.



STEP 8

AQUA MATIC MODULAR SYSTEM
INSERT HIGH PRESSURE MANIFOLD UP ONTO THE PRESSURE PORT SHAFT.

AQUA MATIC MODULAR
STYLE SYSTEM HIGH PRESSURE MANIFOLD



AQUA MATIC COMPACT STYLE SYSTEM HIGH PRESSURE MANIFOLD

AQUA MATIC COMPACT SYSTEM

a. SLIDE HIGH PRESSURE MANIFOLD UP INTO THE PRESSURE PORT SHAFT

b. PUSH THE PORT RETAINING PLATE INTO PLACE

c. ATTACH THE PORT RETAINING PLATE SCREW

33. Brine Discharge Flow Meter [33]:

The electronic flow meters used in the Aqua Matic System are not repairable. If the flow meter gives an inaccurate reading calibrate it. Refer to Section 3 of this Owner's Manual.

34. **Brine Discharge T-Connector [34]:** The Brine Discharge T-Connector is not repairable. If it breaks or should a crack develop replace it.

35. **Brine Discharge Connector [35]:** This 90 degree elbow fitting attaches to the over board thru-hull fitting for connecting the brine discharge hose. If it breaks or cracks replace it.

36. **Multi Media Filter Waste & Brine Discharge Tee [36]:** This 90 degree elbow fitting attaches to the over board thru-hull fitting for connecting the brine discharge hose. If it breaks or cracks replace it.

37. **Thru-Hull Discharge Fitting [37]:** This Owner or Installer supplied Discharge Thru-Hull Fitting is not repairable. If it breaks or cracks replace it.

38. **Product Water T-Collector [38]:** The Product Water T-Collector is not repairable. If it breaks or should a crack develop replace it.

39. **Salinity Probe [39]:** The salinity probe requires cleaning from time to time should debris build up onto the monel probes. Clean the probes once a year.

    a. Unscrew the black tube fitting nut below the probe to disconnect it from the control manifold.

    b. Using a soft bristle brush, scrub the probes to remove any built up debris. Thoroughly dry the probe area.

Salinity Probe Calibration:

Should the salinity reading become inaccurate calibrate it. Refer to Section 3 of this Owner's Manual.

40. Product Water Flow Meter [40]:

The electronic flow meters used in the Aqua Matic System are not repairable. If the flow meter gives an inaccurate reading calibrate it. Refer to Section 3 of this Owner's Manual.

41. 3-way Product Water Diversion Solenoid Valve [41]:

a. Do not assume that the Valve's Solenoid is not operational. Check it by performing a Function Test as described in Section 3 of this Owner's Manual.

b. Adjustment of outlet ports: Over tightening of the tube fittings into the valve's body can cause the Diversion Valve internal ports to move out of proper position resulting in internal blockage or bypassing.

Refer to the Illustration at the top of the following page and follow the instructions listed below.

1) Remove Diversion Valve from the system and adjust ports.

2) Position the manual over ride button OUTWARD to normal position by first pushing the button inward and rotating it counter clockwise allowing it to spring outward away from the coil body.

3) With your mouth, blow into port "P", air should expel from port "B" which is the "normally open" or "bad water" port.

4) If it is extremely difficult to expel air from port “B” or if no air expels from port “B”, then port “B” requires adjustment.

5) Again blow into port “P” while plugging port “B” with a finger tip. No air should expel from port “A”.

6) If air expels from port “A”, then port “A” requires adjustment.

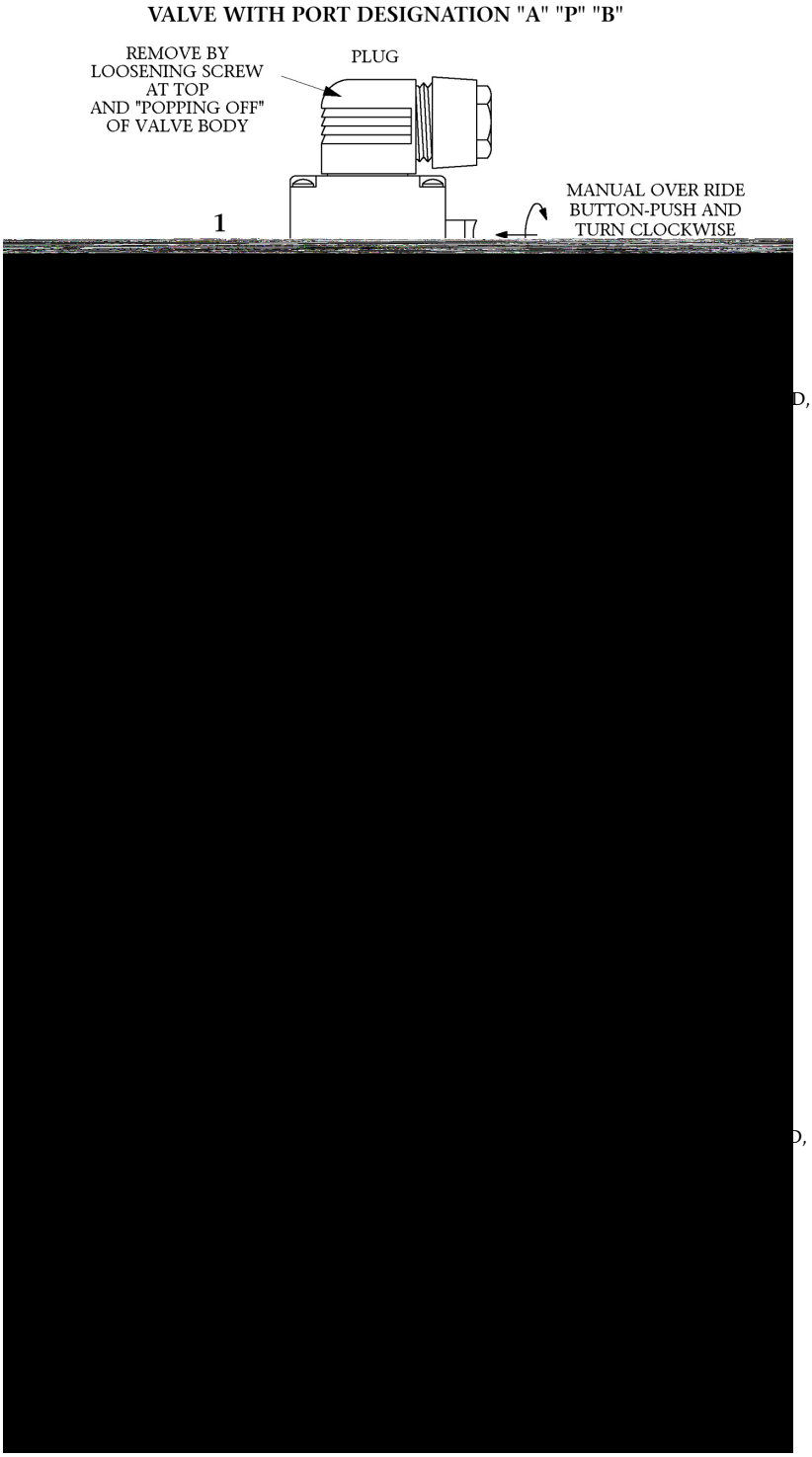
7) Position the manual over ride button INWARD to manual over ride position by pushing the button inward and rotating it clockwise allowing it to lock inward close to the coil body.

8) With your mouth, blow into port “P”, air should expel from port “A” which is the “normally closed” or “good water” port.

9) If it is extremely difficult to expel air from port “A” or if no air expels from port “A”, then port “A” requires adjustment.

10) Again blow into port “P” while plugging port “A” with a fingertip. No air should expel from port “B”.

11) If air expels from port “B”, then port “B” requires adjustment.



b. Solenoid Valve Coil Check:

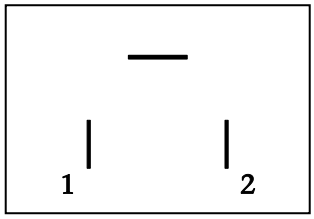
1) The 3-way Product Diversion Valve Solenoid operates from 12 VDC. When the “System OK” screen appears, and the CONTROL STATUS LED “DV” is illuminated, the Valve’s solenoid receives 12 VDC.

To check the condition of the Diversion Valve solenoid coil:

a) While System is operating and producing potable water as indicated by the System OK screen, and confirmed by the CONTROL STATUS "DV" LED illuminated, using a voltmeter set to DC, check the voltage at the din connector terminals at the top of the 3-Way Diversion Valve's solenoid..

b) If 12 VDC is present at the din connector terminals then the control circuit is operating normally, but the 3-way Diversion Valve Coil may be shorted or open. Check the solenoid coil continuity.

c) This check can only be performed with the solenoid electrically disconnected from the Control Board. Remove the Din Connector from the solenoid. Using an Ohm meter measure the continuity of the solenoid coil as shown below.



Measure the DC resistance between pins 1 & 2. Proper resistance reading is approx. 12 to 15 Ω.

d) If an open circuit exists, or if the resistance is much greater than or less than 12 to 15 Ω, then replace the solenoid coil or the entire valve.

e) If 12 VDC is not present at the din connector terminals, then the cable connections may be loose, the cable may be broken, or the control circuit may be inoperable. Check these components.

f) Check for 12 VDC at the connection points of the Diversion Valve Solenoid Coil on the Control Printed Circuit Board terminals TB4 Position DV.

g) If 12 VDC is present while system is operating and while the "System OK" Screen appears and the CONTROL STATUS LED "DV" is illuminated, then the Diversion Valve cable is loose at one of the connections or the cable is defective.

h) If there is no voltage present while system is operating and while the "System OK" Screen appears and the CONTROL STATUS LED "DV" is illuminated, then troubleshoot the Control Printed Circuit Board.

42. Charcoal Filter [42]: A sulfurous (rotten eggs) odor from the product water requires the replacement of the Charcoal Element. Otherwise, the Charcoal Element should be replaced every 3 to 4 months. It is not cleanable.

CAUTION: Do not use third party charcoal or carbon filter elements; use only Sea Recovery Charcoal Filter Elements. Many third party Charcoal Filter Elements on the market do not properly fit, the seams fall apart, and they will allow by-pass.

WARNING: Many third party Charcoal and Carbon Filter Elements on the market are designed for a very low flow rate and will cause extensive and expensive damage to the Sea Recovery System resulting from several hundred pounds of pressure build up on the product water line. Excessive pressure resulting from third party Charcoal or Carbon Filter Elements will damage: R.O. Membrane Element, Product Water Flow Meter, 3-Way Product Water Diversion Valve, Charcoal Filter Housing, and the Product Water Line.

DO NOT ACCEPT THIRD PARTY CHARCOAL FILTER ELEMENTS FROM ANY MARINE DEALER. USE ONLY SEA RECOVERY SUPPLIED CHARCOAL FILTER ELEMENTS. The resulting failure of the system to remain in operation, and or damage to the Sea Recovery System caused by Third Party Charcoal or Carbon Filter Elements is attributed to improper maintenance and operation, is the liability of the operator and owner, and is not covered by the Sea Recovery warranty.

To replace the Charcoal Filter Element:

1. Unscrew the bowl counter clockwise.
2. Remove the Charcoal Filter Element from the bowl.
3. Remove the O-Ring from the top of the bowl and take care to not damage it.
4. Replace the Charcoal Filter Element with a new Sea Recovery element.
5. Wipe the O-Ring with a damp cloth.
6. Sparingly lubricate the O-Ring lightly with O-Ring lubricant.
7. Place the O-Ring back onto the bowl.
8. Insert the new, Sea Recovery Charcoal Filter Element into the bowl.
9. Screw the bowl on clockwise.
10. Hand snug to seal the O-Ring, do not use a wrench or other tool to tighten, do not over tighten. Over tightening causes stress to the lid and bowl threads resulting in damage, breakage, or cracks and subsequent removal difficult.

43. pH Neutralizing Filter [43]: The pH Neutralizing cartridge will require replacement when the calcium carbonate within the cartridge has dissolved.

CAUTION: Do not use third party pH Neutralizing Filter Elements or Cartridges; use only Sea Recovery pH Neutralizing Filter Cartridges. Sea Recovery's pH Neutralizing Cartridge is specifically modified to allow the high volume of product water flow through it with no back pressure build up.

WARNING: All third party pH Neutralizing Cartridges and Elements on the market are designed for a very low flow rate and will cause extensive and expensive damage to the Sea Recovery System resulting from several hundred pounds of pressure build up on the product water line. Excessive pressure resulting from third party pH Neutralizing Cartridges or Elements will damage: R.O. Membrane Element, Product Water Flow Meter, 3-Way Product Water Diversion Valve, Charcoal Filter Housing, pH Neutralizing Housing, and the Product Water Line.

DO NOT ACCEPT THIRD PARTY CHARCOAL FILTER ELEMENTS FROM ANY MARINE DEALER. USE ONLY SEA RECOVERY SUPPLIED CHARCOAL FILTER ELEMENTS. The resulting failure of the system to remain in operation, and or damage to the Sea Recovery System caused by Third Party pH Neutralizing Elements or Cartridges is attributed to improper maintenance and operation, is the liability of the operator and owner, and is not covered by the Sea Recovery warranty.

To replace the pH Neutralizing Cartridge:

1. Unscrew the bowl counter clockwise.
2. Remove the pH Neutralizing Cartridge from the bowl.
3. Remove the O-Ring from the top of the bowl and take care to not damage it.
4. Replace the pH Neutralizing Cartridge with a new Sea Recovery Cartridge.
5. Wipe the O-Ring with a damp cloth.
6. Sparingly lubricate the O-Ring lightly with O-Ring lubricant.
7. Place the O-Ring back onto the bowl.
8. Insert the new, Sea Recovery pH Neutralizing Cartridge into the bowl.
9. Screw the bowl on clockwise.
10. Hand snug to seal the O-Ring, do not use a wrench or other tool to tighten, do not over tighten. Over tightening causes stress to the lid and bowl threads resulting in damage, breakage, or cracks and subsequent removal difficult.

44. Ultraviolet Sterilizer: The UV Sterilizer lamp emits a low frequency form of light. This light degrades and loses intensity and ability to sterilize biological matter over approximately 2,000 hours of use. Therefore, the lamp may remain lit, but requires replacement every 2000-4000 hrs.

CAUTION: Make sure that system power is turned off before beginning sterilizer maintenance. Ultra Violet light is harmful to eyes and skin.

Lamp Replacement:

a. Remove the top lid. The ballast should remain in the lid.
b. Remove the lamp and the lamp plug from the quartz sleeve.
c. Replace the lamp. During lamp replacement clean the quartz sleeve as well. The quartz sleeve should be crystal clear and if it has discolored, it must be cleaned or replaced.

Quartz Sleeve Cleaning:

a. Remove the top cap (cap, ballast, and lamp).
b. Remove the three Phillips-head screws on the top end bushing.
c. Remove the top bushing and the top O-Ring and place in a safe place.
d. Remove the three Phillips-head screws on the bottom bushing. Do not remove the center screw. When you lower the bottom bushing, the quartz sleeve should slide with it.
e. Remove the bottom O-Ring and clean it with a damp cloth.
f. Clean the quartz tube with water and a bottlebrush. Dry with a soft cloth. Handle the quartz sleeve carefully.

Reassembly:

a. Insert the quartz tube into the Bottom End Plug and seat it into the center O-Ring.
b. Attach a new U.V. Lamp into the plug.
c. Slide the lamp into the Quartz Tube and seat the Top end plug into the vessel.
d. Replace the three 1/4-20 cap head screws.

51. Fresh Water Flush Carbon Filter [51] Element: The Carbon Filter Element in the Fresh Water Flush should be replaced every 3 months.

The Fresh Water Flush will automatically flush the system with Fresh Water every 7 days. The duration of the flush cycle will be 90 seconds for a system connected to 60 Hz power and to 120 seconds for systems connected to 50 Hz power.

CAUTION: Do not use third party charcoal or carbon filter elements; use only Sea Recovery Charcoal Filter Elements. Many third party Charcoal Filter Elements on the market do not properly fit, the seams fall apart, and they will allow by-pass.

WARNING: Many third party Charcoal and Carbon Filter Elements on the market are designed for a very low flow rate and will cause the Sea Recovery Aqua Matic Fresh Water Flush Cycle to abort due to lack of sufficient fresh water flow to the High Pressure Pump.

DO NOT ACCEPT THIRD PARTY CHARCOAL FILTER ELEMENTS FROM ANY MARINE DEALER. USE ONLY SEA RECOVERY SUPPLIED CHARCOAL FILTER ELEMENTS. The resulting failure of the Fresh Water Flush Cycle, and or damage to the Sea Recovery System caused by Third Party Charcoal or Carbon Filter Elements is attributed to improper maintenance and operation, is the liability of the operator and owner, and is not covered by the Sea Recovery warranty.

To replace the Carbon Filter Element:

1. Unscrew the bowl counter clockwise.
2. Remove the Carbon Filter Element from the bowl.
3. Remove the O-Ring from the top of the bowl and take care to not damage it.
4. Replace the Carbon Filter Element with a new Sea Recovery element.
5. Wipe the O-Ring with a damp cloth.
6. Sparingly lubricate the O-Ring lightly with O-Ring lubricant.
7. Place the O-Ring back onto the bowl.
8. Insert the new, Sea Recovery Carbon Filter Element into the bowl.
9. Screw the bowl on clockwise.
10. Hand snug to seal the O-Ring, do not use a wrench or other tool to tighten, do not over tighten. Over tightening causes stress to the lid and bowl threads resulting in damage, breakage, or cracks and subsequent removal difficult.

Section 9

Electrical Information

V 3.00

Electrical Requirements

Electrical Specifications

Electrical Wire Sizes

Aqua Matic COMPACT STYLE
Electrical Diagrams
Electrical Wire Routing & Connection

Aqua Matic MODULAR STYLE
Electrical Diagrams
Electrical Wire Routing & Connection

Notes:

A. ELECTRICAL REQUIREMENTS & INFORMATION:

CAUTION, DO NOT PERFORM INSTALLATION UNLESS:

1. The System Feed Water Sea Cock Valve [2] is closed.
2. The system main electrical disconnect switch is switched **"OFF"**, **LOCKED**, and **TAGGED**.

WARNING: ELECTRICAL SHOCK HAZARD. A Volt / Ohm Meter will be necessary. The following installation procedures expose the installer to High Voltage and electrical shock hazard. Only attempt this if you are a qualified electrician and only if surrounding conditions are safe.

CAUTION: Always allow slack in electrical cables. Allow the cable to enter or leave from the strain relief in a straight manner for several inches to ensure proper connection, to relieve stress to the cable and fitting, and to allow ease of detachment and reattachment for maintenance or replacement. If electrical cables are pulled tight causing them to bend at the strain relief, they will pull out of the strain relief causing a dangerous electrical shock condition, the wire may break, and the strain relief will lose its water-tight integrity.

1. **Amperage Notes:** The Electric Motors within the Aqua MATIC systems start in series with time delay between each motor starting after the Touch Screen "Start" Switch is pressed. First, the Booster Pump starts, then the main High Pressure Pump Electric Motor starts. Alternatively, the Booster Pump and High Pressure Pump may be started manually by accessing the manual operation mode from the Touch Screen.

   During start up, the current of the Booster Pump Electric Motor surges to "Locked Rotor" amperage for a fraction of a second after which the current drops to normal running load. Then the High Pressure Pump Electric Motor starts and surges to "locked Rotor" amperage for a fraction of a second after which the current drops to normal running load.

   Therefore, the **maximum surge current** equals the Booster Pump Electric Motor normal running amperage plus the High Pressure Pump Electric Motor starting amperage. **Normal operational amperage** equals the normal operating amperage of the Booster Pump Electric Motor plus the normal operating amperage of the High Pressure Pump Electric Motor.

2. **POWER SOURCE REQUIREMENTS:** Check line voltage and frequency to ensure that it agrees with system nameplate. Grounding and circuit protection should be done in accordance with National Electrical Code. See connection diagram on nameplate of motor or refer to the diagrams within this manual.

Voltage	HZ (AC)	Min. HZ	Max. HZ	Min. Voltage	Max. Voltage
AC Systems					
120 VAC	60 HZ	58 Hz	62 Hz	108 VAC	132 VAC
230 VAC	60 HZ	58 Hz	62 Hz	207 VAC	253 VAC
100 VAC	50 HZ	48 Hz	52 Hz	90 VAC	110 VAC
220 VAC	50 HZ	48 Hz	52 Hz	198 VAC	242 VAC

3. **MOTOR ROTATION:**

   Refer to Booster Pump and High Pressure Pump markings to determine proper rotation.

   Three Phase Systems: Ensure proper rotation by jogging each motor from the manual operation mode.

B. ELECTRICAL MOTOR SPECIFICATIONS:

(H.P. = Horse Power; RPM = Revolutions Per Minute; FLA = Full Load Amperes; LRA = Locked Rotor Amperes @ Start Up)

ALTERNATING CURRENT SYSTEMS:

Single Phase Alternating Current:

		High Pressure Pump Motor				Booster Pump Motor			
VAC	Hz	H.P	RPM	FLA	LRA	H.P	RPM	FLA	LRA
110	50	3	2850	23	89	.5	2850	7.4	20
220	50	3	2850	11.5	44	.5	2850	3.7	10
115	60	3	3450	25.4	86	.5	3450	9.4	20
230	60	3	3450	12.7	43	.5	3450	4.7	10

Three Phase Alternating Current:

		High Pressure Pump Motor				Booster Pump Motor			
VAC	Hz	H.P	RPM	FLA	LRA	H.P	RPM	FLA	LRA
220	50	2.5	2850	7.9	24.9	.5	2850	2.5	8.2
380	50	2.5	2850	4.6	14.4	.5	2850	1.5	4.7
230	60	3	3450	7.6	23.8	.5	3450	2.4	7.9
460	60	3	3450	3.8	11.9	.5	3450	1.2	3.9

C. RECOMMENDED CIRCUIT BREAKER SUPPLYING POWER TO SYSTEM AMPERAGE RATING:

Operating AC Voltage	Phase	Recommended Circuit Breaker
110 - 115 VAC	Single	50 Ampere
220 - 230 VAC	Single	25 Ampere
220 VAC	Three	15 Ampere
380 VAC	Three	10 Ampere
460 VAC	Three	10 Ampere

D. RECOMMENDED POWER WIRE SIZE TO Aqua Matic SYSTEM and Pump Motors:

RECOMMENDED POWER WIRE SIZE TO Aqua Matic SYSTEM:

Operating Voltage	Phase	Maximum Load	Recommended Minimum Wire Size for Length of run		
			10 Ft / 3 meter	25 Ft / 8 meter	50 Ft / 15 meter
110-115 VAC	Single	34.8 Ampere	10 AWG / 6 mm^2	8 AWG / 10 mm^2	8 AWG / 10 mm^2
220-230 VAC	Single	17.4 Ampere	12 AWG / 4 mm^2	12 AWG / 4 mm^2	12 AWG / 4 mm^2
220-230 VAC	Three	10.4 Ampere	14 AWG / 2.5 mm^2	14 AWG / 2.5 mm^2	14 AWG / 2.5 mm^2
380 VAC	Three	6.1 Ampere	14 AWG / 2.5 mm^2	14 AWG / 2.5 mm^2	14 AWG / 2.5 mm^2
460 VAC	Three	5 Ampere	14 AWG / 2.5 mm^2	14 AWG / 2.5 mm^2	14 AWG / 2.5 mm^2

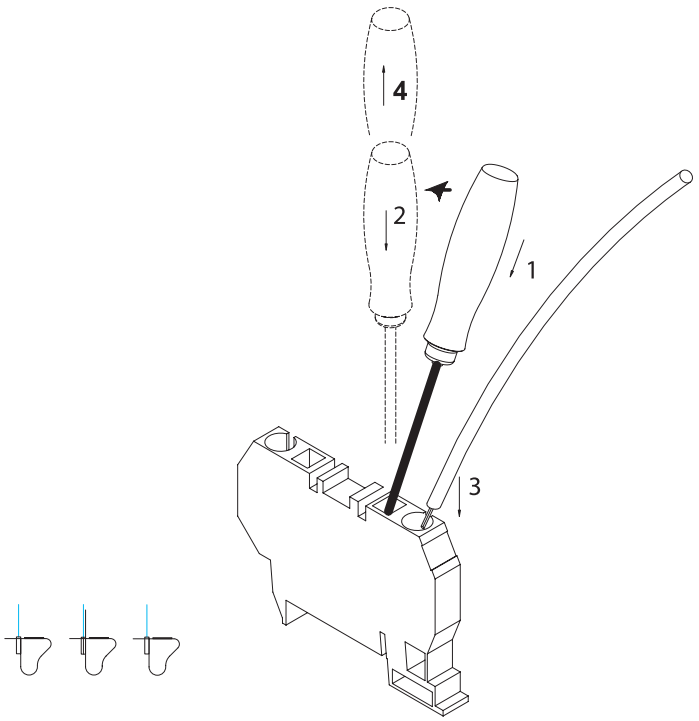
RECOMMENDED POWER WIRE SIZE TO Aqua Matic BOOSTER PUMP:

Operating Voltage	Phase	Maximum Load	Recommended Minimum Wire Size for Length of run		
			10 Ft / 3 meter	25 Ft / 8 meter	50 Ft / 15 meter
110-115 VAC	Single	9.4 Ampere	14 AWG / 2.5 mm^2	14 AWG / 2.5 mm^2	14 AWG / 2.5 mm^2
220-230 VAC	Single	4.7 Ampere	14 AWG / 2.5 mm^2	14 AWG / 2.5 mm^2	14 AWG / 2.5 mm^2
220-230 VAC	Three	2.5 Ampere	16 AWG / 1.5 mm^2	16 AWG / 1.5 mm^2	16 AWG / 1.5 mm^2
380 VAC	Three	1.5 Ampere	16 AWG / 1.5 mm^2	16 AWG / 1.5 mm^2	16 AWG / 1.5 mm^2
460 VAC	Three	1.2 Ampere	16 AWG / 1.5 mm^2	16 AWG / 1.5 mm^2	16 AWG / 1.5 mm^2

RECOMMENDED POWER WIRE SIZE TO Aqua Matic HIGH PRESSURE PUMP:

Operating Voltage	Phase	Maximum Load	Recommended Minimum Wire Size for Length of run		
			10 Ft / 3 meter	25 Ft / 8 meter	50 Ft / 15 meter
110-115 VAC	Single	25.5 Ampere	12 AWG / 4 mm^2	10 AWG / 6 mm^2	10 AWG / 6 mm^2
220-230 VAC	Single	12.7 Ampere	14 AWG / 2.5 mm^2	12 AWG / 4 mm^2	12 AWG / 4 mm^2
220-230 VAC	Three	7.9 Ampere	14 AWG / 2.5 mm^2	14 AWG / 2.5 mm^2	14 AWG / 2.5 mm^2
380 VAC	Three	4.6 Ampere	14 AWG / 2.5 mm^2	14 AWG / 2.5 mm^2	14 AWG / 2.5 mm^2
460 VAC	Three	3.8 Ampere	14 AWG / 2.5 mm^2	14 AWG / 2.5 mm^2	14 AWG / 2.5 mm^2

E. Illustrated method of Wire Insertion into terminal strips:



F. Wire Size Cross Reference American Wire Gauge (AWG) vs. Metric Wire Sizes

AWG	Diameter Inch	Square Inch (In^2)	Diameter Millimeters	Square Millimeters (mm^2)
0000	0.4600	0.1661	11.6840	107.1649
000	0.4096	0.1317	10.4038	84.9683
00	0.3648	0.1045	9.2659	67.3980
0	0.3249	0.0829	8.2525	53.4609
1	0.2893	0.0657	7.3482	42.3871
2	0.2576	0.0521	6.5430	33.6069
3	0.2294	0.0413	5.8268	26.6516
4	0.2043	0.0328	5.1892	21.1385
6	0.1620	0.0206	4.1148	13.2913
8	0.1285	0.0130	3.2639	8.3626
10	0.1019	0.0082	2.5883	5.2588
12	0.0808	0.0051	2.0523	3.3064
14	0.0641	0.0032	1.6281	2.0809
16	0.0508	0.0020	1.2903	1.3070
18	0.0403	0.0013	1.0236	0.8225
20	0.0320	0.0008	0.8128	0.5186
22	0.0254	0.0005	0.6452	0.3267

American Wire Gauge			Metric Wire Gauge		Metric Wire
AWG	dia inch	sq. inch	dia mm	sq mm	Size mm^2
0000	0.4600	0.1661	11.6840	107.1649	**100**
000	0.4096	0.1317	10.4038	84.9683	**85**
00	0.3648	0.1045	9.2659	67.3980	**65**
0	0.3249	0.0829	8.2525	53.4609	**50**
1	0.2893	0.0657	7.3482	42.3871	**40**
2	0.2576	0.0521	6.5430	33.6069	**32**
3	0.2294	0.0413	5.8268	26.6516	**32**
4	0.2043	0.0328	5.1892	21.1385	**19**
6	0.1620	0.0206	4.1148	13.2913	**13**
8	0.1285	0.0130	3.2639	8.3626	**8**
10	0.1019	0.0082	2.5883	5.2588	**5**
12	0.0808	0.0051	2.0523	3.3064	**3**
14	0.0641	0.0032	1.6281	2.0809	**2**
16	0.0508	0.0020	1.2903	1.3070	**1**
18	0.0403	0.0013	1.0236	0.8225	**0.8**
20	0.0320	0.0008	0.8128	0.5186	**0.5**
22	0.0254	0.0005	0.6452	0.3267	**0.35**

Aqua Matic COMPACT STYLE SYSTEM

REFER TO PAGES 8 - 21

Aqua Matic MODULAR STYLE SYSTEM

REFER TO PAGES 22 - 35

Aqua Matic COMPACT STYLE

Electrical Wire

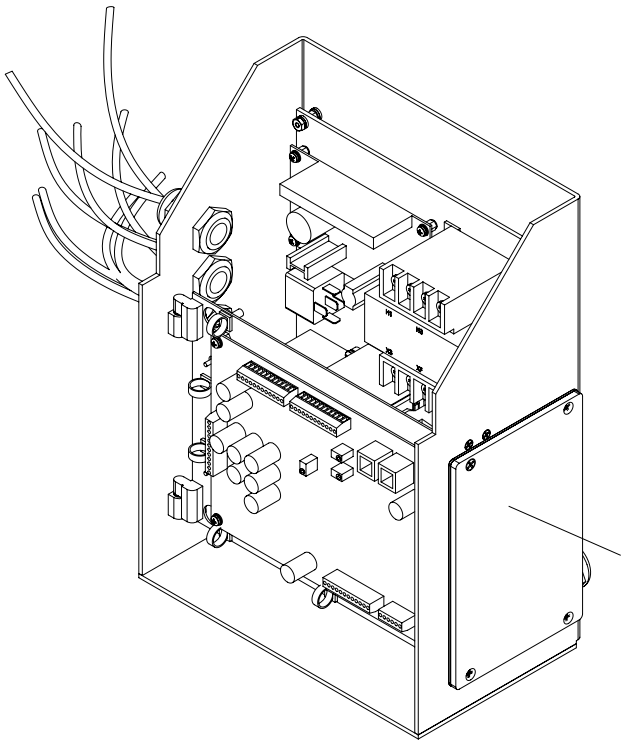
Routing & Connection

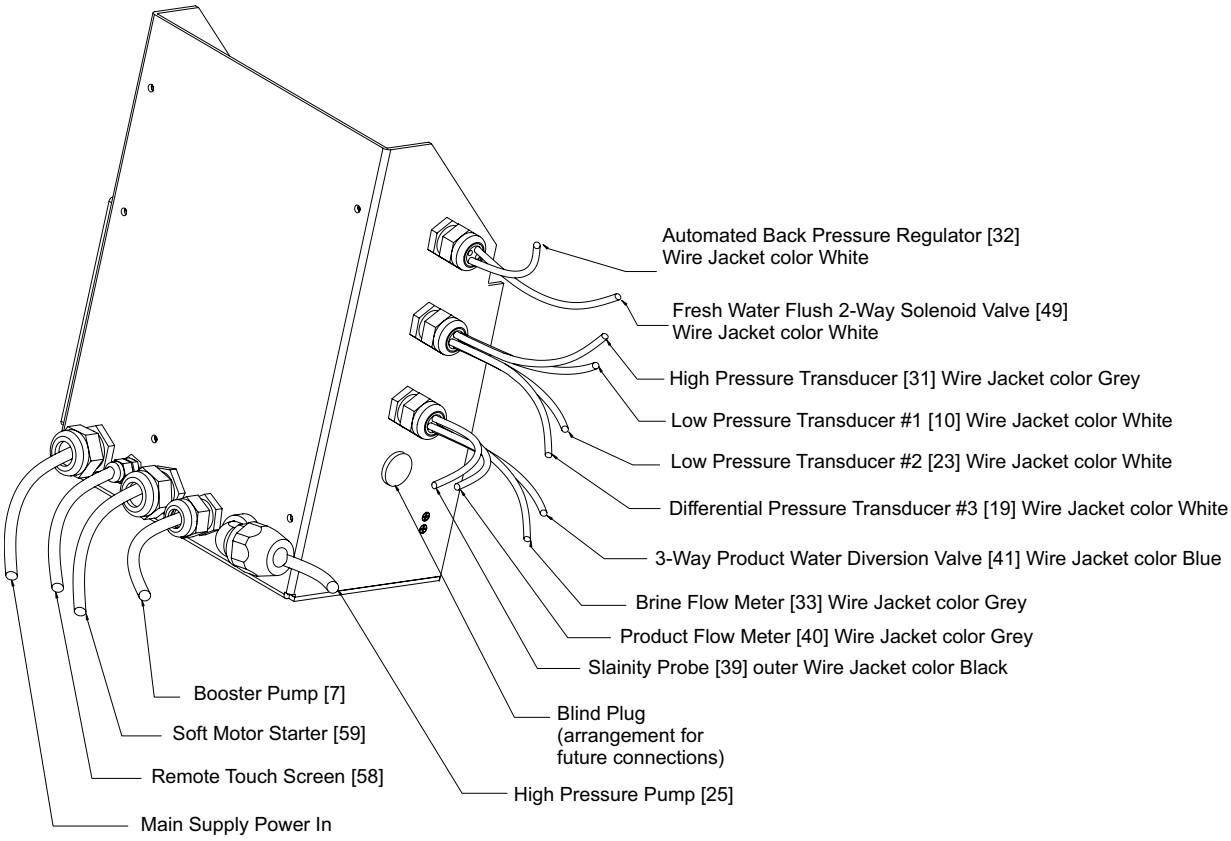
Illustrations

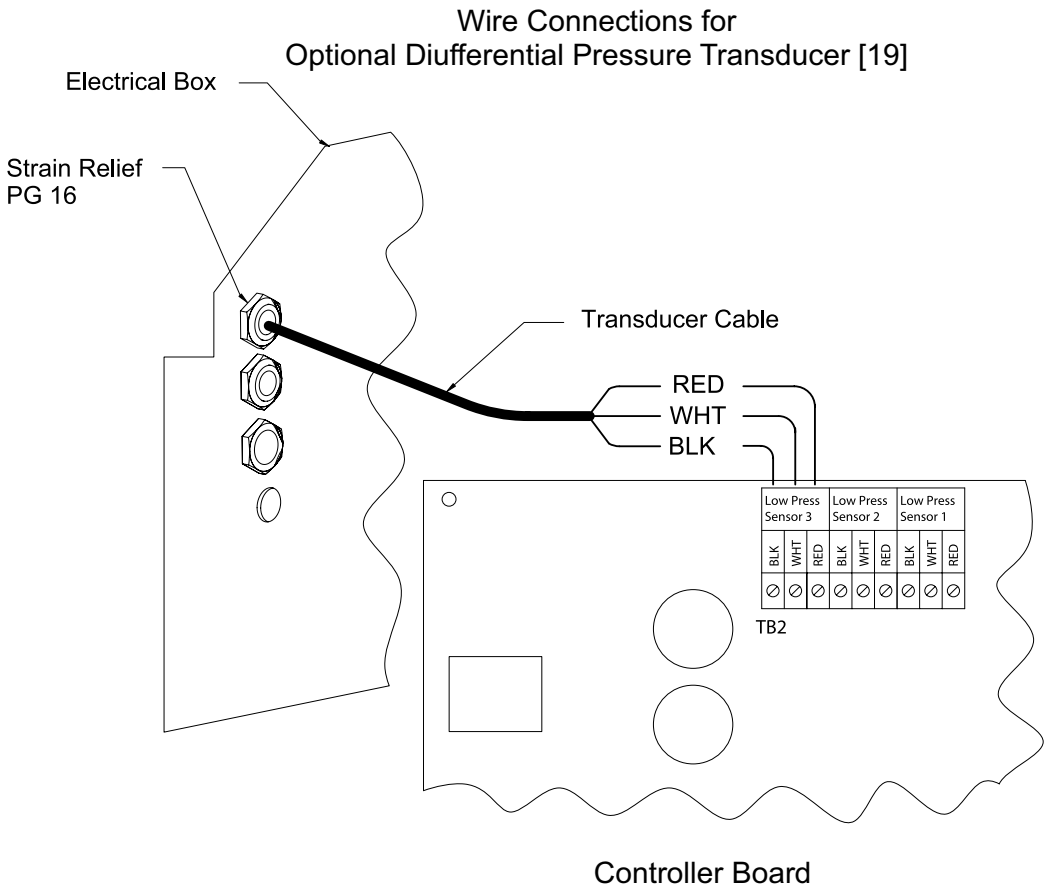
Pages 9 - 12

WARNING: ELECTRICAL SHOCK HAZARD. A Volt / Ohm Meter will be necessary. The following installation procedures expose the installer to High Voltage and electrical shock hazard. Only attempt this if you are a qualified electrician and only if surrounding conditions are safe.

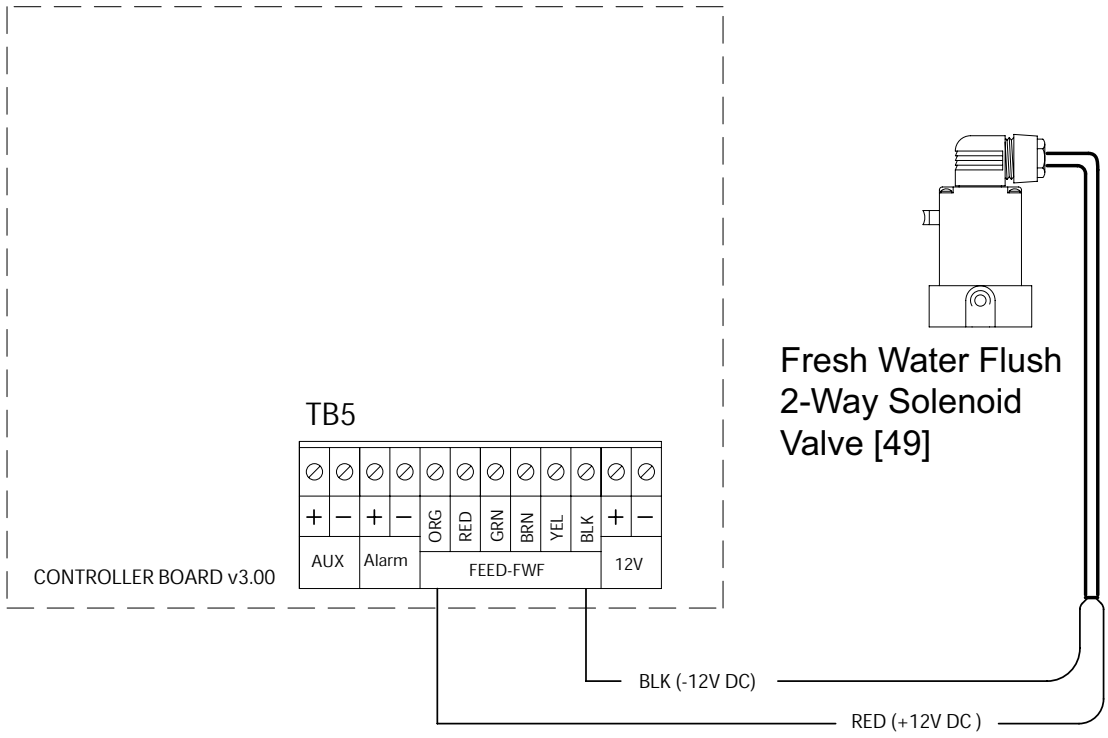
Electrical Box [57] v3.00



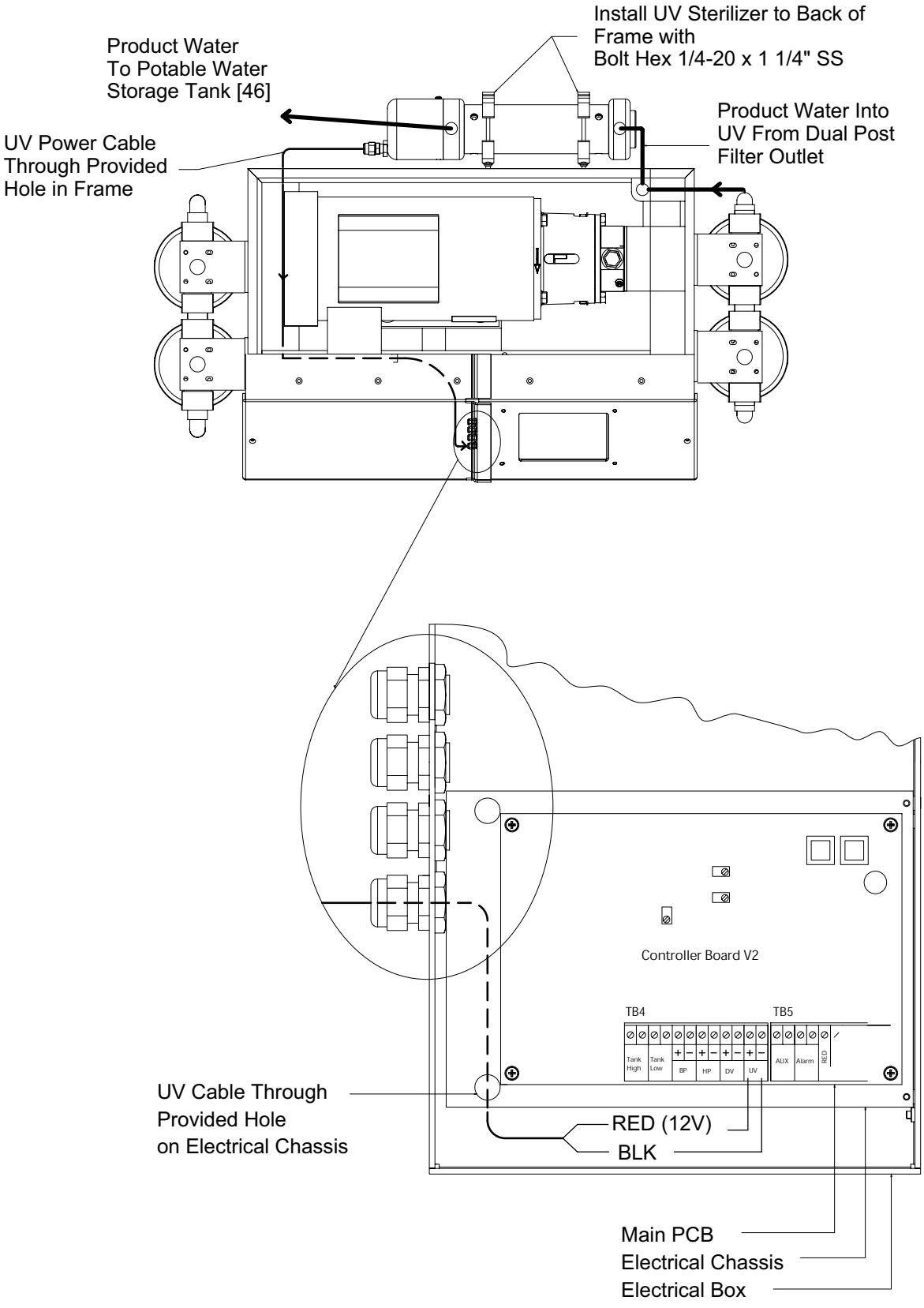




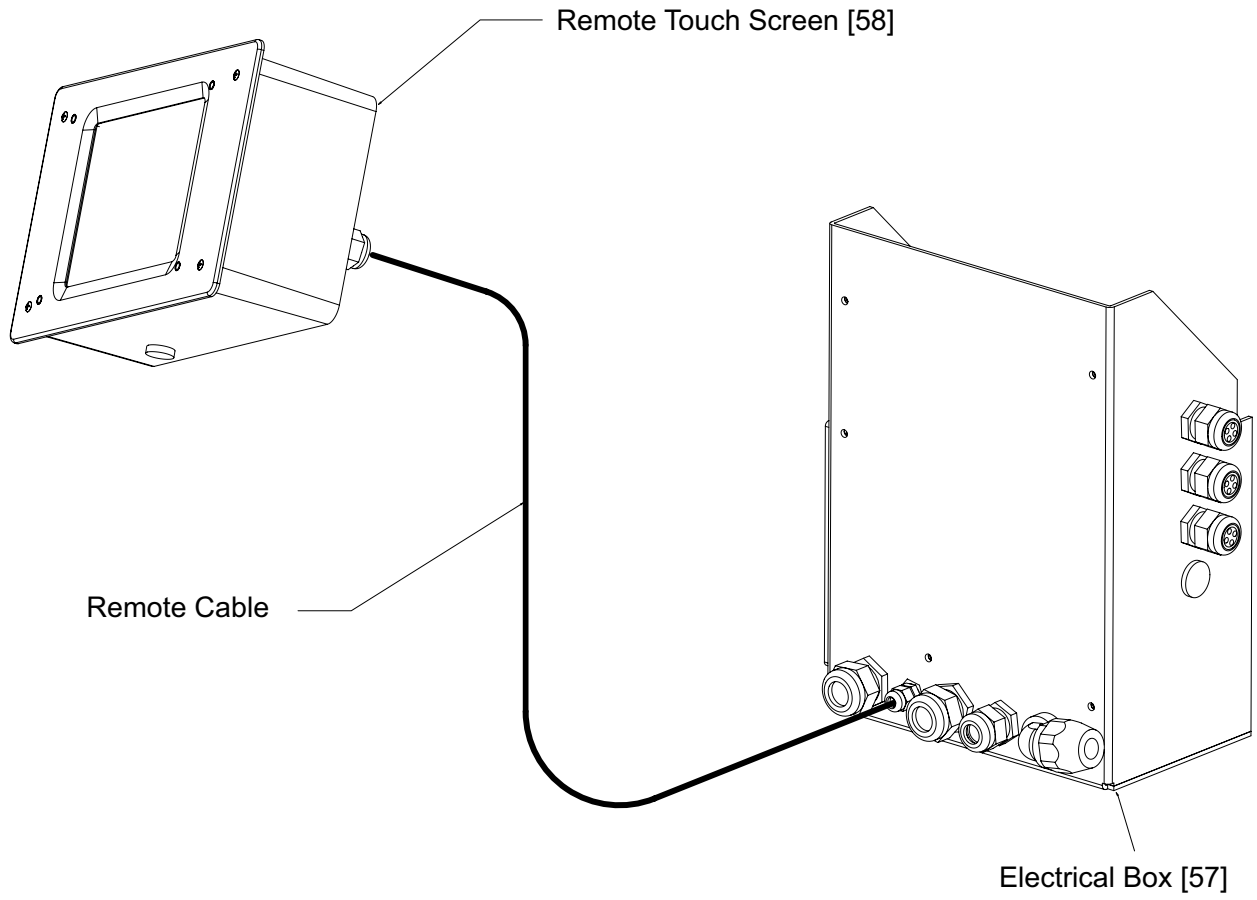
FRESH WATER FLUSH SOLENOID VALVE CONNECTIONS v3.00

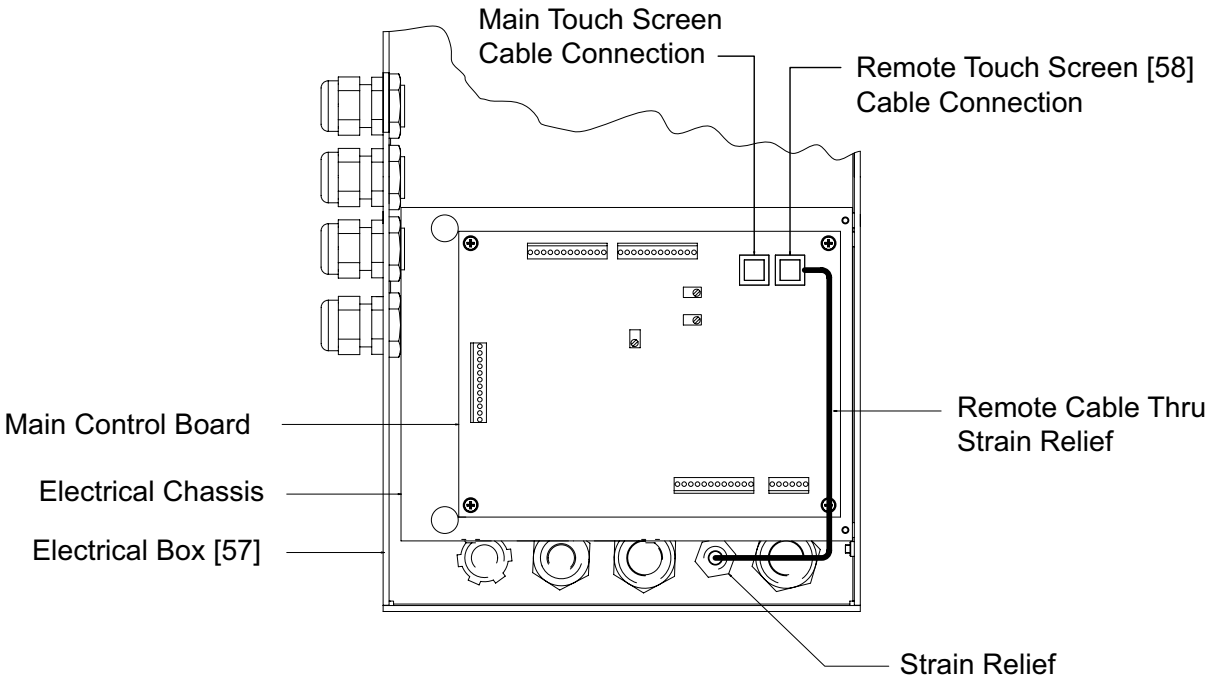


UV Sterilizer [44] Installation Version 2



Remote Touch Screen [58] Installation





Aqua Matic COMPACT STYLE

Electrical Line Drawings
&
Electrical Connections

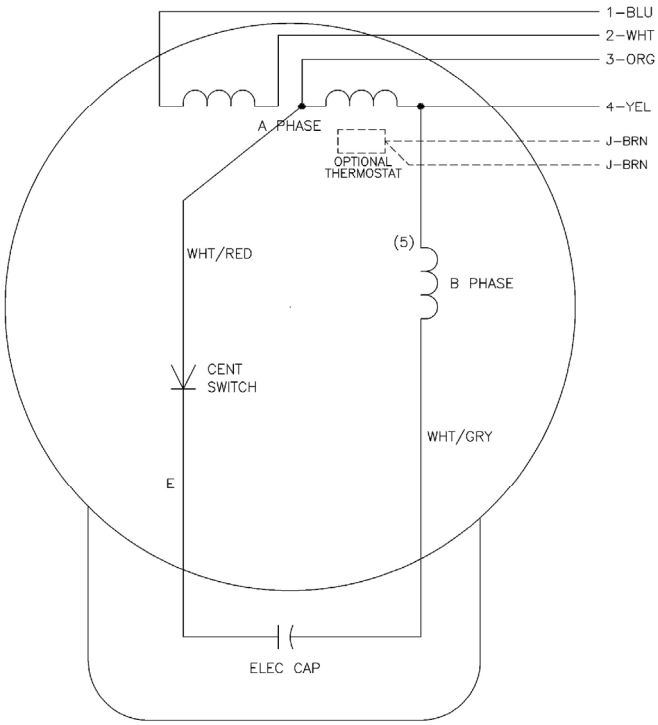
Electric Motor Connections

Power Connections

pages 14 - 17

WARNING: ELECTRICAL SHOCK HAZARD. A Volt / Ohm Meter will be necessary. The following installation procedures expose the installer to High Voltage and electrical shock hazard. Only attempt this if you are a qualified electrician and only if surrounding conditions are safe.

ELECTRIC MOTOR WINDING / WIRING DIAGRAMS
SINGLE PHASE, 50/60 Hz, 110 - 115 VAC // 220 - 230 VAC

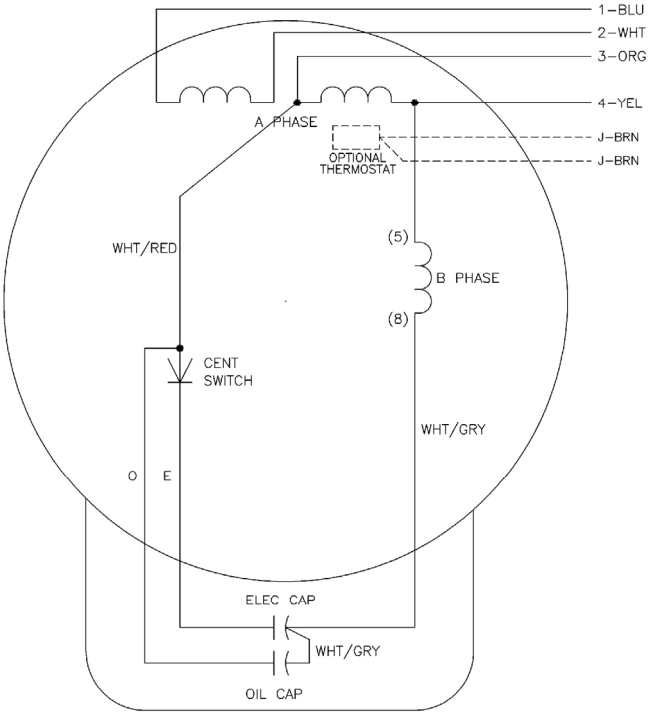


VOLTAGE	LINE A	LINE B	JOIN
220-230 VAC	1	4	2,3
110-115 VAC	1,3	2,4	–

NOTES:

1. CONNECTIONS ARE SHOWN FOR CCW ROTATION FACING END OPPOSITE SHAFT EXTENSION (STD). FOR CW ROTATION, INTERCHANGE 5 AND 8 INTERNALLY.
2. OPTIONAL THERMOSTAT IS PROVIDED WHEN SPECIFIED.
3. MULTIPLE CAPACITORS ARE CONNECTED IN PARALLEL UNLESS OTHERWISE SPECIFIED.
4. LEAD COLORS ARE OPTIONAL. LEADS MUST ALWAYS BE NUMBERED AS SHOWN.

Sea Recovery Aqua Matic
BOOSTER PUMP
ELECTRIC MOTOR
WINDINGS DIAGRAM CD0093
SINGLE PHASE
50/60 Hz
110 - 115 VAC // 220 - 230 VAC
RPM @ 50 Hz 2850 - @ 60 Hz 3450



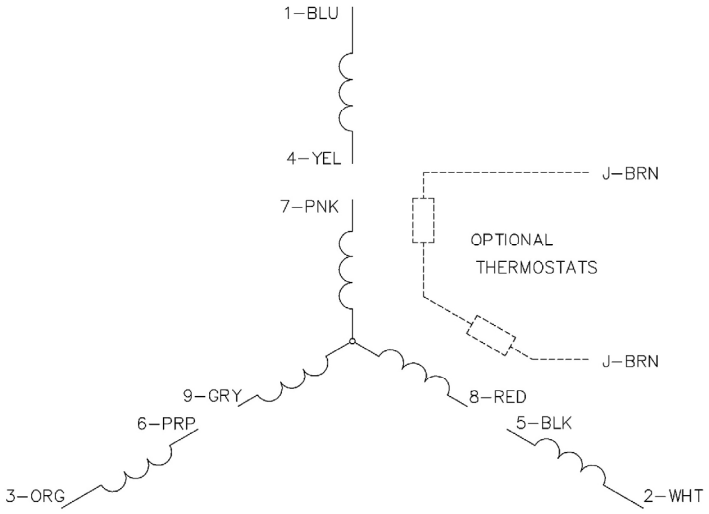
VOLTAGE	LINE A	LINE B	JOIN
220 - 230 VAC	1	4	2,3
110 - 115 VAC	1,3	2,4	–

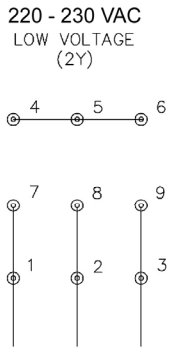
NOTES:

1. CONNECTIONS ARE SHOWN FOR CCW ROTATION FACING END OPPOSITE SHAFT EXTENSION (STD). FOR CW ROTATION, INTERCHANGE 5 AND 8 INTERNALLY.
2. OPTIONAL THERMOSTAT IS PROVIDED WHEN SPECIFIED.
3. MULTIPLE CAPACITORS ARE CONNECTED IN PARALLEL UNLESS OTHERWISE SPECIFIED.
4. LEAD COLORS ARE OPTIONAL. LEADS MUST ALWAYS BE NUMBERED AS SHOWN.

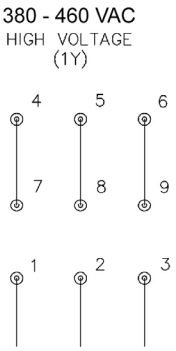
Sea Recovery Aqua Matic
HIGH PRESSURE PUMP
ELECTRIC MOTOR
WINDINGS DIAGRAM CD0762
SINGLE PHASE
50/60 Hz
110 - 115 VAC // 220 - 230 VAC
RPM @ 50 Hz 2850 - @ 60 Hz 3450

ELECTRIC MOTOR WINDING / WIRING DIAGRAMS
THREE PHASE, 50/60 Hz, 220 - 230 VAC // 380 - 460 VAC





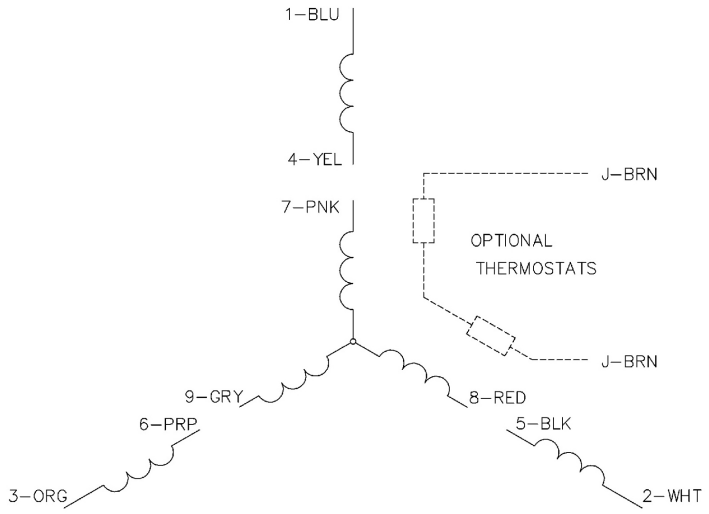
LINE LEADS
220 - 230 VAC

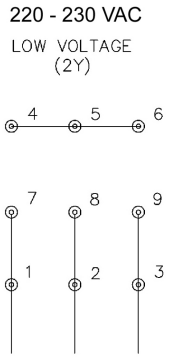


LINE LEADS
380 - 460 VAC

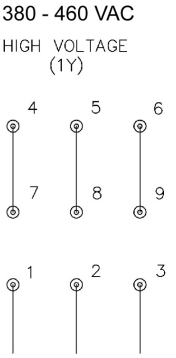
NOTES:
1. INTERCHANGE ANY TWO LINE LEADS TO REVERSE ROTATION.
2. OPTIONAL THERMOSTATS ARE PROVIDED WHEN SPECIFIED.
3. ACTUAL NUMBER OF INTERNAL PARALLEL CIRCUITS MAY BE A MULTIPLE OF THOSE SHOWN ABOVE.
4. LEAD COLORS ARE OPTIONAL. LEADS MUST ALWAYS BE NUMBERED AS SHOWN.

Sea Recovery Aqua Matic
BOOSTER PUMP
ELECTRIC MOTOR
WINDINGS DIAGRAM CD0005
THREE PHASE
50/60 Hz
220 - 230 VAC // 380 - 460 VAC
RPM @ 50 Hz 2850 - @ 60 Hz 3450





LINE LEADS
220 - 230 VAC



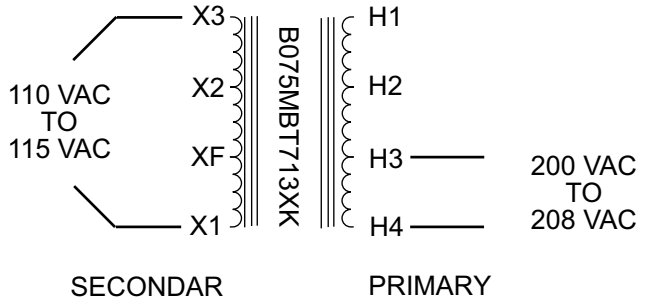
LINE LEADS
380 - 460 VAC

NOTES:
1. INTERCHANGE ANY TWO LINE LEADS TO REVERSE ROTATION.
2. OPTIONAL THERMOSTATS ARE PROVIDED WHEN SPECIFIED.
3. ACTUAL NUMBER OF INTERNAL PARALLEL CIRCUITS MAY BE A MULTIPLE OF THOSE SHOWN ABOVE.
4. LEAD COLORS ARE OPTIONAL. LEADS MUST ALWAYS BE NUMBERED AS SHOWN.

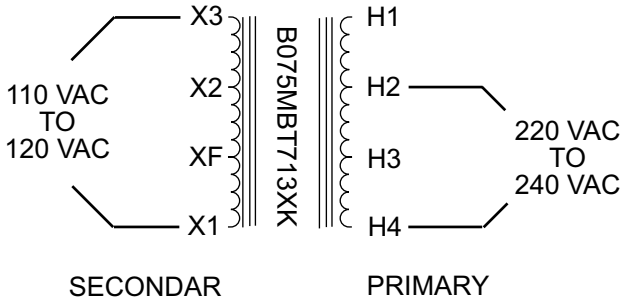
Sea Recovery Aqua Matic
HIGH PRESSURE PUMP
ELECTRIC MOTOR
WINDING DIAGRAM CD0005
THREE PHASE
50/60 Hz
220 - 230 VAC // 380 - 460 VAC
RPM @ 50 Hz 2850 - @ 60 Hz 3450

Three Phase Power Supplied to the Aqua Matic System Step Down Transformer Primary and Secondary (inside the System Control Box) Wiring and Voltages

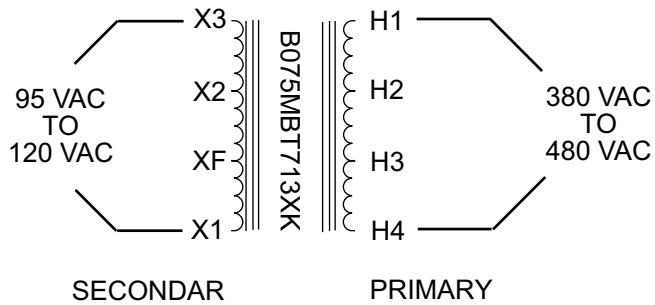
Three Phase Aqua Matic System Voltage from 200 VAC to 208 VAC

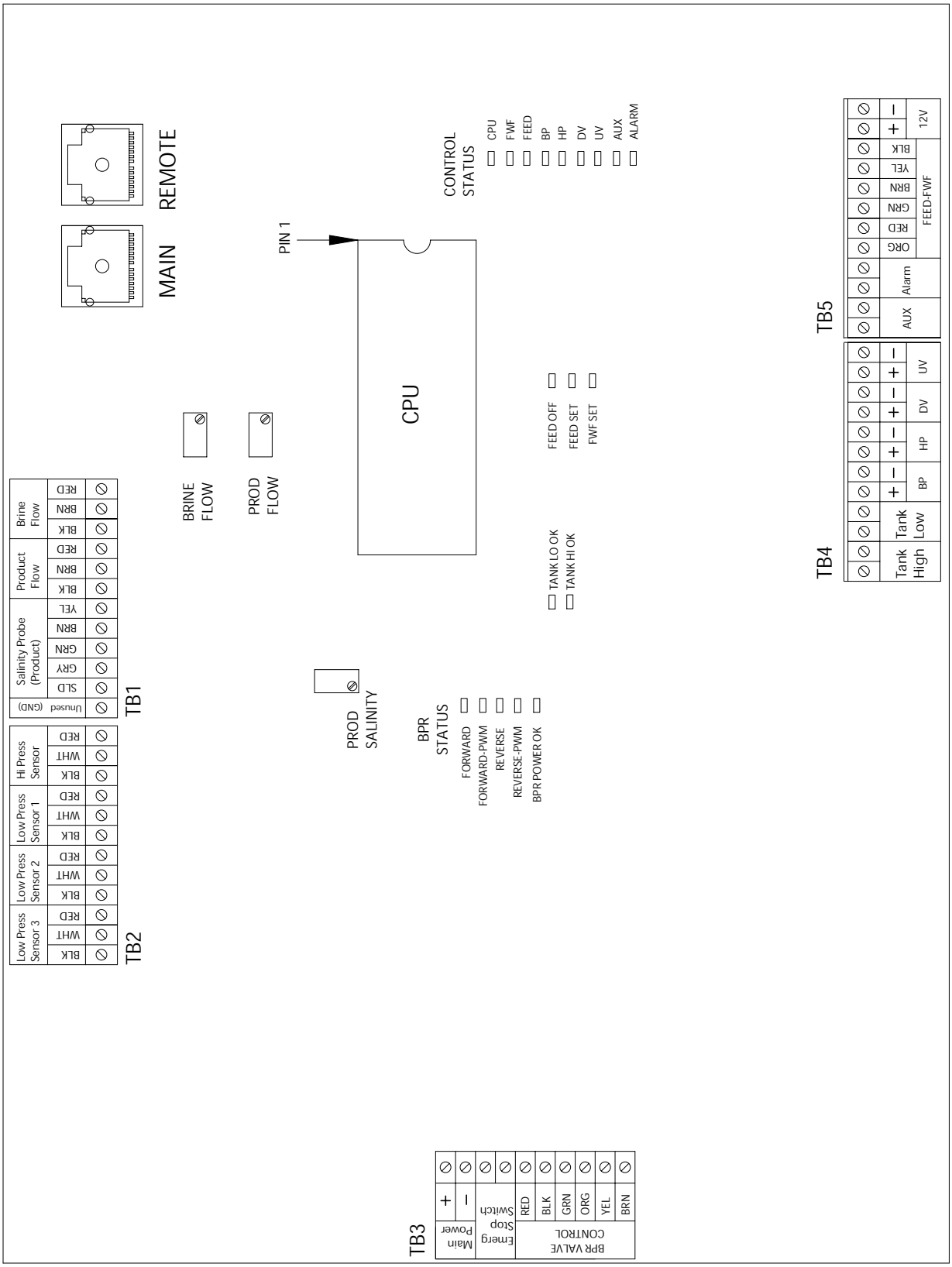


Three Phase Aqua Matic System Voltage from 220 VAC to 240 VAC



Three Phase Aqua Matic System Voltage from 380 VAC to 480 VAC



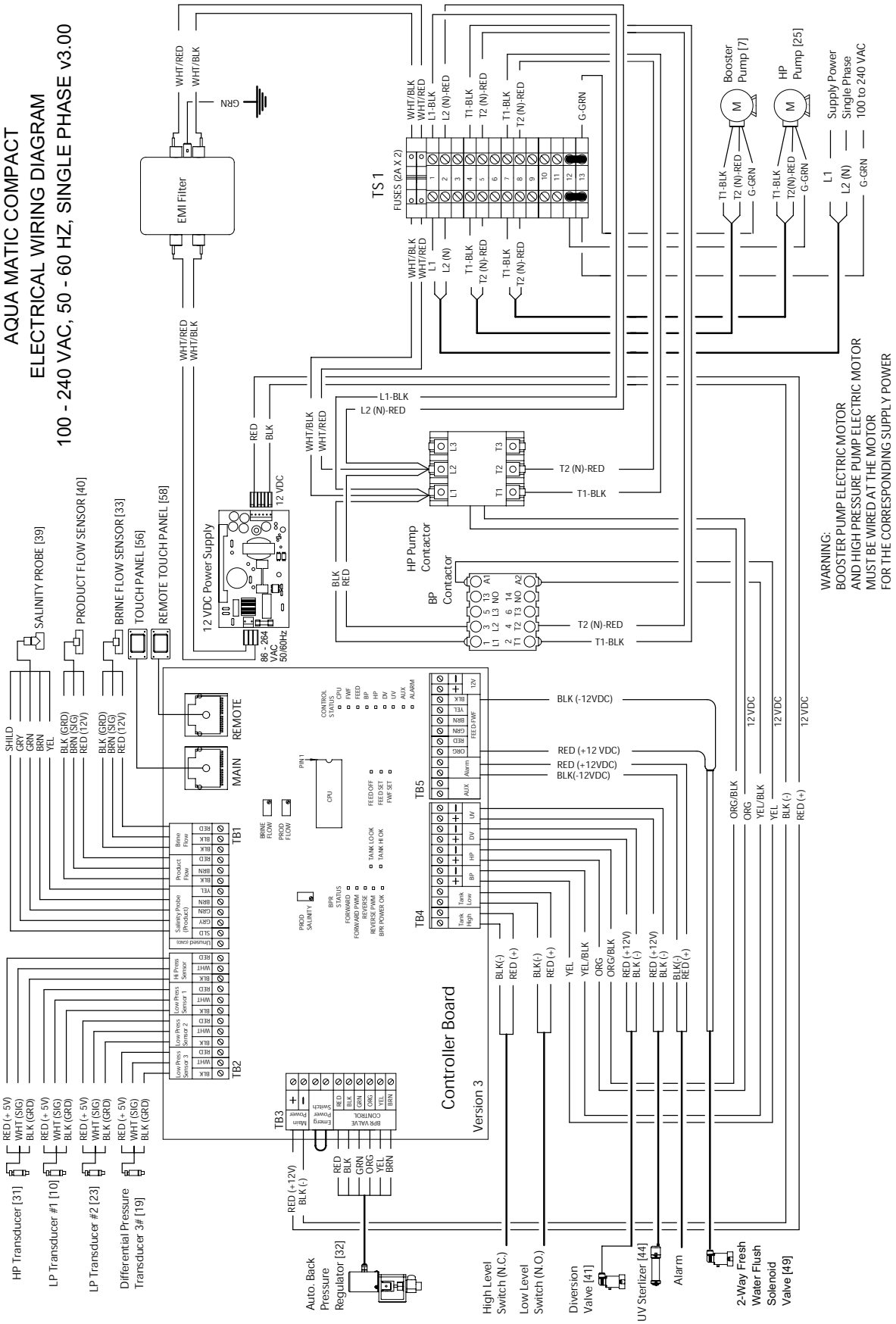

Controller Board
VERSION: 3
MAIN
REMOTE
TB1
Unused (GND)
Salinity Probe (Product)
SLD
GRY
GRN
BRN
YEL
Product Flow
BLK
BRN
RED
Brine Flow
BLK
BRN
RED
TB2
Low Press Sensor 3
Low Press Sensor 2
Low Press Sensor 1
Hi Press Sensor
BLK
WHT
RED
TB3
Main Power
+
–
Emerg Stop Switch
BPR VALVE CONTROL
RED
BLK
GRN
ORG
YEL
BRN
TB4
Tank High
Tank Low
BP
HP
DV
UV
TB5
AUX
Alarm
FEED-FWF
ORG
RED
GRN
BRN
YEL
BLK
12V
PIN 1
CPU
CONTROL STATUS
CPU
FWF
FEED
BP
HP
DV
UV
AUX
ALARM
BRINE FLOW
PROD FLOW
PROD SALINITY
BPR STATUS
FORWARD
FORWARD-PWM
REVERSE
REVERSE-PWM
BPR POWER OK
TANK LO OK
TANK HI OK
FEED OFF
FEED SET
FWF SET

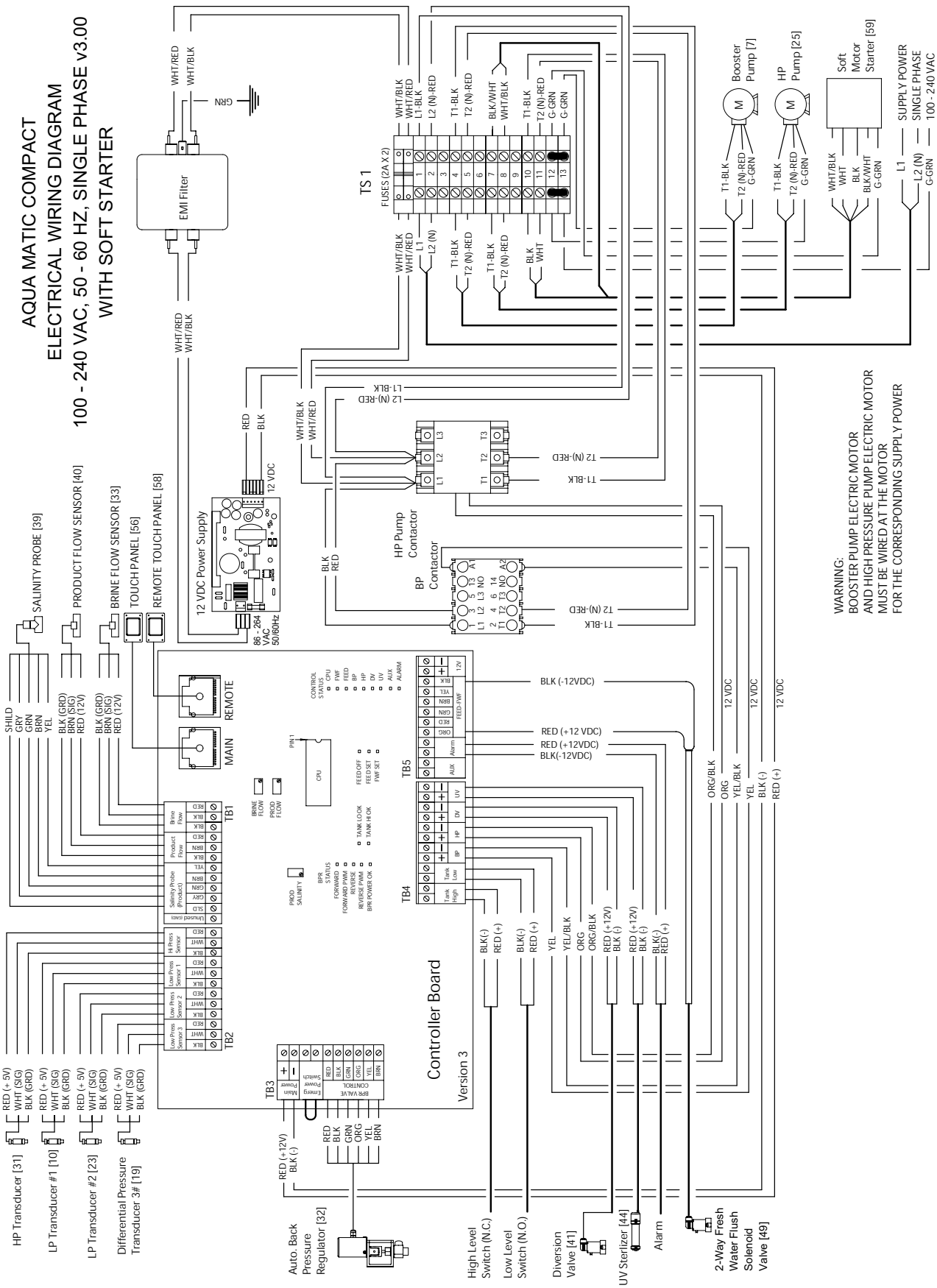
Aqua Matic COMPACT STYLE

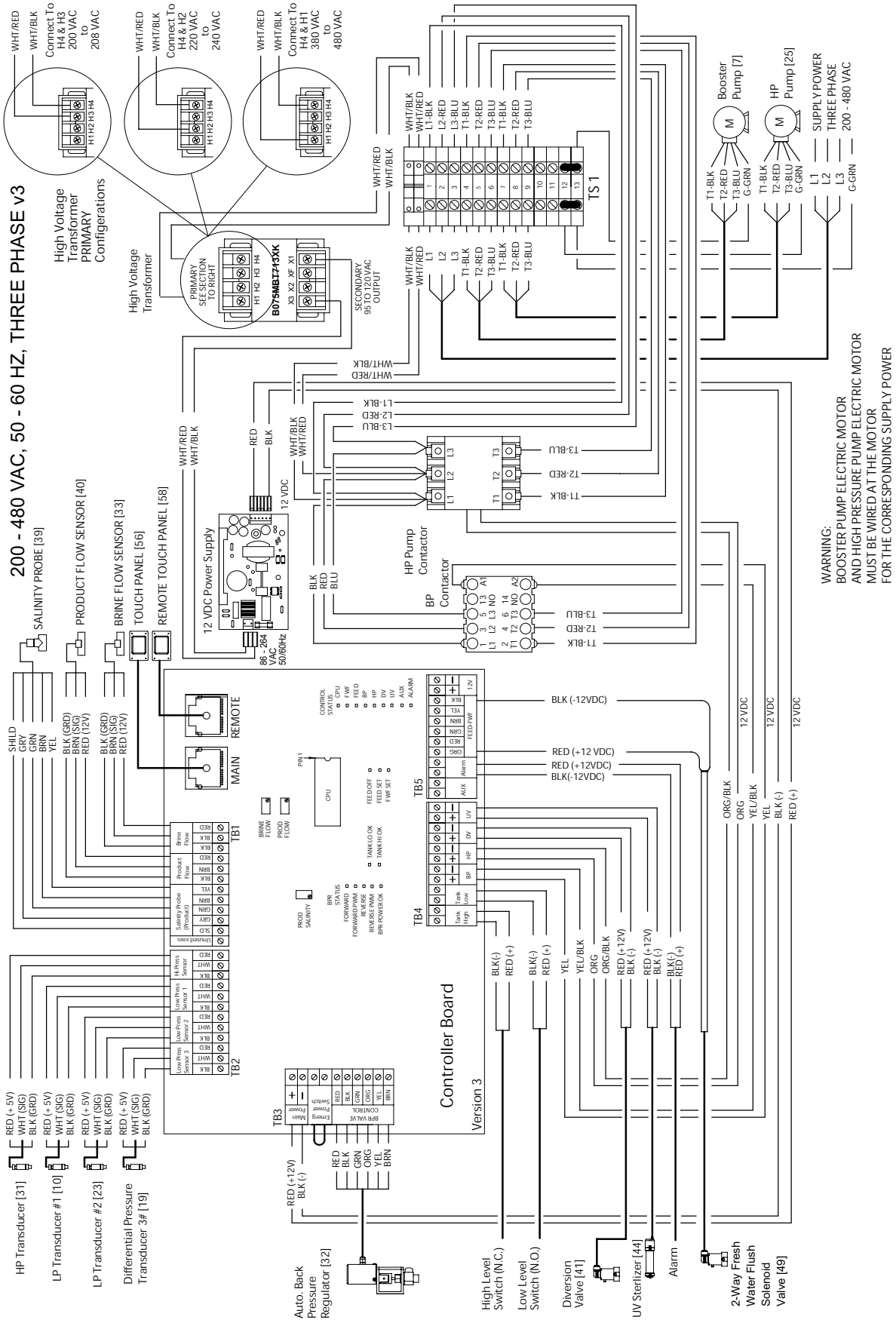
Wiring Diagrams

pages 19 - 21

WARNING: ELECTRICAL SHOCK HAZARD. A Volt / Ohm Meter will be necessary. The following installation procedures expose the installer to High Voltage and electrical shock hazard. Only attempt this if you are a qualified electrician and only if surrounding conditions are safe.


AQUA MATIC COMPACT
ELECTRICAL WIRING DIAGRAM
100 - 240 VAC, 50 - 60 HZ, SINGLE PHASE v3.00
EMI Filter
TS 1
FUSES (2A X 2)
Booster Pump [7]
HP Pump [25]
Supply Power
Single Phase
100 to 240 VAC
12 VDC Power Supply
HP Pump Contactor
BP Contactor
SALINITY PROBE [39]
PRODUCT FLOW SENSOR [40]
BRINE FLOW SENSOR [33]
TOUCH PANEL [56]
REMOTE TOUCH PANEL [58]
REMOTE
MAIN
Controller Board
Version 3
TB1
TB2
TB3
TB4
TB5
HP Transducer [31]
LP Transducer #1 [10]
LP Transducer #2 [23]
Differential Pressure Transducer 3# [19]
Auto. Back Pressure Regulator [32]
High Level Switch (N.C.)
Low Level Switch (N.O.)
Diversion Valve [41]
UV Sterlizer [44]
Alarm
2-Way Fresh Water Flush Solenoid Valve [49]
WARNING:
BOOSTER PUMP ELECTRIC MOTOR
AND HIGH PRESSURE PUMP ELECTRIC MOTOR
MUST BE WIRED AT THE MOTOR
FOR THE CORRESPONDING SUPPLY POWER


AQUA MATIC COMPACT
ELECTRICAL WIRING DIAGRAM
100 - 240 VAC, 50 - 60 HZ, SINGLE PHASE v3.00
WITH SOFT STARTER
Controller Board
Version 3
EMI Filter
TS 1
FUSES (2A X 2)
12 VDC Power Supply
86 - 264 VAC 50/60Hz
HP Pump Contactor
BP Contactor
Booster Pump [7]
HP Pump [25]
Soft Motor Starter [59]
SUPPLY POWER
SINGLE PHASE
100 - 240 VAC
SALINITY PROBE [39]
PRODUCT FLOW SENSOR [40]
BRINE FLOW SENSOR [33]
TOUCH PANEL [56]
REMOTE TOUCH PANEL [58]
HP Transducer [31]
LP Transducer #1 [10]
LP Transducer #2 [23]
Differential Pressure Transducer 3# [19]
Auto. Back Pressure Regulator [32]
High Level Switch (N.C.)
Low Level Switch (N.O.)
Diversion Valve [41]
UV Sterilizer [44]
Alarm
2-Way Fresh Water Flush Solenoid Valve [49]
WARNING:
BOOSTER PUMP ELECTRIC MOTOR
AND HIGH PRESSURE PUMP ELECTRIC MOTOR
MUST BE WIRED AT THE MOTOR
FOR THE CORRESPONDING SUPPLY POWER


AQUA MATIC COMPACT
ELECTRICAL WIRING DIAGRAM
200 - 480 VAC, 50 - 60 HZ, THREE PHASE v3
High Voltage Transformer PRIMARY Configerations
Connect To H4 & H3 200 VAC to 208 VAC
Connect To H4 & H2 220 VAC to 240 VAC
Connect To H4 & H1 380 VAC to 480 VAC
High Voltage Transformer
PRIMARY SEE SECTION TO RIGHT
SECONDARY 95 TO 120 VAC OUTPUT
B075MBT143XK
TS 1
Booster Pump [7]
HP Pump [25]
SUPPLY POWER THREE PHASE 200 - 480 VAC
WARNING:
BOOSTER PUMP ELECTRIC MOTOR
AND HIGH PRESSURE PUMP ELECTRIC MOTOR
MUST BE WIRED AT THE MOTOR
FOR THE CORRESPONDING SUPPLY POWER
12 VDC Power Supply
86 - 264 VAC 50/60Hz
HP Pump Contactor
BP Contactor
SALINITY PROBE [39]
PRODUCT FLOW SENSOR [40]
BRINE FLOW SENSOR [33]
TOUCH PANEL [56]
REMOTE TOUCH PANEL [58]
REMOTE
MAIN
Controller Board
Version 3
CPU
TB1
TB2
TB3
TB4
TB5
HP Transducer [31]
LP Transducer #1 [10]
LP Transducer #2 [23]
Differential Pressure Transducer 3# [19]
Auto. Back Pressure Regulator [32]
High Level Switch (N.C.)
Low Level Switch (N.O.)
Diversion Valve [41]
UV Sterlizer [44]
Alarm
2-Way Fresh Water Flush Solenoid Valve [49]

Aqua Matic MODULAR STYLE

Electrical Wire

Routing & Connection

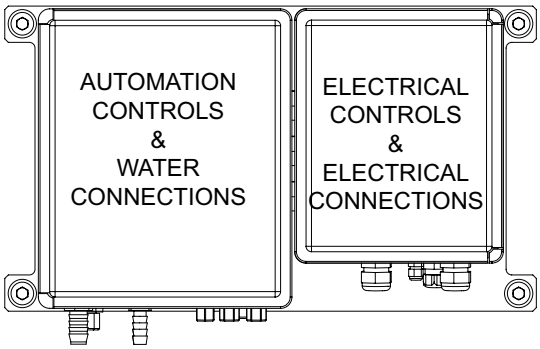
Illustrations

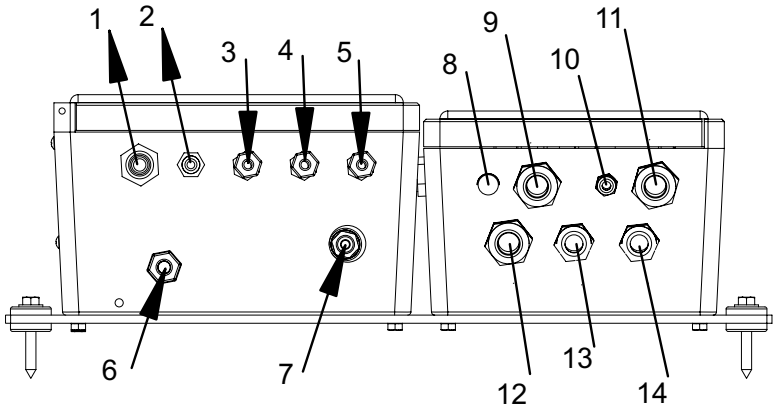
Pages 23 - 25

WARNING: ELECTRICAL SHOCK HAZARD. A Volt / Ohm Meter will be necessary. The following installation procedures expose the installer to High Voltage and electrical shock hazard. Only attempt this if you are a qualified electrician and only if surrounding conditions are safe.

Aqua Matic Modular Control Panel.
Automation Control Box water connections
and
Electrical Control Box Electrical Strain Relief Identification

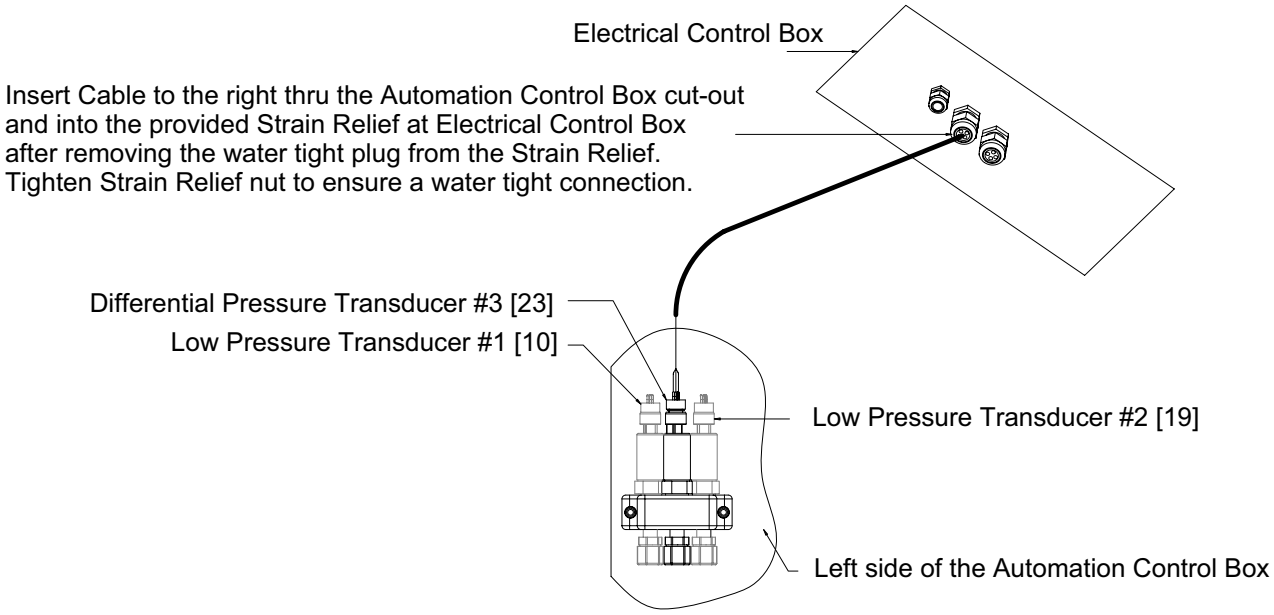
AQUA MATIC MODULAR STYLE
CCONTROL PANEL
AUTOMATION AND ELECTRICAL CONTROLS

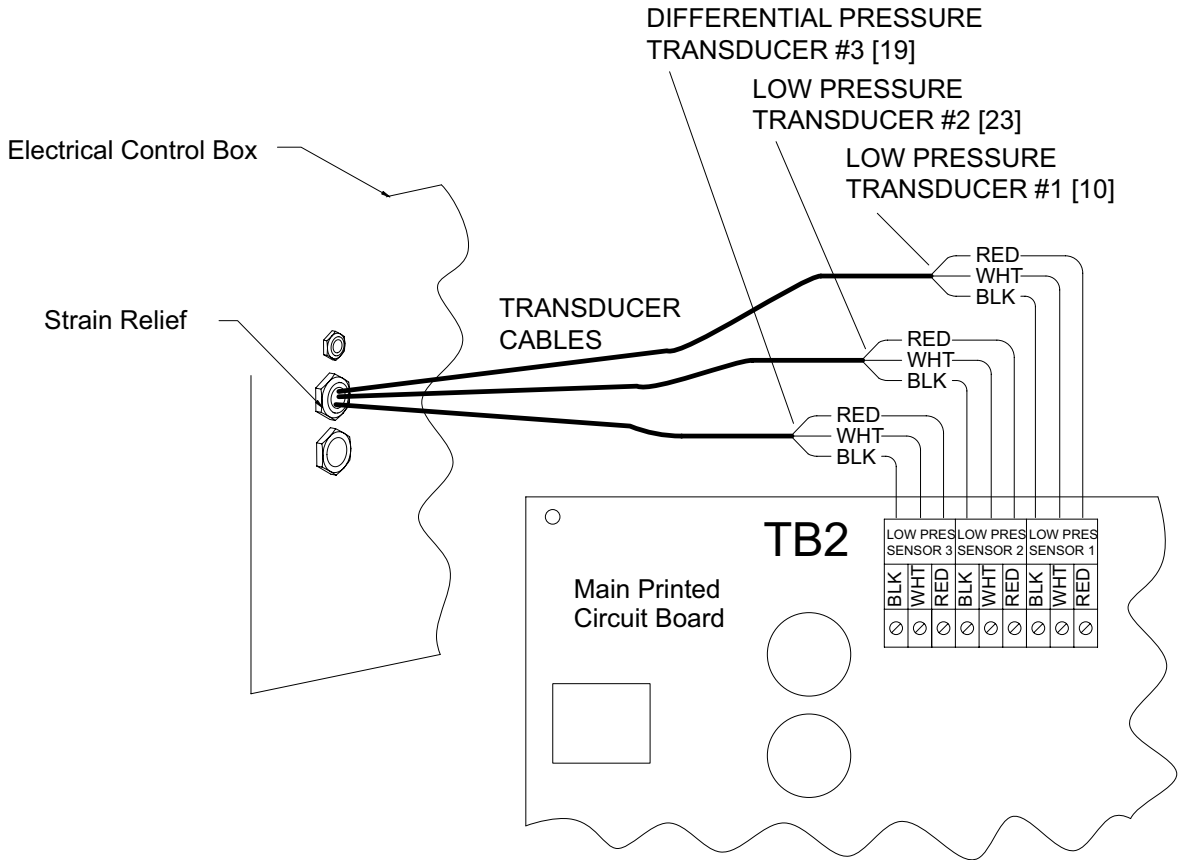




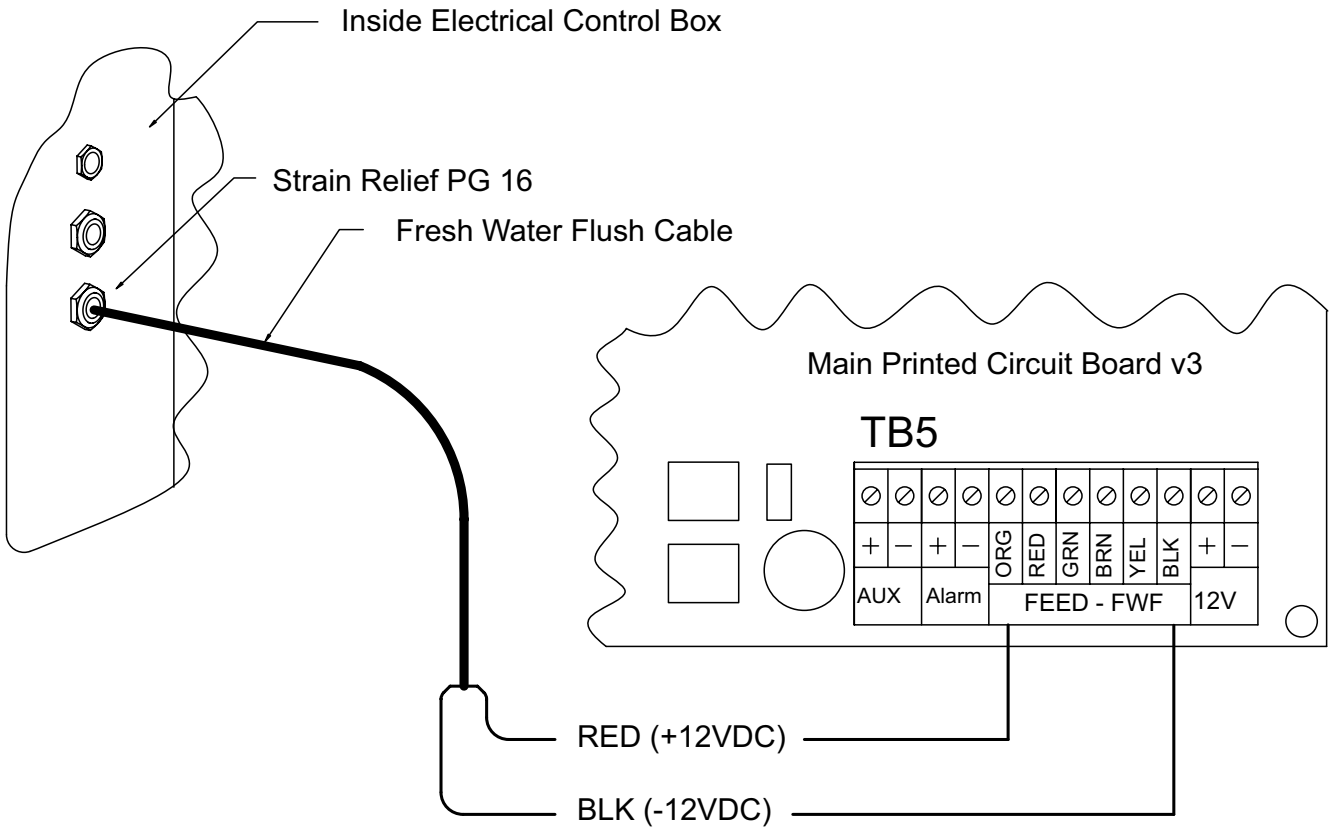
1. BRINE DISCHARGE OUT TO OVER BOARD DISCHARGE THRU-HULL FITTING
2. POTALBE PRODUCT WATER OUT TO POST FILTRATION
3. LOW PRESSURE TRANSDUCER #1 [10] PRESSURE PICK UP FROM INLINE TEE
4. LOW PRESSURE TRANSDUCER #2 [23] PRESSURE PICK UP FROM INLINE TEE
5. DIFFERENTIAL PRESSURE TRANSDUCER #3 [19] PRESSURE PICK UP FROM INLINE TEE
6. PRODUCT WATER IN FROM MEMBRANE VESSEL OUTLET
7. HIGH PRESSURE BRINE WATER INLET FROM MEMBRANE VESSEL OUTLET
8. REMOTE TOUCH PAD
9. SOFT MOTOR STARTER
10. LOCAL/MAIN TOUCH PAD
11. MAIN POWER
12. HIGH PRESSURE PUMP MOTOR
13. BOOSTER PUMP MOTOR
14. FRESH WATER FLUSH

LOW PRESSURE AND DIFFERENTIAL PRESSURE TRANSDUCER ELECTRICAL CONNECTIONS





FRESH WATER FLUSH SOLENOID VALVE CONNECTIONS



Aqua Matic MODULAR STYLE

Electrical Line Drawings
&
Electrical Connections

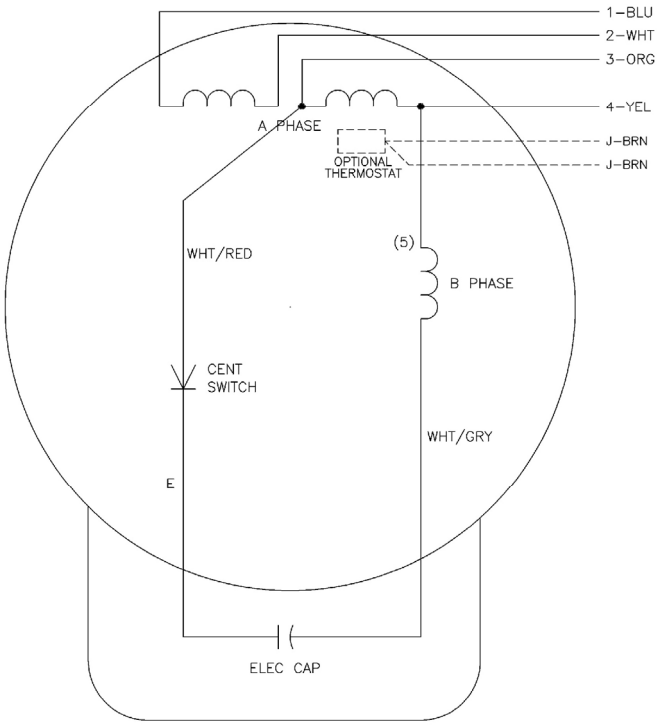
Electric Motor Connections

Power Connections

pages 27 - 31

WARNING: ELECTRICAL SHOCK HAZARD. A Volt / Ohm Meter will be necessary. The following installation procedures expose the installer to High Voltage and electrical shock hazard. Only attempt this if you are a qualified electrician and only if surrounding conditions are safe.

ELECTRIC MOTOR WINDING / WIRING DIAGRAMS
SINGLE PHASE, 50/60 Hz, 110 - 115 VAC // 220 - 230 VAC

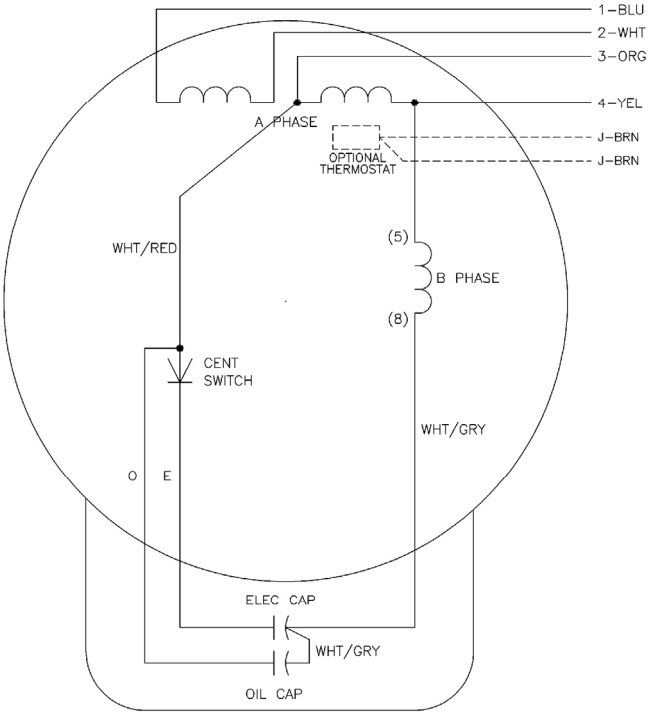


VOLTAGE	LINE A	LINE B	JOIN
220-230 VAC	1	4	2,3
110-115 VAC	1,3	2,4	–

NOTES:

1. CONNECTIONS ARE SHOWN FOR CCW ROTATION FACING END OPPOSITE SHAFT EXTENSION (STD). FOR CW ROTATION, INTERCHANGE 5 AND 8 INTERNALLY.
2. OPTIONAL THERMOSTAT IS PROVIDED WHEN SPECIFIED.
3. MULTIPLE CAPACITORS ARE CONNECTED IN PARALLEL UNLESS OTHERWISE SPECIFIED.
4. LEAD COLORS ARE OPTIONAL. LEADS MUST ALWAYS BE NUMBERED AS SHOWN.

Sea Recovery Aqua Matic
BOOSTER PUMP
ELECTRIC MOTOR
WINDINGS DIAGRAM CD0093
SINGLE PHASE
50/60 Hz
110 - 115 VAC // 220 - 230 VAC
RPM @ 50 Hz 2850 - @ 60 Hz 3450



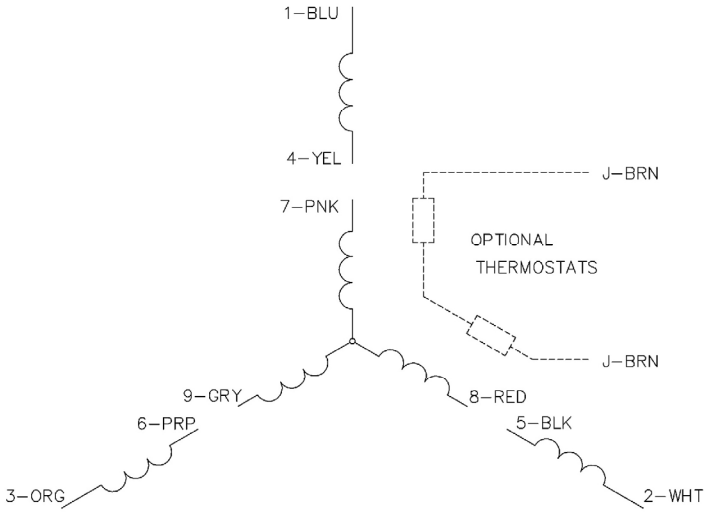
VOLTAGE	LINE A	LINE B	JOIN
220 - 230 VAC	1	4	2,3
110 - 115 VAC	1,3	2,4	–

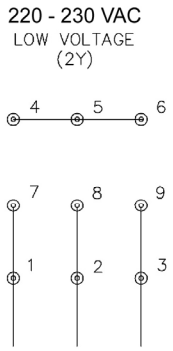
NOTES:

1. CONNECTIONS ARE SHOWN FOR CCW ROTATION FACING END OPPOSITE SHAFT EXTENSION (STD). FOR CW ROTATION, INTERCHANGE 5 AND 8 INTERNALLY.
2. OPTIONAL THERMOSTAT IS PROVIDED WHEN SPECIFIED.
3. MULTIPLE CAPACITORS ARE CONNECTED IN PARALLEL UNLESS OTHERWISE SPECIFIED.
4. LEAD COLORS ARE OPTIONAL. LEADS MUST ALWAYS BE NUMBERED AS SHOWN.

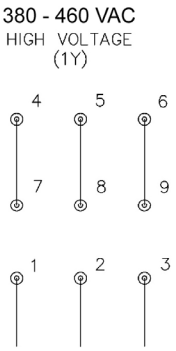
Sea Recovery Aqua Matic
HIGH PRESSURE PUMP
ELECTRIC MOTOR
WINDINGS DIAGRAM CD0762
SINGLE PHASE
50/60 Hz
110 - 115 VAC // 220 - 230 VAC
RPM @ 50 Hz 2850 - @ 60 Hz 3450

ELECTRIC MOTOR WINDING / WIRING DIAGRAMS
THREE PHASE, 50/60 Hz, 220 - 230 VAC // 380 - 460 VAC





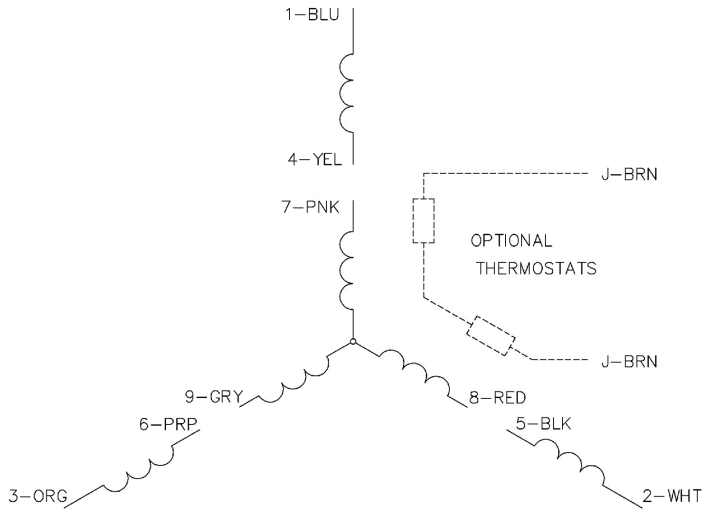
LINE LEADS
220 - 230 VAC

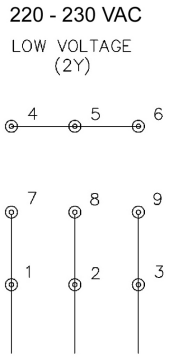


LINE LEADS
380 - 460 VAC

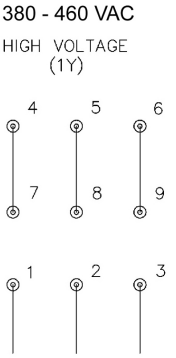
NOTES:
1. INTERCHANGE ANY TWO LINE LEADS TO REVERSE ROTATION.
2. OPTIONAL THERMOSTATS ARE PROVIDED WHEN SPECIFIED.
3. ACTUAL NUMBER OF INTERNAL PARALLEL CIRCUITS MAY BE A MULTIPLE OF THOSE SHOWN ABOVE.
4. LEAD COLORS ARE OPTIONAL. LEADS MUST ALWAYS BE NUMBERED AS SHOWN.

Sea Recovery Aqua Matic
BOOSTER PUMP
ELECTRIC MOTOR
WINDINGS DIAGRAM CD0005
THREE PHASE
50/60 Hz
220 - 230 VAC // 380 - 460 VAC
RPM @ 50 Hz 2850 - @ 60 Hz 3450





LINE LEADS
220 - 230 VAC



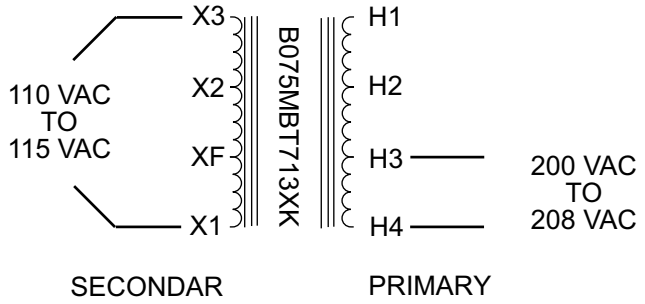
LINE LEADS
380 - 460 VAC

NOTES:
1. INTERCHANGE ANY TWO LINE LEADS TO REVERSE ROTATION.
2. OPTIONAL THERMOSTATS ARE PROVIDED WHEN SPECIFIED.
3. ACTUAL NUMBER OF INTERNAL PARALLEL CIRCUITS MAY BE A MULTIPLE OF THOSE SHOWN ABOVE.
4. LEAD COLORS ARE OPTIONAL. LEADS MUST ALWAYS BE NUMBERED AS SHOWN.

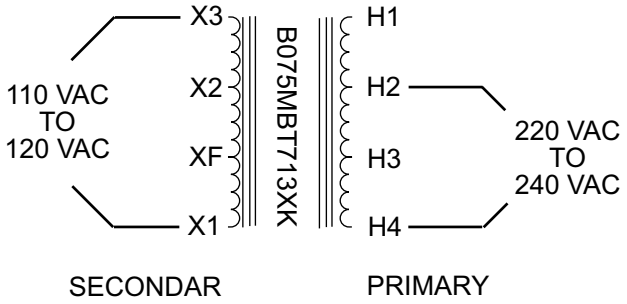
Sea Recovery Aqua Matic
HIGH PRESSURE PUMP
ELECTRIC MOTOR
WINDING DIAGRAM CD0005
THREE PHASE
50/60 Hz
220 - 230 VAC // 380 - 460 VAC
RPM @ 50 Hz 2850 - @ 60 Hz 3450

Three Phase Power Supplied to the Aqua Matic System Step Down Transformer Primary and Secondary (inside the System Control Box) Wiring and Voltages

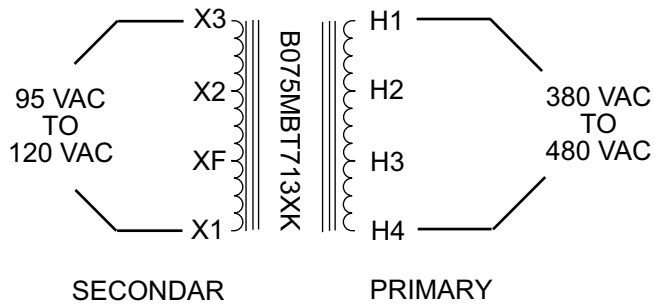
Three Phase Aqua Matic System Voltage from 200 VAC to 208 VAC

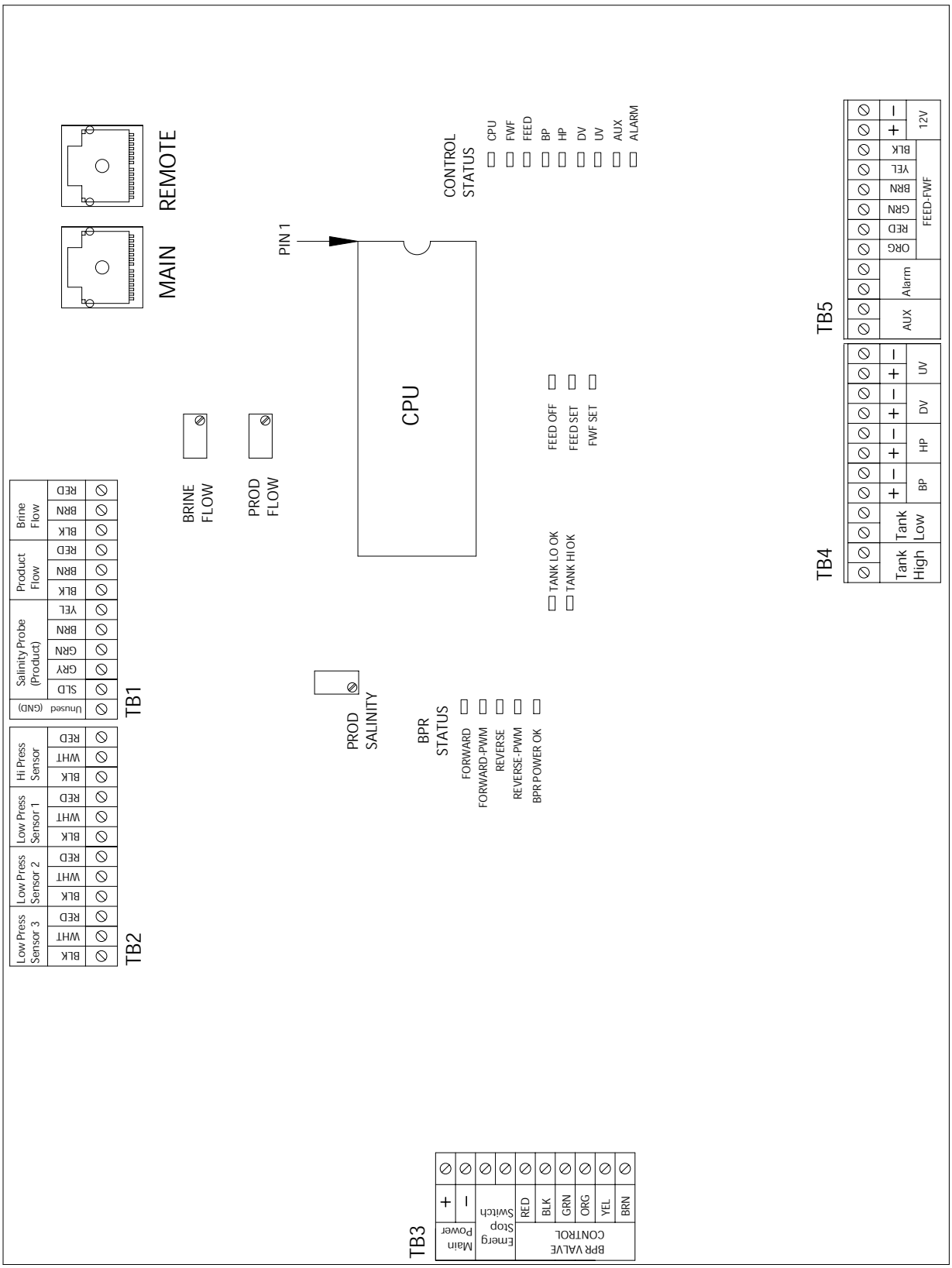


Three Phase Aqua Matic System Voltage from 220 VAC to 240 VAC

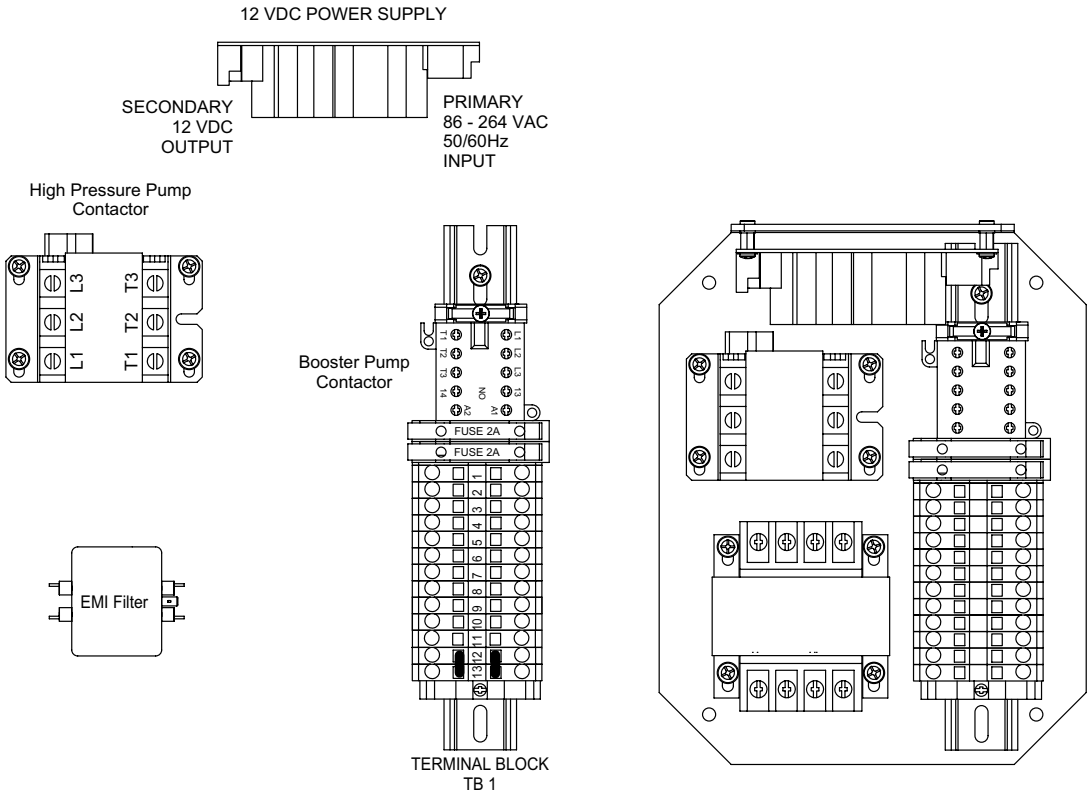


Three Phase Aqua Matic System Voltage from 380 VAC to 480 VAC

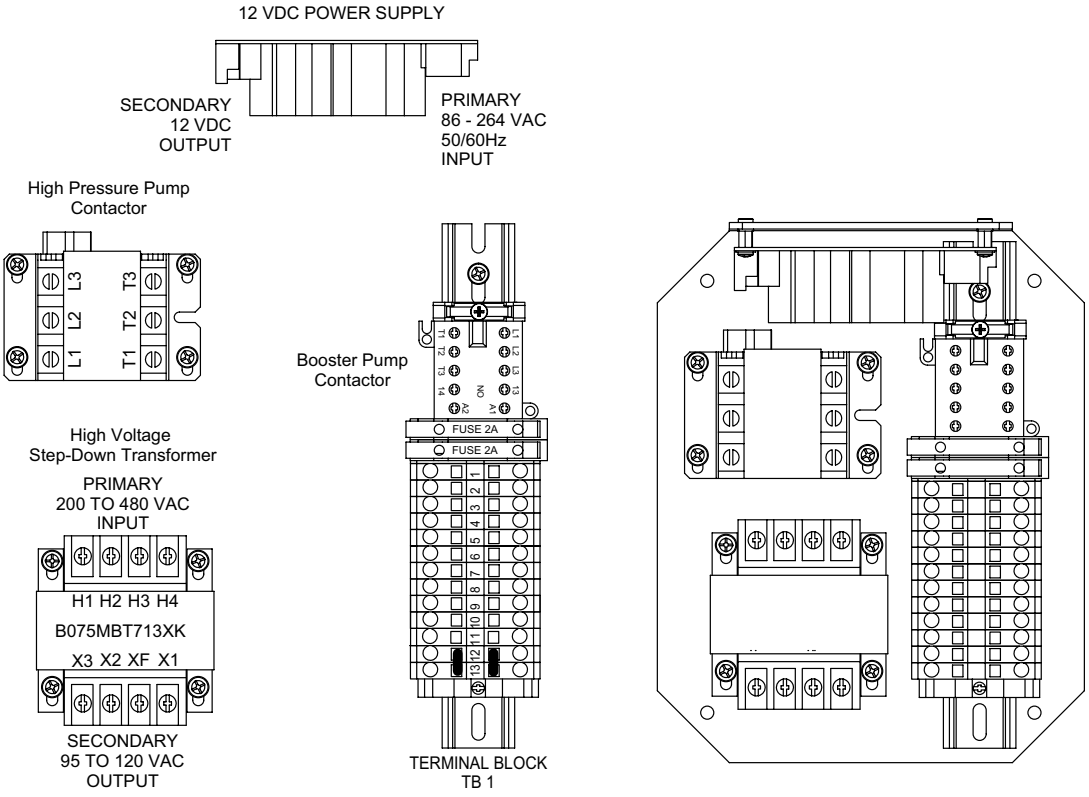



Controller Board
VERSION: 3
MAIN
REMOTE
TB1
Unused (GND)
Salinity Probe (Product)
SLD
GRY
GRN
BRN
YEL
Product Flow
BLK
BRN
RED
Brine Flow
BLK
BRN
RED
TB2
Low Press Sensor 3
BLK
WHT
RED
Low Press Sensor 2
BLK
WHT
RED
Low Press Sensor 1
BLK
WHT
RED
Hi Press Sensor
BLK
WHT
RED
BRINE FLOW
PROD FLOW
PROD SALINITY
PIN 1
CPU
CONTROL STATUS
CPU
FWF
FEED
BP
HP
DV
UV
AUX
ALARM
BPR STATUS
FORWARD
FORWARD-PWM
REVERSE
REVERSE-PWM
BPR POWER OK
TANK LO OK
TANK HI OK
FEED OFF
FEED SET
FWF SET
TB3
Main Power
+
–
Emerg Stop Switch
BPR VALVE CONTROL
RED
BLK
GRN
ORG
YEL
BRN
TB4
Tank High
Tank Low
BP
HP
DV
UV
TB5
AUX
Alarm
ORG
RED
GRN
BRN
YEL
BLK
FEED-FWF
12V

Aqua Matic Modular Style Single Phase Electrical Control Box Chassis and Components



Aqua Matic Modular Style Three Phase Electrical Control Box Chassis and Components

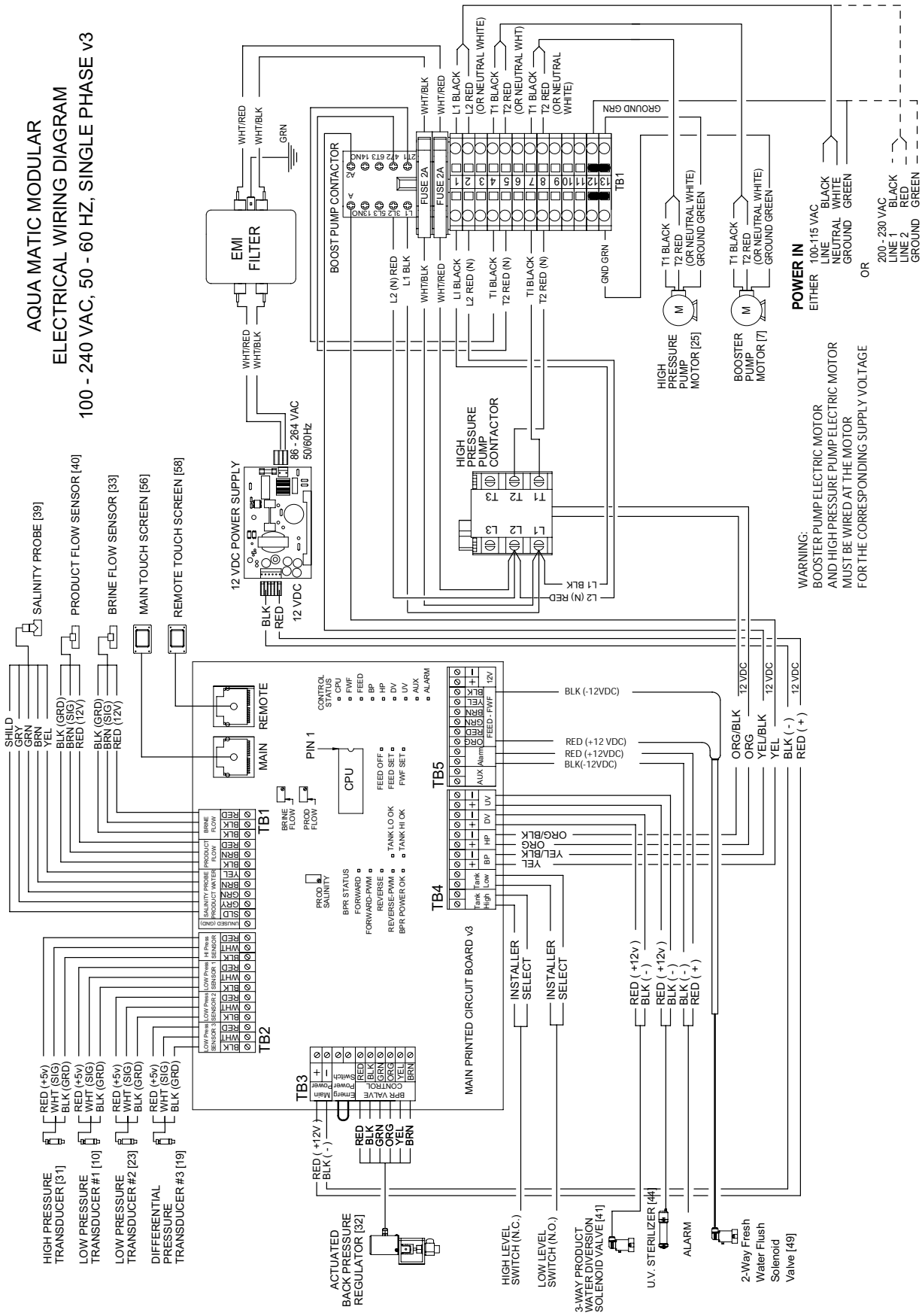


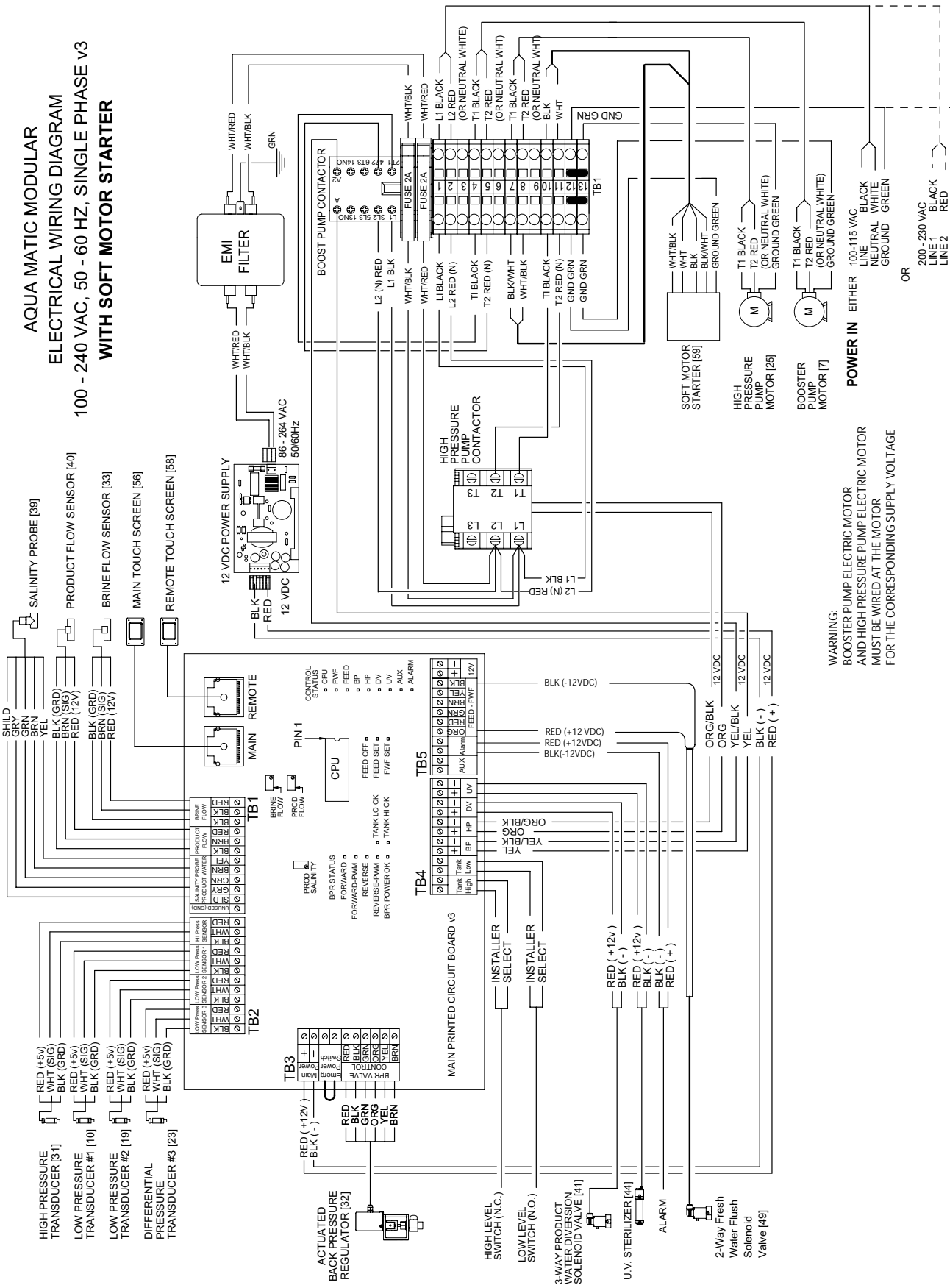
Aqua Matic MODULAR STYLE

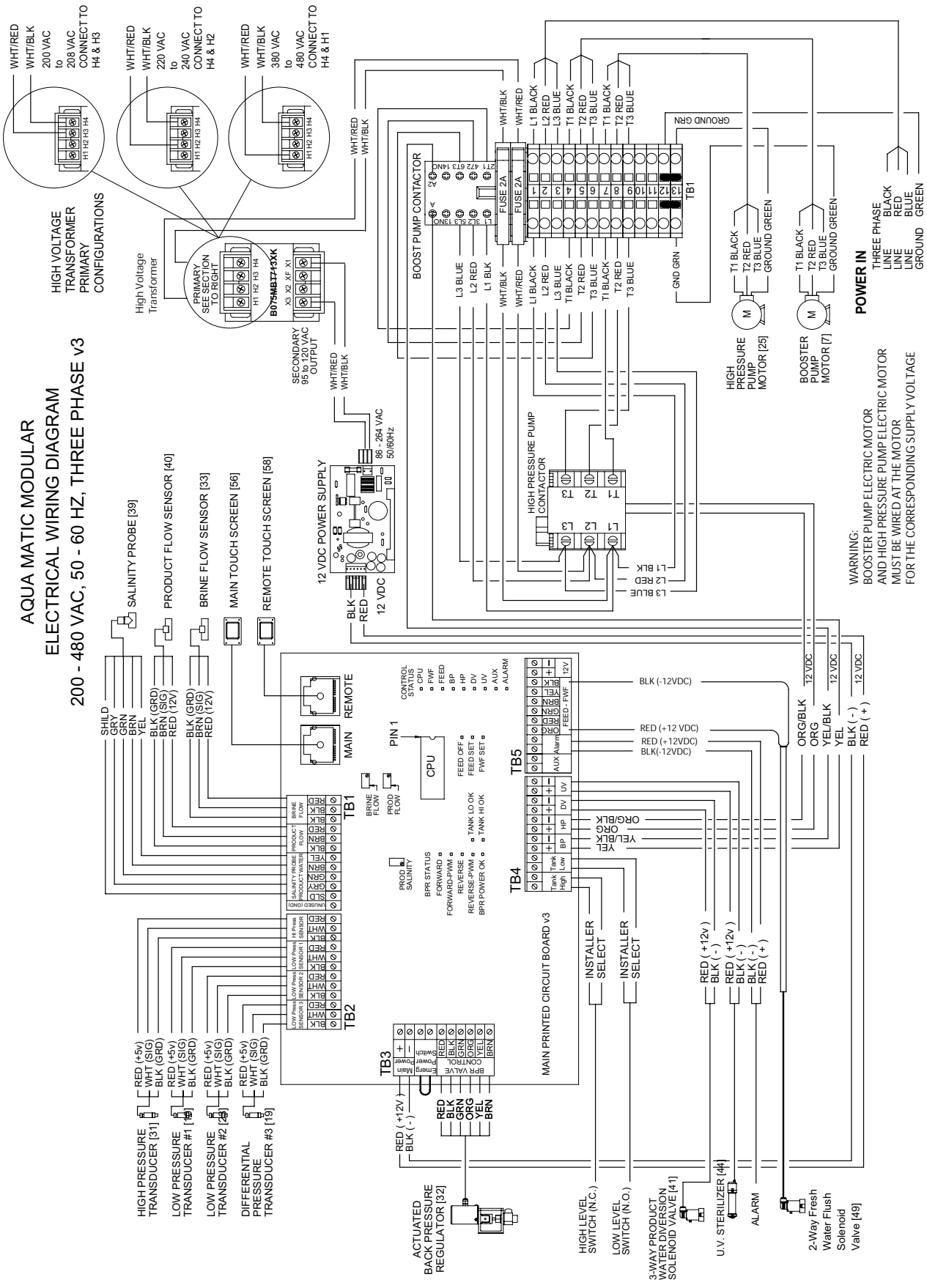
Wiring Diagrams

pages 33 - 35

WARNING: ELECTRICAL SHOCK HAZARD. A Volt / Ohm Meter will be necessary. The following installation procedures expose the installer to High Voltage and electrical shock hazard. Only attempt this if you are a qualified electrician and only if surrounding conditions are safe.


AQUA MATIC MODULAR
ELECTRICAL WIRING DIAGRAM
100 - 240 VAC, 50 - 60 HZ, SINGLE PHASE v3
POWER IN
EITHER 100-115 VAC
LINE BLACK
NEUTRAL WHITE
GROUND GREEN
OR
200 - 230 VAC
LINE 1 BLACK
LINE 2 RED
GROUND GREEN
WARNING:
BOOSTER PUMP ELECTRIC MOTOR
AND HIGH PRESSURE PUMP ELECTRIC MOTOR
MUST BE WIRED AT THE MOTOR
FOR THE CORRESPONDING SUPPLY VOLTAGE
EMI FILTER
BOOST PUMP CONTACTOR
FUSE 2A
FUSE 2A
TB1
HIGH PRESSURE PUMP CONTACTOR
HIGH PRESSURE PUMP MOTOR [25]
BOOSTER PUMP MOTOR [7]
12 VDC POWER SUPPLY
86 - 264 VAC 50/60Hz
SALINITY PROBE [39]
PRODUCT FLOW SENSOR [40]
BRINE FLOW SENSOR [33]
MAIN TOUCH SCREEN [56]
REMOTE TOUCH SCREEN [58]
MAIN PRINTED CIRCUIT BOARD v3
TB2
TB3
TB4
TB5
CPU
PIN 1
INSTALLER SELECT
INSTALLER SELECT
HIGH PRESSURE TRANSDUCER [31]
LOW PRESSURE TRANSDUCER #1 [10]
LOW PRESSURE TRANSDUCER #2 [23]
DIFFERENTIAL PRESSURE TRANSDUCER #3 [19]
ACTUATED BACK PRESSURE REGULATOR [32]
HIGH LEVEL SWITCH (N.C.)
LOW LEVEL SWITCH (N.O.)
3-WAY PRODUCT WATER DIVERSION SOLENOID VALVE [41]
U.V. STERILIZER [44]
ALARM
2-Way Fresh Water Flush Solenoid Valve [49]


AQUA MATIC MODULAR
ELECTRICAL WIRING DIAGRAM
100 - 240 VAC, 50 - 60 HZ, SINGLE PHASE v3
WITH SOFT MOTOR STARTER
POWER IN
EITHER
100-115 VAC
LINE
NEUTRAL
GROUND
OR
200 - 230 VAC
LINE 1
LINE 2
GROUND
EMI FILTER
BOOST PUMP CONTACTOR
FUSE 2A
FUSE 2A
TB1
HIGH PRESSURE PUMP CONTACTOR
12 VDC POWER SUPPLY
86 - 264 VAC 50/60Hz
12 VDC
SOFT MOTOR STARTER [59]
HIGH PRESSURE PUMP MOTOR [25]
BOOSTER PUMP MOTOR [7]
WARNING:
BOOSTER PUMP ELECTRIC MOTOR
AND HIGH PRESSURE PUMP ELECTRIC MOTOR
MUST BE WIRED AT THE MOTOR
FOR THE CORRESPONDING SUPPLY VOLTAGE
SALINITY PROBE [39]
PRODUCT FLOW SENSOR [40]
BRINE FLOW SENSOR [33]
MAIN TOUCH SCREEN [56]
REMOTE TOUCH SCREEN [58]
MAIN PRINTED CIRCUIT BOARD v3
TB1
TB2
TB3
TB4
TB5
CPU
REMOTE
MAIN
INSTALLER SELECT
INSTALLER SELECT
HIGH PRESSURE TRANSDUCER [31]
LOW PRESSURE TRANSDUCER #1 [10]
LOW PRESSURE TRANSDUCER #2 [19]
DIFFERENTIAL PRESSURE TRANSDUCER #3 [23]
ACTUATED BACK PRESSURE REGULATOR [32]
HIGH LEVEL SWITCH (N.C.)
LOW LEVEL SWITCH (N.O.)
3-WAY PRODUCT WATER DIVERSION SOLENOID VALVE [41]
U.V. STERILIZER [44]
ALARM
2-Way Fresh Water Flush Solenoid Valve [49]


AQUA MATIC MODULAR
ELECTRICAL WIRING DIAGRAM
200 - 480 VAC, 50 - 60 HZ, THREE PHASE v3
HIGH VOLTAGE TRANSFORMER PRIMARY CONFIGURATIONS
WHT/RED
WHT/BLK
200 VAC to 208 VAC CONNECT TO H4 & H3
220 VAC to 240 VAC CONNECT TO H4 & H2
380 VAC to 480 VAC CONNECT TO H4 & H1
High Voltage Transformer
PRIMARY SEE SECTION TO RIGHT
B075MBTF145K
SECONDARY 95 to 120 VAC OUTPUT
BOOST PUMP CONTACTOR
FUSE 2A
GROUND GRN
GND GRN
HIGH PRESSURE PUMP CONTACTOR
HIGH PRESSURE PUMP MOTOR [25]
BOOSTER PUMP MOTOR [7]
T1 BLACK
T2 RED
T3 BLUE
GROUND GREEN
POWER IN
THREE PHASE
LINE
LINE
LINE
GROUND
BLACK
RED
BLUE
GREEN
WARNING:
BOOSTER PUMP ELECTRIC MOTOR
AND HIGH PRESSURE PUMP ELECTRIC MOTOR
MUST BE WIRED AT THE MOTOR
FOR THE CORRESPONDING SUPPLY VOLTAGE
12 VDC POWER SUPPLY
86 - 264 VAC 50/60Hz
12 VDC
SALINITY PROBE [39]
PRODUCT FLOW SENSOR [40]
BRINE FLOW SENSOR [33]
MAIN TOUCH SCREEN [56]
REMOTE TOUCH SCREEN [58]
REMOTE
MAIN
TB1
TB2
TB3
TB4
TB5
CPU
PIN 1
CONTROL STATUS
CPU
FWF
FEED
BP
HP
DV
UV
AUX
ALARM
BRINE FLOW
PROD FLOW
PROD SALINITY
BPR STATUS
FORWARD
FORWARD-PWM
REVERSE
REVERSE-PWM
BPR POWER OK
TANK LO OK
TANK HI OK
FEED OFF
FEED SET
FWF SET
MAIN PRINTED CIRCUIT BOARD v3
BPR VALVE CONTROL
INSTALLER SELECT
INSTALLER SELECT
BLK (-12VDC)
RED (+12 VDC)
RED (+12VDC)
BLK(-12VDC)
ORG/BLK
ORG
YEL/BLK
YEL
BLK (-)
RED (+)
12 VDC
HIGH PRESSURE TRANSDUCER [31]
LOW PRESSURE TRANSDUCER #1 [18]
LOW PRESSURE TRANSDUCER #2 [29]
DIFFERENTIAL PRESSURE TRANSDUCER #3 [19]
ACTUATED BACK PRESSURE REGULATOR [32]
HIGH LEVEL SWITCH (N.C.)
LOW LEVEL SWITCH (N.O.)
3-WAY PRODUCT WATER DIVERSION SOLENOID VALVE [41]
U.V. STERILIZER [44]
ALARM
2-Way Fresh Water Flush Solenoid Valve [49]

Notes:

Section 10

Version 3

Exploded Parts Views

with

Part Numbers & Descriptions

Notes: _____

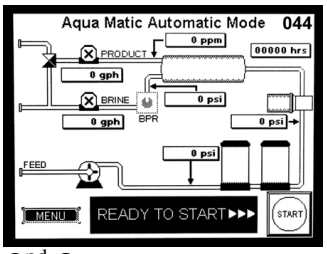
When ordering Parts or Accessories from your local Sea Recovery Dealer or from Sea Recovery direct, PLEASE, in order to save time and to ensure that you receive the correct part provide the following information:

System Model	System Style	System Production	System Serial #
Aqua Matic	Compact	450-1 (one short 21" long R.O. Membrane Element)	Serial Number
Aqua Matic	Compact	700-1 (one medium 31" long R.O. Membrane Element)	Serial Number
Aqua Matic	Compact	900-1 (one long 40" long R.O. Membrane Element)	Serial Number
Aqua Matic	Compact	900-2 (two short 21" long R.O. Membrane Element)	Serial Number
Aqua Matic	Compact	1400-2 (two medium 31" long R.O. Membrane Element)	Serial Number
Aqua Matic	Compact	1800-2 (two long 40" long R.O. Membrane Element)	Serial Number
Aqua Matic	Modular	450-1 (one short 21" long R.O. Membrane Element)	Serial Number
Aqua Matic	Modular	700-1 (one medium 31" long R.O. Membrane Element)	Serial Number
Aqua Matic	Modular	900-1 (one long 40" long R.O. Membrane Element)	Serial Number
Aqua Matic	Modular	900-2 (two short 21" long R.O. Membrane Element)	Serial Number
Aqua Matic	Modular	1400-2 (two medium 31" long R.O. Membrane Element)	Serial Number
Aqua Matic	Modular	1800-2 (two long 40" long R.O. Membrane Element)	Serial Number

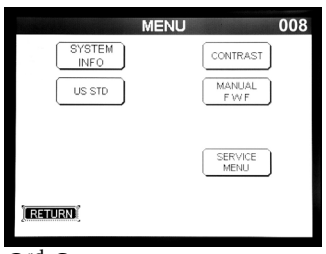
AND

SYSTEM INFORMATION FROM THE SYSTEM INFORMATION SCREEN

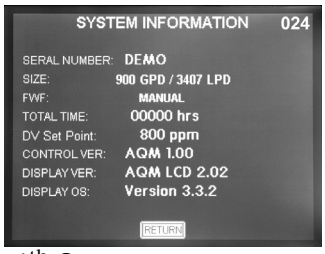
1st Screen007
Touch the Logo



2nd Screen044
Touch MENU



3rd Screen008
Touch SYSTEM INFO



4th Screen024
INFORMATION

SERIAL NUMBER helps us to determine the latest physical version and configuration of your system which is necessary to ensure that we provide you with the correct information or parts.

SIZE tells us the production capacity of your system which gives us a bench mark in diagnosing product water flow and pressure concerns.

FWF tells us if you have installed and are utilizing the Fresh Water Flush feature.

TOTAL TIME assists us in diagnosing abnormalities that can occur at given operational time intervals such as required pump maintenance, or R.O. Membrane Element condition.

DV Set Point helps us to determine if the R.O. Membrane Element is losing its rejection capabilities or if the 3-Way Product Water Diversion Solenoid Valve Set Point is simply adjusted too high or too low.

CONTROL VER allows us to determine the specific sequential operation of the system based on the version of the programmed control logic.

DISPLAY VER and DISPLAY OS assists us in diagnosing problems associated with the Main and Remote Touch Screen(s).

AND Provide Us With information on the part(s) that you wish to order:

Part Number **Part Description** **Quantity**

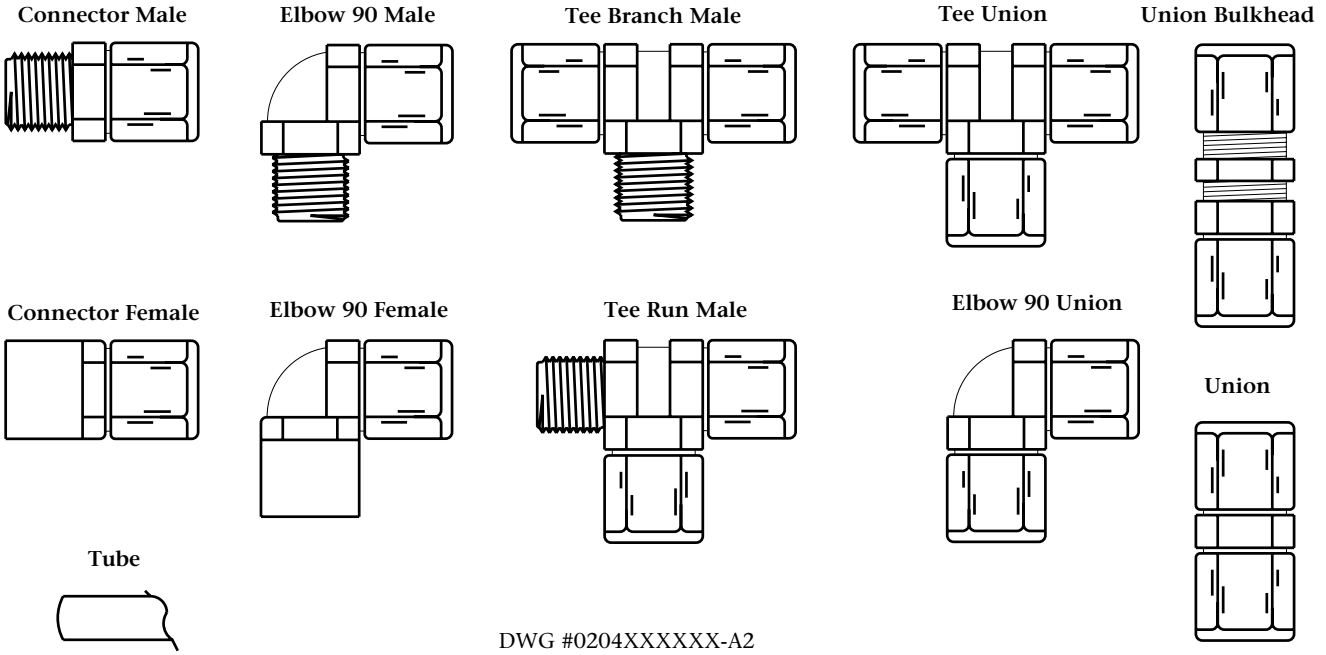
Having this information will expedite your request and ensure that you receive the correct part(s).

COMMON TO BOTH THE

COMPACT AND MODULAR STYLE

PAGES 4 THROUGH 24

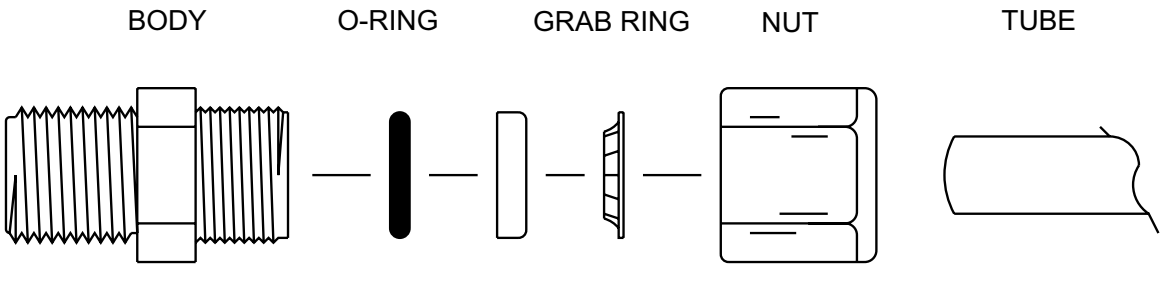
AVAILABLE TUBE FITTINGS



DWG #0204XXXXXX-A2

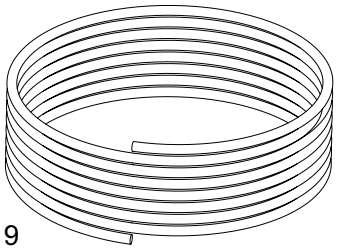
Specify Type of Fitting	and Specify Tube Size	and Specify Pipe Size	and Specify Male or Female
Connector Male	1/4″ O.D.	1/4	MNPT or FNPT
Connector Female	3/8″ O.D.	3/8	MNPT or FNPT
Elbow 90 Male	1/2″ O.D.	1/2	MNPT or FNPT
Elbow 90 Female	5/8″ O.D.	3/4	MNPT or FNPT
Tee Branch Male			
Tee Run Male			
Tee Union			
Elbow Union			
Union Bulkhead			
Union			

LOW PRESSURE THERMAL PLASTIC TUBE FITTING



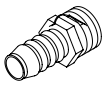
DWG #0204XXXXXX-A1
5/94

ITEM	PART NUMBER	DESCRIPTION	QTY	U/M
1-18	**B001120001**	**INSTALLATION KIT AQMCM**	**1**	**EACH**
1	0328066666	HOSE CLEAR BRAID 3/4"	50	FEET
2	0101013783	ELB90 3/4 FPT X 3/4 FPT PVC	2	EACH
3	0101653783	ADAP 3/4 MPT X 3/4 BARB PVC	2	EACH
4	05181434AA	HOSE CLAMP 3/4" SS	10	EACH
5	0421051239	SEA STRAINER-3/4 BRONZE	1	EACH
6	2115031700	RUBBER MOUNT 90 LB AQM	4	EACH
7	061110049000	WASHER FENDER 5/16" SS	4	EACH
8	0101012583	ELB90 1/2 FPT X 1/2 FPT PVC	1	EACH
9	0328065066	HOSE CLEAR BRAID 1/2"	50	FEET
10	05181432AA	HOSE CLAMP 1/2"	4	EACH
11	01013725CL	NIPPLE 1/2 NPT X CLOSE PVC	1	EACH
12	0101073783	ELB90 3/4 MPT X 3/4 BARB PVC	2	EACH
13	061170628016	SC PHIL PAN "A" 10 X 1 SS	5	EACH
14	061080028000	WASHER FLAT #10 SS	5	EACH
15	0112652500	ADAP 1/2 MNPT X 1/2 BARB NYLON	1	EACH
16	061172149036	SC HEX "A" 5/16 X 2 1/4 SS"	4	EACH
17	B651120001	OWNERS MANUAL AQMC	1	EACH
18	0312123569	TUBE 3/8 BLACK	20	FEET



9
QTY 50 FEET

2
QTY 2



3
QTY 2

4
QTY 10

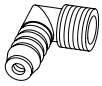
6
QTY 4

7
QTY 4

8
QTY 1

10
QTY 4

11
QTY 1

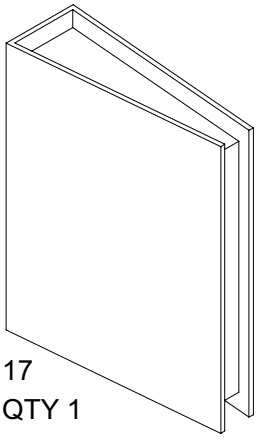


12
QTY 2

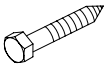
13
QTY 5

14
QTY 5

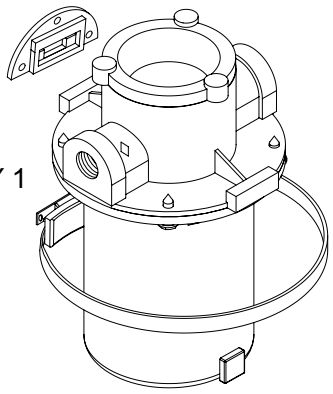
15
QTY 1



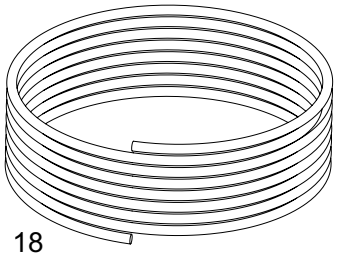
17
QTY 1



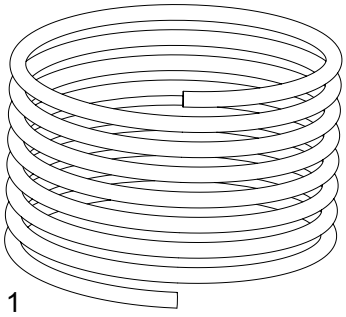
16
QTY 4



5
QTY 1

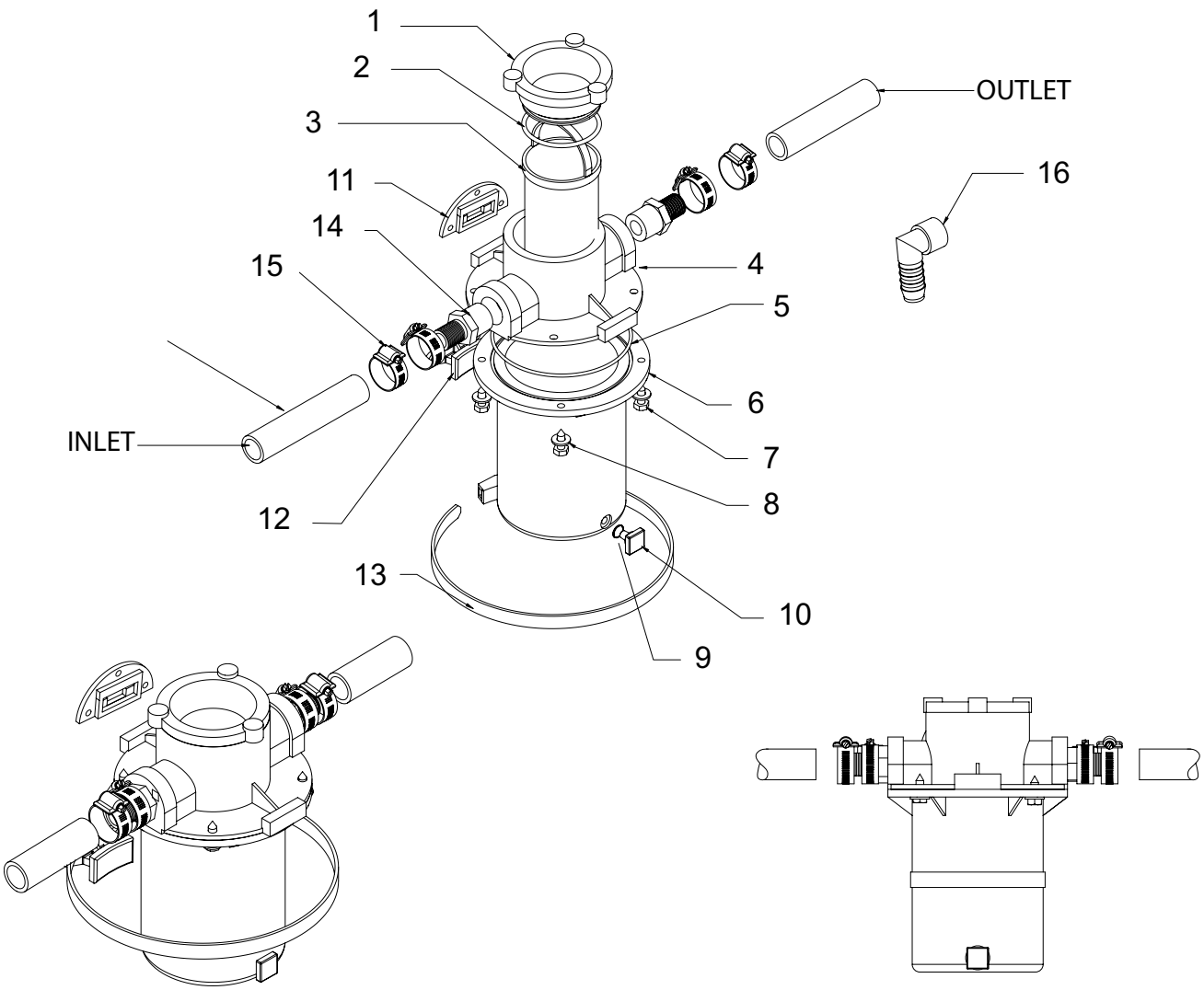


18
QTY 20 FEET

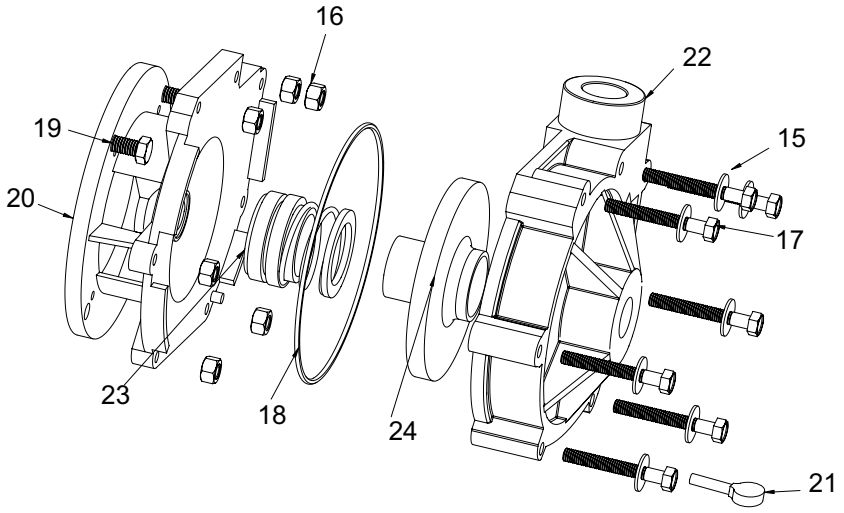


1
QTY 50 FEET

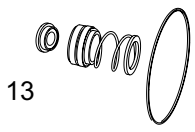
ITEM	PART NUMBER	DESCRIPTION	QTY	U/M	
1-13	**0421051239**	**SEA STRAINER-3/4" BRONZE**			
1		CAP BRONZE		1	EACH
2	0421051239-2	O-RING, CAP SEAL 3/4" BRONZE SEA STRAINER		1	EACH
3	0421051239-7	BASKET MONEL, 3/4" BRONZE SEA STRAINER		1	EACH
4		BODY		1	EACH
5	0421051239-4	O-RING SIGHT GLASS 3/4" BRONZE STRAINER		1	EACH
6		SIGHT GLASS		1	EACH
7		SCREW 1/4-20 X 5/8" HS		4	EACH
8		WASHER 1/4" PFW-2 SET		4	EACH
9		O-RING DRAIN PLUG		1	EACH
10		DRAIN PLUG		1	EACH
11		UPPER BRACKET		1	EACH
12		LOWER BRACKET		1	EACH
13		STRAP		1	EACH
14	0101653783	ADAP 3/4 MPT X 3/4 BARB PVC		2	EACH
15	05181434AA	HOSE CLAMP 3/4" SS		4	EACH
16	0101073783	ELB90 3/4 MPT X 3/4 BARB PVC		2	EACH
17	061170628016	SC PHIL PAN "A" 10 X 1 SS		5	EACH
18	061080028000	WASHER FLAT #10 SS		5	EACH



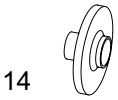
ITEM	PART NUMBER	DESCRIPTION	QTY	U/M
BOOSTER PUMP HEAD ASSY AQM 50/60/1				
13	**B655800009**	**MAINTENANCE SEAL KIT**		
14	**291211181PP**	**MAINTENANCE IMPELLER KIT**		
15-24	**1221515772**	**BOOSTER PUMP HEAD N200**		
15		WASHER FLAT # 10 SS	7	EACH
16		Nut Hex 3/8" SS	7	EACH
17		SCREW HEX 5/16-18 X 2 1/2"	7	EACH
18	26141260PP	GASKET BOOSTER PUMP N200	1	EACH
19		BOLT HEX 3/8-16 X 1" SS	2	EACH
20		MOTOR MOUNTING BRACKET	1	EACH
21		DRAIN PLUG	1	EACH
22		BOOSTER PUMP VOLUTE N200	1	EACH
23	1221515772-3	SEAL BOOSTER PUMP HEAD	1	EACH
24	29121181PP	IMPELLER	1	EACH

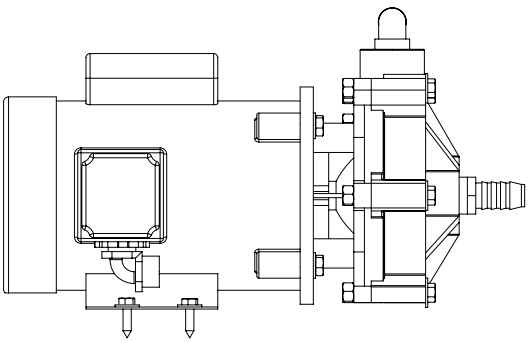


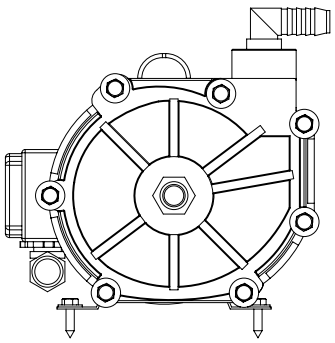
MAINTENANCE SEAL KIT
B655800009



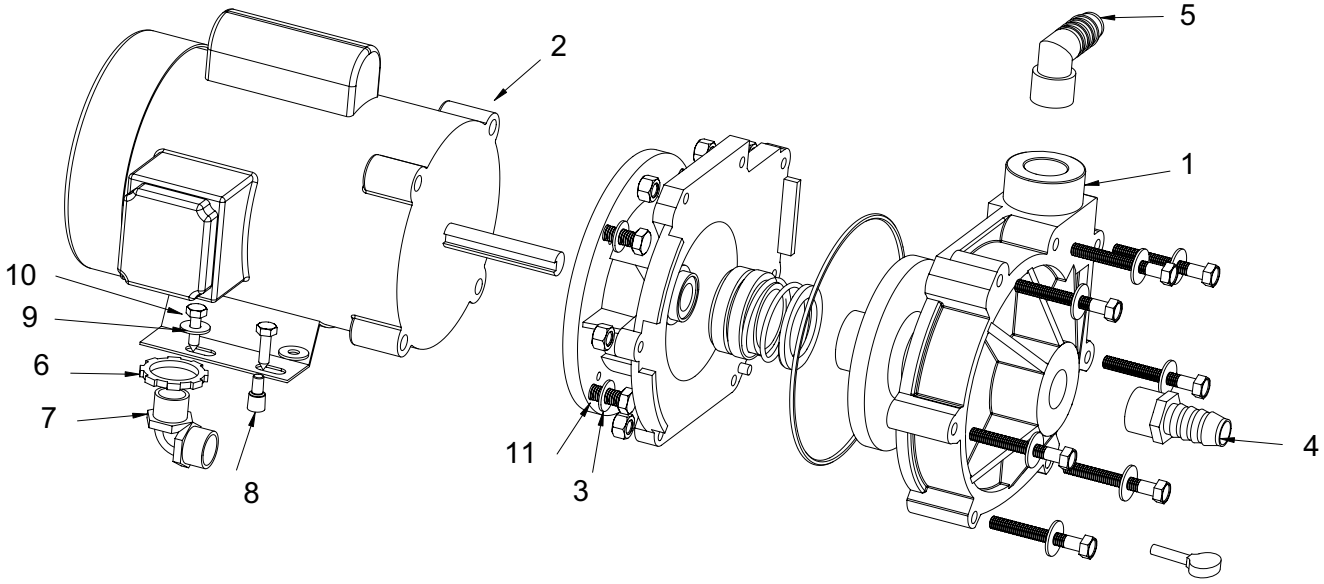
MAINTENANCE IMPELLER KIT
291211181PP



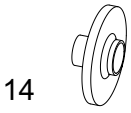




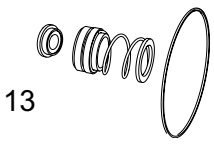
ITEM	PART NUMBER	DESCRIPTION	QTY	U/M
1-12	**B016120001**	**BOOSTER PUMP ASSY AQM 50/60/1 SINGLE PHASE 115-230 VAC 60HZ & 100-220 VAC 50HZ**	**1**	**EACH**
1	1221515772	BOOSTER PUMP HEAD N200	1	EACH
2	1519081110	MOTOR 1/2 HP 110/230-50/60/1PH	1	EACH
3	061080056000	WASHER FLAT 3/8" SS	4	EACH
4	0101653783	ADAP 3/4 MPT X 3/4 BARB PVC	1	EACH
5	0101073783	ELB90 3/4 MPT X 3/4 BARB PVC	1	EACH
6	063200066000	NUT LOCK 1/2" STEEL	1	EACH
7	1920023632	STRAIN RELIEF 90 CG90-6250	1	EACH
8	31313849CD	TERMINAL CONN AW 22/12 GAUGE	2	EACH
9	061100043000	WASHER FLAT OS 1/4" SS	4	EACH
10	061172143016	SC HEX "A" 1/4 X 1 SS	4	EACH
11	061142157016	BOLT HEX 3/8-16 X 1 SS	4	EACH
13	B655800009	MAINTENANCE SEAL KIT		
14	291211181PP	MAINTENANCE IMPELLER KIT		

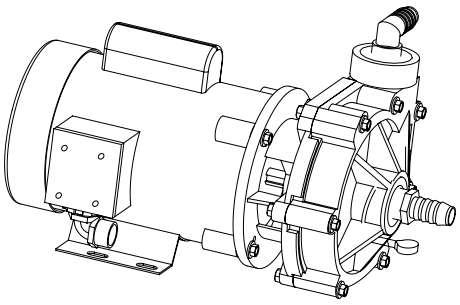


MAINTENANCE IMPELLER KIT
291211181PP

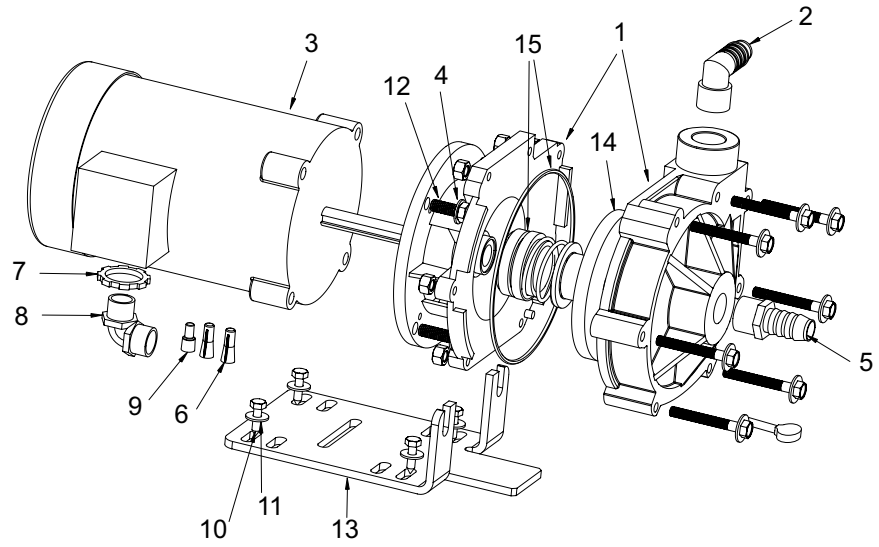


MAINTENANCE SEAL KIT
B655800009

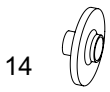




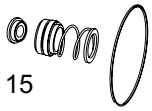
ITEM	PART NUMBER	DESCRIPTION	QTY	U/M
1-13	**B016120002**	**BOOSTER PUMP ASSY AQM 50/60/3 THREE PHASE 200-380 VAC 50HZ & 208-460 VAC 60HZ**	**1**	**EACH**
1	1221515772	BOOSTER PUMP HEAD N200	1	EACH
2	0101073783	ELB90 3/4 MPT X 3/4 BARB PVC	1	EACH
3	1520181110	MOTOR 1/2 HP 208/230/460 50/60	1	EACH
4	061080056000	WASHER FLAT 3/8" SS	4	EACH
5	0101653783	ADAP 3/4 MPT X 3/4 BARB PVC	1	EACH
6	3131210495	WIRE NUT YELLOW	3	EACH
7	063200066000	NUT LOCK 1/2" STEEL	1	EACH
8	1920023632	STRAIN RELIEF 90 CG90-6250	1	EACH
9	31313849CD	TERMINAL CONN AW 22/12 GAUGE	1	EACH
10	061172143016	SC HEX "A" 1/4 X 1 SS	4	EACH
11	061100043000	WASHER FLAT OS 1/4" SS	4	EACH
12	061142157016	BOLT HEX 3/8-16 X 1 SS	4	EACH
13	1221514722-3	BOOSTER PUMP BRACKET MOUNTING	1	EACH
14	291211181PP	MAINTENANCE IMPELLER KIT		
15	B655800009	MAINTENANCE SEAL KIT		

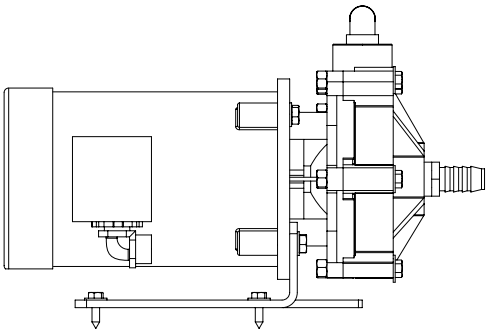


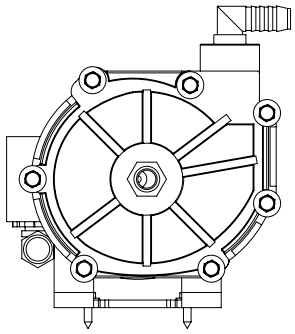
291211181PP
MAINTENANCE IMPELLER KIT



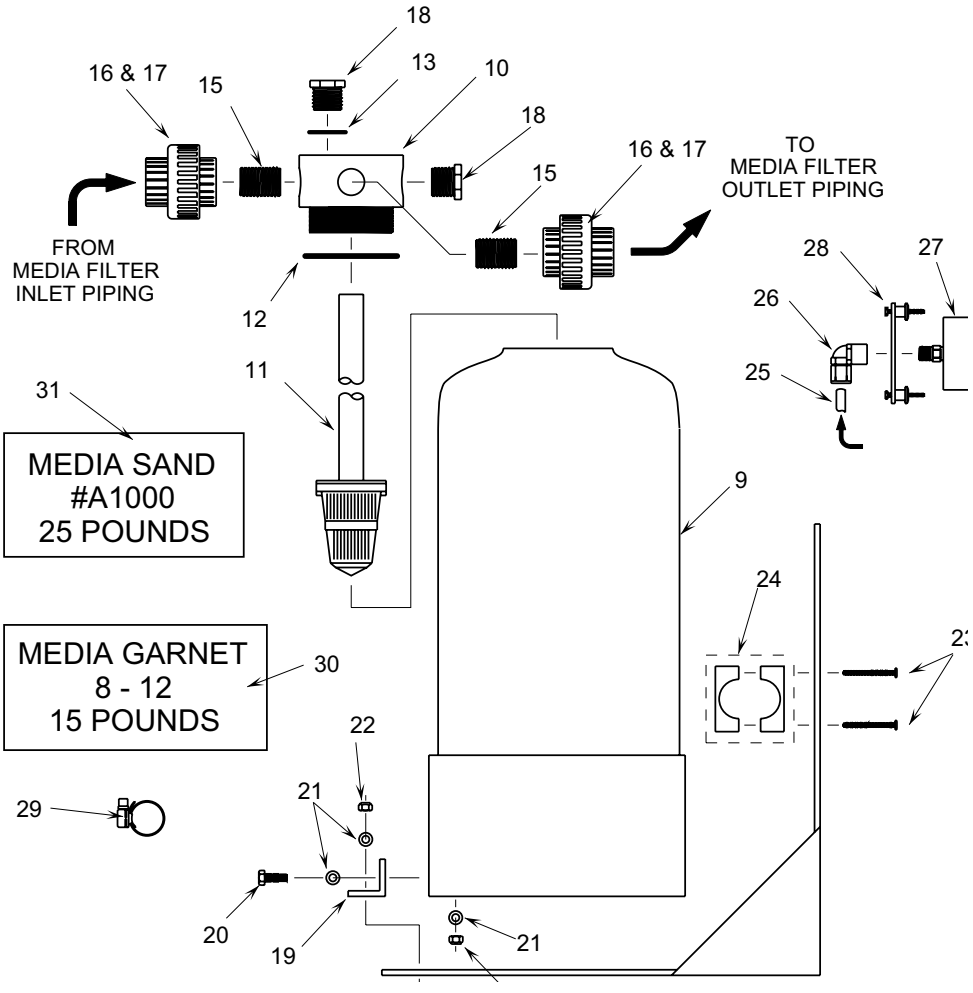
B655800009
MAINTENANCE SEAL KIT



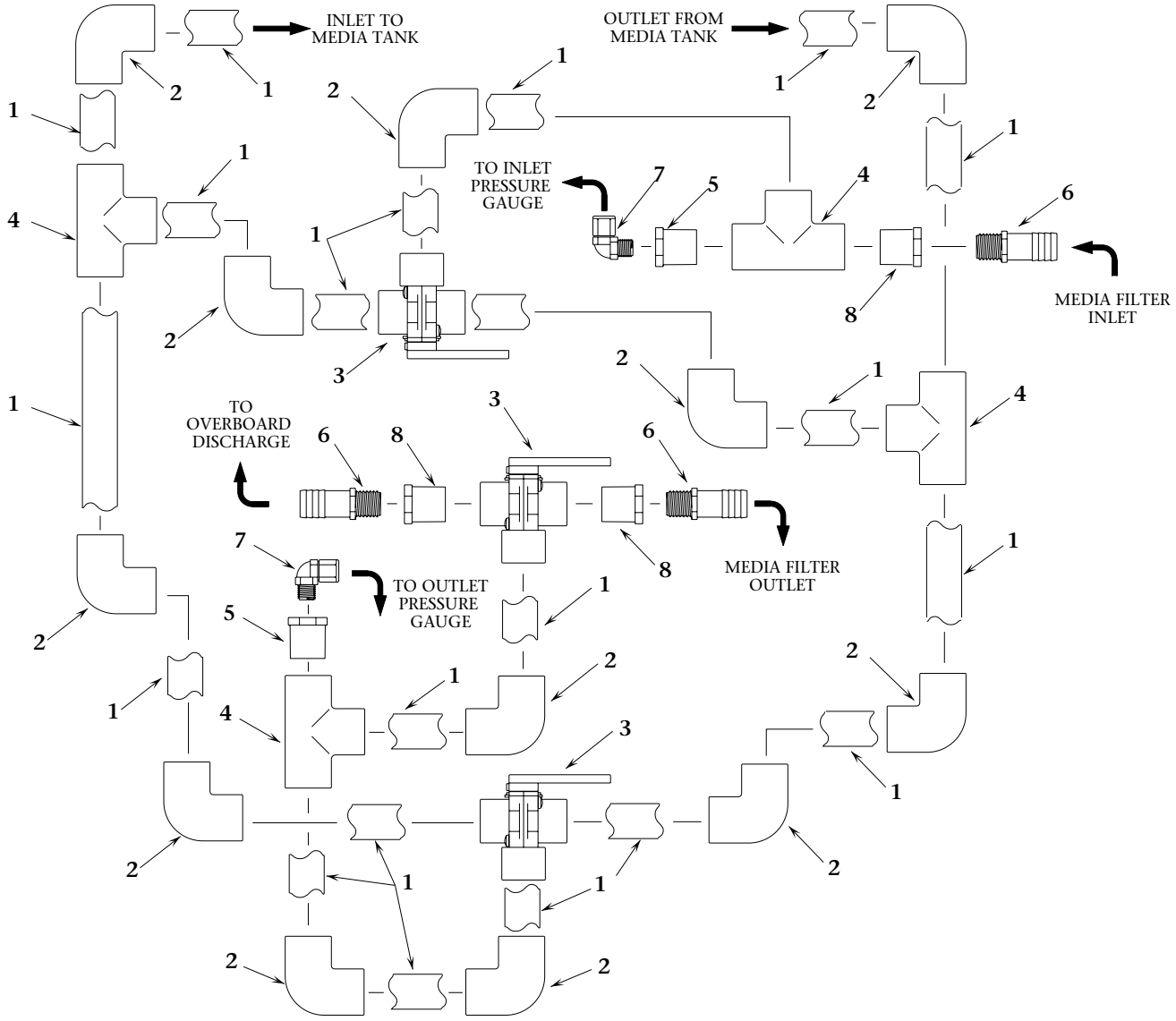




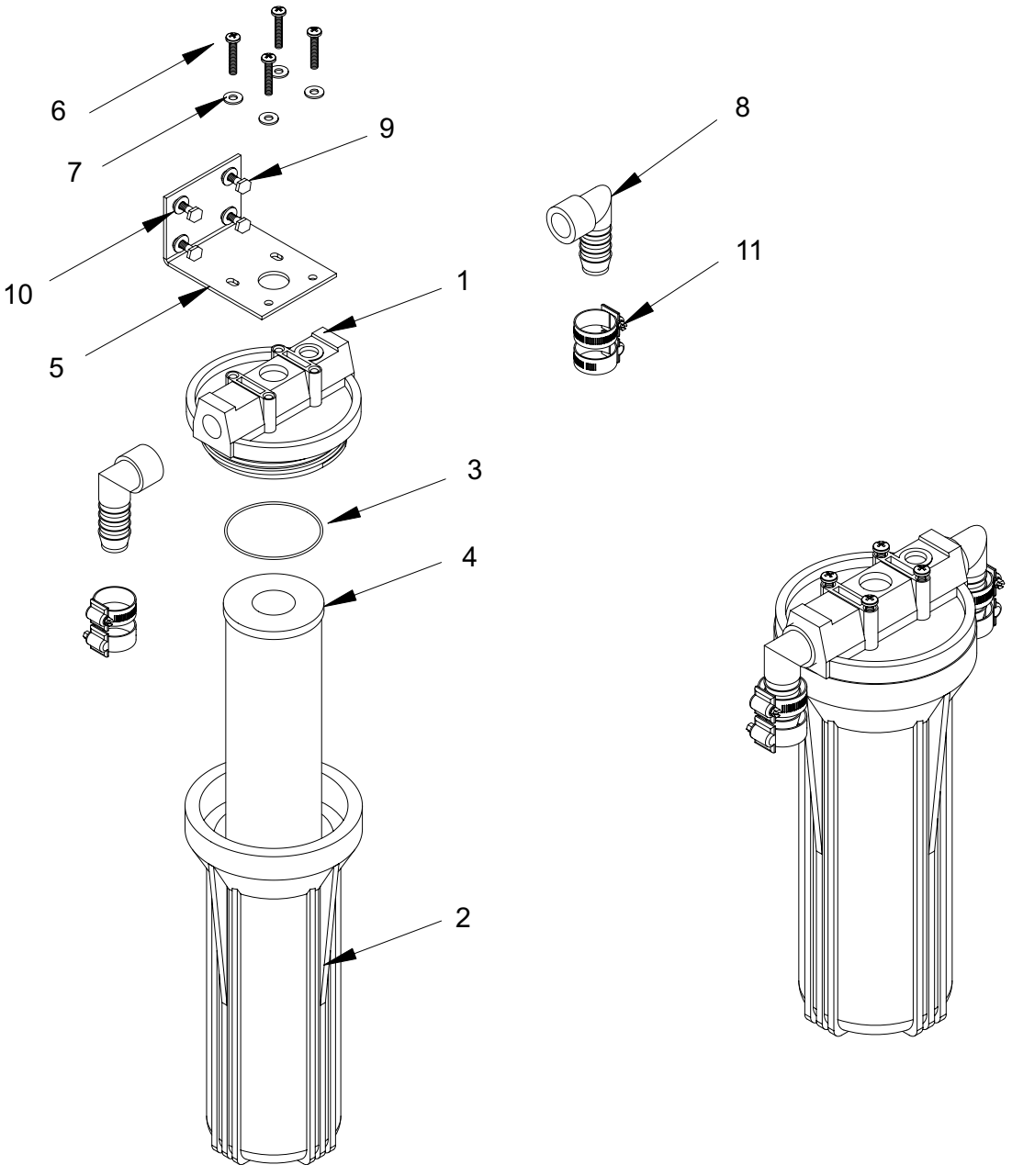
ITEM	PART NUMBER	DESCRIPTION	QTY	U/M
1-31	**B071080002**	**MEDIA FILTER -ASSY/AW >SEP 98**		
9-14	0708040468	MEDIA FILTER 818 ALMOND AW >SEP 98	1	EA
9	0708040468-1	TANK MEDIA FILTER ASSY/AW >SEP 98		
10	0708040400-1	LID MEDIA FILTER ASSY/AW >SEP 98		
11	0708040400-2	LATTERAL PICK UP MEDIA FILTER ASSY/AW >98		
12	2614017300	O-RING 334 MEDIA LID 97		
13	2614017400	O-RING 117 MEDIA TOP INLET		
14	2614017500	O-RING 21- PLUG MEDIA LID 1/2"		
15	01013737CL	NIPPLE 3/4" NPT X CLOSE PVC	2	EA
16	0101693783	UNION 3/4" SL X 3/4" SL PVC	1	EA
17	0101673783	UNION 3/4" FNPT X 3/4" FNPT PVC	1	EA
18	0101343783	PLUG 3/4" MNPT PVC	2	EA
19	20200404010	BRACKET "L" MOUNTING FEET	4	EA
20	061172143016	SC HEX "A" 1/4" X 1" SS	8	EA
21	061100043000	WASHER FLAT OS 1/4" SS	8	EA
22	061060045000	NUT HEX 1/4-20 X 3/4" W/INSERT SS	8	EA
23	061161130028	SC PHIL OVAL 10-24 X 1 3/4" SS	6	EA
24	1453131700-02	VALVE BRACKET 3/4" SL, SET	3	EA
25	0312121969	TUBE 1/4" BLACK NYLON	2	FT
26	0204010869	ELB90 1/4" TUBE X 1/4" FNPT PLAST	2	EA
27	10181522CC	GAUGE -30-0-70 CBM 1/4" MNPT	2	EA
28	05180851CC	GAUGE BRACKET CBM SS	2	EA
29	05181434AA	HOSE CLAMP 3/4" SS	12	EA
30	4643070155	MEDIA GARNET 8-12 100# BAG	17	LB
31	4643020255	MEDIA SAND A1000 (100LB BAG)	25	LB
	14011317AR	VALVE 3-WAY BALL 3/4" SL	3	EA



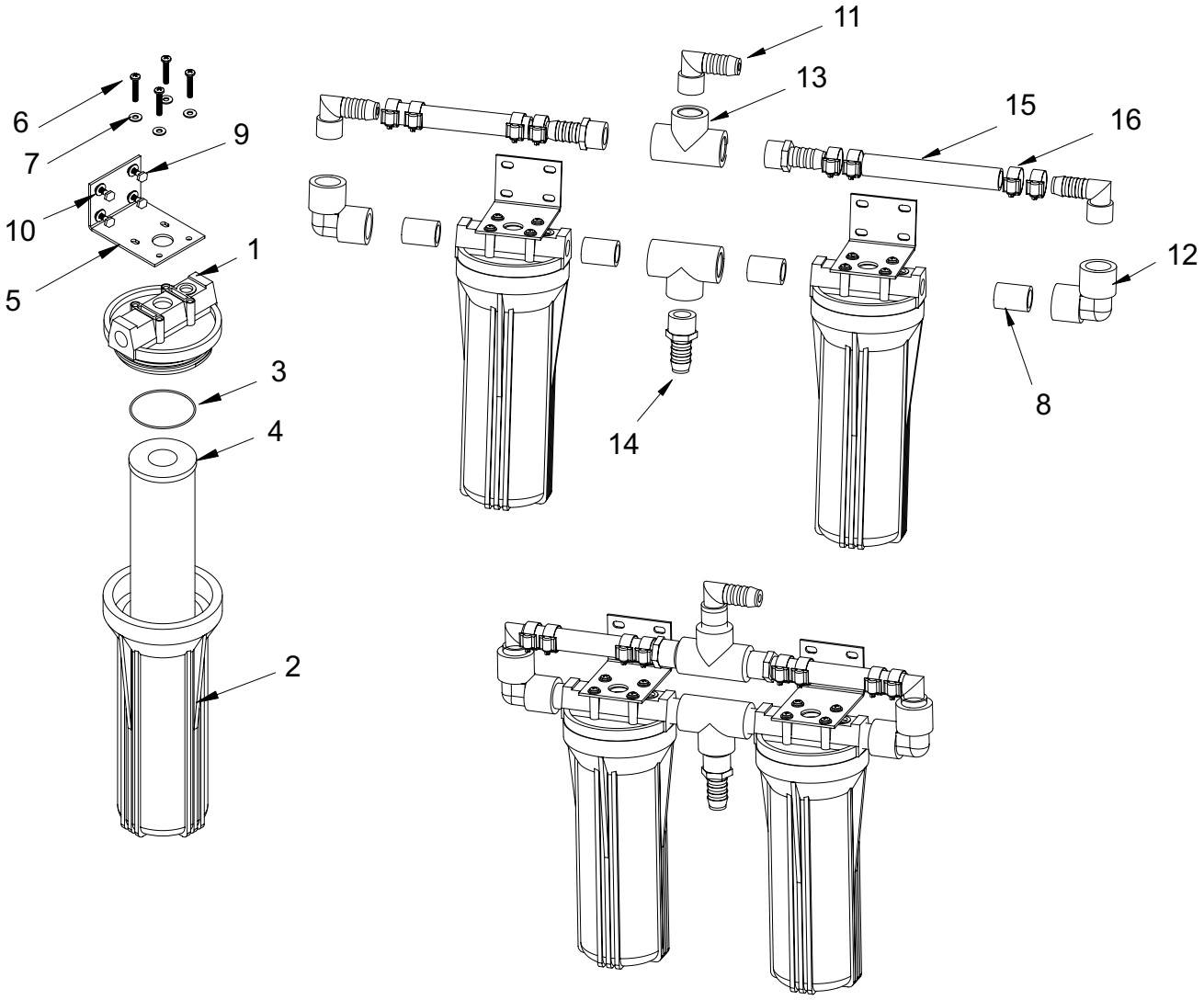
MULTI MEDIA FILTER PIPING:



ITEM	PART NUMBER	DESCRIPTION	QTY	U/M
1-11	**B008800001**	**PLANKTON FILTER ASSY-AW SINGLE**		
1-3	0713020473	FILTER HOUSING/LID 3/4" X 10"	1	EA
1		LID 10 INCH PREFILTER BLUE HOUSING		
2		BOWL 10 INCH PREFILTER BLUE HOUSING		
3	2614010473	O-RING 237 10 INCH PREFILTER BLUE HOUSING		
4	0805823578	ELEMENT PLANKTON	1	EA
5	20200402100	BRACKET PREFILTER/CHRCL/PLNKTN	1	EA
6	061170628016	SC PHIL PAN "A" 10 X 1" SS	4	EA
7	065080028000	WASHER FLAT #10 NYLON	4	EA
8	0101073783	ELB90 3/4" MPT X 3/4" BARB PVC	2	EA
9	061172143016	SC HEX "A" 1/4 X 1" SS	4	EA
10	061100043000	WASHER FLAT OS 1/4" SS	4	EA
11	05181434AA	HOSE CLAMP 3/4" SS	4	EA

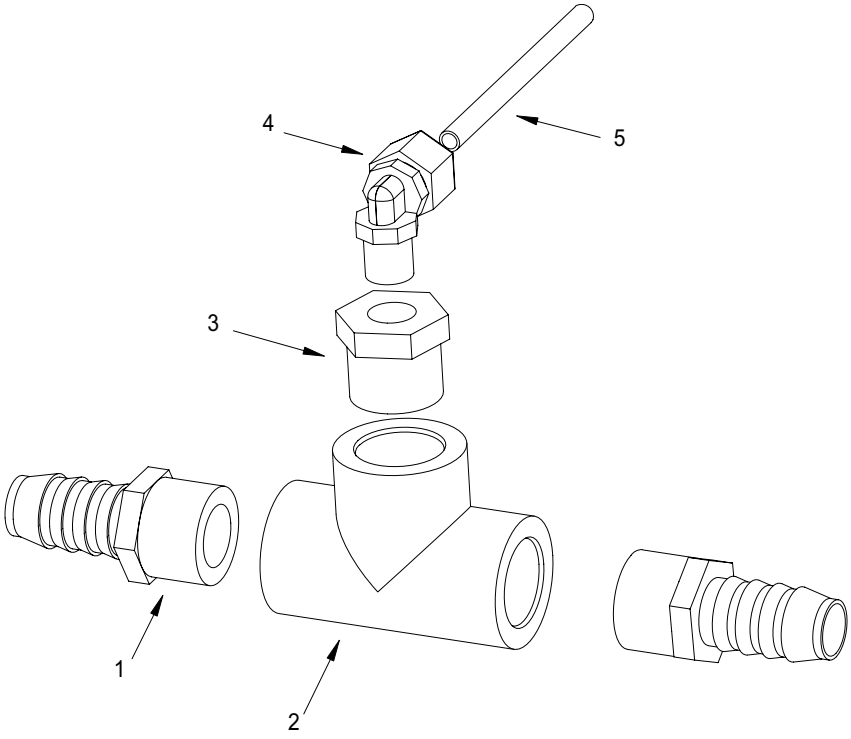


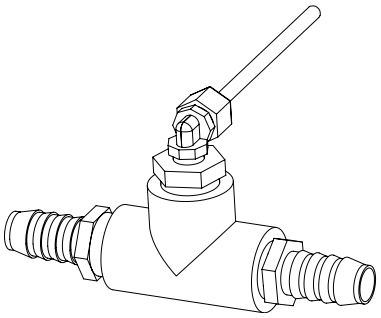
ITEM	PART NUMBER	DESCRIPTION	QTY	U/M
1-16	**B008800002**	**PLANKTON FILTER ASSY-AW DOUBLE**		
1-3	0713020473	FILTER HOUSING/LID 3/4"" X 10"	2	EA
1		LID 10 INCH PREFILTER BLUE HOUSING		
2		BOWL 10 INCH PREFILTER BLUE HOUSING		
3	2614010473	O-RING 237 10 INCH PREFILTER BLUE HOUSING		
4	0805823578	ELEMENT PLANKTON	2	EA
5	20200402100	BRACKET PREFILTER/CHRCL/PLNKTN	2	EA
6	061170628016	SC PHIL PAN "A" 10 X 1" SS	8	EA
7	065080028000	WASHER FLAT #10 NYLON	8	EA
8	01013737CL	NIPPLE 3/4" NPT X CLOSE PVC	4	EA
9	061172143016	SC HEX "A" 1/4" X 1" SS	8	EA
10	061100043000	WASHER FLAT OS 1/4" SS	8	EA
11	0101073783	ELB90 3/4" MPT X 3/4" BARB PVC	3	EA
12	0101013783	ELB90 3/4" FPT X 3/4" FPT PVC	2	EA
13	0101423783	TEE 3/4" FT X 3/4" FT X 3/4" FT PVC	2	EA
14	0101653783	ADAP 3/4" MPT X 3/4 BARB PVC	3	EA
15	0328066666	HOSE CLEAR BRAID 3/4"	1.5	FT
16	05181434AA	HOSE CLAMP 3/4" SS	12	EA

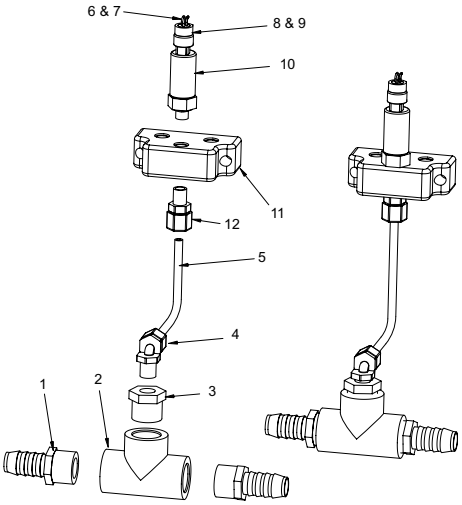


ITEM	PART NUMBER	DESCRIPTION	QTY	U/M
1-5	**P502130002**	**PRESSURE-PICKUP TEE ASSY**		
1	0101653783	ADAP 3/4 MPT X 3/4 BARB PVC	2	EACH
2	0101423783	TEE 3/4 FT X 3/4 FT X 3/4 FT P	1	EACH
3	0101293483	RB 3/4 MT X 1/4 FT PVC	1	EACH
4	0204020869	ELB90 1/4 TUBE X 1/4 MPT PLAST	1	EACH
5	0312121969	TUBE 1/4 BLACK	20	FEET

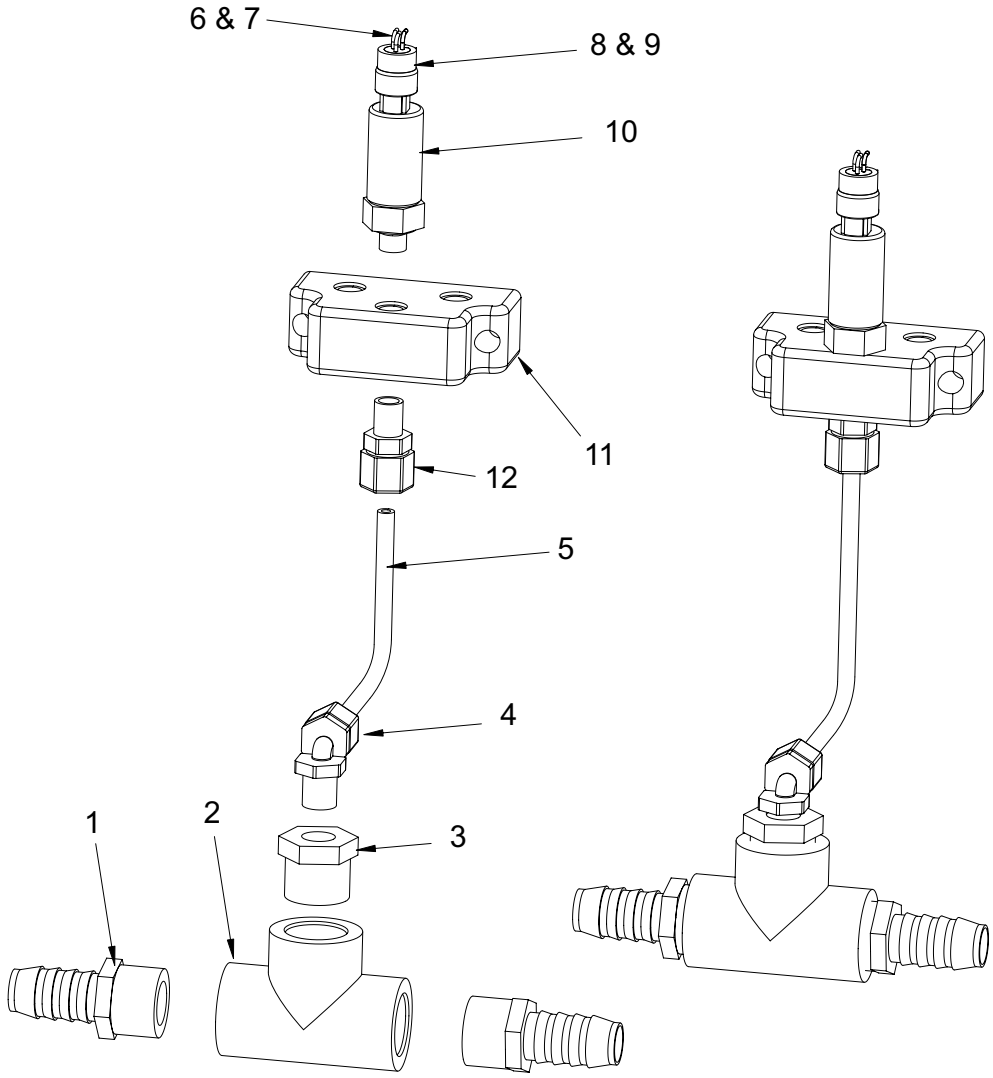
Note: This PRESSURE PICK UP TEE ASSEMBLY is optional and included with certain optional prefiltration components. It is utilized when the standard Dual 10 inch Prefilters are not used or if the Plankton Filter is used with the Standard 10 inch Prefilters along with the Optional Differential Pressure Transducer. If the System is equipped with other optional prefiltration components this manifold will be used to pick up pressure for the respective transducer.





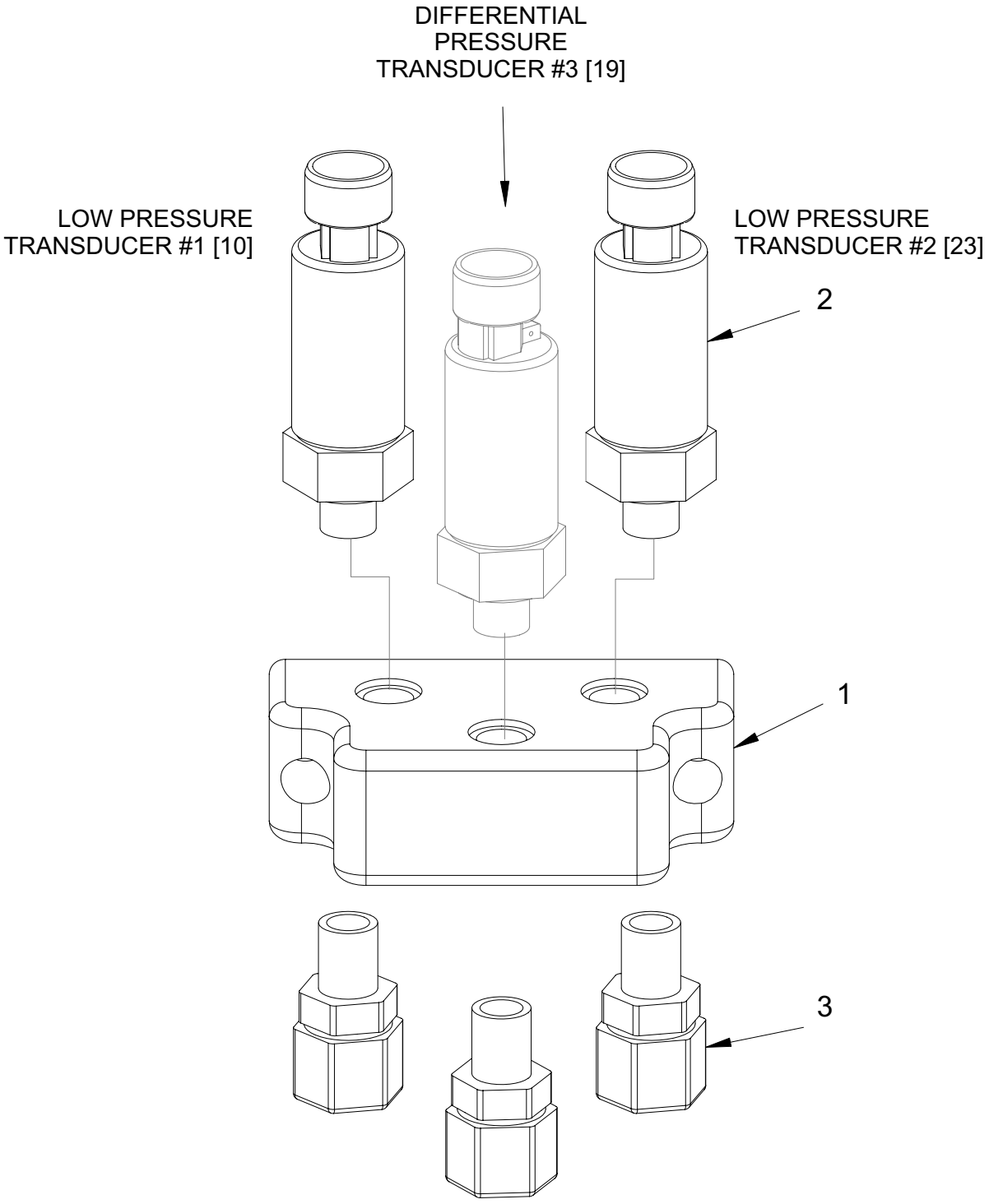


ITEM	PART NUMBER	DESCRIPTION	QTY	U/M
1-10	**B147400001**	**DIFFERENTIAL LOW PRES TRANSDUCER ASSY**		
1 - 5	**P502130002**	**PRESSURE-PICKUP TEE ASSY**		
1	0101653783	ADAP 3/4" MPT X 3/4" BARB PVC	2	EA
2	0101423783	TEE 3/4" FT X 3/4" FT X 3/4" FT P	1	EA
3	0101293483	RB 3/4" MT X 1/4" FT PVC	1	EA
4	0204020869	ELB90 1/4" TUBE X 1/4" MPT PLAST	1	EA
5	0312121969	TUBE 1/4" BLACK	10	FT
6	4942230508	WIRE 24/3 GRAY JACKET	6	FT
7	3131164300	WIRE MARKER 1" 12 - 10 AWG	1	EA
8	31318212CS	PIN PRESSURE TRANSDUCER PLUG	3	EA
9	31311012CS	PLUG PRESSURE TRANSDUCER	1	EA
10	2317100200	TRANSDUCER 0-200 PSI 7/16" SAE	1	EA
11	5301400600	MANIFOLD PRESSURE PICK UP AQM		
12	0204090869	CONN 1/4 TUBE X 1/4 MPT PLASTIC		



ITEM	PART NUMBER	DESCRIPTION	QTY	U/M
1	5301400600	MANIFOLD PRESSURE PICK UP AQM	1	EA
2	2317100200	TRANSDUCER 0-200 PSI 7/16" SAE	2	EA
3	0204090869	CONN 1/4 TUBE X 1/4 MPT PLASTI	3	EA

NOTE: The Aqua Matic is equipped with two Low Pressure Transducers [10 & 23]
Differential Pressure Transducer [19] is an Optional Accessory



PREFILTRATION CARTRIDGE FILTER ELEMENT WARNING:

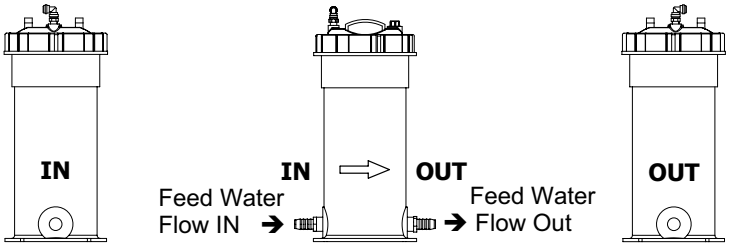
Do not use third party Prefiltration Elements (Plankton Filter Elements, Prefilter Elements, Commercial Prefilter Elements, or Oil/Water Separator Elements). Use only Sea Recovery supplied Prefiltration Elements. Third party prefiltration elements on the market do not properly fit into the Sea Recovery Filter Housings, the seams fall apart, and they will allow by-pass resulting in **EXTENSIVE AND EXPENSIVE DAMAGE TO THE HIGH PRESSURE PUMP AS WELL AS PREMATURE FOULING OF THE R.O. MEMBRANE ELEMENT.**

Damage caused to the Sea Recovery High Pressure Pump, R.O. Membrane Element, or any other component from the use of third party, non Sea Recovery supplied, filter elements is the responsibility and liability of the operator and is not covered by the Sea Recovery Warranty.

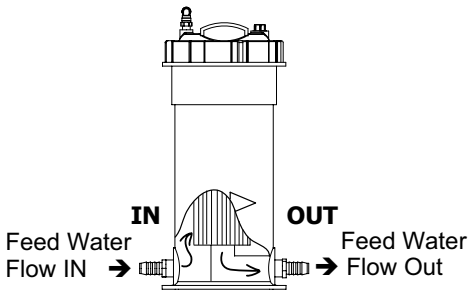
FILTER ELEMENT CAUTION:

Do not use “string wound” or “fiber” type prefilter elements. These type of elements are designed for the Photographic Film Developing industry. When used in sea water they will plug up rapidly in 1/10th or less the time causing frequent shut down of the system and very frequent changing resulting in very high cost of maintenance.

COMMERCIAL PREFILTER CONNECTION AND WATER FLOW



Commercial Prefilter is plumbed
as per the raised arrows and markings IN and OUT



Feed Water Flow through the Commercial Prefilter Element
is from the OUTSIDE of the Element to the INSIDE CENTER of the Element

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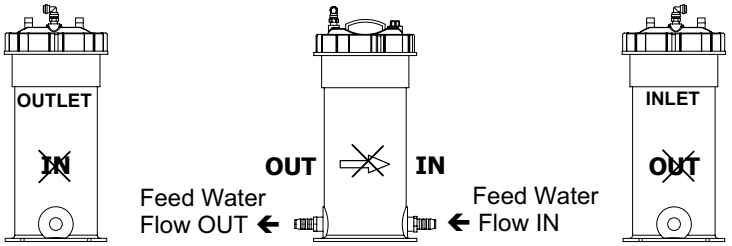
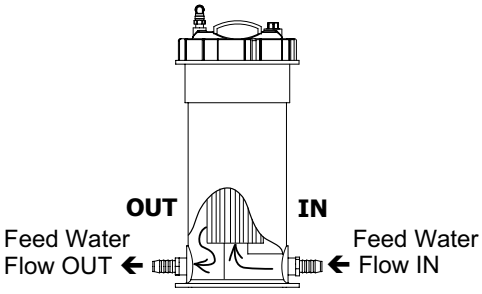
OIL/WATER SEPARATOR CONNECTION AND WATER FLOW

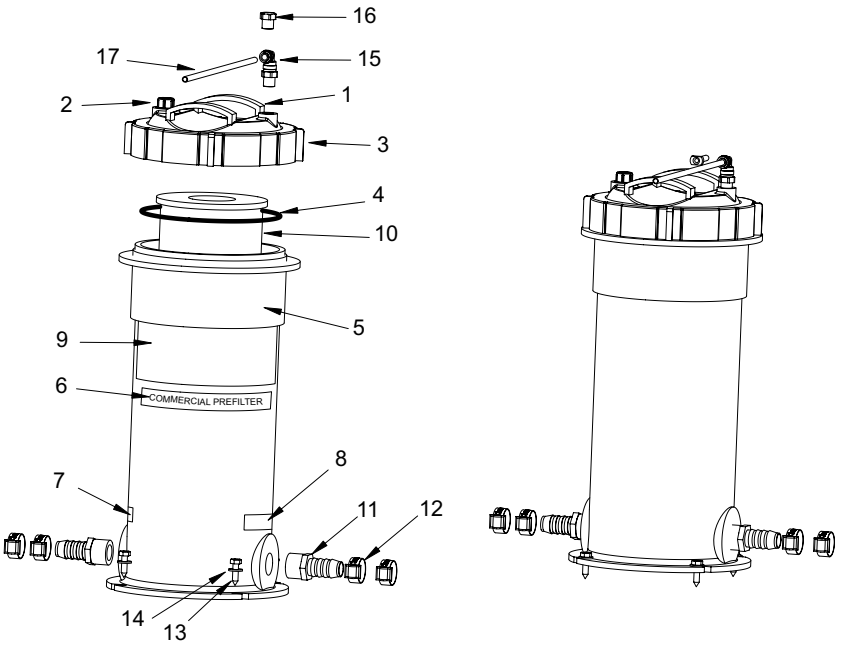


Oil/Water Separator utilizes the same housing as the Commercial Prefilter, however it is plumbed
OPPOSITE of the Commercial Prefilter and OPPOSITE of the raised arrows and markings IN and OUT
Separate Labels are placed on the Oil/Water Separator indicating correct INLET and OUTLET

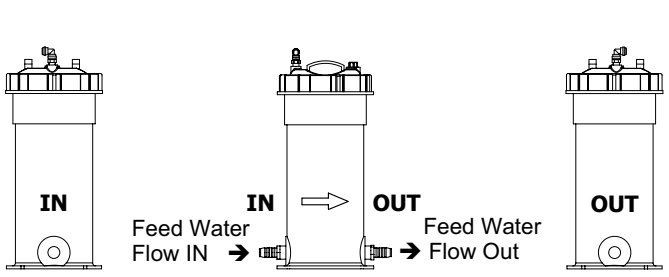


Feed Water Flow through the Oil/Water Separator Element
is from the INSIDE CENTER of the Element to the OUTSIDE of the element

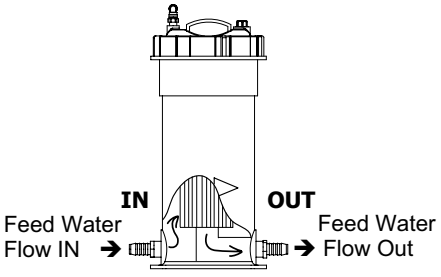
ITEM	PART NUMBER	DESCRIPTION	QTY	U/M
1-16	**B109120001**	**COMMERCIAL PREFILTER ASSY 32.5 SQ FT**		
1-9	07620310WA	FILTER HOUSING 32.5 SQFT >10/05	1	EA
1		LID FILTER HOUSING 32.5 SQ FT		
2	07620310WA-07	SAFETY AIR BLEED VALVE FLTR HOUSING 32.5	1	EA
3		LID LOCK RING FILTER HOUSING 32.5 SQ FT		
4	07620310WA-06	O-RING LID CPF/OWS 32.5 SQ FT		
5		BASE FILTER HOUSING 32.5 SQ FT		
6	22130102BE	LABEL COMM PRE FILTER	2	EA
7	2234011260	LABEL INLET(SRC BLUE)	1	EA
8	2234011360	LABEL OUTLET (SRC BLUE)	1	EA
9	2234010460	LABEL SEA RECOVERY CORP LARGE	2	EA
10	0801063357	ELEMENT CPFE AW 5 MIC 32.5 SQFT	1	EA
11	0101653783	ADAP 3/4" MPT X 3/4" BARB PVC	2	EA
12	05181434AA	HOSE CLAMP 3/4" SS	4	EA
13	061172143016	SC HEX "A" 1/4" X 1" SS	4	EA
14	061100043000	WASHER FLAT OS 1/4" SS	4	EA
15	0204020100	ELB90 1/4 TUBE JGX 1/4" MNPT	1	EA
16	0204990300	PLUG 1/4JG	1	EA
17	0312121969	TUBE 1/4" BLACK	15	FT



COMMERCIAL PREFILTER CONNECTION AND WATER FLOW

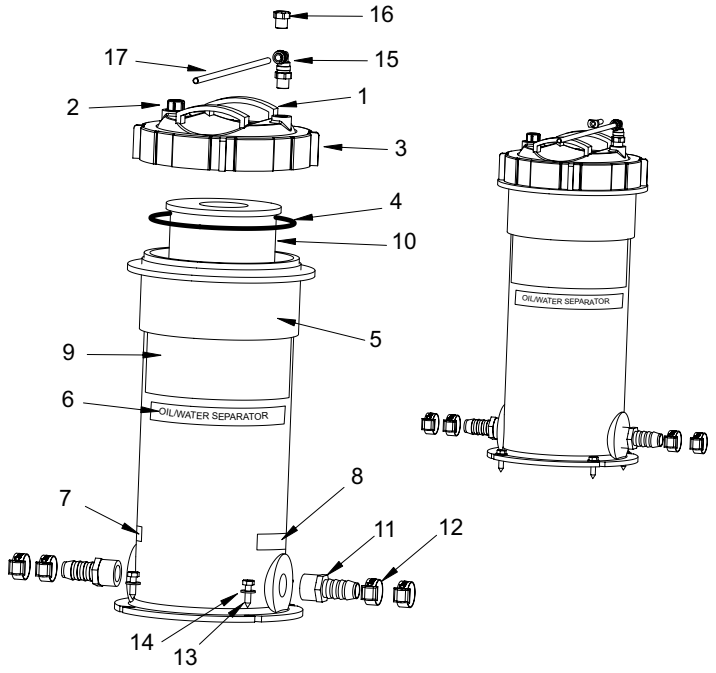


Commercial Prefilter is plumbed
as per the raised arrows and markings IN and OUT

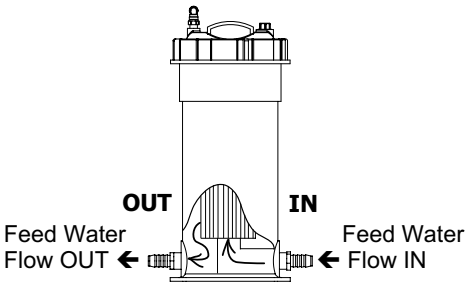


Feed Water Flow through the Commercial
Prefilter Element is from the OUTSIDE
of the Element to the INSIDE CENTER
of the Element

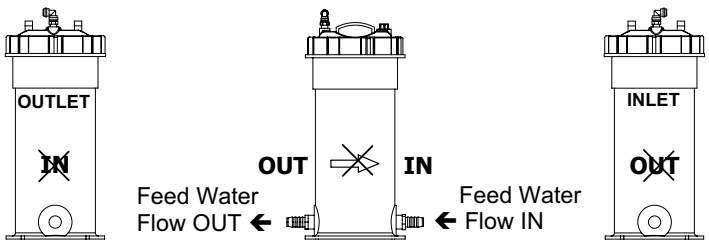
ITEM	PART NUMBER	DESCRIPTION	QTY	U/M
1-16	**B111120001**	**OIL WATER SEPRATOR ASSY 32.5 SQ FT**		
1-9	07620310WA	FILTER HOUSING 32.5 SQFT >10/05	1	EA
1		LID FILTER HOUSING 32.5 SQ FT		
2	07620310WA-07	SAFETY AIR BLEED VALVE FLTR HOUSING 32.5	1	EA
3		LID LOCK RING FILTER HOUSING 32.5 SQ FT		
4	07620310WA-06	O-RING LID CPF/OWS 32.5 SQ FT		
5		BASE FILTER HOUSING 32.5 SQ FT		
6	22130101BE	LABEL OIL WATER SEPERATOR	2	EA
7	2234011260	LABEL INLET(SRC BLUE)	1	EA
8	2234011360	LABEL OUTLET (SRC BLUE)	1	EA
9	2234010460	LABEL SEA RECOVERY CORP LARGE	2	EA
10	08020723KD	ELEMENT OWSE 32.5 SQ FT	1	EA
11	0101653783	ADAP 3/4" MPT X 3/4" BARB PVC	2	EA
12	05181434AA	HOSE CLAMP 3/4" SS	4	EA
13	061172143016	SC HEX "A" 1/4" X 1" SS	4	EA
14	061100043000	WASHER FLAT OS 1/4" SS	4	EA
15	0204020100	ELB90 1/4 TUBE JGX 1/4" MNPT	1	EA
16	0204990300	PLUG 1/4JG	1	EA
17	0312121969	TUBE 1/4" BLACK	15	FT



OIL/WATER SEPARATOR CONNECTION & WATER FLOW

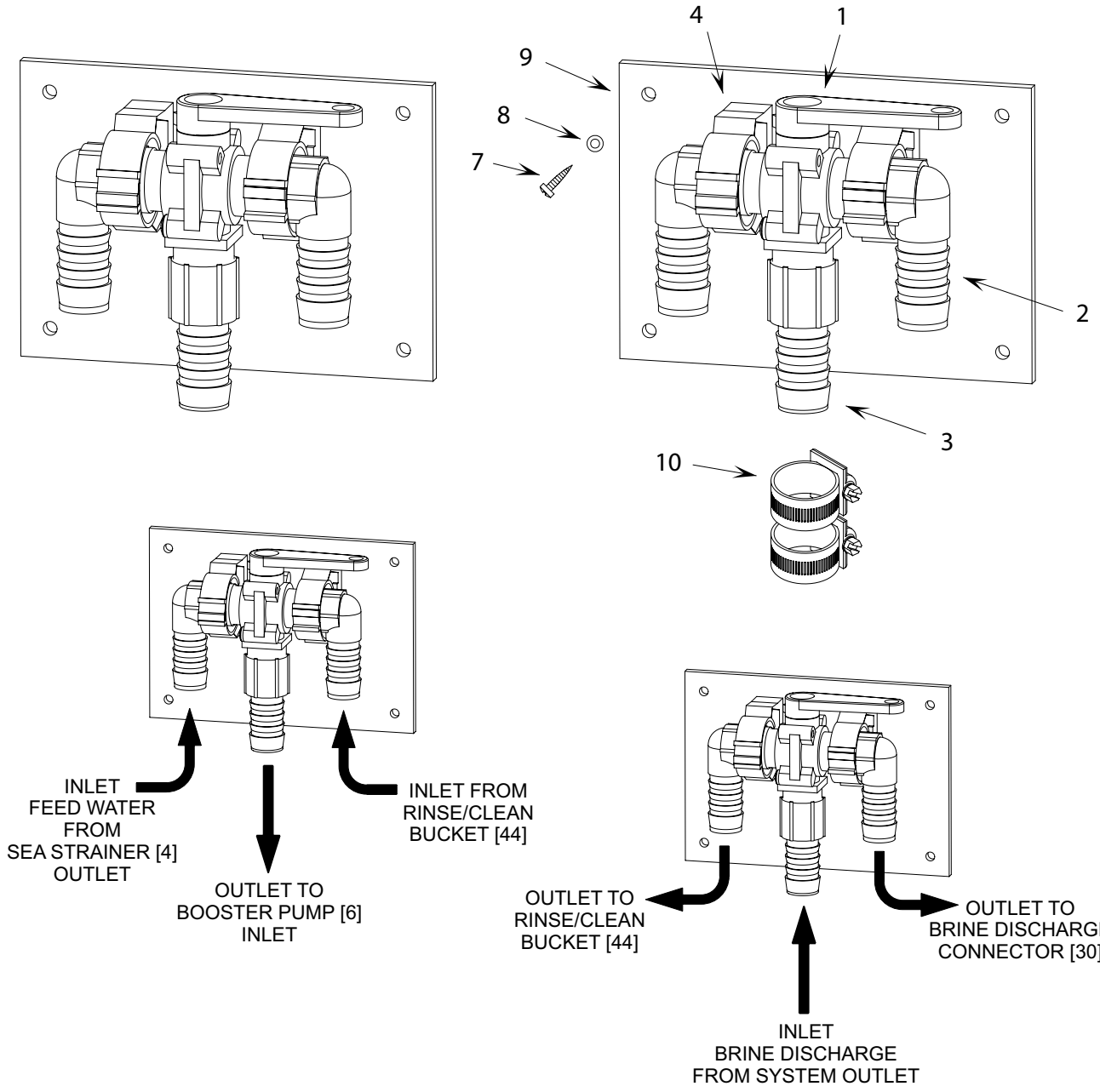


Feed Water Flow through the Oil/Water Separator Element is from the INSIDE CENTER of the Element to the OUTSIDE of the element

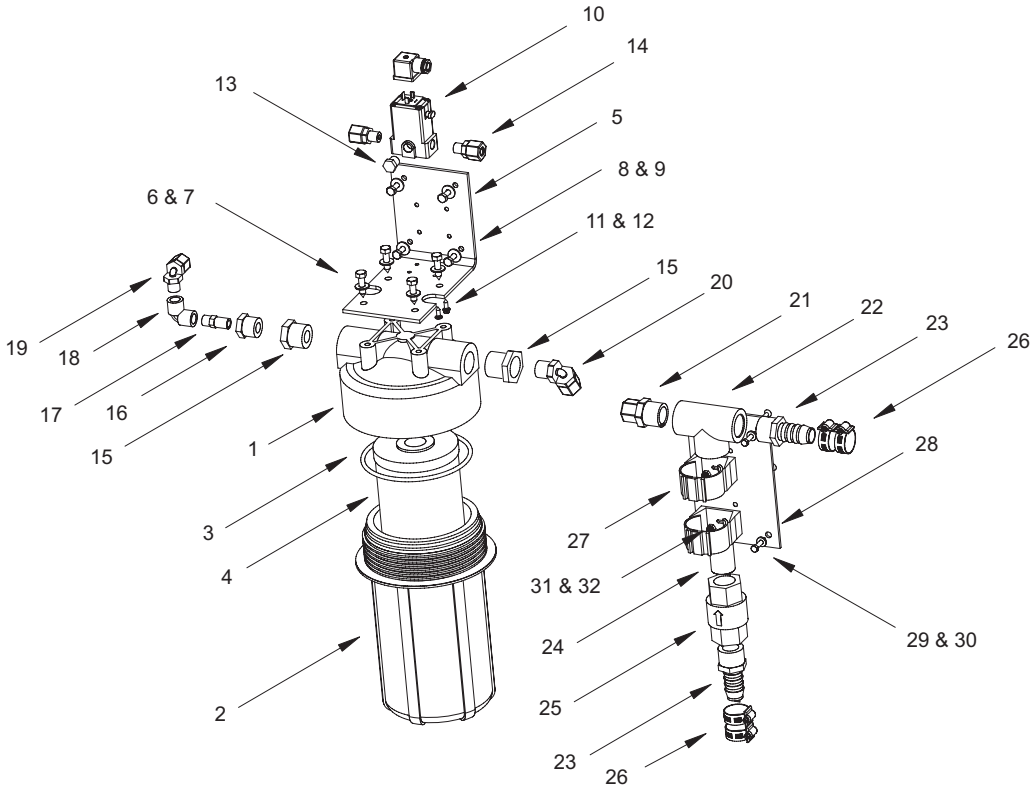


Oil/Water Separator utilizes the same housing as the Commercial Prefilter, however it is plumbed OPPOSITE of the Commercial Prefilter and OPPOSITE of the raised arrows and markings IN and OUT
Separate Labels are placed on the Oil/Water Separator indicating correct INLET and OUTLET

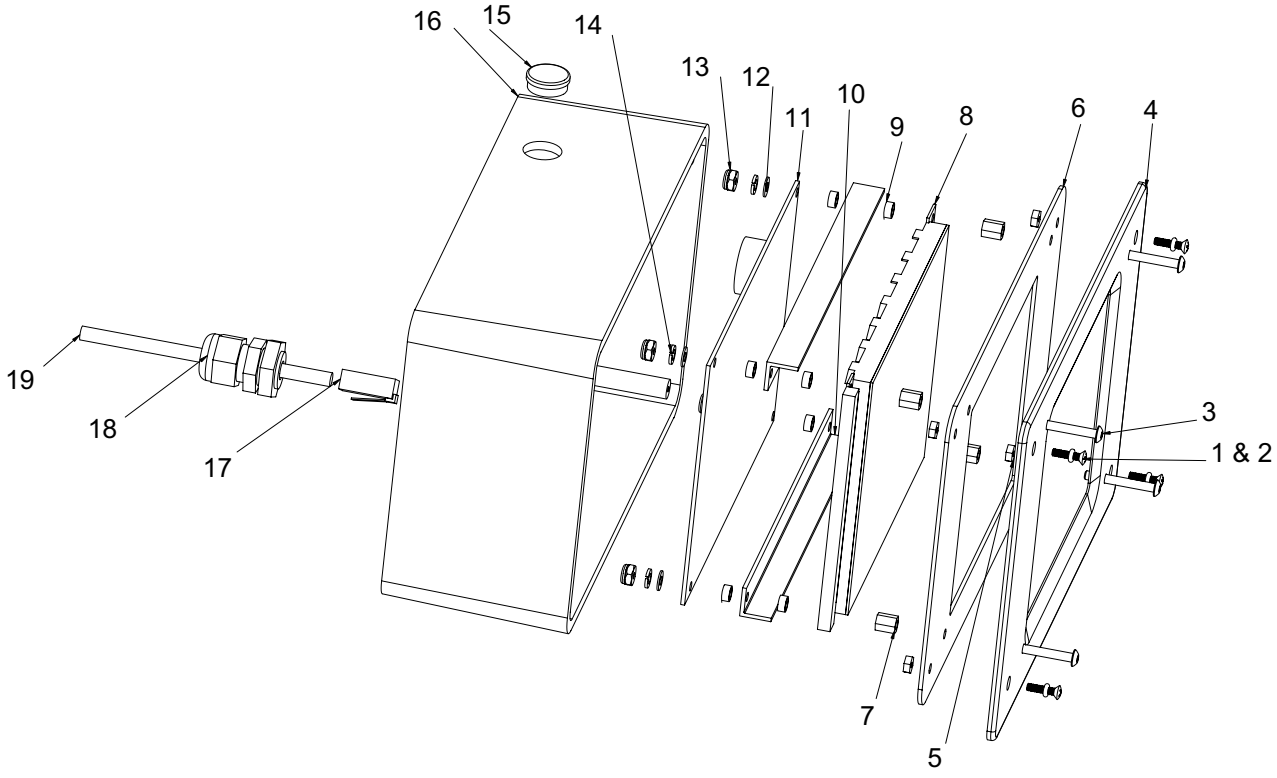
ITEM	PART NUMBER	DESCRIPTION	QTY	U/M
1-11	**B591120001**	**CLEAN AND RINSE KIT AQM**		
1	14011334AR	VALVE 3-WAY BALL 3/4" MPT	2	EA
2	0101063783	ELB90 3/4" FPT X 3/4" BARB PVC	4	EA
3	0101613783	ADAP 3/4" FPT X 3/4" BARB PVC	2	EA
4	0501164200	PIPE SUPPORT 1 1/8"	4	EA
5	061060026000	NUT HEX 8-32 W/INSERT SS	4	EA
6	061161626012	SC PHIL FLAT 8-32 X 3/4" SS	4	EA
7	061170628016	SC PHIL PAN "A" 10 X 1" SS	8	EA
8	065080028000	WASHER FLAT #10 NYLON	8	EA
9	20200404040	BRACKET CLEAN & RINSE KIT AS	2	EA
10	05181434AA	HOSE CLAMP 3/4" SS	12	EA
11	0328066666	HOSE CLEAR BRAID 3/4"	20	FT

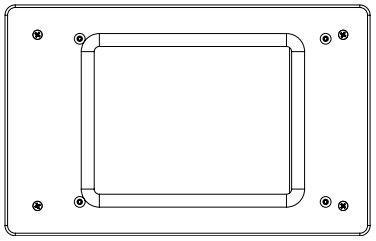


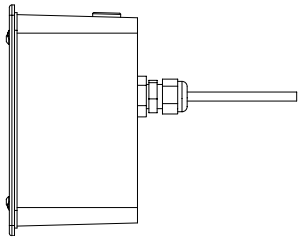
ITEM	PART NUMBER	DESCRIPTION	U/M	QTY
1 - 34	**B598000002**	**FRESH WATER FLUSH SYS-AW>12/99**		
1 - 3	0713020606	FILTER HOUSING BIG BLUE	EACH	1
1		LID BIG BLUE HOUSING 1 EA		
2		BOWL BIG BLUE HOUSING 10"		
3	2614010500	O-RING BIG BLUE HOUSING	EACH	1
4	0803004906	ELEMENT CARBON BRIQUETTE 10"	EACH	1
5	2020040001	BRACKET CARBON FILTER HSG FWF	EACH	1
6	061170628016	SC PHIL PAN "A" 10 X 1 SS	EACH	4
7	065080028000	WASHER FLAT #10 NYLON	EACH	8
8	061172149020	SC HEX "A" 5/16 X 1 1/4 SS	EACH	4
9	061100049000	WASHER FLAT OS 5/16" SS	EACH	4
10	1401095998	VALVE SOLENOID 12VDC AED/CSFE/	EACH	1
11	061170623008	SC PHIL PAN "B" 8 X 1/2 SS	EACH	4
12	065080023000	WASHER FLAT #8 NYLON	EACH	4
13	0101340883	PLUG 1/4 MPT PVC	EACH	1
14	0204091769	CONN 3/8 TUBE X 1/4 MPT PLASTI	EACH	2
15	0101294383	RB 1 MT X 3/4 FT PVC	EACH	2
16	0101293483	RB 3/4 MT X 1/4 FT PVC	EACH	1
17	14172105AT	VALVE CHECK 1/4" MPT SS	EACH	1
18	0101010883	ELB90 1/4 FPT X 1/4 FPT PVC	EACH	1
19	0204021769	ELB90 3/8 TUBE X 1/4 MPT PLAST	EACH	1
20	0204022069	ELB90 3/8 TUBE X 3/4 MPT PLAST	EACH	1
21	0204092069	CONN 3/8 TUBE X 3/4 MPT PLASTI	EACH	1
22	0101423783	TEE 3/4 FT X 3/4 FT X 3/4 FT P	EACH	1
23	0101653783	ADAP 3/4 MPT X 3/4 BARB PVC	EACH	2
24	01013737CL	NIPPLE 3/4 NPT X CLOSE PVC	EACH	1
25	14012118AR	VALVE CHECK 3/4" FPT WITH VITO	EACH	1
26	05181434AA	HOSE CLAMP 3/4" SS	EACH	4
27	0501164500	PIPE SUPPORT 1 1/4"	EACH	2
28	2020040002	BRACKET CHECK VALVE FWF	EACH	1
29	061172143016	SC HEX "A" 1/4 X 1 SS	EACH	4
30	061100043000	WASHER FLAT OS 1/4" SS	EACH	4
31	061161626012	SC PHIL FLAT 8-32 X 3/4 SS	EACH	2
32	061060026000	NUT HEX 8-32 W/INSERT SS	EACH	2
	0713020606-3	FILTER LID WRENCH/BIG BLUE	EACH	1
	4942220811	WIRE 18 GA 2 COND. ORANGE FLEX	FEET	10
	0312123569	TUBE 3/8 BLACK	FEET	10.5



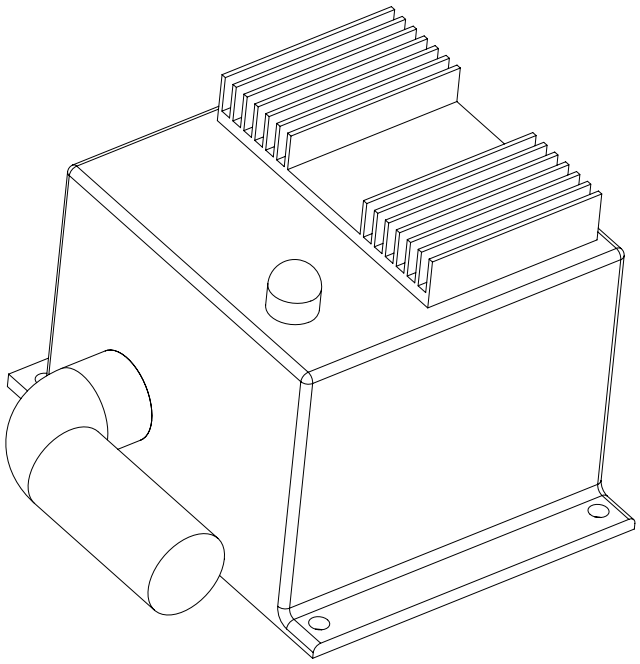
ITEM	PART NUMBER	DESCRIPTION	QTY	U/M
1-19	**B612120001**	**REMOTE AQUA MATIC v3.00**		
1	061161112008	SC PHIL OVAL 4-40 X 1/2 SS	4	EACH
2	2614014700	O-RING 004 GUIDE ROD BRINE AW	4	EACH
3	061162320016	SC SOC CAP BUTTON 6-32 X 1 1/8	4	EACH
4	2020054005	PANEL REMOTE TOUCH PAD BEZEL A	1	EACH
5	061210012000	NUT HEX 4-40 NYLON	4	EACH
6	2615100300	GASKET TOUCH PANEL AQM	1	EACH
7	067262120005	STAND OFF HEX 6-32 x 5/16	4	EACH
8	31317007BY	TOUCHSCREEN 5.7" BLUE/WHITE	1	EACH
9	3131620104	SPACER #6 NON THREADED 1/4	4	EACH
10	2020044003	BRACKET LCD STIFFENER AQM	2	EACH
11	B596120001	PCB LCD DRIVER v3.00	1	EACH
12	061080018000	WASHER FLAT #6 SS	4	EACH
13	061060020000	NUT HEX 6-32 W/INSERT SS	4	EACH
14	061120018000	WASHER SPLIT LOCK #6	4	EACH
15	3131101300	PLUG BLANKING REMOTE AQM .625	1	EACH
16	3131224100	ENCLOSURE REMOTE BLK AQM	1	EACH
17	3131100900	PLUG RJ45	2	EACH
18	1904010443	STRAIN RELIEF 3210 BLK	2	EACH
19	4928660004	CABLE CAT 5E WHITE	75	FEET







ITEM	PART NUMBER	DESCRIPTION	QTY	U/M
1	B596800006	SOFT START ASSY AW	1	EACH



Notes: _____

SPECIFIC FOR ONLY THE

COMPACT STYLE

PAGES 28 THROUGH 56

PREFILTRATION CARTRIDGE FILTER ELEMENT WARNING:

Do not use third party Prefiltration Elements (Plankton Filter Elements, Prefilter Elements, Commercial Prefilter Elements, or Oil/Water Separator Elements). Use only Sea Recovery supplied Prefiltration Elements. Third party prefiltration elements on the market do not properly fit into the Sea Recovery Filter Housings, the seams fall apart, and they will allow by-pass resulting in **EXTENSIVE AND EXPENSIVE DAMAGE TO THE HIGH PRESSURE PUMP AS WELL AS PREMATURE FOULING OF THE R.O. MEMBRANE ELEMENT.**

Damage caused to the Sea Recovery High Pressure Pump, R.O. Membrane Element, or any other component from the use of third party, non Sea Recovery supplied, filter elements is the responsibility and liability of the operator and is not covered by the Sea Recovery Warranty.

FILTER ELEMENT CAUTION:

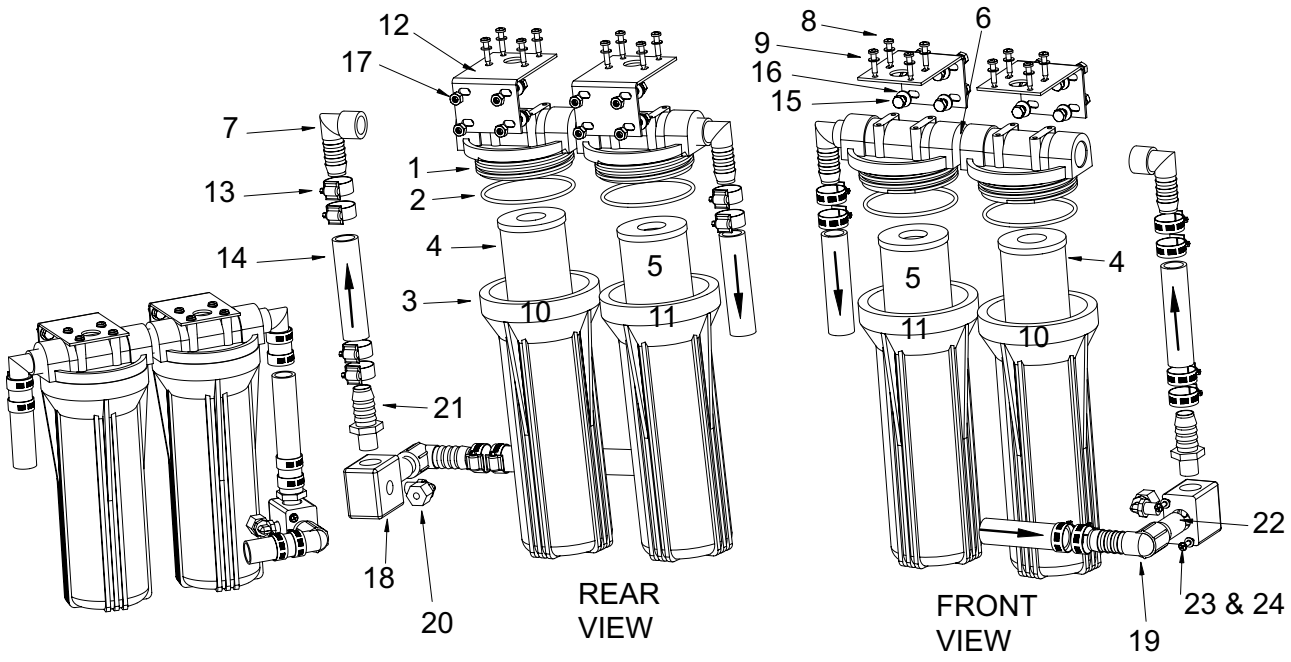
Do not use “string wound” or “fiber” type prefilter elements. These type of elements are designed for the Photographic Film Developing industry. When used in sea water they will plug up rapidly in 1/10th or less the time causing frequent shut down of the system and very frequent changing resulting in very high cost of maintenance.

SPECIFIC TO THE AQUA MATIC COMPACT STYLE ONLY:

ITEM	PART NUMBER	DESCRIPTION	QTY	U/M
1-17	**B108120001**	**PREFILTER DUAL AQM**		
1-3	0713020473	FILTER HOUSING/LID 3/4 X 10	2	EA
1		LID 10 INCH PREFILTER BLUE HOUSING		
2	2614010473	O-RING 237 10 INCH PREFILTER BLUE HOUSING		
3		BOWL 10 INCH PREFILTER BLUE HOUSING		
4	0801130257	ELEMENT PREFILTER 10/25	1	EA
5	0801060157	ELEMENT PREFILTER 10/05	1	EA
6	01013737CL	NIPPLE 3/4 NPT X CLOSE PVC	1	EA
7	0101073783	ELB90 3/4 MPT X 3/4 BARB PVC	2	EA
8	061170628016	SC PHIL PAN ""A"" 10 X 1 SS	8	EA
9	061100028000	WASHER FLAT OS #10 SS	8	EA
10	2234012360	LABEL 25 MICRON PREFILTER-1	1	EA
11	2234012460	LABEL 5 MICRON PREFILTER-2	1	EA
12	20200402100	BRACKET PREFILTER/CHRCL/PLNKTNON	2	EA
13	05181434AA	HOSE CLAMP 3/4"" SS	8	EA
14	0328066666	HOSE CLEAR BRAID 3/4"	2	FT
15	061142145010	BOLT HEX 1/4-20 X 5/8 SS	8	EA
16	061100043000	WASHER FLAT OS 1/4""SS	8	EA
17	065070045000	NUT LOCKING 1/4-20 FLANGED NYL	8	EA
18-24	**P502400002**	**MANIFOLD INLET ASSY AQM**		
18	5301400700	MANIFOLD INLET-PREFILTER AQM	1	EA
19	0101062683	ELB90 1/2 FPT X 3/4 BARB PVC	1	EA
20	0204020869	ELB90 1/4 TUBE X 1/4 MPT PLAST	1	EA
21	0101652683	ADAP 1/2 MPT X 3/4 BARB PVC	1	EA
22	01013725CL	NIPPLE 1/2 NPT X CLOSE PVC	1	EA
23	061170623009	SC PHIL PAN ""A"" 8 X 5/8 SS	2	EA
24	061080023000	WASHER FLAT #8 SS	2	EA

FILTER ELEMENT WARNING: Do not use third party Prefiltration Elements (Plankton Filter Elements, Prefilter Elements, Commercial Prefilter Elements, or Oil/Water Separator Elements). Use only Sea Recovery supplied Prefiltration Elements. Third party prefiltration elements on the market do not properly fit into the Sea Recovery Filter Housings, the seams fall apart, and they will allow by-pass resulting in **EXTENSIVE AND EXPENSIVE DAMAGE TO THE HIGH PRESSURE PUMP AS WELL AS PREMATURE FOULING OF THE R.O. MEMBRANE ELEMENT. Damage caused to the Sea Recovery High Pressure Pump, R.O. Membrane Element, or any other component from the use of third party, non Sea Recovery supplied, filter elements is the responsibility and liability of the operator and is not covered by the Sea Recovery Warranty.**

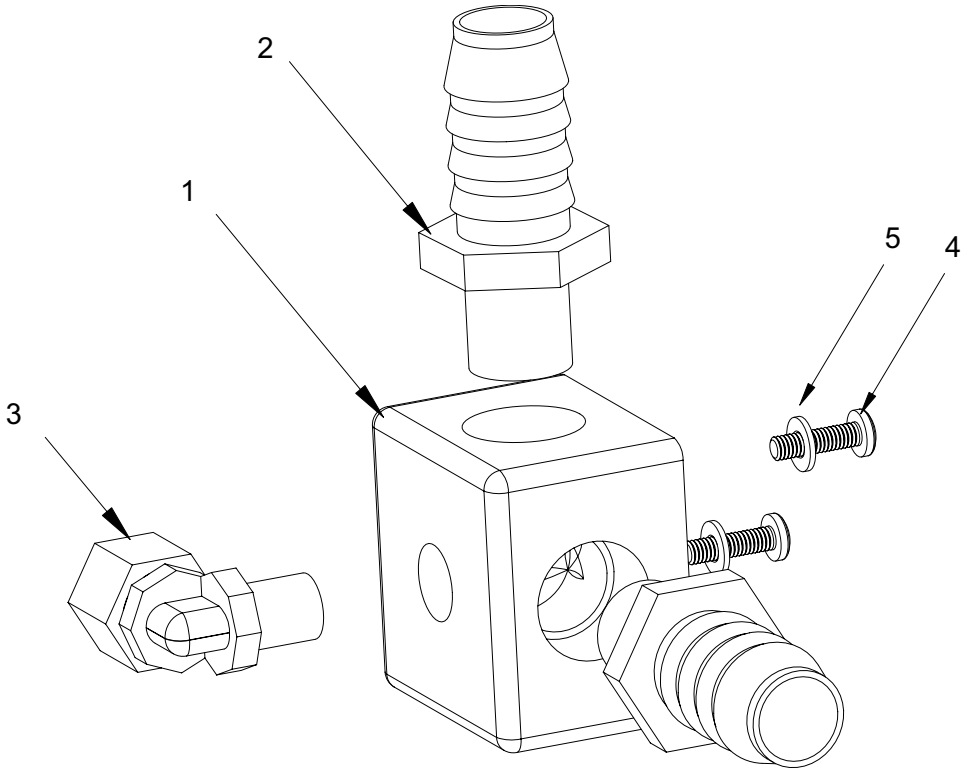
FILTER ELEMENT CAUTION: Do not use "string wound" or "fiber" type prefilter elements. These type of elements are designed for the Photographic Film Developing industry. When used in sea water they will plug up rapidly in 1/10th or less the time causing frequent shut down of the system and very frequent changing resulting in very high cost of maintenance.



SPECIFIC TO THE AQUA MATIC COMPACT STYLE ONLY:

ITEM	PATR NUMBER	DESCRIPTION	QTY	U/M
1-5	**P502400001**	**MANIFOLD INLET ASSY AQM -STD**		
1	5301400300	MANIFOLD INLET STANDARD AQM	1	EACH
2	0101652683	ADAP 1/2 MPT X 3/4 BARB PVC	2	EACH
3	0204020869	ELB90 1/4 TUBE X 1/4 MPT PLAST	1	EACH
4	061170623009	SC PHIL PAN "A" 8 X 5/8 SS	2	EACH
5	061080023000	WASHER FLAT #8 SS	2	EACH

Note: This **MANIFOLD INLET ASSY AQM -STD** is installed inside the Aqua Matic Compact Frame and picks up pressure for the Low Pressure Transducer #2 [17] after all prefiltration and just prior to the High Pressure Pump Inlet.



HIGH PRESSURE PUMP WARNING:

Two similar pumps are commercially available. One has a lower water flow rate, the other has a higher water flow rate than the Sea Recovery High Pressure Pump.

The commercially available **lower water flow rated pump** will cause:

a. Poor quality Product Water.
b. Low Product Water Flow.
b. Excessive operating pressure as the System attempts to adjust pressure to achieve rated Product Water Flow.
b. Immediate fouling of the Sea Recovery Aqua Matic R.O. Membrane Elements resulting in unrecoverable damage to them.

The commercially available **higher water flow rated pump** will cause:

a. Low feed water pressure into the high pressure pump.
b. Line pressure loss of feed water resulting in continual system shut down.
c. Cavitation to the high pressure pump resulting in premature failure of the pump.
d. Extensive Line Pressure Build-Up in the High Pressure Hoses and Manifolds.
d. Telescoping damage of the R.O. Membrane Elements due to excessive feed flow across them.
e. Over heating of the High Pressure Pump Electric Motor due to excessive load.

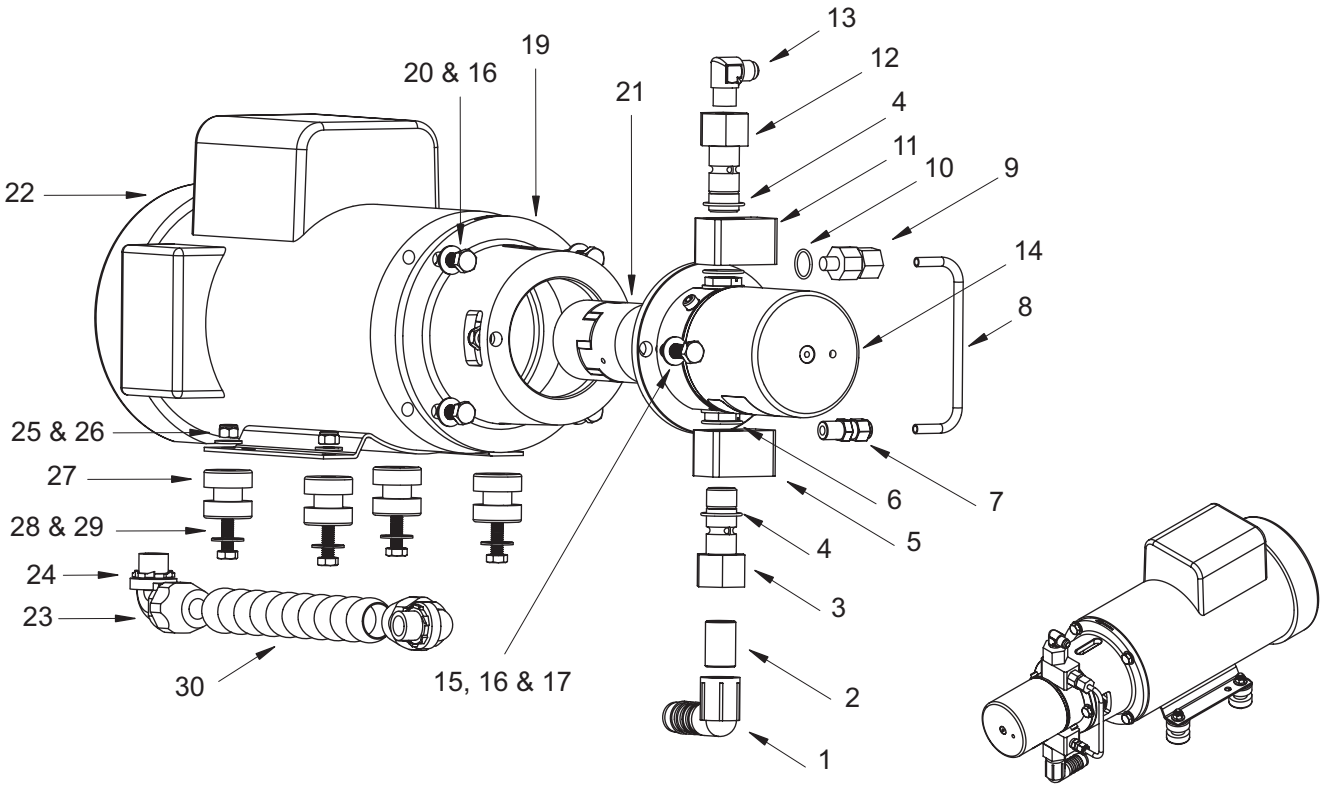
NEVER REPLACE THE SEA RECOVERY HIGH PRESSURE PUMP WITH A THIRD PARTY, NON SEA RECOVERY SUPPLIED, HIGH PRESSURE PUMP. THE SEA RECOVERY AQUA MATIC HIGH PRESSURE PUMP IS NOT AVAILABLE THROUGH ANY SOURCE OTHER THAN SEA RECOVERYand SEA RECOVERY DEALERS. WHEN REPAIRING OR REPLACING THE HIGH PRESSURE PUMP ENSURE THAT THE MARINE DEALER HAS OBTAINED THE REPAIR PARTS OR THE PUMP FROM SEA RECOVERY.

DAMAGE CAUSED TO THE SEA RECOVERY SYSTEM RESULTING FROM THE USE OF NON SUPPLIED SEA RECOVERY PARTS OR COMPONENTS IS THE RESPONSIBILITY AND LIABILITY OF THE MARINE DEALER THAT SUPPLIED THE PUMP OR PARTS AND THE OPERATOR AND IS NOT COVERED BY THE SEA RECOVERY WARRANTY.

SPECIFIC TO THE AQUA MATIC COMPACT STYLE ONLY:

HIGH PRESSURE PUMP AND MOTOR ASSEMBLY SINGLE PHASE ALTERNATING CURRENT 100/220 VAC 50 Hz, SINGLE PHASE & 115/230 VAC, 60 Hz, SINGLE PHASE

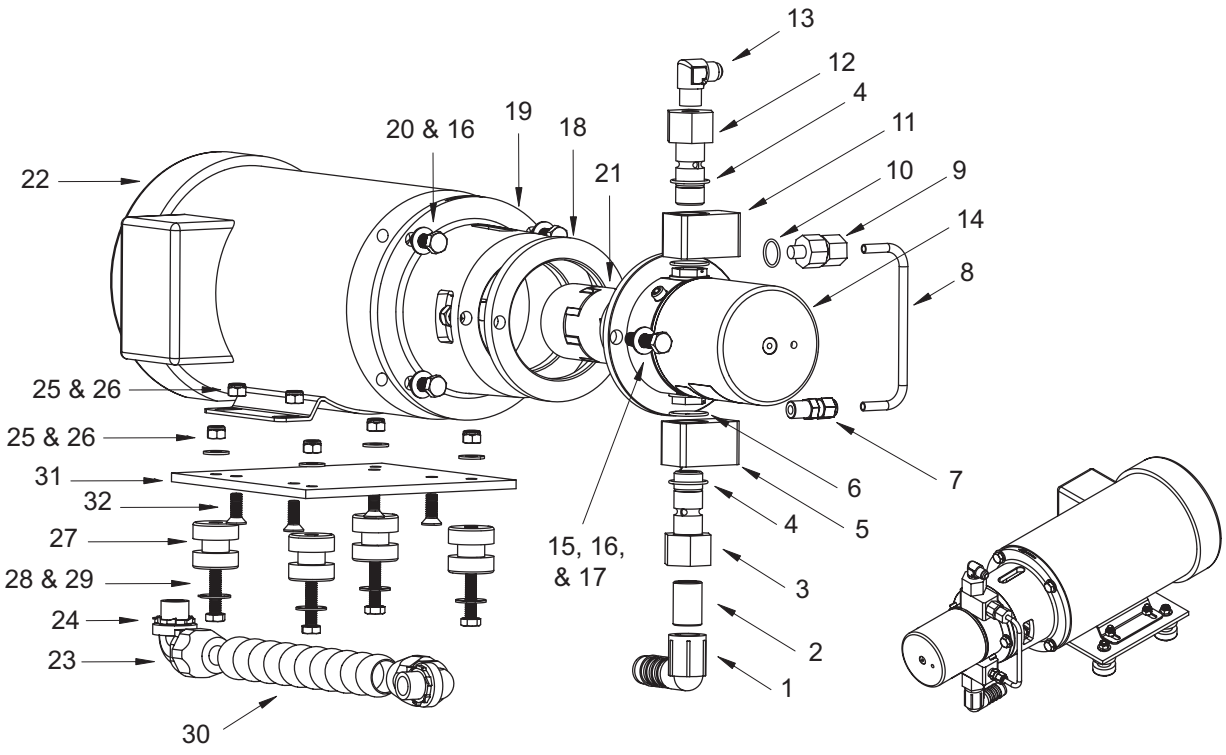
ITEM	PART NUMBER	DESCRIPTION	QTY	U/M
1 - 31	**B156130005**	**HP PUMP/MOTOR ASSY AQTM 110/ 50/60 1 PH**		
1	0101062683	ELB90 1/2 FPT X 3/4 BARB PVC	1	EACH
2	01013725CL	NIPPLE 1/2 NPT X CLOSE PVC	1	EACH
3	0117662500	ADAPTER 1/2-1/4MBSP X 1/2 FNPT	1	EACH
4	2617102100	O-RING ADAPTER 1/2 BSP ISO SS	2	EACH
5	0117990800	BANJO FITTING LOWER 1/4" NPT	1	EACH
6	353001013A	O-RING 022	4	EACH
7	0217090887	CONN 1/4 TUBE X 1/4 MPT SS	1	EACH
8	0117500800	INTERCONNECT BYPASS PIPE SS	1	EACH
9	1417213887	VALVE CHECK 1/4 BSP ISO X 1/4 TU SS	1	EACH
10	353033002A	O-RING 017	1	EACH
11	0117992500	BANJO FITTING UPPER 7/16-20 UN	1	EACH
12	0117662300	ADAPTER 1/2-1/4MBSP X1/4 FNPT-	1	EACH
13	1317021769	ELB90 -6 FLARE X 1/4 MPT SS	1	EACH
14	12572402DS	HPRA PUMP 4.37 GPM	1	EACH
15	061142157020	BOLT HEX 3/8-16 X 1 1/4 SS	2	EACH
16	061080056000	WASHER FLAT 3/8" SS	6	EACH
17	061060057000	NUT HEX 3/8-16 W/INSERT SS	2	EACH
18	NOT USED			
19	1220770100	BELL HOUSING	1	EACH
20	061142157016	BOLT HEX 3/8-16 X 1 SS	4	EACH
21	12207602DL	COUPLING FLEX	1	EACH
22	15AE261912	MOTOR 3/2.5 HP 115/230 1PH	1	EACH
23	1920023632	STRAIN RELIEF 90 1/2 BLK W/NUT	2	EACH
24	063200066000	NUT LOCK 1/2" STEEL	2	EACH
25	061060050000	NUT HEX 5/16-18 W/INSERT SS	4	EACH
26	061100049000	WASHER FLAT OS 5/16" SS	4	EACH
27	2115031700	RUBBER MOUNT 90 LB AQM	4	EACH
28	061110049000	WASHER FENDER 5/16" SS	4	EACH
29	061142150032	BOLT HEX 5/16-18 X 2 SS	4	EACH
30	4928402800	CONDUIT 1/2 FLEX BLK	1	FEET



SPECIFIC TO THE AQUA MATIC COMPACT STYLE ONLY:

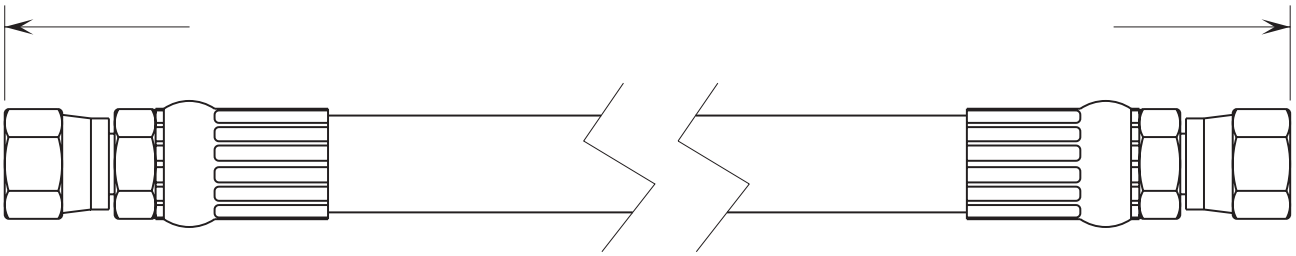
HIGH PRESSURE PUMP AND MOTOR ASSEMBLY THREE PHASE ALTERNATING CURRENT 200-220/380 VAC 50 Hz, 3 PHASE AND 208-230/460 VAC, 60 Hz, 3 PHASE

ITEM	PART NUMBER	DESCRIPTION	QTY	U/M
1 - 31	**B156130006**	**HP PUMP/MOTOR ASSY AQTM 50/60 3 PH**		
1	0101062683	ELB90 1/2 FPT X 3/4 BARB PVC	1	EACH
2	01013725CL	NIPPLE 1/2 NPT X CLOSE PVC	1	EACH
3	0117662500	ADAPTER 1/2-1/4MBSP X 1/2 FNPT	1	EACH
4	2617102100	O-RING ADAPTER 1/2 BSP ISO SS	2	EACH
5	0117990800	BANJO FITTING LOWER 1/4" NPT	1	EACH
6	353001013A	O-RING 022	4	EACH
7	0217090887	CONN 1/4 TUBE X 1/4 MPT SS	1	EACH
8	0117500800	INTERCONNECT BYPASS PIPE SS	1	EACH
9	1417213887	VALVE CHECK 1/4 BSP ISO X 1/4 TU SS	1	EACH
10	353033002A	O-RING 017	1	EACH
11	0117992500	BANJO FITTING UPPER 7/16-20 UN	1	EACH
12	0117662300	ADAPTER 1/2-1/4MBSP X1/4 FNPT-	1	EACH
13	1317021769	ELB90 -6 FLARE X 1/4 MPT SS	1	EACH
14	12572402DS	HPRA PUMP 4.37 GPM	1	EACH
15	061142157022	BOLT HEX 3/8-16 X 1 1/2 SS	2	EACH
16	061080056000	WASHER FLAT 3/8" SS	6	EACH
17	061060057000	NUT HEX 3/8-16 W/INSERT SS	2	EACH
18	2020084007	ADAPTER SPACER MOTOR 3 PH AQM/AQT	1	EACH
19	1220770100	BELL HOUSING	1	EACH
20	061142157016	BOLT HEX 3/8-16 X 1 SS	4	EACH
21	12207602DL	COUPLING FLEX	1	EACH
22	15AF271910	MOTOR 3/2.5 HP 3 PH 50/60 HZ AQM/AQT	1	EACH
23	1920023632	STRAIN RELIEF 90 1/2 BLK W/NUT	2	EACH
24	063200066000	NUT LOCK 1/2" STEEL	2	EACH
25	061060050000	NUT HEX 5/16-18 W/INSERT SS	8	EACH
26	061100049000	WASHER FLAT OS 5/16" SS	8	EACH
27	2115031700	RUBBER MOUNT 90 LB AQM	4	EACH
28	061110049000	WASHER FENDER 5/16" SS	4	EACH
29	061142150032	BOLT HEX 5/16-18 X 2 SS	4	EACH
30	4928402800	CONDUIT 1/2 FLEX BLK	1	FEET
31	2020084006	PLATE BASE MOTOR 3 PH AQMC/AQTC	1	EACH
32	061161650014	SC PHIL FLAT 5/16-18 X 7/8" LG SS	4	EACH



PART NUMBER	DESCRIPTION	LENGTH	PORT
B390120001	HOSE HP ASSY AQMC & AQTC 450-1	17 3/4" / 451mm	INLET
B390120002	HOSE HP ASSY AQMC & AQTC 450-1	12" / 305mm	OUTLET
B390120003	HOSE HP ASSY AQMC & AQTC 700-1	19 3/4" / 502mm	INLET
B390120004	HOSE HP ASSY AQMC & AQTC 700-1	14 1/4" / 362mm	OUTLET
B390120005	HOSE HP ASSY AQMC & AQTC 900-1	23 3/4" / 603mm	NLET
B390120006	HOSE HP ASSY AQMC & AQTC 900-1	17 3/4" / 451mm	OUTLET
B390120007	HOSE HP ASSY AQMC & AQTC 900-2	17 3/4" / 451mm	INLET
B390120008	HOSE HP ASSY AQMC & AQTC 900-2	28 3/4" / 730mm	OUTLET
B390120009	HOSE HP ASSY AQMC & AQTC 1400-2	19 3/4" / 502mm	INLET
B390120000	HOSE HP ASSY AQMC & AQTC 1400-2	30 3/4" / 781mm	OUTLET
B390120011	HOSE HP ASSY AQMC & AQTC 1800-2	23 3/4" / 603mm	INLET
B390120012	HOSE HP ASSY AQMC & AQTC 1800-2	35 1/4" / 895mm	OUTLET

SPECIFY PART NUMBER AND DESCRIPTION OF SPECIFIC HIGH PRESSURE HOSE ASSEMBLY
OR IF A SPECIAL LENGTH IS REQUIRED, SPECIFY MEASURED OVERALL LENGTH: FITTING TO FITTING



OVERALL LENGTH IS + / - 1/4" (6mm)

Notes:

SPECIFIC TO THE AQUA MATIC COMPACT STYLE ONLY:

SINGLE REVERSE OSMOSIS MEMBRANE/VESSEL ASSEMBLY

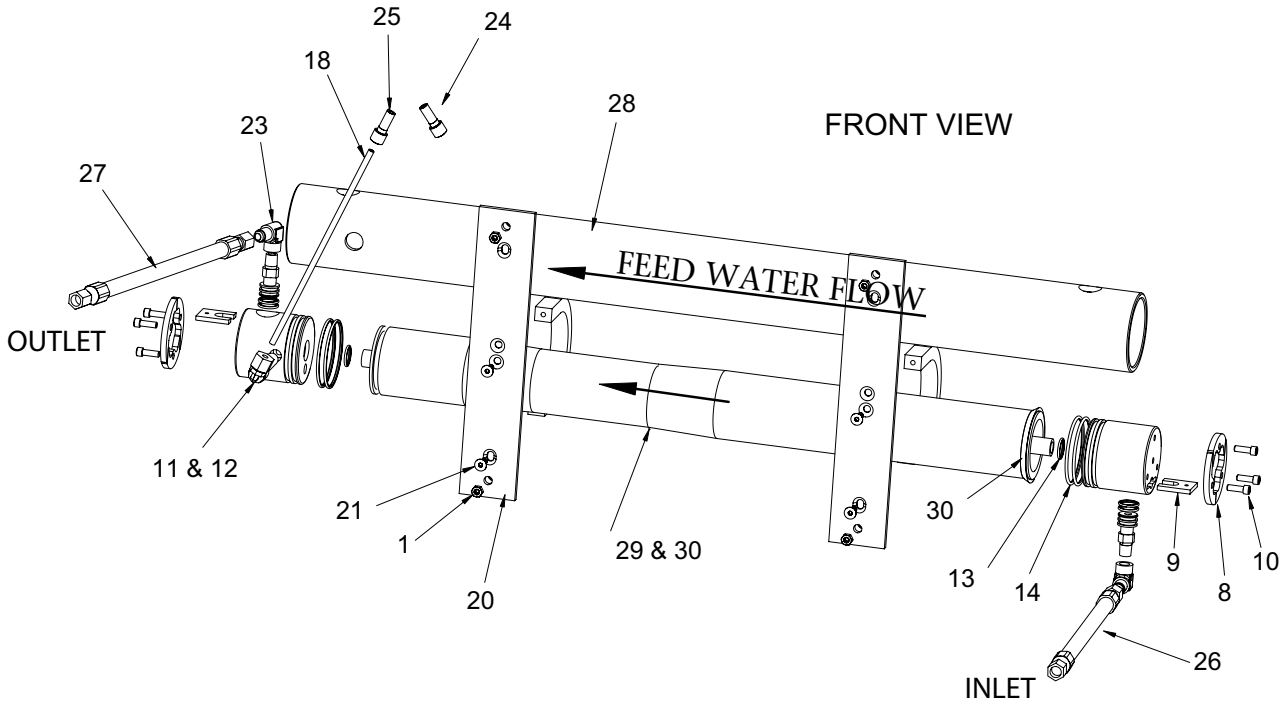
AQUA MATIC MODEL AND STYLE	PART NUMBER	DESCRIPTION
AQUA MATIC 450-1 COMPACT	**B198000020**	**MEMBRANE RACK 450-1 AQMC**
AQUA MATIC 700-1 COMPACT	**B198000021**	**MEMBRANE RACK 700-1 AQMC**
AQUA MATIC 900-1 COMPACT	**B198000022**	**MEMBRANE RACK 900-1 AQMC**

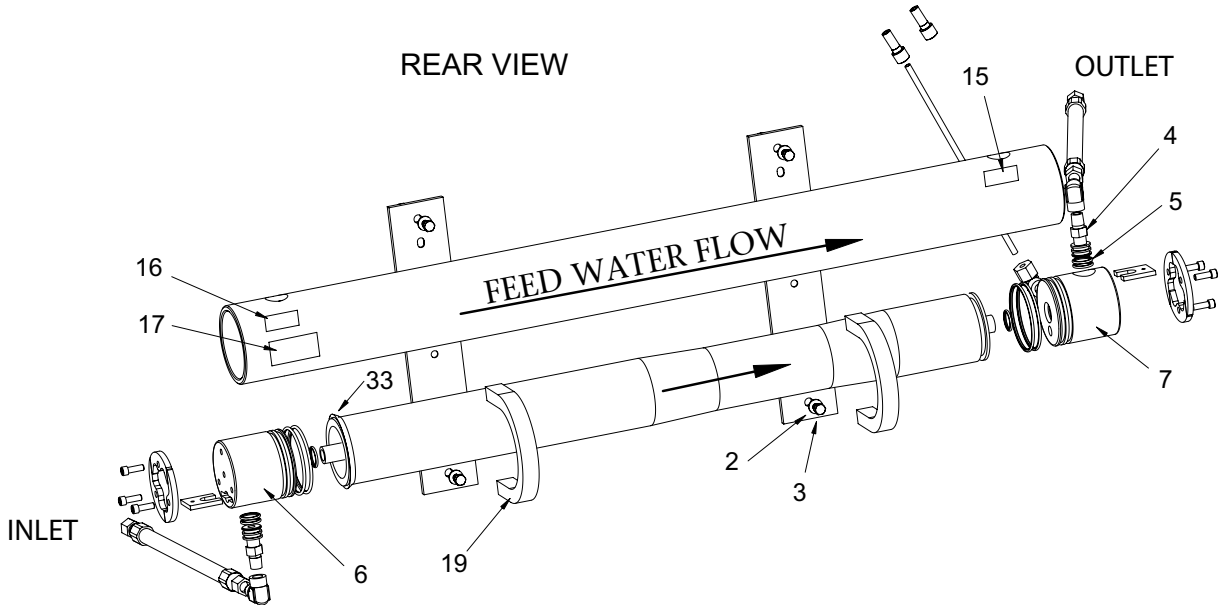
SINGLE REVERSE OSMOSIS MEMBRANE/VESSEL ASSY FOR AQUA MATIC COMPACT STYLE:

ITEM	PART NUMBER	DESCRIPTION	QTY	U/M
1-33	**B198000020**	**MEMBRANE RACK 450-1 AQMC**	**1**	**EACH**
OR				
1-33	**B198000021**	**MEMBRANE RACK 700-1 AQMC**	**1**	**EACH**
OR				
1-33	**B198000022**	**MEMBRANE RACK 900-1 AQMC**	**1**	**EACH**
1	061060045000	NUT HEX 1/4-20 W/INSERT SS	2	EACH
2	061100043000	WASHER FLAT OS 1/4" SS	4	EACH
3	061142145016	BOLT HEX 1/4-20 X 1 SS	2	EACH
4	0117410800	NIPPLE HP MVA AW	2	EACH
5	2614017900	O-RING 115 INTERCONNECTAW	4	EACH
6	2453502400	END PLUG SINGLE 3" AW	1	EACH
7	2453512400	END PLUG DUAL 3" AW	1	EACH
8	20201030000	SEGMENT RING AW (SET)	2	EACH
9	0520210600	RETAINER PORT MVA AW	2	EACH
10	061162345012	SC SOC CAP 1/4-20 X 3/4 SS	6	EACH
11	0101370815	NIPPLE 1/4 NPT X 1 1/2 PVC	1	EACH
12	0204010869	ELB90 1/4 TUBE X 1/4 FPT PLAST	1	EACH
13	2614010100	O-RING 116 PRODUCTAS/AW	2	EACH
14	2614014900	O-RING 230 BRINE 3" END PLUG	4	EACH
15	2234011360	LABEL OUTLET (SRC BLUE)	1	EACH
16	2234011260	LABEL INLET(SRC BLUE)	1	EACH
17	2220010660	LABEL MEMBRANE SERIAL NO. SRC	1	EACH
18	0312121969	TUBE 1/4 BLACK	1.5	FEET
19	05202401GR	BRACKET MVA (AL) U CLAMP AW	2	EACH
20	0520051800	MVA RACK, AW SERIES >9/01	2	EACH
21	061161845012	SC ALLEN FLAT 1/4-20 X 3/4 SS	4	EACH
22	2632180426	DECOFELT 1/8 X 1 1/4 BLK ADH B	0.5	FEET
23	1317011769	ELB90 -6 FLARE X 1/4 FPT SS	2	EACH
24	0204990200	PLUG 3/8 JQ	1	EACH
25	0204690100	REDUCER 3/8 X1/4 JQ	1	EACH
FOR AQUA MATIC 450-1:				
26	B390120001	HOSE HP ASSY AQMC 450-1 17.75" INLET	1	EACH
27	B390120002	HOSE HP ASSY AQMC 450-1 12" OUTLET	1	EACH
28	2408132500	VESSEL HIGH PRESSURE 450GPD AW	1	EACH
29-30	2724011233	MEMBRANE 450GPD AW W/ BRINE SEAL	1	EACH
30	2614050433	BRINE SEAL 3"		
FOR AQUA MATIC 700-1:				
26	B390120003	HOSE HP ASSY AQMC 700-1 19.75" INLET	1	EACH
27	B390120004	HOSE HP ASSY AQMC 700-1 14.25" OUTLET	1	EACH
28	2408132500-01	VESSEL HIGH PRESSURE 700GPD AW	1	EACH
29-30	2724011333	MEMBRANE 700GPD AW W/ BRINE SEAL	1	EACH
30	2614050433	BRINE SEAL 3"		
FOR AQUA MATIC 900-1:				
26	B390120005	HOSE HP ASSY AQMC 900-1 23.75" INLET	1	EACH
27	B390120006	HOSE HP ASSY AQMC 900-1 17.75" OUTLET	1	EACH
28	2408132500-02	VESSEL HIGH PRESSURE 900GPD AW	1	EACH
29-30	2724011433	MEMBRANE 900GPD AW W/ BRINE SEAL	1	EACH
30	2614050433	BRINE SEAL 3"		

SINGLE REVERSE OSMOSIS MEMBRANE/VESSEL ASSEMBLY
ILLUSTRATED FOR AQUA MATIC COMPACT STYLE:

AQUA MATIC MODEL AND STYLE	PART NUMBER	DESCRIPTION
AQUA MATIC 450-1 COMPACT	B198000020	MEMBRANE RACK 450-1 AQMC
AQUA MATIC 700-1 COMPACT	B198000021	MEMBRANE RACK 700-1 AQMC
AQUA MATIC 900-1 COMPACT	B198000022	MEMBRANE RACK 900-1 AQMC





SPECIFIC TO THE AQUA MATIC COMPACT STYLE ONLY:

DOUBLE REVERSE OSMOSIS MEMBRANE/VESSEL ASSEMBLY FOR AQUA MATIC COMPACT STYLE:

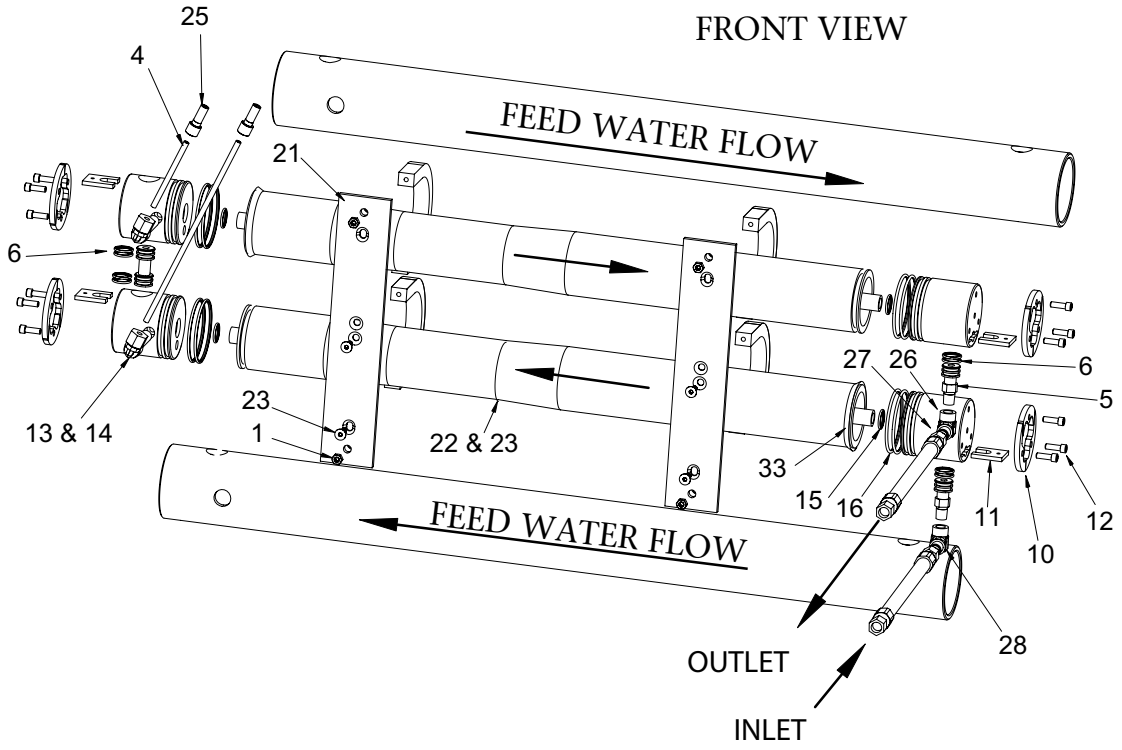
AQUA MATIC MODEL AND STYLE	PART NUMBER	DESCRIPTION
AQUA MATIC 900-2 COMPACT	B198000023	MEMBRANE RACK 900-2 AQMC
AQUA MATIC 1400-2 COMPACT	B198000024	MEMBRANE RACK 1400-2 AQMC
AQUA MATIC 1800-2 COMPACT	B198000025	MEMBRANE RACK 1800-2 AQMC

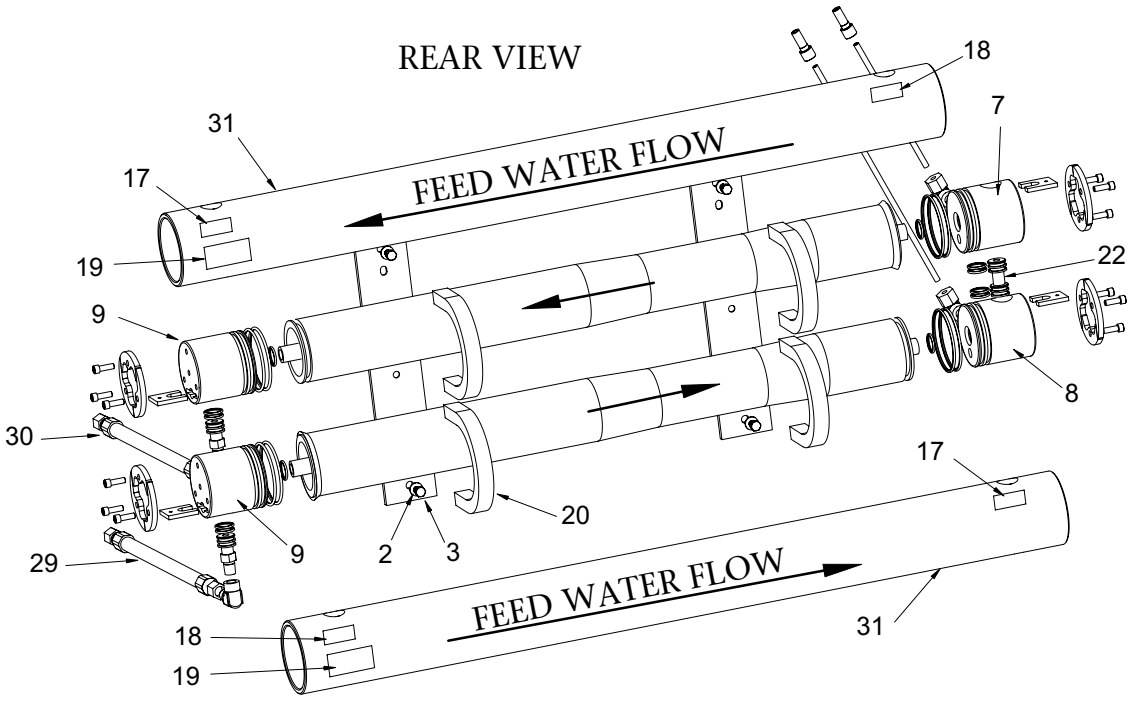
REFER TO ILLUSTRATION ON FOLLOWING PAGE "DOUBLE REVERSE OSMOSIS MEMBRANE/VESSEL ASSEMBLY"

ITEM	PART NUMBER	DESCRIPTION	QTY	U/M
1-33	**B198000023**	**MEMBRANE RACK 900-2 AQMC**	**1**	**EACH**
OR				
1-33	**B198000024**	**MEMBRANE RACK 1400-2 AQMC**	**1**	**EACH**
OR				
1-33	**B198000025**	**MEMBRANE RACK 1800-2 AQMC**	**1**	**EACH**
1	061060045000	NUT HEX 1/4-20 W/INSERT SS	2	EACH
2	061100043000	WASHER FLAT OS 1/4"SS	4	EACH
3	061142145016	BOLT HEX 1/4-20 X 1 SS	2	EACH
4	0312121969	TUBE 1/4 BLACK	4	FEET
5	0117410800	NIPPLE HP MVA AW	2	EACH
6	2614017900	O-RING 115 INTERCONNECTAW	8	EACH
7	H36160522400	END PLUG 3" DUAL, HORIZON SEAF	1	EACH
8	2453512400	END PLUG DUAL 3" AW	1	EACH
9	2453502400	END PLUG SINGLE 3" AW	2	EACH
10	20201030000	SEGMENT RING AW (SET)	4	EACH
11	0520210600	RETAINER PORT MVA AW	4	EACH
12	061162345012	SC SOC CAP 1/4-20 X 3/4 SS	12	EACH
13	0101370815	NIPPLE 1/4 NPT X 1 1/2 PVC	2	EACH
14	0204010869	ELB90 1/4 TUBE X 1/4 FPT PLAST	2	EACH
15	2614010100	O-RING 116 PRODUCTAS/AW	4	EACH
16	2614014900	O-RING 230 BRINE 3" END PLUG	8	EACH
17	2234011360	LABEL OUTLET (SRC BLUE)	2	EACH
18	2234011260	LABEL INLET(SRC BLUE)	2	EACH
19	2220010660	LABEL MEMBRANE SERIAL NO. SRC	2	EACH
20	05202401GR	BRACKET MVA (AL) U CLAMP AW	4	EACH
21	0520051800	MVA RACK, AW SERIES >9/01	2	EACH
22	2417430800	INTERCONNECT MVA SS AW	1	EACH
23	061161845012	SC ALLEN FLAT 1/4-20 X 3/4 SS	8	EACH
24	2632180426	DECOFELT 1/8 X 1 1/4 BLK ADH B	1	FEET
25	0204690100	REDUCER 3/8 X1/4 JQ	2	EACH
26	0117010869	ELB90 1/4 FPT X 1/4 FPT SS	1	EACH
27	1317061769	ELB45 -6 FLARE X 1/4 MPT SS	1	EACH
28	1317011769	ELB90 -6 FLARE X 1/4 FPT SS	1	EACH
FOR AQUA MATIC 900-2:				
29	B390120007	HOSE HP ASSY AQMC 900-2 17.75" INLET	1	EACH
30	B390120008	HOSE HP ASSY AQMC 900-2 28.75" OUTLET	1	EACH
31	2408132500	VESSEL HIGH PRESSURE 450GPD AW	2	EACH
32-33	2724011233	MEMBRANE 450GPD AW W/ BRINE SEAL	2	EACH
33	2614050433	BRINE SEAL 3"		
FOR AQUA MATIC 1400-2:				
29	B390120009	HOSE HP ASSY AQMC 1400-2 19.75 INLET	1	EACH
30	B390120000	HOSE HP ASSY AQMC 1400-2 30.75 OUTLET	1	EACH
31	2408132500-01	VESSEL HIGH PRESSURE 700GPD AW	2	EACH
32-33	2724011333	MEMBRANE 700GPD AW W/ BRINE SEAL	2	EACH
33	2614050433	BRINE SEAL 3"		
FOR AQUA MATIC 1800-2:				
29	B390120011	HOSE HP ASSY AQMC 1800-2 23.75 INLET	1	EACH
30	B390120012	HOSE HP ASSY AQMC 1800-2 35.25 OUTLET	1	EACH
31	2408132500-02	VESSEL HIGH PRESSURE 900GPD AW	2	EACH
32-33	2724011433	MEMBRANE 900GPD AW W/ BRINE SEAL	2	EACH
33	2614050433	BRINE SEAL 3"		

DOUBLE REVERSE OSMOSIS MEMBRANE/VESSEL ASSEMBLY
ILLUSTRATED FOR AQUA MATIC COMPACT STYLE:

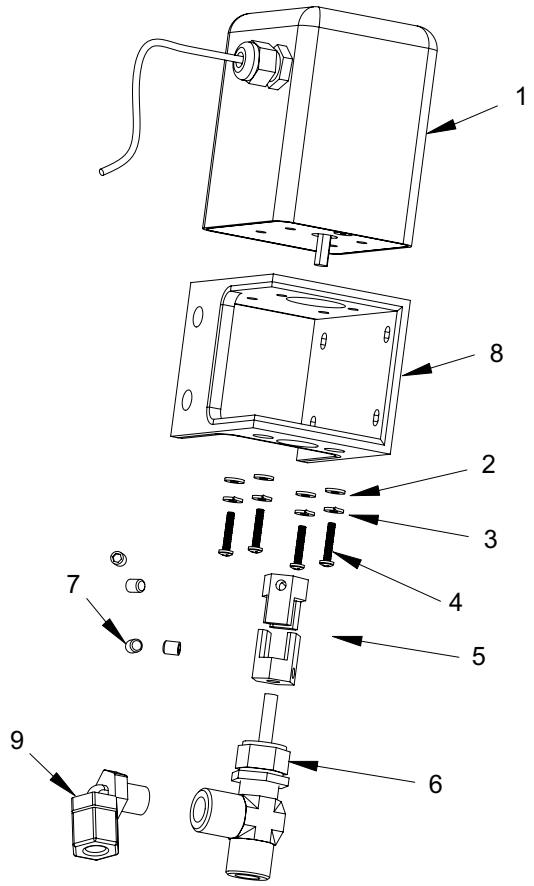
AQUA MATIC MODEL AND STYLE	PART NUMBER	DESCRIPTION
AQUA MATIC 900-2 COMPACT	B198000023	MEMBRANE RACK 900-2 AQMC
AQUA MATIC 1400-2 COMPACT	B198000024	MEMBRANE RACK 1400-2 AQMC
AQUA MATIC 1800-2 COMPACT	B198000025	MEMBRANE RACK 1800-2 AQMC





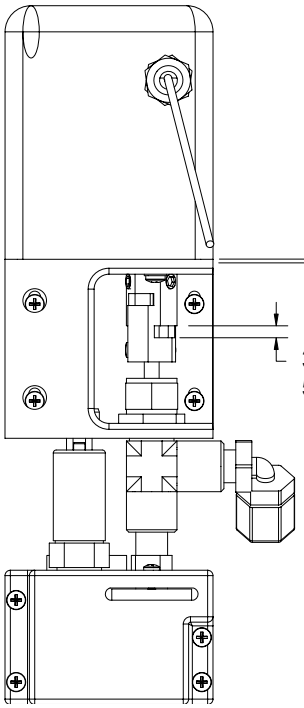
SPECIFIC TO THE AQUA MATIC COMPACT STYLE ONLY:

ITEM	PART NUMBER	DESCRIPTION	QTY	U/M
1	**B079400002**	**BPR GEAR ASSY AQM**	**1**	**EACH**
2	061080023000	WASHER FLAT #8 SS	4	EACH
3	061120023000	WASHER SPLIT LOCK #8 SS	4	EACH
4	061160626012	SC PHIL PAN HEAD 8-32 X 3/4 SS	4	EACH
5	3421020100	COUPLER BACK PRESSURE REG AQM	1	EACH
6	1417017896	VALVE PRESS REGULATOR-AS	1	EACH
7	061222345006	SC ALLEN SET 1/4-20 X 3/8 SS	4	EACH
8	2020044000	BRACKET BP REGULATOR AQM	1	EACH
9	0204021769	ELBOW 90 1/4"MPT x 3/8" TUBE PLASTIC	1	EACH



WARNING:
1. MOTOR GEAR SHAFT AND BACK PRESSURE REGULATOR VALVE STEM MUST BE SYNCRONIZED PRIOR TO TIGHTENING COUPLERS ELSE DAMAGE TO MOTOR AND GEARS WILL RESULT AND SYSTEM WILL NOT REMAIN IN OPERATION REFER TO SECTION 8 OF THIS OWNER'S MANUAL FOR SPECIFIC INSTRUCTIONS.

2. SEE COUPLER SPACING NOTES BELOW.

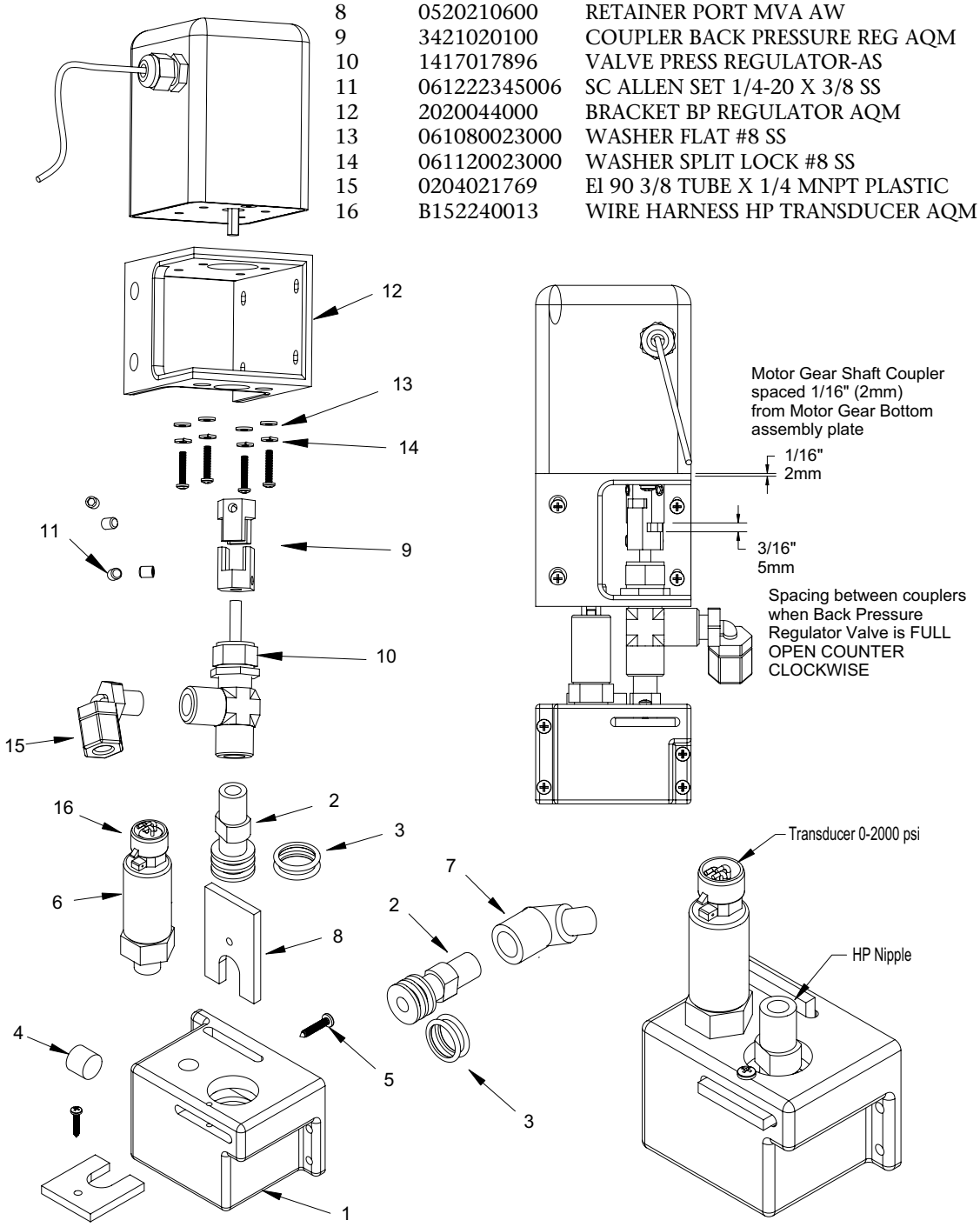


Motor Gear Shaft Coupler spaced 1/16" (2mm) from Motor Gear Bottom assembly plate

Spacing between couplers when Back Pressure Regulator Valve is FULL OPEN COUNTER CLOCKWISE

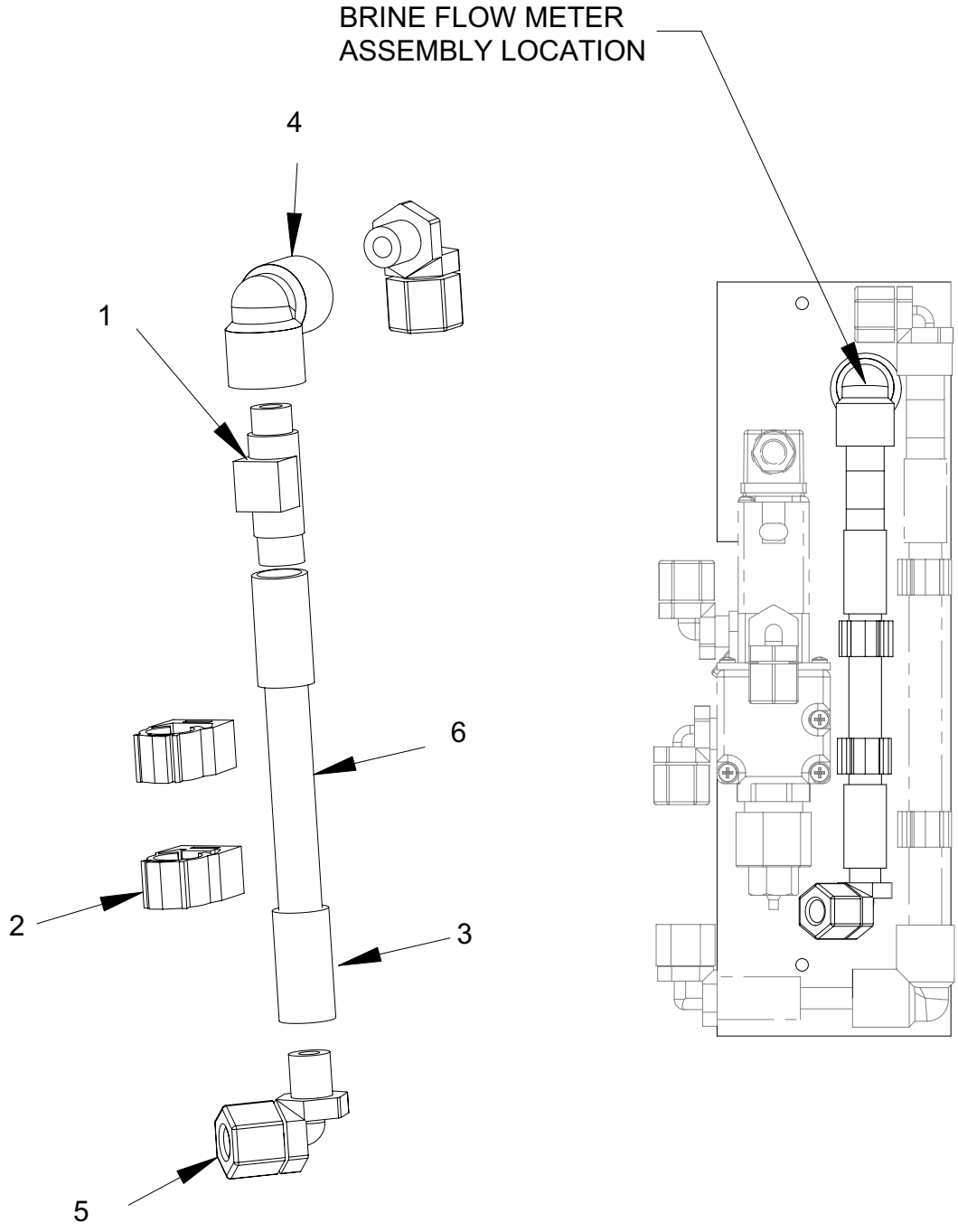
SPECIFIC TO THE AQUA MATIC COMPACT STYLE ONLY:

ITEM	PART NUMBER	DESCRIPTION	QTY	U/M
1-14	**P340120001**	**HP MANIFOLD ASSY AQM**		
1	5333400200	MANIFOLD HIGH PRESS AQM	1	EACH
2	0117410800	NIPPLE HP MVA AW	2	EACH
3	2614017900	O-RING 115 INTERCONNECTAW	4	EACH
4	0117340800	PLUG 1/4 MPT SOC SS	1	EACH
5	061170618109	SC PHIL PAN "A" 6 X 3/4 SS	2	EACH
6	2317100300	TRANSDUCER 0-2000 PSI 7/16 SA	1	EACH
7	1317064800	ELB45 -6 FLARE X 1/4 FPT SS	1	EACH
8	0520210600	RETAINER PORT MVA AW	2	EACH
9	3421020100	COUPLER BACK PRESSURE REG AQM	1	EACH
10	1417017896	VALVE PRESS REGULATOR-AS	1	EACH
11	061222345006	SC ALLEN SET 1/4-20 X 3/8 SS	4	EACH
12	2020044000	BRACKET BP REGULATOR AQM	1	EACH
13	061080023000	WASHER FLAT #8 SS	4	EACH
14	061120023000	WASHER SPLIT LOCK #8 SS	4	EACH
15	0204021769	El 90 3/8 TUBE X 1/4 MNPT PLASTIC	1	EACH
16	B152240013	WIRE HARNESS HP TRANSDUCER AQM	1	EACH



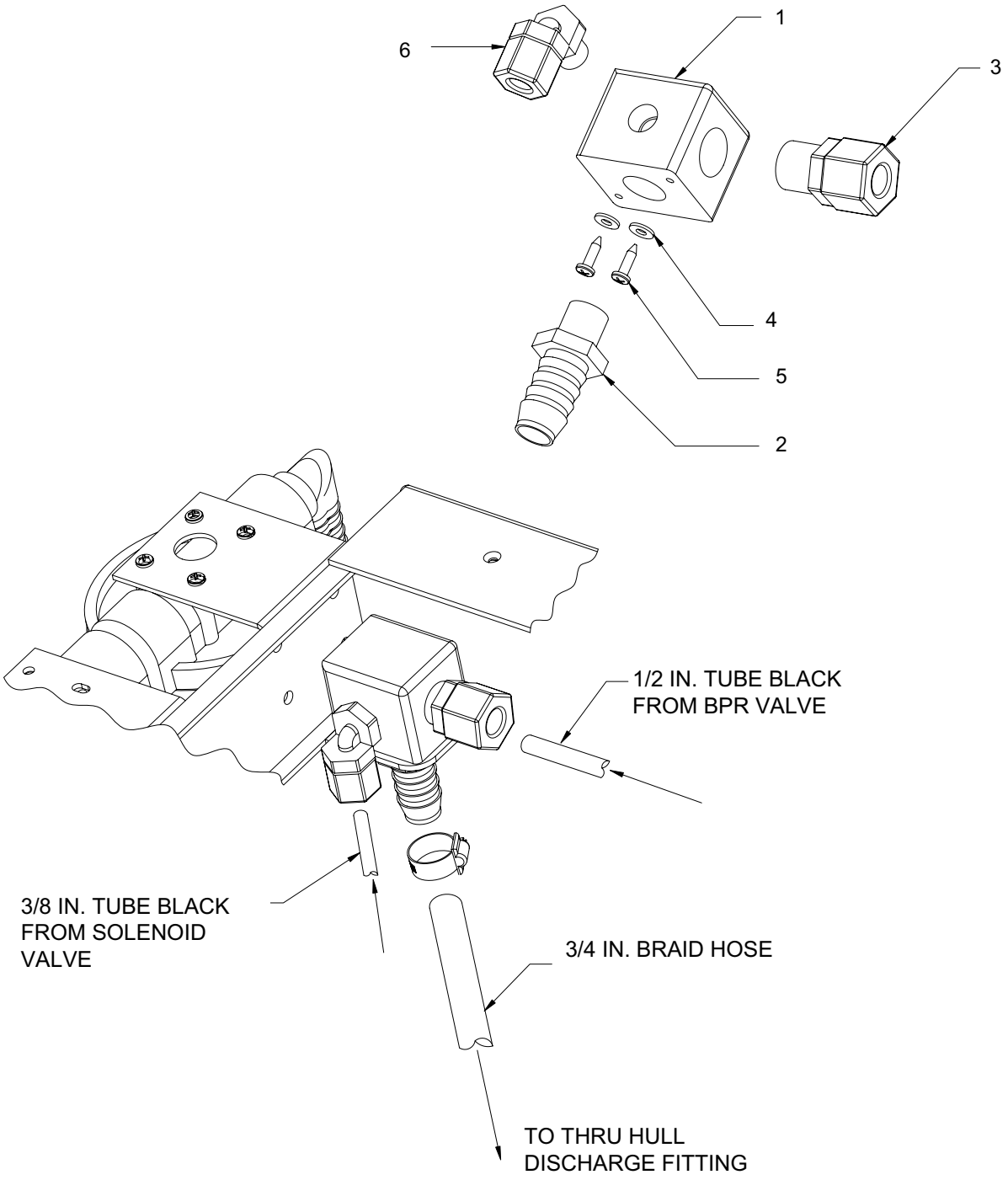
SPECIFIC TO THE AQUA MATIC COMPACT STYLE ONLY:

ITEM	PART NUMBER	DESCRIPTION	QTY	U/M
1	11026920AO	FLOW METER IN-LINE .53-7.9 GPM	1	EACH
2	0501164800	PIPE SUPPORT 3/8"	4	EACH
3	0101551883	COUP 3/8 SL X 3/8 FPT PVC	2	EACH
4	0101011883	ELB90 3/8 FPT X 3/8 FPT PVC	1	EACH
5	0204021869	ELB90 3/8 TUBE X 3/8 MPT PLAST	2	EACH
6	0301094100	PIPE PVC SCH 80 3/8"	4	INCH



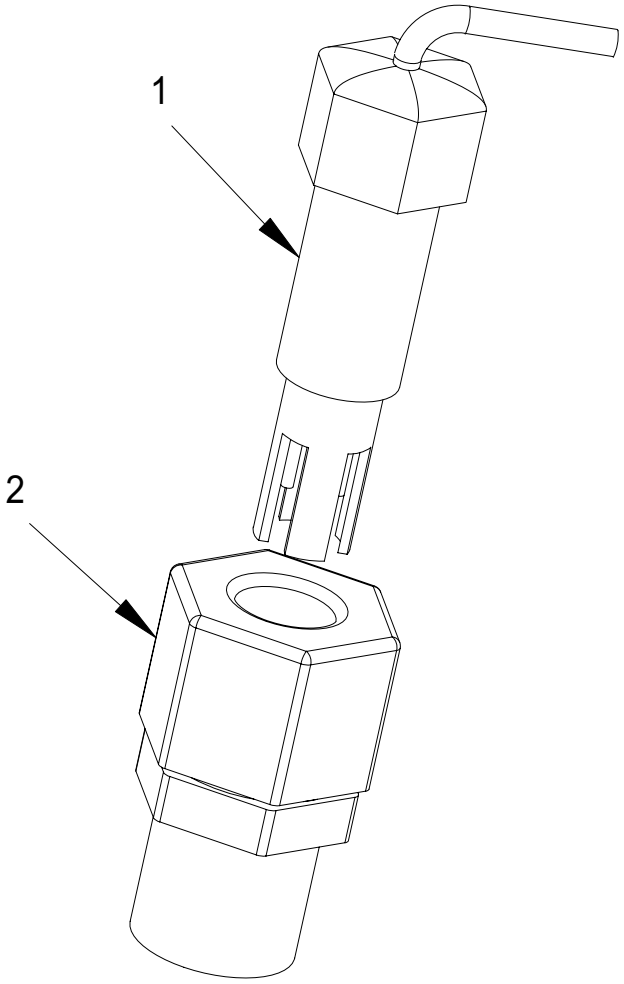
SPECIFIC TO THE AQUA MATIC COMPACT STYLE ONLY:

ITEM	PART NUMBER	DESCRIPTION	QTY	U/M
1-6	**P483400001**	**BRINE DISCHARGE MANIFOLD ASSY AQM**		
1	5301400400	MANIFOLD BRINE DISCHARGE AQM	1	EACH
2	0101652683	ADAP 1/2 MPT X 3/4 BARB PVC	1	EACH
3	0204092569	CONN 1/2 TUBE X 1/2 MPT PLASTI	1	EACH
4	061080023000	WASHER FLAT #8 SS	2	EACH
5	061170623009	SC PHIL PAN "A" 8 X 5/8 SS	2	EACH
6	0204021769	ELB90 3/8 TUBE X 1/4 MPT PLAST	1	EACH



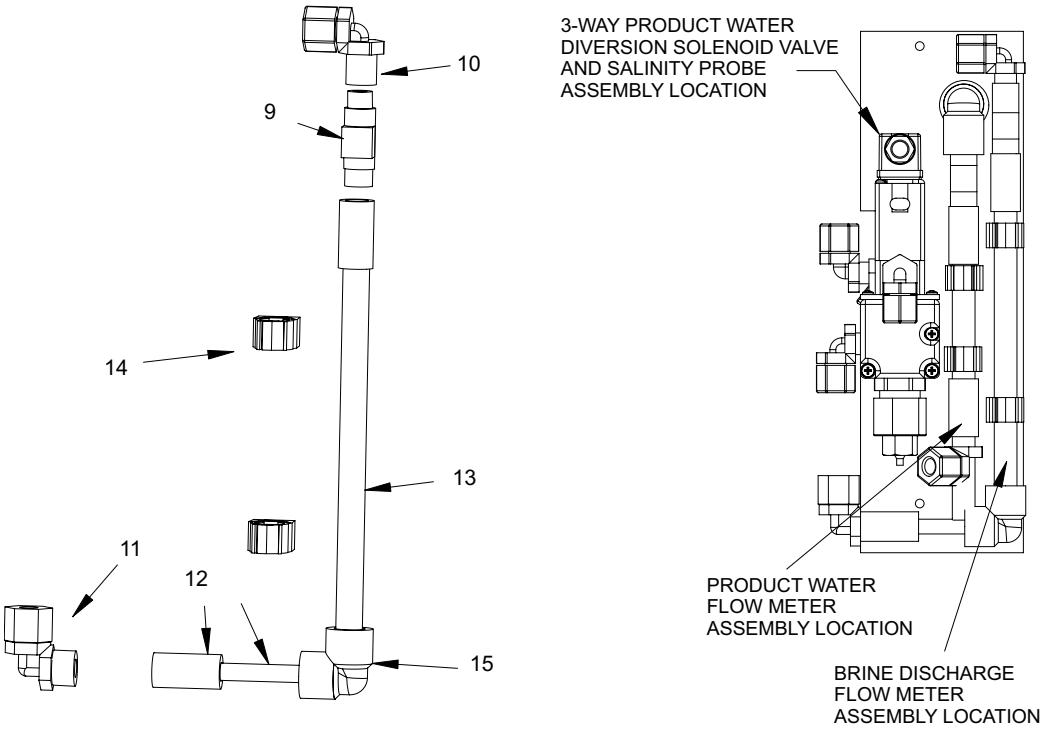
SPECIFIC TO THE AQUA MATIC COMPACT STYLE ONLY:

ITEM	PART NUMBER	DESCRIPTION	QTY	U/M
1-2	**B51108001**	**SALINITY PROBE ASSY AQM**	**1**	**EACH**
1	31314203HA	SALINITY PROBE W-TEMP SENSOR	1	EACH
2	0204092569	CONN 1/2 TUBE X 1/2 MNPT PLASTIC	1	EACH



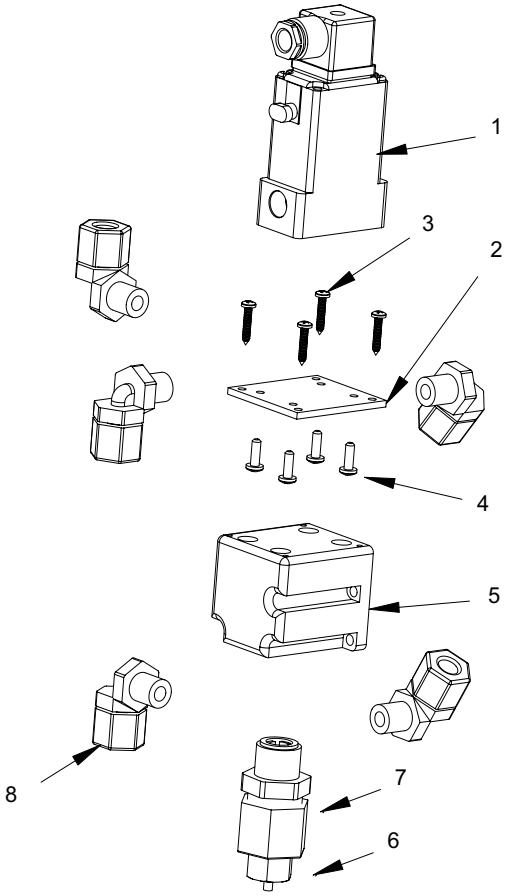
SPECIFIC TO THE AQUA MATIC COMPACT STYLE ONLY:

ITEM	PART NUMBER	DESCRIPTION	QTY	U/M
1-24	P515400001	LP BACK PLATE ASSEMBLY AQM		
1-8		3-WAY PRODUCT WATER DIVERSION SOLENOID VALVE AND SALINITY PROBE ASSEMBLY		
1	1401095998	VALVE SOLENOID 12VDC AED/CSFE/	1	EACH
2	3901034000	ADAPTER PLATE DIV-VALVE AQM	1	EACH
3	061170618109	SC PHIL PAN "A" 6 X 3/4 SS	4	EACH
4	061170623008	SC PHIL PAN "B" 8 X 1/2 SS	4	EACH
5	5301400500	MANIFOLD SALINITY PROBE AQM	1	EACH
6	31314203HA	SALINITY PROBE W/ TEMP SENSOR	1	EACH
7	0204092969	CONN 5/8 TUBE X 1/2 MPT PLASTI	1	EACH
8	0204021769	ELB90 3/8 TUBE X 1/4 MPT PLAST	6	EACH
9- 15		**PRODUCT WATER FLOW METER ASSEMBLY**		
9	11026520AO	FLOW METER IN-LINE .13-1.3 GPM	1	EACH
10	0204011869	ELB90 3/8 TUBE X 3/8 FPT PLAST	1	EACH
11	0204021869	ELB90 3/8 TUBE X 3/8 MPT PLAST	1	EACH
12	0101551883	COUP 3/8 SL X 3/8 FPT PVC	4	EACH
13	0301094100	PIPE PVC SCH 80 3/8"	.5	FEET
14	0501164800	PIPE SUPPORT 3/8"	2	EACH
15	0101051800	ELB90 3/8 SL X 3/8 SL PVC	1	EACH
16	061160625006	SC PHIL PAN 8-32 X 1/2 SS	7	EACH
17	2020084004	LP PLATE AQM	1	EACH
18	11026920AO	FLOW METER IN-LINE .53-7.9 GPM	1	EACH
19	0501164800	PIPE SUPPORT 3/8"	2	EACH
20	0301094100	PIPE PVC SCH 80 3/8"	1.5	FEET
21	0101011883	ELB90 3/8 FPT X 3/8 FPT PVC	1	EACH
22	0312123569	TUBE 3/8 BLACK	2	FEET
23	0204021869	ELB90 3/8 TUBE X 3/8 MPT PLAST	1	EACH
24	0204022469	ELB90 1/2 TUBE X 3/8 MPT PLAST	1	EACH
25	061160631014	SC PHIL PAN 10-32 X 7/8 SS	2	EACH
26	065070031000	NUT LOCKING 10-32 NYLON	2	EACH
27	4942220809	WIRE 18 GA 2 COND. BLUE FLEX C	2.25	FEET



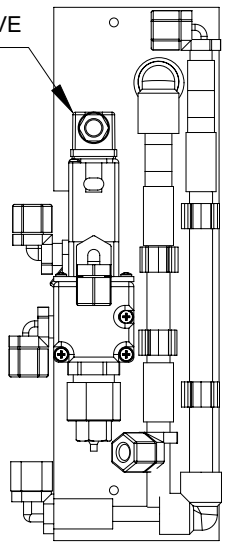
SPECIFIC TO THE AQUA MATIC COMPACT STYLE ONLY:

ITEM	PART NUMBER	DESCRIPTION	QTY	U/M
1-24	**P515400001**	**LP BACK PLATE ASSEMBLY AQM**		
1-8		3-WAY PRODUCT WATER DIVERSION SOLENOID VALVE AND SALINITY PROBE ASSEMBLY		
1	1401095998	VALVE SOLENOID 12VDC AED/CSFE/	1	EACH
2	3901034000	ADAPTER PLATE DIV-VALVE AQM	1	EACH
3	061170618109	SC PHIL PAN "A" 6 X 3/4 SS	4	EACH
4	061170623008	SC PHIL PAN "B" 8 X 1/2 SS	4	EACH
5	5301400500	MANIFOLD SALINITY PROBE AQM	1	EACH
6	31314203HA	SALINITY PROBE W/ TEMP SENSOR	1	EACH
7	0204092969	CONN 5/8 TUBE X 1/2 MPT PLASTI	1	EACH
8	0204021769	ELB90 3/8 TUBE X 1/4 MPT PLAST	6	EACH
9	061160625006	SC PHIL PAN 8-32 X 1/2 SS	7	EACH
10	2020084004	LP PLATE AQM	1	EACH
11	11026520AO	FLOW METER IN-LINE .13-1.3 GPM	1	EACH
12	11026920AO	FLOW METER IN-LINE .53-7.9 GPM	1	EACH
13	0501164800	PIPE SUPPORT 3/8"	4	EACH
14	0101551883	COUP 3/8 SL X 3/8 FPT PVC	4	EACH
15	0101011883	ELB90 3/8 FPT X 3/8 FPT PVC	1	EACH
16	0312123569	TUBE 3/8 BLACK	2	FEET
17	0301094100	PIPE PVC SCH 80 3/8"	1.5	FEET
18	0204021869	ELB90 3/8 TUBE X 3/8 MPT PLAST	2	EACH
19	0204011869	ELB90 3/8 TUBE X 3/8 FPT PLAST	1	EACH
20	0204022469	ELB90 1/2 TUBE X 3/8 MPT PLAST	1	EACH
21	061160631014	SC PHIL PAN 10-32 X 7/8 SS	2	EACH
22	065070031000	NUT LOCKING 10-32 NYLON	2	EACH
23	4942220809	WIRE 18 GA 2 COND. BLUE FLEX C	2.25	FEET
24	0101051800	ELB90 3/8 SL X 3/8 SL PVC	1	EACH

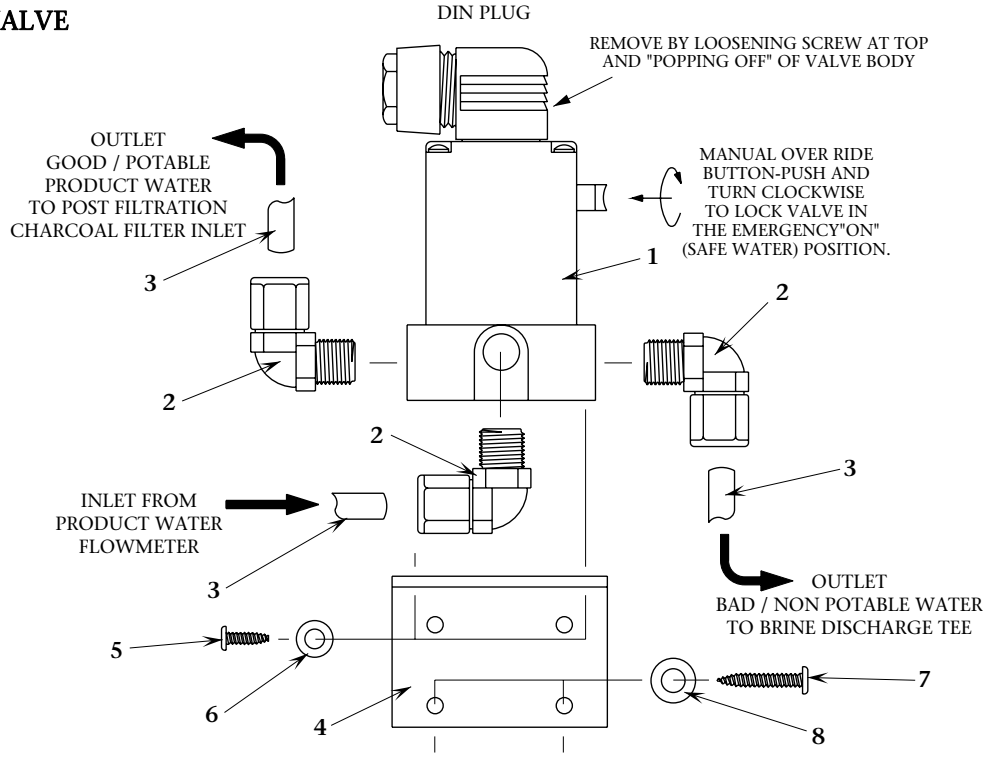


ITEMS 1-24
P515400001
LP BACK PLATE ASSEMBLY AQM

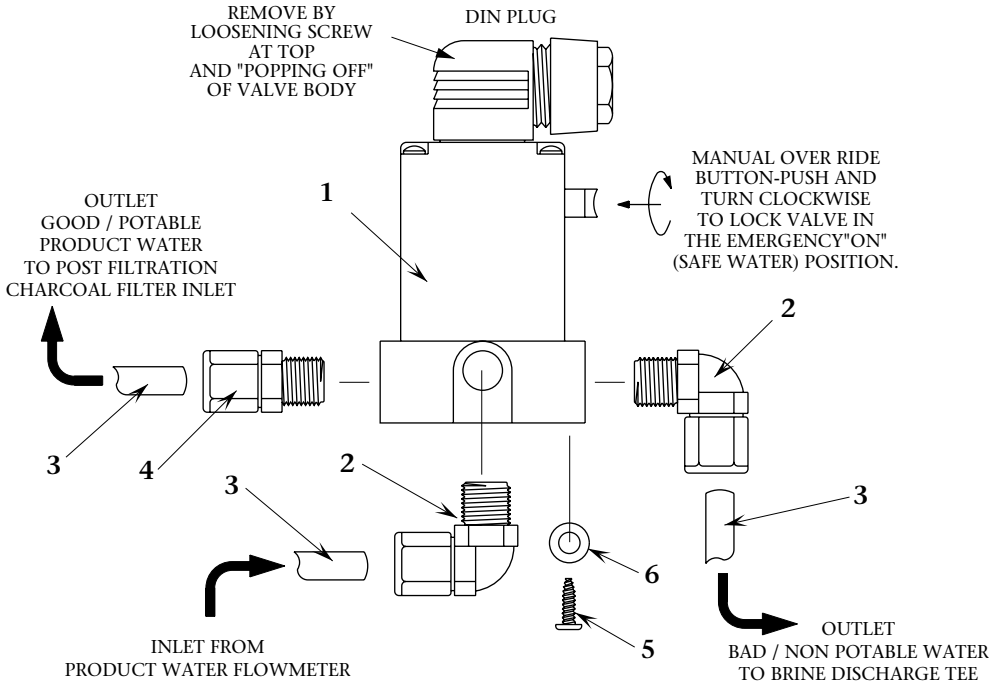
3-WAY PRODUCT WATER DIVERSION SOLENOID VALVE AND SALINITY PROBE ASSEMBLY LOCATION



3-WAY PRODUCT WATER DIVERSION SOLENOID VALVE PORT DESIGNATION & WATER FLOW DESCRIPTION



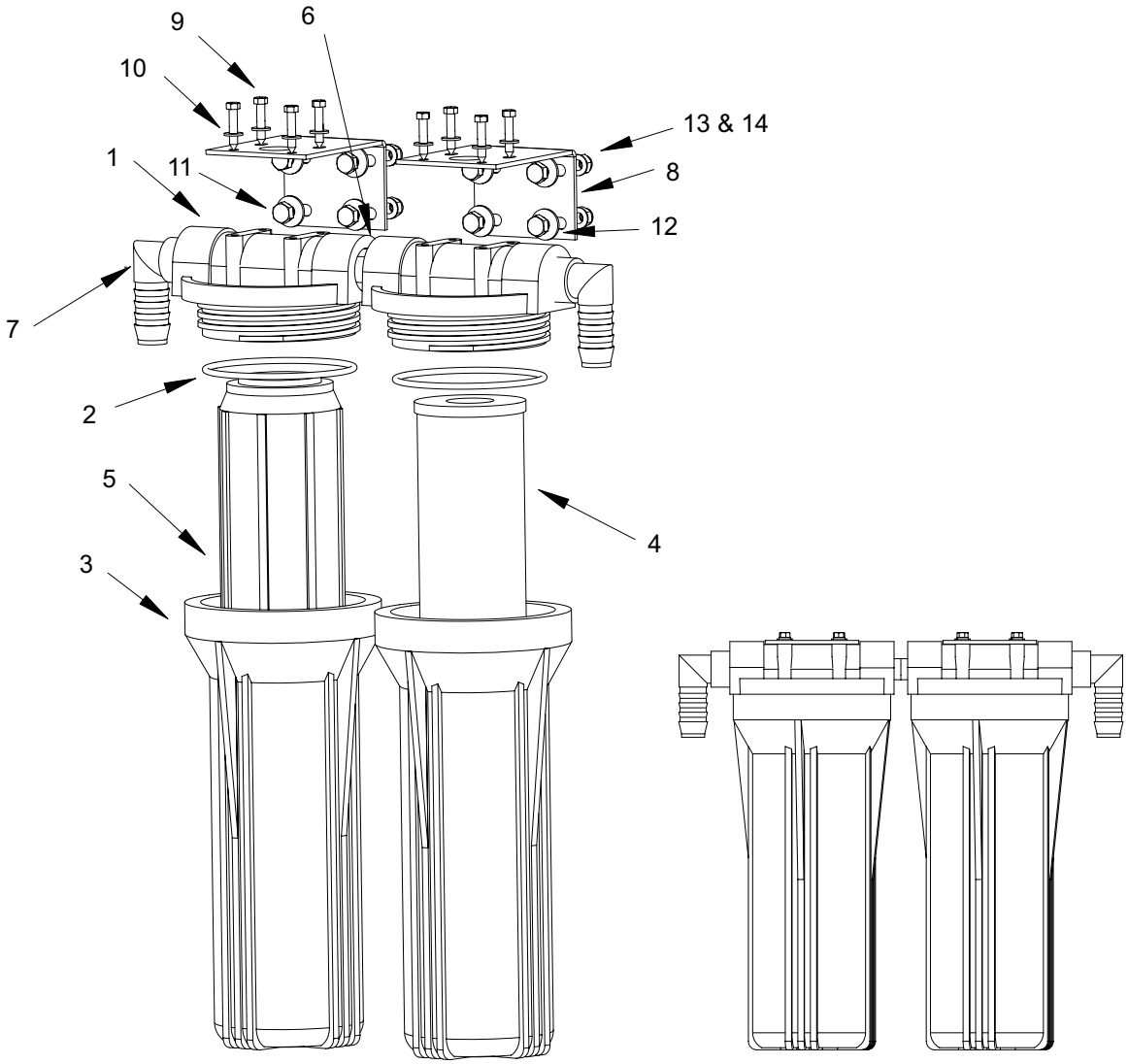
PLUMBING CONNECTIONS
"P" = INLET (COMMON)
"B" = NORMALLY OPEN -TO DISCHARGE (BAD WATER)
"A" = NORMALLY CLOSED -TO CHARCOAL FILTER INLET (GOOD WATER)



PLUMBING CONNECTIONS
"P" = INLET (COMMON)
"B" = NORMALLY OPEN -TO DISCHARGE (BAD WATER)
"A" = NORMALLY CLOSED -TO CHARCOAL FILTER INLET (GOOD WATER)

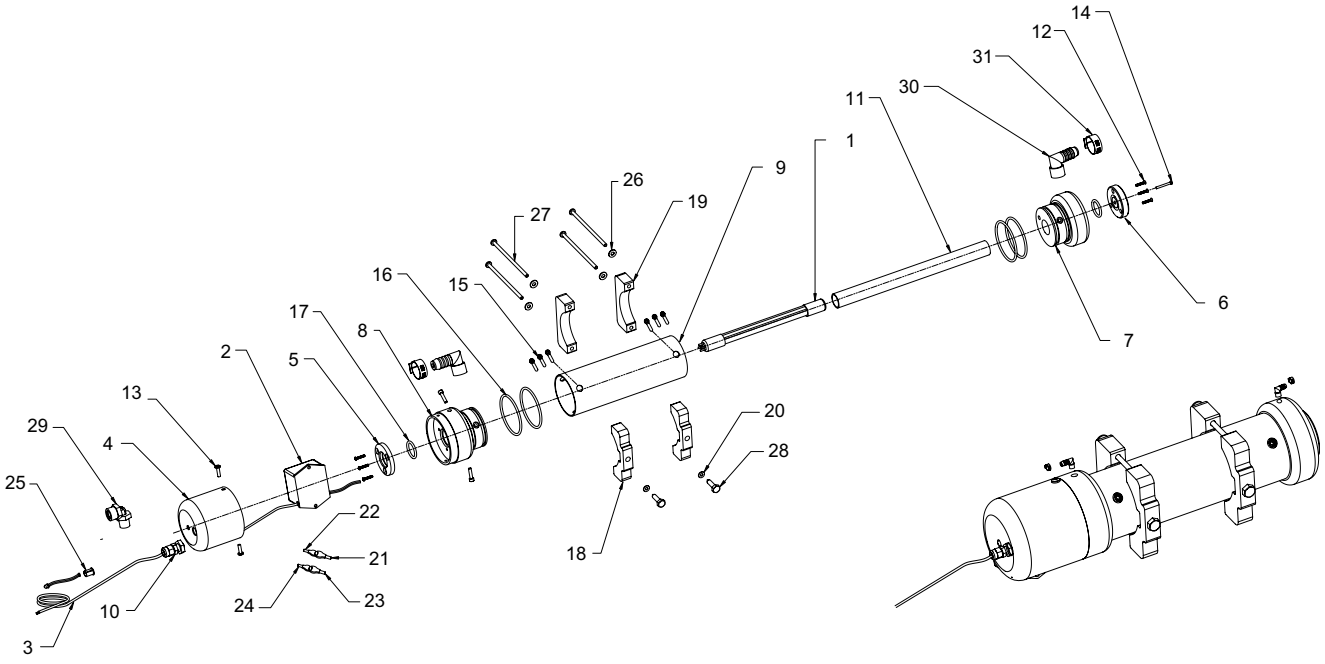
SPECIFIC TO THE AQUA MATIC COMPACT STYLE ONLY:

ITEM	PART NUMBER	DESCRIPTION		QTY	U/M
ITEM	**PART NUMBER**	**DESCRIPTION**	**QTY**	**U/M**	
1-14	**B114130001**	**POSTFILTER DUAL AQMM**			
1-3	0713020573	FILTER HOUSING/LID 3/8 X 10	2	EACH	
1		LID PREFILTER HOUSING 10"	2	EACH	
2	2614010473	O-RING PREFILTER 10"	2	EACH	
3		BOWL PREFILTER HOUSING 10"	2	EACH	
4	0803004773	ELEMENT CHARCOAL 10"	1	EACH	
5	08251950AS	ELEMENT PH 9 3/4"	1	EACH	
6	01013718CL	NIPPLE 3/8 NPT X CLOSE PVC	1	EACH	
7	0112071900	ELB90 3/8 X 1/2 BARB NYLON	2	EACH	
8	20200402100	BRACKET PREFILTER/CHRCL/PLNKTN	2	EACH	
9	061170628016	SC PHIL PAN ""A"" 10 X 1 SS	8	EACH	
10	061080028000	WASHER FLAT #10 SS	8	EACH	
11	061172143016	SC HEX ""A"" 1/4 X 1 SS	8	EACH	
12	061100043000	WASHER FLAT OS 1/4" SS	8	EACH	
13		WASHER FLAT 1/4 SS	8	EACH	
14		NUT 1/4-20 SS W/NYLON INSERT	8	EACH	



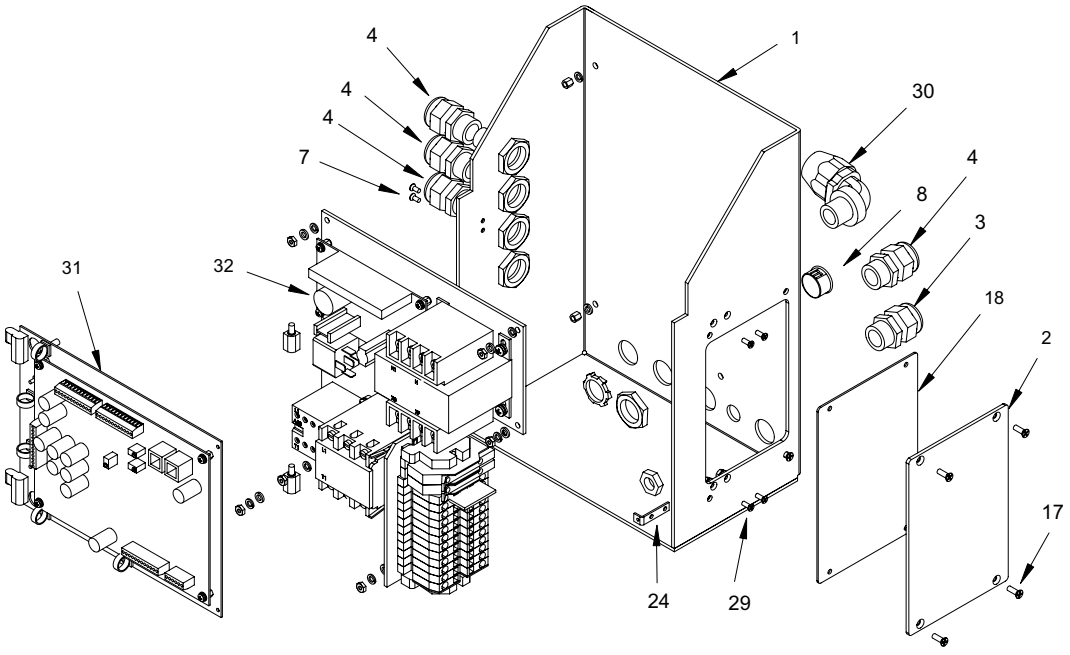
SPECIFIC TO THE AQUA MATIC COMPACT STYLE ONLY:

ITEM	PART NUIMBER	DESCRIPTION	QTY	U/M
1-33	B52680000B	UV STERILIZER 1 GPM 12VDC		
1	4000010400	LAMP UV AW >4/20/99	1	EA
2	4000021400	BALLAST 12VDC-4C AW	1	EA
3	4942220810	WIRE 18 GA 2 COND. PURPLE FLEX	6	FT
4	4000160100	CAP ELETRICAL U.V. STLR	1	EA
5	4000100200	BUSHING TOP END U.V. STLR	1	EA
6	4000100300	BUSHING BTTM END U.V. STLR	1	EA
7	2401522200	END PLUG BTTM U.V.	1	EA
8	2401532200	END PLUG TOP U.V.	1	EA
9	2417202200	VESSEL U.V.STERILIZER	1	EA
10	1904010643	STRAIN RELIEF 3444 BLK	2	EA
11	4000040400	QUARTZ SLEEVE UV AW4/99	1	EA
12	061161130016	SC PHIL OVAL 10-24 X 1" SS	6	EA
13	061160630008	SC PHIL PAN 10-24 X 1/2" SS	2	EA
14	061161130020	SC PHIL OVAL 10-24 X 1 1/4" SS	1	EA
15	061162345004	SC SOC CAP 1/4-20 X 1/4" SS	6	EA
16	2614010200	O-RING 227 SEAL 2 1/2"	4	EA
17	2614019000	O-RING 212 QUARTZ SLEEVE UVAW	2	EA
18	20010418002A	BRACKET MNT SADDLE UV/AW BTTM	2	EA
19	20010418001A	BRACKET MNT SADDLE UV/AW TOP	2	EA
20	061100043000	WASHER FLAT OS 1/4" SS	2	EA
21	3131383600	TERMINAL MALE DISC RED 18AWG	1	EA
22	3131383700	TERMINAL FEMALE DISC RED 18AWG	1	EA
23	3131383500	TERMINAL MALE DISC BLUE 14AWG	1	EA
24	3131383400	TERMINAL FEM DISC BLUE 14AWG	1	EA
25	3131290400	MOUNTING CLIP LED	1	EA
26	065080028000	WASHER FLAT #10 NYLON	4	EA
27	061160630048	SC PHIL PAN 10-24 X 3" SS	4	EA
28	061182143024	SC LAG 1/4" X 1 1/2" SS	2	EA
29	2614112000	GROMMET (CABLE) .125-.187 1238	1	EA
30	0254011000	ELB90 1/4" MPT X 1/2" BARB NY	2	EA
31	05181432AA	HOSE CLAMP 1/2"	2	EA
32	061142145020	BOLT HEX 1/4-20 X 1 1/4" SS	2	EA
33	065070045000	NUT LOCKING 1/4-20 FLANGED NYL	2	EA



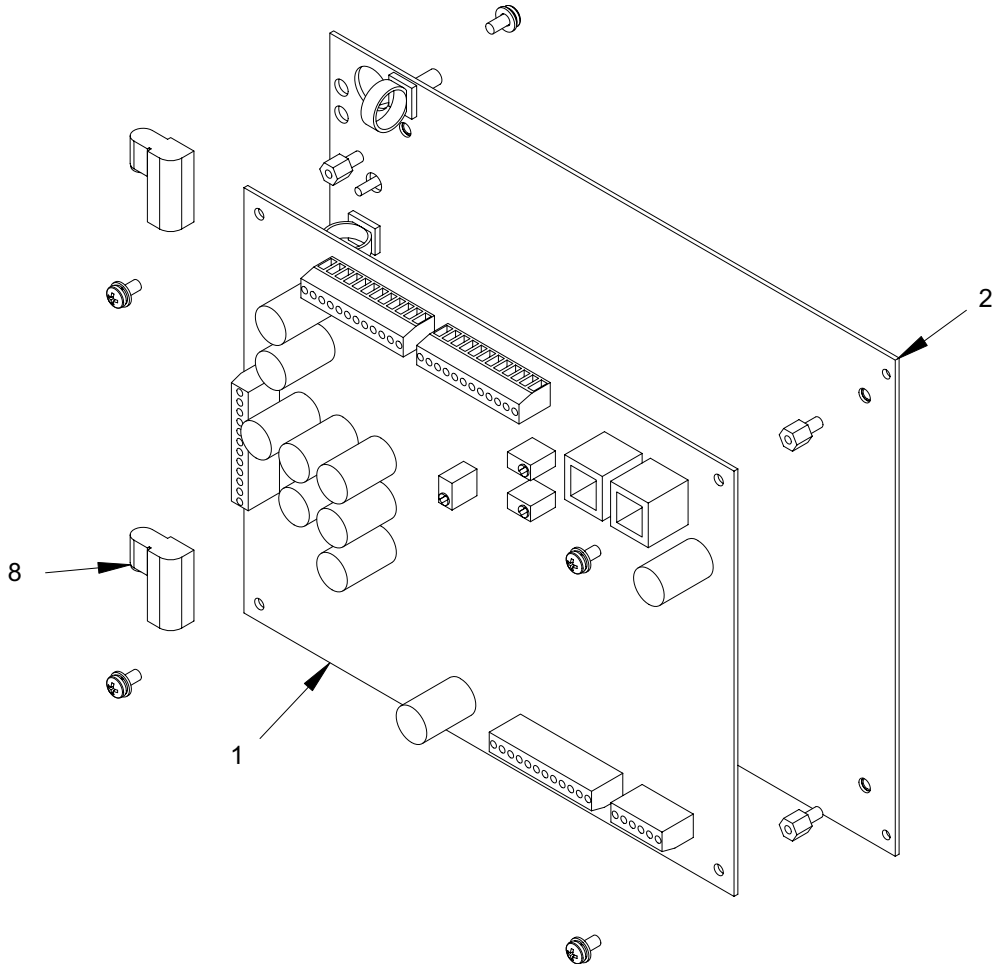
SPECIFIC TO THE AQUA MATIC COMPACT STYLE ONLY:

ITEM	PART NUMBER	DESCRIPTION	QTY	U/M
1	3131224000	ENCLOSURE ELECTRICAL BOX- AQM VERSION 3.00	1	EACH
2	2020094001	PANEL ACCESS TERM STRIP AQM	1	EACH
3	1904010243	STRAIN RELIEF 3222	2	EACH
4	1904010743	STRAIN RELIEF 3219 (BLK)	5	EACH
5	2632112700	GROMET 3X 6MMAQM	2	EACH
6	2632112800	GROMET 4 X 4MM	2	EACH
7	3014052700	ROD ROUND RUBBER .20 DIA	0.75	FEET
8	3131100800	PLUG BLANKING FOR CG-6250	1	EACH
9	061181123010	SC PHIL OVAL "A" 8 X 5/8 SS	19	EACH
10	2615180100	FELT ADHESIVE 1/8 X 3/4 STRIP	8	FEET
11	061160626020	SC PHIL PAN 8-32 X 1 1/4 SS	1	EACH
12	061060026000	NUT HEX 8-32 W/INSERT SS	1	EACH
13	065272323000	INSERT NYLON #8 AQM	19	EACH
14	061060031000	NUT HEX 10-32 W/INSERT SS	5	EACH
15	061160631016	SC PHIL PAN 10-32 X 1 SS	5	EACH
16	061120028000	WASHER SPLIT LOCK #10 SS	5	EACH
17	061161626008	SC PHIL FLAT 8-32 X 1/2 SS	4	EACH
18	2615100100	GASKET ACCESS PANEL AQM	1	EACH
10	066161631012	SC PHIL FLAT 10-32 X 3/4 BRASS	1	EACH
20	066010031000	NUT HEX 10-32 BRASS	2	EACH
21	066120031000	WASHER #10 SPLIT LOCK BRASS	1	EACH
22	061080043000	WASHER FLAT 1/4"SS	2	EACH
23	061172143010	SC HEX "A" 1/4 X 5/8 SS	2	EACH
24	3117170100	BRACKET RIGHT ANGLE STOP 6-32	2	EACH
25	0512130500	WIRE CLAMP WHITE 5/8"	1	EACH
26	0512130100	WIRE CLAMP WHITE 1/4"	1	EACH
27	067262831005	STANDOFF 10-32 X 5/16	5	EACH
28	061070012000	NUT HEX 4-40 W/INSERT SS	4	EACH
29	061161612006	SC PHIL FLAT 4-40 X 3/8 SS	4	EACH
30	1920016590	STRAIN RELIEF 90 1/2 VLK W/NUT	1	EACH
31	B596120002	PCB MAIN ASSY AQM VERSION 3.00	1	EACH
	SINGLE PHASE OPERATING POWER			
32	B619120001	CONTROLLER CHASSIS ASSY 1PH AQM VERSION 2	1	EACH
	OR			
	THREE PHASE OPERATING POWER			
32	B619120002	CONTROLLER CHASSIS ASSY 3PH AQM VERSION 2	1	EACH



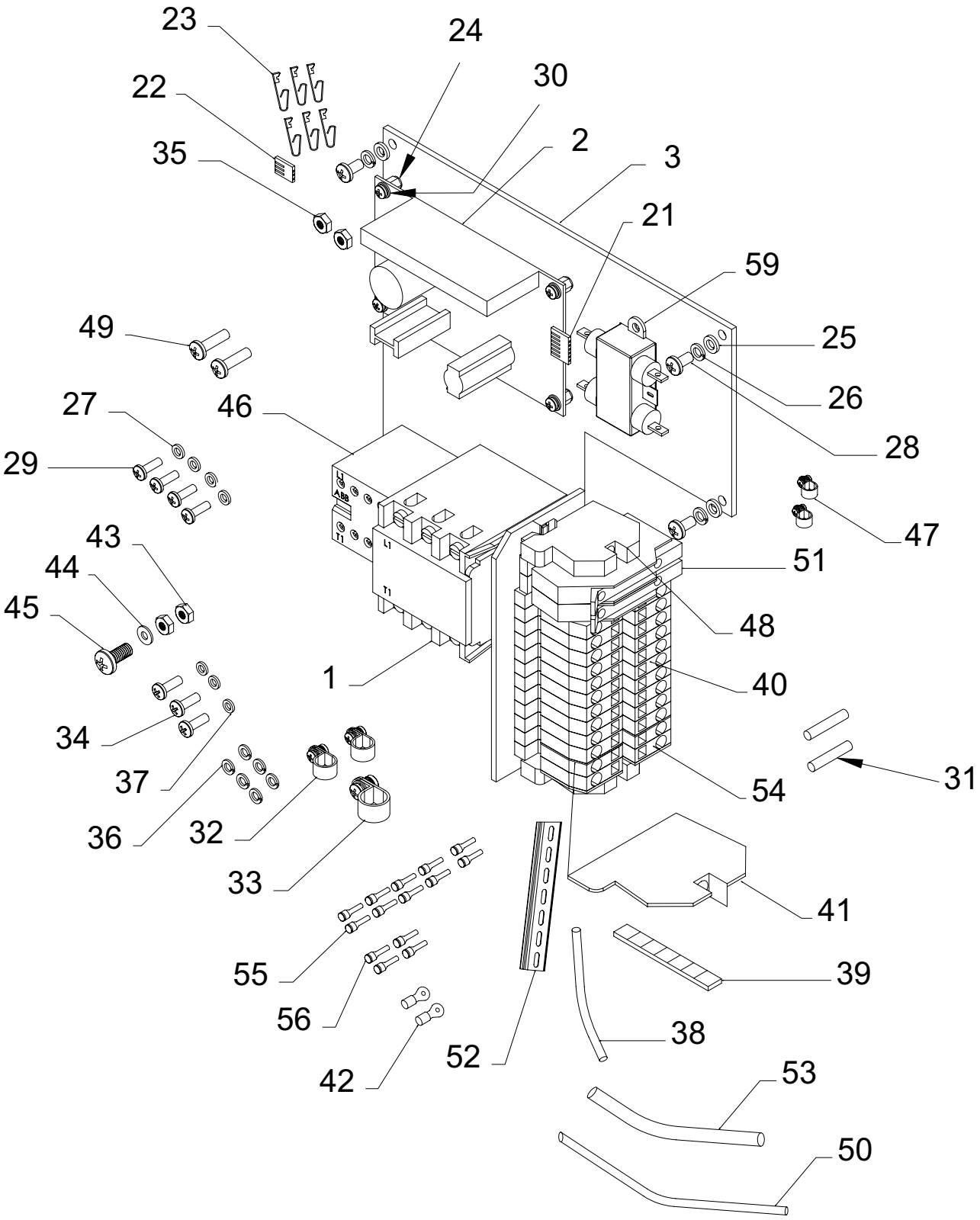
SPECIFIC TO THE AQUA MATIC COMPACT STYLE ONLY:

ITEM	PART NUMBER	DESCRIPTION	QTY	U/M
1-14	**B596120002**	**PCB MAIN ASSY AQM VERSION 3.00**	**1**	**EACH**
1	B596240001	PCB MAIN AQM V2	1	EACH
2	3131232800	CHASSIS PLATE PCB MAIN AQM	1	EACH
3	067272720004	STANDOFF 6-32 X 1/4 M X F	4	EACH
4	061120018000	WASHER SPLIT LOCK #6 SS	4	EACH
5	061160620005	SC PHIL PAN 6-32 X 1/4 SPECIAL	4	EACH
6	2614112400	GROMMET GT-330-7DS	2	EACH
7	31312001DK	BUMP ON BLACK PAD	1	EACH
8	5520100600	HINGE SET #6AQM	2	EACH
9	4910210707	WIRE 20 GA ORANGE UL1007	0.687	FEET
10	3131384900	TERMINAL CONN FERRULE 20AWG WH	6	EACH
11	061160620006	SC PHIL PAN 6-32 X 3/8 SS	2	EACH
12	2614019900	O-RING CONTROLLER AQM	2	EACH
13	0512130900	WIRE CLAMP INSERTAQM	5	EACH
14	068162520005	SC PHIL PAN S/F 6-32 X 5/16 AL	4	EACH



SPECIFIC TO THE AQUA MATIC COMPACT STYLE ONLY:

ITEM	PART NUMBER	DESCRIPTION	QTY	U/M
	AQUA MATIC COMPACT CONTROLLER CHASSIS SINGLE PHASE VERSION 2			
1-59	**B619120001**	**CONTROLLER CHASSIS ASSY 1PH AQM VERSION 2**		
1	31310603BF	CONTACTOR 30A AW>12/99 12VDC	1	EACH
2	31314301CW	POWER SUPPLY AW>12/99 12VDC	1	EACH
3	3131232900	CHASSIS CONRTROLLER AQM	1	EACH
4	4910210701	WIRE 20 GA BLACK UL1007	6.5	FEET
5	4910210715	WIRE 20 GA WHITE/BLACK UL1015	3	FEET
6	4910210702	WIRE 20 GA RED UL1007	6	FEET
7	4910210717	WIRE 20 GA WHITE/RED UL1015	3	FEET
8	4900210901	WIRE 14 GA GREEN/YELLOW UL1015	3	FEET
9	4900211101	WIRE 12 GA BLACK UL1015	3.5	FEET
10	4900211201	WIRE 10 GA BLACK UL1015	4	FEET
11	4910210707	WIRE 20 GA ORANGE UL1007	3	FEET
12	4910210731	WIRE 20 GA ORANGE/BLACK UL1007	3	FEET
13	4910210703	WIRE 20 GA YELLOW UL1007	3	FEET
14	4910210730	WIRE 20 GA YELLOW/BLACK UL1007	3	FEET
15	3131386200	TERMINAL CONN FERRULE 10AWG	2	EACH
16	31313842DK	TERMINAL CONN FERRULE BLACK	10	EACH
17	3131383700	TERMINAL FEMALE DISC RED 18AWG	6	EACH
18	3131384100	TERMINAL CONN FERRULE 12AWG	6	EACH
19	3131384900	TERMINAL CONN FERRULE 20AWG WH	18	EACH
20	3131384800	TERMINAL CONN FERRULE 18AWG YE	7	EACH
21	3131573000	HEADER PLUG 6-PIN (AW>2000)	1	EACH
22	3131573100	HEADER PLUG 3-PIN (AW>2000)	1	EACH
23	3131573200	HEADER TERMINAL	6	EACH
24	067272720004	STANDOFF 6-32 X 1/4 M X F	4	EACH
25	061080028000	WASHER FLAT #10 SS	4	EACH
26	061120028000	WASHER SPLIT LOCK #10 SS	4	EACH
27	061080023000	WASHER FLAT #8 SS	4	EACH
28	061160631006	SC PHIL PAN 10-32 X 3/8 SS	4	EACH
29	061160626008	SC PHIL PAN 8-32 X 1/2 SS	4	EACH
30	061160620005	SC PHIL PAN 6-32 X 1/4 SPECIAL	4	EACH
31	3131301500	FUSE 2A -AW POWER SUPPLY ONLY	2	EACH
32	0512130400	WIRE CLAMP BLACK 1/2"	2	EACH
33	0512130200	WIRE CLAMP BLACK 3/8"	1	EACH
34	061160620006	SC PHIL PAN 6-32 X 3/8 SS	4	EACH
35	061060026000	NUT HEX 8-32 W/INSERT SS	2	EACH
36	061080018000	WASHER FLAT #6 SS	4	EACH
37	061120018000	WASHER SPLIT LOCK #6 SS	6	EACH
38	31316202CW	EXPANDABLE WIRE SLEEVING 1/8"	2	FEET
39	31311618DM	TERMINAL MARKER CARDAQM	1	EACH
40	31311523DM	TERMINAL 8 AWG DIN GREY	11	EACH
41	31311617DM	TERMINAL COVER GREYAQM	1	EACH
42	3131386300	TERMINAL RING BLU R6B-14S	2	EACH
43	066012145000	NUT HEX 1/4-20BRASS	2	EACH
44	066080045000	WASHER FLAT 1/4-20 BRASS	1	EACH
45	066160245008	SC PHIL PAN 1/4-20 x 5/8 BRASS	1	EACH
46	31310110BF	CONTACTOR 9A AUX AW>12/99 12VD	1	EACH
47	0512130100	WIRE CLAMP WHITE 1/4"	2	EACH
48	31311601BY	END BRACKET DIN (AW>2000)	2	EACH
49	061160631005	SC PHIL PAN 10-32 X 5/16 SS	2	EACH
50	31316709CW	HEAT SHRINK 3/16"	1	FEET
51	3131310400	FUSE HOLDER DIN TERMINAL	2	EACH
52	3131170147	ANNEL DIN 35 MM RAIL	6	INCH
53	31316702CW	HEAT SHRINK 3/8"	0.208	FEET
54	31311524DM	TERMINAL 8AWG DIN GREEN	2	EACH
55	31313856DK	TERMINAL CONN FERRULE 24AWG BL	10	EACH
56	31313860DK	TERMINAL CONN FERRULE 26AWG GR	4	EACH
57	4900211202	WIRE 10 GA RED UL1015	4	FEET
58	4900211102	WIRE 12 GA RED UL1015	3.5	FEET
59	31318301DK	EMI FILTER	1	EACH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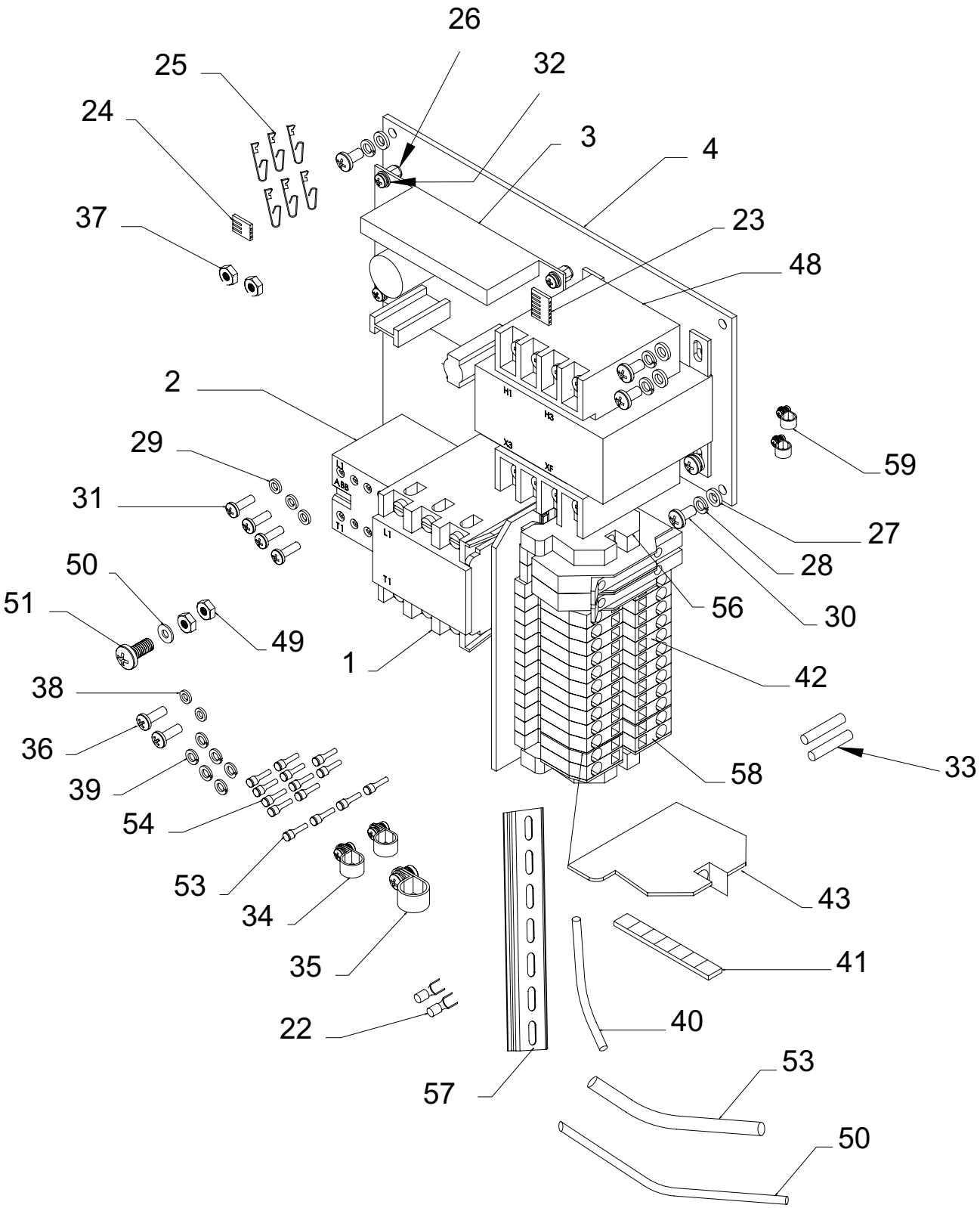
SPECIFIC TO THE AQUA MATIC COMPACT STYLE ONLY:

ITEM	PART NUMBER	DESCRIPTION	QTY	U/M
AQUA MATIC COMPACT CONTROLLER CHASSIS THREE PHASE VERSION 2				
1-59	**B619120002**	**CONTROLLER CHASSIS ASSY 3PH AQM VERSION 2**		
1	31310603BF	CONTACTOR 30A AW>12/99 12VDC	1	EACH
2	31310110BF	CONTACTOR 9A AUX AW>12/99 12VD	1	EACH
3	31314301CW	POWER SUPPLY AW>12/99 12VDC	1	EACH
4	3131232900	CHASSIS CONRTROLLER AQM	1	EACH
5	4910210701	WIRE 20 GA BLACK UL1007	6.5	FEET
6	4910210715	WIRE 20 GA WHITE/BLACK UL1015	3	FEET
7	4910210702	WIRE 20 GA RED UL1007	6	FEET
8	4910210717	WIRE 20 GA WHITE/RED UL1015	3	FEET
9	4900210901	WIRE 14 GA GREEN/YELLOW UL1015	3	FEET
10	4900211101	WIRE 12 GA BLACK UL1015	3.5	FEET
11	4900211201	WIRE 10 GA BLACK UL1015	4	FEET
12	4910210707	WIRE 20 GA ORANGE UL1007	3	FEET
13	4910210731	WIRE 20 GA ORANGE/BLACK UL1007	3	FEET
14	4910210703	WIRE 20 GA YELLOW UL1007	3	FEET
15	4910210730	WIRE 20 GA YELLOW/BLACK UL1007	3	FEET
16	3131386200	TERMINAL CONN FERRULE 10AWG	2	EACH
17	31313842DK	TERMINAL CONN FERRULE BLACK	8	EACH
18	3131383700	TERMINAL FEMALE DISC RED 18AWG	2	EACH
19	3131384100	TERMINAL CONN FERRULE 12AWG	8	EACH
20	3131384900	TERMINAL CONN FERRULE 20AWG WH	18	EACH
21	3131384800	TERMINAL CONN FERRULE 18AWG YE	7	EACH
22	3131380900	TERMINAL FORK BLUE 14RB-6FL	2	EACH
23	3131573000	HEADER PLUG 6-PIN (AW>2000)	1	EACH
24	3131573100	HEADER PLUG 3-PIN (AW>2000)	1	EACH
25	3131573200	HEADER TERMINAL	6	EACH
26	067272720004	STANDOFF 6-32 X 1/4 M X F	4	EACH
27	061080028000	WASHER FLAT #10 SS	8	EACH
28	061120028000	WASHER SPLIT LOCK #10 SS	8	EACH
29	061080023000	WASHER FLAT #8 SS	3	EACH
30	061160631006	SC PHIL PAN 10-32 X 3/8 SS	8	EACH
31	061160626008	SC PHIL PAN 8-32 X 1/2 SS	4	EACH
32	061160620005	SC PHIL PAN 6-32 X 1/4 SPECIAL	4	EACH
33	3131301500	FUSE 2A -AW POWER SUPPLY ONLY	2	EACH
34	0512130400	WIRE CLAMP BLACK 1/2"	2	EACH
35	0512130200	WIRE CLAMP BLACK 5/8"	1	EACH
36	061160620006	SC PHIL PAN 6-32 X 3/8 SS	2	EACH
37	061060026000	NUT HEX 8-32 W/INSERT SS	2	EACH
38	061080018000	WASHER FLAT #6 SS	2	EACH
39	061120018000	WASHER SPLIT LOCK #6 SS	6	EACH
40	31316202CW	EXPANDABLE WIRE SLEEVING 1/8"	2	FEET
41	31311618DM	TERMINAL MARKER CARDAQM	1	EACH
42	31311523DM	TERMINAL 8 AWG DIN GREY	11	EACH
43	31311617DM	TERMINAL COVER GREYAQM	1	EACH
44	4900211102	WIRE 12 GA RED UL1015	3.5	FEET
45	4900211106	WIRE 12 GA BLUE UL1015	3.5	FEET
46	4900211202	WIRE 10 GA RED UL1015	4	FEET
47	4900211206	WIRE 10 GA BLUE UL1015	4	FEET
48	3131131500	TRANSFORMER 480/120BUCK AQM	1	EACH
49	066012145000	NUT HEX 1/4-20BRASS	2	EACH
50	066080045000	WASHER FLAT 1/4-20 BRASS	1	EACH
51	066160245008	SC PHIL PAN 1/4-20 x 5/8 BRASS	1	EACH
52	31311524DM	TERMINAL 8AWG DIN GREEN	2	EACH
53	31313856DK	TERMINAL CONN FERRULE 24AWG BL	10	EACH
54	31313860DK	TERMINAL CONN FERRULE 26AWG GR	4	EACH
55	NOT USED			
56	31311601BY	END BRACKET DIN (AW>2000)	2	EACH
57	3131170147	ANNEL EIN 35 MM RAIL	6	INCH
58	31311524DM	TERMINAL 8 AWG DIN GREEN	2	EACH
59	0512130100	WIRE CLAMP ¼"	2	EACH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Notes:

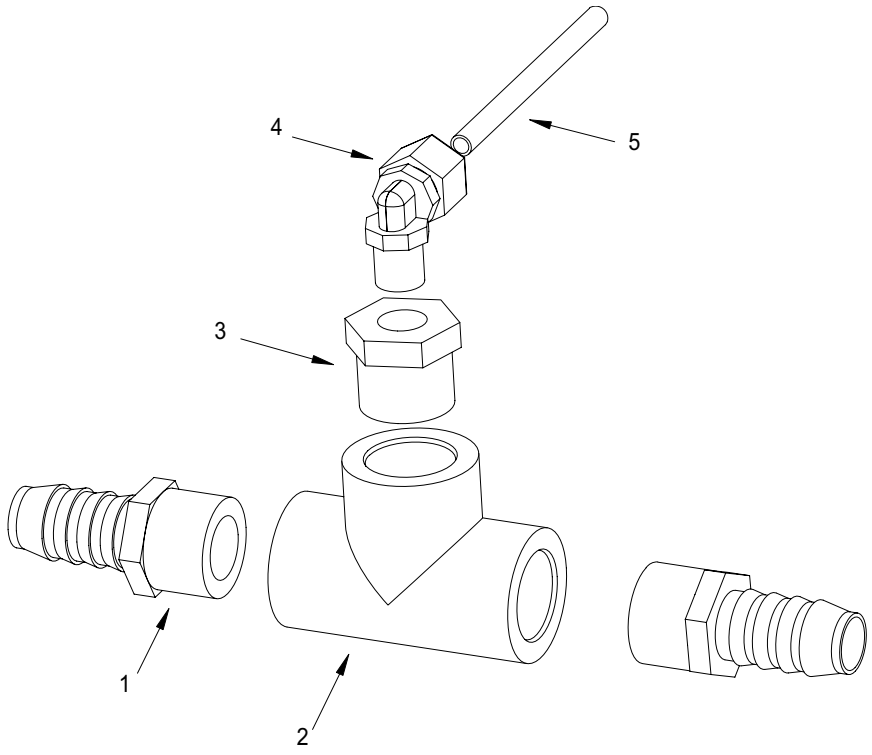
SPECIFIC FOR ONLY THE

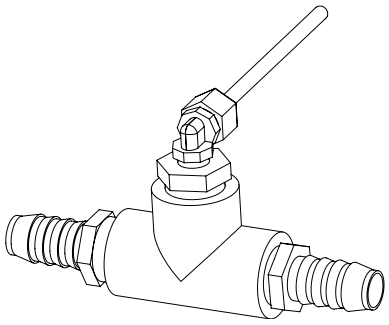
MODULAR STYLE

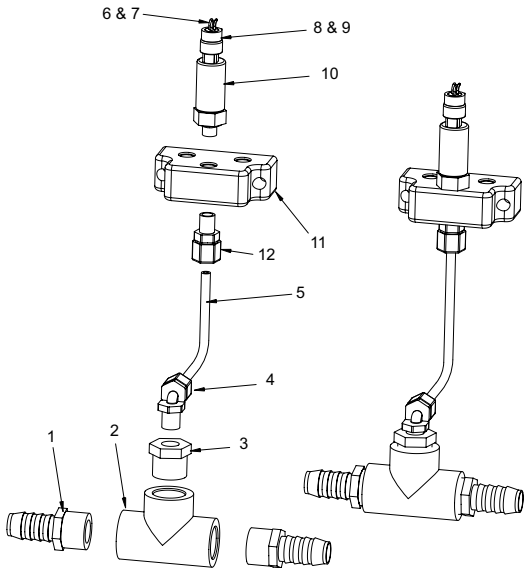
PAGES 58 THROUGH 82

SPECIFIC FOR AQUA MATIC MODULAR STYLE:

ITEM	PART NUMBER	DESCRIPTION	QTY	U/M
1-5	**P502130002**	**PRESSURE-PICKUP TEE ASSY**		
1	0101653783	ADAP 3/4 MPT X 3/4 BARB PVC	2	EACH
2	0101423783	TEE 3/4 FT X 3/4 FT X 3/4 FT P	1	EACH
3	0101293483	RB 3/4 MT X 1/4 FT PVC	1	EACH
4	0204020869	ELB90 1/4 TUBE X 1/4 MPT PLAST	1	EACH
5	0312121969	TUBE 1/4 BLACK	20	FEET







PREFILTRATION CARTRIDGE FILTER ELEMENT WARNING:

Do not use third party Prefiltration Elements (Plankton Filter Elements, Prefilter Elements, Commercial Prefilter Elements, or Oil/Water Separator Elements). Use only Sea Recovery supplied Prefiltration Elements. Third party prefiltration elements on the market do not properly fit into the Sea Recovery Filter Housings, the seams fall apart, and they will allow by-pass resulting in **EXTENSIVE AND EXPENSIVE DAMAGE TO THE HIGH PRESSURE PUMP AS WELL AS PREMATURE FOULING OF THE R.O. MEMBRANE ELEMENT.**

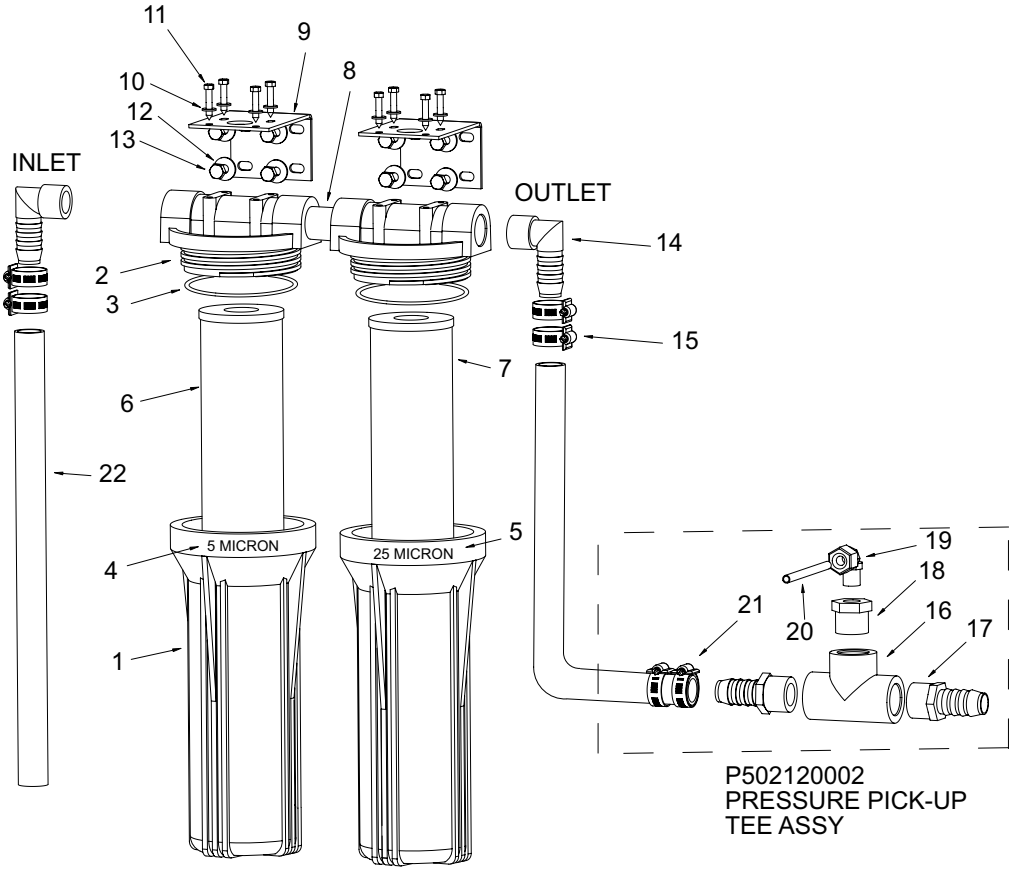
Damage caused to the Sea Recovery High Pressure Pump, R.O. Membrane Element, or any other component from the use of third party, non Sea Recovery supplied, filter elements is the responsibility and liability of the operator and is not covered by the Sea Recovery Warranty.

FILTER ELEMENT CAUTION:

Do not use “string wound” or “fiber” type prefilter elements. These type of elements are designed for the Photographic Film Developing industry. When used in sea water they will plug up rapidly in 1/10th or less the time causing frequent shut down of the system and very frequent changing resulting in very high cost of maintenance.

SPECIFIC TO AQUA MATIC MODULAR STYLE:

ITEM	PART NUMBER	DESCRIPTION	QTY	U/M
1-20	**B108130001**	**PREFILTER DUAL-AQMMODULAR 10/25-05**	**1**	**EACH**
1-3	0713020473	FILTER HOUSING/LID 3/4 X 10	2	EACH
1		BOWL FILTER HOUSING 10 INCH BLUE		
2		LID FILTER HOUSING 10 INCH BLUE		
3	2614010473	O-RING 237 10 INCH PREFILTER BLUE HOUSING		
4	2234012460	LABEL 5 MICRON PREFILTER-2	1	EACH
5	2234012360	LABEL 25 MICRON PREFILTER-1	1	EACH
6	0801060157	ELEMENT PREFILTER 5 MICRON 10/05	1	EACH
7	0801130257	ELEMENT PREFILTER 25 MICRON 10/25	1	EACH
8	01013737CL	NIPPLE 3/4 NPT X CLOSE PVC	1	EACH
9	20200402100	BRACKET PREFILTER/CHRCL/PLNKTN	2	EACH
10	065080028000	WASHER FLAT #10 NYLON	8	EACH
11	061170628016	SC PHIL PAN "A" 10 X 1 SS	8	EACH
12	061100043000	WASHER FLAT OS 1/4" SS	8	EACH
13	061172143016	SC HEX "A" 1/4 X 1 SS	8	EACH
14	0101073783	ELB90 3/4 MPT X 3/4 BARB PVC	2	EACH
15	05181434AA	HOSE CLAMP 3/4" SS	4	EACH
16-21	**P502130002**	**PRESSURE PICKUP TEE ASSY**	**1**	**EACH**
16	0101423783	TEE 3/4 FT X 3/4 FT X 3/4 FT P	2	EACH
17	0101653783	ADAP 3/4 MPT X 3/4 BARB PVC	4	EACH
18	0101293483	RB 3/4 MT X 1/4 FT PVC	2	EACH
19	0204021869	ELB90 3/8 TUBE X 3/8 MPT PLAST	2	EACH
20	0312121969	TUBE 1/4 BLACK	20	FEET
21	05181434AA	HOSE CLAMP 3/4" SS	4	EACH
22	0328066666	HOSE CLEAR BRAID 3/4" I.D.		



HIGH PRESSURE PUMP WARNING:

Two similar pumps are commercially available. One has a lower water flow rate, the other has a higher water flow rate than the Sea Recovery High Pressure Pump.

The commercially available **lower water flow rated pump** will cause:

a. Poor quality Product Water.
b. Low Product Water Flow.
b. Excessive operating pressure as the System attempts to adjust pressure to achieve rated Product Water Flow.
b. Immediate fouling of the Sea Recovery Aqua Matic R.O. Membrane Elements resulting in unrecoverable damage to them.

The commercially available **higher water flow rated pump** will cause:

a. Low feed water pressure into the high pressure pump.
b. Line pressure loss of feed water resulting in continual system shut down.
c. Cavitation to the high pressure pump resulting in premature failure of the pump.
d. Extensive Line Pressure Build-Up in the High Pressure Hoses and Manifolds.
d. Telescoping damage of the R.O. Membrane Elements due to excessive feed flow across them.
e. Over heating of the High Pressure Pump Electric Motor due to excessive load.

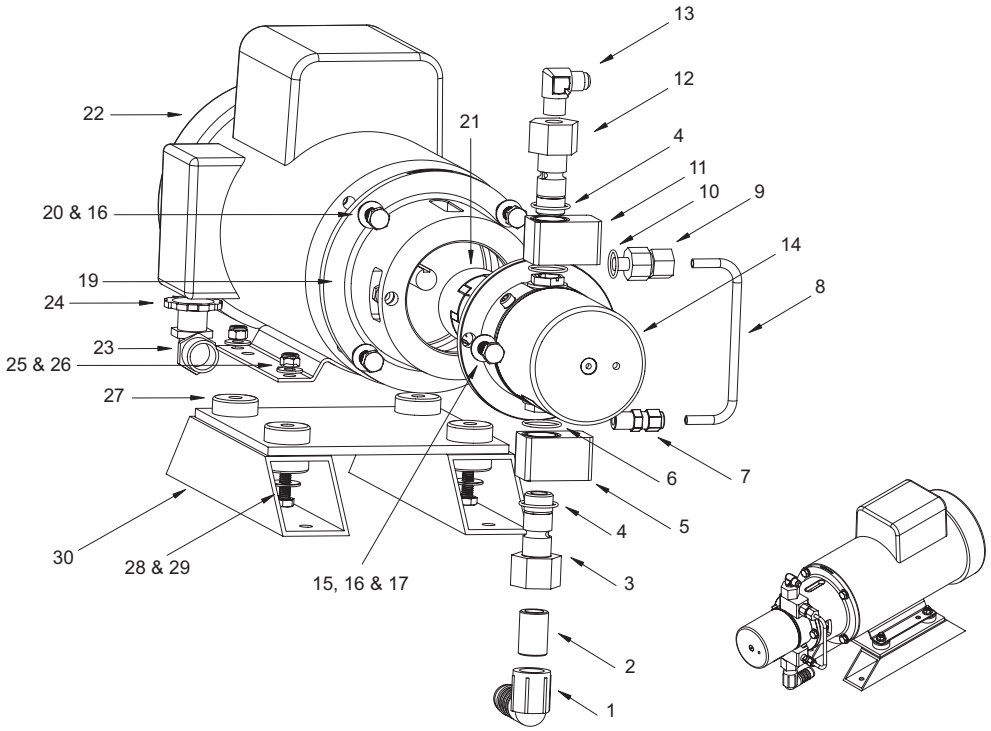
NEVER REPLACE THE SEA RECOVERY HIGH PRESSURE PUMP WITH A THIRD PARTY, NON SEA RECOVERY SUPPLIED, HIGH PRESSURE PUMP. THE SEA RECOVERY AQUA MATIC HIGH PRESSURE PUMP IS NOT AVAILABLE THROUGH ANY SOURCE OTHER THAN SEA RECOVERYand SEA RECOVERY DEALERS. WHEN REPAIRING OR REPLACING THE HIGH PRESSURE PUMP ENSURE THAT THE MARINE DEALER HAS OBTAINED THE REPAIR PARTS OR THE PUMP FROM SEA RECOVERY.

DAMAGE CAUSED TO THE SEA RECOVERY SYSTEM RESULTING FROM THE USE OF NON SUPPLIED SEA RECOVERY PARTS OR COMPONENTS IS THE RESPONSIBILITY AND LIABILITY OF THE MARINE DEALER THAT SUPPLIED THE PUMP OR PARTS AND THE OPERATOR AND IS NOT COVERED BY THE SEA RECOVERY WARRANTY.

SPECIFIC TO AQUA TOUCH MODULAR STYLE:

HIGH PRESSURE PUMP AND MOTOR ASSEMBLY SINGLE PHASE ALTERNATING CURRENT 100/220 VAC 50 Hz, SINGLE PHASE & 115/230 VAC, 60 Hz, SINGLE PHASE

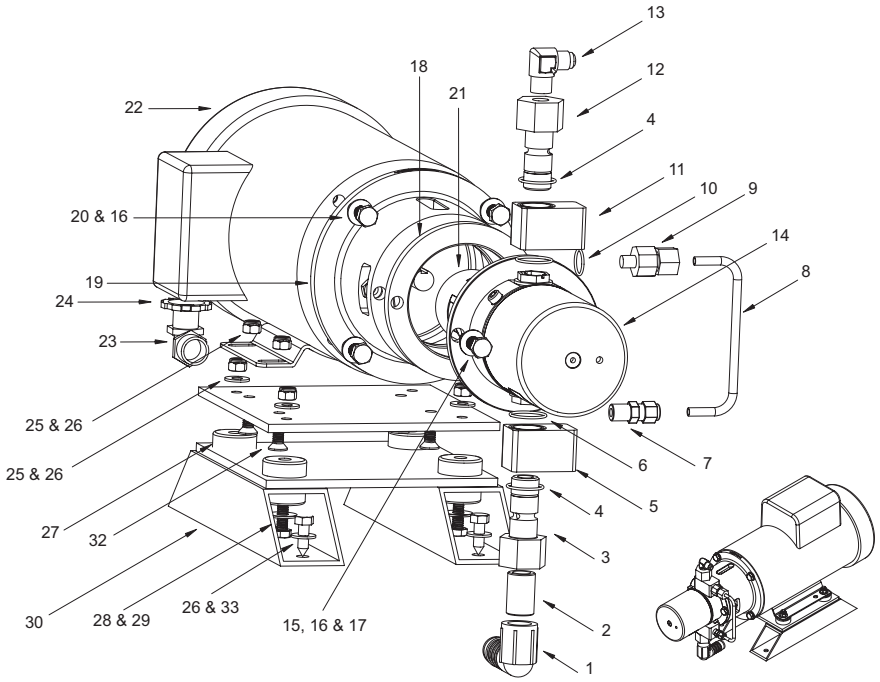
ITEM	PART NUMBER	DESCRIPTION	QTY	U/M
1 - 31	B156130005	HP PUMP/MOTOR ASSY AQTM 110/ 50/60 1 PH		
1	0101062683	ELB90 1/2 FPT X 3/4 BARB PVC	1	EACH
2	01013725CL	NIPPLE 1/2 NPT X CLOSE PVC	1	EACH
3	0117662500	ADAPTER 1/2-1/4MBSP X 1/2 FNPT	1	EACH
4	2617102100	O-RING ADAPTER 1/2 BSP ISO SS	2	EACH
5	0117990800	BANJO FITTING LOWER 1/4" NPT	1	EACH
6	353001013A	O-RING 022	4	EACH
7	0217090887	CONN 1/4 TUBE X 1/4 MPT SS	1	EACH
8	0117500800	INTERCONNECT BYPASS PIPE SS	1	EACH
9	1417213887	VALVE CHECK 1/4 BSP ISO X 1/4 TU SS	1	EACH
10	353033002A	O-RING 017	1	EACH
11	0117992500	BANJO FITTING UPPER 7/16-20 UN	1	EACH
12	0117662300	ADAPTER 1/2-1/4MBSP X1/4 FNPT-	1	EACH
13	1317021769	ELB90 -6 FLARE X 1/4 MPT SS	1	EACH
14	12572402DS	HPRA PUMP 4.37 GPM	1	EACH
15	061142157020	BOLT HEX 3/8-16 X 1 1/4 SS	2	EACH
16	061080056000	WASHER FLAT 3/8" SS	6	EACH
17	061060057000	NUT HEX 3/8-16 W/INSERT SS	2	EACH
18	NOT USED			
19	1220770100	BELL HOUSING	1	EACH
20	061142157016	BOLT HEX 3/8-16 X 1 SS	4	EACH
21	12207602DL	COUPLING FLEX	1	EACH
22	15AE261912	MOTOR 3/2.5 HP 115/230 1PH	1	EACH
23	1920023632	STRAIN RELIEF 90 CG90-6250	1	EACH
24	063200066000	NUT LOCK 1/2" STEEL	1	EACH
25	061060050000	NUT HEX 5/16-18 W/INSERT SS	4	EACH
26	061100049000	WASHER FLAT OS 5/16" SS	8	EACH
27	2115031700	RUBBER MOUNT 90 LB AQM	4	EACH
28	061110049000	WASHER FENDER 5/16" SS	4	EACH
29	061142150032	BOLT HEX 5/16-18 X 2 SS	4	EACH
30	2020031301	MOTOR BASE SKID AQMM	1	EACH
31	0611800500116	SC LAG 5/16 X 1" LG SS	4	EACH
	31313842DK	TERMINAL CONN FERRULE BLACK	2	EACH
	31313853DK	TERMINAL CONN FERRULE 14AWG	1	EACH



SPECIFIC TO AQUA TOUCH MODULAR STYLE:

HIGH PRESSURE PUMP AND MOTOR ASSEMBLY THREE PHASE ALTERNATING CURRENT 200-220/380 VAC 50 Hz, 3 PHASE AND 208-230/460 VAC, 60 Hz, 3 PHASE

ITEM	PART NUMBER	DESCRIPTION	QTY	U/M
1 - 30	B156130006	HP PUMP/MOTOR ASSY AQTM 3 PH 50/60 HZ		
1	0101062683	ELB90 1/2 FPT X 3/4 BARB PVC	1	EACH
2	01013725CL	NIPPLE 1/2 NPT X CLOSE PVC	1	EACH
3	0117662500	ADAPTER 1/2-1/4MBSP X 1/2 FNPT	1	EACH
4	2617102100	O-RING ADAPTER 1/2 BSP ISO SS	2	EACH
5	0117990800	BANJO FITTING LOWER 1/4" NPT	1	EACH
6	353001013A	O-RING 022	4	EACH
7	0217090887	CONN 1/4 TUBE X 1/4 MPT SS	1	EACH
8	0117500800	INTERCONNECT BYPASS PIPE SS	1	EACH
9	1417213887	VALVE CHECK 1/4 BSP ISO X 1/4 TU SS	1	EACH
10	353033002A	O-RING 017	1	EACH
11	0117992500	BANJO FITTING UPPER 7/16-20 UN	1	EACH
12	0117662300	ADAPTER 1/2-1/4MBSP X1/4 FNPT-	1	EACH
13	1317021769	ELB90 -6 FLARE X 1/4 MPT SS	1	EACH
14	12572402DS	HPRA PUMP 4.37 GPM	1	EACH
15	061142157024	BOLT HEX 3/8-16 X 1 1/2 SS	2	EACH
16	061080056000	WASHER FLAT 3/8" SS	6	EACH
17	061060057000	NUT HEX 3/8-16 W/INSERT SS	2	EACH
18	2020084007	ADAPTER SPACER MOTOR 3 PH AQT	1	EACH
19	1220770100	BELL HOUSING	1	EACH
20	061142157016	BOLT HEX 3/8-16 X 1 SS	4	EACH
21	12207602DL	COUPLING FLEX	1	EACH
22	15AE271910	MOTOR 3/2.5 HP 3 PH 50/60 HZ AQM/AQT	1	EACH
23	1920023632	STRAIN RELIEF 90 CG90-6250	1	EACH
24	063200066000	NUT LOCK 1/2" STEEL	1	EACH
25	061060050000	NUT HEX 5/16-18 W/INSERT SS	8	EACH
26	061100049000	WASHER FLAT OS 5/16" SS	12	EACH
27	2115031700	RUBBER MOUNT 90 LB AQM	4	EACH
28	061110049000	WASHER FENDER 5/16" SS	4	EACH
29	061142150032	BOLT HEX 5/16-18 X 2 SS	4	EACH
30	2020031301	MOTOR BASE SKID AQMM	1	EACH
31	2020084006	PLATE BASE MOTOR 3 Ph AQTM	1	EACH
32	061161650014	SC PHIL FLAT 5/16-18 X 7/8" SS	4	EACH
33	0611800500116	SC LAG 5/16 X 1" LG SS	4	EACH
	31313842DK	TERMINAL CONN FERRULE BLACK	3	EACH
	31313849DK	TERMINAL CONN FERRULE 14AWG	1	EACH



SPECIFIC TO AQUA MATIC MODULAR STYLE

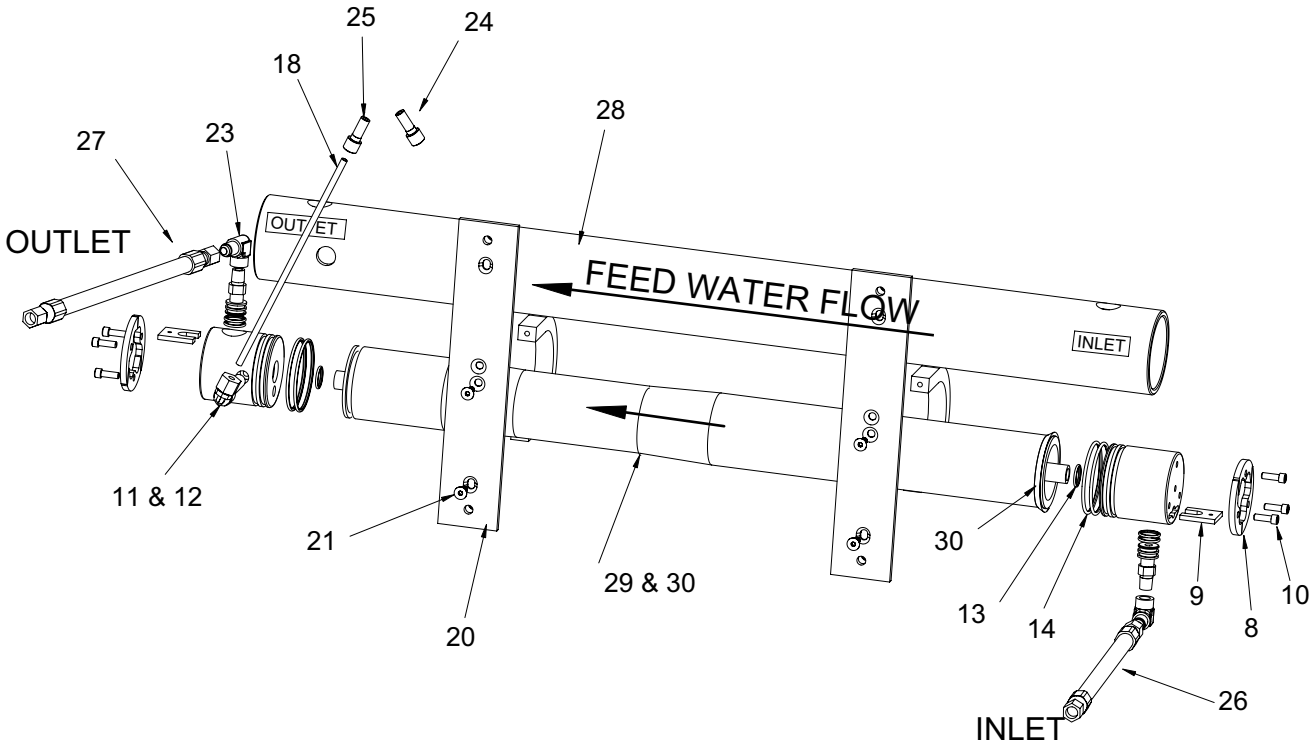
SINGLE REVERSE OSMOSIS MEMBRANE/VESSEL ASSEMBLY

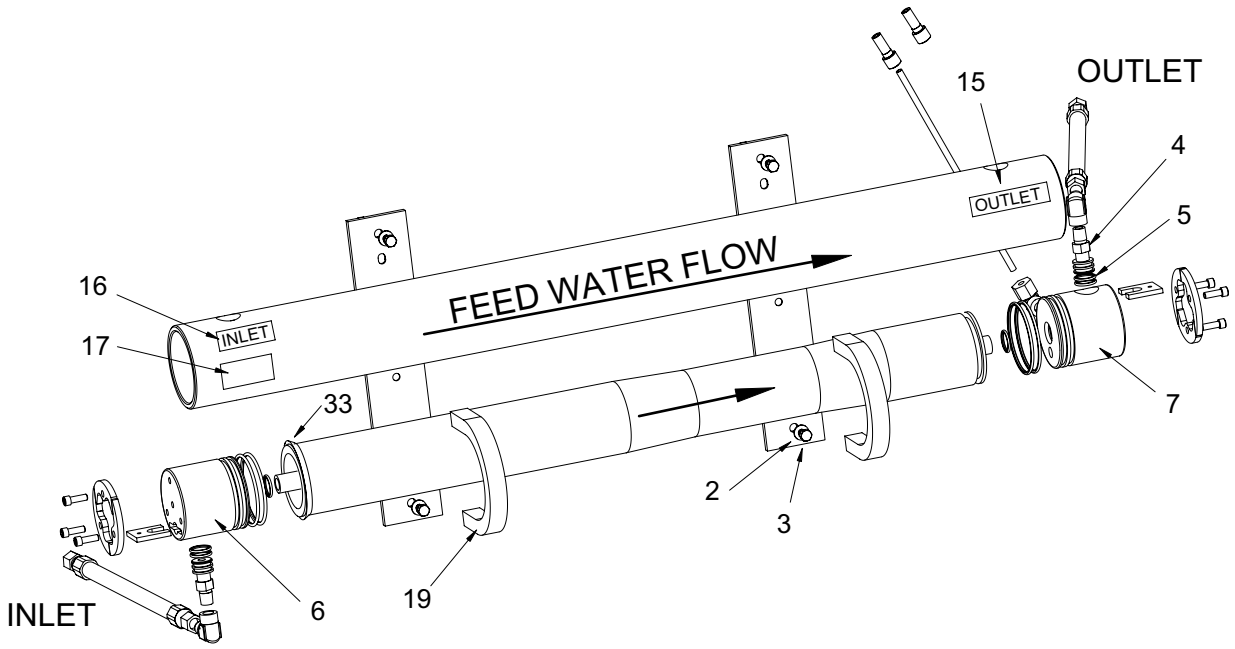
ITEM	PART NUMBER	DESCRIPTION	QTY	U/M
1-30	**B198000010**	**MEMBRANE RACK 450-1 AW/AQMM**	**1**	**EACH**
	OR			
1-30	**B198000012**	**MEMBRANE RACK 700-1 AW/AQMM**	**1**	**EACH**
	OR			
1-30	**B198000011**	**MEMBRANE RACK 900-1 AW/AQMM**	**1**	**EACH**
1	NOT USED			
2	061100043000	WASHER FLAT OS 1/4" SS	4	EACH
3	061181445020	SC LAG 1/4 X 1 1/4 SS	4	EACH
4	0117410800	NIPPLE HP MVA AW	2	EACH
5	2614017900	O-RING 115 INTERCONNECTAW	4	EACH
6	2453502400	END PLUG SINGLE 3" AW	1	EACH
7	2453512400	END PLUG DUAL 3" AW	1	EACH
8	20201030000	SEGMENT RING AW (SET)	2	EACH
9	0520210600	RETAINER PORT MVA AW	2	EACH
10	061162345012	SC SOC CAP 1/4-20 X 3/4 SS	6	EACH
11	0101370815	NIPPLE 1/4 NPT X 1 1/2 PVC	1	EACH
12	0204010869	ELB90 1/4 TUBE X 1/4 FPT PLAST	1	EACH
13	2614010100	O-RING 116 PRODUCTAS/AW	2	EACH
14	2614014900	O-RING 230 BRINE 3" END PLUG	4	EACH
15	2234011360	LABEL OUTLET (SRC BLUE)	1	EACH
16	2234011260	LABEL INLET(SRC BLUE)	1	EACH
17	2220010660	LABEL MEMBRANE SERIAL NO. SRC	1	EACH
18	0312121969	TUBE 1/4 BLACK	1.5	FEET
19	05202401GR	BRACKET MVA (AL) U CLAMP AW	2	EACH
20	0520051800	MVA RACK, AW SERIES >9/01	2	EACH
21	061161845012	SC ALLEN FLAT 1/4-20 X 3/4 SS	4	EACH
22	2632180426	DECOFELT 1/8 X 1 1/4 BLK ADH B	0.5	FEET
23	1317011769	ELB90 -6 FLARE X 1/4 FPT SS	2	EACH
24	0204990200	PLUG 3/8 JQ	1	EACH
25	0204690100	REDUCER 3/8 X1/4 JQ	1	EACH
26 - 27	B390800012	HOSE HP ASSY AW 75" TOTAL LENGTH	2	EACH
	SPECIAL HIGH PRESSURE HOSE LENGTHS ARE AVAILABLE THROUGH SEA RECOVERY			
FOR AQUA MATIC 450-1:				
28	2408132500	VESSEL HIGH PRESSURE 450GPD AW	1	EACH
29-30	2724011233	MEMBRANE 450GPD AW W/ BRINE SEAL	1	EACH
30	2614050433	BRINE SEAL 3"		
FOR AQUA MATIC 700-1:				
28	2408132500-01	VESSEL HIGH PRESSURE 700GPD AW	1	EACH
29-30	2724011333	MEMBRANE 700GPD AW W/ BRINE SEAL	1	EACH
30	2614050433	BRINE SEAL 3"		
FOR AQUA MATIC 900-1:				
28	2408132500-02	VESSEL HIGH PRESSURE 900GPD AW	1	EACH
29-30	2724011433	MEMBRANE 900GPD AW W/ BRINE SEAL	1	EACH
30	2614050433	BRINE SEAL 3"		

AQUA MATIC MODULAR STYLE:

SINGLE REVERSE OSMOSIS MEMBRANE/VESSEL ASSEMBLY

AQUA MATIC MODEL AND STYLE	PART NUMBER	DESCRIPTION
AQUA MATIC 450-1 MODULAR	B198000010	MEMBRANE RACK 450-1 AW/AQMM
AQUA MATIC 700-1 MODULAR	B198000012	MEMBRANE RACK 700-1 AW/AQMM
AQUA MATIC 900-1 MODULAR	B198000011	MEMBRANE RACK 900-1 AW/AQMM





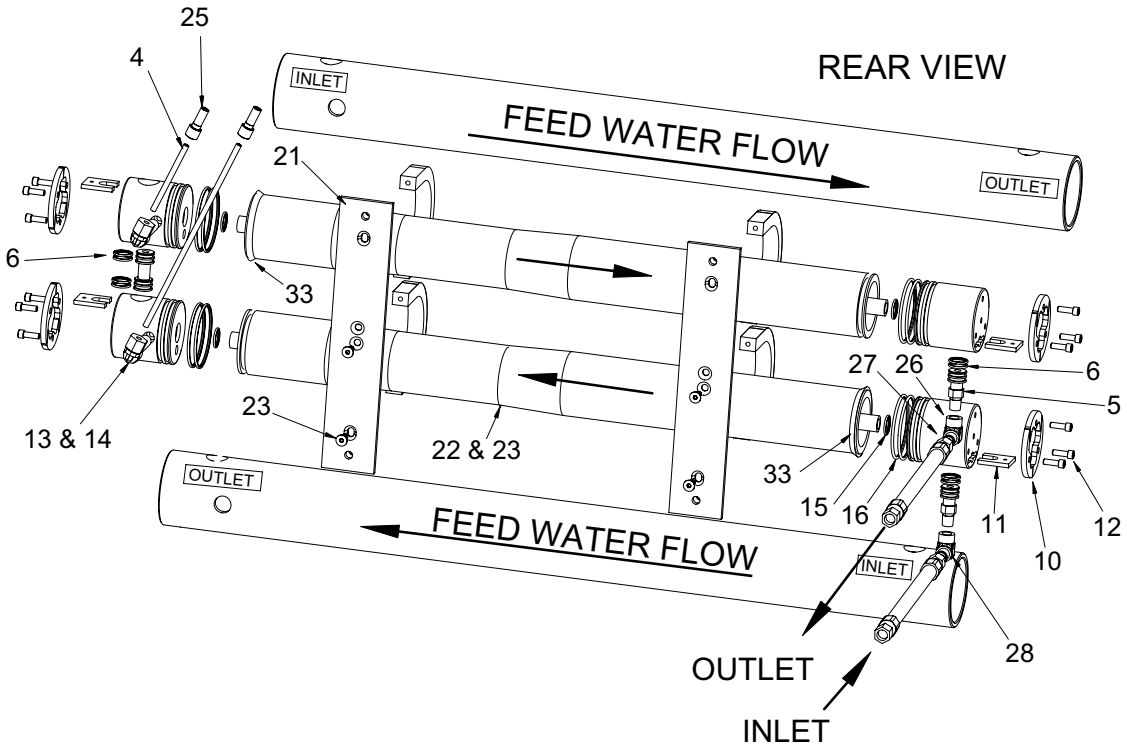
SPECIFIC TO AQUA MATIC MODULAR STYLE:

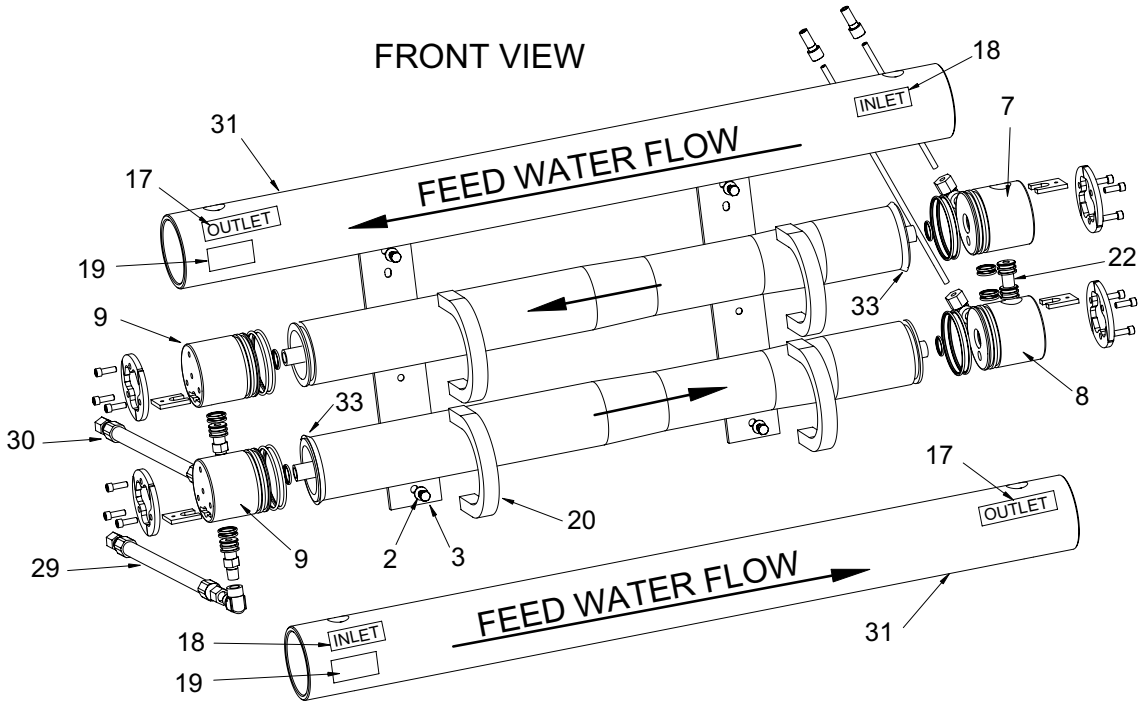
DOUBLE REVERSE OSMOSIS MEMBRANE/VESSEL ASSEMBLY

ITEM	PART NUMBER	DESCRIPTION	QTY	U/M
1-33	**B198000009**	**MEMBRANE RACK 900-2 AW/AQMM**	**1**	**EACH**
	OR			
1-33	**B198000007**	**MEMBRANE RACK 1400-2 AW/AQMM**	**1**	**EACH**
	OR			
1-33	**B198000008**	**MEMBRANE RACK 1800-2 AW/AQMM**	**1**	**EACH**
1	NOT USED			
2	061100043000	WASHER FLAT OS 1/4"SS	4	EACH
3	061181445020	SC LAG 1/4 X 1 1/4 SS	4	EACH
4	0312121969	TUBE 1/4 BLACK	4	FEET
5	0117410800	NIPPLE HP MVA AW	2	EACH
6	2614017900	O-RING 115 INTERCONNECTAW	8	EACH
7	H36160522400	END PLUG 3" DUAL, HORIZON SEAF	1	EACH
8	2453512400	END PLUG DUAL 3" AW	1	EACH
9	2453502400	END PLUG SINGLE 3" AW	2	EACH
10	20201030000	SEGMENT RING AW (SET)	4	EACH
11	0520210600	RETAINER PORT MVA AW	4	EACH
12	061162345012	SC SOC CAP 1/4-20 X 3/4 SS	12	EACH
13	0101370815	NIPPLE 1/4 NPT X 1 1/2 PVC	2	EACH
14	0204010869	ELB90 1/4 TUBE X 1/4 FPT PLAST	2	EACH
15	2614010100	O-RING 116 PRODUCTAS/AW	4	EACH
16	2614014900	O-RING 230 BRINE 3" END PLUG	8	EACH
17	2234011360	LABEL OUTLET (SRC BLUE)	2	EACH
18	2234011260	LABEL INLET(SRC BLUE)	2	EACH
19	2220010660	LABEL MEMBRANE SERIAL NO. SRC	2	EACH
20	05202401GR	BRACKET MVA (AL) U CLAMP AW	4	EACH
21	0520051800	MVA RACK, AW SERIES >9/01	2	EACH
22	2417430800	INTERCONNECT MVA SS AW	1	EACH
23	061161845012	SC ALLEN FLAT 1/4-20 X 3/4 SS	8	EACH
24	2632180426	DECOFELT 1/8 X 1 1/4 BLK ADH B	1	FEET
25	0204690100	REDUCER 3/8 X1/4 JQ	2	EACH
26	0117010869	ELB90 1/4 FPT X 1/4 FPT SS	1	EACH
27	1317061769	ELB45 -6 FLARE X 1/4 MPT SS	1	EACH
28	1317011769	ELB90 -6 FLARE X 1/4 FPT SS	1	EACH
29-30	B390800012	HOSE HP ASSY AW 75" TOTAL LENGTH	2	EACH
	SPECIAL HIGH PRESSURE HOSE LENGTHS ARE AVAILABLE THROUGH SEA RECOVERY			
FOR AQUA MATIC 900-2:				
31	2408132500	VESSEL HIGH PRESSURE 450GPD AW	2	EACH
32-33	2724011233	MEMBRANE 450GPD AW W/ BRINE SEAL	2	EACH
33	2614050433	BRINE SEAL 3"		
FOR AQUA MATIC 1400-2:				
31	2408132500-01	VESSEL HIGH PRESSURE 700GPD AW	2	EACH
32-33	2724011333	MEMBRANE 700GPD AW W/ BRINE SEAL	2	EACH
33	2614050433	BRINE SEAL 3"		
FOR AQUA MATIC 1800-2:				
31	2408132500-02	VESSEL HIGH PRESSURE 900GPD AW	2	EACH
32-33	2724011433	MEMBRANE 900GPD AW W/ BRINE SEAL	2	EACH
33	2614050433	BRINE SEAL 3"		

DOUBLE REVERSE OSMOSIS MEMBRANE/VESSEL ASSEMBLY
ILLUSTRATED FOR AQUA MATIC MODULAR STYLE:

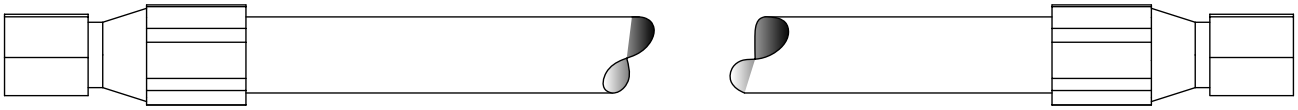
AQUA MATIC MODEL AND STYLE	PART NUMBER	DESCRIPTION
AQUA MATIC 900-2 MODULAR	B198000009	MEMBRANE RACK 900-2 AW/AQMM
AQUA MATIC 1400-2 MODULAR	B198000007	MEMBRANE RACK 1400-2 AW/AQMM
AQUA MATIC 1800-2 MODULAR	B198000008	MEMBRANE RACK 1800-2 AW/AQMM





ITEM	PART NUMBER	DESCRIPTION	QTY	U/M
1	**B390800012**	**HOSE HP ASSY AW 75" TOTAL LENGTH**	**2**	**EACH**

SPECIAL LENGTHS ARE AVAILABLE THROUGH SEA RECOVERY.



SPECIFIC TO AQUA MATIC MODULAR STYLE:

110-115 / 220-230 VAC, 50/60 Hz, SINGLE PHASE OPERATING POWER:

ITEM	PART NUMBER	DESCRIPTION	QTY	U/M
1-6	**B750130001**	**CORE UNIT AUTO/ELECT AQMM 1PH**		
1	2020084008	PLATE ENCLOSURE MOUNTING AQMM	1	EACH
2	061142150012	BOLT HEX 5/16-18 X 3/4 SS	8	EACH
3	061120049000	WASHER SPLIT LOCK 5/16"SS	8	EACH
4	061100049000	WASHER FLAT OS 5/16"SS	8	EACH
5	0312256667	SPIRAL WRAP 1/2"	2	FEET
6	B619120003	CONTROLLER AQMM 1PH v3.00	1	EACH
7	B751130001	ENCLOSURE ASSY AUTOMATION AQMM	1	EACH

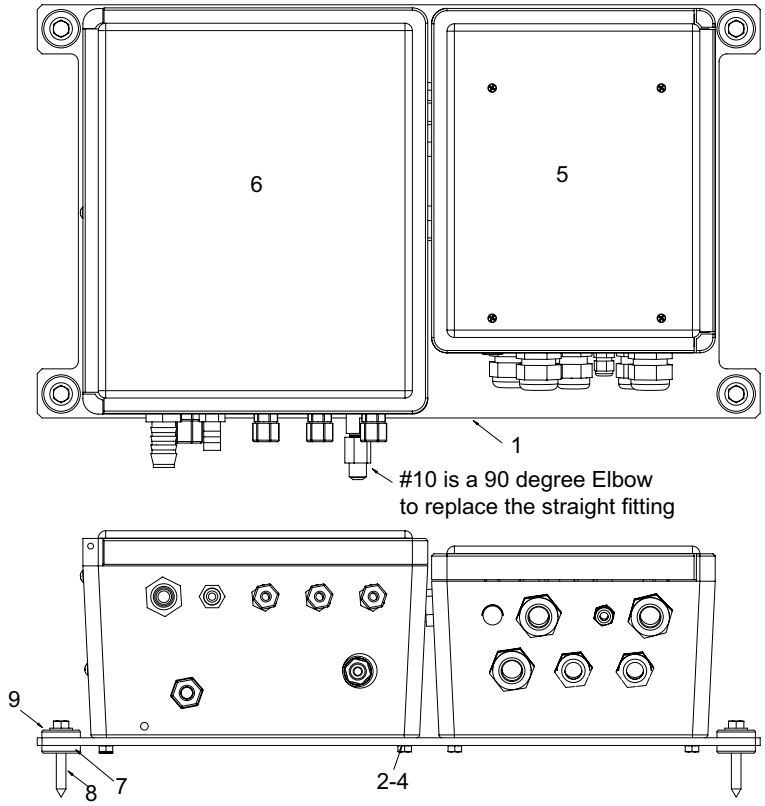
OR

208-230/460 VAC 60 Hz & 220-380-415 VAC, 50 Hz, THREE PHASE OPERATING POWER

ITEM	PART NUMBER	DESCRIPTION	QTY	U/M
1-6	**B750130002**	**CORE UNIT AUTO/ELECT AQMM 3PH**		
1	2020084008	PLATE ENCLOSURE MOUNTING AQMM	1	EACH
2	061142150012	BOLT HEX 5/16-18 X 3/4 SS	8	EACH
3	061120049000	WASHER SPLIT LOCK 5/16"SS	8	EACH
4	061100049000	WASHER FLAT OS 5/16"SS	8	EACH
	0312256667	SPIRAL WRAP 1/2"	2	FEET
5	B619120004	CONTROLLER AQMM 3PH v3.00	1	EACH
6	B751130001	ENCLOSURE ASSY AUTOMATION AQMM	1	EACH

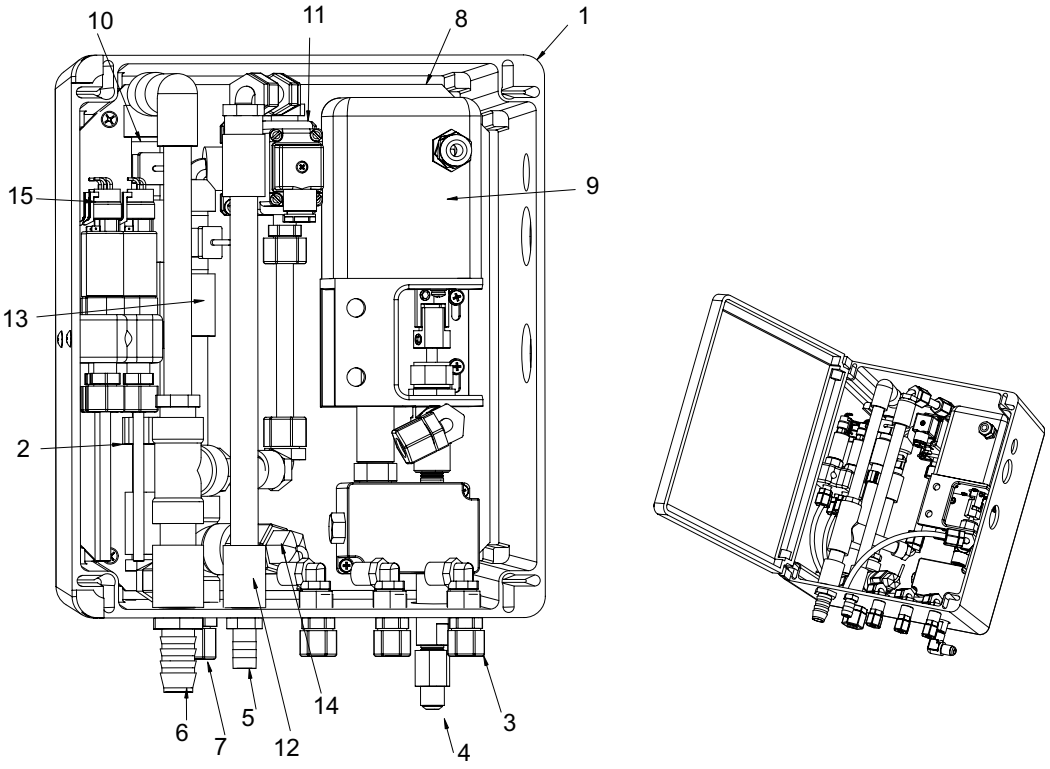
INCLUDED WITH INSTALLATION KIT:

7	2115031700	RUBBER MOUNT 90 LB AQM	4	EACH
8	061110049000	WASHER FENDER 5/16"SS	4	EACH
9	061172149036	SC HEX "A" 5/16 X 2 1/4 SS	4	EACH
10	1317011769	ELB90 -6 x1/4 FPT SS	1	EACH



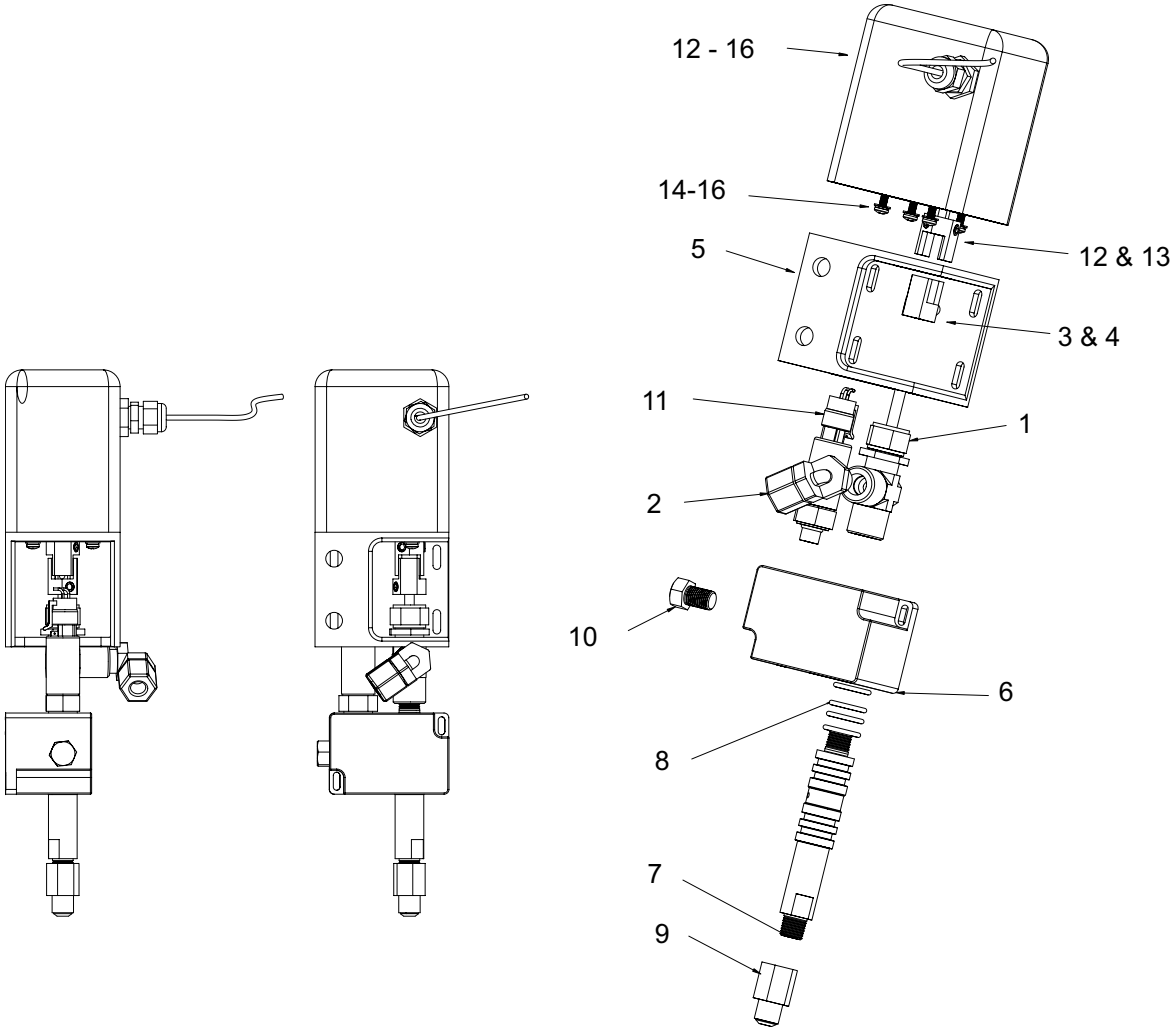
SPECIFIC TO AQUA MATIC MODULAR STYLE:

ITEM	PART NUMBER	DESCRIPTION	QTY	U/M
1-15	**B751130001**	**ENCLOSURE ASSY AUTOMATION AQMM**	**1**	**EACH**
1	31312241CH-01	ENCLOSURE AUTOMATION AQMM	1	EACH
2	0501164800	PIPE SUPPORT 3/8"	2	EACH
3	0204090869	CONN 1/4 TUBE X 1/4 MPT PLASTI	3	EACH
	OR			
3	0204020869	ELB90 1/4 TUBE X 1/4 MPT PLAST	3	EACH
4	1317121769	CONN -6 FLARE X 1/4 FPT SS	1	EACH
5	0112651900	ADAP 3/8 MPT X 1/2 BARB NYLON	1	EACH
6	0101652683	ADAP 1/2 MPT X 3/4 BARB PVC	1	EACH
7	0204091969	CONN 3/8 TUBE X 1/2 MPT PLASTI	1	EACH
8	2020084100	PLATE WATER MOUNTING AQMM	1	EACH
	061080023000	WASHER FLAT #8 SS	8	EACH
	061120023000	WASHER SPLIT LOCK #8 SS	8	EACH
	061080018000	WASHER FLAT #6 SS	2	EACH
	061120018000	WASHER SPLIT LOCK #6 SS	2	EACH
	061160620010	SC PHIL PAN 6-32 X 5/8 SS	2	EACH
	061160626010	SC PHIL PAN 8-32 X 5/8 SS	8	EACH
	061161020016	SC PHIL TRUSS 8-32 X 1 SS	2	EACH
	061160631010	SC PHIL PAN 10-32 X 5/8 SS	2	EACH
	061161631008	SC PHIL FLAT 10-32 X 1/2 SS	4	EACH
9	B476130002	BPR REGULATER ASSY AQMM	1	EACH
10	**P486130001**	**BRINE SUPPLY LINE 1 ASSEMBLY AQMM**	**1**	**EACH**
11	**P516130005**	**DIVERSION VALVE ASSY AQMM**	**1**	**EACH**
12	**P516130005-01**	**DIVERSION VALVE "A" PORT**	**1**	**EACH**
13	**P516130005-02**	**DIVERSION VALVE P -PORT AQMM**	**1**	**EACH**
14	**B511080003**	**SALINITY PROBE ASSY 2002**	**1**	**EACH**
15	**P147130001**	**LOW PRESS TRANSDUCER ASSY AQMM**	**1**	**EACH**



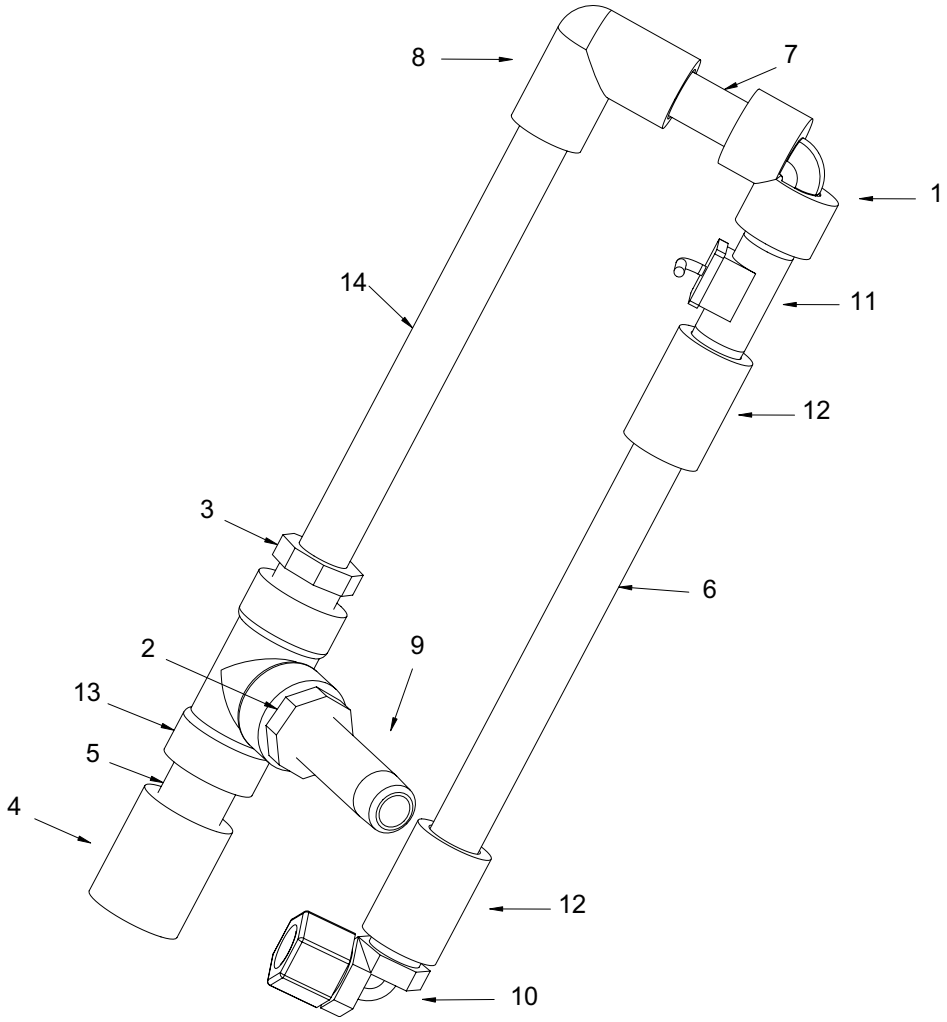
SPECIFIC TO AQUA MATIC MODULAR STYLE:

ITEM	PART NUMBER	DESCRIPTION	QTY	U/M
1-16	**B476130002**	**BPR REGULATER ASSY AQMM**	**1**	**EACH**
1	1417017896	VALVE PRESS REGULATOR-AS	1	EACH
2	0204021769	ELB90 3/8 TUBE X 1/4 MPT PLAST	1	EACH
3	3421020100	COUPLER BACK PRESSURE REG- AQM	1	EACH
4	061222345006	SC ALLEN SET 1/4-20 X 3/8 SS	2	EACH
5	2020044000	BRACKET BP REGULATOR AQM	1	EACH
6	5353140900	MANIFOLD PRESSURE PORT AQMM	1	EACH
7	01634108CQ	PRESSURE PORT SHAFT AQMM	1	EACH
8	2614017900	O-RING 115 INTERCONNECT AW	4	EACH
9	1317121769	CONN -6 FLARE X 1/4 FPT SS	1	EACH
10	590111401A	PLUG 1/4 O-RING BOSS TYPE	1	EACH
11	2317100300	TRANSDUCER 0-2000 PSI 7/16" SA	1	EACH
12-16	**B079400002**	**BPR GEAR ASSY AQM**	**1**	**EACH**
12	3421020100	COUPLER BACK PRESSURE REG- AQM	1	EACH
13	061222345006	SC ALLEN SET 1/4-20 X 3/8 SS	2	EACH
14	061160626012	SC PHIL PAN 8-32 X 3/4 SS	4	EACH
15	061080023000	WASHER FLAT #8 SS	4	EACH
16	061120023000	WASHER SPLIT LOCK #8 SS	4	EACH



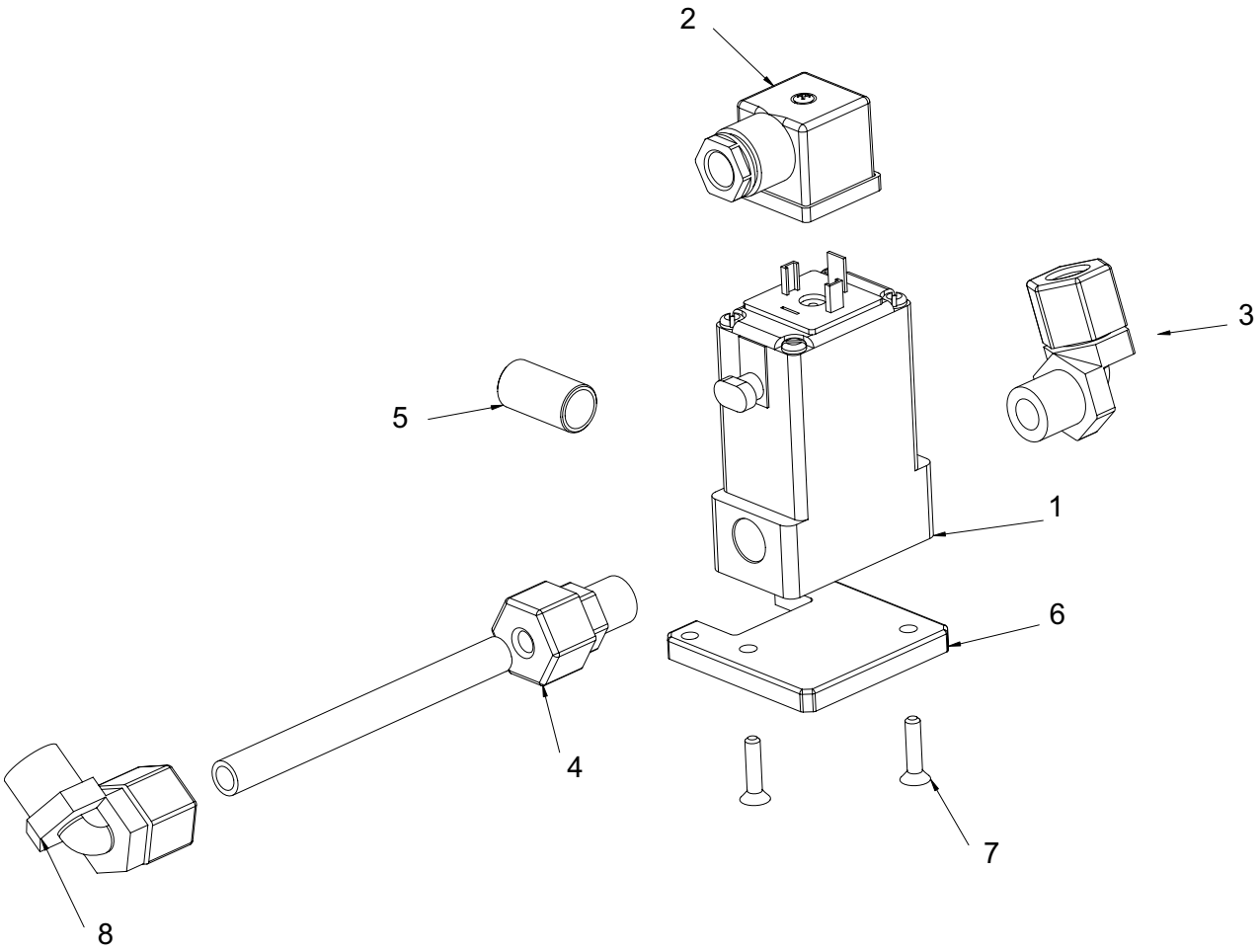
SPECIFIC TO AQUA MATIC MODULAR STYLE:

ITEM	PART NUMBER	DESCRIPTION	QTY	U/M
1-14	**P486130001**	**BRINE SUPPLY LINE 1 ASSEMBLY AQMM**		
1	0101191800	ELB90 3/8 SL X 3/8 FNPT PVC	1	EACH
2	0101322483	RB 1/2 SL X 3/8 SL PVC SCH 80	2	EACH
3	0101322483	RB1/2 SL X 3/8 SL FLUSH STYLE PVC SCH 80	1	EACH
4	0101602583	ADAP 1/2 FPT X 1/2 SL PVC	1	EACH
5	0301098800	PIPE PVC SCH 80 1/2"	3.46	INCH
6	0301094100	PIPE 3/8" PVC SCH 80	6.75	INCH
7	0301094100	PIPE PVC SCH 80 3/8	2.4	INCH
8	0101051800	ELB90 3/8 SL X 3/8 SL PVC SCH 80	1	EACH
9	0101371830	NIPPLE 3/8 NPT X 3.0" PVC SCH 80	1	EACH
10	0204021869	ELB90 3/8 TUBE X 3/8 MPT PLAST	1	EACH
11	11026920AO	FLOW METER IN-LINE .53-7.9 GPM	1	EACH
12	0101551883	COUP 3/8 SL X 3/8 FPT PVC	2	EACH
13	0101462583	TEE 1/2 SL X 1/2 SL X 1/2 SL P	1	EACH
14	0301094100	PIPE 3/8" PVC SCH 80	6.75	INCH



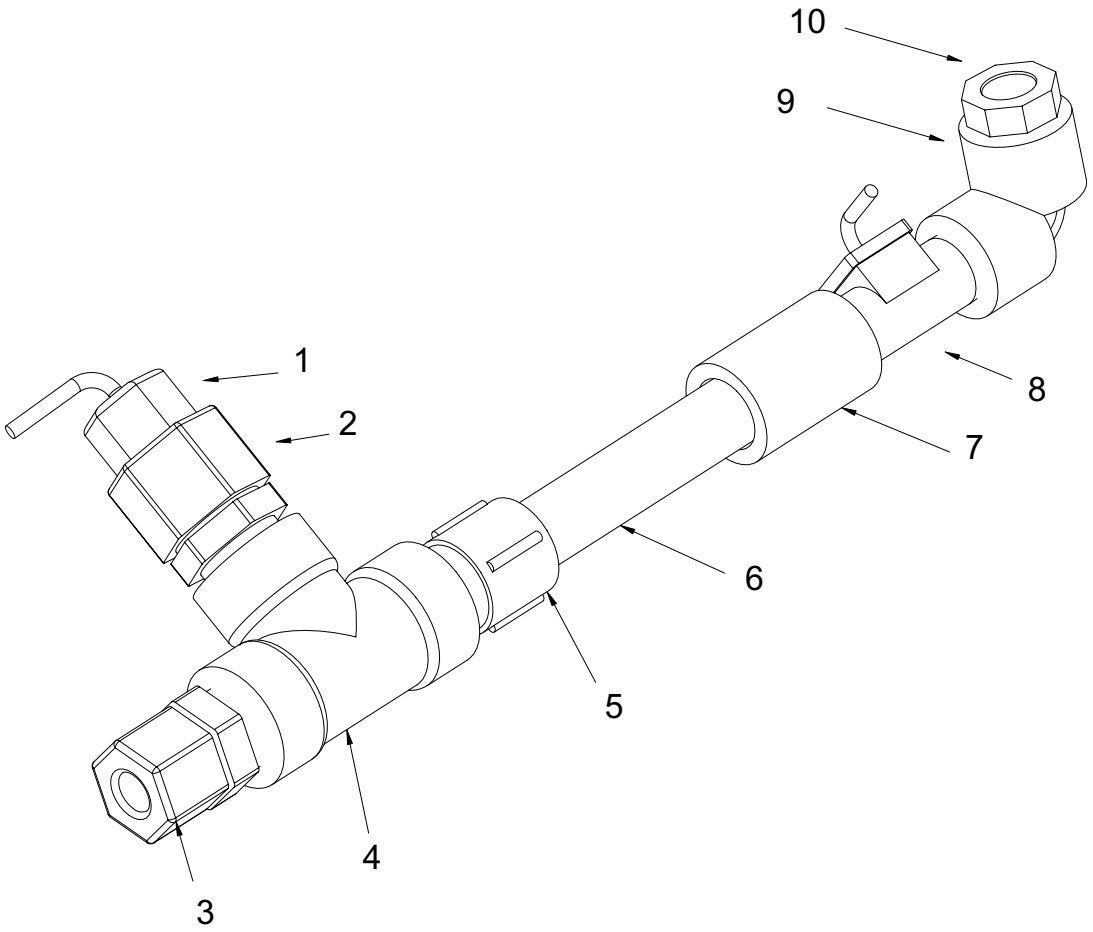
SPECIFIC TO AQUA MATIC MODULAR STYLE:

ITEM	PART NUMBER	DESCRIPTION	U/M	QTY
1 - 8	**B516130005**	**DIVERSION VALVE ASSY AQMM**		
1	1401095998	VALVE SOLENOID 12VDC AED/CSFE/	EACH	1
2	3131680100	PLUG (CONNECTOR) DIN 4 COND	EACH	1
3	0204021769	ELB90 3/8 TUBE X 1/4 MPT PLAST	EACH	1
4	0204090869	CONN 1/4 TUBE X 1/4 MPT PLASTI	EACH	1
5	01013708CL	NIPPLE 1/4 NPT X CLOSE PVC	EACH	1
6	2020040200	PLATE MOUNTING 3-WAY VALVE AQM	EACH	1
7	061171623010	SC PHIL FLAT"B" 8 X 5/8 SS	EACH	2
8	0204021869	ELB90 3/8 TUBE X 3/8 MPT PLAST	EACH	1
	061170623010	SC PHIL PAN "B" 8 X 5/8 SS	EACH	2



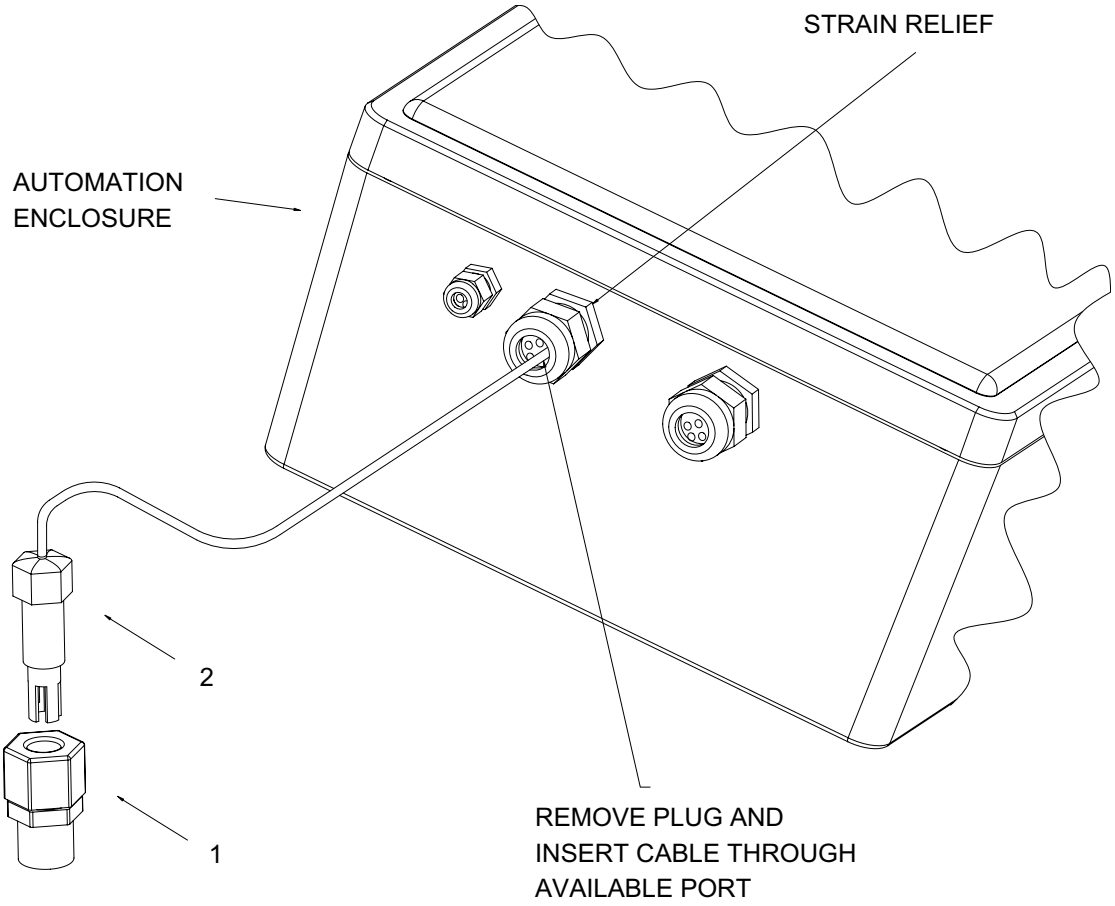
SPECIFIC TO AQUA MATIC MODULAR STYLE:

ITEM	PART NUMBER	DESCRIPTION	QTY	U/M
1-10	**P516130005-02**	**DIVERSION VALVE P -PORT AQMM**		
1-2	B511080003	SALINITY PROBE ASSY 2002	1	EACH
1	0204092969	CONN 5/8 TUBE X 1/2 MPT PLASTI	1	EACH
2	31314203HA	SALINITY PROBE W/ TEMP SENSOR	1	EACH
3	0204091969	CONN 3/8 TUBE X 1/2 MPT PLASTI	1	EACH
4	0101422583	TEE 1/2 FT X 1/2 FT X 1/2 FT P	1	EACH
5	0103302483	ADAP 1/2 MALE X 3/8 SL SCH 40	1	EACH
6	0301094100	PIPE PVC SCH 80 3/8	0.3	FEET
7	0101551883	COUP 3/8 SL X 3/8 FPT PVC	1	EACH
8	11026520AO	FLOW METER IN-LINE .13-1.3 GPM	1	EACH
9	0101011883	ELB90 3/8 FPT X 3/8 FPT PVC	1	EACH
10	0101261783	RB 3/8 MT X 1/4 FT PVC	1	EACH



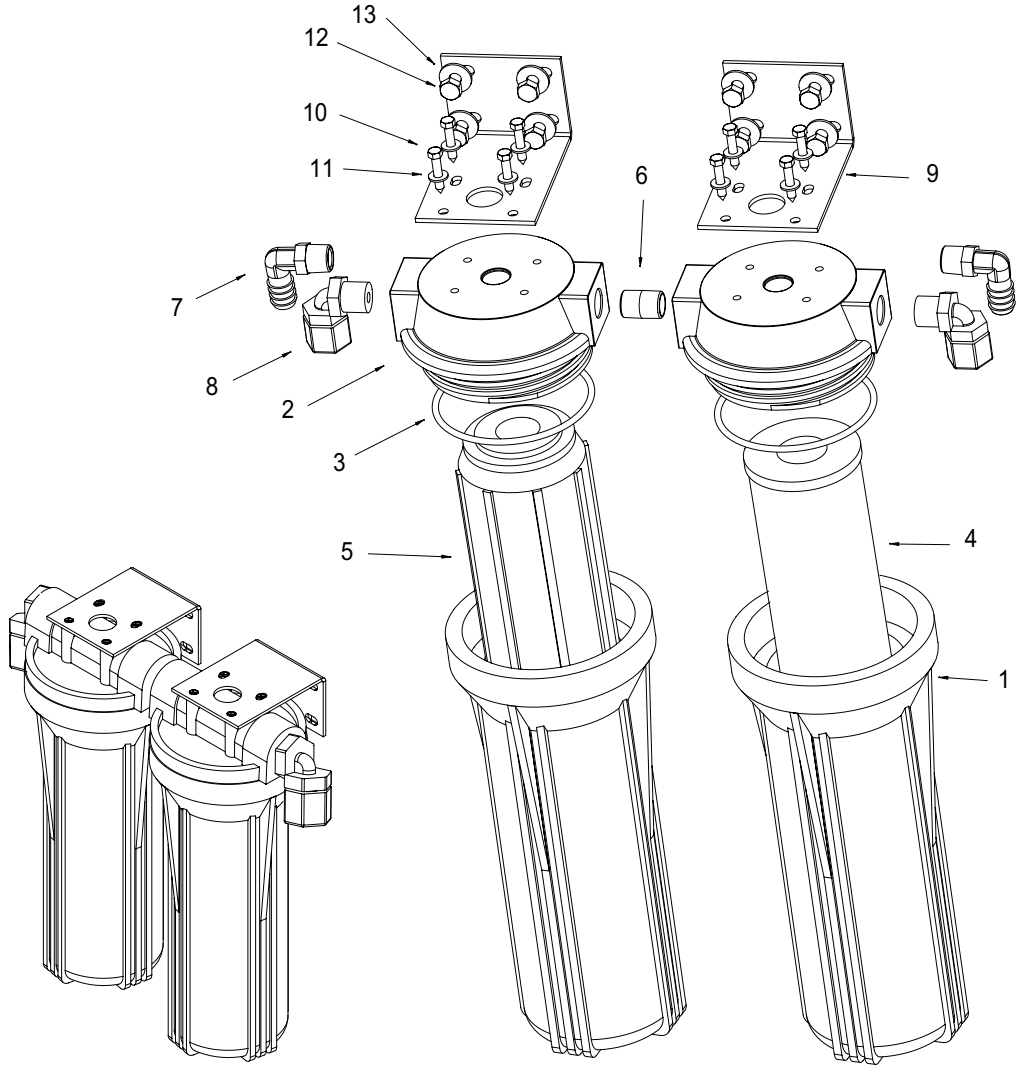
SPECIFIC TO AQUA MATIC MODULAR STYLE:

ITEM	PART NUMBER	DESCRIPTION	QTY	U/M
1-2	**B511080003**	**SALINITY PROBE ASSY 2002**	**1**	**EACH**
1	0204092969	CONN 5/8 TUBE X 1/2 MPT PLASTI	1	EACH
2	31314203HA	SALINITY PROBE W/ TEMP SENSOR	1	EACH



SPECIFIC TO AQUA MATIC MODULAR STYLE:

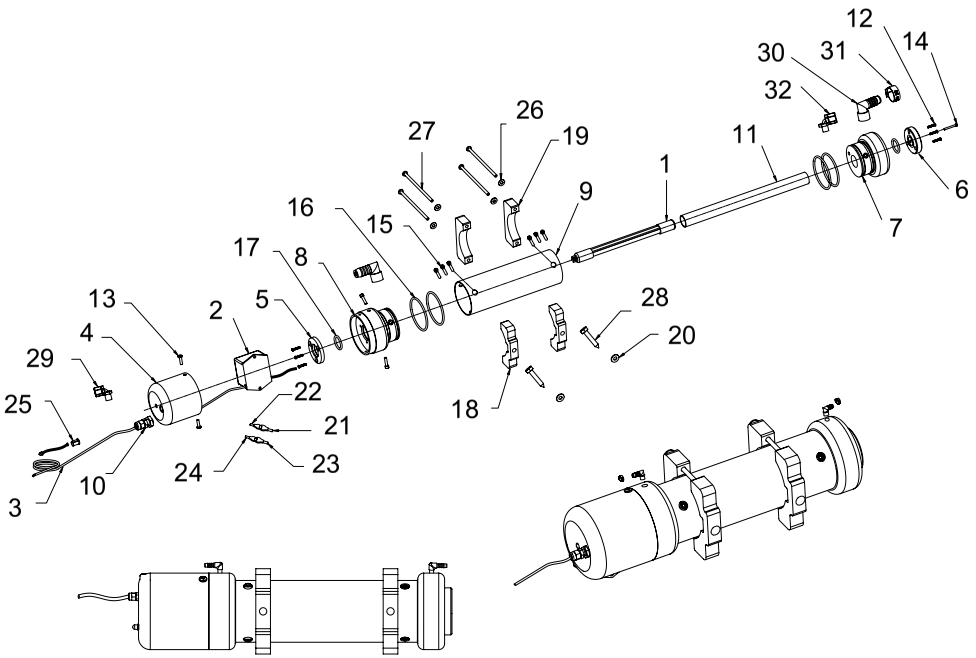
ITEM	PART NUMBER	DESCRIPTION	QTY	U/M
1 - 13	**B114130001**	**POSTFILTER DUAL AQMM**		
1 - 3	0713020573	FILTER HOUSING/LID 3/8 X 10	2	EACH
1		BOWL PREFILTER HOUSING 10"		
2		LID PREFILTER HOUSING 10"		
3	2614010473	O-RING PREFILTER 10"		
4	0803004773	ELEMENT CHARCOAL 10"	1	EACH
5	08251950AS	ELEMENT PH 9 3/4"	1	EACH
6	01013718CL	NIPPLE 3/8 NPT X CLOSE PVC	1	EACH
7	0112071900	ELB90 3/8 X 1/2 BARB NYLON	2	EACH
8	0204021869	ELB90 3/8 TUBE X 3/8 MPT PLAST	2	EACH
9	20200402100	BRACKET PREFILTER/CHRCL/PLNKTN	2	EACH
10	061170628016	SC PHIL PAN "A" 10 X 1 SS	8	EACH
11	061080028000	WASHER FLAT #10 SS	8	EACH
12	061172143016	SC HEX "A" 1/4 X 1 SS	8	EACH
13	061100043000	WASHER FLAT OS 1/4" SS	8	EACH



AQUA MATIC MODULAR STYLE:

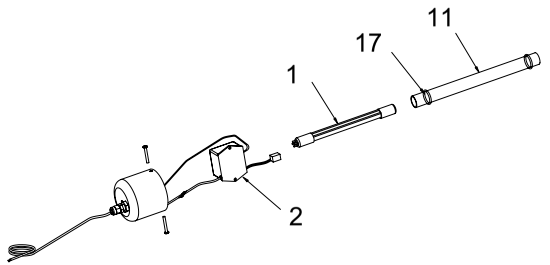
ITEM	PART NUMBER	DESCRIPTION	QTY	U/M
1-32	B52680000B	UV STERILIZER 1 GPM 12VDC		
1	4000010400	LAMP UV AW >4/20/99	1	EACH
2	4000021400	BALLAST 12VDC-4C AW	1	EACH
3	4942220810	WIRE 18 GA 2 COND. PURPLE FLEX	6	FEET
4	4000160100	CAP ELETRICAL U.V. STLR	1	EACH
5	4000100200	BUSHING TOP END U.V. STLR	1	EACH
6	4000100300	BUSHING BTTM END U.V. STLR	1	EACH
7	2401522200	END PLUG BTTM U.V.	1	EACH
8	2401532200	END PLUG TOP U.V.	1	EACH
9	2417202200	VESSEL U.V.STERILIZER	1	EACH
10	1904010643	STRAIN RELIEF 3444 BLK	2	EACH
11	4000040400	QUARTZ SLEEVE UV AW 4/99	1	EACH
12	061161130016	SC PHIL OVAL 10-24 X 1 SS	6	EACH
13	061160630008	SC PHIL PAN 10-24 X 1/2 SS	2	EACH
14	061161130020	SC PHIL OVAL 10-24 X 1 1/4 SS	1	EACH
15	061162345004	SC SOC CAP 1/4-20 X 1/4 SS	6	EACH
16	2614010200	O-RING 227 SEAL 2 1/2"	4	EACH
17	2614019000	O-RING 212 QUARTZ SLEEVE UVAW	2	EACH

ITEM	PART NUMBER	DESCRIPTION	QTY	U/M
18	20010418002A	BRACKET MNT SADDLE UV/AW BTTM	2	EACH
19	20010418001A	BRACKET MNT SADDLE UV/AW TOP	2	EACH
20	061100043000	WASHER FLAT OS 1/4""SS	2	EACH
21	3131383600	TERMINAL MALE DISC RED 18AWG	1	EACH
22	3131383700	TERMINAL FEMALE DISC RED 18AWG	1	EACH
23	3131383500	TERMINAL MALE DISC BLUE 14AWG	1	EACH
24	3131383400	TERMINAL FEM DISC BLUE 14AWG	1	EACH
25	3131290400	MOUNTING CLIP LED	1	EACH
26	065080028000	WASHER FLAT #10 NYLON	4	EACH
27	061160630048	SC PHIL PAN 10-24 X 3 SS	4	EACH
28	061182143024	SC LAG 1/4 X 1 1/2 SS	2	EACH
	061142145020	BOLT HEX 1/4-20 X 1 1/4 SS	2	EACH
	065070045000	NUT LOCKING 1/4-20 FLANGED NYL	2	EACH
29	0204020869	ELB90 1/4 TUBE X 1/4 MPT PLAST	2	EACH
30	0254011000	ELB90 1/4 MPT X 1/2 BARB NY	2	EACH
31	05181432AA	HOSE CLAMP 1/2"	2	EACH
32	0204021769	ELB90 3/8 TUBE X 1/4 MPT PLAST	2	EACH
	2614112000	GROMMET (CABLE) .125-.187 1238	1	EACH



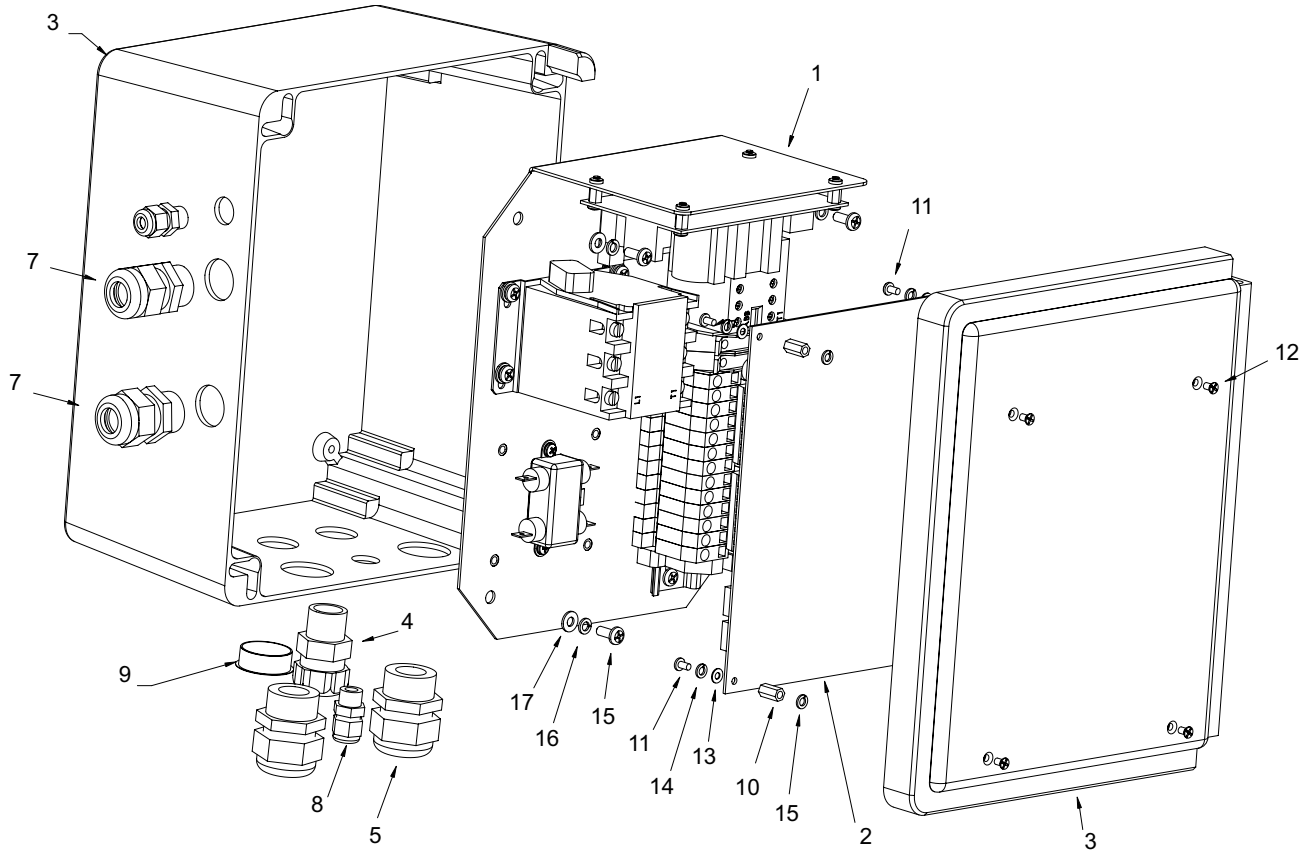
SERVICE & MAINTENANCE PARTS

ITEM	PART NUMBER	DESCRIPTION
1	4000010400	LAMP UV AW >4/20/99
2	4000021400	BALLAST 12VDC-4C AW
11	4000040400	QUARTZ SLEEVE UV AW 4/99
17	2614019000	O-RING 212 QUARTZ SLEEVE UVAW



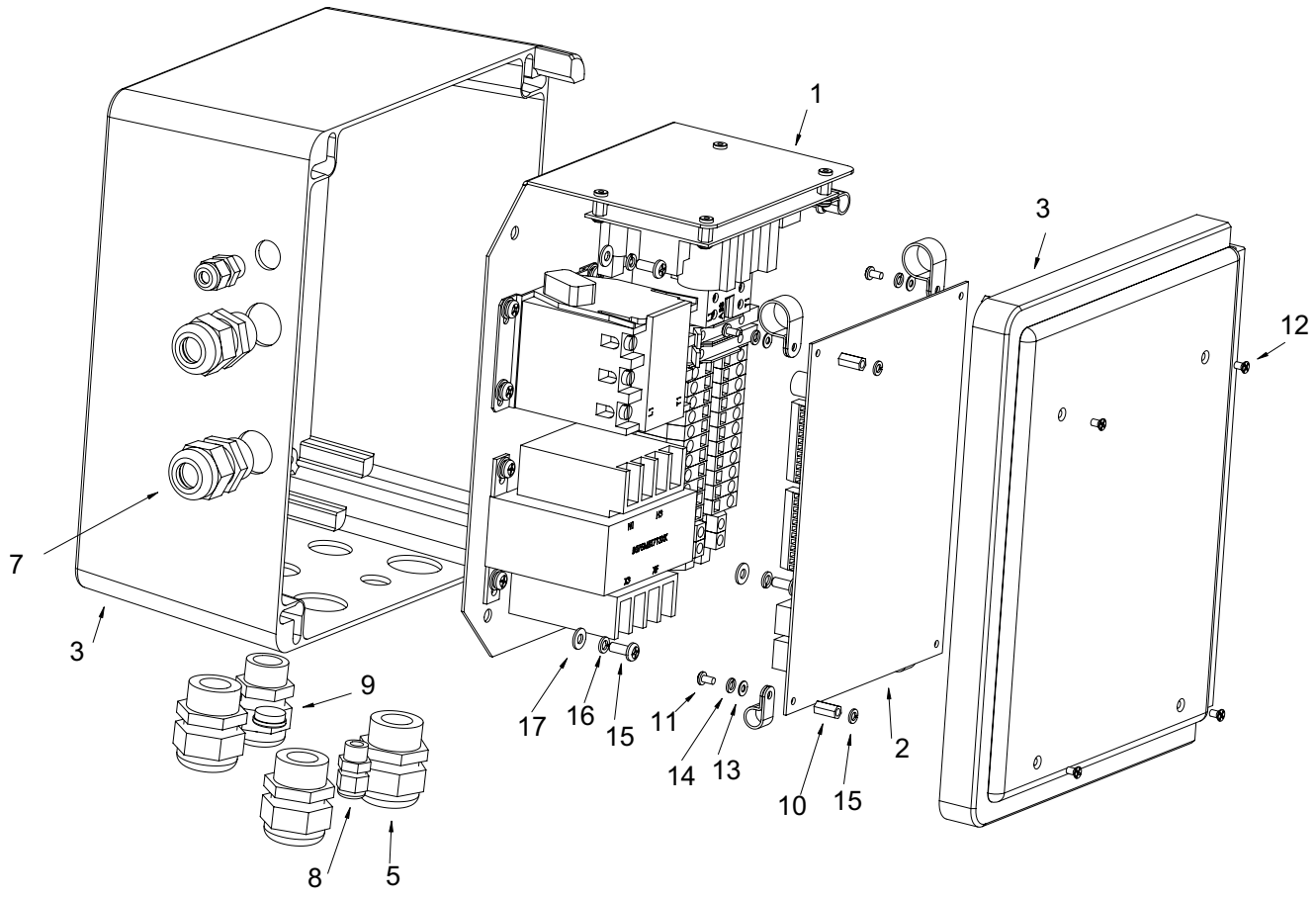
SPECIFIC FOR AQUA MATIC MODULAR STYLE:

ITEM	PART NUMBER	DESCRIPTION	U/M	QTY
1 - 17	**B619120003**	**CONTROLLER AQMM 1PH v3.00 SINGLE PHASE 110-115 / 220-230 VAC, 50/60 Hz**	**EACH**	**1**
1	B619120001	CONTROLLER CHASSIS ASSY 1PH AQM v3.00	EACH	1
2	B596240002	PCB MAIN AQM v3.00	EACH	1
3	31312241CH-02	ENCLOSURE ELETRICAL AQMM	EACH	1
4	1920040500	STRAIN RELIEF 3/8 LIQTITE	EACH	1
5	1904010343	STRAIN RELIEF 3223	EACH	2
6	1904010443	STRAIN RELIEF 3210 BLK	EACH	1
7	1904011800	STRAIN RELIEF 3HOLE X 6MM AQM	EACH	2
8	1904010643	STRAIN RELIEF 3444 BLK	EACH	2
9	3131101400	PLUG BLANKING ELE BOX AQM 1.13	EACH	1
10	067262820008	STANDOFF 6-32 X 1/2 F X F	EACH	4
11	061160620006	SC PHIL PAN 6-32 X 3/8 SS	EACH	3
12	061162020006	SC PHIL FLAT 6-32 X 3/8 SS	EACH	4
13	061080018000	WASHER FLAT #6 SS	EACH	4
14	061120018000	WASHER SPLIT LOCK #6 SS	EACH	4
15	061160631006	SC PHIL PAN 10-32 X 3/8 SS	EACH	4
16	061120028000	WASHER SPLIT LOCK #10 SS	EACH	4
17	061080028000	WASHER FLAT #10 SS	EACH	8
	0512130100	WIRE CLAMP WHITE 1/4"	EACH	2
	0512130400	WIRE CLAMP BLACK 1/2"	EACH	1
	0512130500	WIRE CLAMP WHITE 5/8"	EACH	2



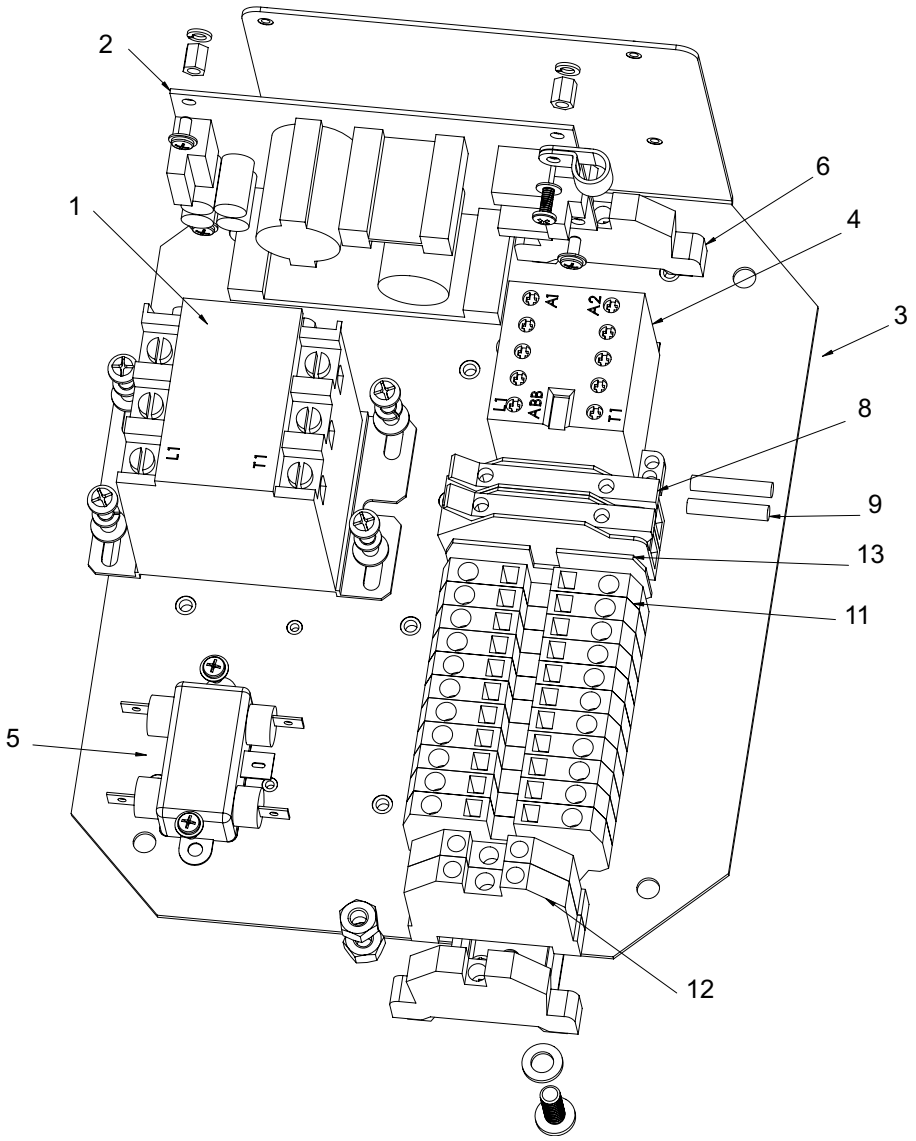
SPECIFIC FOR AQUA MATIC MODULAR STYLE:

ITEM	PART NUMBER	DESCRIPTION	U/M	QTY
1 - 17	**B619120004**	**CONTROLLER AQMM 3PH v3.00 THREE PHASE 220-380-415, 50Hz, and 208-230-460, 60 Hz**	**EACH**	**1**
1	B619120002	CONTROLLER CHASSIS ASSY 3PH AQM v3.00	EACH	1
2	B596240002	PCB MAIN AQM v3.00	EACH	1
3	31312241CH-02	ENCLOSURE ELETRICAL AQMM	EACH	1
4	1920040500	STRAIN RELIEF 3/8 LIQTITE	EACH	1
5	1904010343	STRAIN RELIEF 3223 3/4" GREY	EACH	2
6	1904010443	STRAIN RELIEF 3210 BLK	EACH	1
7	1904011800	STRAIN RELIEF 3HOLE X 6MM AQM	EACH	2
8	1904010643	STRAIN RELIEF 3444 BLK	EACH	2
9	3131101400	PLUG BLANKING ELE BOX AQM 1.13	EACH	1
10	067262820008	STANDOFF 6-32 X 1/2 F X F	EACH	4
11	061160620006	SC PHIL PAN 6-32 X 3/8 SS	EACH	3
12	061162020006	SC PHIL FLAT 6-32 X 3/8 SS	EACH	4
13	061080018000	WASHER FLAT #6 SS	EACH	4
14	061120018000	WASHER SPLIT LOCK #6 SS	EACH	4
15	061160631006	SC PHIL PAN 10-32 X 3/8 SS	EACH	4
16	061120028000	WASHER SPLIT LOCK #10 SS	EACH	4
17	061080028000	WASHER FLAT #10 SS	EACH	8
	0512130100	WIRE CLAMP WHITE 1/4"	EACH	2
	0512130400	WIRE CLAMP BLACK 1/2"	EACH	1
	0512130500	WIRE CLAMP WHITE 5/8"	EACH	2



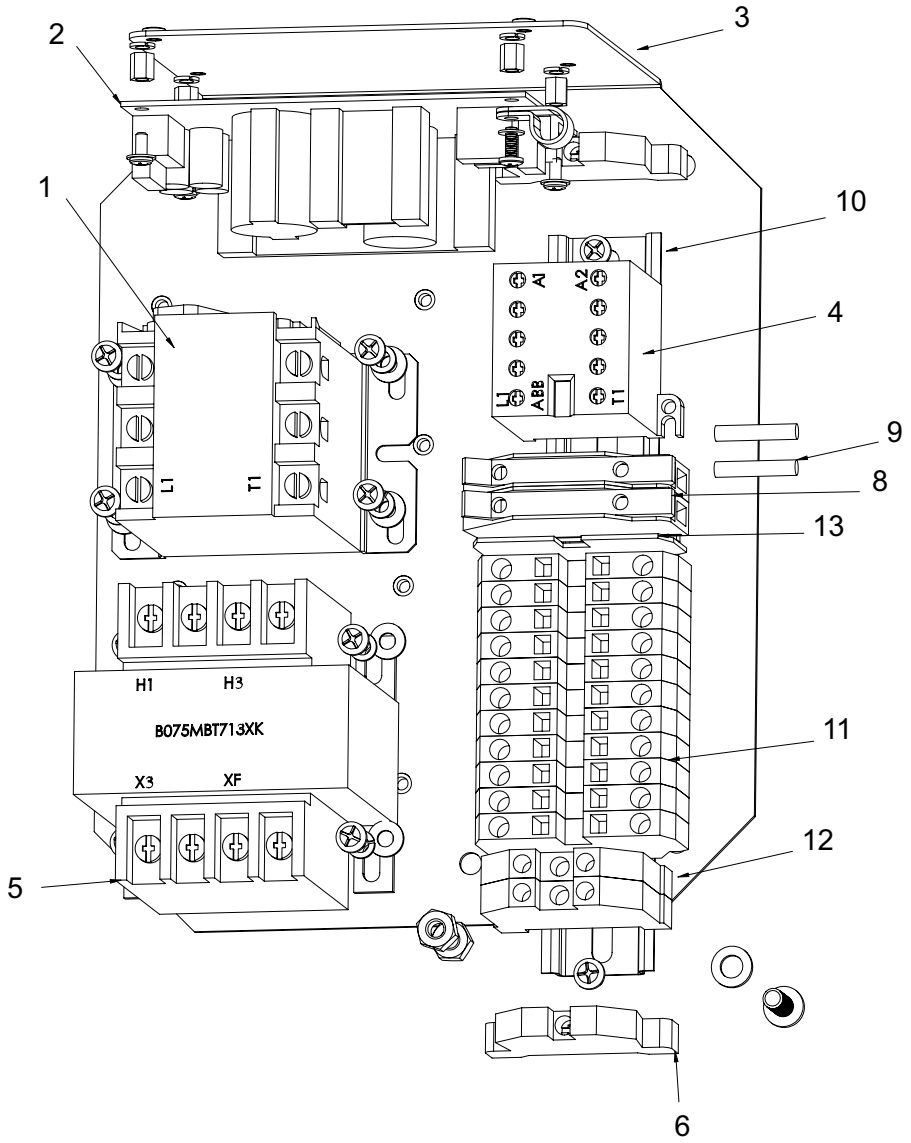
SPECIFIC FOR AQUA MATIC MODULAR STYLE:

ITEM	PART NUMBER	DESCRIPTION	QTY	U/M
1 - 13	**B619120001**	**CONTROLLER CHASSIS ASSY 1PH AQM SINGLE PHASE 110-115 / 220-230 VAC, 50/60 Hz**		
1	31310603BF	CONTACTOR 30A AW>12/99 12VDC	1	EACH
2	31314301CW	POWER SUPPLY AW>12/99 12VDC	1	EACH
3	3131232900	CHASSIS CONTROLLER AQM	1	EACH
4	31310110BF	CONTACTOR 9A AUX AW>12/99 12VD	1	EACH
5	31318301DK	FILTER HIGH FREQUENCY NOISE	1	EACH
6	31311601BY	END BRACKET DIN (AW>2000)	2	EACH
7	31311618DM	TERMINAL MARKER CARD AQM	1	EACH
8	3131310400	FUSE HOLDER DIN TERMINAL	2	EACH
9	3131301500	FUSE 2A -AW POWER SUPPLY ONLY	2	EACH
10	3131170147	CHANNEL DIN 35 MM RAIL	6	INCH
11	31311523DM	TERMINAL 8 AWG DIN GREY	11	EACH
12	31311524DM	TERMINAL 8 AWG DIN GREEN	2	EACH
13	31311617DM	TERMINAL COVER GREY AQM	1	EACH



SPECIFIC FOR AQUA MATIC MODULAR STYLE:

ITEM	PART NUMBER	DESCRIPTION	QTY	U/M
1 - 13	**B619120002**	**CONTROLLER CHASSIS ASSY 3PH AQM THREE PHASE 220-380-415, 50Hz, and 208-230-460, 60 Hz**		
1	31310603BF	CONTACTOR 30A AW>12/99 12VDC	1	EACH
2	31314301CW	POWER SUPPLY AW>12/99 12VDC	1	EACH
3	3131232900	CHASSIS CONTROLLER AQM	1	EACH
4	31310110BF	CONTACTOR 9A AUX AW>12/99 12VD	1	EACH
5	3131131500	TRANSFORMER 480/120 BUCK AQM	1	EACH
6	31311601BY	END BRACKET DIN (AW>2000)	2	EACH
7	31311618DM	TERMINAL MARKER CARD AQM	1	EACH
8	3131310400	FUSE HOLDER DIN TERMINAL	2	EACH
9	3131301500	FUSE 2A -AW POWER SUPPLY ONLY	2	EACH
10	3131170147	CHANNEL DIN 35 MM RAIL	6	INCH
11	31311523DM	TERMINAL 8 AWG DIN GREY	11	EACH
12	31311524DM	TERMINAL 8 AWG DIN GREEN	2	EACH
13	31311617DM	TERMINAL COVER GREY AQM	1	EACH



Notes:

SECTION 11

CONVERSION CHARTS

NOTES: _____

MICRON / INCH / MESH

COMPARISON MEASUREMENTS

MICRON	INCH	INCH	MESH (opening)
1	.00003937	.0070	100
5	.00019685	.0075	90
10	.00039370	.0075	80
15	.00059055	.0078	70
20	.00078740	.0110	60
25	.00098425	.0130	50
30	.00118110	.0180	40
40	.00157480	.0260	30
50	.00196850	.0410	20
75	.00295275	.0850	10
100	.00393700	.1770	5
200	.00787400	.9370	1

TEMPERATURES CELSIUS vs FAHRENHEIT

CONVERSION CHART

F	C	F	C
0	-32	122	50
32	0	131	55
41	5	140	60
50	10	149	65
59	15	158	70
68	20	167	75
78	25	176	80
86	30	185	85
95	35	194	90
104	40	203	95
113	45	212	100

CELSIUS = 0.556 (F -32)

FAHRENHEIT = (1.8 C) +32

Sea Recovery® TEMPERATURE EFFECT COMPARISON CHART

(At 820 psi & 35,000 ppm TDS NaCl feed water conditions)

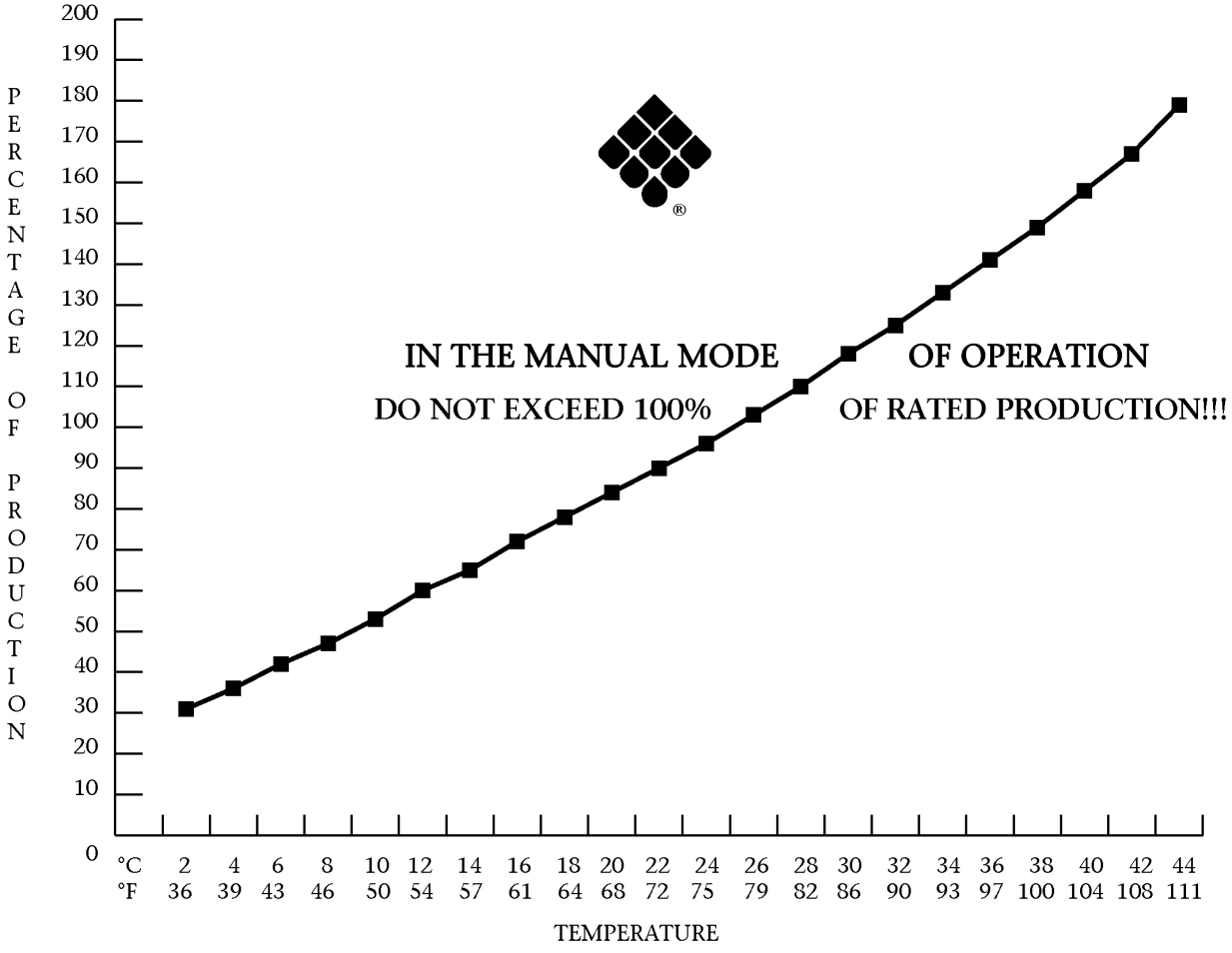
The Temperature Effect Chart on this page illustrates the loss or gain of productivity across the RO membrane.

To determine what normal (in spec.) flow of the RO membrane would be at 77° F / 25° C follow these directions:

1) Determine feed source temperature.
2) Locate the corresponding temperature on the chart
3) Follow the corresponding temperature in a vertical line up to the plotted production line.
4) From this temperature point at the production line, move left horizontally to the plotted productivity percent.
5) Calculate the system's present productivity in U.S. gallons per day by multiplying the gallon per hour product water flow meter reading by 24.
6) Divide the figure reached in step 5 above, present gallon per day productivity, by the plotted productivity percentage from step 4 above. The answer will be equivalent to the membranes present productivity at specification test parameters, 820 psi & 77° F / 25° C.

Example:

1) With the system operating at 820 psi.
2) Present feed temperature is 61° F or 16° C.
3) Plotted productivity is therefore 72% of normal.
4) The system is a 400 gallon per day model and it is presently producing 280 gallons per day.
5) 280 gallons per day divided by .72 equals 388 gallons per day calculated productivity. The system is rated at 400 gallons per day ±15% (340 to 460 gallons per day). Therefore, the system is within specifications at 280 gallons per day actual productivity at 61° F/16° C, 820 psi and 35,000 ppm feed.



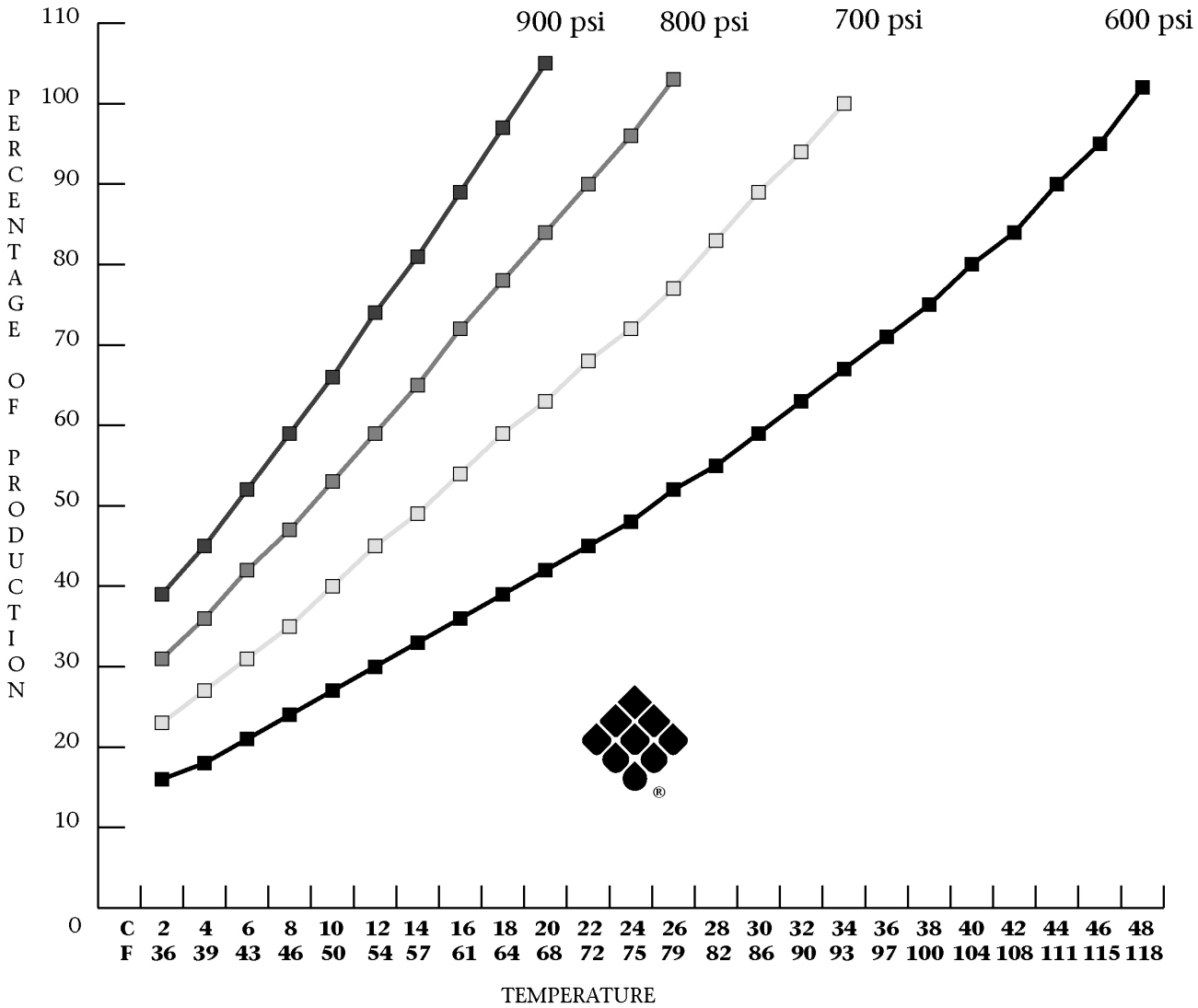
Sea Recovery ®

SEAWATER TEMPERATURE & PRESSURE EFFECTS CHART

(Do not use this chart for brackish water systems & applications)

As the seawater temperature increases, the Sea Recovery system pressure must be adjusted so that the system achieves no greater than 100% of rated product water flow. Product water flow greater than 100% of rated product water flow will cause premature fouling of the SRC RO membrane element. This will lead to more frequently required cleaning and void all warranties of the SRC RO membrane element.

IN THE MANUAL MODE OF OPERATION
DO NOT EXCEED 100% OF RATED PRODUCTION!!!



WATER COMPARISON CHART

GALLONS / VOLUME / WEIGHT

U.S. GALLON	CUBIC FEET	CUBIC YARD	CUBIC METER	TON SHORT	TON METRIC
1	0.13	0.005	0.004	0.004	0.004
5	0.67	0.025	0.019	0.021	0.019
10	1.34	0.050	0.038	0.041	0.038
25	3.34	0.129	0.10	0.104	0.094
50	6.68	0.248	0.19	0.208	0.189
100	13.37	0.50	0.38	0.42	0.38
200	26.74	0.99	0.76	0.83	0.76
300	40.10	1.49	1.14	1.25	1.13
400	53.47	1.98	1.51	1.67	1.51
500	66.84	2.48	1.89	2.08	1.89
600	80.21	2.97	2.27	2.50	2.27
700	93.58	3.47	2.65	2.92	2.65
800	106.94	3.96	3.03	3.33	3.02
900	120.31	4.46	3.41	3.75	3.40
1,000	133.68	4.95	3.79	4.17	3.78
2,500	334.20	12.38	9.46	10.41	9.45
5,000	668.40	24.76	18.93	20.83	18.89
7,500	1002.60	37.13	28.39	31.24	28.34
10,000	1336.81	49.51	37.85	41.65	37.79
25,000	3342.00	123.80	94.60	104.10	94.50
50,000	6684.00	247.60	189.30	208.30	188.90
75,000	100.6.00	371.30	283.90	312.40	283.40
100,000	13368.06	495.11	378.54	416.50	377.85

1 U.S. GALLON	=	231. CU. INCH
1 U.S. GALLON OF WATER	=	8.33 LBS.
1 SHORT TON	=	2000 LBS.
1 METRIC TON	=	2204.6 LBS.
1 CU. INCH OF WATER	=	0.0360 LBS.
1 CU. FOOT OF WATER	=	62.4 LBS.
1 IMPERIAL GALLON OF WATER	=	10.0 LBS.
1 GALLON	=	3.7854 LITERS
1 CUBIC METER	=	1000 LITERS
1 CUBIC METER	=	264 GALLONS

PPM CONVERSION CHART

SPECIFIC CONDUCTANCE IN MICROMHOS	SPECIFIC RESISTANCE IN OHMS	DISSOLVED SOLIDS P.P.M.	RESISTANCE* MHOS	OHMS	P.P.M.
.0385	26,000,000	NONE	250.0	4,000	125
.0556	18,000,000	.02777	256.4	3,900	128
.0625	16,000,000	.03125	263.2	3,800	132
.0714	14,000,000	.03571	270.3	3,700	135
.0833	12,000,000	.04166	277.8	3,600	139
.1	10,000,000	.05	285.7	3,500	143
.125	8,000,000	.0625	294.1	3,400	147
.167	6,000,000	.08333	303.0	3,300	152
.2	5,000,000	.1	312.0	3,200	156
.25	4,000,000	.125	322.5	3,100	161
.5	2,000,000	.25	333.3	3,000	166
1	1,000,000	.5	344.8	2,900	172
2	500,000	1	357.0	2,800	179
4	250,000	2	370.4	2,700	185
6	166,666	3	384.6	2,600	192
8	125,000	4	400.0	2,500	200
10	100,000	5	416.6	2,400	208
12	83,333	6	434.8	2,300	217
14	71,428	7	454.5	2,200	227
16	62,500	8	476.2	2,100	238
18	55,555	9	500.0	2,000	250
20	50,000	10	526.3	1,900	263
22	45,454	11	555.5	1,800	278
24	41,666	12	588.2	1,700	294
26	38,461	13	625.0	1,600	312
28	35,714	14	666.6	1,500	333
30	33,333	15	714.2	1,400	357
40	25,000	20	769.2	1,300	384
50	20,000	25	833.3	1,200	416
60	16,666	30	909.0	1,000	500
70	14,286	35	1,000	1,000	500
80	12,500	40	1,111	900	555
100	10,000	50	1,250	800	625
120	8,333	60	1,428	700	714
140	7,142	70	1,666	600	833
160	6,250	80	2,000	500	1,000
180	5,555	90	2,500	400	1,250
200	5,000	100	3,333	300	1,667
			5,000	200	2,500
			10,000	100	5,000

*Approximate dissolved solids expressed as Calcium Carbonate (CaC03)

PRESSURE COMPARISON

psi	Kg/cm^2	"Hg Vacuum	bar	kPa	atmosphere
1	0.0704	2.036	0.0689	6.895	0.0681
14.22	1	28.96	0.981	98.07	0.968
0.4912	0.0345	1	0.0339	3.386	0.03342
14.504	1.02	29.53	1	100	0.987
0.14504	0.0102	0.295	0.01	1	0.00987
14.7	1.033	29.92	1.013	101.3	1

METRIC / U.S. CUSTOMARY UNIT EQUIVALENTS

multiply:		by:		to get or multiply:		by:		to get:
LINEAR								
inch	x	25.4	=	millimeters(mm)	x	0.03937	=	inch
feet	x	0.3048	=	meters(m)	x	3.281	=	feet
yard	x	0.9144	=	meters(m)	x	1.0936	=	yard
mile	x	1.6093	=	kilometers(km)	x	0.6214	=	mile
inch	x	2.54	=	centimeters(cm)	x	0.3937	=	inch
VOLUME								
fluid oz	x	29.57	=	milliliters (ml)	x	0.03381	=	fluid oz
U.S. quart	x	0.94635	=	liters(l)	x	1.0567	=	quarts
U.S. gallon	x	3.7854	=	liters(l)	x	0.2642	=	gallons
$feet^3$	x	28.317	=	liters	x	0.03531	=	$feet^3$
$feet^3$	x	0.02832	=	$meters^3$	x	35.315	=	$feet^3$
$yard^3$	x	0.7646	=	$meters^3$	x	1.3080	=	$yard^3$
MASS								
ounces	x	28.35	=	grams(g)	x	0.03527	=	ounces
pounds	x	0.4536	=	kilograms (kg)	x	2.2046	=	pounds
tons (2000lb)	x	907.18	=	kilograms (kg)	x	0.001102	=	tons
tons (2000lb)	x	0.90718	=	metric tons(t)	x	1.1023	=	tons

WIRE SIZE CROSS REFERENCE CHART:

American Wire Gauge			Metric Wire Gauge		Metric Wire
AWG	dia inch	sq. inch	dia mm	sq mm	Size mm^2
0000	0.4600	0.1661	11.6840	107.1649	100
000	0.4096	0.1317	10.4038	84.9683	85
00	0.3648	0.1045	9.2659	67.3980	65
0	0.3249	0.0829	8.2525	53.4609	50
1	0.2893	0.0657	7.3482	42.3871	40
2	0.2576	0.0521	6.5430	33.6069	32
3	0.2294	0.0413	5.8268	26.6516	32
4	0.2043	0.0328	5.1892	21.1385	19
6	0.1620	0.0206	4.1148	13.2913	13
8	0.1285	0.0130	3.2639	8.3626	8
10	0.1019	0.0082	2.5883	5.2588	5
12	0.0808	0.0051	2.0523	3.3064	3
14	0.0641	0.0032	1.6281	2.0809	2
16	0.0508	0.0020	1.2903	1.3070	1
18	0.0403	0.0013	1.0236	0.8225	.8
20	0.0320	0.0008	0.8128	0.5186	.5
22	0.0254	0.0005	0.6452	0.3267	.35

NOTES: _____