



Reverse Osmosis Production System

DU RO250-4, -5, -6, -7, -8, -9



RO250-4



RO250-6

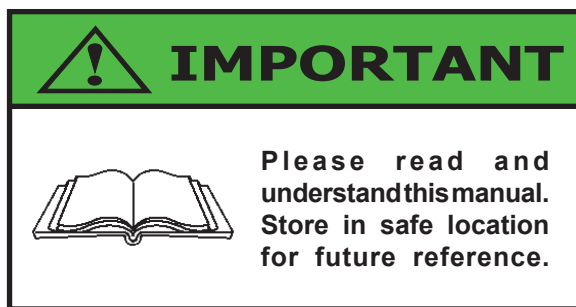
Owner's Manual #0794

Customer Number:

Serial Number:

Model Number:

Installation Date:



Everyone who operates this unit should understand basic operations and safety precautions! The time you take to fully understand the proper installation, maintenance and use of the machine will prolong its service life, and assure you of trouble free operation.

When unpacking, check to make sure all the parts shown on the Parts Breakdown near the end of this manual are included. If any parts are missing or broken, please call Dultmeier Sales as soon as possible.

Consumers should notice that this manual may differ slightly from the actual product as more improvements are made to our products. Some of the pictures in this manual may differ slightly from the actual product as well. Dultmeier Sales reserves the right to update designs and / or change the specifications at any time without incurring any obligation to install them on units previously sold.

If you have any questions or suggestions about this manual, please contact us at:

1-888-677-5054
dultmeier@dultmeier.com
www.dultmeier.com

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To avoid serious or fatal personal injury or major property damage, read and follow all safety and operation instructions in the manual.



This is a **Safety Alert Symbol** -

When you see this symbol in the manual, look for the following signal words & be alert to the potential for personal injury or property damage.



Warns of potential hazards that **WILL** cause serious personal injury, death or property damage.



Warns of potential hazards that **CAN** cause serious personal injury, death or property damage.



Warns of potential hazards that **WILL** or **CAN** cause minor personal injury, death or property damage.



Indicates special instructions that **MUST** be followed but not related to hazards.

**This manual is intended to assist in the installation and operation of this unit.
Do not attempt to operate this unit without reading and understanding this manual.**

General Safety

To avoid the risk of serious bodily injury and property damage, read safety instructions carefully before installing this system. Follow all local and/or national plumbing and electrical codes when installing.



Do Not Allow System or Components to Freeze.

To do so may damage the system and will void the warranty.



Never Run the System Dry.

Running the unit dry (without fluid) can damage internal parts, overheat pump (which can cause burns to people handling or servicing the pump), and will void the warranty.



Risk of Electric Shock.

Keep the unit dry at all times -

Do not wash the motor or electrical panel or allow the unit to sit in standing water.



Use only Ground Fault Circuit Interrupter (GFCI) protected grounded outlet for the cord plug.

If you must use an extension cord, use only UL approved indoor/outdoor, 3-wire, grounding type cords.

The cord must be rated to support amp draw. Do not allow any part of cord or receptacle ends to sit in water.

To avoid fatal shocks, proceed as follows if service is needed:

- Turn off water to the system.
- Disconnect the power at main electrical service before unplugging the unit.
- Ground the electrical outlet box.
- Take extreme care when changing fuses.



Do not run the unit with discharge shut off, as hose may burst or damage may occur.



Modern motors can operate at high temperatures. To avoid burns when servicing pump, allow it to cool for 20 minutes after shutdown before handling.

Carbon Filter Installation (optional), 2 Cubic Foot (RO250-3, -4, -5, -6)

1. Select a location for RO250, Carbon Filter, SFS Transfer system, and Tank. Locate near water source, electrical, and a drain. Floor surface must be level.
2. Connect the carbon filter inlet to the soft water source. **(Fig. 1)**
3. Install 1/2" hose to hose barb marked Drain and run this to drain line.
4. Attach hose to hose barb marked outlet. Leave hose long enough to reach the drain. **(Fig. 1)**



Do not install hose on RO250 System at this time.



Follow backwash filter installation startup procedures on following page (page 3) until lines are clear of any carbon.



Ignoring this step WILL damage RO250 membrane(s) and void warranty.

5. Turn off water and connect the Carbon Filter Outlet to the RO250 inlet. **(Fig. 2)**

Drain - Goes to sewer drain.
Inlet - Bring soft water here.
Outlet - Run hose to RO250
see Fig. 2 - Ref (G).



figure 1

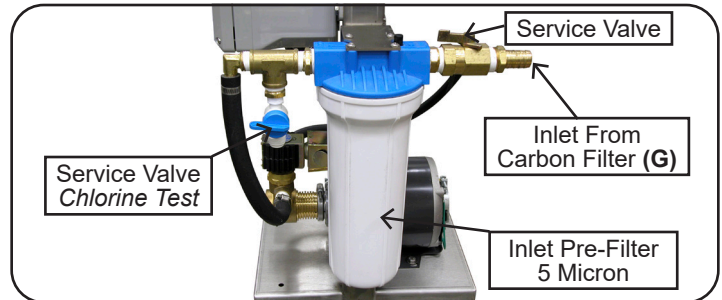


figure 2

Model 5600 Backwash Filter Installation/Start-up

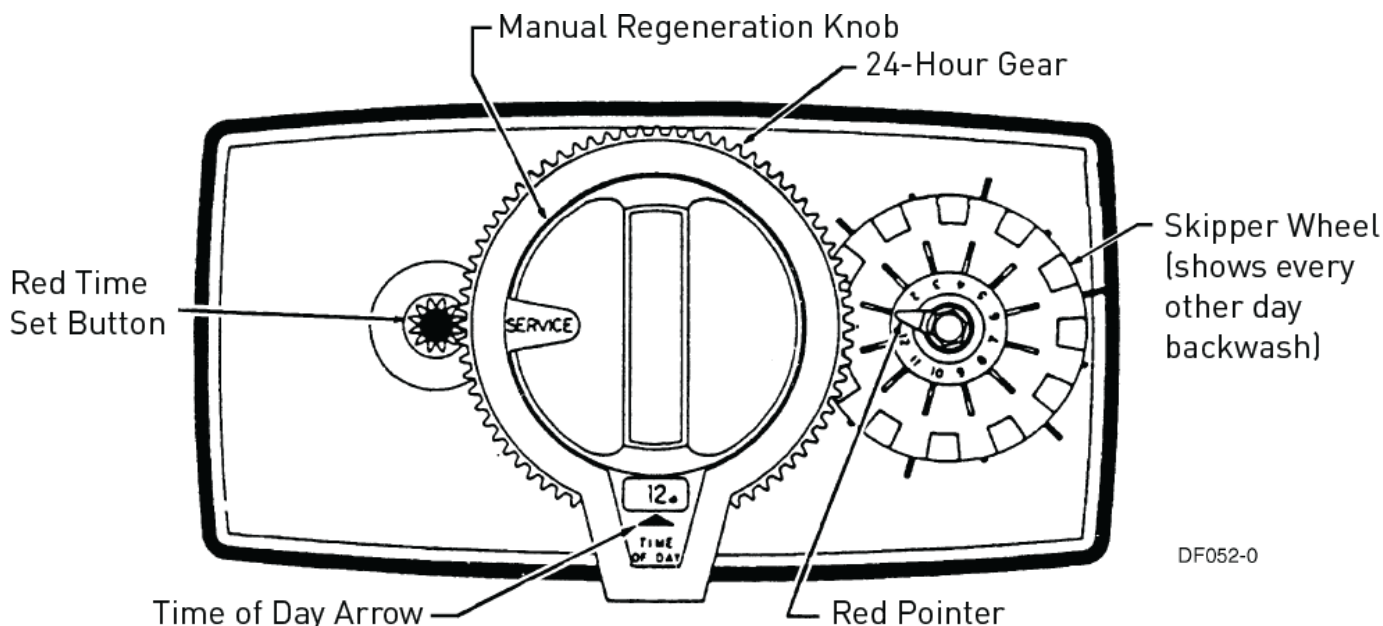
Install the carbon bottle with the inlet, outlet and drain connections made according to manufacturer's recommendations and to meet with applicable plumbing codes.

Before Plugging in the Unit

1. Open a treated water tap down stream of the filter.
2. Manually index the filter to the **In Service** position and allow the mineral tank to fill slowly by opening the main water supply valve. Any bypass should be in the **In Service** position.

Note: The water flowing from the downstream tap is cloudy and/or contains media fines as well as air. Allow the water to run until it appears clean and free of air.

3. When a steady clean flow of appears at the tap, close the tap and the main water supply valve and allow the filter media bed to settle for 15-20 minutes.
4. Manually index the filter to the **Backwash** position.
5. To prevent a sudden surge of water and air, partially open the main water supply valve so that the flow at the drain of the filter is approximately 1 gmp. The water at the drain is cloudy again, and/or contains media fines as well as air. Allow water to flow at the drain until it appears completely clean and free of air.
6. Continue to open the water supply valve until it is completely open. Allow water to flow at the drain until all media fines are washed out of the filter.
7. Manually index the filter to the **In Service** position, and again open the downstream tap. Check to be sure the water flows clear. If necessary, allow water to flow until all media fines are gone.
8. Plug in the electrical cord and look in the sight hole on the back of the timer motor to ensure that it is running. Set the days backwashing is to occur by sliding tabs on the skipper wheel outward to expose trip fingers. Each tab is one day. Finger at red pointer is tonight. Moving clockwise from red pointer, extend or retract fingers to obtain the desired backwash schedule. **Extend two pointers to backwash, one every six days (#6 and #12).**
9. Set time of day by pushing red button and spin the 24-hour gear until the present time of day is visible above the time of day arrow.



Carbon Filter Installation, 3 Cubic Foot (RO250-7, -8, -9)

Water Pressure

Select a location for RO250, Carbon Filter, SFS Transfer system, and Tank. Locate near water source, electrical, and a drain. Floor surface must be level.

Electrical Facilities

An uninterrupted alternating current (A/C) supply is required.



Other voltages are available. Please make sure your voltage supply is compatible with your unit before installation.

Existing Plumbing

Condition of existing plumbing should be free from lime and iron buildup. Piping that is built up heavily with lime and/or iron should be replaced. If piping is clogged with iron, a separate iron filter unit should be installed ahead of the water softener.

Location of Bottle and Drain

The carbon bottle should be located and close to a drain to prevent air breaks and back flows.



Water Pressure is not to exceed 125 PSI, water temperature is not to exceed 110 deg. F, and the unit cannot be subjected to freezing conditions.

1. Place the unit where you want to install the unit, making sure the unit is level and on a firm base.
2. During cold weather, the installer should warm the valve to room temperature before operating.
3. All plumbing should be done in accordance to local plumbing codes. The pipe size for residential drain line should be a minimum of 1/2 inch (13 mm). Backwash flow rates in excess of 7 gpm (26.5 Lpm) or length in excess of 20 feet require 3/4 inch (19 mm) drain line. Commercial drain lines should be the same size as the drain line flow control.
4. Refer to the dimensional drawing for cutting height of the distributor tube flush with the top of the tank.
5. Lubricate the distributor o-ring seal and tank o-ring seal. Place the main control valve on tank.



Only use silicone lubricant.

6. Solder joints near the drain must be done prior to connecting the Drain Line Flow Control (DLFC) fitting. Leave at least 6 inches (15 cm) between the DLFC and solder joints when soldering pipes that are connected on the DLFC. Failure to do this could cause interior damage to the DLFC.
7. Plumber tape is the only sealant to be used on the drain fitting.
8. On units with a bypass, place in bypass position. Turn on the main water supply. Open the drain and outlet line and let run for a few minutes or until the system is free from foreign material (usually solder) that may have resulted from the installation. Once clean, close the water tap.
9. Slowly place the bypass in service position and let water flow into the carbon tank. Let run until air is purged from the unit.
10. Plug unit into an electrical outlet. All electrical connections must be connected according to local codes. Be certain the outlet is uninterrupted.

Start-up Instructions

The carbon bottle should be installed with the inlet, outlet, and drain connections made in accordance with the manufacturer's recommendations, and to meet with applicable plumbing codes.

1. Turn the manual regeneration knob slowly in a clockwise direction until the program micro switch lifts on top of the first set of pins. Allow the drive motor to move the piston to the first regeneration step and stop. Each time the program switch position changes, the valve will advance to the next regeneration step. Always allow the motor to stop before moving to the next set of pins or spaces.
2. Position the valve to backwash. Ensure the drain line flow remains steady for 10 minutes or until the water runs clear.

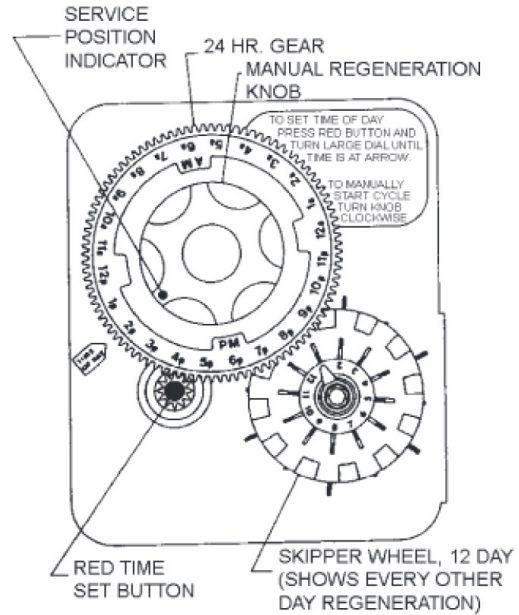
Timer Setting Procedure

How to Set Days on Which Water Conditioner is to Regenerate (Figure 2)

Rotate the skipper wheel until the number "1" is at the red pointer. Set the days that regeneration is to occur by sliding tabs on the skipper wheel outward to expose trip fingers. Each tab is one day. Finger at red pointer is tonight. Moving clockwise from the red pointer, extend or retract fingers to obtain the desired regeneration schedule. Use the #6 and #12 pins only.

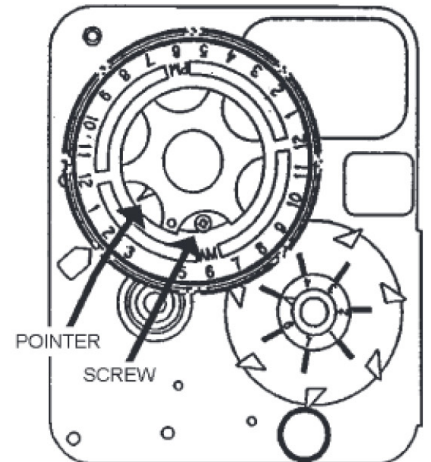
How to Set the Time of Day

1. Press and hold the red button in to disengage the drive gear.
2. Turn the large gear until the actual time of day is at the time of day pointer.
3. Release the red button to again engage the drive gear.



How to Manually Regenerate your Water Conditioner

1. Turn the manual regeneration knob clockwise.
2. This slight movement of the manual regeneration knob engages the program wheel and starts the regeneration program.
3. The black center knob will make one revolution in the following approximately three hours and stop in the position shown in the drawing.
4. Even though it takes three hours for this center knob to complete one revolution, the regeneration cycle of your unit might be set for only one half of this time.
5. In any event, conditioned water may be drawn after rinse water stops flowing from the water conditioner drain line.



IMPORTANT!

Tank Preparation



Apply pipe sealant to all fittings before installation.

1. Install 2" Valve Kit **(B)** onto tank fitting. **(Fig. 3)**
2. Install Low Level shut-down switch (2XC13) with the N.O. marking facing up.



Improper installation can result in damage to pump and will void warranty.

3. Open tank lid and feed wire end of float switch (2P055) from inside of tank through the grey strain relief fitting labeled **(F)**. **(Fig. 3)**
 - Pull the cord through the strain relief until the metal weight touches it.
 - Measure cord 12" from tank and mark it.
 - Pull cord inside tank until your mark is even with the strain relief.
 - Hand tighten the strain relief until cord can't move.
4. Loosely fit clamps on hoses.
5. Connect the permeate (spot-free) hose **(D)** on the RO250 production unit to the hose barb labeled **(D)** on the tank. **(Fig. 3)**

6. Connect the bypass hose **(C)** on the RO TRANSFER to the hose barb labeled **(C)** on the tank.
7. Connect the inlet hose **(B)** on the RO TRANSFER to the Valve Kit **(B)** on supply tank.
8. Tighten all clamps.

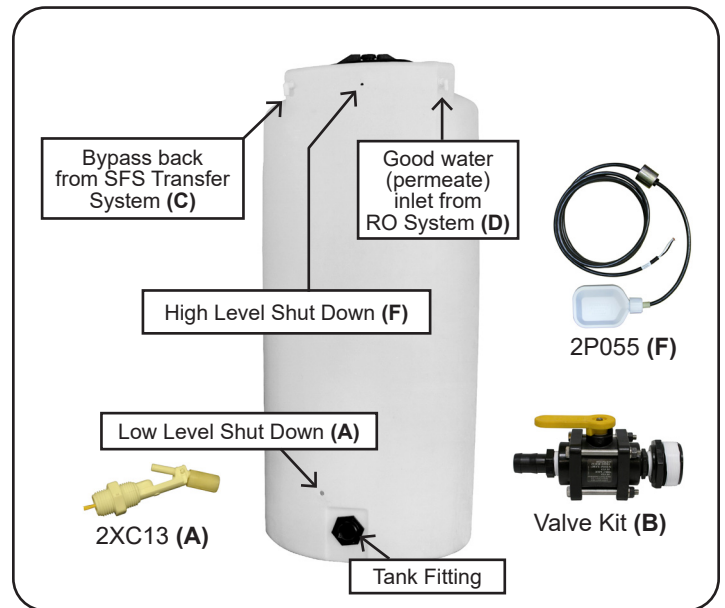


figure 3

Maintenance

1. Inlet Prefilter on RO250 should be replaced after initial tank is filled (Approx. 200 gallons) and then inspected and/or replaced every month. **(Page 2, Fig. 2)**
2. Check the unit daily.
 - Look for leaks.
 - Confirm drain hoses are secure.
 - Read all gauges and check them against previously recorded pressures and flows.
3. Water conditions should be checked monthly for chlorine. Use Service Valve to fill a container then use test strip provided. **(Page 2, Fig. 2)**
4. Quality of permeate water should be checked for TDS levels. Total Dissolved Solids meter display should read between 000 and 040 on the handheld. System should be serviced if permeate water reads 40 parts per million or higher or if spotting on vehicles occurs.
5. Inspect float switch.
 - Lift and lower to see if working properly.
 - Check cords for nicks and cuts. Replace if noticeable damage to float or cords.
6. Check Manual Flush Mode.
 - Pressing button will start the flush cycle for approximately 3 minutes.

Pump/Motor Replacement for RO250-3, RO250-4, and RO250-5:

Tools Required:

1. Work bench with vise is recommended.
2. Flat blade screwdriver with insulated handle.
3. Pipe wrench.
4. 7/16" open end wrench. (2 Required)

- Motor -

Motor replacement should be performed by a qualified electrician. Use the method below to remove the pump from the motor. Then follow the instructions on the new motor for proper wiring. You will need the (2) 7/16" wrenches to remove the motor from the stand.

- Pump -

1. Loosen hose clamps on inlet and outlet and remove the hoses.
2. Unscrew and remove coil from solenoid. Allow coil to rest with no strain on cord (please see page 8, item #13)
3. Remove the V-Band Clamp. **(Fig. 6)**
4. Separate the pump from the motor.
5. Remove brass fittings and solenoid valve from old pump and install on new pump.
6. Reverse steps 1-3 for reassembly. See *Adjusting the Pump Relief Valve* before putting the unit back to

Adjusting the Pump Relief Valve:

The Pump Relief Valve is a safety device used on RO250-4 and RO250-5 only. This is not intended to adjust PSI of the unit, but to protect the system from over pressurizing. It is factory set and should never exceed 210 PSI.

If pressure adjustment is needed use the Adjusting Valve located above the pressure gauge. (Fig. 7)

In the unlikely event the Pump Relief Valve needs adjustment or after replacing the pump follow these instructions or call us at 800-228-9666.

1. With the unit running turn the slotted screw inside the Relief Valve counterclockwise until pressure gauge reads 100 PSI. **(Fig. 6 & Fig. 7)**
2. Turn Adjusting Valve slightly clockwise until it is tight. Your pressure gauge should slightly raise.
3. Now turn the slotted screw inside the Relief Valve clockwise until the pressure gauge reads 210 PSI.
4. Last, turn the Adjusting Valve counterclockwise until pressure gauge reads between 180-200 PSI.

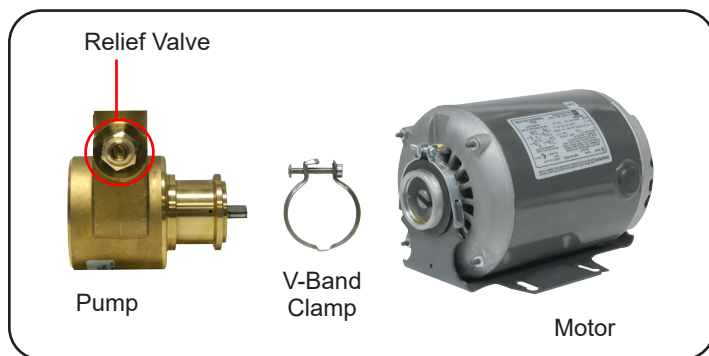


figure 6

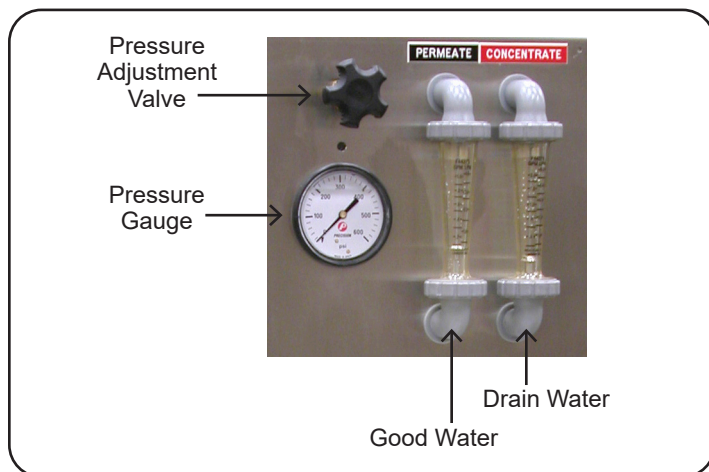
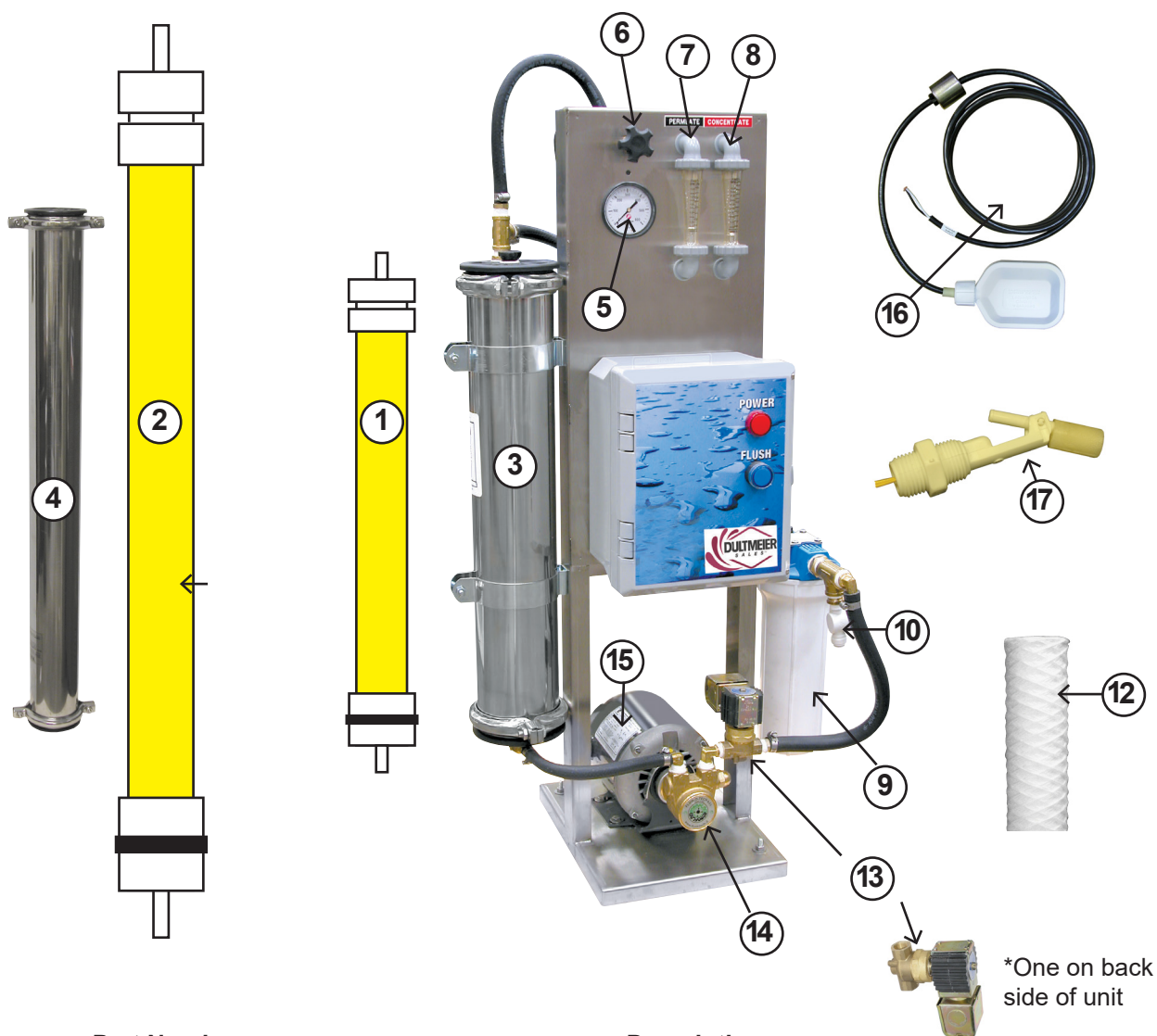


figure 7

Parts Breakdown: RO250-4 (shown) & RO250-5



Item	Part Number	Description
1	EP HR4021	4 x 21 Membrane (RO250-4)
2	EP ETT11	4 x 40 Membrane (RO250-5)
3	EP SS421	Stainless Housing, 4 x 21 (RO250-4)
4	EP SS440	Stainless Housing, 4 x 40 (RO250-5)
5	AH 2640-80	600# Liquid Pressure Gauge
6	SM 589	1/4 Adjusting Valve
7	BL F44375LHE8 (RO250-4)	Flow Meter (Permeate/Concentrate)
8	BL F44376LHE8 (RO250-4)	Flow Meter (Permeate/Concentrate)
9	EP WF1124	Filter Housing
10	LM PSV35	Chlorine Test Valve
12	EP LP013	Pre Filter 5 Micron
13	DE A413P-24	Inlet & Flush Solenoid (2 Qty.)
14	PB PO301V (RO250-4)	Pump (RO250-4)
15	PB PO1001 (RO250-5)	Pump (RO250-5)
16	CE 931 (RO250-4)	1/3 HP Motor (RO250-4)
17	CE 933 (RO250-5)	1/3 HP Motor (RO250-5)
16	AR 2P005	Float Switch (High Level)
17	AR 2XC13	Float Switch (Low Level)

*One on back side of unit

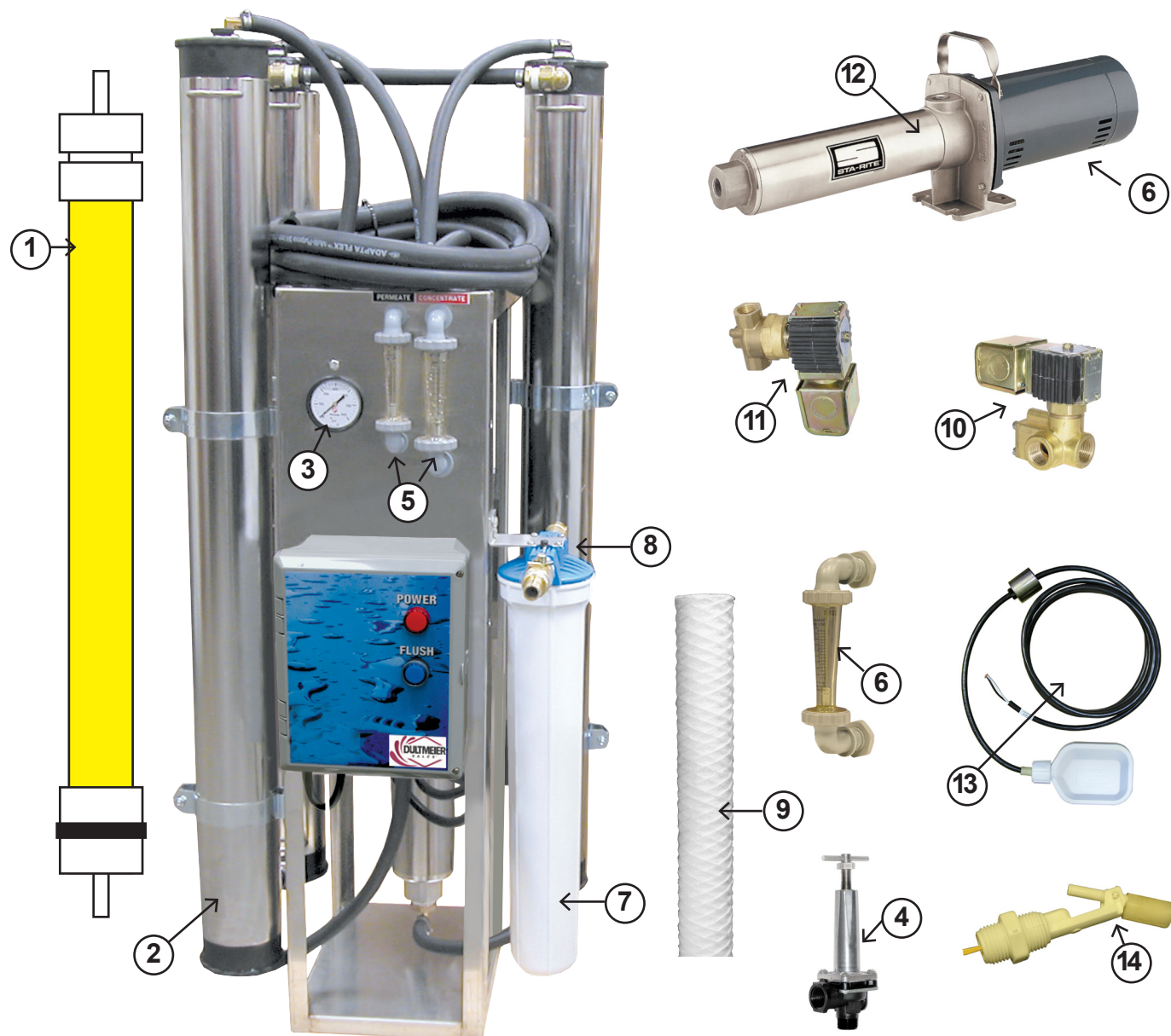
Parts Breakdown: RO250-6



Item	Part Number	Description
1	EP ETT11	4 x 40 Membrane *
2	EP SS440	Stainless Housing, 4 x 40 *
3	AH 2640-80	600# Liquid Pressure Gauge
4	SS 8460-3/4	Bypass Valve
5	BL F44500LHE8	Flow Meter (Permeate)
6	BL F44750LHE12	Flow Meter (Concentrate)
7	COMES AS ONE UNIT, SEE #13	
8	EP WF2124	Filter Housing
9	LM PSV35	Chlorine Test Valve (at inlet water prefilter)
10	EP LP015	Pre Filter 5 Micron
11	DE A454P-24	Inlet Solenoid
12	DE A414P-24	Flush Solenoid
13	SAHPS10D	Pump/Motor
14	AR 2P005	Float Switch (High Level)
15	AR 2XC13	Float Switch (Low Level)

* Qty. 2 on RO250-6

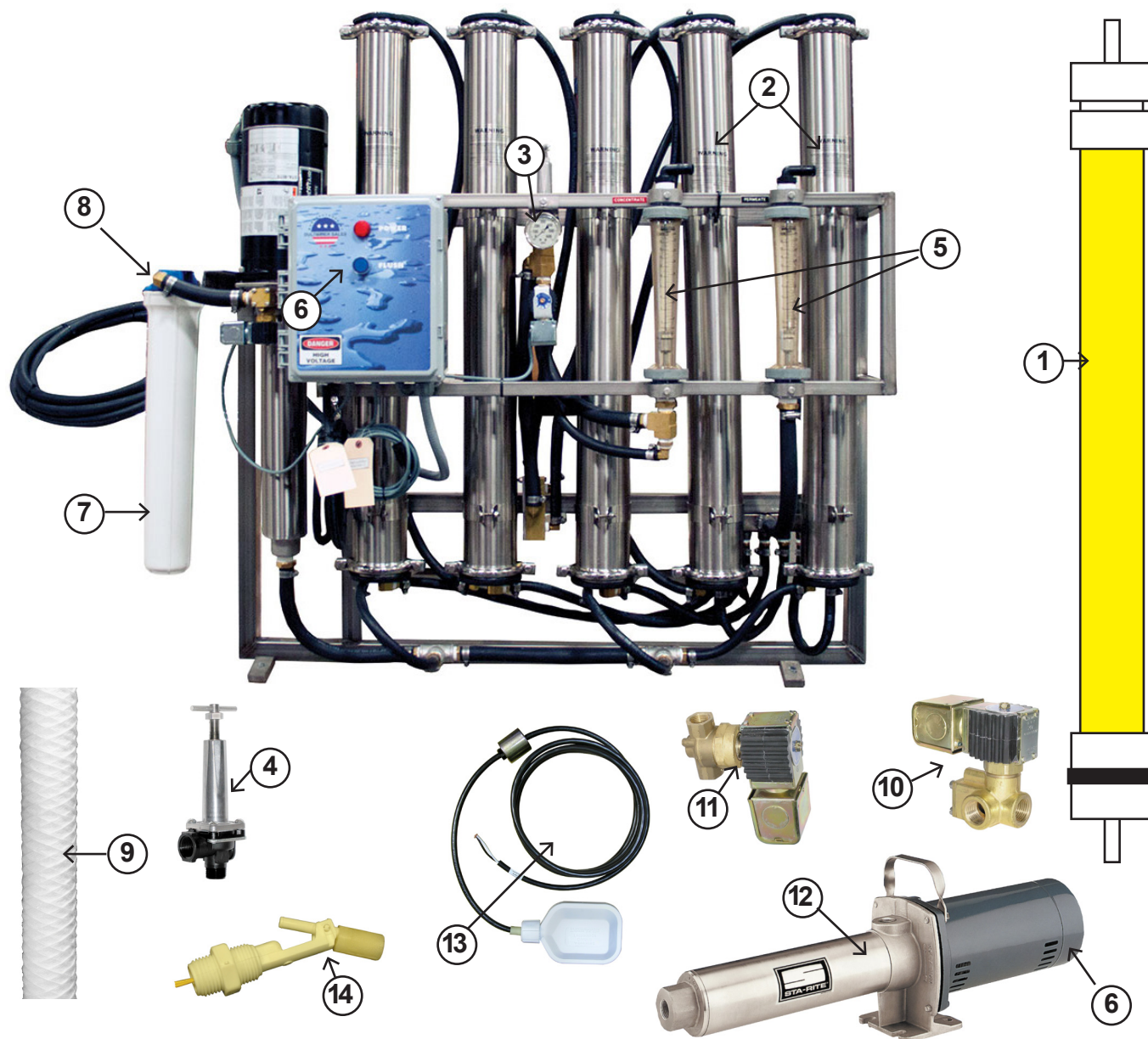
Parts Breakdown: RO250-7 (shown) & RO250-8



Item	Part Number	Description
1	EP ETT11	4 x 40 Membrane *
2	EP SS440	Stainless Housing, 4 x 40 *
3	AH 2640-80	600# Liquid Pressure Gauge
4	SS 8460-3/4	Bypass Valve
5	BL F44750LHE12	Flow Meter (Permeate/Concentrate)
6	COMES AS ONE UNIT, SEE #12	
7	EP WF2124	Filter Housing
8	LM PSV35	Chlorine Test Valve
9	EP LP015	Pre Filter 5 Micron
10	DE A454P-24	Inlet Solenoid
11	DE A414P-24	Flush Solenoid
12	SAHPS10E (RO250-7) SAHPS20F-01 (RO250-8)	Pump/Motor
13	AR 2P005	Float Switch (High Level)
14	AR 2XC13	Float Switch (Low Level)

* Qty. 3 on RO250-7 & Qty. 4 on RO250-8

Parts Breakdown: RO250-9



Item	Part Number	Description
1	EP ETT11	4 x 40 Membrane *
2	EP SS440	Stainless Housing, 4 x 40 *
3	AH 2640-80	600# Liquid Pressure Gauge
4	SS 8460-3/4	Bypass Valve
5	BL F451002LHN	Flow Meter (Permeate/Concentrate)
6	Refer to Parts Breakdown: Electrical (All Models) on page 11	
7	EP WF2124	Filter Housing
8	LM PSV35	Chlorine Test Valve
9	EP LP015	Pre Filter 5 Micron
10	DE A4549-24	Inlet Solenoid
11	DE A414P-24	Flush Solenoid
12	SAHPS20F-01	Pump/Motor
13	AR 2P005	Float Switch (High Level)
14	AR 2XC13	Float Switch (Low Level)

* Qty. 5 on RO250-9

Parts Breakdown: Electrical (All Models)



3



4



5



6



7

→ 10\$

→ Orange 20

→ Green 24

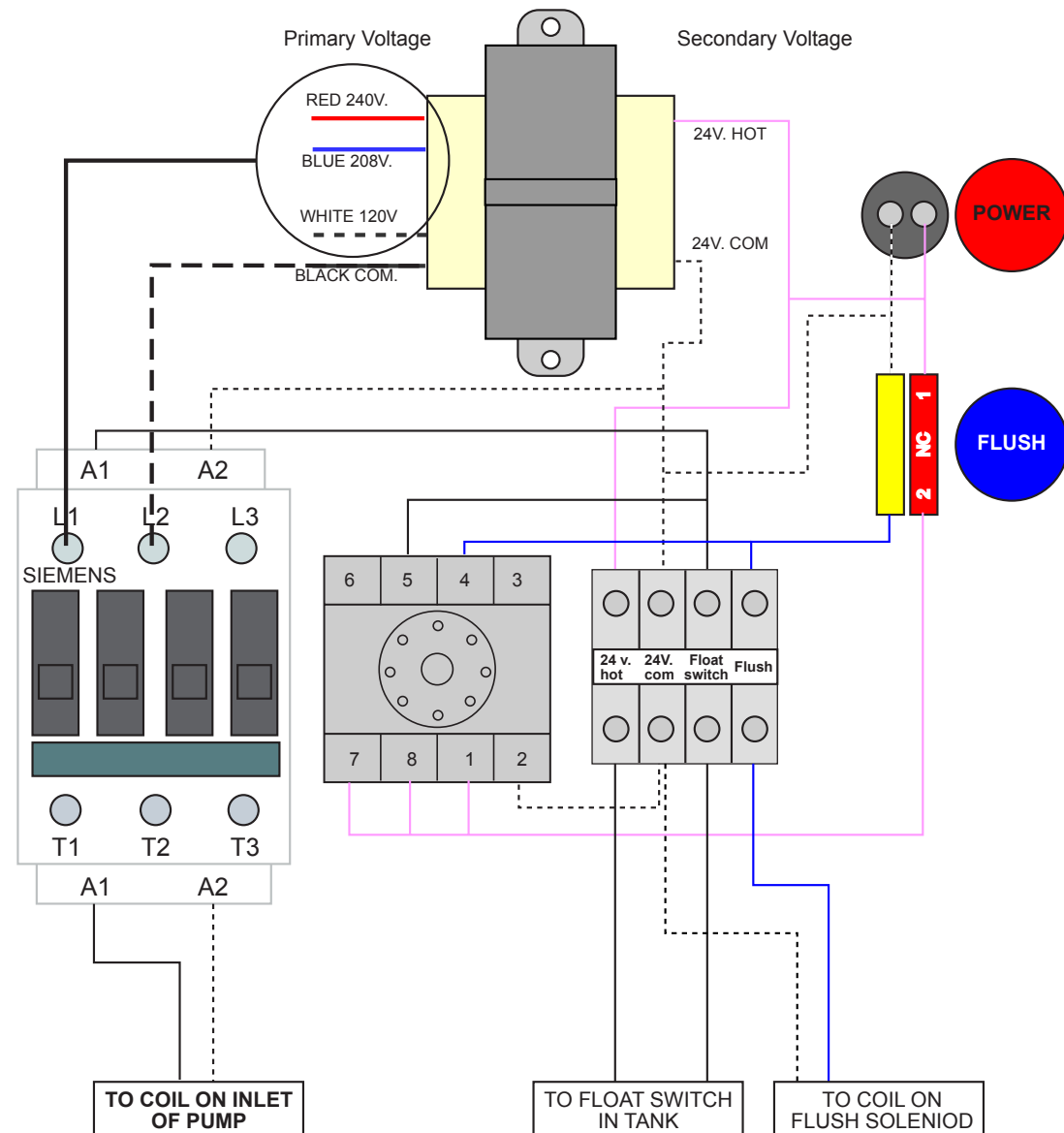
→ HR



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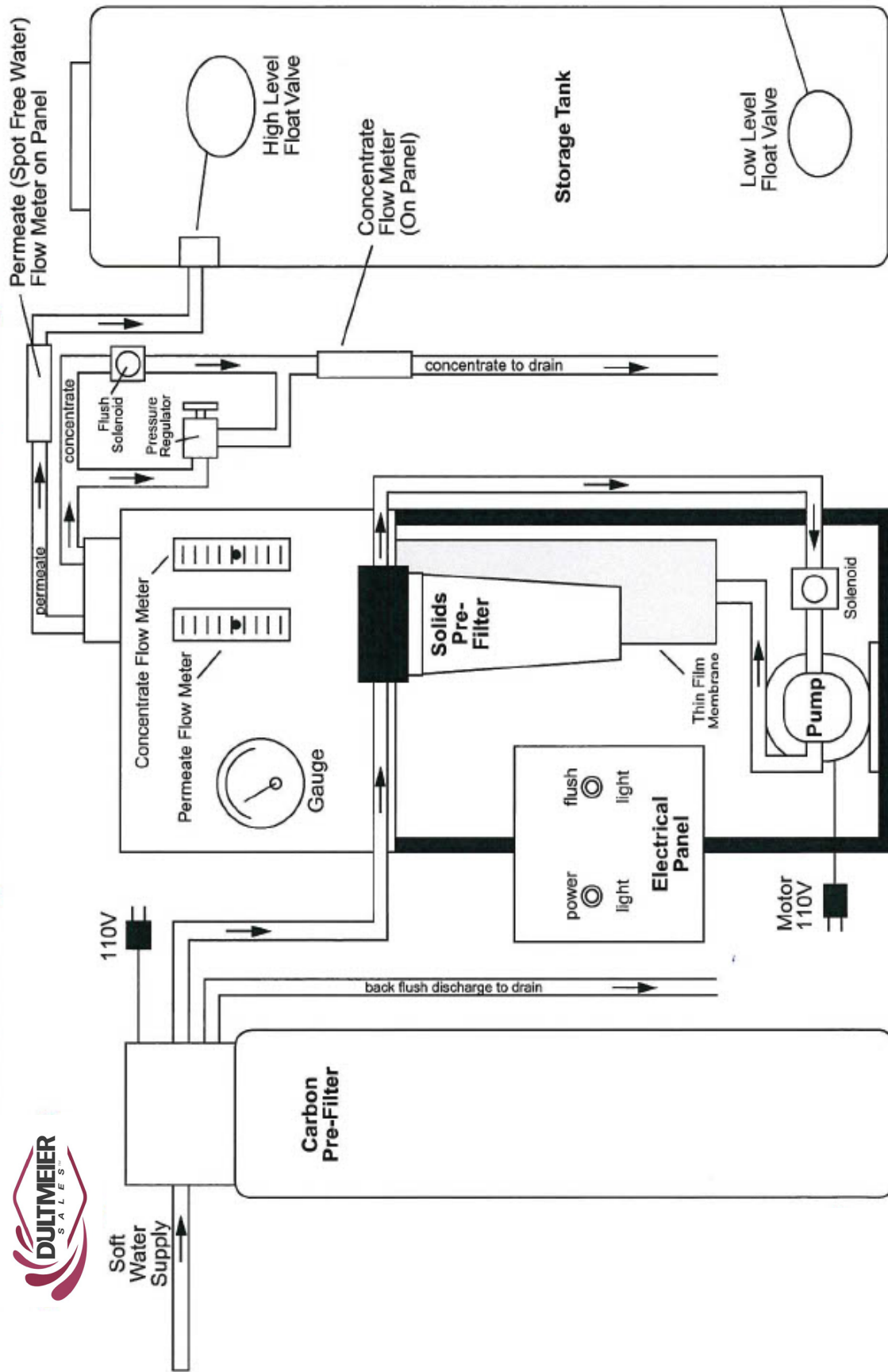
Item	Part Number	Description
1	CE 8LP2TILB4	Red Light (Power)
2	CE 8LP2TBL106	Blue Push Button (Flush Switch)
3	CE 8LM2TLB6	Led Light (Flush Switch)
4	CE 8LM2TC01	N.C. Contactor (Flush Switch)
5	GN 3T267	24 Volt Transformer
6	GN 5X852	Relay Socket
7	DU H3CR-24	Timer (Flush Only)
8	GO 3RT1026-1AC20	Motor Starter Contactor

DU RO250 ELECTRIC



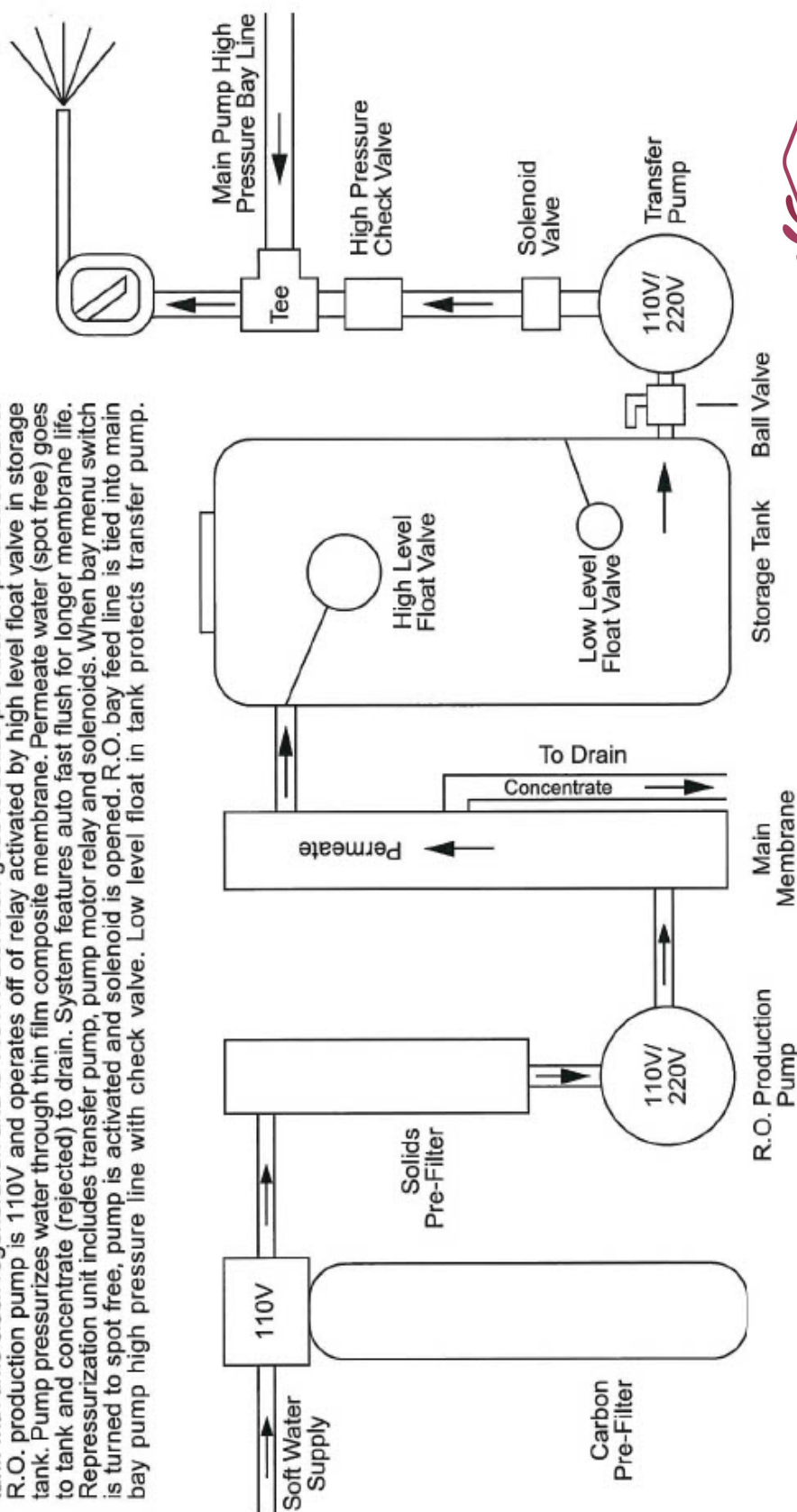
Consult qualified electrician for any local codes or requirements	
Dultmeier Sales Omaha, NE 800-228-9666	
Electrical DU RO250 Form 789	4/05 JC

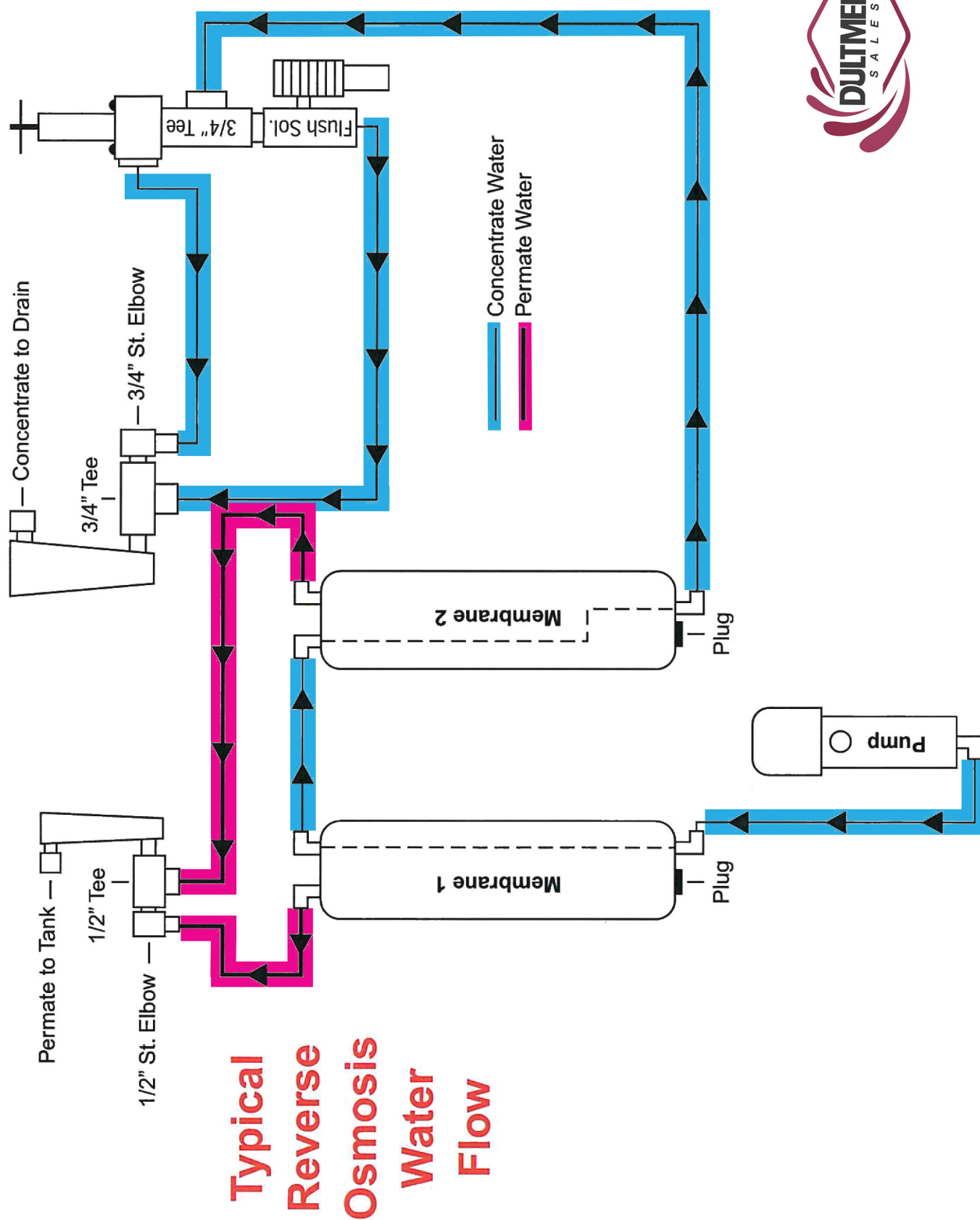
Reverse Osmosis Spot Free Rinse Production System



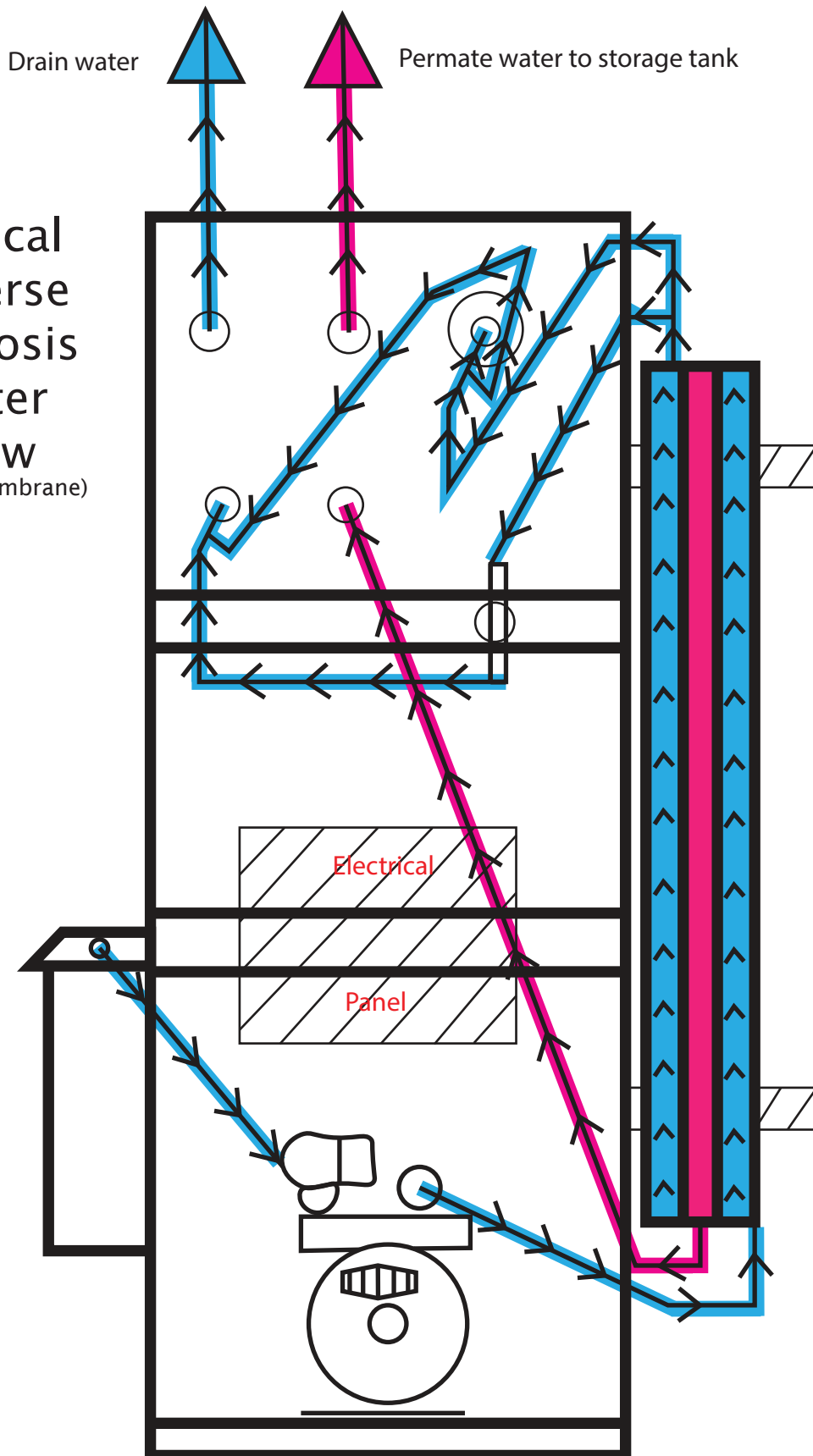
Typical Car Wash Reverse Osmosis Spot Free Rinse System

Soft water supply connects to carbon pre-filter required to remove chlorine. This unit is a free standing tank with time clock regeneration and is 110V. Water then goes to solids pre-filter on production stand. R.O. production pump is 110V and operates off of relay activated by high level float valve in storage tank. Pump pressurizes water through thin film composite membrane. Permeate water (spot free) goes to tank and concentrate (rejected) to drain. System features auto fast flush for longer membrane life. Repressurization unit includes transfer pump, pump motor relay and solenoids. When bay menu switch is turned to spot free, pump is activated and solenoid is opened. R.O. bay feed line is tied into main bay pump high pressure line with check valve. Low level float in tank protects transfer pump.





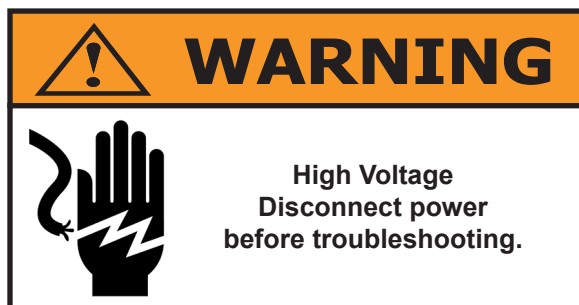
Typical Reverse Osmosis Water Flow (single membrane)



Troubleshooting Your System

PROBLEM	CAUSE	SOLUTION
Low or No Production	Incorrect setting on diaphragm relief valve.	Adjust diaphragm relief valve to 180-200 PSI.
	Incorrect setting on pump relief valve. *	See Adjusting the Pump Relief Valve. (pg. 4)
	RO system is in flush mode.	Wait approx 3 minutes for flush mode to finish.
	Flush valve is stuck in open position.	Check flush valve for debris.
	Clogged Membrane.	Replace Membrane.
	Dirty or clogged prefilter.	Replace Prefilter.
	Worn or defective pump, motor, or other components.	Repair or replace defective parts. (see <i>Parts Breakdown</i> , pgs. 6-9)
	Low water temperature.	See Water Temperature Flow Rates. (pg. 10)
Clogged Membrane	Carbon filter was not flushed properly causing carbon to pass through system.	Flush carbon filter through a full cycle. Check carbon filter for proper plumbing.
	Organic or inorganic matter in incoming water supply.	Have water tested before replacing membrane.
	Unit sat idle or is not energized, allowing organic growth.	Keep unit plugged in at all times.
	Normal use over time	
Increased RO Production, or High TDS, or Decrease in PSI	Chlorine in RO system.	Inspect, and/or repair carbon filter.
	Ruptured Membrane.	Replace Membrane.
	Ceveron ring, and/or stem ring defective, installed incorrectly, or missing.	Inspect for proper installation, replace if defective.
	Membrane installed upside down.	Turn Membrane opposite direction.
Flow to Tank When Unit is Not in Productions	Debris in inlet solenoid or defective inlet solenoid.	Clean or replace inlet solenoid.
	RO system is in flush mode.	Wait approx 3 minutes for flush mode to finish.
Pump is Noisy	Inlet is obstructed, or restricted.	Inspect prefilter and inlet lines, clean if necessary.
	Coupling, mounting bolts, or V band clamp is loose. *	Ensure that the pump is correctly aligned and tighten all the components.
	Water source is off or not fully open.	Turn water on. Ensure water valve is fully open.

* For RO250-4 only.



Before taking drastic measures to resolve any system problems, please call our tech department for assistance.



Notice Regarding Manufacturer's Limited Warranty

Dultmeier Sales Limited Liability Company (hereinafter Dultmeier), notifies you that component part(s) carry a manufacturer's limited warranty provided by the manufacturer of said component part(s). These warranties do not pertain to normal wear of component part(s) that may occur within any specified period. While Dultmeier is not the manufacturer of any of the component part(s), Dultmeier will assist you in processing any and all manufacturer's warranty claim if applicable and available. Any and all manufacturer's claims must be submitted in writing to the manufacturer within the warranty periods provided by the manufacturer.

Defective component part(s) that are to be considered for manufacturer's limited warranty must be returned to the manufacturer by prepaid shipment with the applicable manufacturer's limited warranty period. If the component part(s) are deemed to be defective under the manufacturer's warranty, Dultmeier will assist in obtaining a replacement or repair of the component part(s). Said component part(s) will be returned F.O.B. Omaha, Nebraska. Replacement or repair shall be the exclusive remedy for any breach of warranty. Labor for installation, either with respect to original or replacement part or components, is not covered under the manufacturer's limited warranty.

Neither the manufacturer nor Dultmeier warrants loss of income or consequential damages for injury or commercial loss resulting from any breach of warranty or warranties stated above.

The manufacturer's limited warranty as stated does not apply to component part(s) which have been improperly installed, misused, altered, neglected, abused or not installed, adjusted, maintained, or used in accordance with applicable codes and ordinances and in accordance with the manufacturer's specifications as to such factors.

Notwithstanding Dultmeier's willingness to assist in the processing of the manufacturer's limited warranty, Dultmeier makes no warranty against infringement of the like, makes no warranty of merchantability, makes no warranty of fitness for a particular purpose, and makes no other warranty, express or implied, including implied warranty arising from the course of dealing or usage of trade.

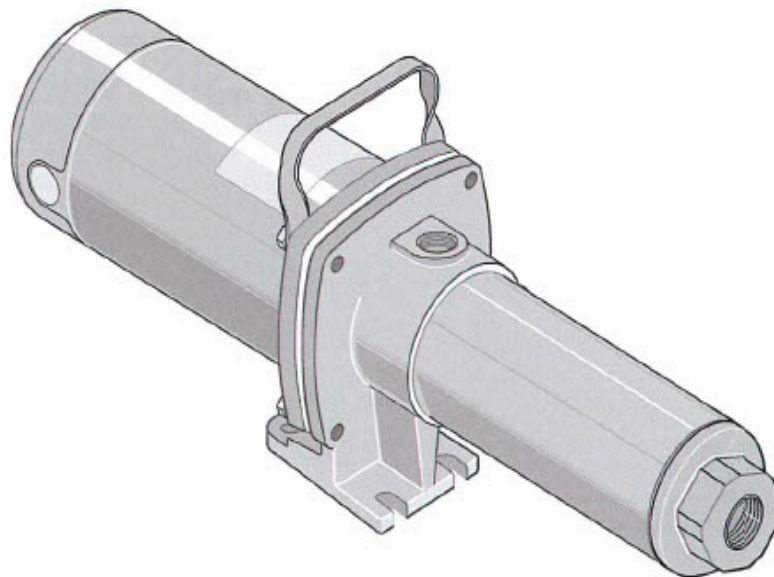
Compliance with all local, state and federal codes regarding the installation and operation of said equipment, parts and components shall be the responsibility of the purchaser. The rights and obligations of the parties shall be governed by the laws of the State of Nebraska.

**Dultmeier Sales • 1-888-677-5054
Omaha, NE - Davenport, IA**



STA-RITE®

OWNER'S MANUAL
Signature 2000
High Pressure Booster Pump
60 Hz. 1/2 through 3 HP



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PH: 888-782-7483

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S327 (11/01/12)

READ AND FOLLOW SAFETY INSTRUCTIONS!

⚠ This is the safety alert symbol. When you see this symbol on your pump or in this manual, look for one of the following signal words and be alert to the potential for personal injury:

⚠ DANGER warns about hazards that **will** cause serious personal injury, death or major property damage if ignored.

⚠ WARNING warns about hazards that **can** cause serious personal injury, death or major property damage if ignored.

⚠ CAUTION warns about hazards that **will** or **can** cause minor personal injury or property damage if ignored.

The label **NOTICE** indicates special instructions which are important but not related to hazards.

Carefully read and follow all safety instructions in this manual and on pump.

Keep safety labels in good condition.
Replace missing or damaged safety labels.

California Proposition 65 Warning

⚠ WARNING This product and related accessories contain chemicals known to the State of California to cause cancer, birth defects or other reproductive harm.

ELECTRICAL SAFETY

⚠ WARNING



Hazardous voltage. Can shock, burn, or cause death.

Ground pump before connecting to power supply.

⚠ Some models of pump are supplied with 3-conductor grounding type cord. Connect only to properly grounded, GFCI protected outlet. Do not lift pump by electrical cord.

⚠ Pump is non-submersible. Keep motor dry at all times. Do not wash motor. Do not immerse. Protect motor from wet weather.

⚠ If using extension cord, use only UL approved indoor/outdoor, 3-wire, grounding

type cord. Do not allow any part of cord or receptacle ends to sit in water or damp locations.

⚠ Unplug pump before servicing.

⚠ CAUTION **Burn Hazard.** Do not touch an operating motor. Modern motors can operate at high temperatures. To avoid burns when servicing pump, allow it to cool for 20 minutes after shut-down before handling.

Follow local and/or national plumbing and electrical codes when installing.

⚠ WARNING **Hazardous Pressure.** **DO NOT** run the pump with discharge shutoff, as hose may burst or pump may be damaged due to high temperatures.

GENERAL SAFETY

To avoid risk of serious bodily injury and property damage, read safety instructions carefully before installing pump.

Do not allow pump or any system component to freeze. To do so may damage system and will void warranty.

⚠ WARNING **Risk of electric shock.** To avoid fatal shocks, proceed as follows if pump needs servicing.

- Disconnect power to pump outlet box before pulling pump cord plug.** After plug is pulled, let pump cool for 20 minutes before attempting to work on it.
- Take extreme care when changing fuses.** To reduce chance of fatal electrical shocks, **DO NOT** stand in water or put your finger in the fuse socket.
- Ground** electrical outlet box.
- Use only Ground Fault Circuit Interrupter (GFCI) protected grounded outlet** for cord plug.

Never run pump dry. Running pump dry can damage internal parts, overheat pump (which can cause burns to people handling or servicing pump), and will void warranty.

Do not pump chemicals or corrosive liquids with pump.

⚠ WARNING **Hazardous Pressure.**

- Use high pressure reinforced type discharge hose ONLY.** See parts list for available hose, nozzle and fittings. A high pressure relief valve is recommended.
- DO NOT use garden hose with High Pressure Booster pump.** Garden hose will not stand the discharge pressure produced and will fail.
- High pressure discharge stream is dangerous.** To avoid injury, **DO NOT** aim the discharge stream at any person or animal.
- BE SURE** that the pump suction pipe pressure plus the pump discharge pressure does not exceed the pressure rating of hose and fittings. See Table I for pump discharge pressure ratings.

INSPECT THE SHIPMENT

The high pressure booster pump has been carefully inspected and packaged to assure safe delivery. Inspect the pump and fittings and report to the carrier any items which are damaged or missing.

TABLE I - DISCHARGE PRESSURE

GPM	HP	No. of Stages	Discharge Pressure PSI at Rated Flow	Discharge Pressure PSI at No Flow
7	1/2	9	90	130
7	3/4	12	123	173
7	1	16	162	229
10	1/2	6	74	113
10	3/4	8	97	147
10	1	10	134	188
10	1	11	146	202
10	1-1/2	14	173	206
10	2	16	197	260
20	1	7	75	110
20	1-1/2	9	97	143
20	2	11	123	175
20	3	15	195	250
30	1	5	59	75
30	1-1/2	6	71	91
30	2	7	81	106
30	3	11	129	167

*For total discharge pressure, add this pressure to suction pipe pressure. For example, an HP7C pump taking suction from a 100 psi water service line will produce $130 + 100 = 230$ psi total discharge pressure at 0 GPM flow. If suction pressure drops to 50 psi, discharge pressure will drop to 180 psi.

NOTE: Model numbers that include an "S" (HPS7C, HPS10D, etc) have a stainless steel suction, discharge assembly, and capscrews. Model numbers ending in "3" (HP7C3, HPS10C3, etc) have 3-phase motors. Models numbers ending in "T" have TEFC motors.

INSTALLATION

The pump is designed to boost city water pressure or water pressure from a private water system. Use this high pressure stream to wash down milk parlors, barns, garages and driveways, or for fire protection.

The pump is portable with a convenient carrying handle. If an existing pressure water system is to be used as a water supply, it can be connected with available fittings and 3/4" or 1" high pressure hose to the pump inlet. A special heavy duty 3/4" or 1" suction hose with fittings is available as an accessory. If pump is permanently mounted on wall, use a 3/4" or 1" pipe or heavy-duty hose for suction line. 20 GPM models require one-inch discharge hose to reduce friction losses and 30 GPM models require 1-1/4".

⚠ WARNING Hazardous pressure. Pump body may explode if pressures exceed rated limits. Maximum inlet pressure is 80 PSI. Maximum discharge pressure is 315 PSI. Warranty is void if these pressure limits are exceeded.

HIGH PRESSURE BOOSTER PUMP INSTALLATION INSTRUCTIONS

These instructions cover high pressure booster pump installations as shown below:

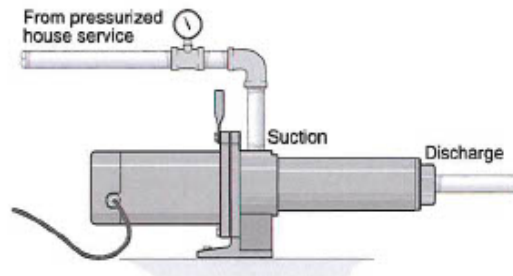


Figure 1 – Connection to house service.

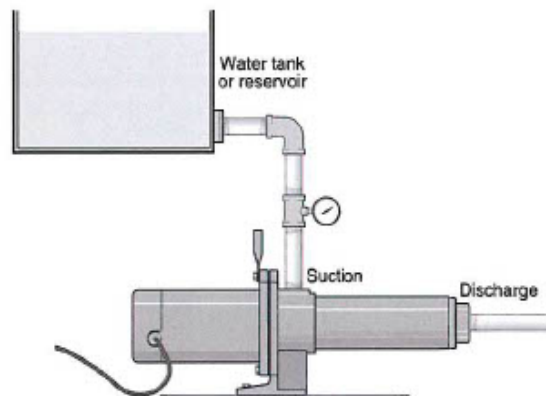


Figure 2 – Connection to water reservoir.

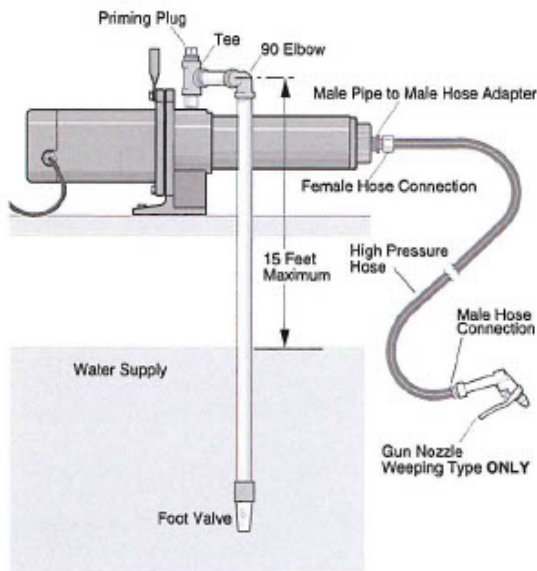
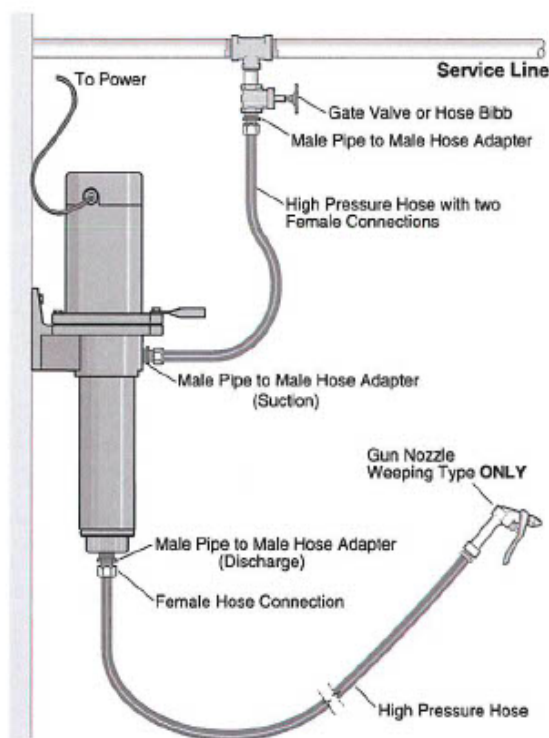


Figure 3 – Cistern or shallow well installation.



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Figure 4 – Wall mounted to pressurized service line.

To reduce friction losses to a minimum, inlet (suction) line should be **short** and have as few elbows as possible.

Size the inlet according to the chart below:

Ave. GPM	Threaded Inlet Size	Recommended Inlet Line Size	Recommended Discharge Line Size
7	3/4" NPT	1"	1"
10	3/4" NPT	1"	1"
20	1" NPT	1-1/4"	1-1/4"
30	1-1/4" NPT	1-1/2"	1-1/2"

An inlet strainer will prevent suspended debris from clogging pump.

The internal running surfaces of the pump and seals require water lubrication for good, consistent operation. **Allowing pump to run dry will severely damage pump and seals.**

Install a pressure gauge in pump inlet line. Keep at least two pounds per square inch pressure (2 PSI) in inlet line whenever pump is operating. If this is not possible, consult customer service representative.

LUBRICATION

It is not necessary to lubricate pump or motor. The motor is equipped with sealed ball bearings, lubricated for the life of the bearing. The mechanical shaft seal in the pump is self-lubricating and requires no adjustment. Disassemble pump to replace seal (See "Maintenance", Pages 8 to 9).

OPERATION

NOTICE: Observe the following precautions when operating the pump:

1. **Keep the motor dry! Do not** direct stream from pump discharge onto the motor!
2. **⚠ WARNING Hazardous pressure. Do not** run the pump with discharge shutoff, as hose may burst or pump may be damaged due to high temperatures.
3. **Do not** use a standard trigger gun with this pump. Use only trigger guns with an automatic weeping feature. These are available as accessories and are provided with three nozzles. The smallest nozzle restricts the flow, allowing use of a smaller water source. The two larger nozzles are used if the water source will supply the pump's full capacity.
4. **Do not** run pump dry; to do so may damage the seal.
5. To avoid internal damage to pump, **Do not** operate with water temperature above 175 degrees F.

⚠ Disconnect power before working on pump, motor, pressure switch, or wiring.

Single Phase, ODP Motor

MOTOR SWITCH SETTINGS

Dual-voltage motors (motors that can operate at either 115 or 230 volts), are set at the factory to 230 volts. Do not change motor voltage setting if line voltage is 230 volts, or if you have a single voltage motor.*

NOTICE: Never wire a 115 volt motor to a 230 volt line.

REMOVE MOTOR END COVER

If you have a dual-voltage motor, and will connect it to 115 volts, follow the procedure below.

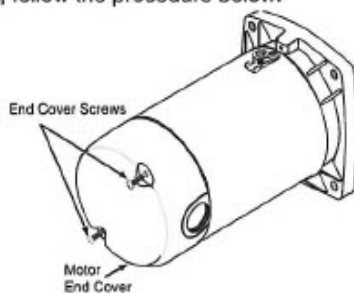


Figure 5 – Removing Motor End Cover

You will need to remove the motor end cover to change the voltage setting.

Your motor terminal board (located under the motor end cover) should look like one of the following.

PLUG TYPE VOLTAGE SELECTOR

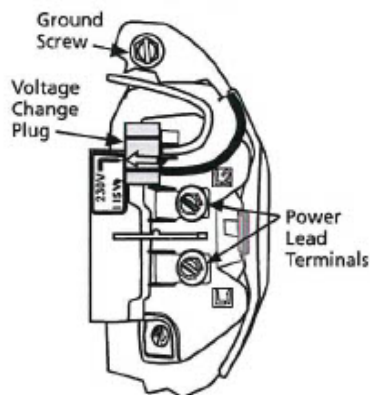


Figure 6 – Voltage set to 230 volts, Plug Type

To change to 115 volts:

1. Make sure power is off.
2. Pull the plug straight up.

**Models with power cords are pre-wired for 115 volts. This includes models HP7D-02 and HP7C-02.*

3. Move and attach the plug at the 115 volt position. The plug will now cover 2 metal tabs. The arrow on the plug will point to 115V.
 4. Attach the power lead wires to the power lead terminals. Make sure the wires are secure.
 5. Attach the ground wire to the green ground screw
 6. Reinstall the Motor end cover
- Go to Wiring Connections, page 6.

DIAL TYPE VOLTAGE SELECTOR

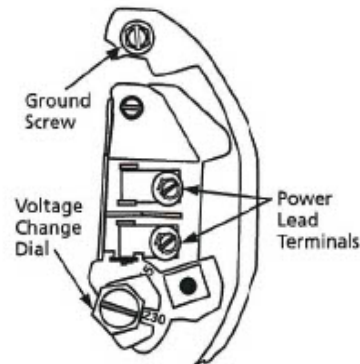









Figure 7 – Voltage set to 230 volts, Dial Type

To change to 115 volts:

1. Make sure power is off.
 2. Turn the dial counter-clockwise until 115 shows in the dial window.
 3. Attach the power lead wires to the power lead terminals. Make sure the wires are secure.
 4. Attach the ground wire to the green ground screw
 5. Reinstall the Motor end cover
- Go to Wiring Connections, page 6.

ELECTRICAL

-  Ground motor before connecting to electrical power supply.
-  Failure to ground motor can cause severe or fatal electrical shock hazard.
-  Explosion hazard. Do not ground to a gas supply line.
-  To avoid dangerous or fatal electrical shock, turn OFF power to motor before working on electrical connections.
-  Supply voltage must be within $\pm 10\%$ of nameplate voltage. Incorrect voltage can cause fire or serious damage to motor and voids warranty. If in doubt consult a licensed electrician.
-  Use wire size specified in Wiring Chart (Table II, Page 7). If possible, connect pump to a separate branch circuit with no other appliances on it.
-  Wire motor according to diagram on motor nameplate. If nameplate diagram differs from diagrams above, follow nameplate diagram.

For All 3-phase and TEFC Motors: Follow the wiring diagram on the motor junction box or on the motor nameplate.

WIRING CONNECTIONS

1. Install, ground, wire and maintain this pump in compliance with the National Electrical Code (NEC) or the Canadian Electrical Code (CEC) and with all local codes and ordinances that apply. Consult your local building inspector for local information.

2. Make sure that the voltage, frequency and phase (single phase or three phase) of the power supply agree with that stamped on the motor nameplate. If in doubt, check with the power company.
3. Some models are equipped with three phase motors. Three phase motors require magnetic starters and can run in either direction, depending on how they are connected to the power supply.

NOTICE: Dual voltage motors without cords are factory wired for 230 volts. If necessary, reconnect the motor for 115 volts, as shown. All cord connected motors are wired for 115 volts (See Page 5). Do not alter the wiring in single voltage motors.

Install, ground, wire, and maintain your pump in compliance with the National Electrical Code (NEC) or the Canadian Electrical Code (CEC), as applicable, and with all local codes and ordinances that apply. Consult your local building inspector for code information.

NOTICE: Clamp the power cable to prevent strain on the terminal screws.

NOTICE: Your Motor Terminal Board (under the motor end cover) looks like one of those shown above. Do not change motor wiring if line voltage is 230 volts. Connect power supply as shown for your supply voltage.

NOTICE: Some models are equipped with three phase motors. Three phase motors require magnetic starters and can run in either direction, depending on how they are connected to the power supply.

To Check For Proper Rotation – 3 Phase Motors

⚠ WARNING Risk of electrical shock.

1. Be sure power is disconnected to motor when working on electrical connections.
2. Remove the motor end cover, exposing motor shaft. Momentarily start pump. If hookup is correct, the shaft will rotate clockwise.
3. If rotation is not clockwise, reverse any two leads to the starter. The rotation will now be correct.

GROUNDING THE MOTOR

Ground the pump permanently using a wire of size and type specified by local or National Electrical Code.

Models (HP7C and HP7D Series Only) with factory installed cord and plug:

⚠ WARNING Risk of electric shock. This equipment is only for use on 115V and is equipped with an approved 3-conductor cord and 3-prong, grounding type plug. To reduce the risk of electric shock, be certain that it is connected to a properly grounded, grounding type receptacle. Do not modify or remove plug. Make sure pump circuit meets National Electrical Code. To avoid dangerous electrical shock hazard, keep cord dry at all times.

Models without cord and plug:

1. Connect ground wire first. Connect the ground first, then to green grounding terminal provided under motor canopy (see Figures 6 and 7) identified as GRD. Make ground connection to this terminal. **Do not** connect motor to electrical power supply until unit is permanently grounded; otherwise serious or fatal electrical shock hazard may be caused.
2. For best ground connection, connect to a grounded lead in the service panel or to a metal underground water pipe or well casing at least 10 ft. long. If plastic pipe or insulated fittings are used, run ground wire directly to the metal well casing or use ground electrode furnished by the power company.

TABLE II - RECOMMENDED FUSING AND WIRING

Motor Type	Motor H.P.	Volts/Phase	Max. Load Amps	Branch Fuse Rating Amps	Wire Length		
					0'-100'	101-200'	201-300'
					AWG Wire Size		
ODP	1/2	115/230/1	12.4/ 6.2	20/15	12/14	10/14	8/14
ODP	1/2	230/460/3	3.1/1.55	15/15	14/14	14/14	14/14
ODP	3/4	115/230/1	14.8/7.4	20/15	12/14	8/14	6/14
ODP	3/4	230/460/3	3.6/1.8	15/15	14/14	14/14	14/14
ODP	1	115/230/1	19.2/9.6	25/15	10/14	8/14	6/12
ODP	1	230/460/3	4.7/2.35	15/15	14/14	14/14	14/14
ODP	1-1/2	115/230/1	24/12	30/15	10/14	6/12	6/12
ODP	1-1/2	230/1	12.0	15	14	14	12
ODP	1-1/2	230/460/3	6.8/3.4	15/15	14/14	14/14	14/14
ODP	2	115/230/1	26/13	35/20	8/12	6/12	4/10
ODP	2	230/1	10.4	15	14	14	14
ODP	2	230/460/3	6.0/3.0	15/15	14/14	14/14	14/14
ODP	3	208-230/1	15.0	20	12	12	10
ODP	3	200-230/460/3	11.5/5.8	15/15	14/14	14/14	12/14
TEFC	1	115/230/1	18/9	25/15	10/14	8/14	8/12
TEFC	1	208-230/460/3	4.8/2.4	15/15	14/14	14/14	14/14
TEFC	1-1/2	230/1	10.4	15	14	14	12
TEFC	1-1/2	208-230/460/3	6.0/3.0	15/15	14/14	14/14	14/14
TEFC	2	230/1	11.7	15	14	10	8
TEFC	2	208-230/460/3	7.0/3.5	15/15	14/14	14/14	14/14
TEFC	3	230/1					
TEFC	3	208-230/460/3	7.0/3.5	15/15	14/14	14/14	14/14

MAINTENANCE

Pump Disassembly

⚠ WARNING Hazardous voltage. Can shock, burn or cause death. Disconnect power before servicing.

Tools required:

1. 7/16" open end wrench (2 required).
2. Flat blade screwdriver with insulated handle.
3. Work bench with vise recommended.
4. Pliers or similar tool.
5. Pipe wrench.

Impeller Stack Changeout (See Figure 8)

Remove pump from service and mount vertically in vise (if available) motor side down. Hold at center of motor. It may be desirable to wrap motor with a shop rag to protect outside surface.

Proceed as follows:

1. Attach pipe wrench to flats on discharge connection and turn clockwise to remove (left hand threads).
2. Remove screws holding motor canopy and remove canopy. Pull straight off as shown. Leave switch wires attached (if present).

⚠ WARNING Capacitor voltage may be hazardous. To discharge capacitor, hold insulated handle screwdriver by the handle and short capacitor terminals together. Do not touch metal screwdriver blade or capacitor terminals.

3. Unscrew the overload and move it aside. Do not disconnect wires. Slide 7/16" open end wrench in behind spring loaded centrifugal switch as shown. Place on motor shaft flats to hold shaft stationary.

4. With one 7/16" wrench in place on motor shaft, place second wrench on shaft hex at pump end and unscrew impeller stack by turning counter-clockwise.

5. Once loose from motor shaft, hold shaft by snap ring using a pliers or similar tool, and pull stack from shell. You may have to apply a back and forth motion to break stack loose from shell.

To assemble with replacement impeller stack, keep pump in the vertical position, motor down, and reverse instructions 1 through 5.

Assembly hints:

- A. Apply a soapy water solution to suction and discharge O-Rings to ease seating of shell.
- B. Make sure mechanical shaft seal spring is in proper position on motor shaft.
- C. On three-phase models, apply Loctite No. 271 to motor shaft threads before reinstalling stack.

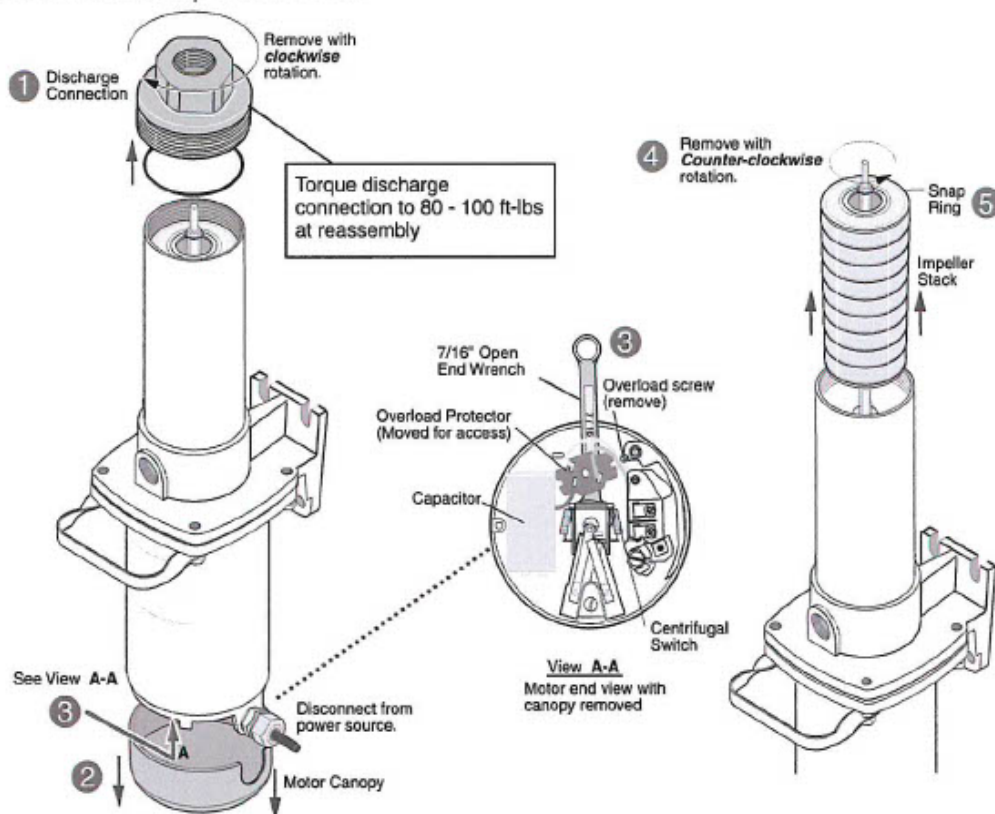


Figure 8 – Impeller stack changeout.

Mechanical Seal Changeout

(Refer to Figures 8 and 9)

This procedure is best completed with the pump held in a vertical position, motor down.

First complete "Disassembly" instructions 1 through 5 under "Impeller Stack Changeout." (See Figure 8).

6. Remove 4 capscrews holding pump body to motor. Pump handle will come off with top capscrews.
7. Unscrew pump shell from pump body, turning clockwise (left hand threads).
8. Remove mechanical shaft seal spring and rotating half from motor shaft. Use care not to scratch motor shaft when removing rotating half.
9. Remove pump body from motor and place on flat surface, face down. Again, use care not to scratch motor shaft.
10. Use a screwdriver to push ceramic seat out from seal cavity as shown.
11. Installation of ceramic seat:
 - A. Turn pump body over so seal cavity is up; clean cavity thoroughly.
 - B. Clean polished surface of ceramic seat with a clean cloth.
 - C. Lubricate outside rubber surface of seat with soapy water. Place cardboard washer over

polished face of seat and press into seal cavity using a 3/4" socket or a piece of 3/4" standard pipe.

- D. Be sure polished surface of seat is free of dirt and has not been damaged by insertion. Re-move excess soapy water. Dispose of cardboard washer.

12. Installation of rotating half and spring:

- A. Reinstall pump body on motor using extreme caution not to hit ceramic portion of seal on motor shaft. Reattach pump body to motor using capscrews. Be sure to reinstall pump handle at this time.
- B. Inspect shaft to make sure that it is clean.
- C. Clean face of rotating half of seal with a clean cloth.
- D. Lubricate inside diameter of rotating half with soapy water and slide onto motor shaft (sealing face first).
- E. Place spring over motor shaft so it rests on rotating half.

13. To complete reassembly from this point, reverse instructions 1 through 5 under "Impeller Stack Changeout."

NOTICE: Lubricate suction and discharge O-Rings with soapy water for easier installation of shell.

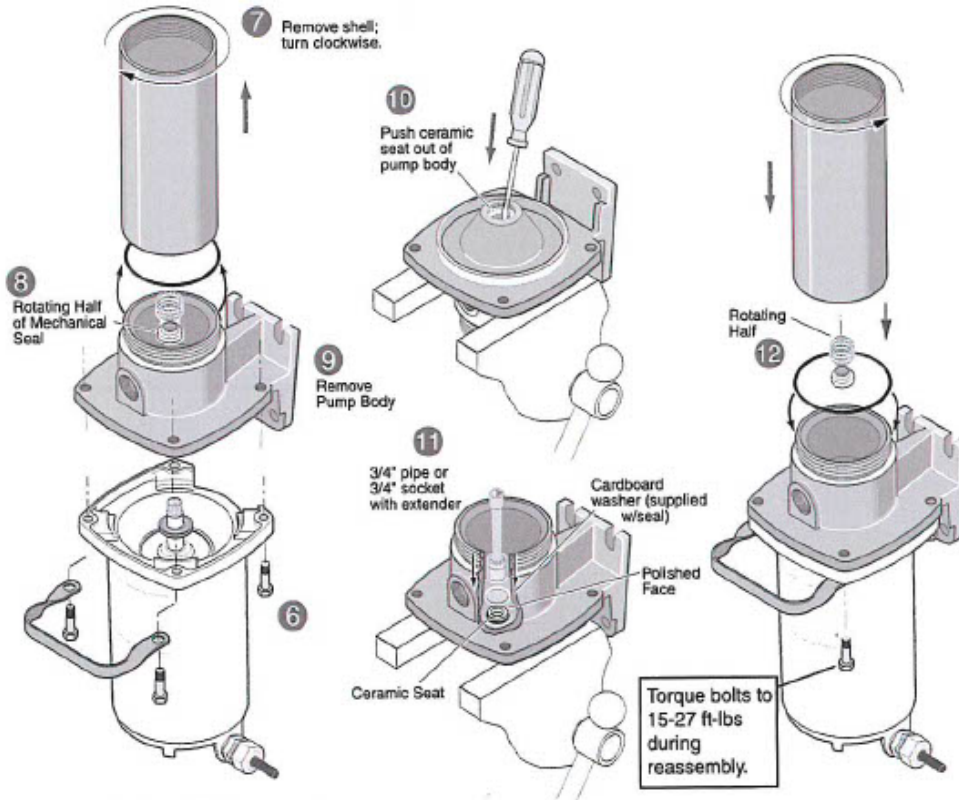


Figure 9 – Mechanical seal changeout.

**THE FOLLOWING ACCESSORIES
MAY BE ORDERED FOR HIGH
PRESSURE BOOSTER PUMPS**

Hose 6'-3/4" w/Female Ends (150 PSI Rating)	PKG 83
Hose 25'-3/4" w/Male & Female Ends (150 PSI Rating)	PKG 84
Adapter 3/4" NPT x 3/4" Hose	PKG 85
Nozzle - High Pressure	PKG 86
Suction Vacuum Relief Valve	PKG 96

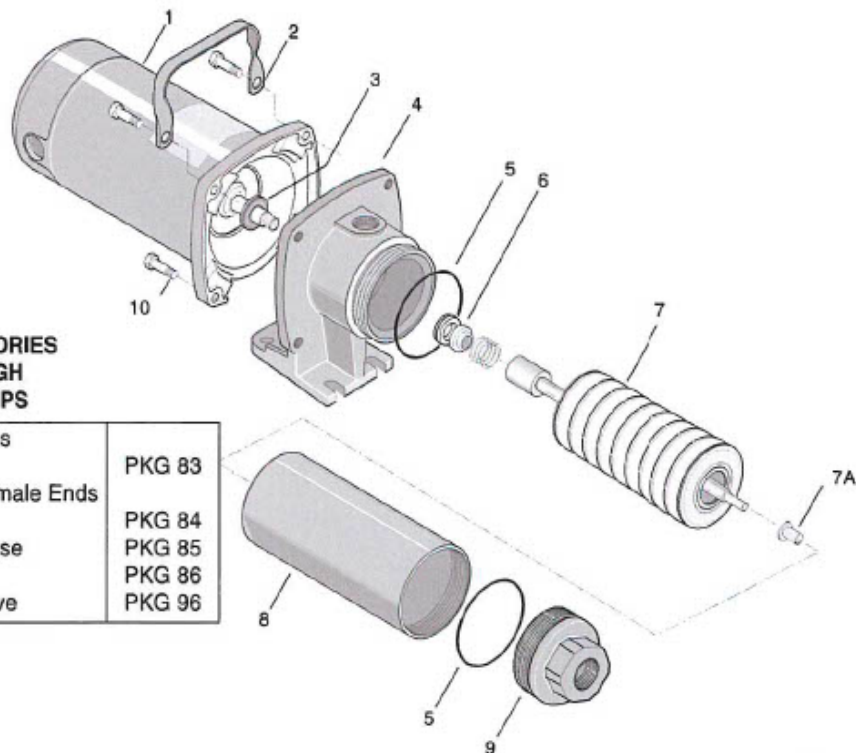


Figure 9 – Exploded view.

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REPAIR PARTS LIST

Key No.	Description	Qty.	HP7C-02 HP7C3-02 HP10C-02 HP10C3-02 1/2 HP	HP7D-02 HP7D3-02 HP10D-02 HP10D3-02 3/4 HP	HP7E-02 HP7E3-02 HP10E-02 HP10E3-02 HP10E311-02 1 HP	HP10F-02 HP10F3-02 1-1/2 HP	SHP10G3-02 HP10G-02 HP10G3-02 2 HP
1	Motor - 115/230 Volt, 1 Phase	1	J218-590PKG	J218-596PKG	J218-601PKG	J218-883APKG	J218-628APKG
1	Motor - 230/460 Volt, 3 Phase	1	AP100CH	AP100DL2	AP100EH	AP100FH	AP100GH
2	Handle (†)	1	C54-21	C54-21	C54-21	-	-
3	Water Slinger	1	17351-0009	17351-0009	17351-0009	17351-0009	17351-0009
4	Pump Body	1	C2-85	C2-85	C2-85	C2-85	C2-85
5	O-Ring	2	U9-430	U9-430	U9-430	U9-430	U9-430
6	Shaft Seal Assembly	1	U109-118	U109-118	U109-118	U109-118	U109-118
7	Pump Stack (7 GPM Pump)	1	P325-422	P325-423	P325-424	-	-
7	Pump Stack (10 GPM Pump)††	1	P325-425	P325-426	P325-439	P325-428	P325-429
7A	Nylatron Bearing (included with Key No. 9)	1	W31112	W31112	W31112	W31112	W31112
8	Pump Shell (7 GPM Pump)	1	P56-430SSL	P56-431SSL	P56-432SSL	-	-
8	Pump Shell (10 GPM Pump)†††	1	P56-460SSL	P56-461SSL	P56-469SSL	P56-452SSL	P56-432SSL
9	Discharge Assembly	1	C152-3	C152-3	C152-3	C152-3	C152-4
10	Cap screw - 3/8 x 16 x 1-1/2"	4	U30-982ZP	U30-982ZP	U30-982ZP	U30-982ZP	U30-982ZP
#	Cord Connector**	1	U71-7	U71-7	-	-	-
#	Cord**	1	U17-402	U17-1238	-	-	-

Not Illustrated.

** Included with Model Numbers HP7C-01 and the HP7D Series Model Numbers.

† Handle comes with HP7 series and HP10E series.

†† Model HP10E311-02 uses Part Number P325-362.

††† Model HP10E311-02 uses Part Number P56-404SSL.

**THE FOLLOWING ACCESSORIES
MAY BE ORDERED FOR HIGH
PRESSURE BOOSTER PUMPS**

Hose 6'-3/4" w/Female Ends (150 PSI Rating)	PKG 83
Hose 25'-3/4" w/Male & Female Ends (150 PSI Rating)	PKG 84
Adapter 3/4" NPT x 3/4" Hose	PKG 85
Nozzle - High Pressure	PKG 86
Suction Vacuum Relief Valve	PKG 96

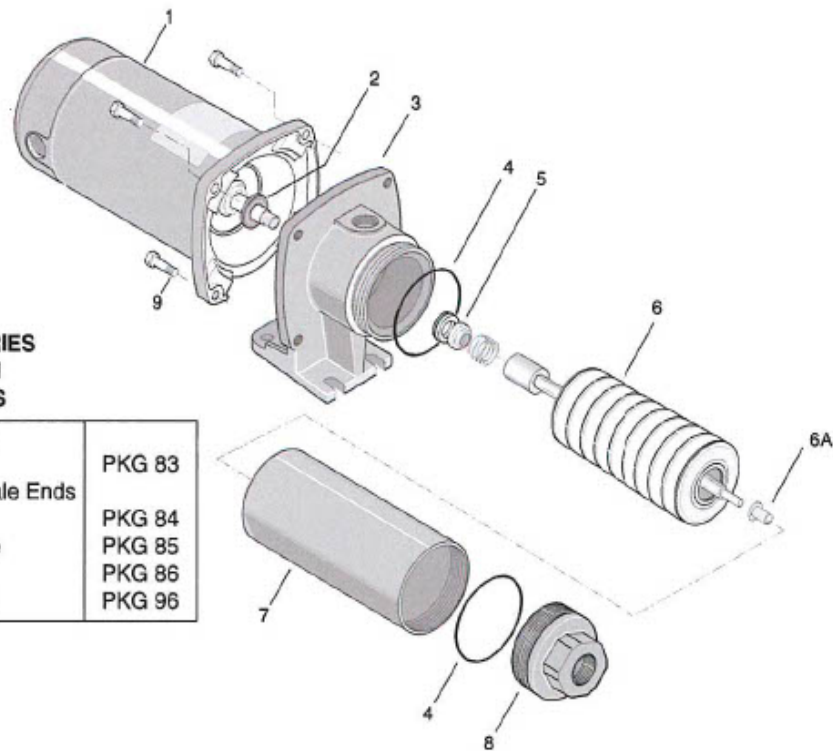


Figure 10 – Exploded view.

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REPAIR PARTS LIST

Key No.	Description	Qty.	HPS7C-01 HPS7C3-01 HPS10C3-01 1/2 HP	HPS7D-01 HPS7D3-01 HPS10D3-01 3/4 HP	HPS7E-01 HPS7E3-01 HPS10E3-01 1HP	HPS10F-01 HPS10F3-01 1-1/2 HP	HPS10G-01 HPS10G3-01 2 HP
1	Motor - 115/230 Volt, 1 Phase	1	J218-590PKG	J218-596PKG	J218-601PKG	J218-883APKG	J218-628APKG
1	Motor - 230/460, 3 Phase	1	AP100CH	AP100DL2	AP100EH	AP100FH	AP100GH
2	Water Slinger	1	17351-0009	17351-0009	17351-0009	17351-0009	17351-0009
3	Pump Body	1	C2-86SS	C2-86SS	C2-86SS	C2-86SS	C2-86SS
4	O-Ring	2	U9-430	U9-430	U9-430	U9-430	U9-430
5	Shaft Seal Assembly	1	U109-118	U109-118	U109-118	U109-118	U109-118
6	Pump Stack (7 GPM)	1	P325-422R	P325-423R	P325-424R	-	-
6	Pump Stack (10 GPM)	1	P325-425R	P325-426R	P325-439R	P325-428R	P325-429R
6A	Nylatron Bearing (included with Key No. 9)	1	W31112	W31112	W31112	W31112	W31112
7	Pump Shell (7GPM)	1	P56-430SSL	P56-431SSL	P56-432SSL	-	-
7	Pump Shell (10GPM)	1	P56-460SSL	P56-461SSL	P56-469SSL	P56-452SSL	P56-432SSL
8	Discharge Assembly	1	C152-4	C152-4	C152-4	C152-4	C152-4
9	Capscrew 3/8 x 16 x 1-1/2", S.S.	4	S25983	S25983	S25983	S25983	S25983

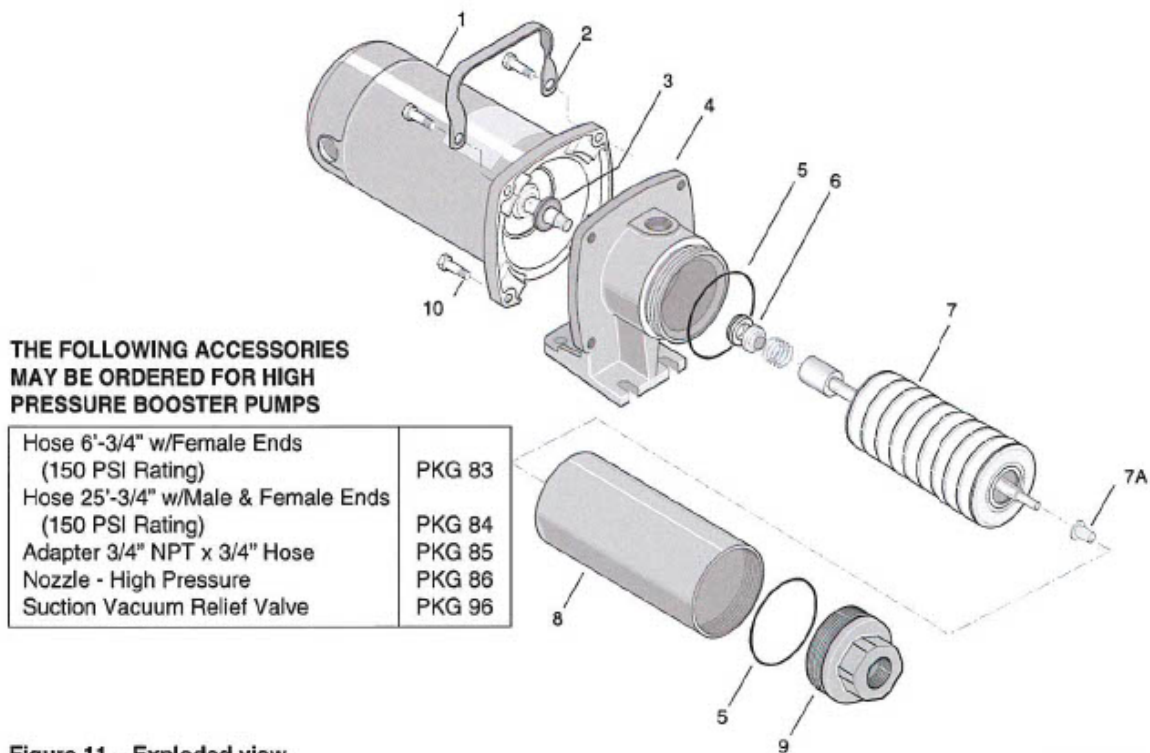


Figure 11 – Exploded view.

1226 0026 NCB00WNB

REPAIR PARTS LIST

Key No.	Description	Qty.	HP20E-02 HP20E3-02 1 HP	HP20F-02 HP20F3-02 1-1/2 HP	HP20G-02 HP20G3-02 2 HP	HP20H-01 HP20H3-01 HP20HT-02 HP20H3T-02 3 HP
1	Motor - 115/230 Volt, 1 Phase	1	J218-601PKG	J218-883APKG	J218-628APKG	—
1	Motor - 230 Volt, 1 Phase	1	—	—	A100GSL	AE100HLL
1	Motor - 230/460 Volt, 3 Phase	1	AP100EH	AP100FH	AP100GH	AP100HL
1	Motor - 230 Volt, 1 Phase, TEFC	1	—	—	—	J218-1035
1	Motor - 208-230/460 Volt, 3 Phase, TEFC	1	—	—	—	J218-1036
2	Handle	1	C54-21	C54-21	C54-21	C54-21
3	Water Slinger	1	17351-0009	17351-0009	17351-0009	17351-0009
4	Pump Body	1	C2-85A	C2-85A	C2-85A	C2-85A
5	O-Ring	2	U9-430	U9-430	U9-430	U9-430
6	Shaft Seal Assembly	1	U109-118	U109-118	U109-118	U109-118
7	Pump Stack	1	P325-602R	P325-431R	P325-432R	P325-718R
7A	Nylatron Bearing (included with Key No. 9)	1	W31112	W31112	W31112	W31112
8	Pump Shell	1	P56-433SSL	P56-434SSL	P56-452SSL	P56-620SSL
9	Discharge Assembly	1	C152-3A	C152-3A	C152-3A	C152-3A
10	Cap screw - 3/8 x 16 x 1-1/2"	4	U30-982ZP	U30-982ZP	U30-982ZP	U30-982ZP

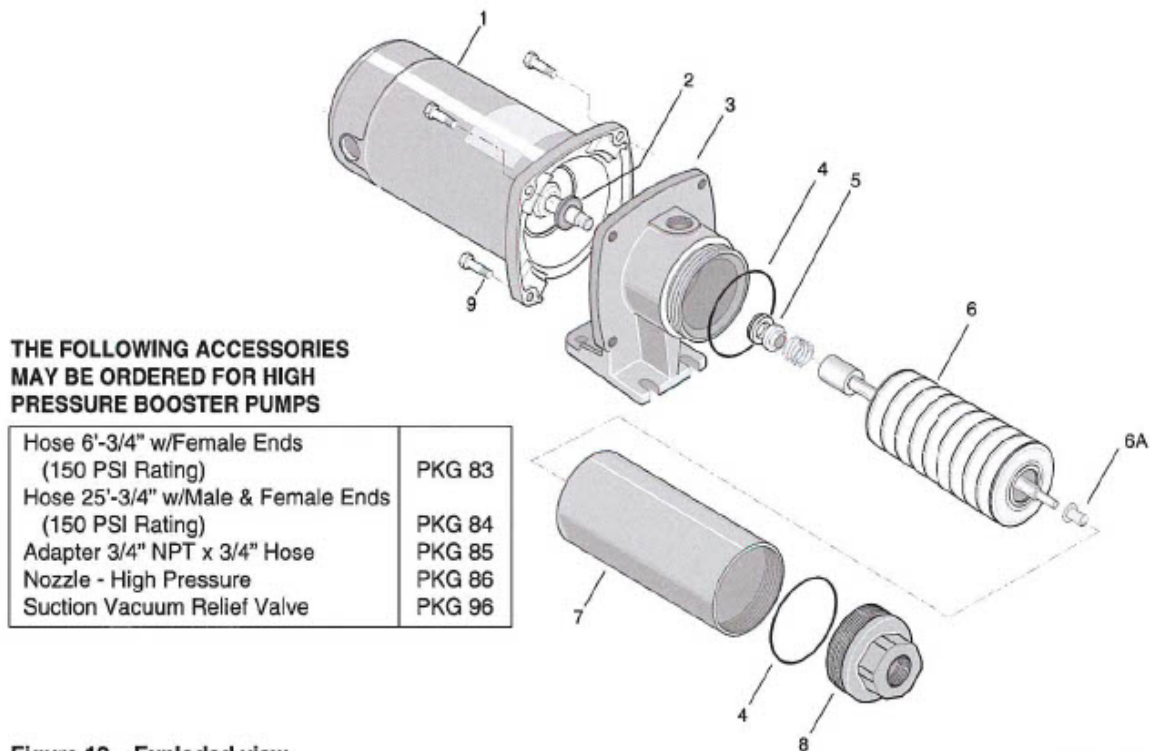


Figure 12 – Exploded view.

REPAIR PARTS LIST

Key No.	Description	Qty.	HPS20E-01 HPS20E3-01 1HP	HPS20F-01 HPS20F3-01 1-1/2 HP	HPS20G-01 HPS20G3-01 2 HP	HPS20H-01 HPS20H3-0 HPS20HT-01 HPS20H3T-01 3 HP
1	Motor - 115/230 Volt, 1 Phase	1	J218-601PKG	J218-883APKG	J218-628APKG	—
1	Motor - 230 Volt, 1 Phase	1	—	—	A100GSL	AE100HLL
1	Motor - 230/460 Volt, 3 Phase	1	AP100EL2	AP100FH	AP100GH	AP100HL
1	Motor - 230 Volt, 1 Phase, TEFC	1	—	—	—	J218-1035
1	Motor - 208-230/460 Volt, 3 Phase, TEFC	1	—	—	—	J218-1036
2	Water Slinger	1	17351-0009	17351-0009	17351-0009	17351-0009
3	Pump Body	1	C2-86SSA	C2-86SSA	C2-86SSA	C2-86SSA
4	O-Ring	2	U9-430	U9-430	U9-430	U9-430
5	Shaft Seal Assembly	1	U109-118	U109-118	U109-118	U109-118
6	Pump Stack	1	P325-440R	P325-431R	P325-432R	P325-718R
6A	Nylatron Bearing (included with Key No. 8)	1	W31112	W31112	W31112	W31112
7	Pump Shell	1	P56-470SSL	P56-434SSL	P56-452SSL	P56-620SSL
8	Discharge Assembly	1	C152-4A	C152-4A	C152-4A	C152-4A
9	Capscrew 3/8 x 16 x 1-1/2"	4	S25983	S25983	S25983	S25983

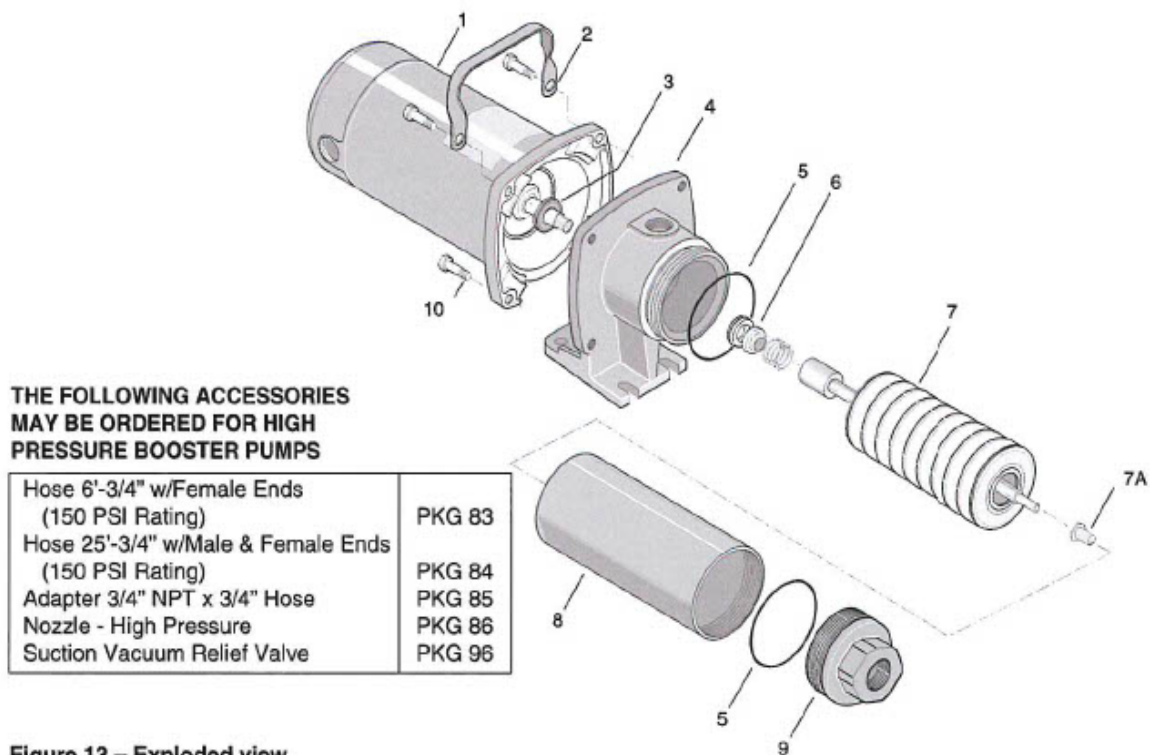


Figure 13 – Exploded view.

1204 0605 NCB5WV02

REPAIR PARTS LIST

Key No.	Description	Qty.	HP30E-02 HP30E3-02 HP30ET-02 HP30E3T-02 1 HP	HP30F-02 HP30F3-02 HP30FT-02 HP30F3T-02 1-1/2 HP	HP30G-02 HP30G3-02 HP30GT-02 HP30G3T-02 2 HP	HP30H-02 HP30H3-02 HP30HT-02 HP30H3T-02 3 HP
1	Motor - 115/230 Volt, 1 Phase	1	J218-601PKG	J218-883APKG	J218-628APKG	—
1	Motor - 230 Volt, 1 Phase	1	—	—	A100GSL	AE100HLL
1	Motor - 230/460 Volt, 3 Phase	1	AP100EH	AP100FH	AP100GH	AP100HL
1	Motor - 230 Volt, 1 Phase, TEFC	1	A100FL-T	AE100GL-T	AE100G5L-T	J218-1035
1	Motor - 208-230/460 Volt, 3 Phase, TEFC	1	AP100FL-T	AP100GL-T	AP100G5L-T	J218-1036
2	Handle	1	C54-21	C54-21	C54-21	C54-21
3	Water Slinger	1	17351-0009	17351-0009	17351-0009	17351-0009
4	Pump Body	1	C2-85B	C2-85B	C2-85B	C2-85B
5	O-Ring	2	U9-430	U9-430	U9-430	U9-430
6	Shaft Seal Assembly	1	U109-118	U109-118	U109-118	U109-118
7	Pump Stack	1	P325-719R	P325-720R	P325-721R	P325-722
7A	Nylatron Bearing (included with Key No. 9)	1	W31112	W31112	W31112	W31112
8	Pump Shell	1	P56-621SSL	P56-622SSL	P56-434SSL	P56-615SSL
9	Discharge Assembly	1	C152-3B	C152-3B	C152-3B	C152-3B
10	Capscrew - 3/8 x 16 x 1-1/2"	4	U30-982ZP	U30-982ZP	U30-982ZP	U30-982ZP

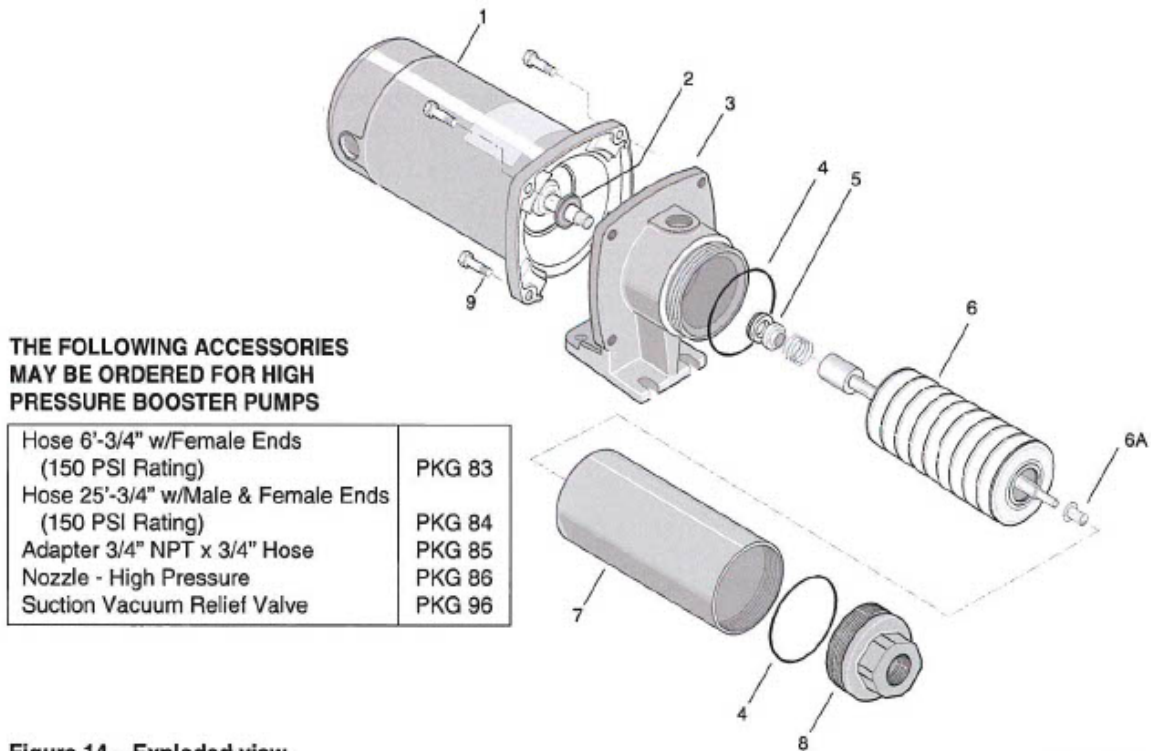


Figure 14 – Exploded view.

REPAIR PARTS LIST

Key No.	Description	Qty.	HPS30E-01 HPS30E3-0 HPS30ET-01 HPS30E3T-01 1HP	HPS30F-01 HPS30F3-01 HPS30FT-01 HPS30F3T-01 1-1/2 HP	HPS30G-01 HPS30G3-01 HPS30GT-01 HPS30G3T-01 2 HP	HPS30H-01 HPS30H3-01 HPS30HT-01 HPS30H3T-01 3 HP
1	Motor - 115/230 Volt, 1 Phase	1	J218-601PKG	J218-883APKG	J218-628APKG	—
1	Motor - 230 Volt, 1 Phase	1	—	—	A100GSL	AE100HLL
1	Motor - 230/460 Volt, 3 Phase	1	AP100EH	AP100FH	AP100GH	AP100H
1	Motor - 230 Volt, 1 Phase, TEFC	1	A100FL-T	AE100GL-T	AE100G5L-T	J218-1035
1	Motor - 208230/460 Volt, 3 Phase, TEFC	1	AP100FL-T	AP100GL-T	AP100G5L-T	J218-1036
2	Water Slinger	1	17351-0009	17351-0009	17351-0009	17351-0009
3	Pump Body	1	C2-86SSB	C2-86SSB	C2-86SSB	C2-86SSB
4	O-Ring	2	U9-430	U9-430	U9-430	U9-430
5	Shaft Seal Assembly	1	U109-118	U109-118	U109-118	U109-118
6	Pump Stack	1	P325-719R	P325-720R	P325-721R	P325-722R
6A	Nylatron Bearing (included with Key No. 9)	1	W31112	W31112	W31112	W31112
7	Pump Shell	1	P56-621SSL	P56-622SSL	P56-434SSL	P56-615SSL
8	Discharge Assembly	1	C152-4B	C152-4B	C152-4B	C152-4B
9	Capscrew 3/8 x 16 x 1-1/2"	4	S25983	S25983	S25983	S25983

Limited Warranty

STA-RITE warrants to the original consumer purchaser ("Purchaser" or "You") of the products listed below, that they will be free from defects in material and workmanship for the Warranty Period shown below.

Product	Warranty Period
Water Systems Products — jet pumps, small centrifugal pumps, submersible pumps and related accessories	<i>whichever occurs first:</i> 12 months from date of original installation, or 18 months from date of manufacture
Pro-Source™ Composite Tanks	5 years from date of original installation
Pro-Source™ Steel Pressure Tanks	5 years from date of original installation
Pro-Source™ Epoxy-Lined Tanks	3 years from date of original installation
Sump/Sewage/Effluent Products	12 months from date of original installation, or 18 months from date of manufacture

Our warranty will not apply to any product that, in our sole judgement, has been subject to negligence, misapplication, improper installation, or improper maintenance. Without limiting the foregoing, operating a three phase motor with single phase power through a phase converter will void the warranty. Note also that three phase motors must be protected by three-leg, ambient compensated, extra-quick trip overload relays of the recommended size or the warranty is void.

Your only remedy, and STA-RITE's only duty, is that STA-RITE repair or replace defective products (at STA-RITE's choice). You must pay all labor and shipping charges associated with this warranty and must request warranty service through the installing dealer as soon as a problem is discovered. No request for service will be accepted if received after the Warranty Period has expired. This warranty is not transferable.

STA-RITE SHALL NOT BE LIABLE FOR ANY CONSEQUENTIAL, INCIDENTAL, OR CONTINGENT DAMAGES WHATSOEVER. THE FOREGOING WARRANTIES ARE EXCLUSIVE AND IN LIEU OF ALL OTHER EXPRESS AND IMPLIED WARRANTIES, INCLUDING BUT NOT LIMITED TO THE IMPLIED WARRANTIES OF MERCHANTABILITY AND FITNESS FOR A PARTICULAR PURPOSE. THE FOREGOING WARRANTIES SHALL NOT EXTEND BEYOND THE DURATION EXPRESSLY PROVIDED HEREIN. Some states do not allow the exclusion or limitation of incidental or consequential damages or limitations on the duration of an implied warranty, so the above limitations or exclusions may not apply to You. This warranty gives You specific legal rights and You may also have other rights which vary from state to state.

This Limited Warranty is effective June 1, 2011 and replaces all undated warranties and warranties dated before June 1, 2011.

STA-RITE INDUSTRIES

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