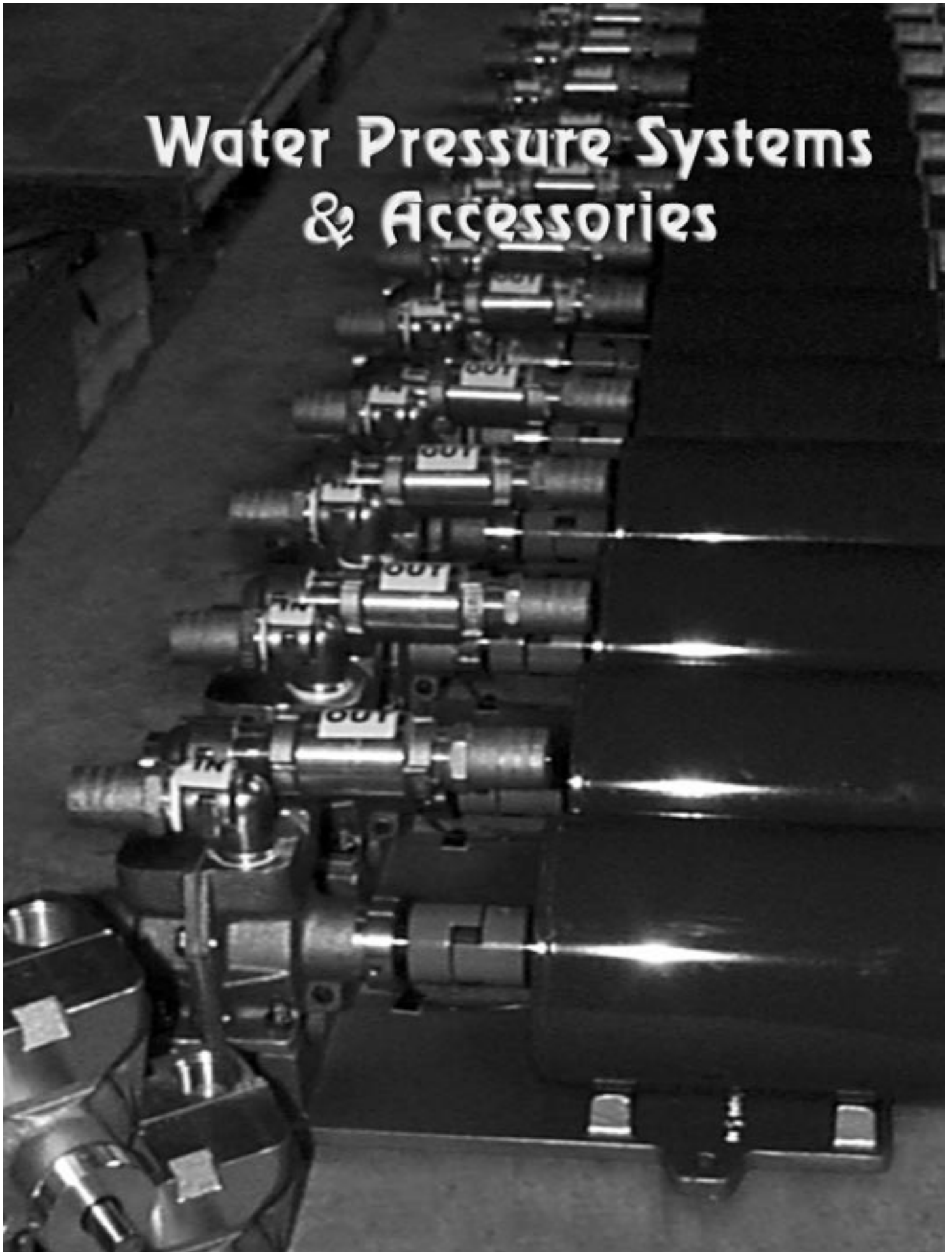


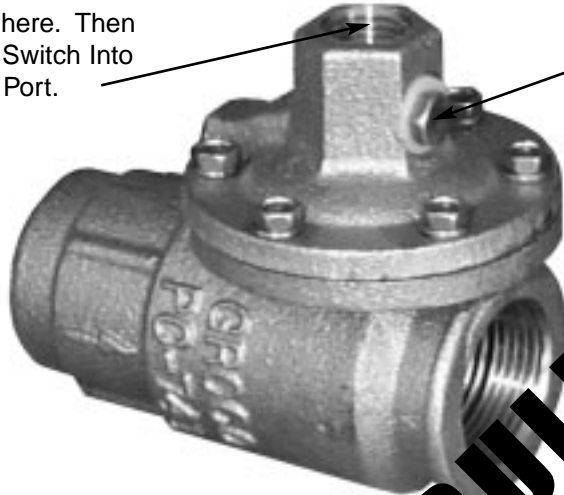
# Water Pressure Systems & Accessories





# Pressure Switch and Check Valve Installation for C-60 & 80, WSC-60 & 80, PJR and PSR

Fill with fresh water here. Then screw the Pressure Switch Into this 1/4" NPT Port.



After screwing in the pressure switch, loosen (but do not remove) this screw to bleed off excess air and/or water pressure.

Observe the Directional Flow Arrow. This side is the outlet side.

PC-741 Check Valve

**PC-741 Check Valve:** Our goal to manufacture the finest products available has led us through a series of design changes for pressure switches and check valves.

PC-741 Check Valve is standard equipment on C-60, C-80, WSC-60, WSC-80 manufactured after 1/1/00, PJR and PSR pumps manufactured after 3/00. It is a recommended upgrade for all previous manufactured pressure pumps. PC-741 is designed to address the most common problem encountered with pressure switches in the marine environment - the aggressive nature of the liquid being pumped. In salt water, switches are subject to corrosion and salt build-up in the pressure-sensing throat of the switch, causing abnormal operation or switch failure.

In fresh water, the throat of the switch is subject to the build-up of scaling and sediment from the supply tanks, causing similar symptoms.

PC-741 is threaded on both ends for 3/4" FNPT and accepts any pressure switch with a 1/4" MNPT threaded port. The design features the environmental isolation of the pressure switch from the water being pumped through the system, so throat clogging, salt or sediment build-up, and corrosion are averted.

**PC-741 Installation:** Remove the old PC-740, PC-750, or P-9021 check valve. Screw PC-741 into place with 1/4" FNPT port facing up. Remove the plastic plug and fill the reservoir completely with tap water. Apply TFE thread tape to the pressure switch threads and screw in tightly. Once the switch is tight and will not be moved again,

bleed excess water pressure from the reservoir (you pressurized the reservoir when you screwed in the switch). Proper operation of the pressure switch depends on the complete absence of air in the reservoir. If abnormal pump operation is experienced upon start-up, check the water level in the reservoir and repeat the bleeding process.

We recommend the use of a drop of Loc-Tite #243 Thread Locker on the threads of the bleed screw before tightening.

**Pressure Switches:** We have offered many different pressure switches for use with our pumps. Following is a listing of the switches and pertinent facts relating to each.

**Service Note:** If you are replacing the pressure switch for C-60, C-80, WSC-60 or WSC-80 we recommend that you also replace the check valve with PC-741.

Model	Special Feature	Pressure Range	Adjustable	Ignition Protected	Available
3515AM		Any	Yes	No	No
3515ARB	Lo PSI cut-off	Any	Yes	No	No
69-A		Any	Yes	No	Yes
69-WFC	Lo PSI cut-off	Any	Yes	No	Yes
IPS-A		30-50	Yes	Yes	No
IPS-B		20-40	Yes	Yes	No
IPS-38		18-38	No	No	Yes
IPS-383	IPS-38 w/relay	18-38	No	No	Yes
IPS-40		18-40	No	Yes	Yes
IPS-50		30-50	No	Yes	Yes

January 15, 2001

## *Service Bulletin*

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Products affected: Pumps that use PC-741 check valve (PSR, PJR, PJR-A, C-60, C-80, WSC-60, and WSC-80)

Identification of PC-741: "PC-741" is cast into the check valve body. The assembly includes a diaphragm between two flanges, secured by six (6) hex bolts.

Serial Numbers: Beginning 0300 (March, 2000) and ending 0101 (January, 2001)

Background: Proper pump and pressure switch operation is reliant upon the upper chamber of PC-741 (into which the pressure switch is fastened) maintaining its reservoir of water. Some PC-741 check valves are not maintaining their water reservoir, and must be replaced.

Corrective action: Regardless of whether your pump is operating properly or not, we recommend replacement of PC-741 with P-9021-A, which is available at no-charge through 12/31/01. (The pressure switch does not need replacement.)

If you have unsold inventory: Return inventory to GROCO via surface UPS for prompt re-work.

If you have pumps already installed: You may perform the rework if you choose. It takes only a few minutes to complete. Alternately you may return the pumps to us for prompt re-work.

How to obtain P-9021-A: Contact GROCO via phone or FAX. Provide us with:

- The pump model number
- The pump serial number
- The owner's name

We will ship a replacement P-9021-A check valve with installation instructions at no-charge to you (or to your customer) via surface UPS. The old parts should be discarded.

**GROCO®**

## Installation and Operation Instructions for P-9000 and P-9000-1 Rotary Pumps

010804

**The Concept:** P-9000 and P-9000-1 are twin chamber self-priming rotary pumps capable of exceptional combined pressure and flow.

Construction materials (stainless steel, bronze, Teflon and Delrin) make the suitable for pumping nearly any non-flammable and non-explosive fluid with low solids content.

P-9000 has Teflon impellers and is capable of developing pressure up to 60 PSI and flow up to 11 GPM. P-9000 will run dry periodically without damage. Maximum RPM is 1750.

P-9000-1 has Delrin impellers and is capable of pressure up to 100 PSI and flow up to 8 GPM. P-9000-1 may not be run dry. Maximum RPM is 1750.

**Installation:** Mount securely with four (4) 1/4" bolts and lockwashers. In direct-drive installations (as with GROCO PSR pumps) alignment of the pump shaft with the motor shaft is critical for smooth and quiet operation. Carefully shim the pump to obtain accurate alignment. Improper alignment will result in noisy pump performance, low GPM and pressure, and high amp draw. Premature wear of the driving coupling and pump bearings and seal may result.



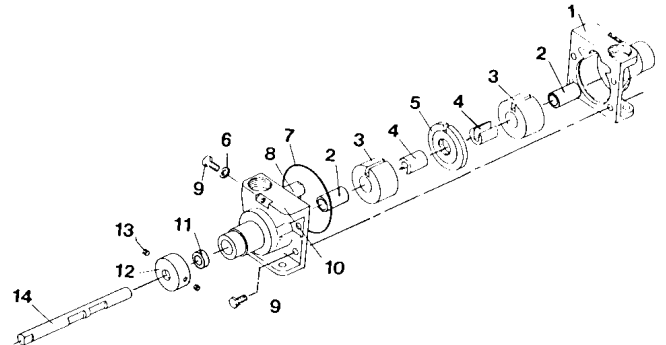
**Plumbing:** Inlet and outlet are threaded 3/4" NPT. The pump is reversible in rotation, so the inlet and outlet ports will be determined by motor rotation. If motor rotation is CCW facing the motor shaft, the pump port closest to the motor will be the inlet.

Your choice of fittings will affect pump performance. Full-flow fittings provide the least restriction and therefore the greatest GPM flow.

Use TFE thread tape on all threaded connections.

**Start-up:** On initial start-up only, pour a small amount of the liquid being pumped into the pump inlet. This will aid in initial prime.

**Maintenance:** Do not lubricate any part of the pump.



Master	Regular	Item	Description	Qty	P-9000	P-9000-1	
		1, 10	Pump Housing	1	P-9001/9002 set	P-9001/9002 set	
		2	Bearing Set	2	P-9009 set	P-9009 set	
•		3	Impeller Set	2	P-9014 set	P-9014-1 set	
		4	Eccentric Set	2	P-9004 set	P-9004-1 set	
		5	Separator	1	P-9006	P-9006	
•	•	6	Seal	2	P-9005 before 1/85	P-9005 before 1/85	
•	•				2-010 after 1/85	2-010 after 1/85	
•	•	7	O-Ring	1	2-041 before 12/85	2-041 before 12/85	
•	•				2-042 after 12/85	2-042 after 12/85	
		8	Impeller Guide	1	P-9007	P-9007	
		9	Bolt	4	1428X12HS	1428X12HS	
•	•	11	Shaft seal	1	P-9015	P-9015	
		12	End Cap	1	P-9020	P-9020	
		13	Set Screw	2	1032X316SSS	1032X316SSS	
		14, 4	Shaft/Eccentrics Set	1	P-9003/4 assy	P-9003/4-1 assy	
		NS	Lockwasher	4	14SS	14SS	
		Regular Service Kit				P-9000 Regular	P-9000-1 Regular
		Master Service Kit				P-9000 Master	P-9000-1 Master

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## Installation and Operation Instructions for PJR - Paragon Junior Water Pressure Systems

**The Concept:** Paragon pumps were designed for use aboard commercial vessels where performance and reliability are demanded.

Combined high pressure and flow, plus solid state dry-tank shutdown control has made PJR the choice of serious boaters world-wide.



Use only PST-1 pressure storage tank with PJR. The use of a larger tank will cause improper operation of the ETM dry-tank protection system.

The use of a foot or two of hose at the pump inlet and discharge will help to isolate vessel plumbing from pump pulsations.

**Installation:** The motor and circuitry are not waterproof. Install PJR in a dry well ventilated location not more than 6-feet above the water supply. If PJR will have a flooded inlet the pump may be oriented in any position; if PJR must self-prime orientation must be upright.

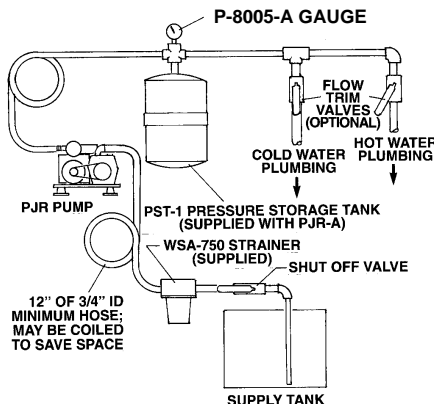
Mount PJR to a sturdy platform using the three (3) mount feet included. Operation is quietest when mounted to a solid surface.

If conserving water is a concern, install "flow trim" valves to enable you to adjust the flow. This will also aid in balancing hot and cold water mix in showers.

**Water Filters and Purifiers:** We do not recommend the use of filters as they will seriously restrict the flow and pressure you desire. If you choose to utilize such a filter, it must be installed after the PST. DO NOT install a filter between the supply tank and the pump.

**Electrical:** Proper wire size is essential. Refer to the wire size selection information included with this product. Connect positive power to the terminal block location marked (+); Connect ground (-) to the terminal block location marked (-). Protect PJR with a dedicated circuit breaker.

Voltage	Breaker
PJR 12V	30-A
PJR 24V	20-A



**Start-up:** In preparation for start-up, check all plumbing and electrical connections. Open all faucets and shower heads half-way. Apply power at the circuit breaker; the pump will run and should self-prime within a minute. As water flows smoothly from each shower head and faucet, shut it off. When all outlets have been shut off the pump will pressurize the system and shut off. Note that it will take several minutes to fill the PST and the water heater.

**Plumbing:** Before making plumbing connections pour water into the pump inlet to aid in initial priming.

PJR develops substantial pressure and suction; plumbing lines must be rigid pipe or heavily reinforced hose. The inlet to the pump must be 3/4" ID. Install WSA-750 pump strainer (3/4" NPT ports) in the inlet line between the supply tanks and the pump in a location that can be easily serviced. Note that an increasingly noisy pump may be caused by a WSA-750 that needs cleaning.

The discharge line between the pump and the PST (pressure storage tank) must be 3/4" ID; plumbing size may be reduced after the PST if desired.

Install P-8005 pressure gauge (1/4" NPT threaded connection) by the pressure storage tank, not by the pump.

**Dry Tank Shut-down:** In the event PJR loses its water supply, ETM (the black box behind the motor) will shut the pump motor off if it runs continuously for more than 6-minutes. This will occur only if you run out of water. If the pump is properly sized for the boat because even though you may be drawing water continuously, PJR will cycle (build up pressure and shut off). The timer is reset each time the pump cycles. To reset, shut off power at the breaker panel for one-minute. When you re-apply power the pump will run. Follow normal start-up procedure.

**Winterization:** Freezing will damage your pump and the connected plumbing. To winterize first allow PJR to pump the supply tank(s) dry. Shut off power when the faucets begin to pass air. Disconnect inlet and outlet hoses to drain the connecting plumbing, and pour an ounce or two of potable alcohol (your favorite scotch will do fine) into the pump. Reconnect the hoses to prevent evaporation. DO NOT use automotive antifreeze to winterize as it may be poisonous.

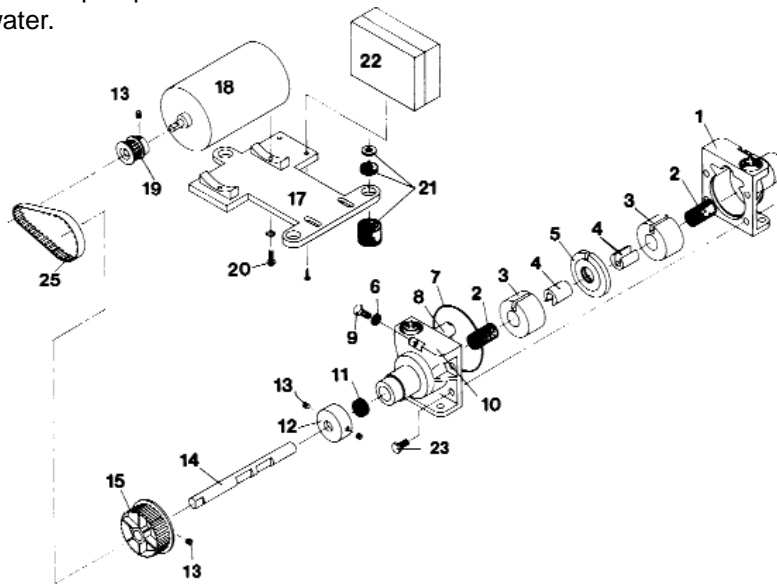
**Maintenance:** Check the WSA-750 inlet strainer at least monthly.

Check the air charge in the PST at least once per season. This is done with no system water pressure present. With a tire gauge check the air charge. It should be the same as the cut-on pressure of the pump. Add or remove air as needed before applying power to the pump and pressurizing the system with water.

DO NOT lubricate any internal part of the pump.

**Service Notes:**

- After 3/00, PC-741 check valve was used with IPS-40 and was located at the pump rather than being remotely mounted.
- PC-741 check valve was discontinued after 1/01 and was replaced by P-9021-A check valve.
- If you wish to utilize an adjustable pressure switch, #69-A may be ordered. Note that 69-A is not "Ignition Protected", nor is it CE recognized. The use of 69-A presents a spark hazzard and thus voids the UL listing. 69-A should not be considered for use on pumps installed aboard gasoline powered vessels.



Item	Part Number	Description	Qty	Item	Part Number	Description	Qty	
	1-14	P-9000	Pump Assembly	1	8	P-9007	Impeller Guide	1
	1,10	P-9001/9002 Set	Pump Castings set	1	9	1420X34HS	Bolt	2
	2	P-9009 Set	Carbon Bearings (2)	1	12	P-9020	End Cap	1
•	3	P-9014 Set	Impellers (2)	1	13	1032x316SS	Set Screw	2
	4,14	P-9003/4 Set	Shaft and Eccentrics Set	1	17	P-8004-A	Base	1
	5	P-9006	Separator	1	18	(Voltage)-F	Motor	1
•	NS	P-9006-A	Separator Washer Set (2)	1	20	1032X12HS	Bolt	2
••	6	P-9005	Seals (2) (before 1/85)	1	21	P-9022-A	Mount Foot Set (3)	1
••		2-010	O-Ring (2) (after 1/85)	1	22	ETM (Voltage)	Electronic Dry Tank Module	1
••	7	2-041	O-Ring (before 1/86)	1	23	1428X12HS	Bolt	4
••		2-042	O-Ring (after 1/86)	1	NS	P-9021-A	Check valve	1
					NS	IPS-40	Pressure Switch, UL & CE	1
••	11	P-9015	Seal	1		69-A	Adjustable Pressure switch (not UL & CE)	1
•	15	P-8002	Pulley for pump	1				
•	19	P-8001	Pulley for motor	1	NS	P-8005-A	Pressure Gauge	1
•	25	P-8003	Belt	1		P-8005-B	Pressure Gauge (oil filled)	
••	NS	WSA-751	WSA Filter Basket	1				
••	NS	WSA-752	WSA Strainer Gasket	1				
•		PJR Regular	Service Kit					
•		PJR Master	Service Kit					

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## Installation and Operation Instructions for PSR - Paragon Senior Water Pressure Systems

**The Concept:** Paragon pumps were designed for use aboard commercial vessels where performance and reliability are demanded.

Combined high pressure and flow, plus solid state dry-tank shutdown control has made PSR the choice of serious boaters world-wide.



Select GROCO PST-2, PST-3, PST-4 or PST-5 for use with PSR (PST-1 does not have enough capacity).

Use of a foot or two of hose at the pump inlet and discharge to help isolate vessel plumbing from pump pulsations.

**Installation:** The motor and circuitry are not waterproof. Install PSR in a dry well ventilated location not more than 10-feet above the water supply. If PSR will have a flooded inlet the pump may be oriented in any position; if PSR must self-prime orientation must be upright.

Mount PSR to a sturdy platform using the four (4) mount feet included. Operation will be quieter if mounted to a solid surface.

If conserving water is a concern, install "flow trim" valves to enable you to adjust the flow. This will also aid in balancing hot and cold water mix in showers.

**Water Filters and Purifiers:** We do not recommend the use of filters as they will seriously restrict the flow and pressure you desire. If you choose to utilize such a filter, it must be installed after the PST. DO NOT install a filter between the supply tank and the pump.

**Electrical:** Proper wire size is essential. Refer to the wire size selection information included with this product. For DC models connect positive (+) to the solenoid terminal with the red tag (remove the tag). Connect ground (-) to the bronze stud directly beneath the solenoid. Protect PSR with a dedicated circuit breaker.

Voltage	Breaker
PSR 12V	50-A
PSR 24V	30-A
PSR 32V	20-A
PSR 115VAC	10-A
PSR 230VAC	5-A

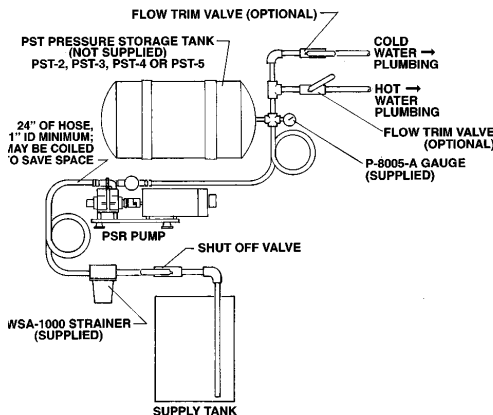
**Start-up:** In preparation for start-up, check all plumbing and electrical connections.

Open all faucets and shower heads half-way. Apply power at the circuit breaker; the pump will run and should self-prime within a minute.

As water flows smoothly from each shower head and faucet, shut it off. When all outlets have been shut off the pump will pressurize the system and shut off. Note that it will take several minutes to fill the PST(s) and the water heater(s).

**Dry Tank Shut-down:** In the event PSR loses its water supply, a thermal switch located in the pump casting will shut the pump motor off. Check and fill the supply tanks before resetting the control.

To reset, shut off power at the breaker panel for one-minute. When you apply power the pump will run. Follow normal start-up procedure.



**Plumbing:** Before making plumbing connections pour water into the pump inlet to aid in initial priming.

PSR develops substantial pressure and suction; plumbing lines must be rigid pipe or heavily reinforced hose. The inlet to the pump must be 1" ID. Install WSA-1000 (1" NPT ports) pump strainer in the inlet line between the supply tanks and the pump in a location that can be easily serviced. Note that an increasingly noisy pump may be caused by a WSA-1000 that needs cleaning.

The discharge line between the pump and the PST (pressure storage tank) must be 1" ID; plumbing size may be reduced after the PST if desired.

Install P-8005 pressure gauge (1/4" NPT threaded connection) by the pressure storage tank, not by the pump.

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**Winterization:** Freezing will damage your pump and the connected plumbing. To winterize first allow PSR to pump the supply tank(s) dry. Shut off power when the faucets begin to pass air. Disconnect inlet and outlet hoses to drain the connecting plumbing, and pour an ounce or two of potable alcohol (your favorite scotch will do fine) into the pump. Reconnect the hoses to prevent evaporation. DO NOT use automotive antifreeze to winterize as it may be poisonous.

**Maintenance:** Check the WSA-1000 inlet strainer at least monthly.

Check the air charge in the PST at least once per season. This is done with no system water pressure present. With a tire gauge check the air charge. It should be the same as the cut-on pressure of the pump. Add or remove air as needed before pressurizing the system.

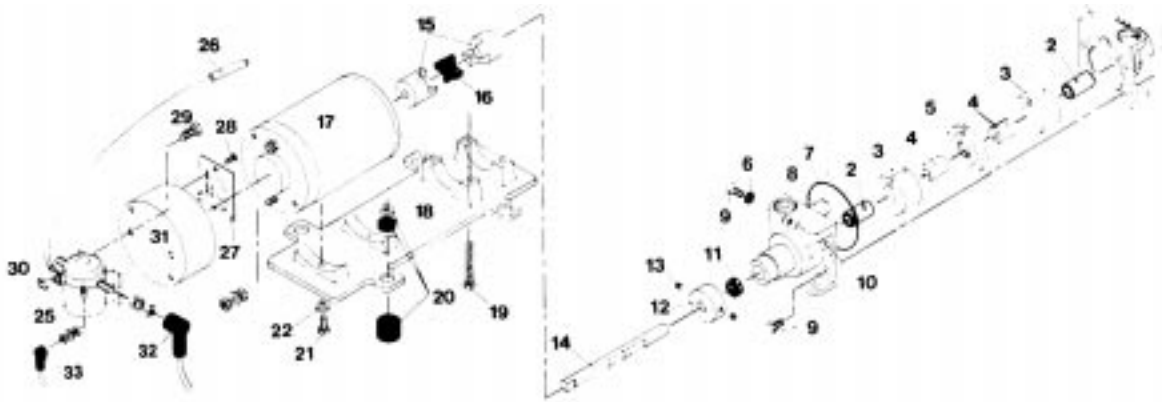
DO NOT lubricate any part of the pump.

**Service Note:** PSR pumps manufactured after 1/1/88 use the "J" series motor (4-5/8" diameter) which replaces the "G" series motor (4" diameter). All replacement motors are "J" series, so if you are replacing a "G" motor with a "J" motor, P-7004-D base must also be ordered.

- Between 3/00 and 12/00 PC-741 check valve was used with IPS-50 pressure switch and is located at the pump rather than being remotely mounted.

- After 1/01 P-9021-A check valve is used.

- If you wish to utilize an adjustable pressure switch, #69-A may be ordered. Note that 69-A is not "Ignition Protected", nor is it CE recognized. The use of 69-A presents a spark hazard and thus voids the UL listing. 69-A should not be considered for use on pumps installed aboard gasoline powered vessels.



Item	Part Number	Description	Qty	Item	Part Number	Description	Qty
1,10	P-9001/9002 Set	Pump Castings set	1	25-31	P-6001-A (Voltage)	Control Assy (before 1/88)	1
2	P-9009 Set	Carbon Bearings (2)	1	25-31	P-6001-B (Voltage)	Control Assy (after 1/88)	1
• 3	P-9014 Set	Impellers (2)	1	25	P-6003 (Voltage)	Solenoid	1
4,14	P-9003/4 Set	Shaft and Eccentrics Set	1	26	P-6002	Thermal Switch	1
5	P-9006	Separator	1	27	P-6002 (Voltage)	Control PCB & Probe (before 3/00)	1
• 6	P-9005	Seals (2) (before 1/85)	1		012-0022-02	Control PCB (after 3/00)	1
• 2-010		O-Ring (2) (after 1/85)	1	31	J End Cap	Motor End Cap	1
• 7	2-041	O-Ring (before 1/86)	1	32	P-6010	Solenoid Boot, large	2
• 2-042		O-Ring (after 1/86)	1	33	P-6011	Solenoid Boot, small	2
8	P-9007	Impeller Guide	1	NS	P-9021-A	Check valve	1
9	1420X34HS	Bolts	2	NS	IPS-50	Pressure Switch, UL & CE	1
• 11	P-9015	Seal	1	69-A		Adjustable Pressure switch (not UL & CE)	1
12	P-9020	End Cap	1	NS	P-8005-A	Pressure Gauge	1
13	1032x316SS	Set Screw	2	P-8005-B		Pressure Gauge (oil filled)	
15	P-7005	Coupling	1				
• 16	P-7006	Coupling Spyder	1				
17	(Voltage)-J	Motor	1				
18	P-7004-D	Base	1				
19	1420X2HS	Bolts	4				
20	P-9022-B	Mount Foot Set (4)	1				
• NS	WSA-1001	WSA Filter Basket	1				
• NS	WSA-1002	WSA Strainer Gasket	1				
•	PSR Regular	Service Kit					
•	PSR Master	Service Kit					

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## Installation and Operating Instructions for PST Series Pressure Storage Tanks



PST-1 or PST-2

	PST-1	PST-2
Diameter	8.0"	11.0"
Length	12.63"	14.0"
Inlet Plumbing	3/4" MNPT	3/4" MNPT
Total Volume(gal)	2.0	4.4
Approx Drawdown (gal)	1.0	2.5
Max Working Pressure	100 PSI	100 PSI

Install PST-1 or PST-2 in any position (horizontal or vertical) anywhere in the cold water plumbing between the pump and the outlets.

Many pressure pumps produce pulsations, so we recommend that as much distance as possible be provided between the pump and the PST tank to help isolate the tank from pump pulsations. If space limitations leave you no choice but to install the PST next to the pump, additional distance can be "created" with coiled hose.

For the same reason, system pressure switches and gauges should be located at the PST, not at the pump.

Use the enclosed mount strap to secure the PST to a suitably sturdy platform. Leave room above the PST for check and adjustment of the air charge, which should be set at or just below the pressure pump cut-on pressure. Check and adjust at least yearly.

Install PST-3, PST-4, or PST-5 in a vertical position anywhere in the cold water plumbing between the pump and the outlets. Three angle brackets are supplied to fasten the tank stand to the selected mounting platform. Drill six (6) 17/64" holes in the tank stand and thru-bolt the brackets. Then fasten the tank and brackets to the floor.

Many pressure pumps produce pulsations, so we recommend that as much distance as possible be provided between the pump and the PST tank to help isolate the tank from pump pulsations. If space limitations leave you no choice but to install the PST next to the pump, additional distance can be "created" with coiled hose.

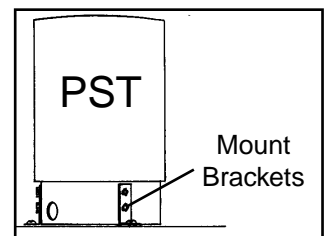
For the same reason, system pressure switches and gauges should be located at the PST, not at the pump.

Leave room above the PST for check and adjustment of the air charge, which should be set at or just below the pressure pump cut-on pressure. Check and adjust the tank air charge (with no system pressure present) at least yearly. Air charge should be at or just below pump cut-on pressure.



PST-3, PST-4 or PST-5

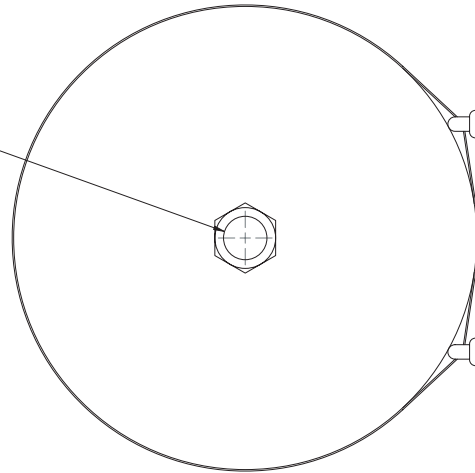
	PST-3	PST-4	PST-5
Diameter	15.38"	15.38"	15.38"
Length	19.25"	24"	31.63"
Inlet Plumbing	1" MNPT	1" MNPT	1" MNPT
Total Volume(gal)	10.3	14	20
Approx Drawdown (gal)	5.5	7	10
Max Working Pressure	100 PSI	100 PSI	100 PSI



WITH NO WATER PRESSURE PRESENT  
CHECK AND ADJUST TANK AIR CHARGE  
TO BE EQUAL TO THE CUT-ON PRESSURE  
OF THE PUMP

TANK MAY BE ORIENTED IN ANY POSITION

3/4" NPT PIPE CONNECTION



4.0 FOR PST-1  
4.625 FOR PST-2

IN EACH MOUNT FOOT USE TWO  
#10 FLAT HEAD STAINLESS STEEL  
WOOD SCREWS OR MACHINE SCREWS

6.0 FOR PST-1  
8.0 FOR PST-2

TOLERANCES (EXCEPT AS NOTED)	GROSS Mechanical Laboratories, Inc.	
DECIMAL	SCALE	APPROVED BY
FRACTIONAL	D	⊕
ANGULAR	PST-1 AND PST-2 INSTALLATION	
DATE	010321	

## Installation and Operation Instructions for WSC-60 and WSC-80 Water Pressure Systems

**Installation:** The pump motor is not waterproof, so installation must be in a dry location, not more than 10-feet away from or 2-feet higher than the water supply.



PST-1 pressure storage tank may be located anywhere in the cold water plumbing after the pump. Installation of PST may be in any position that allows for air charge adjustment.

**Plumbing:** Plumbing should be 3/4" ID reinforced hose between the supply tanks and the pump, and between the pump and the PST-1 pressure storage tank. After PST-1 hose size may be reduced to as small as 3/8" if desired.

The pump inlet is threaded for garden hose connection outside and 1/2" NPT inside. The check valve outlet is threaded for 3/4" FNPT.

**Electrical:** Proper wire size is essential for proper system operation. Refer to the wire size selection chart packaged with this product. Connect (+) power and (-) ground as indicated by the label adjacent to the terminal block. Use ring terminals for electrical connections.



**Water Filters:** The use of a coarse 40-mesh water strainer (GROCO WSA-750) to filter supply tank debris is permissible. Installation should be as near the supply tanks as possible and in a serviceable location.

We do not recommend the use of water filters or water purifiers to improve water taste. Such

filters impose considerable restriction to the pump's ability to provide the pressurized flow you desire. If however you choose to use a filter, it must be located after PST-1.

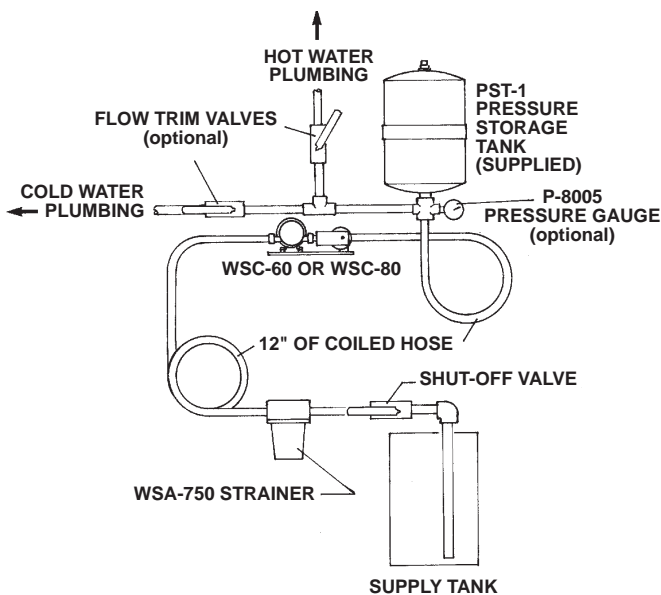
**System Start-up:** Double-check all plumbing connections for tightness; an air leak will prevent pump priming and normal operation.

To help with initial pump priming pour a small amount of water into the pump inlet before applying power for the first time. Open all faucets and shower head half-way and apply power at the breaker panel. The pump should prime itself and begin delivering water. As a smooth flow comes from each faucet, shut it off. When the shower head and all faucets are closed, WSC will build pressure and shut off. This may take several minutes if the boat is equipped with a water heater.

If the pump primes and pumps smoothly but will not shut off, check for water leaks on the pressure side, and verify that proper wire size has been used.

**Dry Tank Shut-down:** WSC water pressure systems are equipped with GROCO's exclusive ETM timer. ETM will interrupt power to the pump motor if it runs non-stop for 6-minutes. A pump properly sized for the boat will "cycle" by building up pressure and shutting off, even if you are drawing water continuously. For example, WSC-80 will deliver up to 7 GPM to the system, so its output will exceed the 2 to 4 GPM normally drawn from a shower head or single faucet. WSC will build up pressure and shut off before ETM times out, which resets the timer.

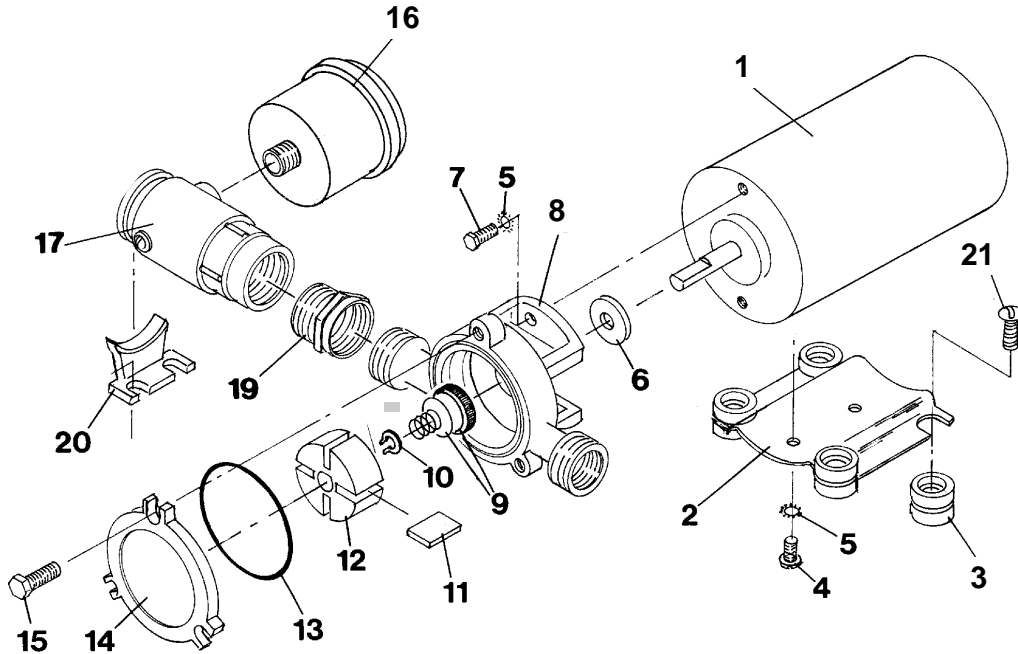
If ETM ever times out, after filling the supply tanks, interrupt power at the breaker panel for 1-minute. When the power is turned back on the pump will run. Follow normal start-up procedure.



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## Parts and Assembly for WSC-60 and WSC-80

**Winterization:** Freezing will damage the pump and check valve. Winterize the system by allowing the pump to empty the supply tanks. Disconnect the hoses at the inlet and the outlet side of the pump and loosen the pump cover screws to drain the water.



	Item	Description	Qty	WSC-60	WSC-80
	1	Motor	1	(Voltage)-F	(Voltage)-F-RAE
	2	Base	1	B-200	B-200
	3	Grommets	4	B-200-G	B-200-G
	4	Screw	2	832X38PS	832X38PS
	5	Lockwasher	4	10ETS	10ETS
	6	Slinger	1	SP-95	SP-95
	7	Screw	2	1032X12HS	1032X12HS
	8	Pump Housing	1	SP-49-B	SP-49-B
•	9	Seal Assy	1	69089	69089
•	10	Snap Ring	1	Snap Ring-1	Snap Ring-1
••	11	Blades Set	8	SP-98	SP-98
•	12	Rotor	1	SP-99-A	SP-99-A
•	13	O-Ring	1	2-034	2-034
	14	Cover	1	SP-91	SP-91
	15	Screw	3	1024X12HB	1024X12HB
	16	Pressure Switch	1	IPS-40	IPS-40
	17	Check Valve	1	P-9021-A	P-9021-A
	19	Reducer	1	34X12 Nipple	34X12 Nipple
	20	Bracket	1	C-59	C-59
	NS	Dry Tank Timer	1	ETM (Voltage)	ETM (Voltage)
•		Service Kit	1	P-5	P-5
• + ••		Master Service Kit	1	P-10 Master	P-10 Master

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# Installation Instructions for P-6001-A Paragon Senior Control Assembly

**Installation Instructions:** In that there are many possible installation variations for installing a new control PCB and/or Thermal Switch on a PSR pump, we have endeavored to show only the finished installation.

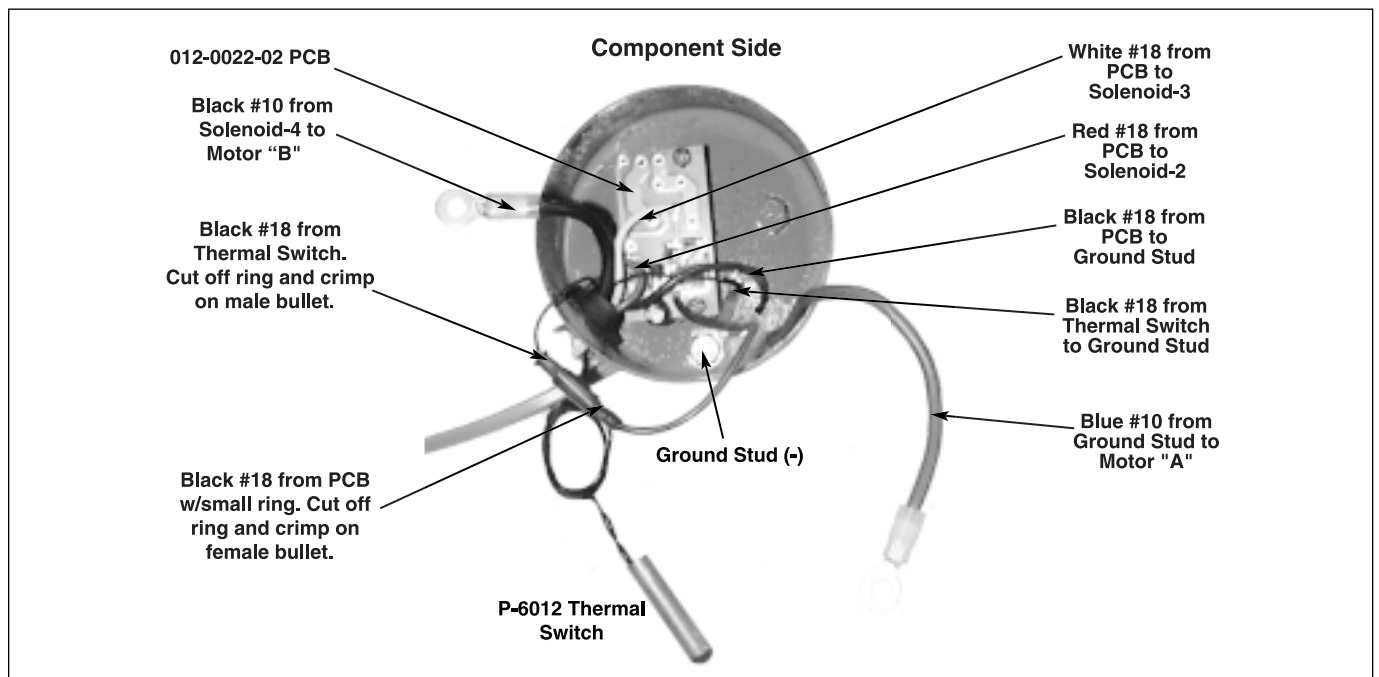
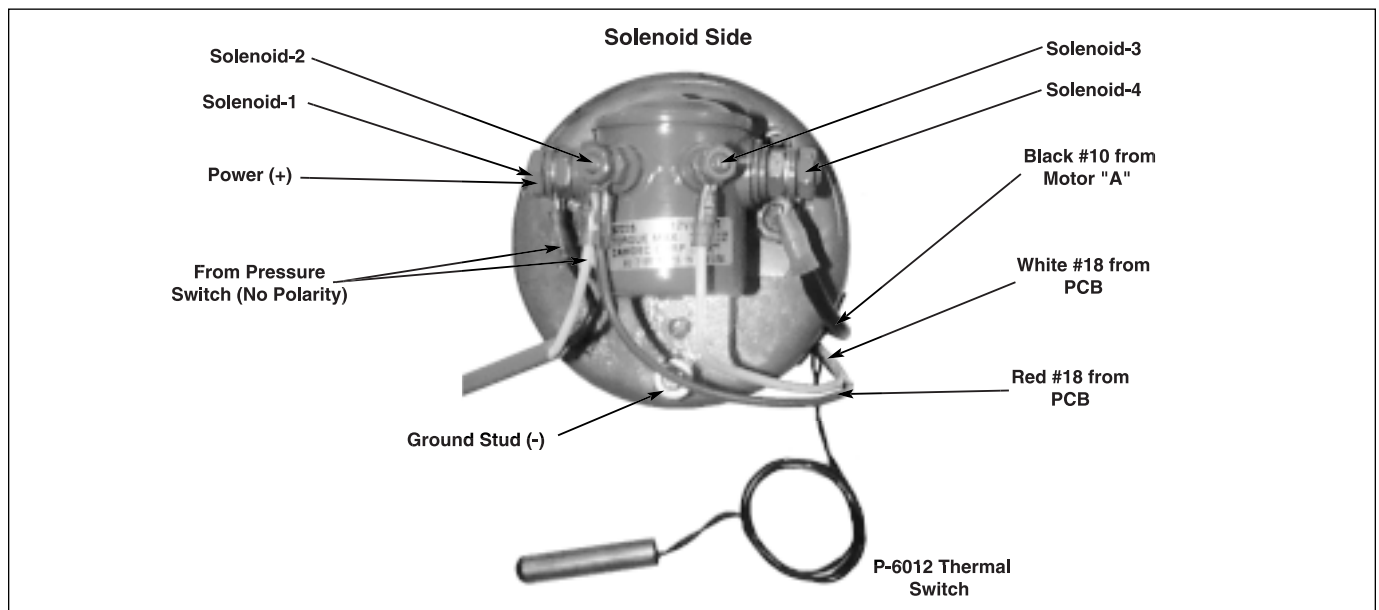
Regardless of the vintage pump you are working with, the schematic on Page-2 applies.

**Important Note:** P-6002 (PCB with Thermal Switch) is no longer available; it is replaced by 012-0022-02 PCB, and P-6012 Thermal Switch, sold separately. 012-0022-02 is supplied with ring terminals for use with

pumps manufactured after 3/00. Mounting and function are the same, but note that 012-0022-02 and P-6012 Thermal Switch are both connected to the ground stud.

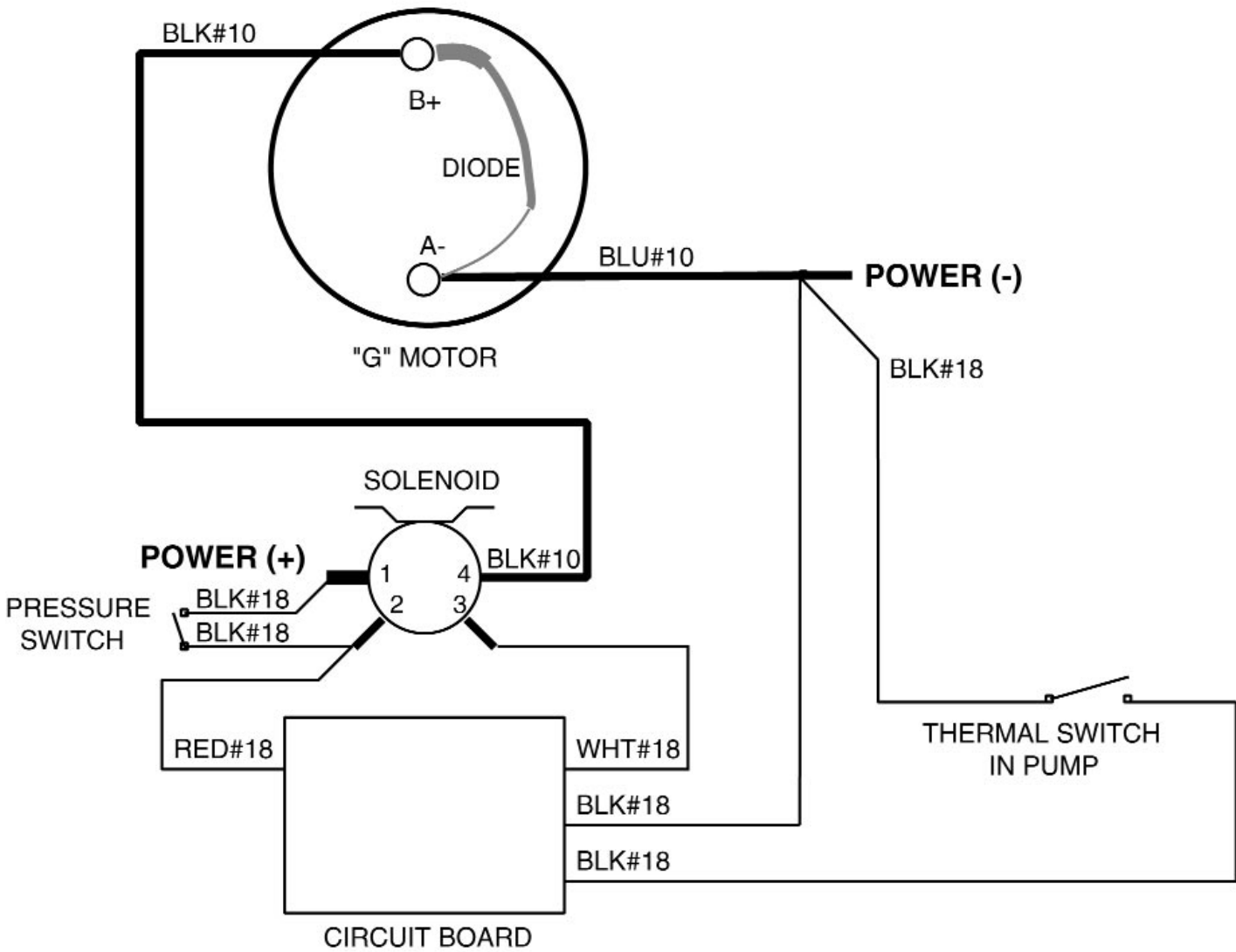
If in your installation you wish to utilize the old Thermal Switch, you must cut the ring terminals off the new PCB and crimp on bullet terminals as instructed and pictured below.

Ensure that the ground stud is properly assembled. The two isolation washers must prevent electrical contact between any connected wire and the metal motor cap.



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# Wiring Schematic for P-6001-A Paragon Senior Control Assembly



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# Installation Instructions for P-6001-B Paragon Senior Control Assembly

**Installation Instructions:** In that there are many possible installation variations for installing a new control PCB and/or Thermal Switch on a PSR pump, we have endeavored to show only the finished installation.

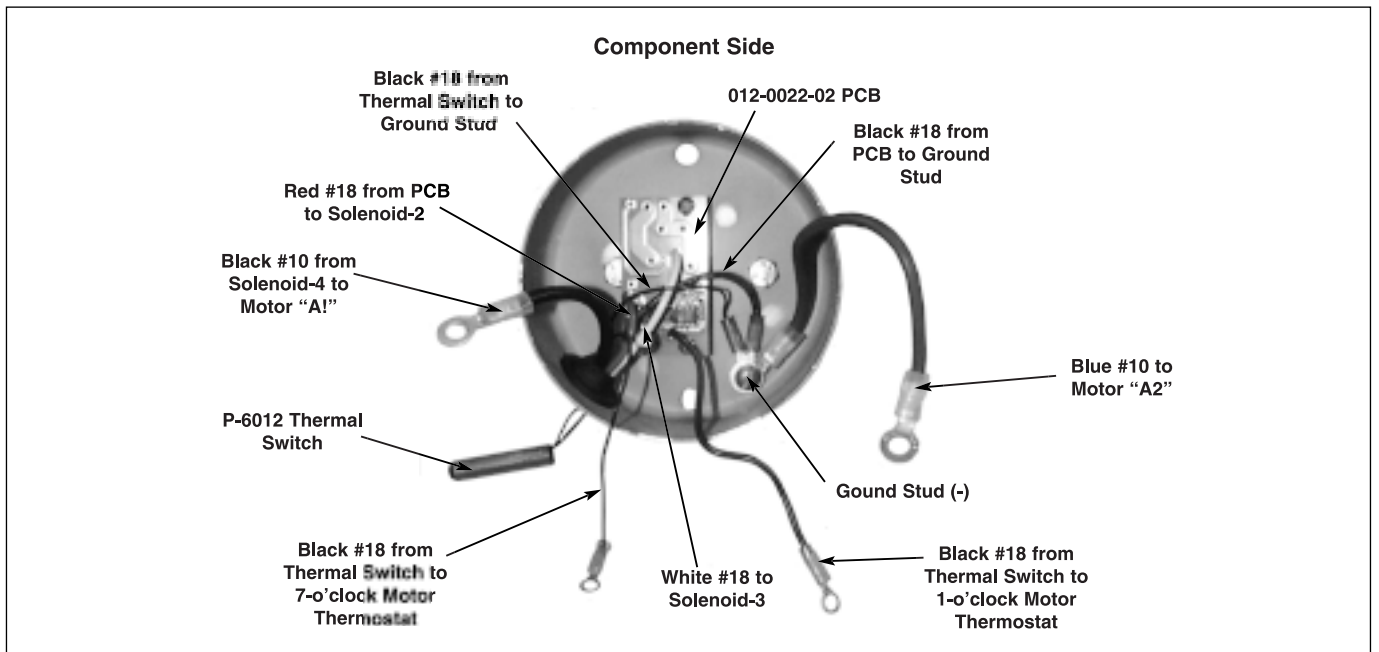
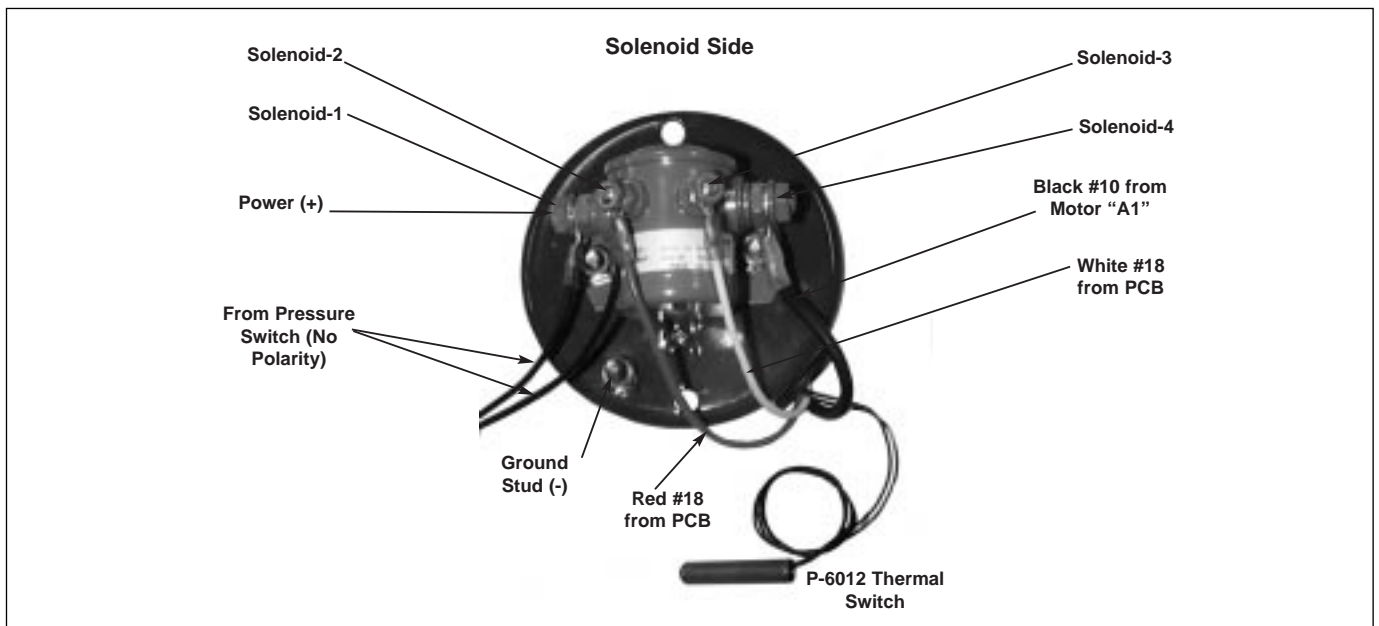
Regardless of the vintage pump you are working with, the schematic on Page-2 applies.

**Important Note:** P-6002 (PCB with Thermal Switch) is no longer available; it is replaced by 012-0022-02 PCB, and P-6012 Thermal Switch, sold separately. 012-0022-02 is supplied with ring terminals for use with

pumps manufactured after 3/00. Mounting and function are the same, but note that 012-0022-02 and P-6012 Thermal Switch are both connected to the ground stud.

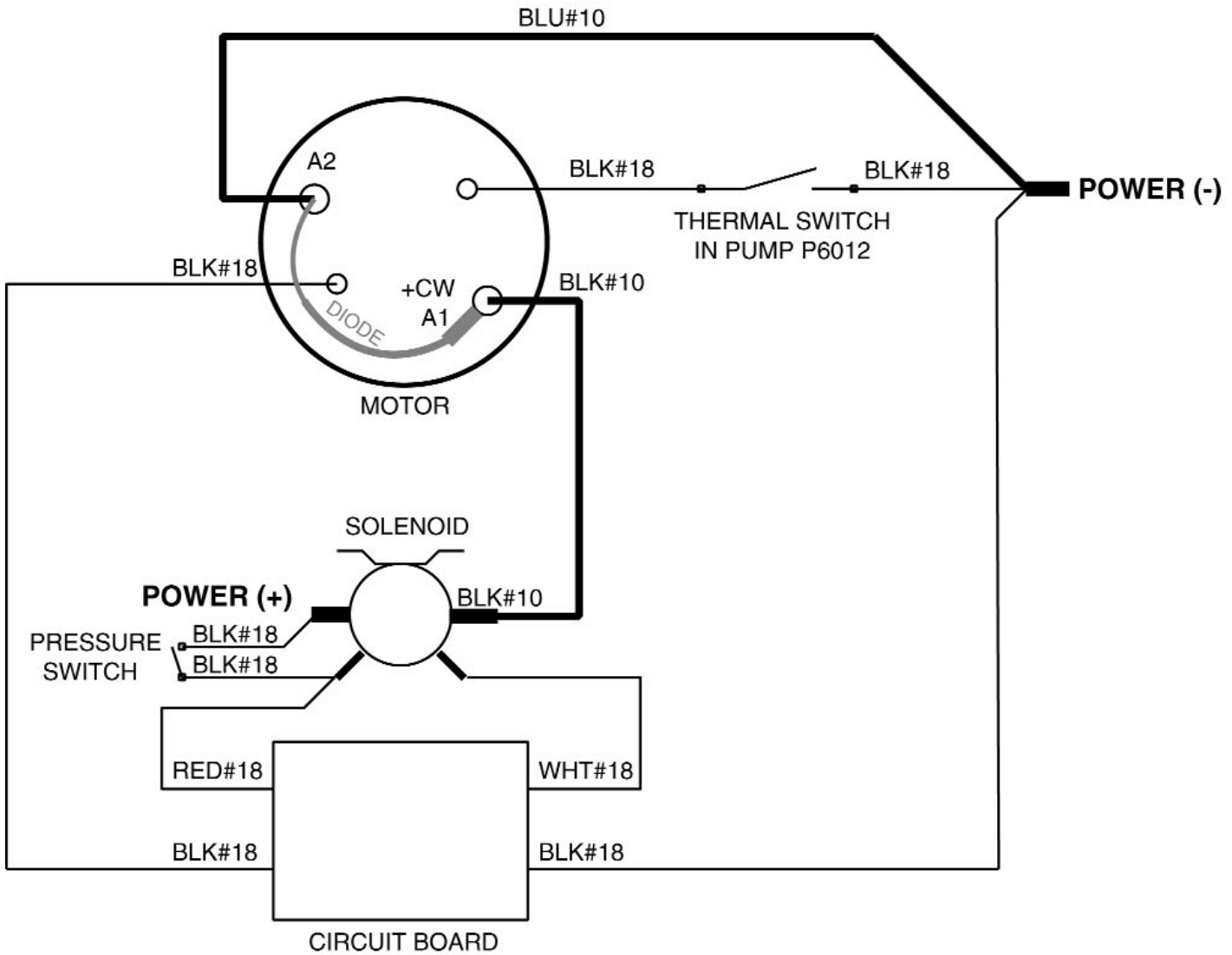
If in your installation you wish to utilize the old Thermal Switch, you must cut the ring terminals off the new PCB and crimp on bullet terminals as instructed and pictured below.

Ensure that the ground stud is properly assembled. The two isolation washers must prevent electrical contact between any connected wire and the metal motor cap.



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# Wiring Schematic for P-6001-B Paragon Senior Control Assembly



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## Installation Instructions for ETM Timer for Paragon Junior Pumps

**The Concept:** ETM is designed for use as dry-tank protection for pressure pumps, and is standard equipment on GROCO Paragon Junior (models PJR, PJR-A, and 401-0004) and WSC-60 and WSC-80 water pressure systems. ETM will stop the connected motor if it runs non-stop for more than 6-minutes (previously 5-minutes).

If the pump is properly matched to vessel size and water usage habits, it will "cycle" by building up system pressure and shutting off, even if you are drawing water continuously. For example, Paragon Junior delivers up to 7 GPM to the system, so its output will exceed the 2 to 4 GPM that is normally drawn from a single faucet or shower. PJR will build pressure and shut off before the timer "times out". The timer is reset each time the pump reaches pressure and shuts off.

**Installation:** ETM is supplied with (3) ring terminals and (1) bullet terminal. Several combinations of pressure switch, terminal block and ETM have been manufactured since 1982. Identify the schematic that matches your components, and replace ring terminals with bullet terminals (supplied) as needed. Paragon Junior wiring schematics are shown below. Refer to the reverse side for WSC series wiring schematics.

**Nuisance ETM Shut-downs** are caused by:

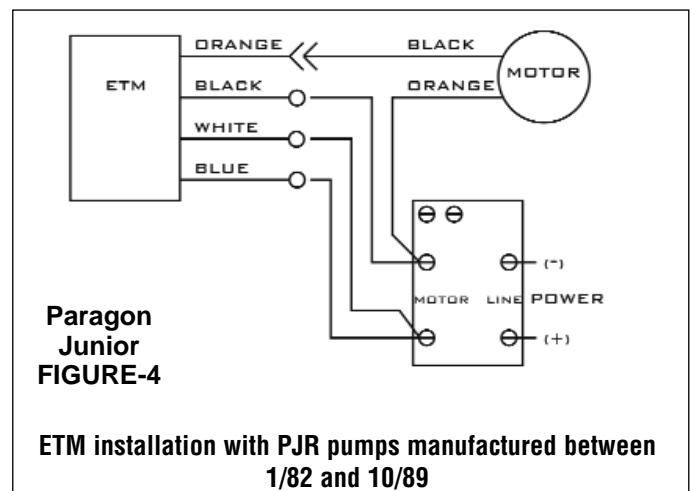
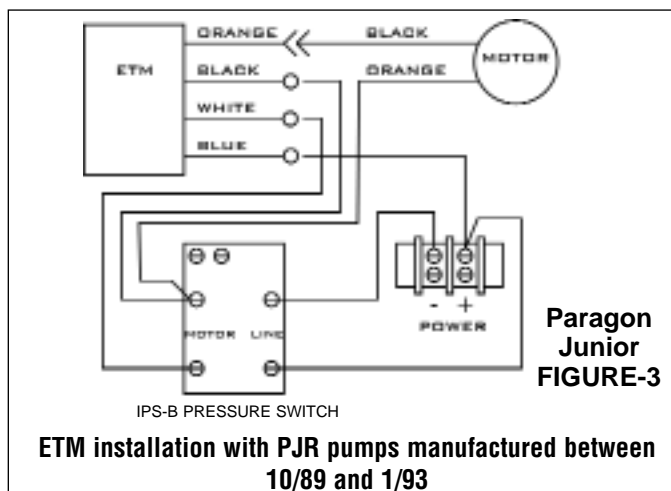
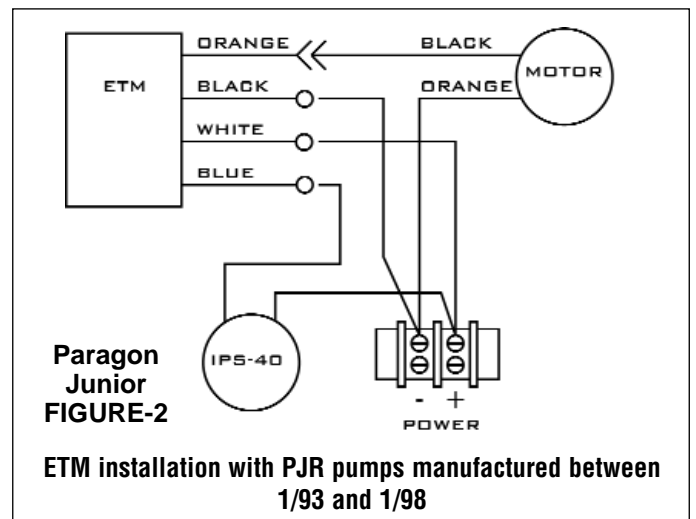
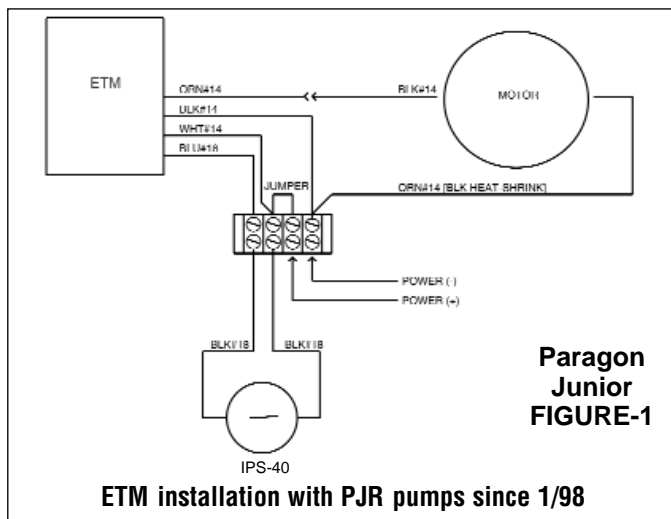
- Pump capacity being too low in relation to the boat size and/or normal water demand.
- Pressure storage tank size is too large in relation to pump capacity; the pump runs more than 6-minutes during pressure build-up. Use only GROCO PST-1 when ETM is installed.

**Operation:** If ETM shuts off the pump, first check and fill water supply tank(s) if necessary. To reset ETM interrupt power by turning the circuit breaker off for 1-minute. The pump will run when the breaker is switched back on.

**Service Note:** IPS-40 pressure switch must not be used with a 3-wire ETM. If you have a 3-wire ETM and want to replace the pressure switch with IPS-40 you must also replace ETM.

Alternately 69-A pressure switch (not "Ignition Protected") may be used with 3-wire ETM.

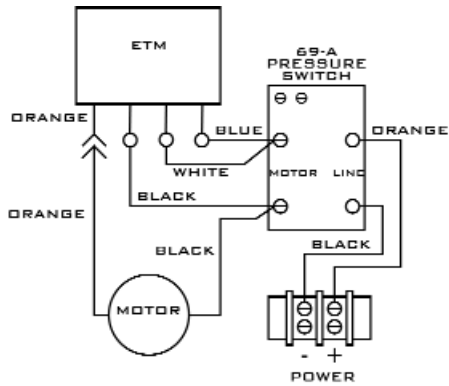
**Note:** There are no user serviceable parts inside. Do not break the seal or open the enclosure.



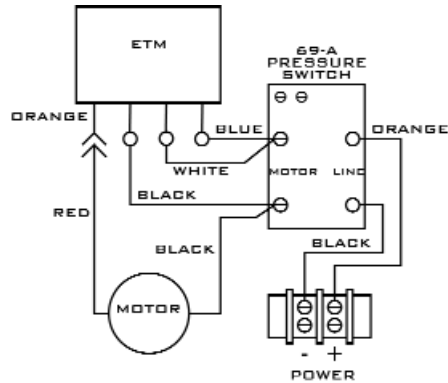
# Installation Instructions for ETM Timer for WSC-60 and WSC-80 Water Pressure Systems

**Note:** ETM replaces ETM-A on WSC-60 and WSC-80 systems manufactured after 3/00. Refer to the instructions on the reverse side for operating instructions.

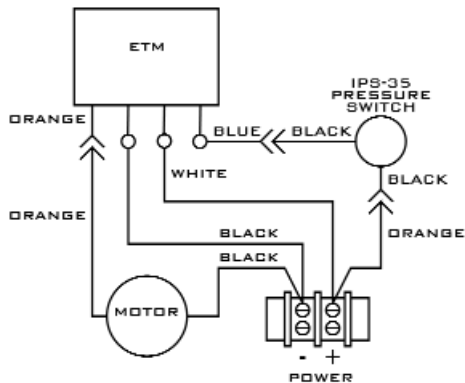
**Service Note:** IPS-40 pressure switch must not be used with a 3-wire ETM. If you have a 3-wire ETM and want to replace the pressure switch with IPS-40 you must also replace ETM. Alternately, 69-A pressure switch (not "Ignition Protected") may be used with 3-wire ETM.



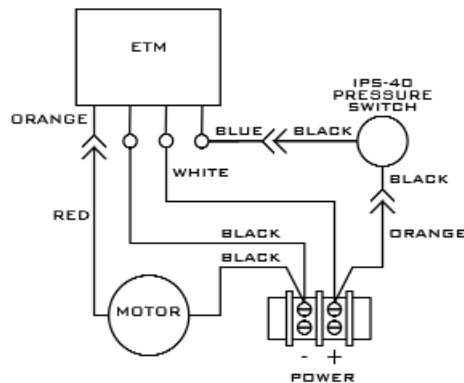
**ETM Installation with WSC-60  
manufactured between 1/89 and 9/92**



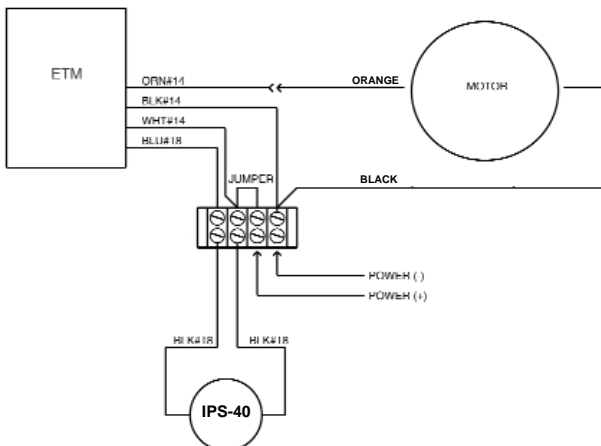
**ETM Installation with WSC-80  
manufactured between 1/89 and 9/92**



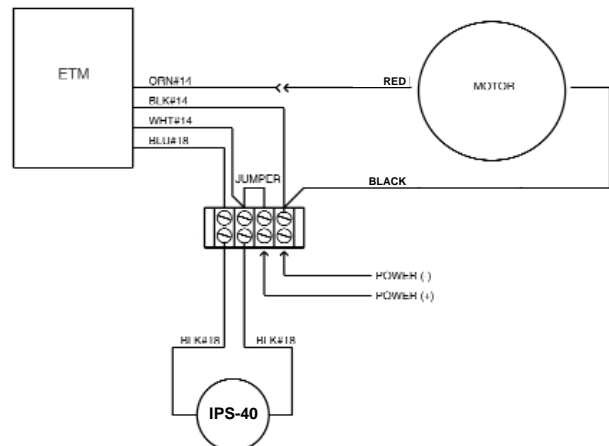
**ETM Installation with WSC-60  
manufactured between 9/92 and 3/00**



**ETM Installation with WSC-80  
manufactured between 9/92 and 3/00**



**ETM Installation with WSC-60  
manufactured after 3/00**



**ETM Installation with WSC-80  
manufactured after 3/00**

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