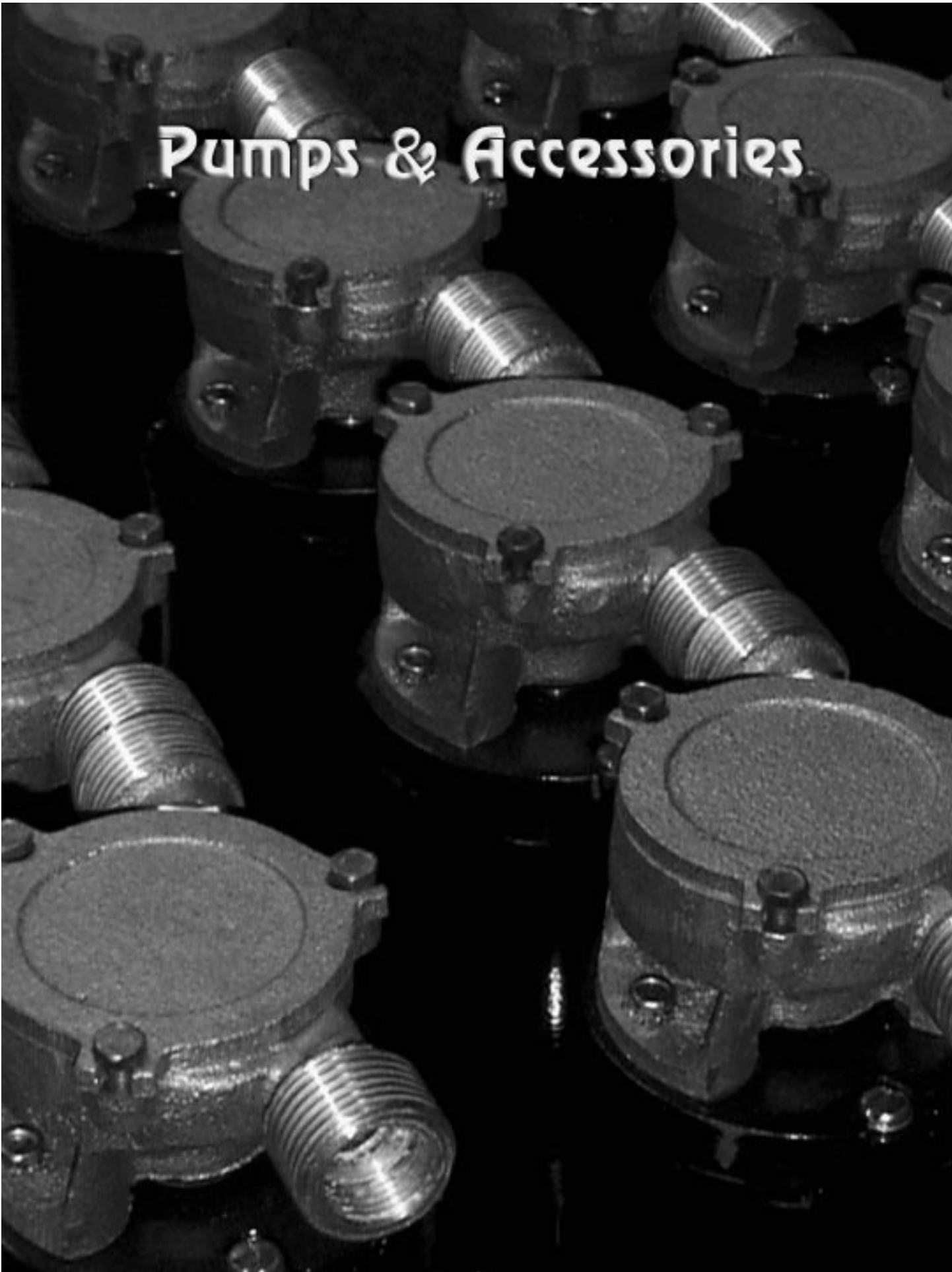


Pumps & Accessories



SPO-60 and SPO-80 Series Vane Pumps Installation, Operation, and Maintenance



Non-reversing SPO-60-N or SPO-80-N



Reversing SPO-60-R or SPO-80-R

Before you install: Vane Pumps are too efficient to pump viscous fluids like engine oil through the engine dip-stick tube. If this is your intended application a permanent installation is required with connections to the oil pan drain plug. The minimum hose ID for oil change applications is 5/8".

Installation: Install your vane pump in a dry location. The motor is not waterproof - motor damage caused by water exposure is not covered by the product warranty.

GROCO Vane Pumps will self-prime to 24" when dry (about 36" when wet). Fasten the pump to a suitably sturdy platform with stainless steel fasteners through the mount base grommets. The pump may be installed in any orientation.

If the distance between the pump and the liquid source exceeds 24" use optional GROCO P-9021 check valve.

Minimum plumbing for pumping water is 1/2" ID.

Minimum plumbing for pumping oil is 5/8" ID.

Electrical Requirements: Adequate wire size is essential for proper pump operation. Refer to the wire size selection chart enclosed.

GROCO Vane Pump motors are reversible. The direction of motor rotation is determined by positive and negative power connections. For clockwise motor rotation (facing pump cover) connect positive (+) power to the orange motor lead and negative (-) to the black motor lead.

Model	Voltage	Breaker (For Water or Oil)
SPO-60	12V	30
SPO-60	24V	20
SPO-80	12V	30
SPO-80	24V	20
SPO-80	32V	10

Warning: Do not pump flammable fluids with this pump.

Operation: With reversing models "on" and "off" control is accomplished at the toggle switch on the reversing control assembly. The switch position indicates the direction of flow.

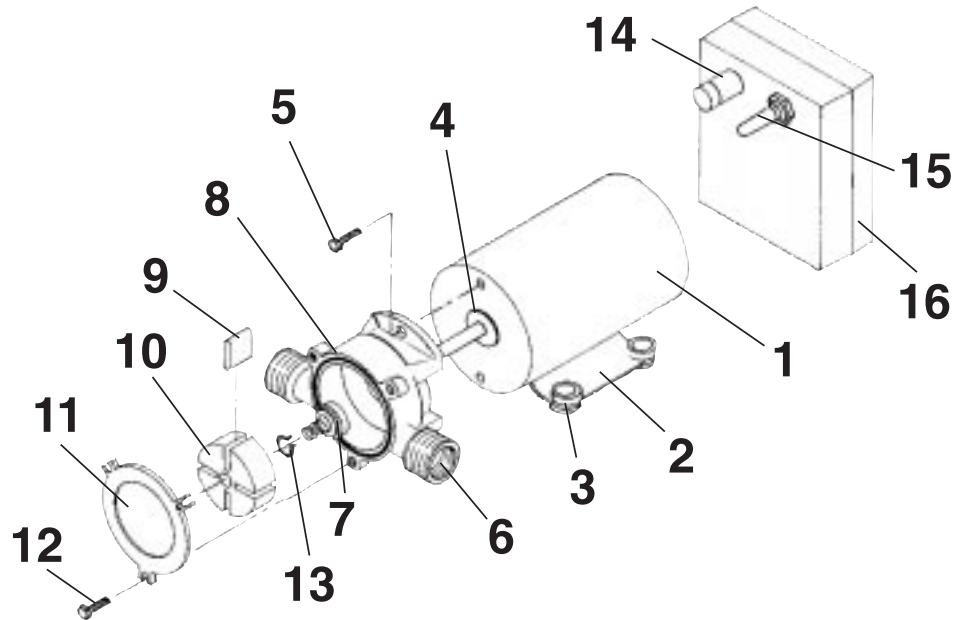
Non-reversing models must be switched by a toggle or foot switch that you supply and install. Be sure the selected switch is rated to carry the motor load for the pump model and application (oil or water).

The motor will normally become hot to the touch after continuous operation of more than a few minutes, particularly when pumping oil.

Maintenance: The periodic application of a small amount of vegetable oil into the pump (you may pump it through) will help prevent salts and silt build-up. This is not necessary for pumps used exclusively for oil pumping.

Winterization: Freezing will damage the pump. Remove the pump cover and drain the water out of the pump housing..

SPO-60 and SPO-80 Series Vane Pumps Parts and Assembly



Item	Part Number	Description	Qty	P-5 Kit	P-5 Master Kit
1	(Voltage)-F (Voltage)-R	Motor (SPO-60) Motor (SPO-80)	1		
2	B-200	Base	1		
3	B-200-G	Grommets Set (4)	1		
4	SP-95	Slinger	1		
5	1032X12HS	Bolts	2		
6	SP-49-B	Pump Body	1		
7	69089	Shaft Seal Assembly	1	x	x
8	2-034	O-Ring	1	x	x
9	SP-99	Blades Set (4)	1		x
10	SP-94	Rotor	1		x
11	SP-91	Pump Cover	1		
12	1024X12HB	Bolts	3		
13	Snap Ring-1	Seal Snap Ring	1	x	x
14	HKP	Fuse Holder	1		
15	Switch-4	Toggle Switch	1		
16	Rev-B Assy (Volts)	Reversing Control	1		

Service Notes:

- 32V-F motor is no longer available.
- Rev-B Assembly replaces Rev-A Assembly for all models. Specify voltage when ordering.

Installation, Operation and Maintenance for BMX3-60 and BMX3-80 Oil Change Systems

000315

Before you begin: Assure that proper wire size is provided (refer to the wire size selection chart supplied) and proper oil resistant hose is provided (minimum hose 5/8" ID).

Installation: Select a horizontal or vertical installation location that will assure the shortest possible plumbing runs between the manifold and each engine oil pan to be serviced.

The pump motor is not waterproof, so the installation should be in a location that will not submerge the motor in high bilge water level.

Drill four (4) 17/64" holes in the mount board and fasten securely to an engine stringer or other suitably sturdy platform with 1/4" bolts.

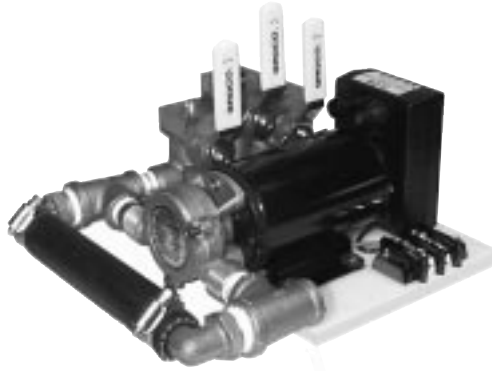
Plumbing: Identify the oil pan drain plug thread size. Then consult a hydraulic fittings and hose manufacturer or distributor to obtain the proper brass or stainless steel fittings to fit your engine oil pans and the manifold of the oil change kit. All manifold ports are threaded 1/2" NPT. In order to minimize plumbing related restrictions that will shorten the life of the pump motor use the largest oil resistant hose size practical between the manifold and the oil pans (5/8" ID is the minimum allowable hose size; 3/4" ID is better).

Do not use hose runs of more than 10 feet, and avoid sags and sharp bends. Note: If long hose runs cannot be avoided consider installing a pump without a manifold (GROCO #331 series) on each engine, rather than a single centrally located pump with a manifold. The cost is about equal.

The pump port on the opposite side from the manifold is threaded 1/2" NPT and may be fitted with a length of hose. When pumping old oil out of the engines this will be the discharge hose. When pumping fresh oil in this will be the suction hose.

The plumbing arrangement directly in front of the pump head is the "Pressure Relief" or "PR" system. If the PR system senses that the pump is operating at greater than 20 PSI the relief valve opens to recirculate excess pressure and flow back to the inlet side of the pump, thus reducing motor load. Note that the PR system functions only when pumping fresh oil into the engine(s).

Note: Multiple manifolds may be joined with 1/2" pipe nipples to make a 6 or 9 valve manifold system.



Electrical: Proper wire size is essential for strong pump performance and long motor life. After running the proper wire size from the circuit breaker on the DC distribution panel to the pump, make connections to the terminal block mounted next to the pump motor. Use ring terminals for a secure installation.

Observe proper polarity as marked on the terminal block. Proper connection

will assure that the reversible pump motor runs in the correct direction, and that oil will flow in the direction indicated by switch position.

Model	Voltage	Breaker
BMX3-60	12V	30 amp
BMX3-60	24V	15 amp
BMX3-80	12V	30 amp
BMX3-80	24V	15 amp
BMX3-80	32V	10 amp

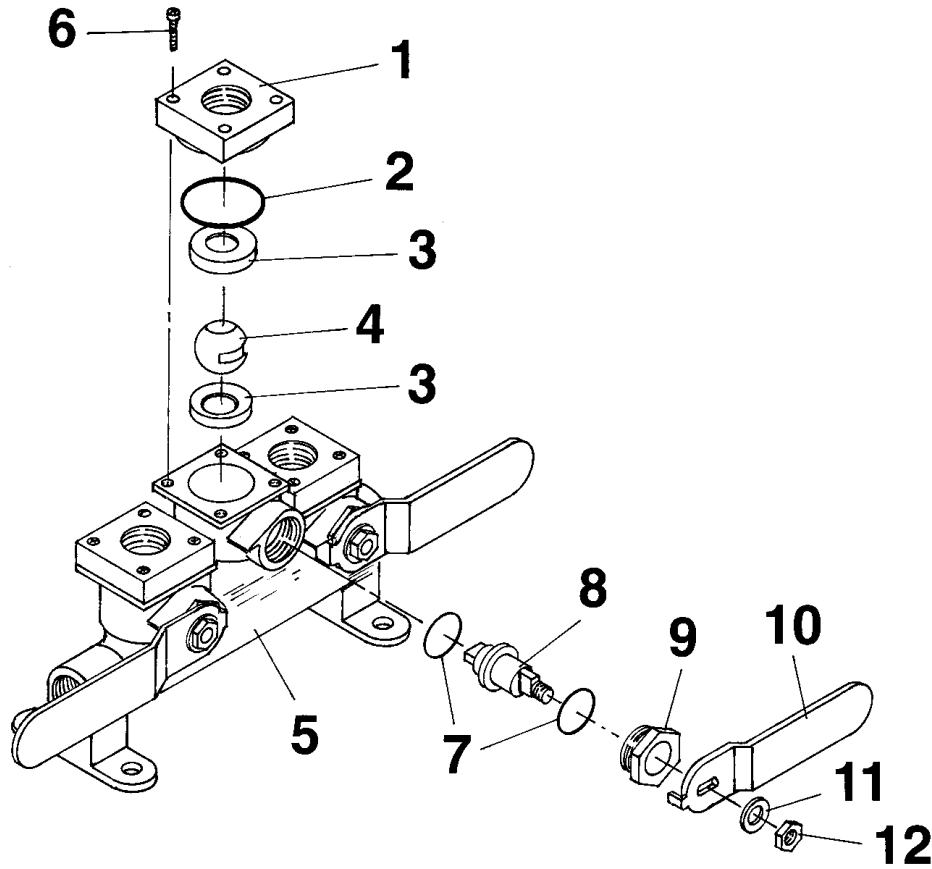
Before Changing Oil: Plan ahead; if the air temperature is below 60-degrees-F we recommend that you warm the fresh oil by storing it inside overnight the day before a scheduled oil change.

Operation: Before changing oil run the engines for a few minutes to warm the old oil and mix sludge. Place the discharge hose into a suitable container large enough to receive the old oil at a rate of about 4 GPM. Open the valve (vertical, or perpendicular to the pump motor) to the first engine to be serviced. Actuate the pump switch for pumping out (pointing away from the manifold). When the first engine has been drained of oil you will hear the pump motor speed increase. Flip the toggle switch to the center (off) position and place the hose into a container filled with the pre-measured volume (refer to the engine manual) of fresh oil to be pumped back in. Now actuate the pump switch for pumping in (pointing toward the manifold). Fresh oil will be pumped back into the engine oil pan. Note that the pumping rate back in will likely be slower than pumping out due to plumbing-related restrictions. Repeat this procedure for each engine to be serviced.

DISPOSE OF USED OIL PROPERLY AND RESPONSIBLY

Before You Start Your Engines: Check to assure that the pump motor reversing switch is in the "off" position, and that all manifold valve handles are closed (parallel to the motor). Shut off the circuit breaker that supplied power to the pump.

Parts and Service for BMX3 Manifold



Item	Part Number	Description	Qty
1	99-0017-00	Cap	3
2	2-026	O-Ring	3
3	BV-506-1	Ball Seat	6
4	BV-504	Ball	3
5	BMX3-A	Manifold Body	1
6	1032x5/8HS	Bolts	12
7	1-116	Stem Seals	6
8	BV-501-A	Stem	3
9	BV-503	Stem Locknut	3
10	BV-508-A	Handle and Cover	3
11	14FS	Washer	3
12	1420HSL	Locknut	3

C-60 and C-80 Deck Wash Kits Installation, Operation, and Maintenance

010704

The Concept: GROCO C-60 and C-80 Deck Wash Kits are driven by self-priming Vane Pumps that will deliver up to 7.5 GPM at up to 40 PSI - more than enough pressure and flow to remove even the most stubborn mud from anchors or fish blood from decks.



Start-up: Apply power at the circuit breaker. With the PGN-50 Salt Water Nozzle squeezed open, switch the toggle switch "on". The pump will run and prime itself within a few seconds. When the nozzle is released the system will pressurize and shut off. If the pump does not prime itself within 15 seconds or so, turn the toggle switch off and check these details:

Installation: Install your deck wash pump in any orientation, not more than 24" from the inlet seacock in a dry location. The motor is not waterproof. Motor damage from water exposure is not covered by product warranty. Drill through the plastic mount board and fasten the unit securely in place.

Install P-9021 check valve on top of the inlet seacock (observe flow direction arrow). P-9021 maintains system prime while the boat is underway and the pump is not in use. A 3/4" scoop thru-hull (GROCO STH-750-W, not included) must be installed to assure that the pump inlet plumbing is always under positive pressure.

Use 3/4" ID reinforced hose to the pump, and garden hose after the pump. The pump inlet and outlet have standard garden hose connections. Double-clamp hose connections and use TFE thread tape on threaded connections.

Install the supplied toggle switch in a location that is convenient for turning the system on or off, such as in the cockpit near the discharge hose. Turn the toggle switch off when system use is not anticipated.

The use of optional PST-1 Pressure Storage Tank will reduce pump cycling.

Electrical Requirements:

Select the proper wire size from the Wire Size Selection chart. Run positive (+) power from the circuit breaker to one pole of the toggle switch supplied. Wire from the second pole of the toggle switch to the terminal block location opposite the orange wire on the pump mount board. Run negative (-) power to the terminal block location opposite the black wire on the pump mount board.

Model	Voltage	Breaker
C-60	12V	30
C-60	24V	20
C-80	12V	30
C-80	24V	20
C-80	32V	15

Make electrical connections with ring terminals for #6 stud.

- Is the nozzle squeezed open?
- Is proper wiring polarity observed (motor running backwards)?
- Is P-9021 check valve installed backwards (observe flow direction arrow)?
- Are plumbing connections tight?

Note: It may help with initial start-up, and with the first use each season to "wet" the pump by pouring a small amount of water into the inlet hose between the pump and P-9021 check valve.

Operation: Once primed you will enjoy pressurized water on demand. Just pick up the nozzle and squeeze. When not in use, coil the discharge hose and hang it to prevent the accidental discharge of pressurized water.

Engine vibration and boat movement may cause P-9021 to loose prime and cause the pump to "cycle". This is normal if the toggle switch is left "on". Always turn the toggle switch "off" when you have no plans to use your deck wash system.

Maintenance: Vane pumps are manufactured to close tolerances. Remove the pump cover once per season and apply a small amount of vegetable oil to the inside of the pump housing to help to prevent salt and silt build-up.

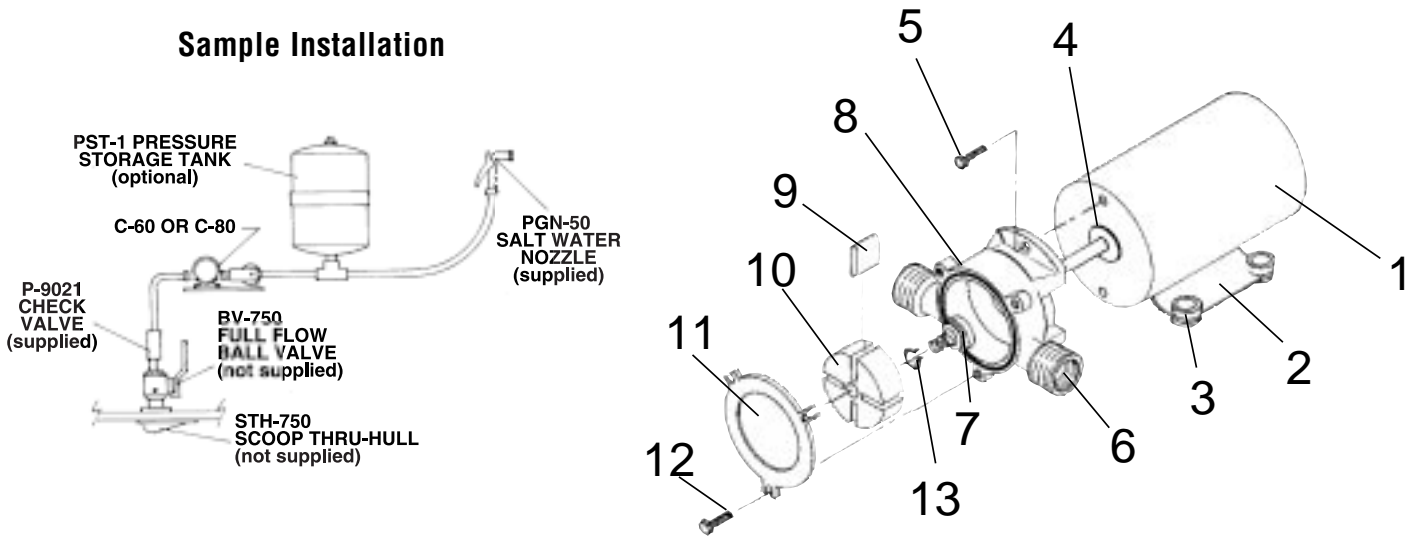
Service Note: C-60 and C-80 manufactured after 1/00 are equipped with a sealed pressure switch adaptor that is fastened to the check valve assembly. Do not remove the bleed screw on the side of the bronze switch adaptor (the adaptor is the bronze part that the switch screws into) unless the pressure switch is removed.

If you must ever replace the pressure switch, prior to screwing the new switch into place, assure that the adaptor chamber is completely filled with clean fresh water, then screw in and tighten the pressure switch. Finally, loosen the bleed screw on the side of the pressure switch port to bleed off excess air pressure or water. Apply a drop of "Loc-Tite Thread Locker" to the bleed screw threads before re-tightening.

© 1999 GROSS MECHANICAL LABORATORIES, INC. ALL RIGHTS RESERVED.

C-60 and C-80 Parts and Assembly

Sample Installation



Item	Part Number	Description	Qty	P-5 Kit	P-5 Master Kit
1	(Voltage)-F (Voltage)-R	Motor (C-60) Motor (C-80)	1		
2	B-200	Base	1		
3	B-200-G	Grommets Set (4)	1		
4	SP-95	Slinger	1		
5	1032X12HS	Bolts	2		
6	SP-49-B	Pump Body	1		
7	69089	Shaft Seal Assembly	1	x	x
8	2-034	O-Ring	1	x	x
9	SP-99	Blades Set (4)	1		x
10	SP-94	Rotor	1		x
11	SP-91	Pump Cover	1		
12	1024X12HB	Bolts	3		
13	Snap Ring-1	Seal Snap Ring	1	x	x
NS	P-9021-A	Check Valve Assembly	1		
NS	IPS-38	Pressure Switch only	1		
NS	IPS-383 (Volts)	Press Switch & Relay	1		

Service Notes:

- 32V-F Motor is no longer available
- IPS-38 Pressure switch requires a relay. If replacing the pressure switch on a C-60 or C-80 that does not already have a relay, you must order IPS-383 (voltage).
- C-60 and C-80 produced after January, 2000 include PC-741 check valve and pressure switch adaptor. If you are replacing IPS-38 pressure switch it is recommended that PC-741 be installed as well. PC-741 replaces P-9021-A in current production and protects the pressure switch from becoming clogged or disabled by debris, sand or salt.

Installation and Operation Instructions for CB-10 Series Centrifugal Booster Pumps

000417



CB-10 Inlet and Outlet are for garden hose connections or for 1" ID hose

The Concept: CB-10 is a high-capacity (up to 17 GPM) centrifugal pump designed for use in fresh or salt water (hot or cold) circulating systems. Construction is of non-corrosive non-metallic and stainless steel, so CB-10 may be used to pump nearly any non flammable, non-explosive liquid.

Installation: Install the pump in a location that will provide generous air flow to aid in motor cooling. Fasten to the mount platform with four 1/4" stainless steel fasteners. CB-10 is not self-priming; the installation location must assure a flooded inlet.

Electrical: Adequate wire size is essential for proper motor and pump performance. Refer to the wire size selection chart enclosed. The orange wire is positive (+). Make electrical connections with marine grade crimp terminals.

Operation: Control CB-10 with a toggle switch or with GROCO FPC-10-R Pump Cycle Timer.

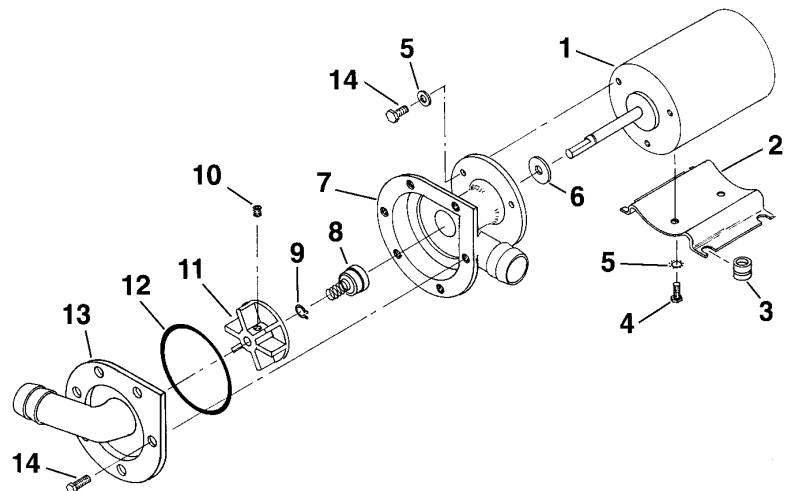
Maintenance: No routine maintenance is required.

Winterization: Freezing water within will damage the pump. Close the inlet seacock and disconnect the connecting fittings or hose to drain water. Remove the pump cover to drain water from the pump cavity.

Plumbing: Make plumbing connections with garden hose 1" ID hose. Double clamp hose connections.

Avoid sharp bends and sags in plumbing lines, and use full-flow fittings and hose if possible.

Item	Part Number	Description	Qty	
1	(Voltage)-B	Motor	1	
2	B-200	Base	1	
3	06-0001-00	Grommets	4	
4	8X38PSMS	Screw	2	
5	10ETS	Lockwasher	11	
6	SP-95	Slinger	1	
7	05-0004-00	Housing	1	
*	8	69026	Seal Assy	1
*	9	Snap Ring-1	Snap Ring	1
10	14X14SSS	Set Screw	1	
11	CP-55	Impeller	1	
*	12	2-146	O-Ring	1
13	05-0005-00	Cover	1	
14	1032X58HS	Screw	9	
*	Service Kit	P-2		



Installation and Operation Instructions for CP-20 and CP-30 Centrifugal Circulator Pumps



CP-20 has 3/4" NPT Inlet, Outlet is for Garden Hose or 1/2" NPT



CP-30 has replaceable motor brushes. Inlet and Outlet are the same as CP-20

The Concept: CP-20 and CP-30 are centrifugal pumps designed for use in fresh or salt water (hot or cold) circulating systems. Construction is of bronze, stainless steel, or is non-metallic, so these pumps may be used to pump nearly any non flammable, non-explosive liquid.

Installation: Install the pump in a location that will provide generous air flow to aid in motor cooling. Fasten securely to the mount platform with four (4) 1/4" stainless steel fasteners.

Pumps are not self-priming; the installation location must assure a flooded inlet.

Electrical: Proper wire size is essential for proper motor and pump performance. Refer to the wire size selection chart enclosed. The orange wire is positive (+). Make electrical connections with marine grade crimp terminals.

Operation: Consider controlling CP-20 or CP-30 with GROCO Pump Cycle Timer PC-10 or FPC-10.

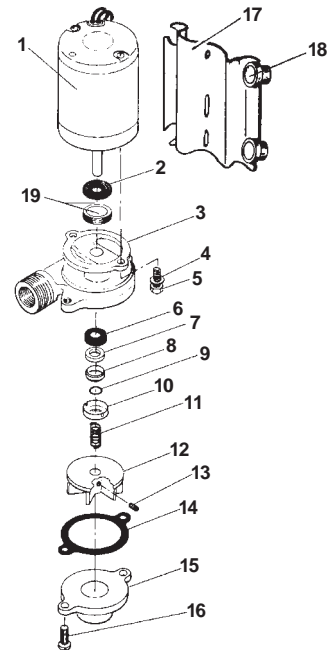
Maintenance: No regular maintenance is required.

Winterization: Freezing water within will damage the pump. Close the inlet seacock and disconnect the connecting fittings or hose to drain water. Remove the pump cover to drain water from the pump cavity.

Plumbing: Make plumbing connections with pipe, hose, or pipe-to-hose adaptors. Double clamp hose connections and use TFE thread tape on pipe connections.

Avoid sharp bends and sags in plumbing lines, and use full-flow fittings and hose if possible.

Item	Part Number	Description	Qty
1	(Voltage)-B	CP-20 Motor	1
	(Voltage)-M	CP-30 Motor	1
NS	24137901	M-motor brush set	2
2	SP-95	Slinger	1
3	CP-20-A	CP-20, CP-30 Body	1
5	1032X12HS	Bolt	2
• 6-11	69026	Sea Assembly	1
12	CP-55	Impeller	1
13	14X14set	Set Screw	1
• 14	CP-56	Gasket	1
15	CP-58-H	Inlet	1
16	1420X34HB	Bolt	2
17	B-200	Base	1
18	B-200-G	Grommets Set (4)	1
• 19	031-075-8	Seal	1
• NS	Snap ring-1	Seal Snap Ring	1
•	Service Kit	P-2	



Installation and Operation Instructions for CP-20-BB, CP-20-BBWA and CP-20-BBC



CP-20-BB
Inlet and Outlet for 1" ID Hose



CP-20-BBWA
Inlet for 1/2" NPT, Outlet for 1/2" NPT or 1" ID Hose



CP-20-BBC
Inlet for 3/4" NPT, Outlet for 1" ID Hose

The Concept: GROCO CP-20-series pumps are efficient centrifugal pumps designed for use in hot or cold water circulating systems in automotive, industrial, or marine and RV applications.

Installation: Install the pump in a location that will provide generous air flow for motor cooling. Fasten securely to the mount platform with four (4) 1/4" fasteners (not supplied).

Electrical: Proper wire size is essential for proper motor and pump performance. Make power connections (orange is + positive) that assure no more than a 3% voltage drop.

Plumbing: Make plumbing connections with pipe, hose, or

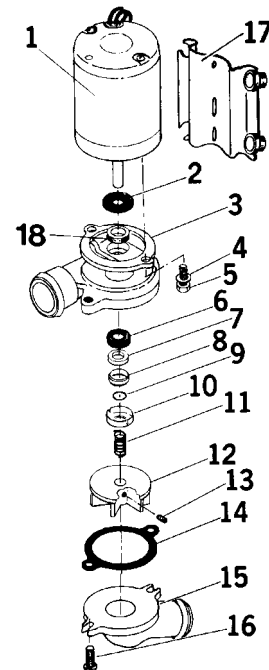
pipe-to-hose adaptors. Double clamp hose connections and use TFE tape on threaded connections.

Bends in hose or pipe connections will restrict pump flow. Plan the installation so as to minimize bends. Use full-flow fittings when possible. Contact GROCO for bronze pipe-to-hose adaptors.

CP-20 series pumps require a flooded inlet. Assure that the pump is supplied with a continuous flow of water.

Maintenance: No regular maintenance is required

Item	Part Number	Description	Qty
1	(Voltage)-B	Motor	1
2	SP-95	Slinger	1
3	CP-20-B	CP-20-BB Body	1
	CP-20-C	CP-20-BBC Body	1
	CP-20-W	CP-20-BBWA Body	1
4	10ETB	Lockwasher	2
5	1032X12HS	Screw	2
• 6-11	69026	Seal Assembly	1
12	CP-55	Impeller	1
13	14X14SS	Set Screw	1
• 14	CP-56	Gasket	1
15	BB-79	CP-20-BB Cover	1
	CP-58-H	CP-20-BBC Cover	1
	WS-2501	CP-20-BBWA Cover	1
16	14X34HB	Bolts	2
17	B-200	Base	1
• 18	031-075-8	Seal	1
NS	B-200-G	Grommets Set (4)	1
•	Service Kit	P-8	



Installation and Operation Instructions for CP-20-S Centrifugal Circulator Pumps

The Concept: CP-20-S is a submersible centrifugal pump designed for use in fresh or salt water (hot or cold) circulating systems. Construction is of bronze, stainless steel, or is non-metallic, so the pump may be used to pump nearly any non flammable, non-explosive liquid.

Installation: Install the pump in a location that will provide generous air flow to aid in motor cooling.

CP-20-S is not self-priming, so a flooded inlet is required. You may lay CP-20-S on its side in the bilge, running inlet and discharge hoses to and from the pump.

Because of the weight of the pump, installation directly on top of a seacock is not recommended unless the pump is supported with straps or clamps.

Plumbing: Make plumbing connections with pipe, hose, or pipe-to-hose adaptors. Double clamp hose connections and use TFE thread tape on pipe connections.



CP-20-S is fully submersible

The inlet is 3/4" NPT and the discharge is threaded externally for garden hose and internally 1/2" NPT.

Avoid sharp bends and sage in plumbing lines, and use full-flow fittings and hose if possible.

Electrical: Proper wire size is essential for proper motor and pump performance. Refer to the wire size selection chart enclosed.

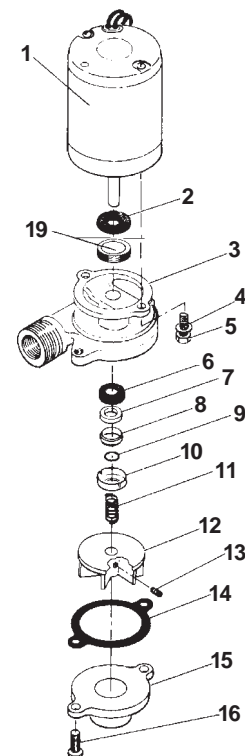
The orange wire is positive (+). Make electrical connections with marine grade crimp terminals.

Operation: Consider controlling operation with GROCO Pump Cycle Timer PC-10 or FPC-10

Maintenance: No regular maintenance is required.

Winterization: Freezing water within will damage the pump. Close the inlet seacock and disconnect the connecting fittings or hose to drain water.

• Item	Part Number	Description	Qty
1	(Voltage)-B	Motor	1
3	CP-20-S	Pump Body	1
4	10ETS	Lockwasher	2
5	1032X12HS	Bolt	2
• 6-11	69026	Seal Assembly	1
12	CP-55	Inpeller	1
13	14X14set	Set Screw	1
• 14	CP-56	Gasket	1
15	CP-58-H	Inlet	1
16	1420X34HB	Bolt	2
• NS	Snap ring-1	Seal Snap Ring	1
NS	SBP-204	Motor Boot	1
NS	PFW-K	Washers	2
NS	CP-21-S	Mount Bracket	1
•	Service Kit	P-2	



Installation and Operation Instructions for 5009 Series Bilge and Circulator Pumps



BP-5009 Bilge Pump



CP-5009 Circulator Pump

The Concept: 5009 Series bilge pumps were originally built for US Navy and US Coast Guard vessels that demanded the ultimate in construction quality, durability, and reliability.

BP-5009 Installation: Fasten the pump securely to the bilge floor with four (4) 1/4" bronze or stainless steel bolts.

BP-5009 Plumbing: The pump discharge is threaded 3/4" NPT. For a 3/4" ID hose connection use GROCO PTH-750 or PTHC-750, and for a 1" ID hose connection use FF-750 or FFC-750. Use TFE thread tape on threaded connections and double clamp hose connections.

The through-hull discharge should be as high above the outside waterline as possible to prevent siphoning of water back into the bilge while heeling or while underway or in heavy seas. The discharge hose from the pump should loop upward at least 6" higher than the discharge thru-hull. GROCO offers several models of 90-degree hose thru-hull fittings.

Electrical: Proper wire size is essential for proper pump performance. Refer to the wire size selection chart packed with this product. Make watertight electrical connections higher than the highest bilge water level. The black wire is (+) and the red wire is (-).

Protect the pump with a circuit breaker as shown below:

BP-5009 12V	30-amp breaker
BP-5009 24V	15-amp breaker
BP-5009 32V	10-amp breaker

CP-5009 Installation: CP-5009 has a 1" NPT inlet and may be installed into a rigid 1" piping system. Do not install CP-5009 directly on top of a 1" seacock. The rubber boot protects the motor, so CP-5009 can be submerged without harm.

CP-5009 Plumbing: The pump discharge is threaded 3/4" NPT. For a 3/4" ID hose connection use GROCO PTH-750 or PTHC-750, and for a 1" ID hose connection use FF-750 or FFC-750. Use TFE thread tape on threaded connections and double clamp hose connections.

The inlet is threaded for 1" NPT.

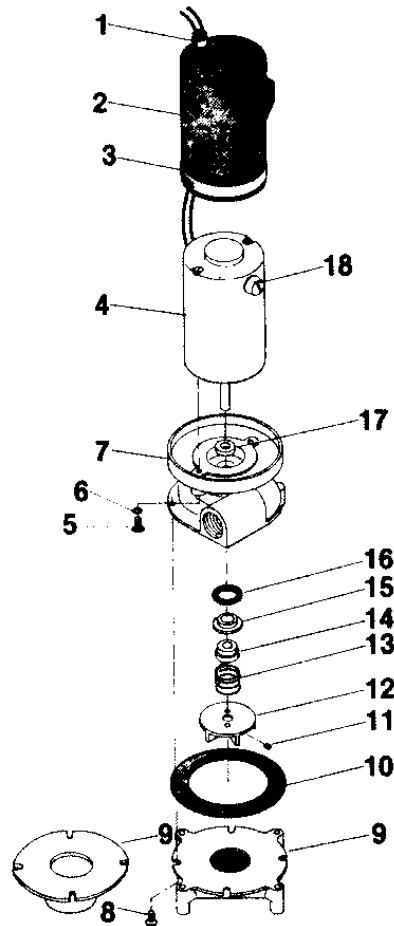
Assure that there are no sags or sharp bends in the discharge hose line.

Electrical: Proper wire size is essential for proper pump performance. Refer to the wire size selection chart packed with this product. Make watertight electrical connections higher than the highest bilge water level. The black wire is (+) and the red wire is (-).

Protect the pump with a circuit breaker as shown below:

CP-5009 12V	30-amp breaker
CP-5009 24V	15-amp breaker
CP-5009 32V	10-amp breaker

Parts and Assembly for 5009 Series Bilge and Circulator Pumps



ITEM	DESCRIPTION	PART NUMBER	QTY
1	GS-4-SS	Hose Clamp	1
2	CP-5004	Motor Boot	1
3	H-64-SS	Hose Clamp	1
4	(Voltage)-RAE	Motor	1
5	1428X12HS	Bolt	2
6	16S	Washer	2
7	CP-5009	Pump Housing	1
8	CP-5007	Base for CP-5009	1
9	CP-5003-A	Base for BP-5009	1
•10	CP-5008	Gasket	1
11	14X14Set	Set Screw	1
12	CP-5002-A	Impeller	1
•13-16	06-037-9	Seal Assembly	1
•17	037-075-8	Seal	1
18	RAE Brushes	Motor Brush Set	2
•	Service Kit	P-4	

© 1989 GROSS MECHANICAL LABORATORIES, INC. ALL RIGHTS RESERVED.

Installation and Operation Instructions for AS-100 Bilge Pump Control Kit

The Concept: AS-100 uses the simple and reliable pressure fluctuation from a rising or falling bilge water level to turn your bilge pump on and off automatically.

There are no floats to stick in the up position to allow your bilge pump to run continuously, or to crack and fill with water so they fail to turn your bilge pump on at all.

Installation: Temporarily place the black neoprene "air bell" about one foot away from the bilge pump, at a level approximately one inch above the level of the base of the pump. Hint: The air bell may be placed on top of a block of wood to achieve the desired level. Secure the air bell only after verifying proper operation (see the section on operation).

Connect the switch to the air bell with the clear tubing supplied. The fit will be tight, so no clamps or adhesives are required.

Locate the pressure switch as high and dry as possible. The switch is not waterproof; a submerged switch and/or electrical connections will cause switch failure. Water damage to the switch voids product warranty. Ensure that there are no sags or sharp bends in the hose. Fasten the switch securely to a sturdy surface with #10 stainless steel screws (not supplied).



Electrical: The pressure switch has two tabs for 1/4" "fast-on" terminals. Refer to the wire size selection information supplied with your bilge pump to ensure that adequate wire size is present to power the pump. Choose the proper crimp-on terminals for the wire size used, and make careful and secure crimps. (Most pump and switch failures are caused by faulty crimps). The maximum continuous pump current is 15 amps @12VDC.

Refer to the schematic on the reverse side for the details of proper hookup.

Operation: To verify that the switch is properly controlling the pump, flood the bilge with several inches of dockside water. Slowly lower the air bell into the water; the switch should trigger pump operation when the air bell is approximately 2-3/4" deep. Allow the pump to run while you lower the air bell to the bilge floor; the pump should turn off when the level of water in the bilge is approximately 1" deep. Experiment with air bell locations until the pump operates as you wish.

Important Note: Do not locate the air bell below the level of the pump as this will allow the pump to run continuously even though the pump has evacuated as much water as it is capable of.

Installation and Operation Instructions for Pump Cycle Timers PC-10-R and FPC-10-R

000411



FPC-10-R mounts flush to wall or bulkhead



PC-10-R mounts anywhere

The Concept: For baitwell applications there is generally no need to run the circulator pump continuously. The periodic change of baitwell water is usually sufficient to keep live bait healthy.

A GROCO Pump Cycle Timer enables you to conserve battery power and extend pump life by limiting pump running time. If a reversing pump is used, such as GROCO SPO-60-R or SPO-80-R, the cycle timer may also be utilized to command the pump to empty the baitwell after you've caught your limit.

Installation: FPC-10-R is designed for mounting flush into a bulkhead. Make a rectangular cutout 3-3/4" x 1-5/8" and fasten with the hardware provided. The installation location must be protected from rain and splashing water.

PC-10-R enclosure is waterproof, but the switch penetrations into the enclosure are not. Installation may be installed anywhere, but must be protected from direct water contact.

Electrical: Proper wire size is essential for safe and efficient pump performance. Refer to the wire size selection information provided with the pump.

Note that PC-10-R and FPC-10-R have a maximum pump amperage of 15-amps @12VDC; 10-amps for 24V and 5-amps for 32V.

Pump Options: PC-10-R and FPC-10-R may be used with GROCO SPO-60-N and SPO-80-N Vane Pumps, or with CP-20, CP-30 or CP-20-S Centrifugal Pumps.

Operation: The 3-position toggle switch provides power to the pump motor in the desired pumping direction. "Empty" is to be used only with reversing pumps.

Adjust cycle selections with the power off. Turn back on to operate the selected cycles.

Total pump cycle time is 15-minutes, Adjust "On" and "Off" cycles as desired to achieve a total 15-minute cycle.

© 1999 GROSS MECHANICAL LABORATORIES, INC. ALL RIGHTS RESERVED.

