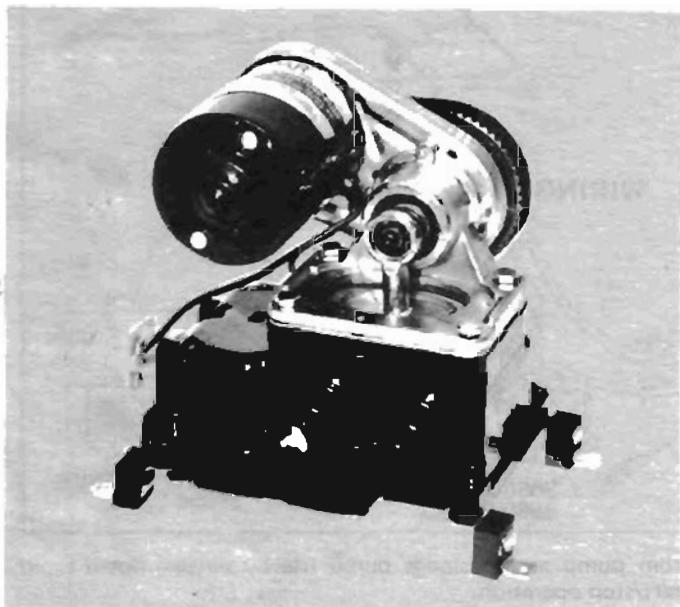


PAR®

ELECTRIC WATER SYSTEM PUMPS

**MODEL 36800-Series
36850-Series
36900-Series**

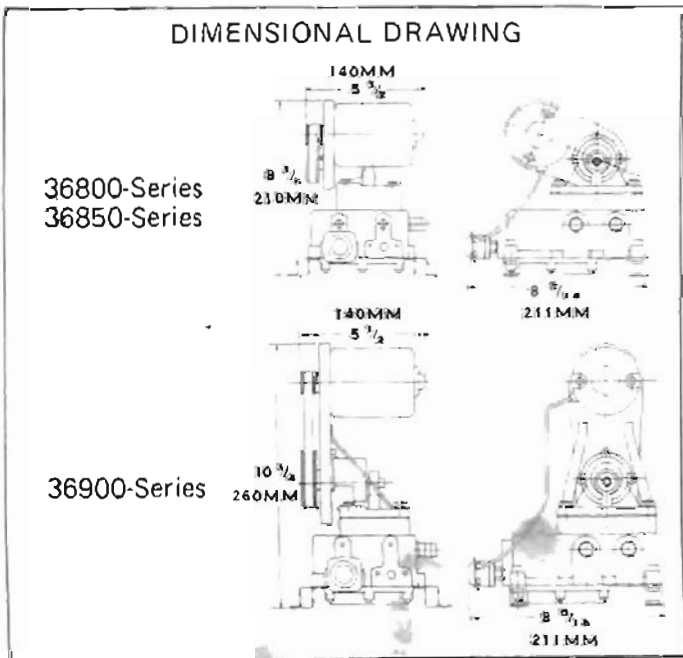
**AUTOMATIC MULTI-FIXTURE
PRODUCT DATA**



APPLICATIONS

PAR automatic water system pumps are designed for self contained recreational vehicles and pleasure boats with multiple-fixture water systems. The systems are automatic - when a faucet is opened, the pump instantly begins operation to provide a constant flow from tank to faucet. Closing the faucet automatically discontinues pump operation. Models 36800 and 36850 are suited for up to five-fixture distribution systems. Model 36900 is recommended for large distribution systems where duty requires simultaneous operation of multiple faucets. Model 36850-series with dry tank switch shuts off automatically when water tank runs dry.

DIMENSIONAL DRAWING



FEATURES

- Self-priming diaphragm pump.
- No pump damage from dry running.
- No motor burnout from low voltage supply.
- Efficient performance. Low current draw saves battery power.
- Generous flow for large water systems.
- Quiet operation.
- Built-in port check valve isolates pump from unregulated city water hookups and hot water backflow.
- Rugged high quality construction. Uses three permanently lubricated ball bearings.
- Built-in pulsation dampeners smooth flow and help prevent freeze-up breakage.
- Large rubber mounting pads absorb operating vibration.
- Model 36850-Series pumps automatically turn off when water runs low. Prevents accidental total loss of battery power.
- IAPMO approved potable water system pump Type IV.

SPECIFICATIONS

Open flow			
36800-Series:	3.7 GPM	14 liters/min.	
36850-Series:	3.7 GPM	14 liters/min.	
36900-Series:	4.3 GPM	16.3 liters/min.	
Cut-off pressure:	35 PSI		
Cut-in pressure:	20 PSI		
Max. suction lift:	10 Feet	3.0 meters	
Ports:	Barbed slip-on for 1/2" or 5/8" ID hose (4-feet of hose supplied with each pump).		
Approx. Ship. Weight			
36800-Series:	11 Lbs.	5.0 kgs	
36850-Series:	12 Lbs.	5.4 kgs	
36900-Series:	13 Lbs.	5.9 kgs	
Approval:	IAPMO Type IV		

STANDARD MODELS

**36800-Series
Automatic Water System**

Model	Voltage	Amperage	
		Open Flow	Maximum
36800-1000	12 VDC	5.0 A	7.3 A
36800-1010	24 VDC	3.0 A	4.5 A
36800-1020	32 VDC	2.8 A	3.5 A

**36850-Series
Automatic Water System with Dry Tank Cut-off Switch**

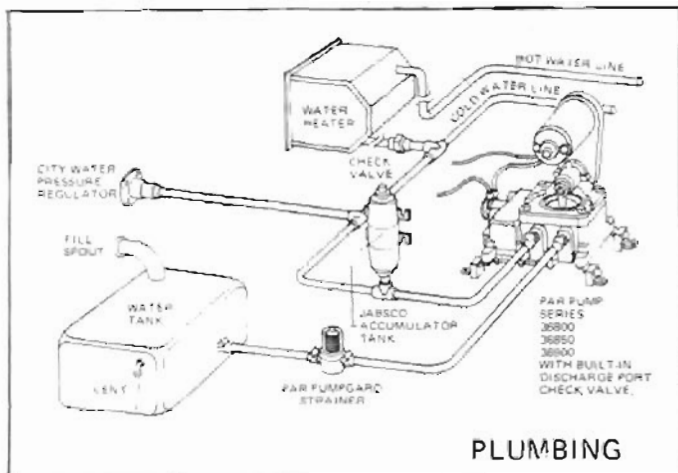
Model	Voltage	Amperage	
		Open Flow	Maximum
36850-1000	12 VDC	5.0 A	7.3 A
36850-1010	24 VDC	3.0 A	4.5 A
36850-1020	32 VDC	2.8 A	3.5 A

**36900-Series
Automatic Water System**

Model	Voltage	Amperage	
		Open Flow	Maximum
36900-1000	12 VDC	6.5 A	9.7 A
36900-1010	24 VDC	3.5 A	7.0 A
36900-1020	32 VDC	2.0 A	2.8 A

36850-SERIES
36900-SERIES

INSTALLATION



MOUNTING

PAR diaphragm pumps are self-priming. They may be located above or below the fresh water tank. The pump is equipped with vibration pads which are most effective when the pump is mounted upright on a solid surface.

PLUMBING

Connect the hose between pump and rigid water distribution lines taking care to avoid hose kinks. To minimize water pressure drop, the size of water supply and branch line piping should not be less than sizes shown in the table below. Valves, tees, elbows, etc. used should be the same size as pipe or tubing. Use gate valves only. Fresh water tank must be vented.

MINIMUM PIPING SIZE

Number of Fixtures	Tubing O.D.	Pipe Size
1 & 2	3/8"	3/8"
3 & 4	1/2"	1/2"

*Six-foot maximum length.

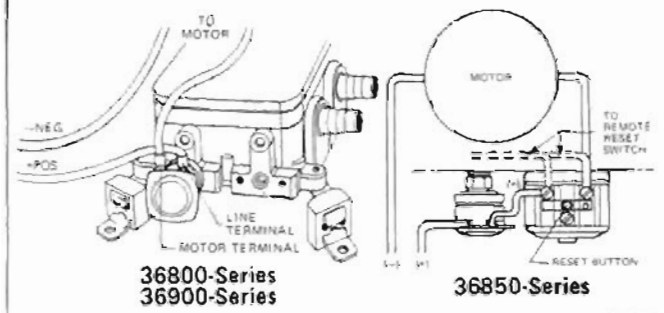
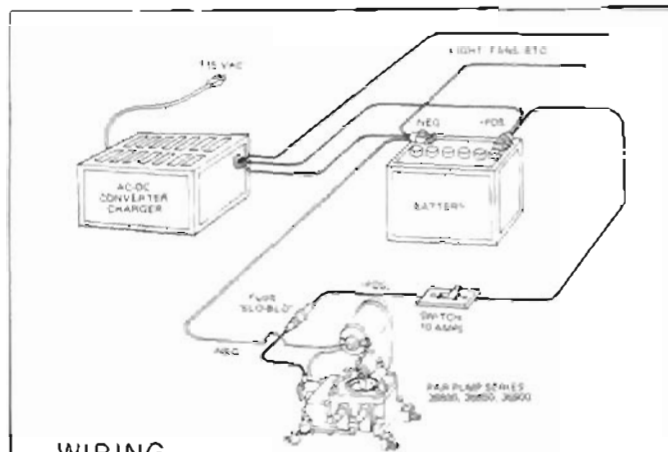
PRESSURE REGULATOR. Systems having a connection for a city water entry should be equipped with a pressure regulating check valve set at approximately 35 PSI. This valve automatically regulates the incoming water pressure to avoid damage to pump and plumbing from excessive pressures. PAR Models 44410-0000 (Permanent Flush Mount) and 44410-0010 (In-line Hose Type) pressure regulating valves are recommended for this purpose.

CHECK VALVES. A built-in port check valve protects the pump from the unregulated high pressures sometimes encountered in city water hookups. However, an additional check valve may be installed at the cold water inlet of the water heater to minimize heat transfer to the cold water line and protect the system in case of water heater relief valve failure. PAR offer qualified in-line check valves, Model 98024-0070, 34344-0000, 35027-0000, and 35195-0000.

SUCTION FILTER. A PAR Pumpguard Model 36400-0000 (strainer/filter) should be installed between the pump and fresh water tank. It prevents valve clogging caused by foreign material entering the pump.

WATER PURIFIER. Many water purifiers cause excessive restriction to flow, especially when element is in use for some time. When used at the main distribution line it causes the pump to cycle on and off rapidly. To minimize cycling, use an accumulator tank between pump and purifier, or install purifier to feed a single outlet for drinking water only.

ACCUMULATOR TANK. The use of an accumulator tank (Jabsco Model 12573-0000), although not required, is recommended for a more effective water distribution system. It eliminates "water hammer", stores pressure to allow a limited use of water without restarting pump (desirable at night-time), assures a constant, even stream of water at faucets farthest



from pump and prolongs pump life by cutting down rapid start/stop operation.

WIRING

Pump should be wired in a circuit independent of all other electrical fixtures. Use stranded copper wire.

WIRE SIZE AWG

Total Conductor Length	12 VDC	24 VDC	32 VDC
Less than 30 feet.	14	16	16
30 to 50 feet.	12	16	16

Above wire size recommendation is based on pump load only. If other electrical fixtures share common service with the pump, larger wire sizes must be used.

MOTOR PROTECTION. The pump wiring must include a "slo-blo" fuse in the positive lead to protect against over-current draw. Below are the proper fuse ratings:

FUSE SIZE

Voltage	Models 36800/36850	Model 36900
12 V	8 amps	10 amps
24 V	5 amps	7½ amps
32 V	3 amps	3 amps

SWITCH. An on-off switch should be installed in the circuit to turn off pump when vehicle or boat is unattended, stored, or in transit.

AC-DC POWER CONVERTERS. AC-DC converter/charger packs should be wired to operate pump directly from the battery at all times. If the battery is bypassed and converter is used to service the pump directly, be sure the total electrical loads do not exceed the converter amp rating. Overloading the converter could result in low-voltage condition.

VOLTAGE CHECK. After installation, check the voltage at the pump motor. Voltage should be checked when pump is operating along with all the inside electrical fixtures. Full voltage must be available at the pump motor at all times.

OPERATION

- Check water level in tank. Be sure valves are open and strainers are clean.
- Open all faucets, hot and cold.
- Turn on power to pump.
- On Model 36850-Series pumps, depress red reset button on top of dry tank switch or turn on remote reset switch (if installed).
- Release reset button (or turn off remote reset switch) when water starts to flow through faucets.
- Close each faucet when it starts to deliver a steady stream of water (close cold water first).
- Observe the pump. Check to be sure pump stops soon after all faucets are closed.
- Pump is now ready for automatic operation. It will start when a faucet is opened and stop when the faucet is closed.

MAINTENANCE

WINTER STORAGE. The PAR pump with its unique pulsation dampener will withstand frozen water without damage, provided the system is not under pressure prior to freezing. To prevent accidental damage, the entire water system must be "winterized" thoroughly for winter storage. This requires complete draining, using the following directions and/or vehicle manufacturer's instructions:

1. Close all faucets and allow pump to empty water tank and intake lines. Run pump dry for 1 to 2 minutes before turning off.
2. Open all drains and blow air through city water entry. Allow time for water heater to empty.
3. Disconnect discharge and intake hoses from pump. Start pump and allow to run until all water is expelled from unit. (Running dry will not harm the pump.)
4. Reconnect the hoses, close the drains and leave faucets open. The water distribution system is now winterized.

An alternate method is to use potable water system anti-freeze solution. Follow directions from anti-freeze manufacturer.

DO NOT USE AUTOMOTIVE TYPE RADIATOR ANTI-FREEZE. IT IS POISONOUS.

SERVICE

TROUBLESHOOTING

Problem	Causes
Pump operates but no water flows through faucet.	<ul style="list-style-type: none">- Low water level in tank.- Water lines are clogged.- Kink in water hose.- Air leak in suction line.- Dirty or hard-to-open in-line check valve.- Defective pump valve.
Pump cycles on and off when faucets are closed.	<ul style="list-style-type: none">- Water leak in plumbing.- Defective toilet flush valve.- Internal leak in valve. Pump check valve not sealing.
Pump operates roughly and has excessive noise and vibration.	<ul style="list-style-type: none">- Intake line is restricted, kink in suction hose or fittings too small.- Pump mounted on flimsy board.- Deformed or ruptured pulsation dampener in pump.- Loosened screws at pulleys and connecting rod.- Worn connecting rod bearing.
Pump fails to start when faucet is opened.	<ul style="list-style-type: none">- Clogged piping.- No voltage to pump.- Defective pressure switch.- Empty water tank (Model 36850-Series only).
Pump fails to stop when faucets are closed.	<ul style="list-style-type: none">- Empty water tank.- Insufficient voltage to pump motor.- Defective pressure switch.

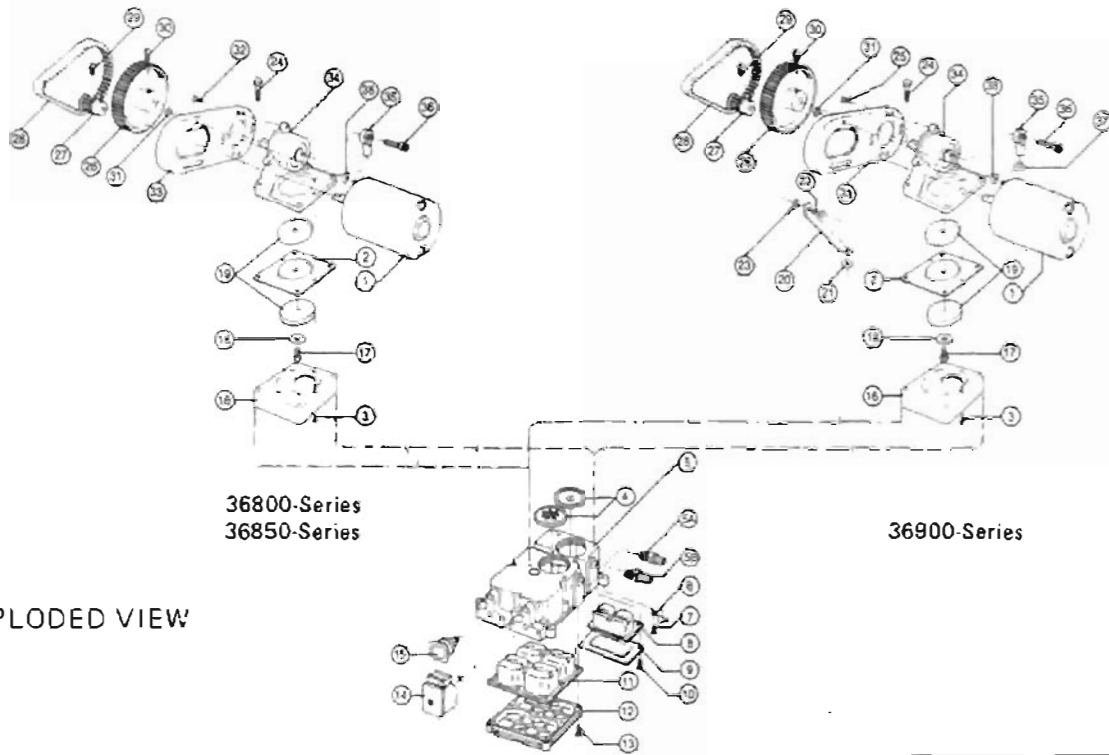
CAUTION: Before servicing pump, turn off power and open faucets to relieve pressure from water distribution system.

VALVES REPLACEMENT

1. Remove four tie down screws (24). Lift jack shaft (34) to expose valves.
2. Lift valves from pockets. Clean all foreign materials from valves and seats. Inspect rubber flappers for cuts.
3. Reinstall valves into same pockets, being sure rubber valve with small hole is UP on intake and rubber valve without the small hole is DOWN on discharge. **CAUTION:** Do not use valve with small hole in rubber on discharge side of pump.

DIAPHRAGM AND CONNECTING ROD REPLACEMENT

1. Remove four tie down screws (24), then lift jack shaft (34) and attached diaphragm assembly from pump base.
2. Expose diaphragm by removing two diaphragm retainer screws (3) and detaching retainer.
3. Remove diaphragm screw (17) to separate diaphragm, plates and washer/spacer from connecting rod. Inspect diaphragm for cuts and ruptures.
4. Remove eccentric screw (36) to separate connecting rod from jack shaft.
5. When reassembling, be sure to align diaphragm and connecting rod so that rod slips straight onto jack shaft and diaphragm rests squarely on diaphragm retainer.



EXPLODED VIEW

SERVICE (Continued)

PULSATION DAMPENERS REPLACEMENT

1. Remove nine screws (13) from bottom cover and three screws (10) from bottom plate.
2. Pull out rubber pulsation dampeners from base. Inspect for excessive deformation, ruptures and cuts.
3. When installing new large pulsation dampener, check that its metal screw sleeve-guide is positioned between center hole and screw-way in the base. Make sure that flanges of both pulsation dampeners are well-seated to effect a proper water and air seal.

PRESSURE SWITCH REPLACEMENT

1. Turn off power to pump and open faucet to relieve pressure from system.
2. Disconnect all wires from pressure switch.
3. Unscrew switch from base.
4. Thread new switch with "O" ring into pump base. Do not overtighten.
5. Rewire per wiring diagram.

DRY TANK SWITCH REPLACEMENT

1. Disconnect all wires from dry tank switch (Model 36850-Series only).
2. Remove switch front cover and two screws located at bottom of switch case. Pull switch from base.
3. When installing new switch, be sure metal spacer is assembled on switch and "O" ring is seated in pump base. Do not overtighten mounting screws.
4. Rewire per wiring diagram.

MOTOR REPLACEMENT

1. Remove two motor nuts (31) to separate motor.
2. Loosen set screw (29) to remove small pulley from motor shaft.
3. When reassembling, adjust belt tension so belt between pulleys can be depressed 1/4" after motor nuts are tightened.

PARTS LIST

Qty.	Part Number	36800-Series	36850-Series	36900-Series	Qty.
1	Motor 12 VDC (with two motor nuts)	30200-0000			1
	Motor 24 VDC (with two motor nuts)	30200-0010			1
	Motor 32 VDC (with two motor nuts)	30200-0020			1
2	*Diaphragm	30015-0000			1
	*Diaphragm	30016-0000			1
3	Diaphragm retainer screw	34743-0000			2
	Diaphragm retainer screw	34917-0000			1
4†	*Valve set (intake and discharge)	30004-0000			1
5†	Base assembly	35625-0100			1
	Base assembly	35625-0200			1
5A†	Port, inlet	42986-0000			1
5B†	Port, discharge	43006-0000			1
6†	Vibration dampener	35432-0000			4
7†	Screw	35618-0000			4
8†	*Small pulsation dampener	35627-0000			1
9†	Bottom plate	35628-0000			1
10†	Screw	35508-0000			3
11†	*Large pulsation dampener (screw sleeve-guide, inc.)	35591-0000			1
12†	Bottom cover	35623-0000			1
13†	Screw	34677-0000			9
14	Dry tank switch (includes spacer and O-ring)	35675-0000			1
15	Pressure switch (includes O-ring)	37122-0010			1
	Pressure switch with conversion kit (required for -0000, -0010, -0020 pumps)	37122-0000			1
16	Diaphragm retainer	35487-0000			1
	Diaphragm retainer	35173-0000			1
17	Diaphragm screw	34679-0000			1
18	Washer, left-hand	35518-0000			1
19	Diaphragm plate	35503-0000			2
	Diaphragm plate	35212-0000			1
20	Brace, left-hand	35255-0010			1
	Brace, right-hand (not shown)	35255-0020			1
21	Washer	33806-0000			2
22	Screw	34678-0000			2
23	Nut	91085-0960			2
24	Tie down screw	34674-0000			2
25	Motor mount screw	34678-0000			4
26	Large pulley	34523-0000			1
27	Small pulley	34523-0000			1
28	*Belt	30021-0000			1
29	Set screw	35247-0000			1
30	Set screw	36562-0000			1
31	Motor nut (includes star washer)	34681-0000			2
32	Jack shaft screw	34678-0000			2
33	Motor mount	34628-0020			1
	Motor mount	34628-0030			1
34	Jack shaft assembly	35506-0000			1
	Jack shaft assembly	35690-0000			1
35	Connecting rod assembly	35465-0000			1
36	Eccentric screw	35464-0000			1
37	Washer/spacer	35490-0000			1
38	Motor washer	34685-0000			3
	Service kit (belt, diaphragm, valve set, pulsation dampeners)	30122-0000			1
	Service kit (belt, diaphragm, valve set, pulsation dampeners)	30121-0000			1

† Parts included in base assemblies.

* Parts contained in service kit.

JABSCO PRODUCTS ITT

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