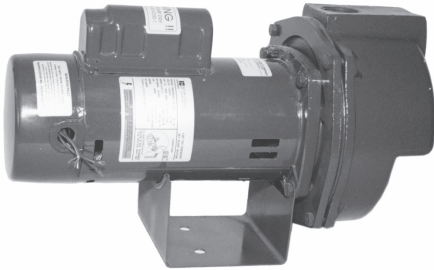


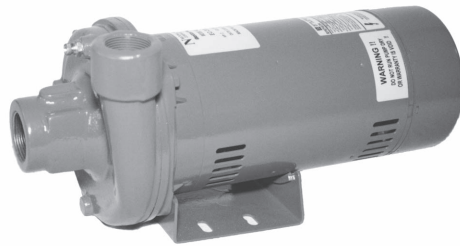
Betta FLO

CENTRIFUGAL PUMPS

SFLP SERIES



EC SERIES



INSTALLATION, OPERATION & MAINTENANCE INSTRUCTIONS

GENERAL INSTRUCTIONS

Examine unit for any visible shipping damage. Immediately report any damage to the carrier. Check all accessory parts carefully against the invoice. All pipe used should be clean and free from rust and scale. Use pipe joint compound on all joints to avoid leaks.

INSTALLATION & OPERATION

Pump Location: Locate the pump as near the well or water source as possible, using short, direct suction pipe. Keep the static suction lift (vertical distance between the center line of the pump and water level) to a minimum. Mount the pump on a solid, level foundation, which provides a rigid and vibration free support. It should be located where the unit is readily accessible for service and maintenance. The pump should be protected against flooding and excessive moisture.

Piping: Both suction and discharge piping should be independently supported at a point near the pump to avoid strains being placed on the pump. Start all piping at pump to avoid strains left by a gap at last connection. It is advisable

to increase the size of both suction and discharge piping at the pump if any appreciable run of pipe is required. Never use a smaller suction pipe than the suction connection on the pump.

Suction Piping: The suction pipe must be kept free from air leaks. The suction pipe must have a gradual slope upward to the pump. Avoid any fittings which may cause an air trap. A check valve or foot valve is required in the suction piping.

Discharge Piping: A gate valve and union should be installed in the discharge line. For removal of the pump for service, close the gate valve, and disconnect at the union.

Priming the Pump: A tee installed in the discharge opening of the pump and provided with a priming plug at the top position; will enable you to fill the pump with water. Once filled and the priming plug replaced, the pump will prime. The priming time depends upon the vertical and horizontal distance between the pump and the water level. The pump should prime itself time after time as long as the suction piping has a check valve or foot valve.

CAUTION: DO NOT run the pump before filling the pump case with liquid, as it may damage the seal.

Storage of Pump: Drain liquid from pump to prevent freezing. It is recommended that a good rust inhibitor be put in the liquid and to prevent excessive corrosion. Be sure motor is kept dry and covered.

When restoring the use of the pump, replace all plugs and make sure all connections are tightly sealed. After a complete check is made, make the initial prime according to directions under the section, Priming the Pump.

ELECTRICAL

WIRING:

Check wiring and fuse charts before connecting wires to service lines. Make sure the voltage and frequency of the power supply agrees with what is stamped on the motor nameplate. If in doubt, check with the power company.

Single Phase: Determine incoming voltage to motor. Where possible, use 230V. Connect wiring to terminal board located inside conduit box cover. Be sure voltage connections agree with wiring diagram on motor nameplate.

Three Phase: 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: Remove the motor end cover. This exposes the motor shaft. If hook-up is correct, the shaft will rotate clockwise. If rotation is not clockwise, reverse any two leads to the starter. The rotation will now be correct.

GROUNDING THE MOTOR:

WIRING TO THIS PUMP MUST BE INSTALLED AND MAINTAINED IN ACCORDANCE WITH THE

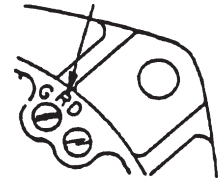
NATIONAL ELECTRICAL CODE OR YOUR LOCAL ELECTRIC CODE. IF MORE INFORMATION IS NEEDED, CALL YOUR LOCAL LICENSED ELECTRICIAN OR YOUR POWER COMPANY.

Permanently ground the motor in accordance with the National Electrical Code Article 250 or applicable local codes and ordinances. It is recommended that a permanent ground connection be made to the unit using a conductor of appropriate size from a metal underground water pipe or a grounded lead in the service panel. Do not ground to a gas supply line. Do not connect to electric power supply until unit is permanently grounded. Connect the ground wire to the approved ground and then connect to the terminal provided.

A metal underground water pipe or well casing at least 10 ft. long makes the best ground electrode. 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.

There is only one proper ground connection on the motor. It is located under the motor canopy and is painted green and identified as GRD. Ground connection must be made to this terminal. See wiring diagram below.

WIRING DIAGRAM: 10-32 GROUND SCREW (BINDING HEAD)



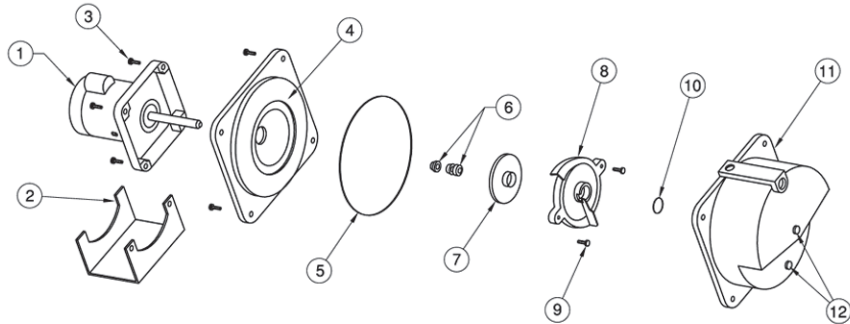
The motor grounding conductor need not be larger than the circuit conductors supplying the motor providing circuit conductors conform to the wiring data provided in this manual.

WIRING SIZE CHART - DIAGRAM E																				
Distance From Motor Fuse Box Meter or Electrical Outlet	Minimum Copper Wire Size Chart (Gauge)																			
	Single Phase Motors								Three Phase Motors											
	3/4 HP		1 HP		1-1/2 HP		2 HP		3 HP		3/4 HP		1 HP		1-1/2 HP		2 HP		3 HP	
	115 Volt	230 Volt	115 Volt	230 Volt	115 Volt	230 Volt	230 Volt	230 Volt	230 Volt	230 Volt	460 Volt	230 Volt	460 Volt	230 Volt	460 Volt	230 Volt	460 Volt	230 Volt	460 Volt	
0-50 Feet	12	14	10	14	10	12	12	10	14	14	14	14	14	14	14	14	14	14	14	
50-100 Feet	12	14	10	14	8	12	12	10	14	14	14	14	14	14	14	14	14	14	14	
100-150 Feet	10	14	10	12	6	12	12	10	14	14	14	14	14	14	14	14	14	14	14	
150-200 Feet	10	12	8	12	*	10	10	10	14	14	14	14	12	14	12	14	12	14	12	
200-300 Feet	8	12	6	10	*	10	10	8	14	14	12	14	12	14	10	12	10	12	12	
Full Size (Amps)	20	15	30	15	30	20	20	30	15	15	15	15	15	15	15	15	15	15	15	

*NOT ECONOMICAL TO RUN IN 115VOLT, USE 230 VOLT

TROUBLE AND CAUSE	REMEDY
<p>Failure to Pump</p> <ol style="list-style-type: none"> 1. Pump not properly primed. 2. Speed too low. 3. Total head more than that for which pump was intended. 4. Suction lift too great. 	<ol style="list-style-type: none"> 1. Make sure pump casing and suction line are full of water. See Priming Instructions. 2. Check voltage at motor terminals and at meter when pump is operating. If low, refer to wiring instructions, or check with your Power Company. Check loose connections. 3. A pump designed for higher head is needed. 4. Locate pump closer to source of water. Make sure suction piping is large enough.
<p>Reduced Capacity and/or Head</p> <ol style="list-style-type: none"> 1. Air pockets or leaks in suction line. 2. Clogged impeller. 3. Strainer too small, or clogged. 4. Insufficient submergence of suction pipe. 5. Excessive suction lift. 6. Total head more than that for which pump was intended. 7. Excessively worn impeller and wearing ring. 	<ol style="list-style-type: none"> 1. Check suction piping. 2. Remove and clean. 3. Use larger strainer, or clean. 4. Add lengths of suction pipe to keep submerged and well below the water surface. 5. If caused by suction pipe friction, enlarge piping. Otherwise, move pump closer to water level. 6. A pump designed for higher head is needed. 7. Order replacement parts using Repair Parts List in this manual.
<p>Pump Loses Prime</p> <ol style="list-style-type: none"> 1. Air leaks in suction line. 2. Excessive suction lift and operating too near shut-off point. 3. Water level drops while pumping, uncovering suction piping. 	<ol style="list-style-type: none"> 1. Check suction piping. 2. Move pump nearer water level. 3. Check water supply. Add length of pipe to suction to keep submerged and under water.
<p>Mechanical Troubles and Noise</p> <ol style="list-style-type: none"> 1. Bent shaft and/or damaged bearings. 2. Suction and/or discharge piping not properly supported and anchored. 	<ol style="list-style-type: none"> 1. Take motor to authorized motor repair shop. 2. See that all piping is supported to relieve strain on pump assembly.

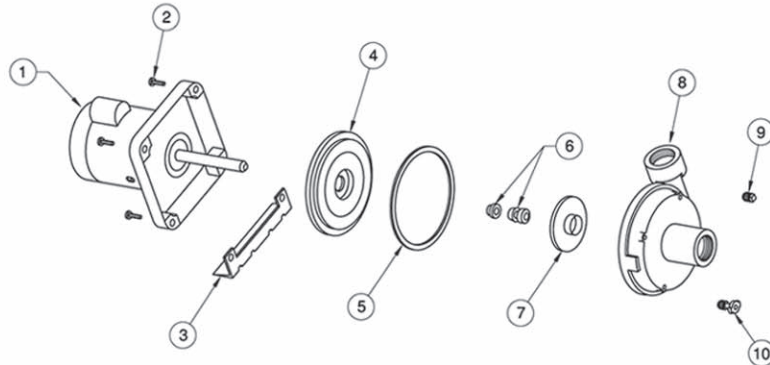
SFLP SERIES REPAIR PARTS



ITEM #	PART #	QTY.	DESCRIPTION
1	N.A.	1	SEE SQ FLANGE MOTOR
2	SFC000PS-248	1	48 FRAME PUMP STAND
2	SFC000PS-256	1	56 FRAME PUMP STAND
3	EXP0198000126	8	3/8-16 X 1 CAP SCREWS
4	SFLP000SP-101	1	1010 SEAL PLATE
5	SFH000HG-200	1	HOUSING O-RING
6	JET000SK-200	1	2000 ROTARY SEAL
7	IMP102742-5000	1	SFLP75 NORYL IMPELLER
7	IMP102742-5125	1	SFLP100 NORYL IMPELLER
7	IMP102742-5350	1	SFLP150 NORYL IMPELLER
7	IMP102742-5485	1	SFLP200 NORYL IMPELLER
7	IMP102752-5000	1	SFLP75 BRASS IMPELLER
7	IMP102752-5125	1	SFLP100 BRASS IMPELLER

ITEM #	PART #	QTY.	DESCRIPTION
7	IMP102752-5350	1	SFLP150 BRASS IMPELLER
7	IMP102752-5485	1	SFLP200 BRASS IMPELLER
7	IMP101410-5750	1	SFLP300 CAST IRON IMPELLER
8	SFLP075DF-101	1	SFLP75 DIFFUSER
8	SFLP100DF-101	1	SFLP100 DIFFUSER
8	SFLP150DF-101	1	SFLP150 DIFFUSER
8	SFLP200DF-101	1	SFLP200 DIFFUSER
8	SFLP300DF-101	1	SFLP300 DIFFUSER
9	EXP0198000103	2	DIFFUSER S.S. CAP SCREW
10	JET000DO-200	1	DIFFUSER O-RING
11	SFLP000HS-101	1	HOUSING
12	EXP0168000161	2	1/4" PLUG

EC SERIES REPAIR PARTS



ITEM #	PART #	QTY.	DESCRIPTION
1	N.A.	1	SEE SQ FLANGE MOTOR
2	1022	4	3/8-16 X 1-1/4 CAP SCREW
3	EC101872	1	PUMP STAND
4	EC101810	1	SEAL PLATE
5	EC101866	1	HOUSING O-RING
6	S101270	1	ROTARY SEAL
7	L101820	1	1/2 HP IMPELLER
7	L101822	1	3/4 HP IMPELLER
7	L101823	1	1 HP IMPELLER

ITEM #	PART #	QTY.	DESCRIPTION
7	L101824	1	1-1/2 HP IMPELLER
7	L101825	1	2 HP IMPELLER
7	L101826	1	2-1/2 HP IMPELLER
7	L101827	1	3 HP IMPELLER
8	EC101860	1	1/2 - 3/4 HP HOUSING
8	EC101862	1	1 - 1-1/2 HP HOUSING
8	EC101864	1	2 - 2-1/2 - 3 HP HOUSING
9	1058	1	1/4" PLUG
10	DC604-4	1	DRAIN COCK - 1/4"