



Owner's Manual

4" Submersible Pumps

Two & Three Wire, 1/2 through 1-1/2 HP



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GENERAL SAFETY


Important Safety Instructions


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


SAVE THESE INSTRUCTIONS – This manual contains important instructions that should be followed during installation, operation, and maintenance of the product. Save this manual for future reference.

Safety Labels

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


 **DANGER** Indicates a hazard which, if not avoided, will result in death or serious injury.


 **WARNING** Indicates a hazard which, if not avoided, could result in death or serious injury.


 **CAUTION** Indicates a hazard which, if not avoided, could result in minor or moderate injury.

NOTICE indicates practices not related to personal injury.

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

 **WARNING**
HAZARDOUS PRESSURE Under certain conditions, submersible pumps can develop extremely high pressure. Install a pressure relief valve capable of passing entire pump flow at 100 PSI (690 kPa).

 **WARNING** Do not allow pump, pressure tank, piping or any other system component containing water to freeze. Freezing may damage system, leading to injury or flooding. Allowing pump or system components to freeze will void warranty.

 **DANGER**
HAZARDOUS VOLTAGE Can shock, burn or cause death. To avoid dangerous or fatal electric shock hazard, use pump only in a water well.

Do not install this pump in a pond, river or other open body of water that could be used for swimming or recreation. Do not swim, wade or play in a body of water in which a submersible pump has been installed.

 **WARNING** Install ground and wire pump according to local and Canadian Electrical Code or National Electrical Code requirements that apply.

 **DANGER** Disconnect electrical power supply before installing or servicing pump.

 **WARNING** Make sure line voltage matches pump voltage and frequency.

Install pump according to all plumbing, pump and well code requirements.

Test well water for purity before using well. Call your local health department for testing procedure.

During installation, keep well covered to prevent leaves and foreign material from falling into the well. Foreign objects in well can contaminate water and cause serious mechanical damage to pump.

Pipe joint compound can cause cracking in plastics. Use only Teflon tape when sealing joints in plastic pipe or connecting pipe to thermoplastic pumps.



Before you start

Selecting the Correct Pump

Before you remove and reinstall your submersible well pump, let's review your well condition and the pumps capabilities.

WELL LOG INFORMATION

The driller that drilled your well should have given you a 'well log' summarizing the:

- A. Depth that the well was drilled, ie 170 ft. from the surface.
- B. Depth to what level the water rose in well, ie 130 ft. from the surface
- C. Depth to what level the water dropped to with the test pump pumping in your well, ie dropped 20' to 150' from the surface when pumping continuously
- D. The gallons per minute your pump pumped, ie 10 GPM

In some counties this information is recorded at the health office or other offices of the county and/or the driller may have retained the information in the driller's file.

You need a copy of the well log or this information from the well log.

If you can not find the well log, you will need to drop a weighted string in the well to:

- A. Record the depth when it hits the bottom of the well.
- B. The depth at which water is standing in the well, ie the length of string from the weighted end of the string that is wet.

NOTE, your pump needs to be installed at minimum 5' above the bottom of the well and 15-20' below the surface of the water column in the well.

PRE-INSTALLATION

4" PUMP DESIGN AND OPTIMUM PERFORMANCE

This pump is designed to pump 10 gallons per minute (10 GPM), which is the average size home's (3-4 bedroom) use of water per minute. Larger homes will require larger pumps.

Deeper wells require higher horsepower to deliver water to the home. See chart at right to ensure you have chosen the correct horsepower for your application.

PROPER 4" PUMP SELECTION

HP	GPM	PUMP DEPTH IN WELL
1/2	10	60-100'
3/4	10	100-175'
1	10	175-250'
1-1/2	10	greater than 250'

VOLTAGE

4" submersible pumps are offered in two voltages, 115 or 230V. Be sure you select a pump whose motor voltage matches the voltage at the well

NUMBER OF PUMP WIRES AND CONTROL BOXES

4" pumps are offered in either 2-wire or 3-wire, indicating the number of wires running from the pump motor.

2-wire motors have 3 wires running from the motor, 2 to provide electric service and 1 ground wire. The motor controls are in the motor in the well.

3-wire motors have 4 wires running from the motor, 3 to provide electric service and 1 ground wire. These motors require a motor control box mounted on the wall near your water pressure tank.

2-wire motors are typically only used in wells less than 300' depths and 3-wire motors can be used in wells at any depth.

Some users prefer their motor controls be readily available for service. A 3-wire pump with control box mounted near the tank provides ease of serviceability.

3-wire start components including capacitors and relays are located in the control box for ease of service. 2-wire start components are inside the hermetically sealed pump motor and rarely fail. If failure does occur, the pump must be replaced.

NOTE: Control box voltage and horsepower must match pump voltage and horsepower.

PUMP		CONTROL BOX	
HP	VOLTAGE	HP	VOLTAGE
1/2	115	1/2	115
1/2	230	1/2	230
3/4	230	3/4	230
1	230	1	230
1-1/2	230	1-1/2	230

CONFIRMATION OF SELECTION

Knowing the above and prior to installing or removing and reinstalling your 4" pump, please confirm the following:

- The correct HP for the depth the pump will be in the well.
- The correct GPM (gallons per minute) for your application.
- The correct voltage
- The correct number of wires
- The correct control box (if applicable)

For parts or assistance, call ECO-FLO Customer Service at 1-877 326-3561

PRE-INSTALLATION

PLANNING INSTALLATION

Inspect the pump and motor for delivery damage. Report any damage immediately to the shipping carrier or to your dealer.

The well driller should pump out all fine sand and foreign matter before the pump is installed. See the Initial Start-Up section of this manual.

Pump performance is based on pumping clear, cold, liquid water with no entrained air. Warranty is void in the following conditions:

- If the pump has pumped excessive sand - excessive sand can cause premature wear to pump.

- If water is corrosive
- If entrained gas or air are present in water being pumped - these can reduce flow and cause cavitation which can damage pump.
- If pump has been operated with discharge valve closed - severe internal damage will result.

Install the pump at least 15 to 20 ft. (4.5 to 6 m) below the lowest water level reached with the pump running (lowest draw-down water level), and at least 5 ft. (1.5M) above the bottom of the well.

GROUNDING THE PUMP



WARNING Can shock, burn or cause death. Permanently ground pump, motor and submersible motor control before connecting power supply to motor.

Ground submersible motor in accordance with all codes and ordinances that apply. Use copper ground wire at least as large as wires carrying current to motor.

Motor is supplied with copper ground wire. Splice to copper conductor that matches motor wire size specified in Table 3. See "cable splicing" under installation.

Permanently ground pump, motor and submersible motor control before connecting power cable to power supply. Connect ground wire to approved ground first, then connect equipment being installed.

Do not ground to a gas supply line.



WARNING Risk of shock or fire. Can shock, burn or kill. Permanently ground the pump, motor and control box before connecting the power supply to the motor.

WIRING CONNECTIONS

All wiring must meet National Electrical Code or Canadian Electrical Code and local code requirements.

Use only copper wire for connections to pump and submersible motor control.

Table 1: Recommended Fusing Data - 60 Hz, Single Phase, 3 Wire Submersible Pump Motors

HP	Volts	Fuse Size	
		Standard	Dual Element
1/2	230	20	10
3/4	230	25	15
1	230	30	20
1-1/2	230	35	20

To avoid over-heating wire and excessive voltage drop at motor, be sure wire size is sufficient per NEC standards for the pump horsepower and length of wire run.

NOTICE: See installation Wiring Diagrams for typical wiring hookups and submersible motor control identification.

Table 2: Recommended Fusing Data - 60 Hz, Single Phase, 2 Wire Submersible Pump Motors

HP	Volts	Fuse Size	
		Standard	Dual Element
1/2	115	35	20
3/4	230	20	10
1	230	25	15
1-1/2	230	30	20

For parts or assistance, call ECO-FLO Customer Service at 1-877 326-3561

WIRING CONNECTIONS

INSTALLATION WIRING - SINGLE PHASE, 3 WIRE



For motors of 1-1/2 HP and above, use a magnetic starter to avoid damage to the pressure switch. Consult factory for wiring information.



Risk of electric shock. Can shock, burn or kill.

Ensure the ground control box, all metal plumbing and motor frame with copper wire are in compliance with local codes. Use a ground wire at least as large as the wires supplying power to the motor.

Permanently close all unused openings in this and other equipment.

Disconnect power to the control box before working on or around the control box, pipes, cable or pump.

Copper Cable Length in Ft. (Service to Motor) G-Series Motors: 1 Ph, 2-Wire Cable, 60 Hz. Wire Size

HP	Volt	Wire Size, AWG											
		14	12	10	8	6	4	3	2	1	0	00	
0.5	115												
0.5	230	466	742	1183	1874	2915	4648	5843	7379	9295	11733		
0.75	230	353	562	891	1420	2210	3523	4429	5594	7046	8895	11222	
1	230	271	430	686	1087	1692	2697	3390	4281	5394	6808	8590	

Copper Cable Length in Ft. (Service to Motor) G-Series Motors: 1 Ph, 3-Wire Cable, 60 Hz. Wire Size

HP	Volt	Wire Size, AWG											
		14	12	10	8	6	4	3	2	1	0	00	
0.5	230	359	571	912	1444	2246	3581	4502	5685	7162	9040		
0.75	230	281	447	713	1129	1757	2800	3521	4446	5601	7070	8920	
1	230	233	371	592	937	1458	2324	2921	3689	4648	5867	7402	

All cable lengths meet NEC for jacketed 60°C copper cable. Based on 3-Wire Induction Run requirements; Capacitor Run requirements may vary. Local code requirements may vary. For aluminum cable, go up two sizes from chart (for example, if the chart calls for No. 10AWG (6mm²) for copper, go to No. 8 AWG (10mm²) for aluminum; the smaller the number, the larger the cable). Use oxidation inhibitors on the connections.

Match the motor to the control box as shown below:

HP	Voltage	Motor Number	Control Box Number
1/2	115		
1/2	230	FM4300531A-01	FM005CB-IR2-01
3/4	230	FM4300731A-01	FM007CB-IR2-01
1	230	FM4301031A-01	FM010CB-IR2-01

INSTALLATION

INSTALLATION WIRING INSTRUCTIONS

Disconnect power before working on or around submersible motor control, pipes, cable, pump or motor.

Ground submersible motor control, all metal plumbing and motor frame with copper wire in compliance with National Electrical Code or Canadian Electrical Code and local code requirements. Use ground wire at least as large as the wires supplying power to motor.

At well head, connect ground wire to grounding terminal that meets Canadian Electrical Code or National Electrical Code requirements that apply. For more information, contact local code officials.

Permanently close all unused openings in this and other equipment.

Note:

Install submersible motor control vertically on wall with top side up. 3-Wire pumps have three power supply wires (Red/Black/Yellow) and one ground wire (Green). 3 wire pumps will not operate without submersible motor control; attempting to do so will burn out motor. Installations must include circuit and component protection in compliance with U.S. National Electrical Code or Canadian Electrical Code, Part 1.

If main overload trips, look for:

1. Shorted Capacitor
2. Voltage Problems
3. Overload or locked pump

Single Phase, 3 Wire Installation

⚠ DANGER Hazardous voltage. Can shock, burn or kill.

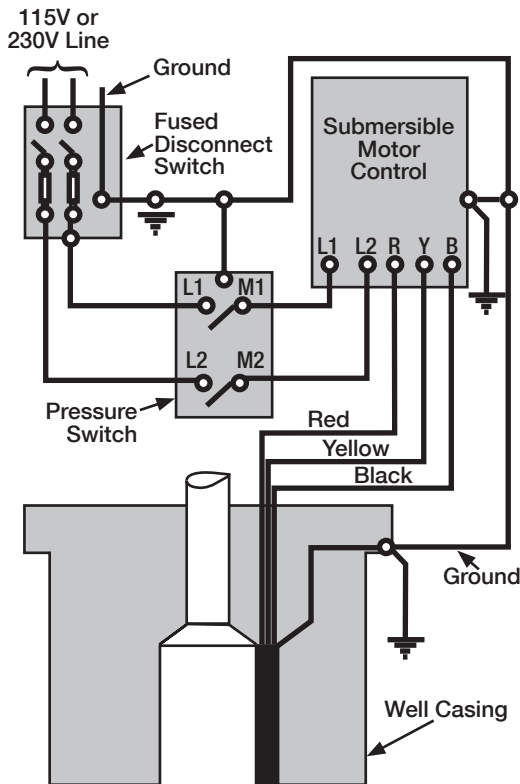


Figure 1-A

Three Wire- 1/2 through 2 HP Submersible Motor Control. Follow color coding when connecting submersible motor control. (Yellow to Y, Red to R, Black to B)

Single Phase, 2 Wire Installation

⚠ DANGER Hazardous voltage. Can shock, burn or kill.

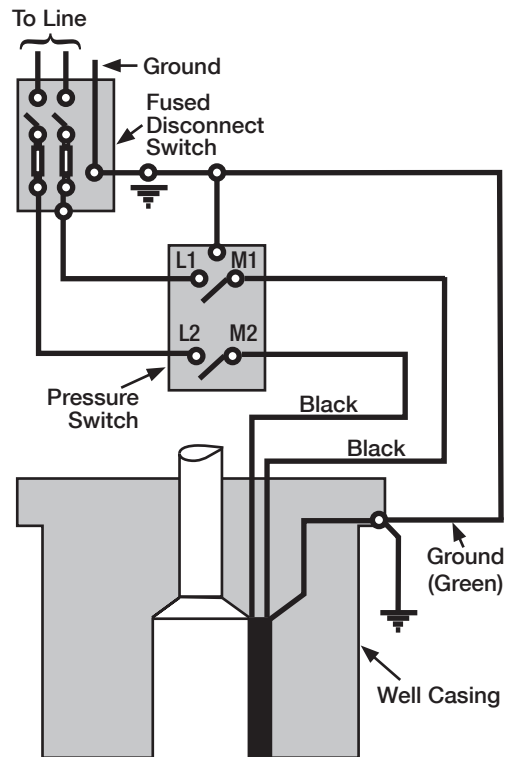


Figure 1-B

Two-wire pumps have two power supply wires (Black/Black) and one ground wire. Submersible motor control is not required.

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INSTALLATION

Wire Splicing

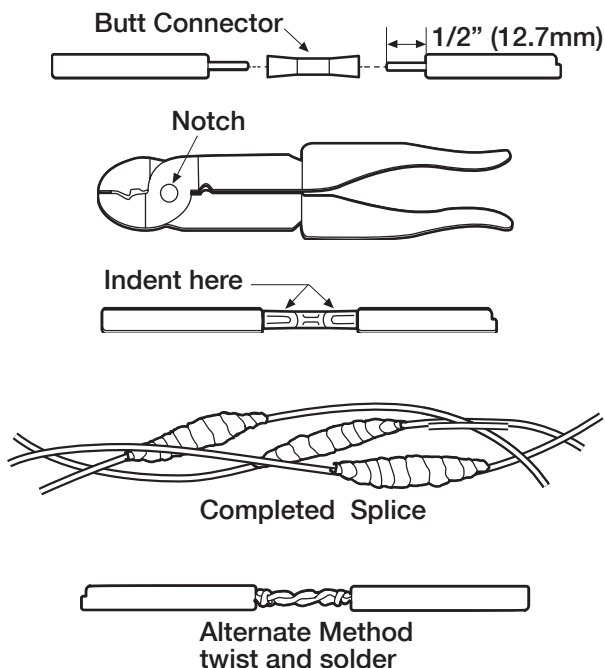
Splice wire to motor leads using only copper wire for connections to pump motor and control box.

1. Tapered splice (Wire sizes No. 8 and larger):

- Cut motor lead staggering lead and wire length so that second lead is 2" longer than first lead and third lead is 2" longer than second.
- Cut off power supply wire ends. Match colors and lengths of the wires to colors and lengths of motor leads.
- Trim installation back 1/2" from supply wire and motor lead ends.
- Insert motor lead ends and supply wire ends into butt connectors. Match wire colors between supply wires and motor leads.
- Using crimping pliers, indent butt connector lugs to attach wire.
- Cut electrical "Scotchfil™" or equivalent insulation putty into three equal parts and form tightly around butt connectors. Be sure Scotchfil™ overlaps insulated part of wire.
- Using #33 Scotch™ or equivalent tape, wrap each joint tightly; cover wire for about 1-1/2" on each side of joint. Make four passes with the tape. When finished you should have four layers of tape tightly wrapped around the wire. Press edges of tape firmly down against the wire.

NOTICE: Since tightly wound tape is the only means of keeping water out of splice, efficiency of splice will depend on the care used in wrapping the tape.

NOTICE: For wire sizes larger than No. 8, use soldered joint rather than Scotchfil™ putty.



NOTICE: Since the tightly wound tape is the only means of keeping water out of the splice, the efficiency of the splice will depend on the care used in wrapping the tape.

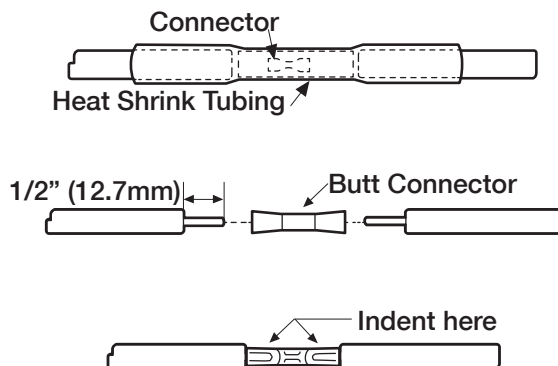
NOTICE: For wire sizes larger than #8, (7mm²) use a soldered joint rather than Scotchfil putty.

2. Heat shrink splice

[for wire sizes #14, 12 and AWG (2,3 and 5mm)]

- Remove 3/8" insulation from ends of motor leads and power supply wires.
- Put plastic heat shrink tubing over motor leads between power supply and motor.
- Match wire colors and lengths between power supply and motor.
- Insert supply wire and lead ends into butt connector and crimp. Match wire colors between power supply and motor. Pull leads to check connections.
- Center tubing over butt connector and apply heat evenly with torch (match or lighter will not supply enough heat).

NOTICE: Keep torch moving. Too much concentrated heat may damage tubing.



3. Mechanical Splice Kit with plastic insulators (for 14, 12 and 10 Gauge AWG Wire (2, 3 and 5mm):

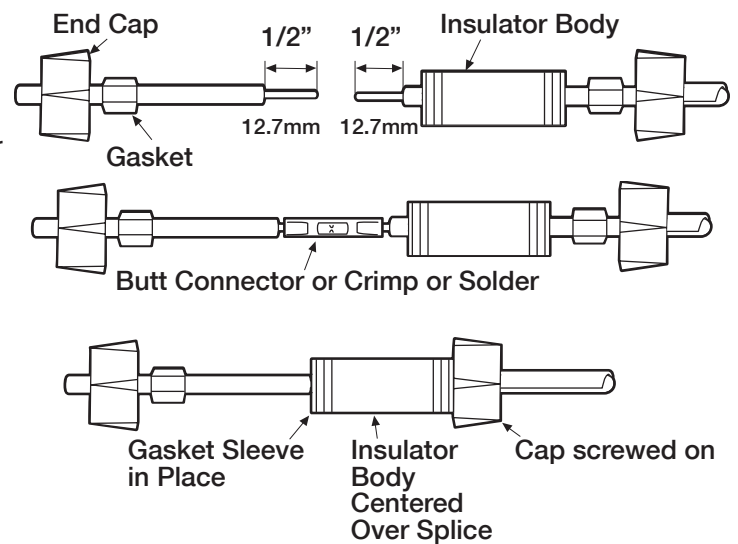
- Cut motor leads staggering lead and wire length so that 2nd lead is 4" (101.6mm) longer than 1st lead and 3rd lead is 4" (101.6mm) longer than second.
- Cut wire ends matching colors and lengths of wires between power supply and motor.
- Trim insulation back 1/2" (12.7mm) from power supply wire and motor lead ends.
- Unscrew plastic caps from insulators. Place a cap and neoprene gasket sleeve on each wire to be spliced.
- Slide insulator body onto one wire end.
- Insert wire end into butt connector and crimp. Match wire colors between power supply and motor.
- Center insulator body over splice and slide gasket sleeves into body as far as they will go. Screw caps onto insulator body and tighten by hand for a strong,

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INSTALLATION

Mechanical Splice Kit with Plastic Insulators (for 14, 12 and 10 Gauge AWG Wire, or 2, 3 and 5.5mm² Wire)

1. Cut off motor leads. Stagger the lead and wire length so that the second lead is 4 inches (101.6mm) longer than the first lead and the third lead is 4 inches (101.6mm) longer than the second.
2. Cut off wire ends. Match colors and lengths of the power supply wires to colors and lengths of the motor leads.
3. Trim insulation back 1/2" (13mm) from the cable ends and motor lead ends.
4. Unscrew plastic caps from insulators. Place a cap and a neoprene gasket sleeve on each wire end to be spliced. Slide the insulator body onto wire end.
5. Insert the wire end into the butt connector and crimp. Match cable and motor wire colors.
6. Center the insulator body over splice and slide the neoprene sleeves into the body as far as they will go. Screw caps onto the insulator body and tighten by hand for a strong, waterproof splice.



INSTALLATIONS

Power Supply Wire Installation

1. To test submersible, momentarily (no more than 5 seconds) connect it to proper power supply. Power supply frequency and voltage must match motor name plate frequency and voltage to within $\pm 10\%$.
2. Fasten power supply wire leads securely to pump discharge section; leave 4-5" (100-125mm) of slack in leads at this point. Securely fasten leads to plastic pipe within 6" (150mm) of the pump discharge section. Use centering guides to protect wire and pipe from rubbing well casing.
3. Connect copper ground wire to motor bracket. Ground wire must be as large as wires supplying current to motor. Consult current Canadian Electrical Code and local codes for grounding information.
4. Most 4" pumps have an eyelet on the pumps discharge for attaching a rope to assist in lowering into and pulling the pump from the well. Attach a nylon rope of adequate length to eyelet
5. Do not use submersible power supply wires supplied by pump manufacturer to lower or lift pump. When lowering pump into well use only the rope and/or discharge pipe, secure supply wires to discharge pipe at 10 ft. (3M) intervals with Scotch™ #33 or equivalent electrical tape. DO NOT damage pump wires.

NOTICE:

To avoid dropping pump down well or damaging wires or splices, **NEVER** allow pump wires to support weight of pump.

Discharge outlet is 1-1/4" FNPT threaded. Use 100 PSI (689.5kPa) rated polyethylene plastic pipe for installations up to 100' (30.5M) depth.

Use 160 PSI (1103.2 kPa) rated polyethylene plastic for installations up to 220' (67.1M) depth.

For depths beyond 220' (67.1M) use galvanized steel pipe for the entire drop pipe.

INITIAL START-UP/NEW WELLS

NOTICE: NEVER operate pump with gate valve completely closed. Pump can destroy itself if run with valve shut off ("dead-headed") and warranty will be void.

NOTICE:

To avoid sand-locking pump, follow procedure below when starting pump for the first time. NEVER start a pump with gate valve completely open unless you have done this procedure first.

1. Connect a pipe elbow, a short length of pipe and a gate valve to pump discharge at well head (see Fig. 3).
2. Mount submersible motor control (3-wire pump) or fused disconnect switch (2-wire pump) in a permanently weatherproof place. Make sure that controls will not be subjected to extreme heat or excess moisture.
3. Make sure controls are in OFF position.
4. Connect motor leads and power supply to submersible motor control or magnetic starter (see Installation Wiring Diagrams).

DO NOT START PUMP YET.

5. Set gate valve on discharge 1/3 open; start pump (see Fig. 3).

6. Keep gate valve at this setting while water pumps out on ground. Let run until water is clear of sand or silt. (To check solids in water, fill a glass from pump and let solids settle out).
7. When water is completely clear at 1/3 setting, open gate valve to approximately 2/3 open and repeat process.
8. When water is completely clear at 2/3 setting, open gate valve completely and run pump until water is completely clear.
9. Remove gate valve for permanent installation near tank (Fig. 4).
10. Install sanitary well seal or pitless adapter unit, well unit, electrical conduit and surface piping. Installation must meet all code requirements that apply.

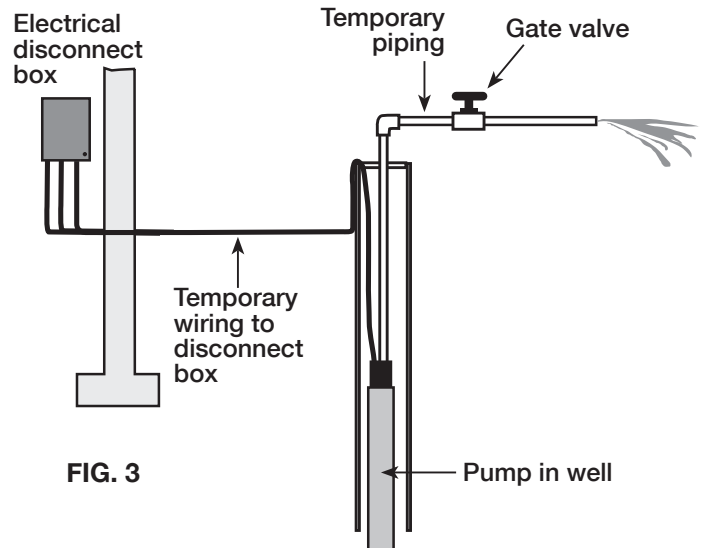


FIG. 3

TEMPORARY CONNECTIONS WHILE CLEANING WELL FOR START-UP

Connecting To Tank/Water System



WARNING Hazardous pressure. Submersible pumps can develop very high pressure in some situations. To prevent tank blowup, install a pressure relief valve able to pass full pump flow at 100 PSI (690 kPa).



CAUTION Pipe joint compound can cause cracking in plastics. Use only Teflon tape on joints in plastic pipe.

NOTICE:

Allowing pump or piping system to freeze may severely damage pump and will void warranty. Protect pump and entire piping system (including pressure tank) from freezing.

Pre-Charged Pressure Tank Hookup

See Fig. 4 for piping connections to pre-charged pressure tank.

NOTICE:

Check air pre-charge in tank before starting pump. Adjust pre-charge to 2 PSI (13.8kPa) below pump cut-in setting, (ie, a pre-charge tank used with a 30-50 switch should be pre-charged with air to 28 PSI (193.1 kPa). Adjust pre-charge by adding or bleeding air through schrader valve located on top of tank. Check pre-charge annually and adjust as needed.

For parts or assistance, call ECO-FLO Customer Service at 1-877 326-3561

INSTALLATIONS

Important Electrical Grounding Information



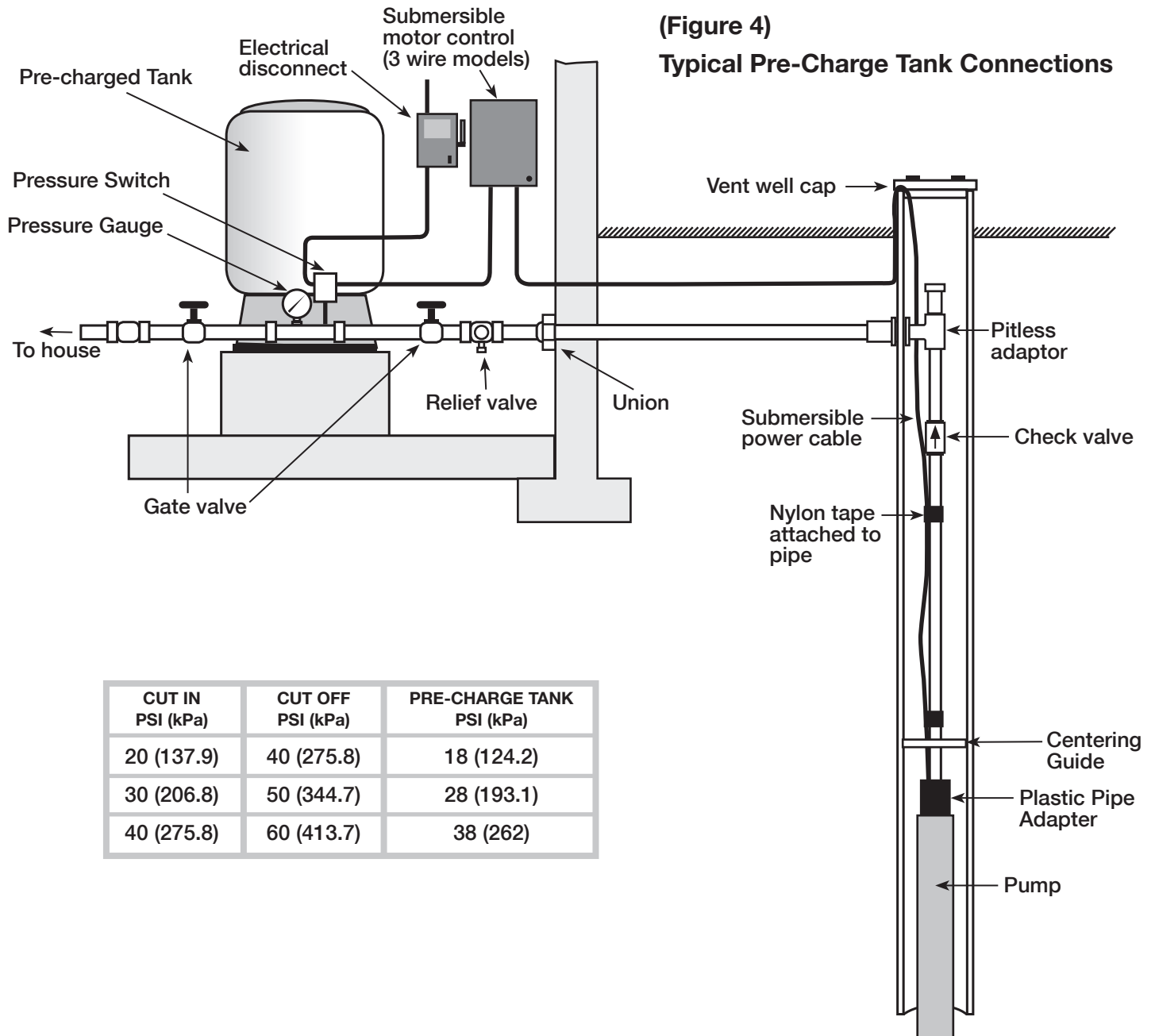
Hazardous voltage. Can shock, burn, or kill. To reduce the risk of electrical shock during pump operation, ground and bond the pump and motor as follows:

- A. To reduce risk of electrical shock from metal parts of the assembly other than the pump, bond together all metal parts accessible at the well head (including metal discharge pipe, metal well casing, and the like). Use a metal bonding conductor at least as large as the power cable conductors running down the well to the pump's motor.
- B. Clamp or weld (or both if necessary) this bonding conductor to the grounding means provided with the

pump, which will be the equipment-grounding terminal, the grounding conductor on the pump housing, or an equipment-grounding lead. The equipment-grounding lead, when provided, will be the conductor having green insulation; it may also have one or more yellow stripes.

- C. Ground the pump, motor, and any metallic conduit that carries power cable conductors. Ground these back to the service by connecting a copper conductor from the pump, motor, and conduit to the grounding screw provided within the supply-connection box wiring compartment. This conductor must be at least as large as the circuit conductors supplying the pump

SAVE THESE INSTRUCTIONS.



CUT IN PSI (kPa)	CUT OFF PSI (kPa)	PRE-CHARGE TANK PSI (kPa)
20 (137.9)	40 (275.8)	18 (124.2)
30 (206.8)	50 (344.7)	28 (193.1)
40 (275.8)	60 (413.7)	38 (262)

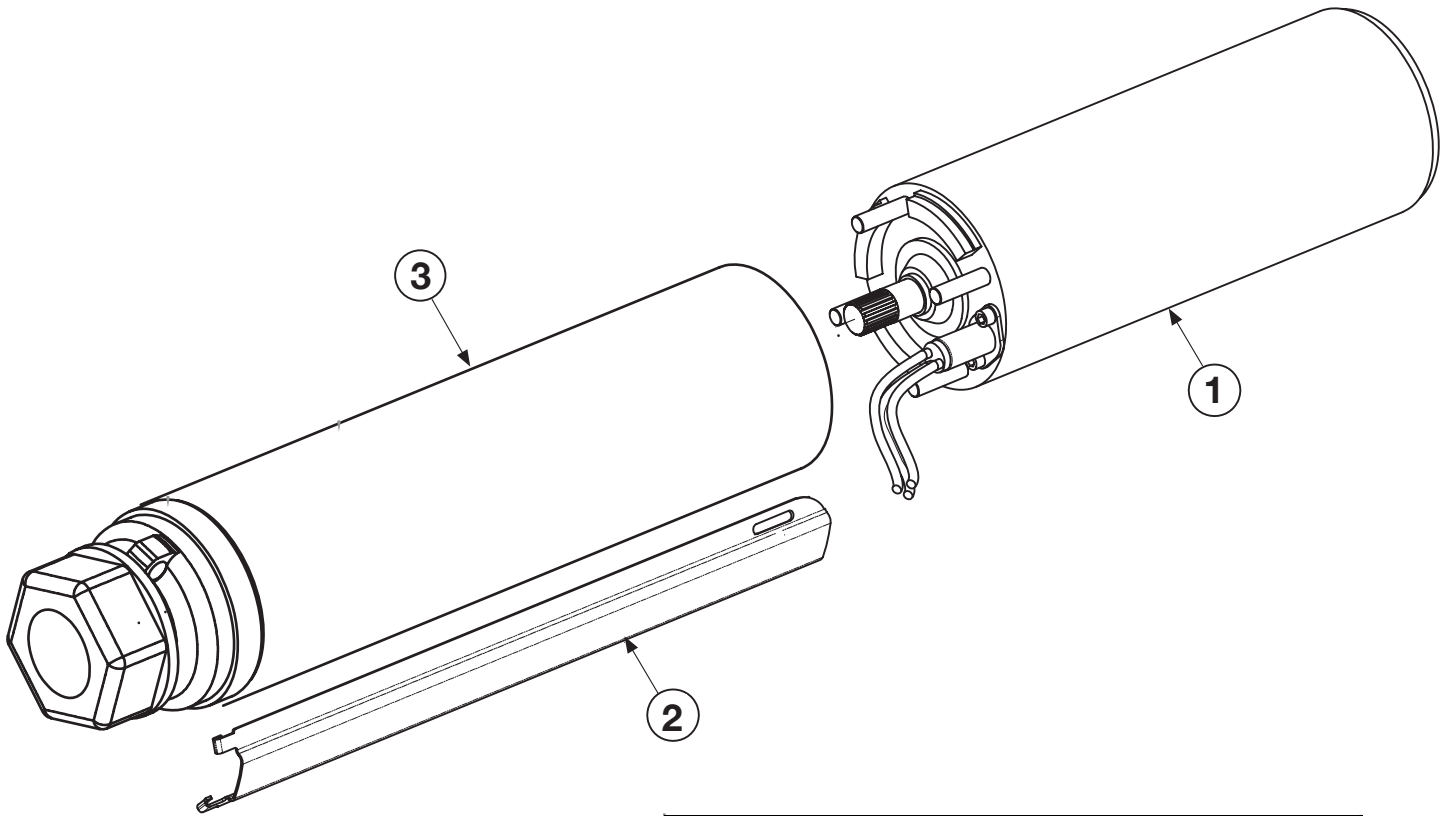
For parts or assistance, call ECO-FLO Customer Service at 1-877 326-3561

TROUBLE SHOOTING

PROBLEM	CHECK	CORRECTIVE ACTION
MOTOR WILL NOT START BUT FUSES DO NOT BLOW	No voltage at submersible motor control or disconnect switch.	Replace blown fuses.
	No voltage at pressure switch.	Replace faulty pressure switch.
	No voltage at submersible motor control box.	Rewire supply to submersible motor control.
	Cable or splices bad.	Consult licensed electrician or serviceman.
	Submersible motor control box incorrectly wired.	Reconnect submersible motor control correctly (see Wiring Installation Diagrams).
FUSES BLOW OR TRIPS WHEN MOTOR STARTS	Wrong size fuse or wrong time delay fuse.	Check fuse size against chart, Page 4. Install correct fuse or size time delay fuse.
	Wire size too small.	Check wire size against chart, Page 4. Install correct size wire.
	Starting capacitor defective, or blown	Check submersible motor control box to see if starting capacitor has blown out. Replace starting capacitor.
	Voltage is too low or high voltage.	Check that line voltage is within $\pm 10\%$ of nameplate. If voltage variation is greater than $\pm 10\%$, call power company or local hydro authority to adjust voltage.
	Power supply wire leads not correctly connected to submersible motor control box.	Check submersible motor control wiring diagram against incoming power hookup. Check power supply wire motor control cover. Reconnect power supply wires so wire color code matches motor lead color code.
	Broken wire in submersible motor control box.	Examine all connections and wiring in submersible. Disconnect power and repair or replace faulty wire.
	Pump or motor stuck or binding.	Check for locked shaft in pump. If necessary, pull pump (make all possible above ground checks first). If pump is locked, replace it. Clean well of all sand or lime before reinstalling pump.
FUSES BLOW OR OVERLOAD PROTECTOR TRIPS WHEN MOTOR IS RUNNING	The voltage is either too high or too low.	Check that line voltage is within $\pm 10\%$ of rated nameplate voltage while motor is running. If voltage variation is more than $\pm 10\%$, call power voltage while motor is running.
	High ambient (atmospheric) temperature is too high.	Check temperature of submersible motor control. Do not mount submersible motor control in direct sunlight.
	Submersible motor control with wrong voltage or horsepower rating.	Compare voltage and horsepower on motor nameplate with those given on control box nameplate or on the circuit diagram inside submersible motor control cover. Replace the control box if the numbers do not match.
	Wire size too small.	Check wire size against the table in the wiring section of this manual. Install the correct size wire.
	Cable splices or motor leads grounded, shorted or open.	Consult a licensed electrician or qualified serviceman. Do not attempt to disassemble the pump or motor.
PUMP STARTS TOO FREQUENTLY	Leaks in system.	Check all tank connections with soapsuds for air leaks. System must be air and water tight.
	The pressure switch is defective.	Check for defective switch or switch out of adjustment. Re-adjust or replace pressure switch.
	Tank waterlogged.	Pre-charged tanks: check tank pre-charge air pressure and check for leak in bladder. Adjust air pressure to 2 PSI (13.8kPa) less than pump cut-in pressure (when there is no water pressure on system). Replace bladder if necessary.
		Air over water tanks: check for air leaks. Check Air Volume Control (AVC). Check snifter valve operation. Repair or replace tanks; replace snifter valves if necessary.
	Leak in drop pipe.	Raise drop pipe one length at a time until water stands in pipe. Replace the pipe above that point.
	Pressure switch too far from tank.	Measure distance from pressure switch to tank. Move switch to within 1' (.3M) of tank.
LITTLE OR NO WATER DELIVERED	The bleeder orifice check valve is stuck or installed backwards (standard tank only).	Examine valve. If stuck, free valve; if installed backwards, reverse it.
	Low water level.	Determine lowest water level in well while pump is running and compare to pump depth setting. Lower pump further into well (but at least 5' (1.6M) above bottom of well). Throttle pump discharge until discharge equals recovery rate of well. NOTICE: Running pump while airlocked can cause loss of prime and seriously damage pump.
	Low voltage.	Check voltage at submersible motor control with pump running. Check incoming wire size and power supply wire size against the tables in the wiring section of this manual. Install larger wire from meter to submersible motor control. Install larger wire from submersible motor control to pump. If necessary, have power company raise supply voltage.
	Plugged intake screen.	Pull pump and check condition of screen. Clean or replace as necessary.
	Check valve at pump if discharge is stuck.	Pull pump and examine check valve. Free check valve.
	Impellers and diffusers are worn.	Make sure system is clear of obstructions and pump is in solid water and operating normally.
AIR OR MILKY WATER DISCHARGE FROM FAUCETS	Gas in well water.	Check for presence of gas in well water. Remove bleeder orifices; Remove bleeder orifices; plug tees. Be sure plugged tees do not leak. If necessary, separate gas from air before it enters pressure tank.
	Air volume control not working (standard tanks only)	Make sure ports and ball check valves are clear. Replace control if necessary

For parts or assistance, call ECO-FLO Customer Service at 1-877 326-3561

SUBMERSIBLE PUMP REPAIR PARTS



NO.	QUANTITY	PART NUMBER	DESCRIPTION
1	1	EFSUP0501	Motor 1/2HP 2W 115V
		EFSUP0502	Motor 1/2HP 2W 230V
		EFSUP0503	Motor 1/2HP 3W 230V
		EFSUP0751	Motor 3/4HP 2W 230V
		EFSUP0752	Motor 3/4HP 3W 230V
		EFSUP1001	Motor 1HP 2W 230V
		EFSUP1002	Motor 1HP 3W 230V
		EFSUP1501	Motor 1-1/2HP 3W 230V
		EFSUP1502	Motor 1-1/2HP 2W 230V
2	1	EFSUP1003	Wire Guard
		EFSUP0506	Wire Guard
		EFSUP1503	Wire Guard
		EFSUP0753	Wire Guard
		EFSUP1004	Wire Guard
		EFSUP1504	Wire Guard
3	1	EFSUP1005	Cartridge assembly 5 stages
		EFSUP0508	Cartridge assembly 6 stages
		EFSUP1505	Cartridge assembly 7 stages
		EFSUP0754	Cartridge assembly 9 stages
		EFSUP1006	Cartridge assembly 12 stages
		EFSUP1506	Cartridge assembly 16 stages

WARRANTY

Retain Original Purchase Receipt for Warranty Eligibility

Limited Warranty

Manufacturer warrants to the original consumer purchaser ("Purchaser" or "You") that its products are free from defects in material and workmanship for a period of three years from the date of the original consumer purchase. If, within three years from the original consumer purchase, any such product shall prove to be defective, it shall be repaired or replaced at manufacturer's option, subject to the terms and conditions set forth herein. Note that this limited warranty applies to manufacturing defects only and not to ordinary wear and tear. All mechanical devices need periodic parts and service to perform well. This limited warranty does not cover repair when normal use has exhausted the life of a part or the equipment.

The original purchase receipt and product warranty information label are required to determine warranty eligibility. Eligibility is based on purchase date or original product – not the date of replacement under warranty. The warranty is limited to repair or replacement of original purchased product only, not replacement product (i.e. one warranty replacement allowed per purchase).

Purchaser pays all removal, installation, labor, shipping, and incidental charges.

Claims made under this warranty shall be made by returning the product to the retail outlet where it was purchased or to the factory immediately after the discovery or any alleged defect. Manufacturer will subsequently take corrective action as promptly as reasonably possible. No requests for service will be accepted if received more than 30 days after the warranty expires. Warranty is not transferable and does not apply to products used in commercial/rental applications.

General Terms and Conditions; Limitations of Remedies

You must pay all labor and shipping charges necessary to replace product covered by this warranty. This warranty does not apply to the following: (1) acts of God; (2) products which, in manufacturer's sole judgment, have been subject to negligence, abuse, accident, misapplication, tampering, or alteration; (3) failures due to improper installation, operation, maintenance or storage; (4) atypical or unapproved application, use or service; (5) failures caused by corrosion, rust or other foreign materials in the system, or operation at pressures in excess of recommended maximums.

This warranty sets forth manufacturer's sole obligation and purchaser's exclusive remedy for defective products.

MANUFACTURER SHALL NOT BE LIABLE FOR ANY CONSEQUENTIAL, INCIDENTAL, OR CONTINGENT DAMAGES WHATSOEVER. THE FOREGOING LIMITED WARRANTIES ARE EXCLUSIVE AND IN LIEU OF ALL OTHER EXPRESS AND IMPLIED WARRANTIES, INCLUDING BUT NOT LIMITED TO IMPLIED WARRANTIES OF MERCHANTABILITY AND FITNESS FOR A PARTICULAR PURPOSE. THE FOREGOING LIMITED WARRANTIES SHALL NOT EXTEND BEYOND THE DURATION PROVIDED HEREIN.

Some states do not allow the exclusion or limitation of incidental or consequential damages or limitations on how long an implied warranty lasts, so the above limitations or exclusions may not apply to You. This warranty gives You specific legal rights and You may also have other rights which vary from state to state.



1899 Cottage Street, Ashland, Ohio 44805
Telephone: 1-877-326-3561
Fax: 1-877-326-1994
www.ecofloproducts.com