

# OPERATION AND PARTS MANUAL



## **LITTLE SUB™ SUBMERSIBLE PUMP**

Revision #0 (09/03/19)

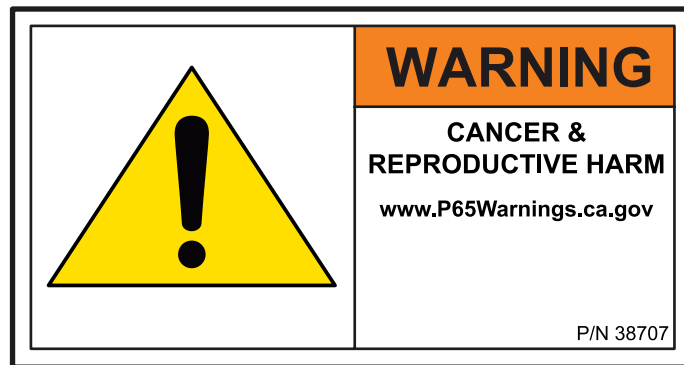
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**THIS MANUAL MUST ACCOMPANY THE EQUIPMENT AT ALL TIMES.**

## PROPOSITION 65 WARNING

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**Little Sub™**  
**Submersible Pump**

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**NOTICE**

Specifications and part numbers are subject to change without notice.

## SAFETY INFORMATION

Do not operate or service the equipment before reading the entire manual. Safety precautions should be followed at all times when operating this equipment. Failure to read and understand the safety messages and operating instructions could result in injury to yourself and others.



### SAFETY MESSAGES

The four safety messages shown below will inform you about potential hazards that could injure you or others. The safety messages specifically address the level of exposure to the operator and are preceded by one of four words: **DANGER**, **WARNING**, **CAUTION** or **NOTICE**.

### SAFETY SYMBOLS



#### **DANGER**

Indicates a hazardous situation which, if not avoided, **WILL** result in **DEATH** or **SERIOUS INJURY**.



#### **WARNING**

Indicates a hazardous situation which, if not avoided, **COULD** result in **DEATH** or **SERIOUS INJURY**.



#### **CAUTION**

Indicates a hazardous situation which, if not avoided, **COULD** result in **MINOR** or **MODERATE INJURY**.

#### **NOTICE**

Addresses practices not related to personal injury.

Potential hazards associated with the operation of this equipment will be referenced with hazard symbols which may appear throughout this manual in conjunction with safety messages.

Symbol	Safety Hazard
	Burn hazards
	Electric shock hazards
	Rotating parts hazards
	Pressurized fluid hazards

# SAFETY INFORMATION

## GENERAL SAFETY

### ⚠ CAUTION

- **NEVER** operate this equipment without proper protective clothing, shatterproof glasses, respiratory protection, hearing protection, steel-toed boots and other protective devices required by the job or city and state regulations.



- Avoid wearing jewelry or loose fitting clothes that may snag on the controls or moving parts as this can cause serious injury.

- **NEVER** operate this equipment when not feeling well due to fatigue, illness or when under medication.



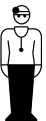
- **NEVER** operate this equipment under the influence of drugs or alcohol.



- **ALWAYS** clear the work area of any debris, tools, etc. that would constitute a hazard while the equipment is in operation.
- No one other than the operator is to be in the working area when the equipment is in operation.
- **DO NOT** use the equipment for any purpose other than its intended purposes or applications.

### NOTICE

- This equipment should only be operated by trained and qualified personnel 18 years of age and older.
- Whenever necessary, replace nameplate, operation and safety decals when they become difficult read.
- Manufacturer does not assume responsibility for any accident due to equipment modifications. Unauthorized equipment modification will void all warranties.
- **NEVER** use accessories or attachments that are not recommended by Multiquip for this equipment. Damage to the equipment and/or injury to user may result.
- **ALWAYS** know the location of the nearest fire extinguisher.
- **ALWAYS** know the location of the nearest first aid kit.
- **ALWAYS** know the location of the nearest phone or **keep a phone on the job site**. Also, know the phone numbers of the nearest **ambulance**, **doctor** and **fire department**. This information will be invaluable in the case of an emergency.



## SAFETY INFORMATION

### PUMP SAFETY

#### DANGER

- **NEVER** operate the equipment in an explosive atmosphere or near combustible materials. An explosion or fire could result causing severe **bodily harm or even death.**



#### WARNING

- Accidental starting can cause severe injury or death. **ALWAYS** place the ON/OFF switch in the OFF position.
- **DO NOT** place hands or fingers inside pump when pump is running.
- **NEVER** disconnect any **emergency or safety devices.** These devices are intended for operator safety. Disconnection of these devices can cause severe injury, bodily harm or even death. Disconnection of any of these devices will void all warranties.
- **Risk of Electric Shock** - Do not enter the pool or spa if the pump is operating.



#### CAUTION

- Be careful of discharge hose whipping under pressure.
- **ALWAYS** check pump oil level only when pump is cool. Expansion due to heat may cause hot oil to spray from the oil plug when the oil plug is removed. The possibility of severe scalding may exist.

#### NOTICE

- **ALWAYS** place the pump in an upright position on a platform before using. The platform will prevent the pump from burrowing itself on soft sand or mud.
- **NEVER** operate pump on its side.
- **DO NOT** allow the pump to freeze in water.
- **NEVER** leave an open pump chamber unattended.
- **ALWAYS** keep the machine in proper running condition.

- **DO NOT** attempt to thaw out a frozen pump by using a torch or other source of flame. Application of heat in this manner may heat the oil in the seal cavity above the critical point, causing pump damage.
- **DO NOT** pump water with a temperature greater than 140°F (60°C).
- **DO NOT** pump liquids containing acid or alkali.
- **ALWAYS** check strainer before pumping. Make sure strainer is not clogged. Remove any large objects, dirt or debris from the strainer to prevent clogging.
- **ALWAYS** use a large basket strainer when pumping water that contains large debris.
- **ALWAYS** flush pump (clean) after use when pumping water concentrated with heavy debris. It is very important to always flush the pump before turning it off to prevent clogging.
- Fix damage to machine and replace any broken parts immediately.
- **ALWAYS** store equipment properly when it is not being used. Equipment should be stored in a clean, dry location out of the reach of children and unauthorized personnel.
- **NEVER** lubricate components or attempt service on a running machine.
- **NEVER** run pump **dry.**
- **ALWAYS** allow the machine a proper amount of time to cool before servicing.
- Keep machine in proper running condition.

### ELECTRICAL SAFETY

#### DANGER

- The electrical voltage required to operate pump can cause severe injury or even death through physical contact with live circuits. **ALWAYS** disconnect electrical power from pump before performing maintenance on pump.



#### WARNING

- To reduce the risk of electric shock, connect to a circuit protected by a Ground-Fault Circuit-Interrupter (GFCI).

# SAFETY INFORMATION

## NOTICE

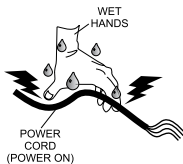
- **ALWAYS** make certain that the voltage supplied to the pump is correct. Always read the pump's nameplate to determine what the power requirements are.

## Power Cord/Cable Safety

### ⚠ DANGER

- **NEVER** stand in water while AC power cord is connected to a live power source.
- **NEVER** use **damaged** or **worn** cables or cords. Inspect for cuts in the insulation.

- **NEVER** grab or touch a live power cord or cable with wet hands. The possibility exists of **electrical shock, electrocution or death.**



- Make sure power cables are securely connected to the motor's output receptacles. Incorrect connections may cause electrical shock and damage to the motor.

### ⚠ WARNING

- **NEVER** attempt to use the power cord as a lifting or lowering device for the pump.

## NOTICE

- **ALWAYS** make certain that proper power or extension cord has been selected for the job. See Cable Selection Chart in this manual.

## Grounding Safety

### ⚠ DANGER

- **ALWAYS** make sure pump is grounded.
- **NEVER** use gas piping as an electrical ground.
- **ALWAYS** make sure that electrical circuits are properly grounded to a suitable earth ground (ground rod) per the National Electrical Code (NEC) and local codes before operating generator. **Severe injury or death by electrocution** can result from operating an ungrounded motor.

## Control Box Safety

### ⚠ DANGER

- **ALWAYS** have a qualified electrician perform the control box installation. The possibility exists of electrical shock or electrocution.

## NOTICE

- **ALWAYS** mount control box in a vertical position protected from harsh environmental elements.

## LIFTING SAFETY

### ⚠ CAUTION

- When raising or lowering of the pump is required, always attach an adequate rope or lifting device to the correct lifting point (handle) on the pump.

## NOTICE

- **NEVER** lift the equipment while the electric motor is running.

## TRANSPORTING SAFETY

## NOTICE

- **ALWAYS** shut down pump before transporting.
- **ALWAYS** tie down equipment during transport.

## ENVIRONMENTAL SAFETY/DECOMMISSIONING

- **DO NOT** pour waste or oil directly onto the ground, down a drain or into any water source.



- Contact your country's Department of Public Works or recycling agency in your area and arrange for proper disposal of any electrical components, waste or oil associated with this equipment.
- When the life cycle of this equipment is over it is recommended that the pump casing and all other metal parts be sent to a recycling center

Metal recycling involves the collection of metal from discarded products and its transformation into raw materials to use in manufacturing a new product.

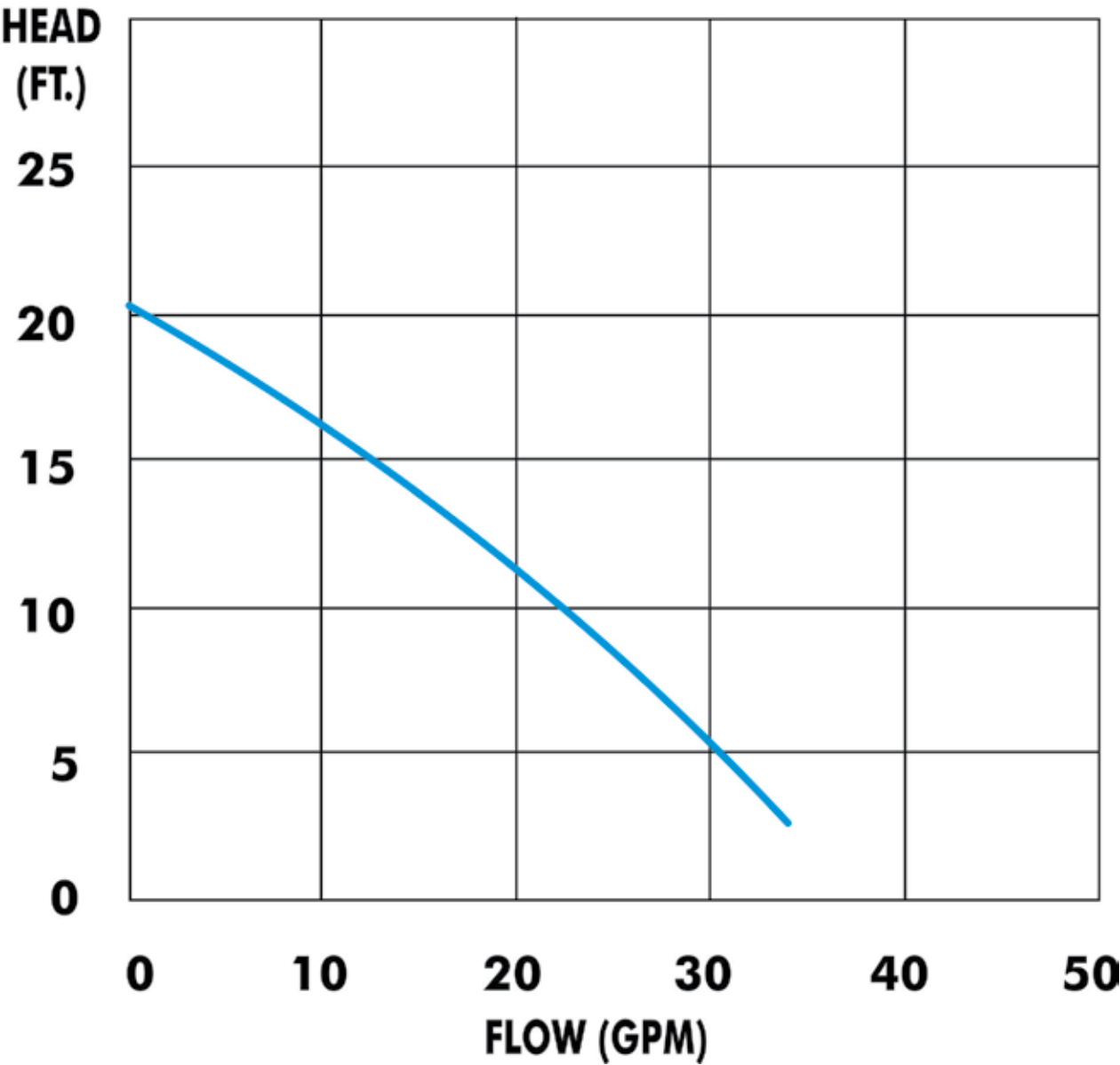
Recyclers and manufacturers alike promote the process of recycling metal. Using a metal recycling center promotes energy cost savings.

Table 1. Specifications	
Model	Little Sub™
Type	Submersible Pump
Impeller	Plastic
Suction and Discharge Size	1.125 in. and 0.75 in. (28.575 mm and 19.05)
Maximum Pumping Capacity	33 gallons/minute (125 liters/minute)
Discharge Height Above Pumping Level	5 ft (1.5 meters) 1,800 gallons/hr (6,814 liters) 10 ft (3.0 meters) 1,320 gallons/hr (4,997 liters) 15 ft (4.5 meters) 720 gallons/hr (2,725 liters) 20 ft (6.0 meters) 120 gallons/hr (454 liters)
Power	0.25 HP (0.37 kW)
Voltage Phase	1Ø 115V
Starting Amps	11.5
Running Amps	2.3
Thermal Overload Protection	YES
Rotation <sup>1</sup>	CCW
Power Cable Length	9.0 ft. (274 cm.)
Dimensions (Dia x Height)	6-1/4 in. (15.9 cm.) x 9.5 in. (24 cm.)
Dry Net Weight (Shipping)	8.5 lbs. (3.85 Kg.)
Dry Net Weight	6.0 lbs. (2.72 Kg.)

1 Motor Rotation - Upon start-up, the pump "kicks" in the opposite direction of motor rotation. The correct rotation is counterclockwise (CCW) as viewed from the impeller end of the pump.



**MQ ~ LITTLE SUB™ Performance Curve**



## GENERAL INFORMATION

The MQ Little Sub™ is a lightweight, portable, submersible pump designed to move fresh water in the following common applications: flooded rooms and roofs, fountains and waterfalls, swimming pools and spas, simple fill-tank requirements, and general low-flow water transfer operations.

The Little Sub™ can discharge a very limited size and amount of debris, and is not designed to handle chemicals, salts, or other low pH liquids. The unit best operates with water temperatures under 104° F.

For optimum performance and pump longevity, it is best to always position the pump in a vertical, upright position and ensure that the proper electricity (115V single-phase) power is always introduced.

Always raise/lower the pump in position by attaching a rope cord to the molded handle. NEVER use the power cord to act as a raise/lowering device.

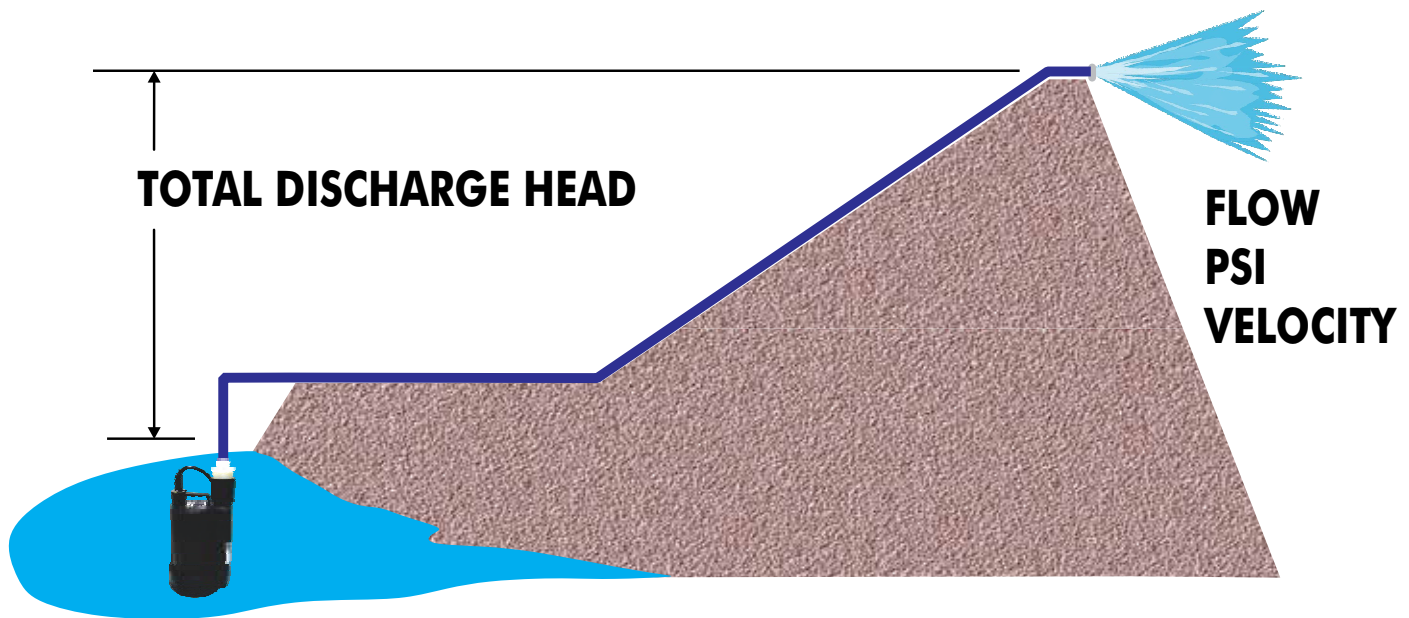
For discharge, the pump provides two discharge port diameter options: 1 ¼" NPT thread or ¾" common garden hose thread. Excessive discharge hose or pipe lengths will affect flow and head performance (see Performance Curve Chart).

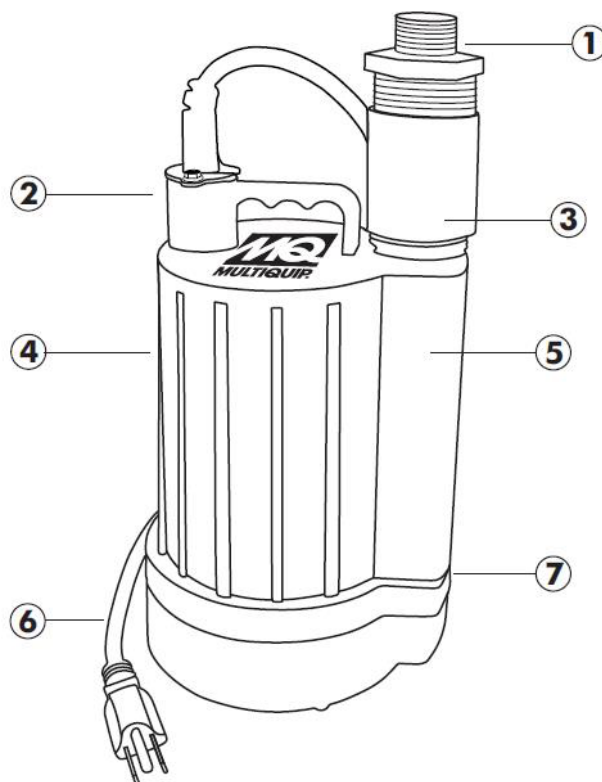
The pump ON/OFF operations occur automatically with the connection of the power cord to the electrical source (there is no switch located on the pump). An optional Control Box (model CB3) is available through MQ Sales if the operator requires cycling the pump via the convenience of an ON/OFF switch.

The pump provides internal overload protection if extreme motor over-heating occurs, but this feature should not be relied upon as a common means of operations. Continual over-heating of the motor often caused by improper electricity, extreme extension cord lengths and/or incorrect extension cord gauge, operating dry, continual operations for extended periods of time, and excessive high temperature fluid operations will shorten the life of the pump motor.

Performance of the Little Sub™ (Flow, Head, Velocity and Pressure) is based upon the application givens that include: discharge hose diameter and length, friction loss factors, and general rise and run discharge figures. The pump permits dewatering levels down to approximately 1/8".

DO NOT allow the pump to run 'dry', or be allowed to freeze with water still in the unit.





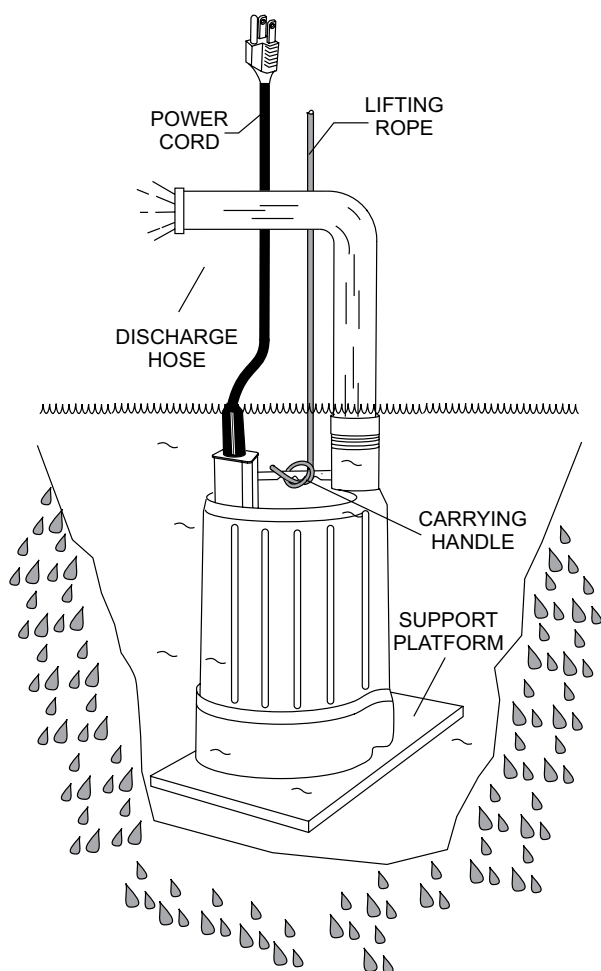
**Figure 1. Submersible Pump Components**

Figure 1 shows general components and operating data for the LITTLE SUB™.

1. **Garden Hose Adapter** — the polyethylene adapter provides threaded connection to a common  $\frac{3}{4}$ " garden hose. It threads into the pump's barrel ( $1\frac{1}{4}$ " female) coupler.
2. **Carry Handle** — a molded carry handle should be used to transport the pump, and be the connection point for a cord to lower/lift the pump into pumping positions. NEVER carry or place the pump into operation via the power cord.
3. **Pump Adapter Coupler** — this  $1\frac{1}{4}$ " F to  $1\frac{1}{4}$ " F coupler threads onto the pump discharge port and supports a connection point for a  $1\frac{1}{4}$ " discharge hose or  $\frac{3}{4}$ " M garden hose adapter.
4. **Pump Casing and Internal Components** — one piece, molded industrial grade polypropylene casing, thermoplastic urethane volute and impeller, stainless steel motor shaft and silicon/carbon mechanical seal. Rated for 104° F MAX Temperature.
5. **Electric Motor** — Permanent Split Capacitor (PSC) 1/4HP 115V single-phase electric motor has internal overload protection.
6. **Power Cord** — NEMA 5-15P plug, 300V 3X0.824 mm<sup>2</sup> 18AWGX3C C(UL) power cord. NEVER use a defective power cord. See Table 3 for Extension Cord support data.
7. **Air Vent** — the casing features a vent opening to prevent air locking during dewatering operations. It is NORMAL for a degree of water to flow through this small discharge eyelet.

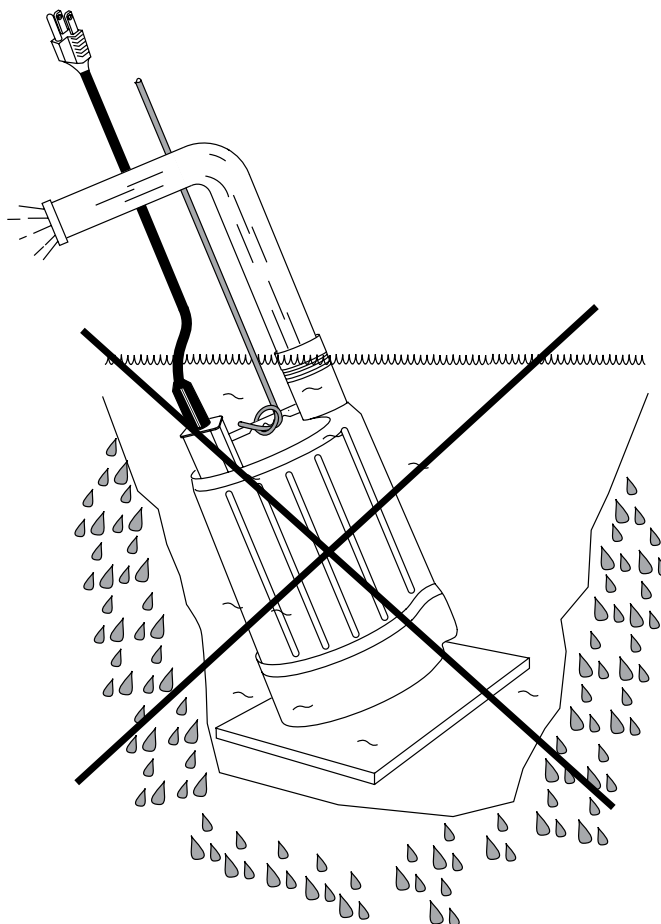
## OPERATION

1. Attach a suitable lifting cable (rope) to the carrying handle (Figure 2) on the pump and lower the pump into place. For applications where there is an excessive amount of mud, grit or silt, the use of a support platform is desirable. When pumping water from swimming pool type applications where there is little or no debris, the support platform is not required.



**Figure 2. Submersible Pump Upright Position (Correct)**

2. Make sure the pump is always placed in an upright position, not tilted (Figure 3). Never position the pump directly on a soft, loose bottom. Remember to attain maximum pumping capacity and prevent excessive wear, position the pump so it will not burrow itself into sand or clay.



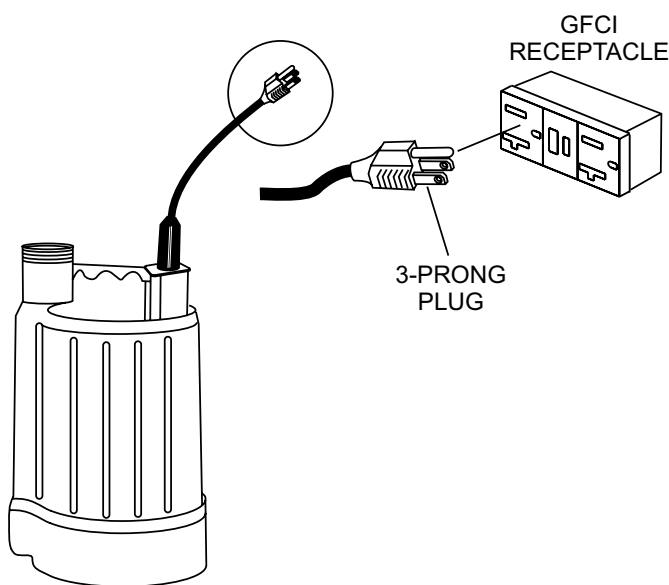
**Figure 3. Submersible Pump Upright Position (Incorrect)**

3. After the pump has been positioned correctly into place, power can be applied to the pump's electric motor.

**DANGER**

**NEVER** grab or touch a live power cord. **DO NOT** stand in water when connecting the pump's power cord into a voltage source. The possibility exists of electrical shock, electrocution and possibly death!

4. If all of the pump's electrical requirements have been met, insert the power plug (Figure 4) on the pump into the power source receptacle. Make sure the extension cord is of proper size, see Table 3. It is recommended that the pump's power cord be plugged into a GFCI receptacle to prevent the possibility of electrical shock. Wait a few seconds and water should begin to flow from the discharge hose.



**Figure 4. Connecting the Power**

5. If water is not flowing from the discharge hose or not flowing freely after a few minutes, remove the power from the pump and check the system for leaks.

## PUMP SHUT-DOWN/CLEAN-UP

1. Remove the power from the pump by turning off the circuit breaker or switch that provides power to the pump. Remember to make sure that hands are dry (not wet), and feet are not standing in water when removing or disconnecting power from the pump.
2. Using the lifting rope, lift the pump up from its current position. Remove the discharge hose from the discharge port on the pump.
3. If the pump was used to pump mud, grit or silt, flush vigorously with clean water.
4. Remove the pump from the water. Wipe off any mud or debris that might have attached itself to the pump.
5. Store pump in a clean dry place away from dirt and debris.

**WARNING**

**NEVER** cut or remove the ground prong from the pump's AC power cord.

**WARNING**

This pump is supplied with a grounding conductor and a grounding-type attachment plug. To reduce the possibility of electric shock, make certain that pump is connected only to a properly grounded receptacle.

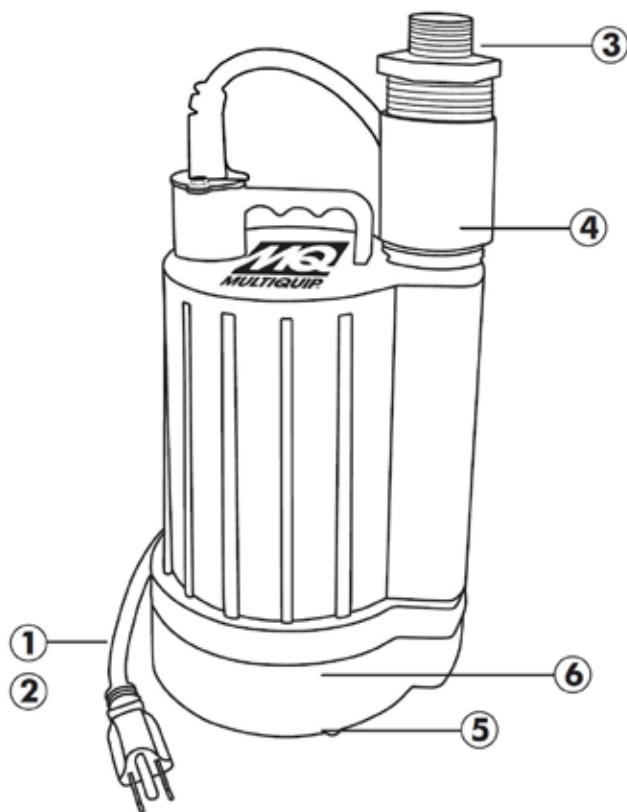
**Table 2. Pump Troubleshooting**

<b>SYMPTOM</b>	<b>POSSIBLE PROBLEM</b>	<b>SOLUTION</b>
Pump Fails To Start	Incorrect voltage/amps?	Check that proper voltage (115 VAC 1Ø) is being supplied to the pump. Also check that there is an adequate amount of current (amps) to run the pump. Check power source circuit breaker.
	Check electrical connections?	Inspect power cord.
	Blown power fuse or tripped circuit breaker?	Replace fuse check circuit breaker, check cause of blown fuse or tripped breaker.
	Impeller locked?	Disconnect power cord and check for clogging. Unclog pump. Check overload protection device.
	Wet motor windings?	Use multimeter to check motor insulation. Insulation resistance must be approximately 15 megaohms. If resistance is low, disassemble pump motor and bake windings to dry them.
	Defective motor and pump bearings?	Check for excessive bearing wear, if worn replace bearings. Replace motor if defective.
Pump Fails to Deliver Full Output	Twisted or restricted discharge hose?	Lay hose flat un-kinked. Remove clog from hose line.
	Clogged pump strainer?	Clean strainer.
	Low voltage?	Use a voltmeter to check voltage while pump is energized. Voltage must be within $\pm 10\%$ . Check power source (no load and load). If an extension cord is used, make sure it has adequate current-carrying capacity for the required length.
	Impeller worn?	Replace impeller.
Water in Mechanical Seal Oil	Defective mechanical seal?	Replace mechanical seal.

## CABLE SELECTION

**Table 3. Cable Selection (60Hz, Single-Phase Operation)**

Current In Amperes	Load in Watts	Maximum Allowable Cable Length			
	115 VAC	#10 Wire	#12 Wire	#14 Wire	#16 Wire
2.5	300	1000 ft.	600 ft.	375 ft.	250 ft.
5	600	500 ft.	300 ft.	200 ft.	125 ft.
7.5	900	350 ft.	200 ft.	125 ft.	100 ft.
10	1200	250 ft.	150 ft.	100 ft.	
15	1800	150 ft.	100 ft.	65 ft.	
20	2400	125 ft.	75 ft.	50 ft.	
<b>CAUTION:</b> Equipment damage can result from low voltage.					





## **PUMP ASSY.**

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<b><u>NO.</u></b>	<b><u>PART NO.</u></b>	<b><u>PART NAME</u></b>	<b><u>QTY.</u></b>	<b><u>REMARKS</u></b>
1	80000-001	9' AC POWER CORD	1	
2	80000-002	20' AC POWER CORD - Option	1	
3	YS022467	GARDEN HOSE ADAPTER	1	
4	YS020331	1 1/4" COUPLER	1	
5	YS139492	STRAINER BASE	1	
6	YS020328T	IMPELLER	1	

# OPERATION AND PARTS MANUAL

## HERE'S HOW TO GET HELP

PLEASE HAVE THE MODEL AND SERIAL  
NUMBER ON-HAND WHEN CALLING

### UNITED STATES

#### ***Multiquip Inc.***

(310) 537- 3700  
6141 Katella Avenue Suite 200  
Cypress, CA 90630  
E-MAIL: [mq@multiquip.com](mailto:mq@multiquip.com)  
WEBSITE: [www.multiquip.com](http://www.multiquip.com)

### CANADA

#### ***Multiquip***

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4110 Industriel Boul.  
Laval, Quebec, Canada H7L 6V3  
E-MAIL: [infocanada@multiquip.com](mailto:infocanada@multiquip.com)

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This manual **MUST** accompany the equipment at all times. This manual is considered a permanent part of the equipment and should remain with the unit if resold.

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