

OPERATION AND PARTS MANUAL



Submersible Pumps **Model ST4125D** **Model ST6125D**

Revision #0 (04/05/07)

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THIS MANUAL MUST ACCOMPANY THE EQUIPMENT AT ALL TIMES.

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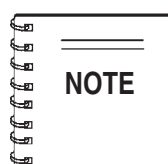
Multiquip ST-4125D/ ST-6125D Submersible Pumps

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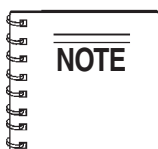
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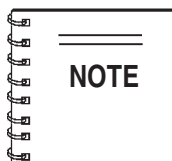


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ST-4125D/ST-6125D — SAFETY MESSAGE ALERT SYMBOLS

FOR YOUR SAFETY AND THE SAFETY OF OTHERS!

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.



This Owner's Manual has been developed to provide complete instructions for the safe and efficient operation of the Multiquip **Models ST-4125D/ST6125D Submersible Pumps**. Before using these pumps, ensure that the operating individual has read and understands all instructions in this manual.

SAFETY MESSAGE ALERT SYMBOLS

The three (3) 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 three words: **DANGER**, **WARNING**, or **CAUTION**.

DANGER

You **WILL** be **KILLED** or **SERIOUSLY** injured if you **DO NOT** follow directions.

WARNING

You **CAN** be **KILLED** or **SERIOUSLY** injured if you **DO NOT** follow directions.

CAUTION

You **CAN** be **INJURED** if you **DO NOT** follow directions.

Potential hazards associated with the submersible pump's operation will be referenced with Hazard Symbols which appear throughout this manual, and will be referenced in conjunction with Safety Message Alert Symbols.

HAZARD SYMBOLS



Rotating Parts



NEVER operate equipment with covers, or guards removed. Keep fingers, hands, hair and clothing away from all moving parts to prevent injury.



Accidental Starting



ALWAYS place the power source circuit breaker or ON/OFF switch in the **OFF** position, when the pump is not in use.



Sight and Hearing hazard



ALWAYS wear approved eye and hearing protection, if required.



Respiratory Hazard

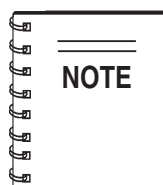


ALWAYS wear approved respiratory protection, if required.



Equipment Damage Messages

Other important messages are provided throughout this manual to help prevent damage to your submersible pump, other property, or the surrounding environment.



This submersible pump, other property, or the surrounding environment could be damaged if you do not follow instructions.

ST-4125D/ST-6125D — RULES FOR SAFE OPERATION



WARNING - Read This Manual

Failure to follow instructions in this manual may lead to serious injury or even death! This equipment is to be operated by trained and qualified personnel only! This equipment is for industrial use only.

The following safety guidelines should always be used when operating the ST-4125D/ST-6125D Submersible Pump:

GENERAL SAFETY

- **DO NOT** operate or service this equipment before reading this entire manual.



- This equipment should not be operated by persons under 18 years of age.
- **NEVER** operate this equipment without proper protective clothing, shatterproof glasses, steel-toed boots and other protective devices required by the job.



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



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



- **NEVER** use accessories or attachments, which are not recommended by Multiquip for this equipment. Damage to the equipment and/or injury to user may result.
- Manufacturer does not assume responsibility for any accident due to equipment modifications.
- Whenever necessary, replace nameplate, operation and safety decals when they become difficult read.
- **ALWAYS** check the machine for loosened threads or bolts before starting.
- **NEVER** operate the submersible pump in an explosive atmosphere or near combustible materials. An explosion or fire could result causing severe **bodily harm or even death**.
- **ALWAYS** make sure submersible pump is grounded.

- **NEVER** use gas piping as an electrical ground.
- **DO NOT** place hands or fingers inside pump when pump is running.
- **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. The ST-4125D and ST-6125D submersible pumps require 230 or 460 VAC (three-phase) for normal operation.
- **DO NOT** restrict the flow of the discharge hose as it may cause overheating.
- Be careful of discharge whipping under pressure.
- Make sure pump installation is in accordance with national and local electrical codes.
- **ALWAYS** have a qualified electrician perform the pump wiring installation.
- **ALWAYS** mount the control box in a vertical position protected from the elements.
- **NEVER** handle pump's AC power cord with **wet hands**.
- **NEVER** let an extension cord or plug connection **lay in water**.
- **NEVER stand in water** while AC power cord is connected to a power source.
- **NEVER** use a pump with a defective, frayed power cord. Check the power cord on the pump for cuts in the insulation.
- **NEVER** use a extension cord that is frayed or damaged where the insulation has been cut.
- **ALWAYS** make certain that proper extension cord has been selected for the job.
- **NEVER** attempt to use the power cord as a lifting or lowering device for the submersible pump.
- When raising or lowering of the submersible pump is required, always attach an adequate rope or lifting device to the correct lifting point (handle) on the pump.
- **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.
- The electrical voltage required to operate the pump can cause severe injury or even death through physical contact with live circuits. **ALWAYS** disconnect the electrical power from the pump before performing maintenance on the pump.
- **ALWAYS** make sure that electrical circuits are properly **grounded** per the **National Electrical Code (NEC)** and

ST-4125D/ST-6125D — RULES FOR SAFE OPERATION

local codes before operating pump. **Severe injury or death** by **electrocution** can result from operating an **ungrounded** pump.

- **ALWAYS** be sure the operator is familiar with proper safety precautions and operations techniques before using submersible pump.
- **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.
- **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 greater than 104 degrees Fahrenheit. Also **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 contain large debris.
- **ALWAYS** flush pump after use when pumping water concentrated with heavy debris. **Flush with clean fresh water**. It is very important to always flush the pump before turning it off to prevent clogging.
- **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.
- **ALWAYS** read, understand, and follow procedures in Operator's Manual before attempting to operate equipment.

Maintenance Safety

- **NEVER** lubricate components or attempt service on a running machine.
- **ALWAYS** allow the machine a proper amount of time to cool before servicing.
- Keep the machinery in proper running condition.
- Fix damage to the machine immediately and always replace broken parts.

Emergencies

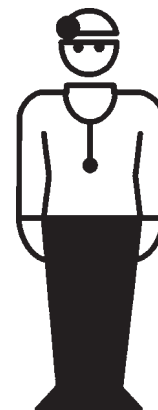
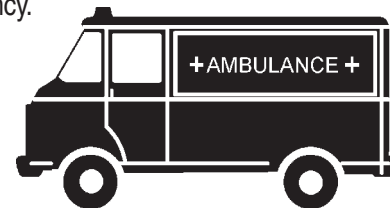
- **ALWAYS** know the location of the nearest **fire extinguisher**.



- **ALWAYS** know the location of the nearest **first aid kit**.



- In emergencies **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.



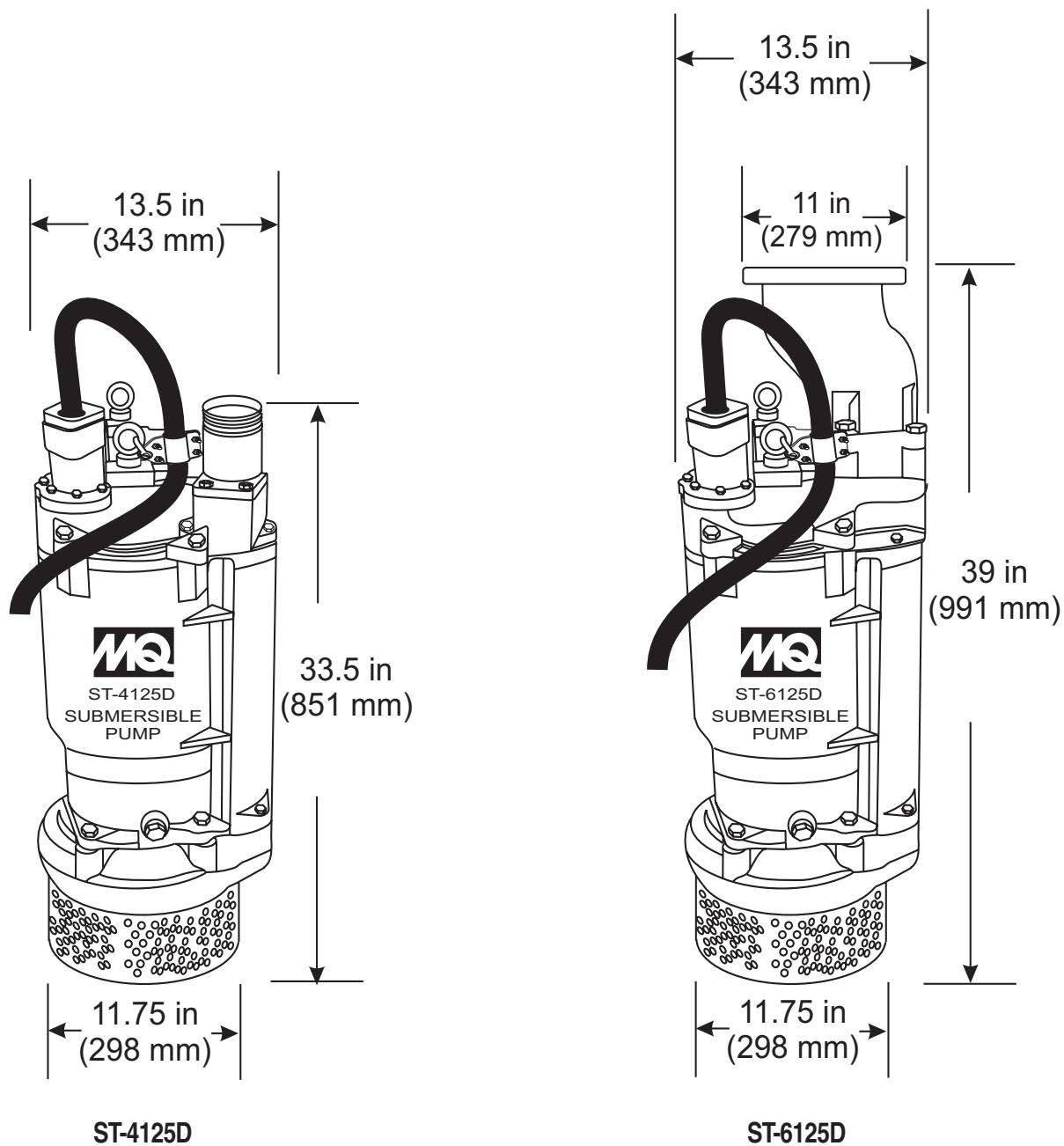


Figure 1. Submersible Pump Dimensions

ST-4125D/ST-6125D — SPECIFICATIONS

TABLE 1. SPECIFICATIONS

Model	ST-4125D	ST-6125D
Type	Centrifugal Submersible Pump	Centrifugal Submersible Pump
Impeller	Cast Ductile Iron	Cast Ductile Iron
Suction & Discharge Size	2.00 in. (51 mm)	2.00 in. (51 mm)
Maximum Pumping Capacity	464 gallons/minute (1,756 liters/minute)	610 gallons/minute (2,309 liters/minute)
Max Head	125 ft. (38 meters)	125 ft (38 meters)
Power	10 HP (7.5 kw)	15 HP (11 kw)
Voltage/Phase	230/460 3Ø	230/460 3Ø
Starting Amps	149 (230V) 75 (460V)	215 (230V) 108 (460V)
Running Amps	27 (230V) 14 (460V)	39 (230V) 19.7 (460V)
Control Box Required	See Note 3	See Note 3
Power Cable Length	50 ft. (15.2 m)	50 ft. (15.2 m)
Dry Net Weight	330 lb (150 kg)	390 lb (177 kg)
Height	32.7 in (83.1 cm)	38.8 in (98.6 cm)
Diameter	14.2 in (36 cm)	14.2 in (36 cm)

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.
2. **Mechanical Seal Oil** – Use a good grade 10 weight non-detergent hydraulic oil (i.e. Shell Turbo 32 or equivalent). Fill oil cavity 75% to 85% full (allow air space for expansion).
3. **Control Box** - Control box (Table 2) is required for use to provide thermal overload protection to the pump.

ST-4125D/ST-6125D — GENERAL INFORMATION

The Multiquip Model ST-4125D and ST-6125D submersible pumps are designed to pump water. These pumps work best when faced with high head applications where you need an appreciable flow.

The ST-4125D and ST-6125D submersible pumps have dual voltage, easily switched between 230 and 460 volts.

These pumps have a heavy-duty cast iron body that is very durable and able to withstand rough handling. The ST-4125D comes with NPT threads for standard hose connections while the ST-6125D is equipped with 6-inch flange fittings.

The mechanical seal of these pumps operates within an oil-filled chamber that provides positive lubrication. This helps prevent damage in the event the pump is run dry for short periods of time.

ST-4125D/ST-6125D — SUBMERSIBLE PUMP COMPONENTS

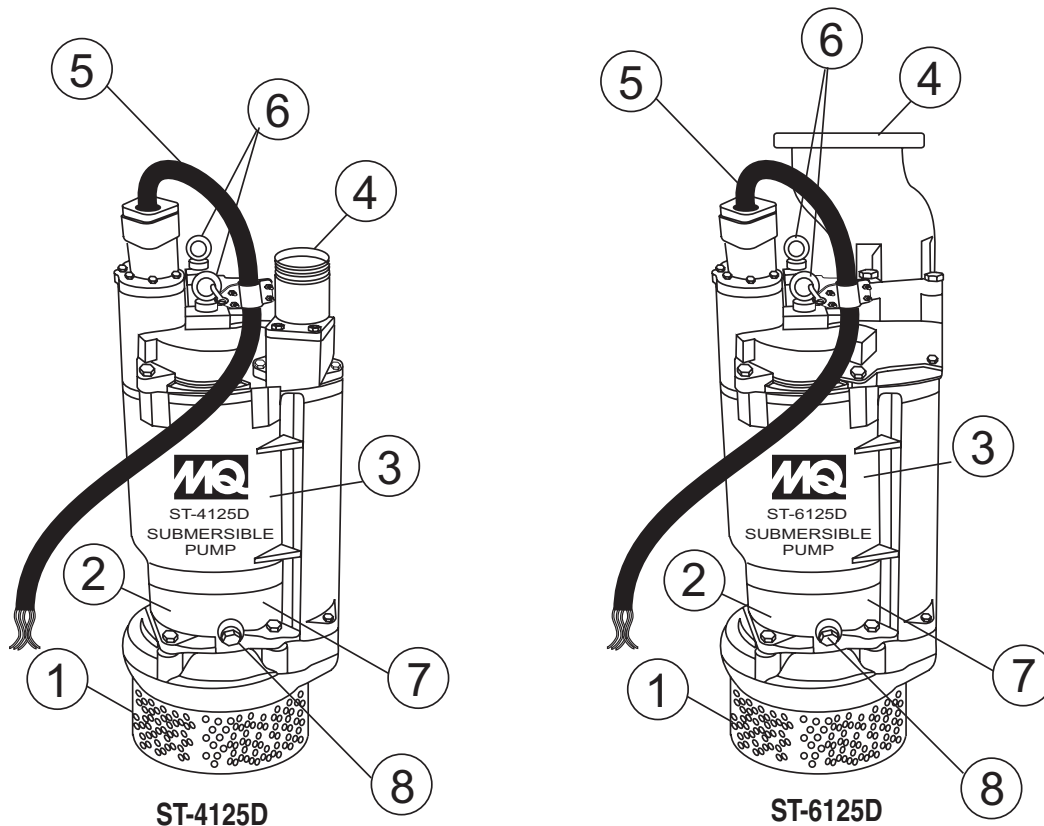


Figure 2. Submersible Pump Components

Figure 2 shows the location of the basic components, for the ST-4125D and ST-6125D submersible pumps. Listed below is a brief explanation of each component.

1. **Strainer Base** – This strainer base is made of stainless steel which is resistant to hardware corrosion. For dewatering purposes, always place the strainer base on a platform.
2. **Volute/Impeller** – Impellers are constructed of cast ductile iron to minimize wear and prolong service life.
3. **Electric Motor** – The ST-4125D pump utilizes a 60 Hz, three-phase, 230/460 VAC, 10 HP electric motor and the ST-6125D pump utilizes a 60 Hz, three-phase, 230/460 VAC, 15 HP electric motor. Consult with a **licensed electrician** before connecting motor to a power source. Observe all city and local safety codes.
4. **Discharge Port** – Connect a 4-inch hose (ST-4125D) or 6-inch hose (ST-6125D) to this port. Remember to adequately support the discharge hose to avoid stress on the pump.
5. **AC Power Cable** – These pumps are supplied with a 50 ft. (15.2 meters) AC power cable. Always check the cable for signs of wear. **NEVER** use a defective power cable. Replace the cable immediately if the cable is worn or defective.
6. **Eye Bolts** – Always lift the submersible pump by the eye bolts using a chain and lifting device capable of lifting about 400 lbs. **NEVER** lift the pump by its power cord! Lifting the pump by the power cord will cause undue stress on the cord and ultimately the cord will become dislodged from the pump.
7. **Mechanical Seal Oil** – This oil-filled seal provides lubrication when running the pump dry. **NEVER** run the pump dry! Running the pump dry will cause severe damage to the pump.
8. **Mechanical Seal Oil Plug** – Remove this plug to check and add hydraulic oil (Shell 32 or equivalent) to the oil cavity. This oil protects the mechanical seal. Oil cavity should be full enough to cover seal spring.

ST-4125D/ST-6125D — FLOAT SWITCHES

Float Switch Theory

There is a tilt-sensitive mercury switch hermetically sealed within each float. As the liquid level (water) rises or falls, the float changes its angle until the mercury switch makes (close) or breaks (open) the circuit.

The length of cord between the float and point of attachment determines the amount of water to be pumped.

Contact Multiquip sales department to order float switches.

Float Switch (Dual)

Float switches (Figure 3) are used for the unattended operation of the submersible pump. The ST-4125D and ST-6125D pumps require the use of a control box to perform this function. Shown in Figure 3 is an example of a dual float control switch application.

The Models ST-4125D and ST-6125D submersible pumps require one each of the Model SW-1WOPA float type mercury switches. These switches have a pumping range level between 5.5~18 feet (1.67~5.5 meters). All float switch connections are bare wire (no plug). The ST-4125D/ST-6125D uses the **CB12 control box for 230V** and the **CB14 control box for 460 V** when float switches are required for the job application.

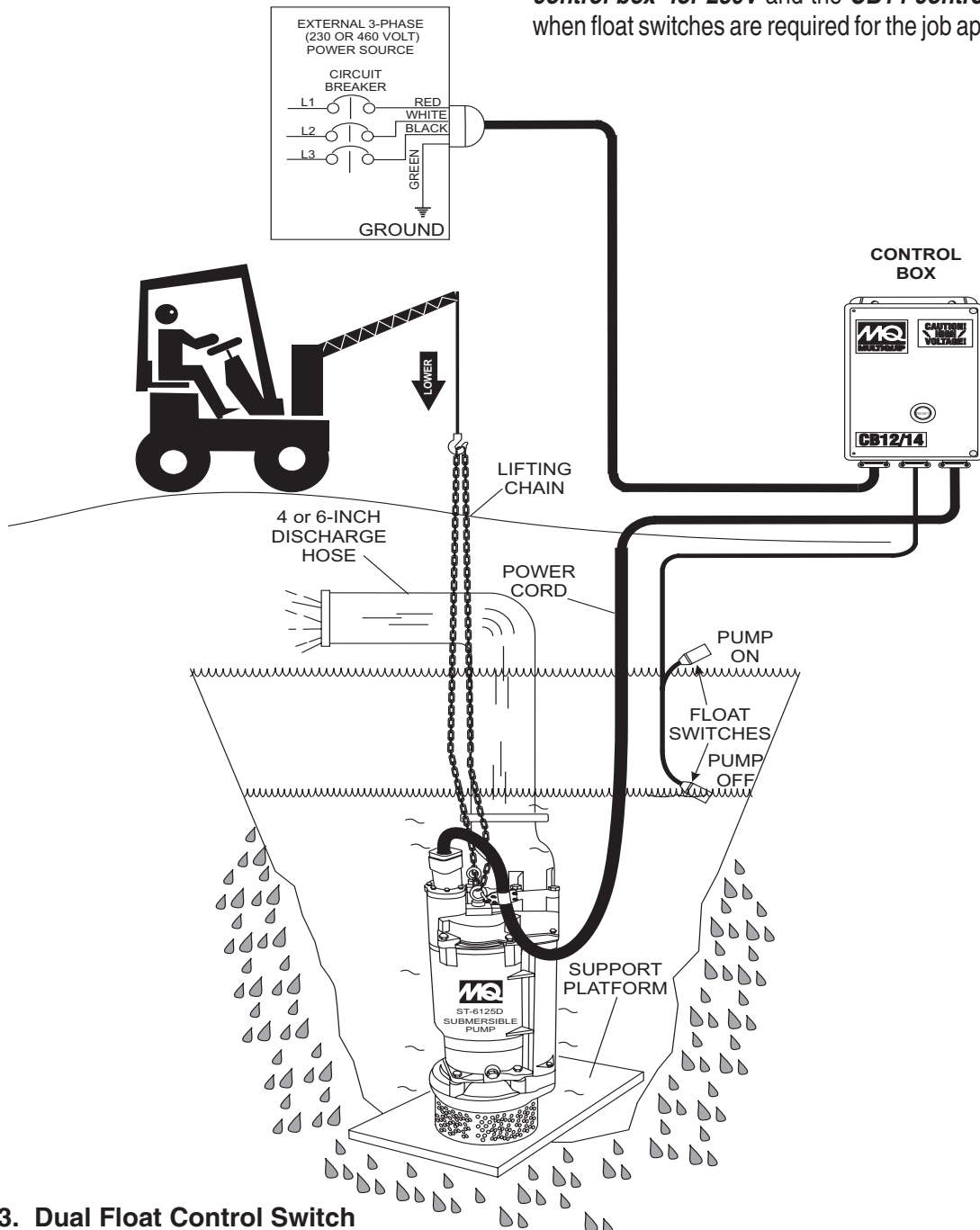


Figure 3. Dual Float Control Switch

ST-4125D/ST-6125D — CONTROL BOXES

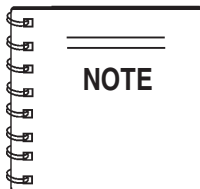
Control Boxes

Control boxes (Figure 4) are required for remote control and thermal shutdown capability for the submersible pump.

These water-resistant control boxes provide electronic overload protection, watertight housing and glands to prevent water from leaking into the box, and a float switch interface.

Refer to Table 2 for the control box model that meets your pumping requirements.

Contact Multiquip sales department to order control boxes as listed in Table 2.



ALWAYS have a qualified licensed electrician perform the installation of the control box.

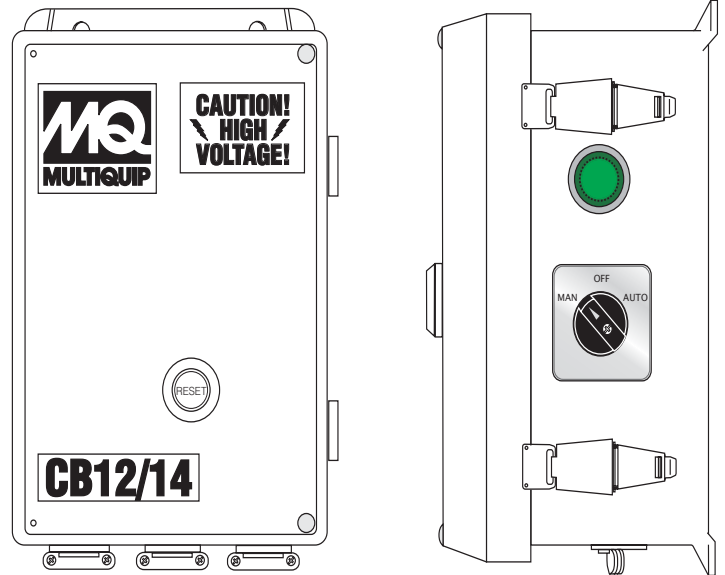


Figure 4. Electrical Control Box (Model CB12/14)

Table 2. Control Box Specifications

Control Box Model No.	Used With Pump Model	VoltageType	Heater Size	Full Load Amps	UL/CSA Listed	Thermal Overload Protection	Float Switch Capability
CB12	ST-4125D	230 VAC Three-Phase	K67	27	YES	YES	YES
CB12	ST-6125D	230 VAC Three-Phase	K73	39	YES	YES	YES
CB14	ST-4125D	460 VAC Three-Phase	K56	14	YES	YES	YES
CB14	ST-6125D	460 VAC Three-Phase	K62	19.7	YES	YES	YES

ST-4125D/ST-6125D — CONTROL BOX INSTALLATION



DANGER - Hazardous Voltage

To place the ST-4125D/ST6125D submersible pumps into operation requires the use of a control box. The control box contains the necessary electronics (thermal overload module, float switch connections and 230/460 voltage transformer) to operate the pump. Remember this control box contains hazardous voltages. Disconnect all sources of power before installing or servicing. There exists the possibility of electrocution, electric shock or burn, which can cause severe bodily harm or even **death!**



CAUTION - Installation

This control box should only be installed or serviced by a licensed electrician or qualified personnel.

CONTROL BOX MOUNTING

Mount the control box in an **upright vertical position**. Make sure the control box is securely fastened to a flat surface, that is free of dust, dirt, moisture or any elements that may contaminate or erode the electronic components of the control box.

3-Phase Power Installation (Input)

The ST-4125D/ST6125D submersible pump requires 230/460V 3-phase power for normal operation. The pump is shipped from the factory in the 230 VAC configuration. To change the voltage setting from 230 VAC to 460 VAC refer to the *230/460 VAC Selection* section.

If you cannot determine what your pump's power requirements are, look at the vendor supplied identification name tag attached to the pump or please contact Multiquip's Service/Technical Assistance department.



CAUTION - Voltage Phasing

Applying incorrect power (**voltage phasing**) to the submersible pump can cause severe damage to the pump. Please make sure that the correct voltage and phase are transferred to the pump at all times.

POWER CORD REQUIREMENTS

When routing the three phase power via a power cord to the control box, **ALWAYS** use the correct wire size. Please reference Table 3 below (Cord Length and Wire Size) to determine the correct wire size. Incorrect wire size can adversely affect the performance of the pump.

TABLE 3. CORD LENGTH AND WIRE SIZE

AMPS	50 FT.	100 FT.	150 FT.
6	16 AWG	16 AWG	14 AWG
8	16 AWG	14 AWG	12 AWG
10	16 AWG	14 AWG	12 AWG
12	14 AWG	14 AWG	12 AWG
14	14 AWG	12 AWG	10 AWG
16	12 AWG	12 AWG	10 AWG

FLOAT SWITCH INSTALLATION

1. Remove the float switch input connector housing, then route the float switch wires through the cable gland on the control box. Attach the wires to the float switch terminal block as indicated by Table 4. Refer to Figures 7 and 8.

TABLE 4. FLOAT SWITCH CONNECTIONS

FLOAT SWITCH	FLOAT SWITCH TERMINAL BLOCK NUMBER
START	TERMINALS 1 AND 2
STOP	TERMINALS 3 AND 4

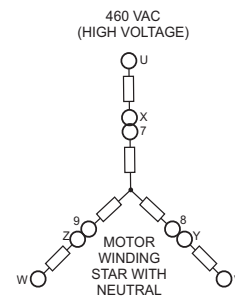
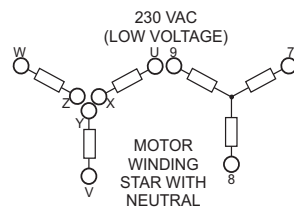
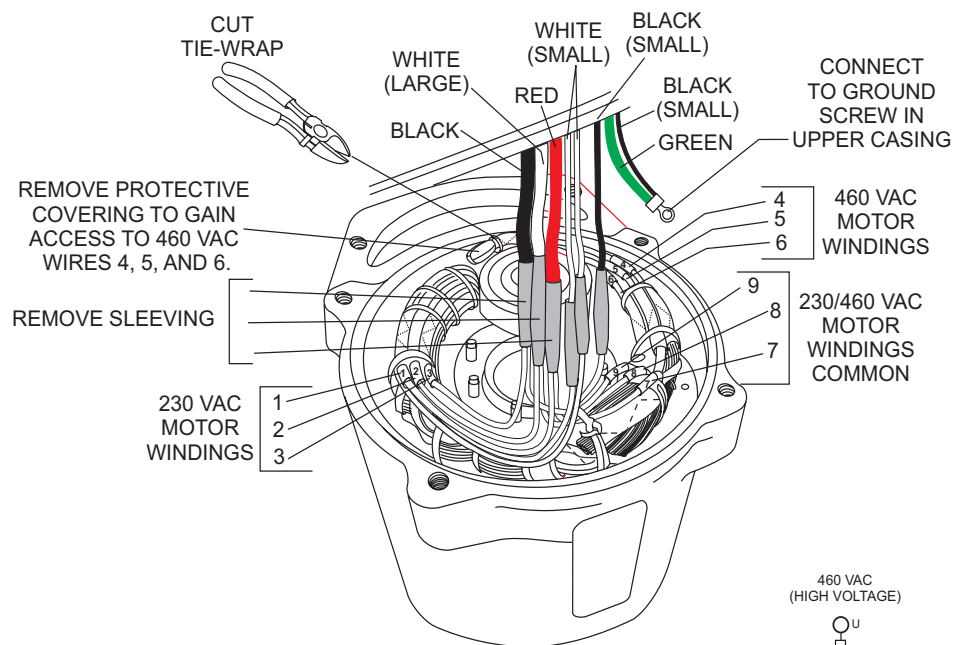
2. Tighten the connector housing to ensure a tight fit between the cord and the connector body. This will prevent the cable from pulling out of the terminal block and also prevent moisture from entering the control box.
3. Determine the length of the float switch wires, then secure float switch wires to pump discharge hose.

ST-4125D/ST-6125D — 230/460 VAC VOLTAGE SELECTION

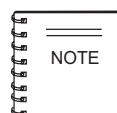
230/460 VAC Voltage Selection

The ST-4125D/ST-6125D submersible pump is factory set at 230 VAC. To change the voltage from 230 VAC to 460 VAC, perform the following (refer to Figure 5):

1. Place pump in a suitable area free of dirt and debris.
2. Remove the four retaining screws, using a 19 mm socket, and the two Allen screws using an 8 mm socket, that secure the pump casing.
3. Lift the top of the pump by attaching a chain on the eye bolts and using a crane or similar equipment. Be careful not to fully stretch the cable connections inside the pump.
4. Cut the tie-wrap holding the 460 VAC motor winding wires as shown in Figure 5. Then remove the protective covering from the wires (labeled 4, 5, and 6).
5. Remove the sleeving covering the large red wire and separate the 2 wires labeled 1 and 7.
6. Connect the wire labeled 4 from step 4 to the wire labeled 7 from step 5 and join them with the large red wire. Cover the wires with sleeving.
7. Repeat steps 5 and 6 for the large black wire and the large white wire. Refer to the table in Figure 5 for wires to separate (column 2) and wires to connect (column 4).
8. Using electrical tape, bind the 3 wires that were separated and disconnected (labeled 1, 2, and 3). Place these wires neatly inside the housing.
9. Reinstall the top of the pump and reinsert the six screws and tighten securely.



MOTOR WINDING CONFIGURATION			
230 VAC INPUT 3Ø	MOTOR WINDINGS	460 VAC INPUT 3Ø	MOTOR WINDINGS
U (RED)	1 AND 7	U (RED)	4 AND 7
V (WHITE)	2 AND 8	V (WHITE)	5 AND 8
W (BLACK)	3 AND 9	W (BLACK)	6 AND 9



NOTE

PUMP IS SHIPPED FROM THE FACTORY FOR 230 VAC OPERATION. FOR 460 VAC OPERATION SEE ABOVE WIRING ILLUSTRATION AND TABLE.

Figure 5. 230/460 VAC Pump Voltage Selection

ST-4125D/ST-6125D — CONTROL BOX WIRING DIAGRAM

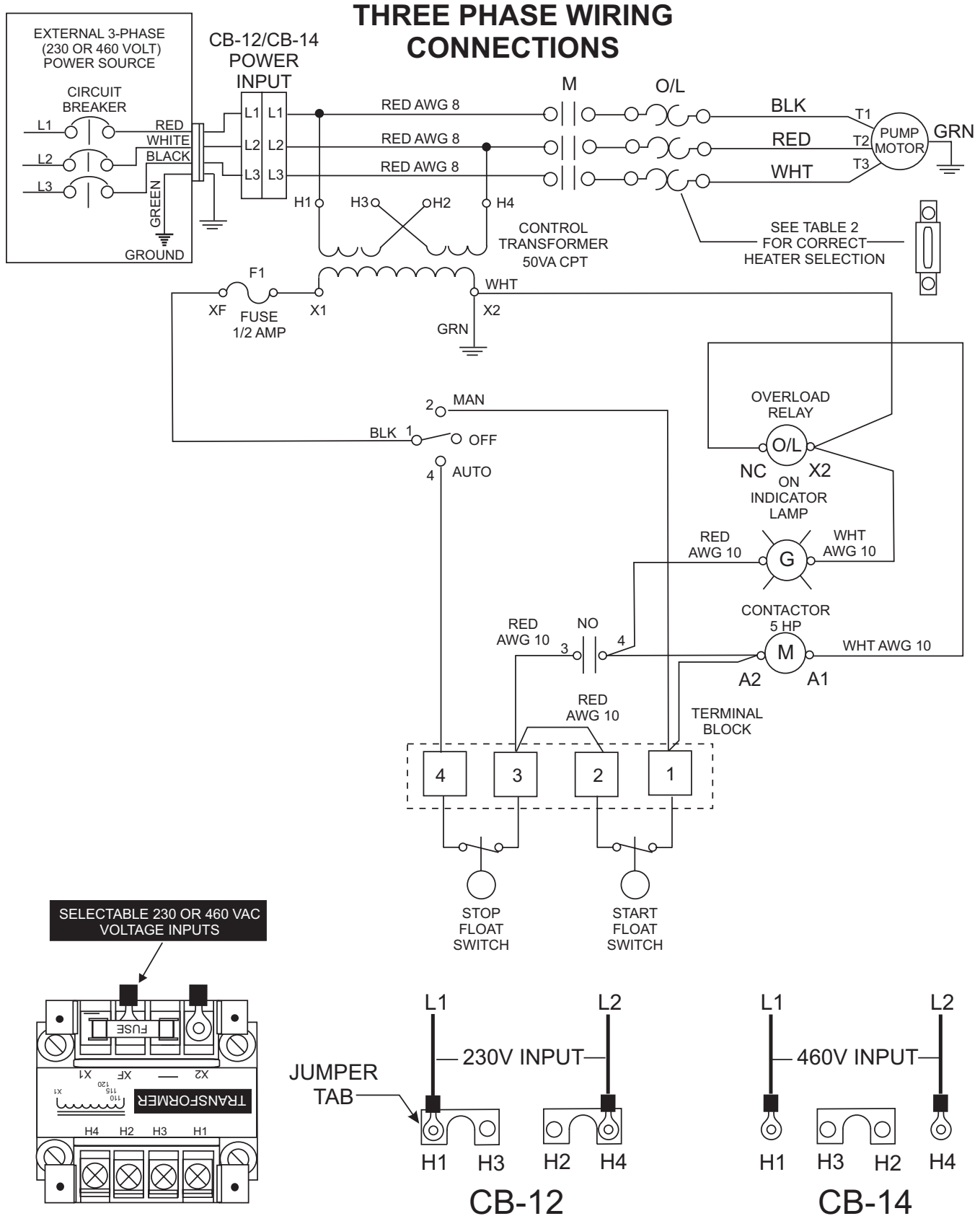


Figure 7. Control Box Wiring Diagram

ST-4125D/ST-6125D — 3-PHASE POWER INSTALLATION

3-PHASE POWER CORD (INPUT TO BOX) INSTALLATION

1. The three phase **input** power cord should have four wires. Each wire is color coded. The colors are **RED**, **WHITE**, **BLACK** and **GREEN**.
2. Remove the 3-phase AC input connector housing from the control box, then route the three phase input power cable through the cable gland on the control box. Attach the wires to the AC terminal block inside the control box as indicated by Table 5 and Figure 8.

TABLE 5. 3-PHASE AC INPUT POWER CONNECTIONS

CABLE WIRE COLOR	AC TERMINAL BLOCK #
RED	L1
WHITE	L2
BLACK	L3
GREEN	GROUND

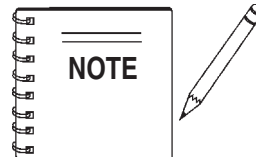
3. Tighten the connector housing to ensure a tight fit between the power cord and the connector body. This will prevent the cable from pulling out of the terminal block and also prevent moisture from entering the control box.

It is recommended that the power being supplied to the control box **ALWAYS** be connected to a **circuit breaker** or a **quick disconnect** switch. This safety feature allows for quick removal of power from the control box in the event of an emergency.

4. Connect the other end of the 3-phase input power cord to the voltage source. Remember to provide a means of disconnecting the power from the control box (circuit breaker or quick disconnect switch). Also make sure to provide a good earth ground to the control box.

3-PHASE POWER INSTALLATION (OUTPUT TO PUMP)

1. The three phase **output** power cord should have four wires. Each wire is color coded. The colors are **RED**, **WHITE**, **BLACK** and **GREEN**.
2. Remove the 3-phase AC output power connector housing on the control box, then route the three phase output power cable through the cable gland on the control box. Attach the wires to the AC terminal blocks on the overload relay as indicated by Figure 8.



Electrical connections to the power source should only be performed by a **licensed electrician** or **qualified personnel**.

ST-4125D/ST-6125D — 3-PHASE POWER INSTALLATION

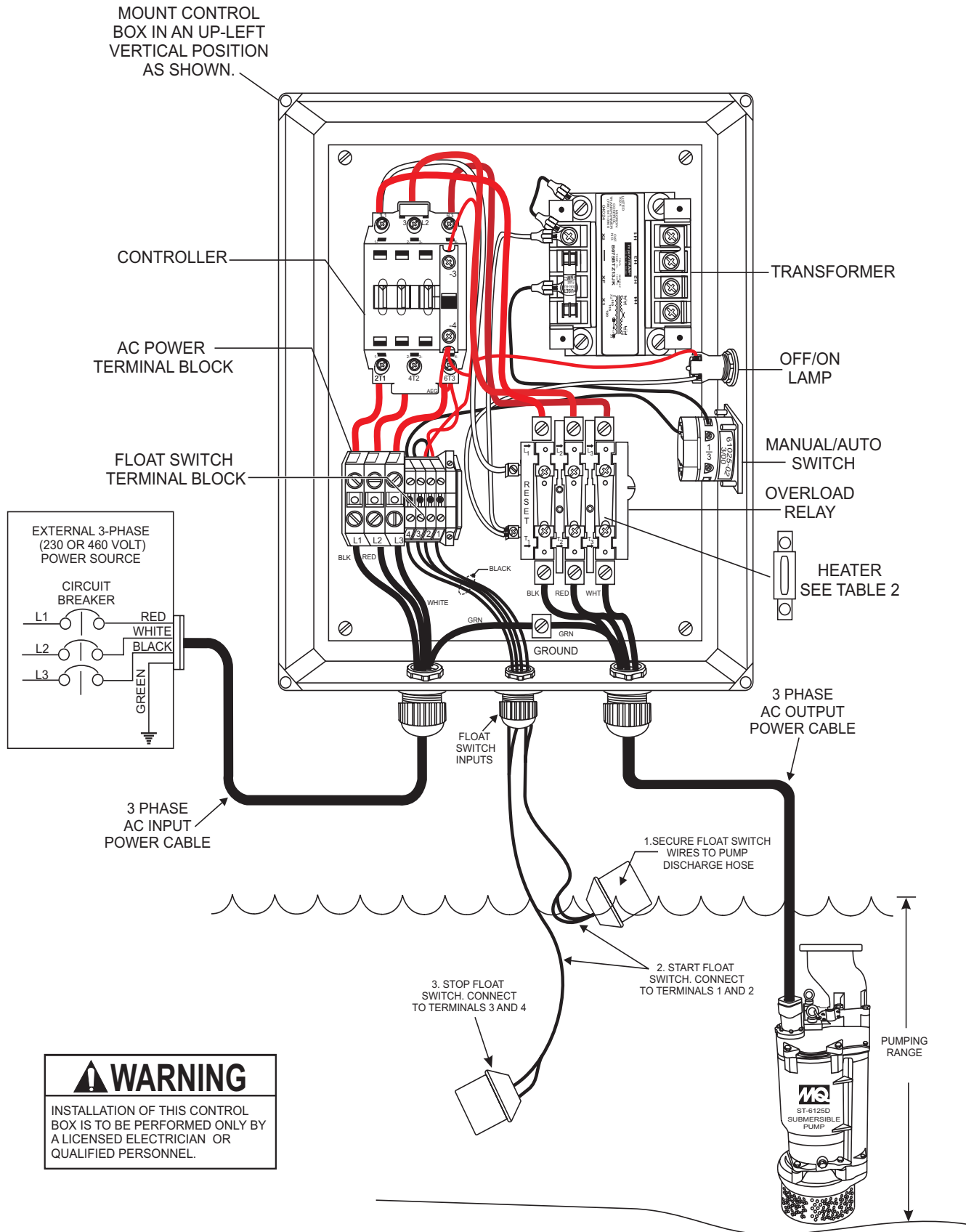


Figure 8. Three Phase Control Box/Pump System Diagram

Control Box Setup

1. From the voltage source set the circuit breaker or quick disconnect switch to the **ON** position.
2. For manual operation of the pump, place the 3-position operation switch (Figure 9) on the control box in the **MANUAL** position.

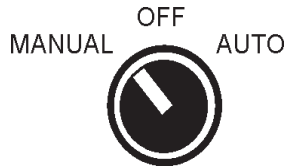


Figure 9. Manual-Off-Auto SW. (Manual Position)

3. Verify that the **ON** indicator (Figure 10) on the control box is **LIT**. This means that power is being supplied to the control box.



Figure 10. Control Box Power ON Indicator

4. In the manual mode the pump will run continuously. Pay close attention when running the pump in this mode. **DAMAGE** to the pump may occur if pump is not immersed in water.
5. To operate the pump automatically (float switches), place the 3-position operation switch in the **AUTO** position (Figure 11).



Figure 11. Manual-Off-Auto SW. (Auto Position)

6. In the **AUTO** mode the pump will run as long as there is a sufficient amount of water. This amount is determined by the setting of the float switches. The **stop float** switch contacts will open when the water level is low and power will be removed from the pump's motor.

Once the water level has risen back to the appropriate level the **start float** switch contacts will close and power will be restored to the pump's motor.

Reset

1. When the overload module detects an overload, the unit will shut down. Check the unit and remove cause of overload.
2. Let the unit cool down and press the RESET button (see Figure 12) on the front of the control box to reset the unit (restore power).



Figure 12. RESET Button

Shut-Down

1. Place the 3-position operation switch on the control box to the **OFF** position (Figure 13).



Figure 13. Manual-Off-Auto SW. (OFF Position)

2. Verify that the control box power **ON** light is **OFF**.
3. Turn the circuit breaker or quick disconnect switch to the **OFF** position.

Operation

1. Attach a suitable lifting chain to the eye bolts (Figure 14) on the pump and using a crane, or similar equipment, 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.
2. Make sure the pump is always placed in an upright position, not tilted (Figure 15). 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.

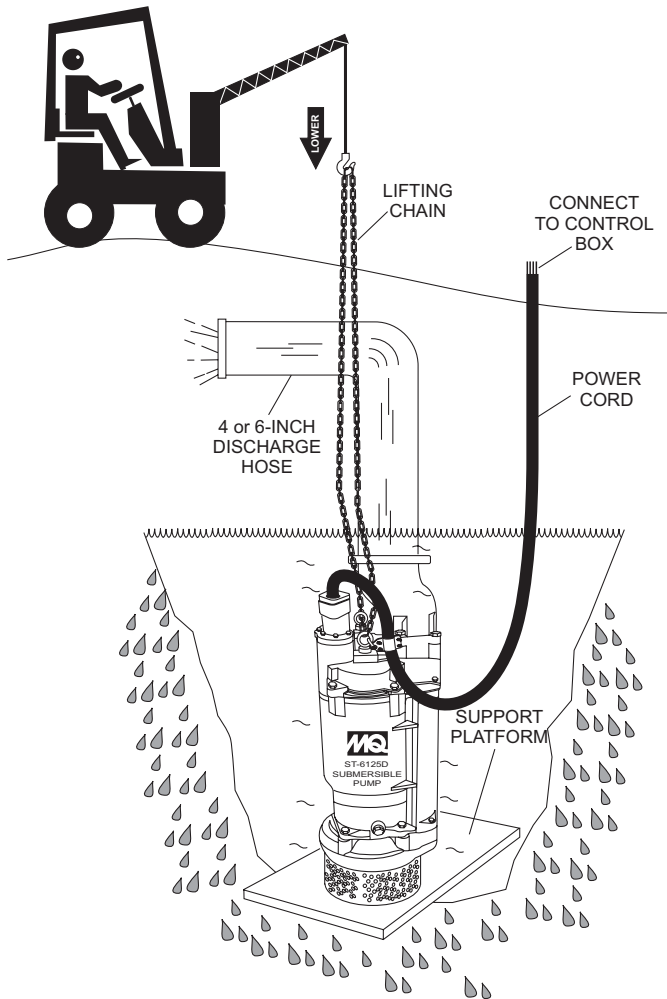


Figure 14. Placing the Submersible Pump
(Correct Upright Position)

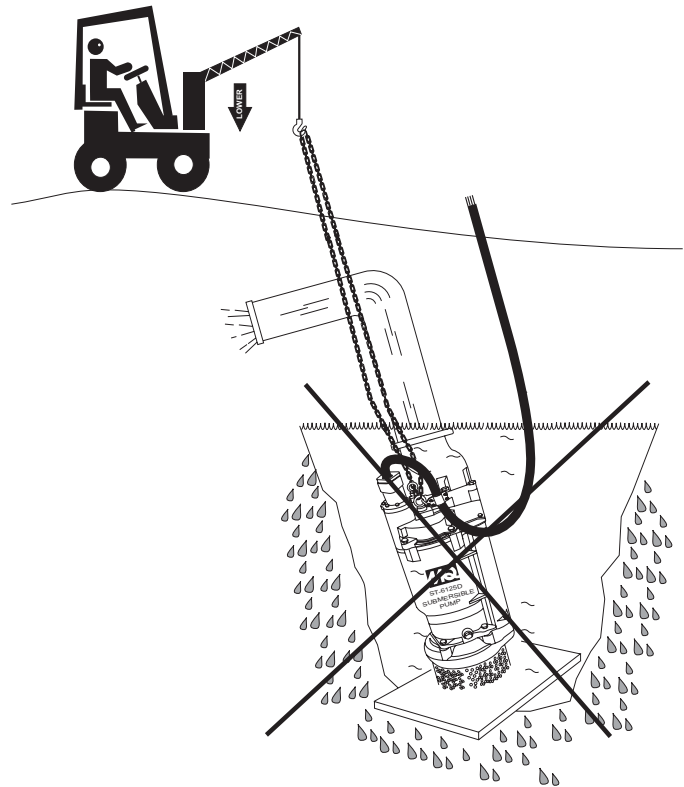


Figure 15. Incorrect Tilted Position

**CAUTION - Pump Use**
DO NOT use this pump for swimming pool applications!

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

4. **NEVER** grab or touch a live power cord (Figure 16) with wet hands, the possibility exists of **electrical shock**, **electrocution** and even **death**.

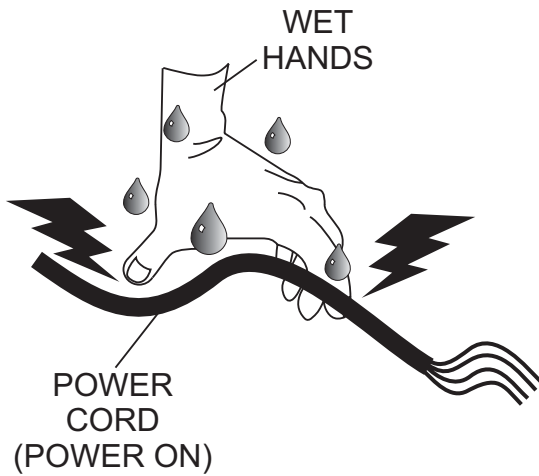


Figure 16. Power Cord (Wet Hands)

DANGER - Electrocution Hazard

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 exist of electrical shock, electrocution and possibly **death!**

3. If all of the pump's electrical requirements have been met, insert the power plug on the pump into the power source receptacle.
4. Wait a few seconds and water should begin to flow from the discharge hose.
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 disconnecting power from the pump.
2. Using the chain and lifting crane, lift the pump up from its current position. Remove the discharge hose from the discharge port on the pump.
3. Remove all power cables and float switches from the control box. Place cables and float switches in a suitable container where they will not get damaged.
4. If the pump was used to pump mud, grit or silt, flush vigorously with clean water.
5. Remove the pump from the water. Wipe off any mud or debris that might have attached itself to the pump.
6. Store pump in a clean dry place away from dirt and debris.

LUBRICATION

To check the oil level of the mechanical seal perform the following:

1. Lay the pump (Figure 17) on its side with the oil plug facing upwards.
2. Remove oil fill plug.
3. Visually inspect oil plug hole to verify that oil cavity is full enough to cover seal spring. Check every 300 hours, change hydraulic oil every 6 months (1,000 hours) or as needed.
4. While checking the hydraulic oil level, also check the condition of the hydraulic oil in the seal cavity. Block the opening with a finger and roll pump to one side to drain oil into a small transparent container. If oil is cloudy or has water in it, drain oil from pump cavity and replace hydraulic oil. Check the seal for wear damage.

5. If oil level is low fill with SAE 10 weight non-detergent hydraulic oil (i.e. Shell Turbo 32 or equivalent). Fill oil cavity 75% to 85% full (allow air space for expansion). Pump oil cavity capacity is approximately 180 cc.

IMPELLER

1. Make sure the clearance between the impeller and the friction disk is approximately .012 - .020 inches (.304 - .508 mm.)
2. If impeller is defective or badly worn, replace impeller immediately.

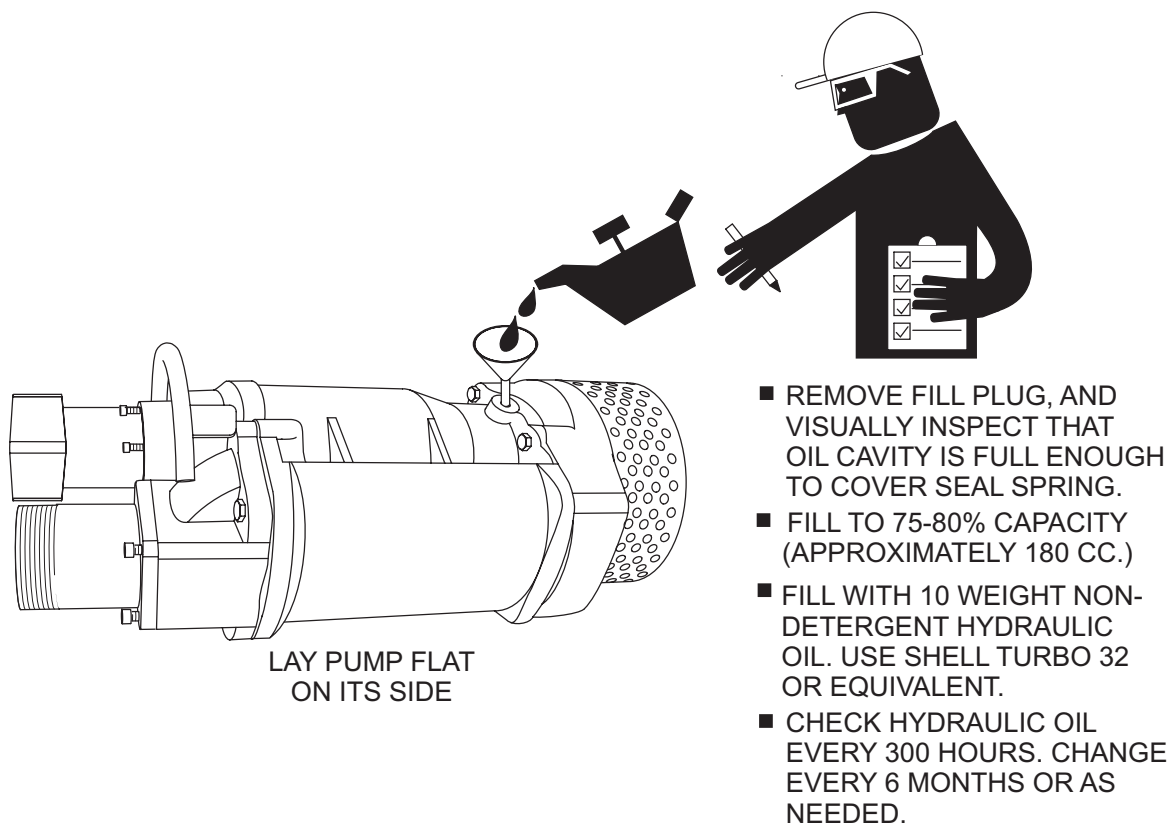


Figure 17. Checking Hydraulic Oil

ST-4125D/ST-6125D — TROUBLESHOOTING

Practically all breakdowns can be prevented by proper handling and maintenance inspections, but in the event of a breakdown, use Table 6 (Pump Troubleshooting) as a basic guideline for troubleshooting the pump. If the problem cannot be remedied, contact Multiquip's service department.

TABLE 6. PUMP TROUBLESHOOTING

SYMPTOM	POSSIBLE PROBLEM	SOLUTION
Pump Fails To Start	Incorrect voltage/amps?	Check that proper voltage (230/460 3Ø) 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?	If using float switches check wiring, inspect power cord.
	Blown power fuse?	Replace fuse, check cause of blown fuse.
	Impeller locked?	Disconnect power cord and check for clogging and improper impeller clearance. 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 Seal Oil	Defective water seal?	Replace water seal.
	Loose Oil Fill Plug?	Tighten securely.

ST-4125D/ST-6125D — PERFORMANCE CURVES

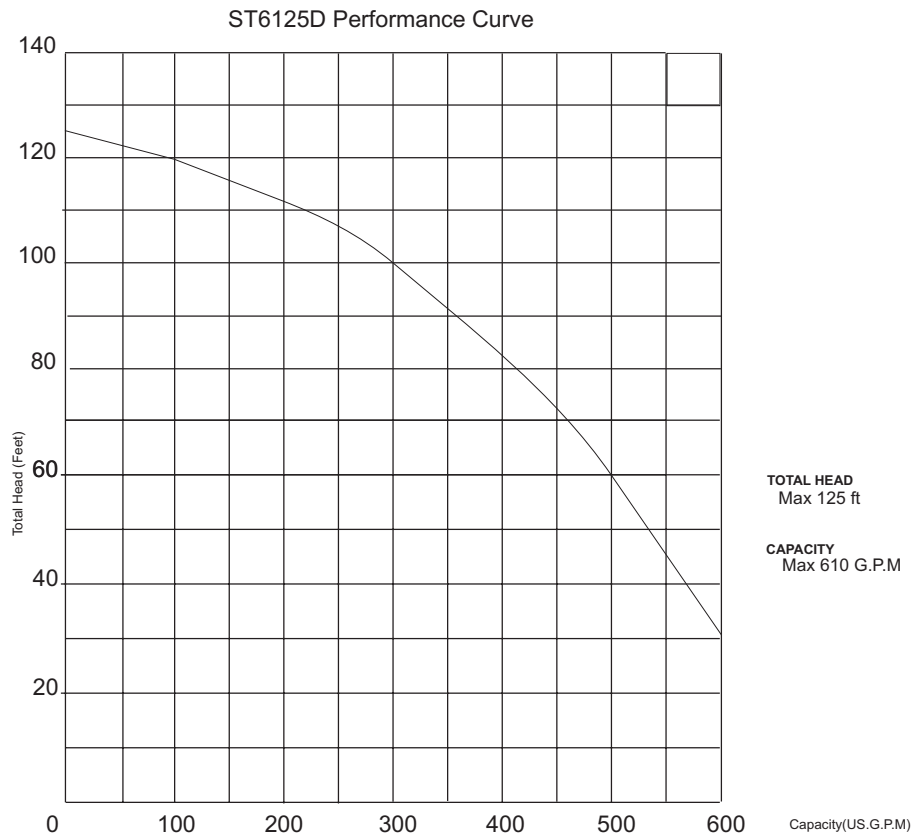
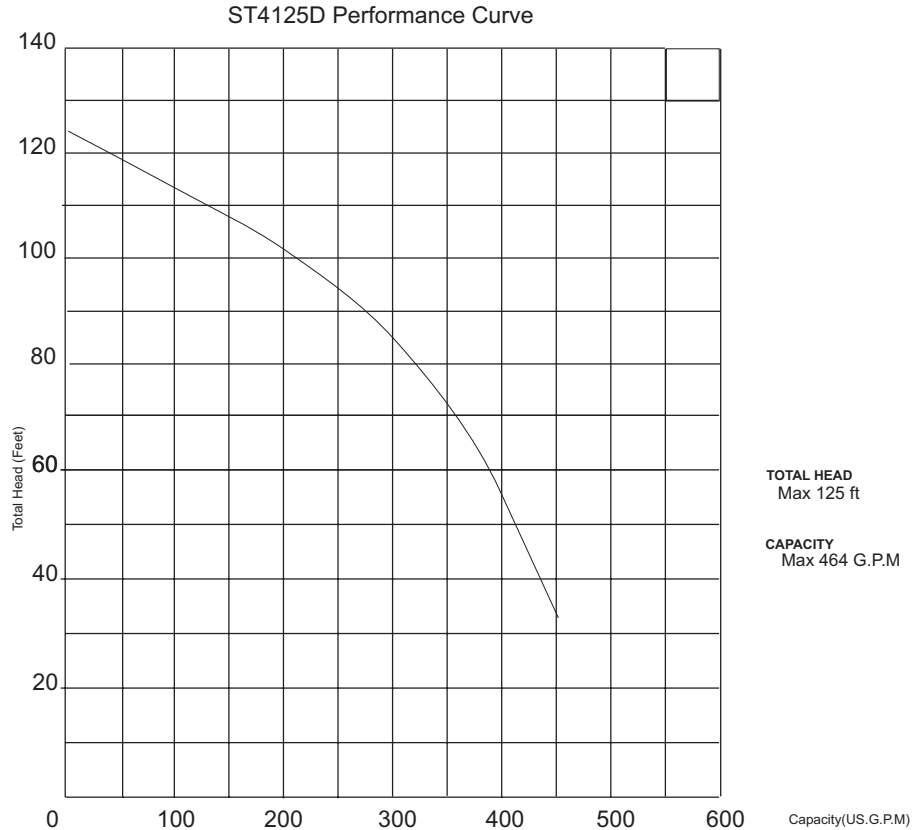


Figure 18. Pump Performance Curves

[illegible]

EXPLANATION OF CODE IN REMARKS COLUMN

The following section explains the different symbols and remarks used in the Parts section of this manual. Use the help numbers found on the back page of the manual if there are any questions.

The contents and part numbers listed in the parts section are subject to change **without notice**. Multiquip does not guarantee the availability of the parts listed.

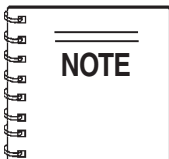
Sample Parts List:

NO.	PART NO.	PART NAME	QTY.	REMARKS
1	12345	BOLT	1	INCLUDES ITEMS W/*
2*		WASHER, 1/4 IN.		NOT SOLD SEPARATELY
2*	12347	WASHER, 3/8 IN.	1	MQ-45T ONLY
3	12348	HOSE	A/R ..	MAKE LOCALLY
4	12349	BEARING	1	S/N 2345B AND ABOVE

NO. Column

Unique Symbols - All items with same unique symbol (*, #, +, %, or >) in the number column belong to the same assembly or kit, which is indicated by a note in the "Remarks" column.

Duplicate Item Numbers - Duplicate numbers indicate multiple part numbers are in effect for the same general item, such as different size saw blade guards in use or a part that has been updated on newer versions of the same machine.



When ordering a part that has more than one item number listed, check the remarks column for help in determining the proper part to order.

PART NO. Column

Numbers Used - Part numbers can be indicated by a number, a blank entry, or TBD.

TBD (To Be Determined) is generally used to show a part that has not been assigned a formal part number at time of publication.

A blank entry generally indicates that the item is not sold separately or is not sold by Multiquip. Other entries will be clarified in the "Remarks" Column.

QTY. Column

Numbers Used - Item quantity can be indicated by a number, a blank entry, or A/R.

A/R (As Required) is generally used for hoses or other parts that are sold in bulk and cut to length.

A blank entry generally indicates that the item is not sold separately. Other entries will be clarified in the "Remarks" Column.

REMARKS Column

Some of the most common notes found in the "Remarks" Column are listed below. Other additional notes needed to describe the item can also be shown.

Assembly/Kit - All items on the parts list with the same unique symbol will be included when this item is purchased.

Indicated by:

"INCLUDES ITEMS W/ (unique symbol)"

Serial Number Break - Used to list an effective serial number range where a particular part is used.

Indicated by:

"S/N XXXXX AND BELOW"

"S/N XXXX AND ABOVE"

"S/N XXXX TO S/N XXX"

Specific Model Number Use - Indicates that the part is used only with the specific model number or model number variant listed. It can also be used to show a part is NOT used on a specific model or model number variant.

Indicated by:

"XXXXX ONLY"

"NOT USED ON XXXX"

"Make/Obtain Locally" - Indicates that the part can be purchased at any hardware shop or made out of available items. Examples include battery cables, shims, and certain washers and nuts.

"Not Sold Separately" - Indicates that an item cannot be purchased as a separate item and is either part of an assembly/kit that can be purchased, or is not available for sale through Multiquip.

ST-4125D/ST-6125D — SUGGESTED SPARE PARTS

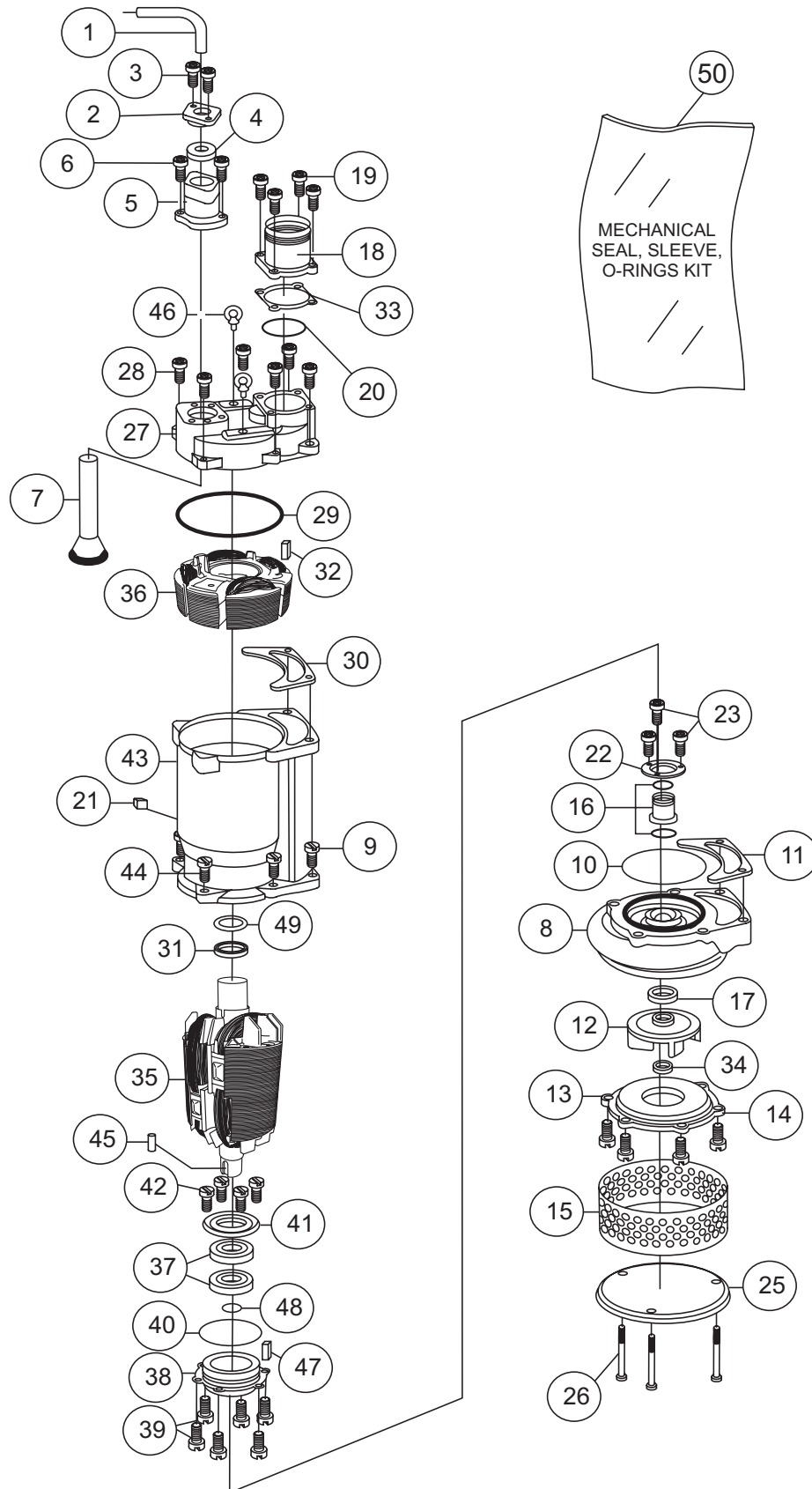
ST-4125D/ST-6125D

SUBMERSIBLE PUMP 1 TO 3 UNITS

Qty.	P/N	Description	Remarks
1	1027620	KIT, MECHANICAL SEAL, SLEEVE, O-RINGS	ST4125D
1	1027622	KIT, MECHANICAL SEAL, SLEEVE, O-RINGS	ST6125D

ST-4125D — SUBMERSIBLE PUMP ASSY.

ST-4125D SUBMERSIBLE PUMP ASSY.



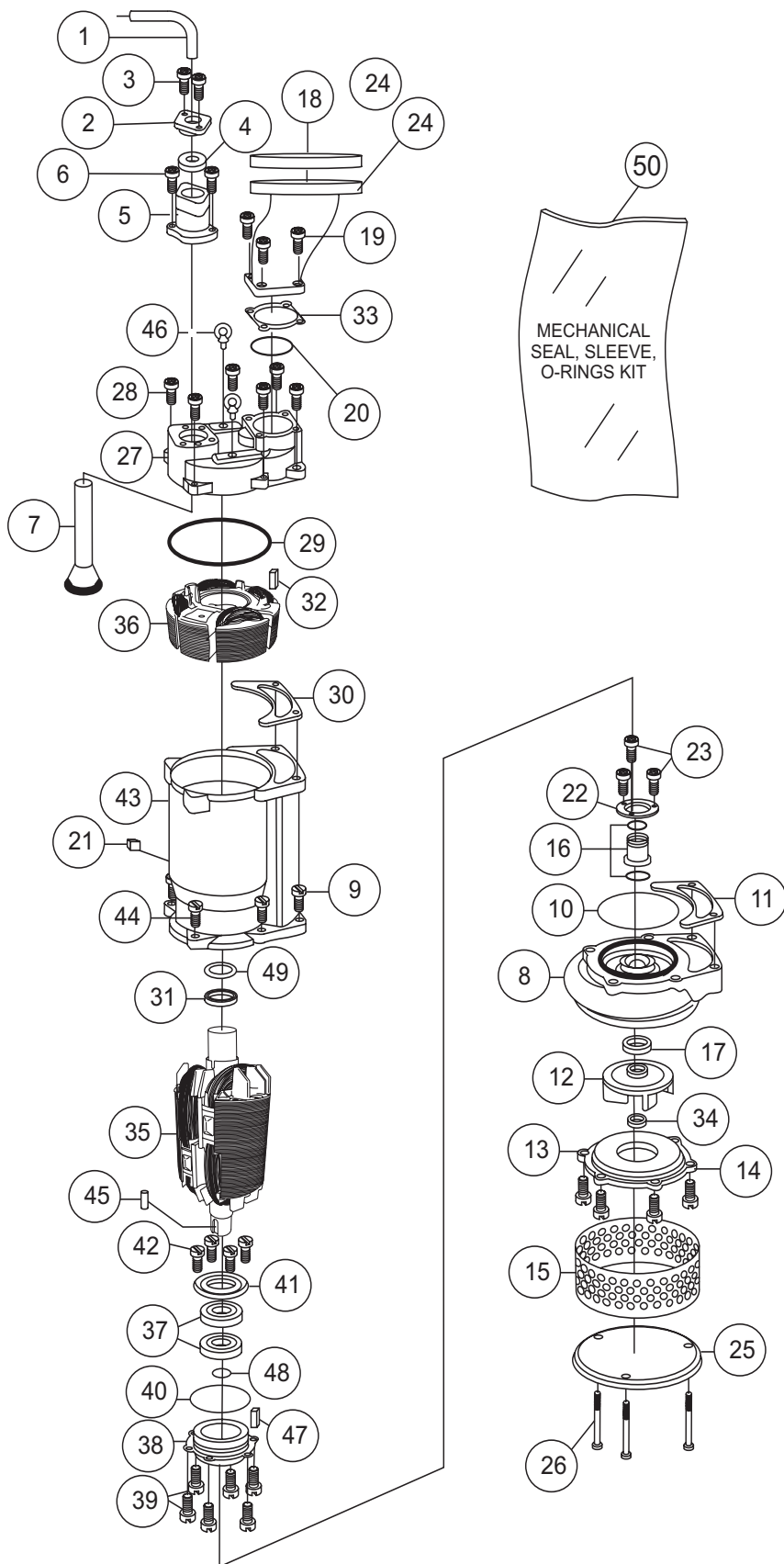
ST-4125D — SUBMERSIBLE PUMP ASSY.

ST-4125D SUBMERSIBLE PUMP ASSY.

<u>NO</u>	<u>PART NO</u>	<u>PART NAME</u>	<u>QTY.</u>	<u>REMARKS</u>
1	1025754	CABLE, POWER, 22 MM 50'	1	
2	1042600	CABLE GLAND, DIA.38	1	
3	ST4125D031	BOLT, M12X25L	2	
4	1040546	CABLE BUSH, DIA.34	1	
5	1042601	CABLE ENTRY ASSY.	1	
6	ST4125D061	BOLT	7	
7	1042602	MOULDING TUBE	1	
8	1042604	VOLUTE, HOUSING	1	
9	ST4125D0201	BOLT, M12X40L	1	
10#	ST4125D0204	O-RING, DIA.35X190	4	
11	1042605	LOWER PACKING	1	
12	1042607	IMPELLER	1	
13	1042608	SUCTION COVER	1	
14	ST4125D0221	BOLT, M12XM20L	4	
15	1042609	STRAINER	1	
16#	ST4125D025	MECHANICAL SEAL	1	
17	1040547	OIL SEAL	2	
18	1042611	HOSE CONNECTION, DISCHARGE 2"	1	
19	ST4125D0321	BOLT, M10X25L	4	
20#	ST4125D0324	O-RING, DIA.3.1X105	1	
21	1040548	OIL PLUG, M12	1	
22	1042612	SEAL STOPPER	1	
23	ST4125D0391	BOLT, M5X10L	3	
25	1042613	BOTTOM PLATE	1	
26	ST4125D0491	BOLT, M12X120L	3	
27	1042614	MOTOR COVER	1	
28	ST4125D0501	BOLT, M12X35L, M10X35L	6	
29#	ST4125D0504	O-RING, DIA.35X232	1	
30	1042615	PACKING, UPPER	1	
31	1042616	BALL BEARING, UPPER, #6306ZZC3	1	
32	1042617	THERMAL PROTECTOR	3	
33#	TBD	GASKET, FLANGE HOSE CONNECTION	1	
34	1042618	NUT, IMPELLER, M20X2.5P	1	
35	ST4125D055	ROTOR, UNIT	1	
36	1042619	STATOR	1	
37	1042620	BALL BEARING (LOWER)#6308/#7308	2	
38	1042621	BEARING HOUSING, LOWER	1	
39	ST4125D0601	BOLT, M8X20L	6	
40#	ST4125D0604	O-RING, DIA.3.1/135	1	
41	1042623	BEARING COVER	1	
42	ST4125D0611	BOLT, M6X16L	4	
43	1042624	STATOR HOUSING	1	
44	ST4125D0641	BOLT, M10X100L	2	
45	1042625	KEY, 7X7X30	1	
46	1042627	EYE BOLT, LIFTING,W3/4"	2	
47	1033125	SEAL, LEAKAGE SENSOR	1	
48	1040549	STOP RING	1	
49	ST4125D0157	WAVE WASHER, DIA.55X70.5X0.4	1	
50	1027620	KIT, MECHANICAL SEAL, SLEEVE, O-RINGS	1	INCLUDES ITEMS W/ #

ST-6125D — SUBMERSIBLE PUMP ASSY.

ST-6125D SUBMERSIBLE PUMP ASSY.



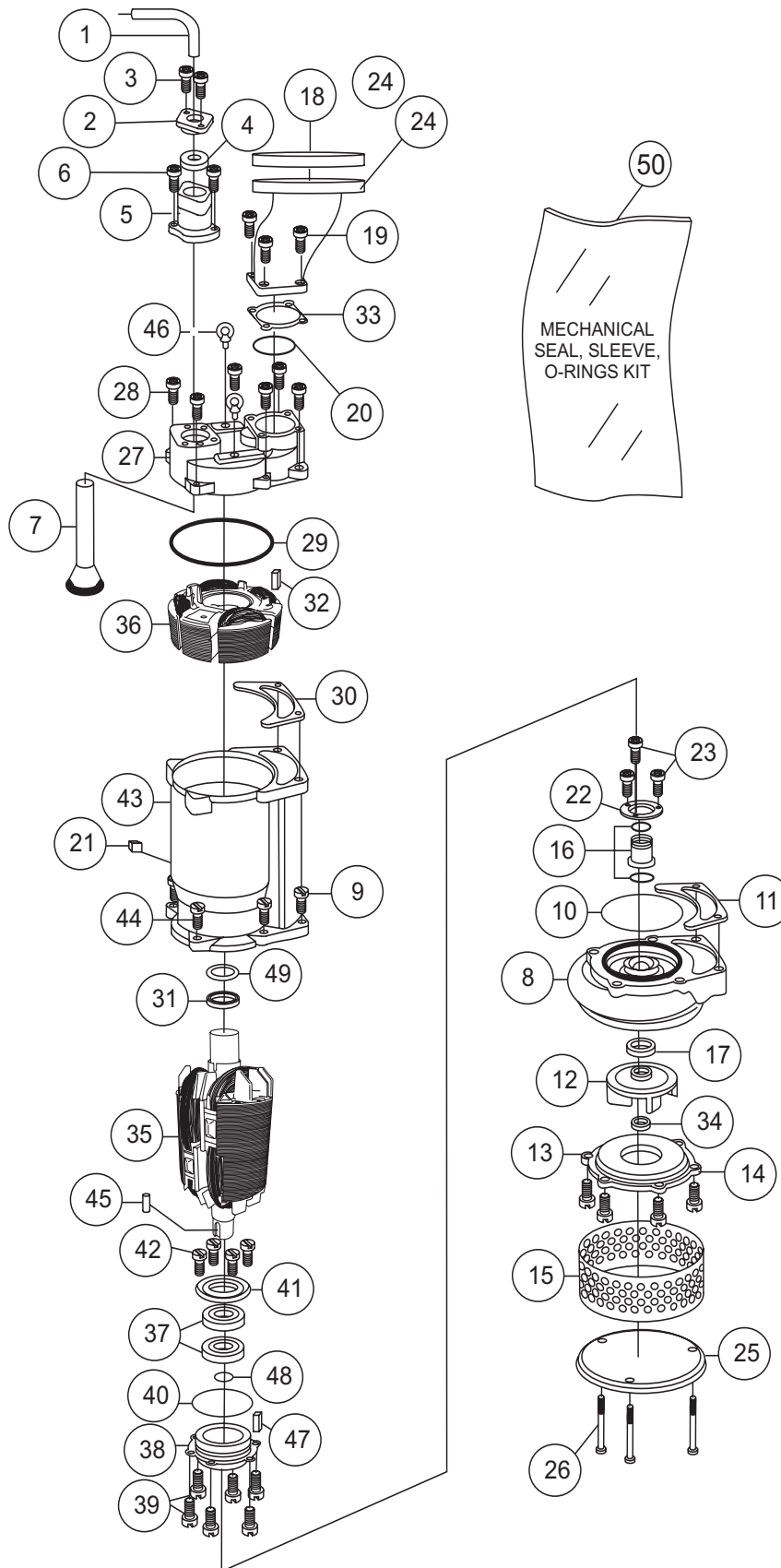
ST-6125D — SUBMERSIBLE PUMP ASSY.

ST-6125D SUBMERSIBLE PUMP ASSY.

<u>NO</u>	<u>PART NO</u>	<u>PART NAME</u>	<u>QTY.</u>	<u>REMARKS</u>
1	1035149	CABLE, POWER, 24 MM 50'	1	
2	1042637	CABLE GLAND, DIA.38	1	
3	ST6125D031	BOLT, M12X25L	2	
4	1042638	CABLE BUSH, DIA.34	1	
5	1042639	CABLE ENTRY ASSY.	1	
6	ST6125D061	BOLT	7	
7	1042640	MOULDING TUBE	1	
8	1042641	VOLUTE, HOUSING	1	
9	ST6125D02011	BOLT, M12X40L	1	
10#	ST6125D0204	O-RING, DIA.35X190	4	
11	1042642	LOWER PACKING	1	
12	1042643	IMPELLER	1	
13	1042644	SUCTION COVER	1	
14	ST6125D0221	BOLT, M12XM20L	4	
15	1042645	STRAINER	1	
16#	ST6125D025	MECHANICAL SEAL	1	
17	1042646	OIL SEAL	2	
18	1042647	FLANGE, HOSE CONNECTION DISCHARGE	1	
19	ST6125D0321	BOLT, M10X25L	4	
20#	ST6125D0324	O-RING, DIA.3.1X105	1	
21	1042648	OIL PLUG, M12	1	
22	1042649	SEAL STOPPER, (OPTIONAL)	1	
23	ST6125D0391	BOLT, M5X10L	3	
24	1042611	HOSE CONNECTION, DISCHARGE	1	
25	1042650	BOTTOM PLATE	1	
26	ST6125D0491	BOLT, BOTTOM PLATE, M12X120L	3	
27	1042651	MOTOR COVER	1	
28	ST6125D0501	BOLT, M12X35L, M10X35L	6	
29#	ST6125D0504	O-RING, DIA.35X232	1	
30	1042652	UPPER PACKING	1	

ST-6125D — SUBMERSIBLE PUMP ASSY.

ST-6125D SUBMERSIBLE PUMP ASSY.



ST-6125D — SUBMERSIBLE PUMP ASSY. (CONTINUED)

ST-6125D SUBMERSIBLE PUMP ASSY. (CONTINUED)

<u>NO</u>	<u>PART NO</u>	<u>PART NAME</u>	<u>QTY.</u>	<u>REMARKS</u>
31	1042653	BALL BEARING, UPPER, #6306ZZC3	1	
32	1042617	THERMAL SENSOR	3	
33#	TBD	GASKET, DISCHARGE CONNECTION	1	
34	1042655	NUT, IMPELLER, M20X2.5P	1	
35	1042654	ROTOR UNIT	1	
36	1042663	STATOR	1	
37	1042664	BALL BEARING, LOWER, #6308/#7308	2	
38	1042665	BEARING HOUSING, LOWER	1	
39	ST6125D0601	BOLT, M8X20L	6	
40#	ST6125D0604	O-RING, DIA.3.1/135	1	
41	1042666	BEARING COVER	1	
42	ST6125D0611	BOLT, M6X16L	4	
43	1042667	STATOR HOUSING	1	
44	ST6125D0641	BOLT, M10X100L	2	
45	1042668	KEY, IMPELLER, 7X7X30	1	
46	1042670	EYE BOLT, LIFTING, W3/4"	2	
47	1033125	SEAL LEAKAGE SENSOR	1	
48	1042671	STOP RING, S-40	1	
49	ST6125D0157	WAVE WASHER, DIA.55X70.5X0.4	1	
50	1027622	KIT, MECHANICAL SEAL, SLEEVE, O-RINGS	1	INCLUDES ITEMS W/ #

PAYMENT TERMS

Terms of payment for parts are net 30 days.

FREIGHT POLICY

All parts orders will be shipped collect or prepaid with the charges added to the invoice. All shipments are F.O.B. point of origin. Multiquip's responsibility ceases when a signed manifest has been obtained from the carrier, and any claim for shortage or damage must be settled between the consignee and the carrier.

MINIMUM ORDER

The minimum charge for orders from Multiquip is \$15.00 net. Customers will be asked for instructions regarding handling of orders not meeting this requirement.

RETURNED GOODS POLICY

Return shipments will be accepted and credit will be allowed, subject to the following provisions:

1. A Returned Material Authorization must be approved by Multiquip prior to shipment.
2. To obtain a Return Material Authorization, a list must be provided to Multiquip Parts Sales that defines item numbers, quantities, and descriptions of the items to be returned.
 - a. The parts numbers and descriptions must match the current parts price list.
 - b. The list must be typed or computer generated.
 - c. The list must state the reason(s) for the return.
 - d. The list must reference the sales order(s) or invoice(s) under which the items were originally purchased.
 - e. The list must include the name and phone number of the person requesting the RMA.
3. A copy of the Return Material Authorization must accompany the return shipment.
4. Freight is at the sender's expense. All parts must be returned freight prepaid to Multiquip's designated receiving point.

5. Parts must be in new and resalable condition, in the original Multiquip package (if any), and with Multiquip part numbers clearly marked.
6. The following items are not returnable:
 - a. Obsolete parts. (If an item is in the price book and shows as being replaced by another item, it is obsolete.)
 - b. Any parts with a limited shelf life (such as gaskets, seals, "O" rings, and other rubber parts) that were purchased more than six months prior to the return date.
 - c. Any line item with an extended dealer net price of less than \$5.00.
 - d. Special order items.
 - e. Electrical components.
 - f. Paint, chemicals, and lubricants.
 - g. Decals and paper products.
 - h. Items purchased in kits.
7. The sender will be notified of any material received that is not acceptable.
8. Such material will be held for five working days from notification, pending instructions. If a reply is not received within five days, the material will be returned to the sender at his expense.
9. Credit on returned parts will be issued at dealer net price at time of the original purchase, less a 15% restocking charge.
10. In cases where an item is accepted, for which the original purchase document can not be determined, the price will be based on the list price that was effective twelve months prior to the RMA date.
11. Credit issued will be applied to future purchases only.

PRICING AND REBATES

Prices are subject to change without prior notice. Price changes are effective on a specific date and all orders received on or after that date will be billed at the revised price. Rebates for price declines and added charges for price increases will not be made for stock on hand at the time of any price change.

Multiquip reserves the right to quote and sell direct to Government agencies, and to Original Equipment Manufacturer accounts who use our products as integral parts of their own products.

SPECIAL EXPEDITING SERVICE

A \$35.00 surcharge will be added to the invoice for special handling including bus shipments, insured parcel post or in cases where Multiquip must personally deliver the parts to the carrier.

LIMITATIONS OF SELLER'S LIABILITY

Multiquip shall not be liable hereunder for damages in excess of the purchase price of the item with respect to which damages are claimed, and in no event shall Multiquip be liable for loss of profit or good will or for any other special, consequential or incidental damages.

LIMITATION OF WARRANTIES

No warranties, express or implied, are made in connection with the sale of parts or trade accessories nor as to any engine not manufactured by Multiquip. Such warranties made in connection with the sale of new, complete units are made exclusively by a statement of warranty packaged with such units, and Multiquip neither assumes nor authorizes any person to assume for it any other obligation or liability whatever in connection with the sale of its products. Apart from such written statement of warranty, there are no warranties, express, implied or statutory, which extend beyond the description of the products on the face hereof.

[illegible]

OPERATION & PARTS MANUAL

HERE'S HOW TO GET HELP

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

UNITED STATES

Multiquip Corporate Office

18910 Wilmington Ave. Tel. (800) 421-1244
Carson, CA 90746 Fax (800) 537-3927
Contact: mq@multiquip.com

Mayco Parts

800-306-2926 Fax: 800-672-7877
310-537-3700 Fax: 310-637-3284

Service Department

800-421-1244 Fax: 310-537-4259
310-537-3700

MQ Parts Department

800-427-1244 Fax: 800-672-7877
310-537-3700 Fax: 310-637-3284

Warranty Department

800-421-1244, Ext. 279 Fax: 310-537-1173
310-537-3700, Ext. 279

Technical Assistance

800-478-1244 Fax: 310-631-5032

MEXICO

MQ Cipsa

Carr. Fed. Mexico-Puebla KM 126.5 Tel: (52) 222-225-9900
Momoxpan, Cholula, Puebla 72760 Mexico Fax: (52) 222-285-0420
Contact: pmastretta@cipsa.com.mx

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Laval, Quebec, Canada H7L 6V3 Fax: (450) 625-8664
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Multiquip

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Barra de Tijuca - Rio de Janeiro Fax: 011-55-21-3433-9055
Contact: cnavarro@multiquip.com.br, srentes@multiquip.com.br

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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.

The information and specifications included in this publication were in effect at the time of approval for printing. Illustrations are based on the *ST4125D/ST6125D Submersible Pump* Illustrations, descriptions, references and technical data contained in this manual are for guidance only and may not be considered as binding. Multiquip Inc. reserves the right to discontinue or change specifications, design or the information published in this publication at any time without notice and without incurring any obligations.

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