

H Series

Installation, Operation & Maintenance Manual

Project: _____

Installation: _____

Pump Model: _____ **Serial Number:** _____

HOMA Pump Technology, Inc.
390 Birmingham Boulevard • Ansonia, CT 06401

GENERAL INSTRUCTIONS:

This manual is intended to provide basic installation and start-up guidance. It is to be read and thoroughly studied prior to attempting to install or operate any of the equipment supplied.

Equipment damage, which occurs by not following these instructions, will void the warranty.

SAFETY PRECAUTIONS:

Only trained qualified personnel shall be utilized for installation and start-up.

The following is a general list of safety precautions that should be followed when installation starting-up or servicing the pump.

The pump station owner or operator is ultimately responsible for ensuring that all equipment is installed, started up and operated in a safe manner.

1. Do not work alone.
2. Double check to make sure that all lifting equipment is in good working order and that it has adequate lifting capacity for the weight that it will handle.
3. Wear safety helmet, goggles and protective shoes, or appropriate safety materials required.
4. Before working on the pump make sure that the power is disconnected and cannot be energized by others. Lockout and tag the control panel circuit breaker.
5. Do not stand under suspended loads!
6. Never enter or work within a wet well without first checking to make sure sufficient oxygen is present and that there are no explosive or poisonous gases present.
7. All personnel, who work with sewage pumping equipment and systems shall be vaccinated against diseases that can occur, If there are any questions or doubts in this area it is strongly suggested that the local health agency be contacted.

EQUIPMENT INVENTORY AND INSPECTION:

Upon arrival of pump shipment carefully unpack all components and compare with shipping and purchase order documents to ensure that the order is complete. Also inspect equipment for any damage that might have occurred in shipment. *If any problems are detected contact an authorized Homa Pump Technology Representative immediately.*

TRANSPORTATION AND STORAGE PROCEDURE:

Always lift the pump by its lifting bail or eye.

Never lift the pump by its power cable!

The power cable ends must be protected from immersion in water as well as moisture intrusion. The cable will wick if it is not protected properly. Power cable leads shall be covered with shrink tubing.

Short-term storage is defined as any time less than six months. We recommend for this time intended to store the pump in its original shipping container in a dry, temperature controlled area. If climate controlled storage is not possible, all exposed parts should be inspected before storage and all surfaces that have the paint scratched, damaged or worn should be re-coated with air dry enamel paint. Any storage time exceeding six months is considered long term. In addition to the safeguards specified above, the impeller should be rotated once a month to prevent the mechanical seals from being damaged, and the pump should be inspected. The oil in the mechanical seal chamber should be drained and replaced.

ELECTRICAL INSTALLATION:

GENERAL GUIDELINES

All electrical work shall be carried out under the supervision of an authorized, licensed electrician. **The present state adopted edition of the National Electrical Code as well as all local codes and regulations shall be complied with.**

VERIFICATION OF POWER SUPPLY

Prior to making any electrical connections or applying power to the pump, compare the power supply available at the pump station to the data on the unit's nameplate. *Confirm that both voltage and phase match between pump and control panel.* The voltage supplied at the pump shall be plus or minus 10% of the nameplate value, frequency shall be plus or minus 5% of the nameplate value, the voltage phase balance shall be plus or minus 1% and the maximum corrected power factor shall be 1.0.

POWER LEAD WIRING

The ends of the cable leads are marked. Please refer to wiring diagram in the appendix for connection details. *The pump must be connected electrically through a motor starter with proper circuit breaker protection in order to validate warranty. Do not splice cables.*

THERMAL SWITCH WIRING:

Pumps are equipped with thermal switches embedded in the stator windings. They are normally closed, designed to open under a high temperature condition and close when the temperature drops below the set point. **THEY MUST BE WIRED TO A CURRENT REGULATED CONTROL CIRCUIT.** Identify leads marked T1 and T3 and connect these wires to the thermal overload relay located in the control panel. *Thermal switch leads must be connected to validate warranty.*

SEAL PROBE WIRING (OPTIONAL)

The probe utilized in the pump is a conductive sensor and is normally open. Only one lead is required to be connected to the seal fail relay located in the control panel. Probe is grounded to pump.

CAPACITORS AND RELAYS:

All single phase motors require start and/or run capacitors to operate. Refer to the wiring schematics in the appendix. *Capacitors and relays must be sized for the specific motor.* Please refer to nameplate for verification of capacitor sizing.

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INSTALLATION OF PUMP:

The H 500/700 series pumps can be transportable from one installation to another. It is intended to operate completely or partially submerged in the pumping liquid. Pump is designed to be installed as a freestanding unit. The pumping media is delivered by a hose, which is connected to the pump.

Install the tube half coupling on to the pump's fixed coupling by rotating clockwise until it locks. Provide a hose of appropriate diameter and secure to the tube half coupling.

Install suitable lifting chain of an adequate length to ensure proper lowering and raising capabilities. Lower the pump into the area where it is required.

The drainage pumps can be connected in a duplex series arrangement for installations where the system head is high. In order to set this system up it will be necessary to provide a hose that connects the discharge of the lower pump to the suction of the bottom pump. The connection steps for the bottom pump is identical to the procedure described above. The top pump's suction strainer needs to be removed and replaced with a tandem operation coupling (consult Authorized Homa Pump Technology Representative for ordering information). Install a half-coupling to the tandem operation coupling and install the other end of the connection hose to the half coupling. The discharge hose for the upper pump is connected in the same manner as for a simplex installation.

START-UP

Prior To Applying Power

Prior to applying power to the pump; double check all wiring and verify that the power (Voltage, Phase) that will be supplied to the unit matches the nameplate specified values.

Measure resistance of cable and pump motor resistance of ground circuit between control panel and outside of pump. Perform MEG ohm check of motor insulation. Record all data on start-up checklist, which is included with this manual.

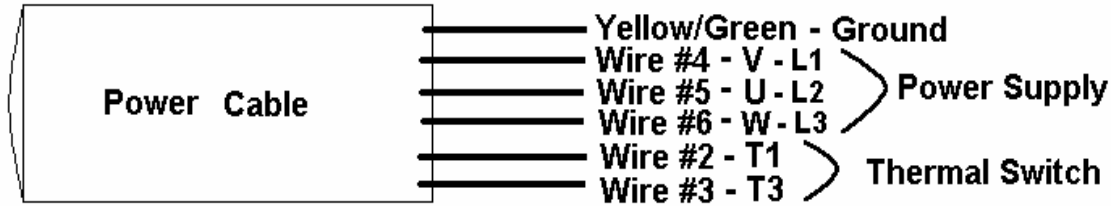
Prior To Installation:

Before lowering the pump into position check the direction of rotation. The impeller will rotate clockwise as viewed from above; therefore the pump will try to move in the counter clockwise direction as the impeller rotates. "Bump the Motor" by closing the pump circuit breaker and push the pump start button and look for the direction of movement specified above. For three phase motors, if the starting jerk is in the clockwise direction, open the circuit breaker to isolate power and interchange two of the three phase leads inside the control panel.

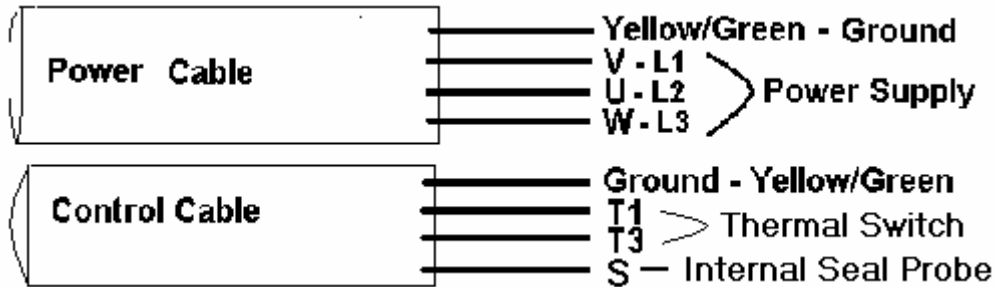
If the above checks prove satisfactory the pump is ready for operation. Lower the pump into position. (Refer to Mechanical installation section of this manual.) Start the pump and allow it to stabilize prior to recording any test data. Listen for any unusual noise and be on the lookout for unusual vibration (Detectable on discharge piping and inlet stand for dry pit installations.) Also for wet well installations, look for blow by flow at the discharge connection. Perform all remaining electrical, operational, and performance tests specified on start-up checklist. *Record and provide details on the checklist to validate warranty.*

3 Phase Cable Connection Diagrams

7 Conductor



Power and Control Cable



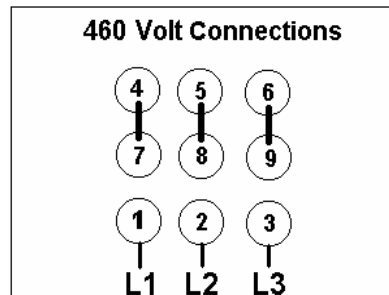
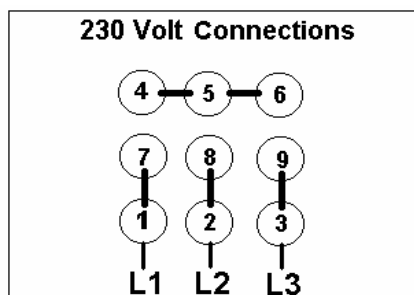
Note: Internal Seal Probe is optional.

4 Conductor Power Cable

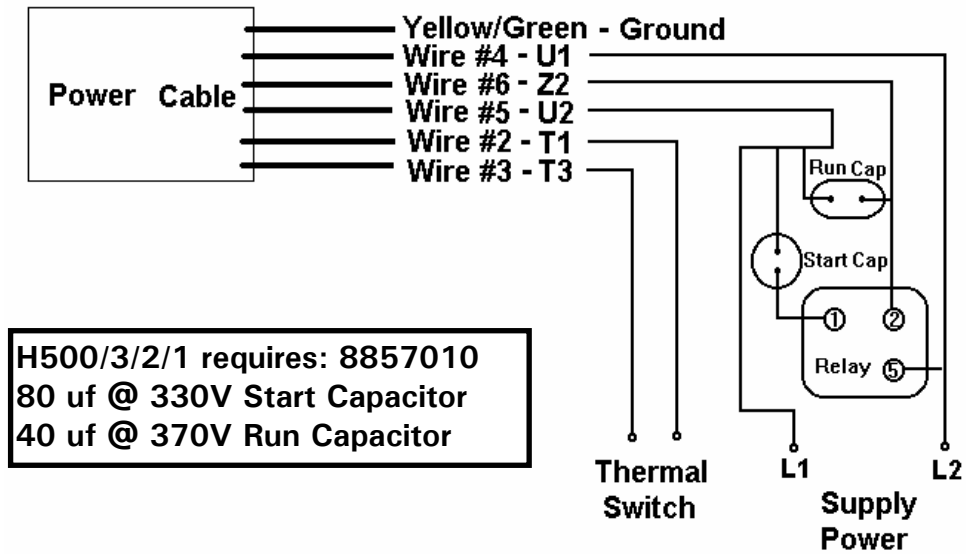


Dual Voltage Pumps

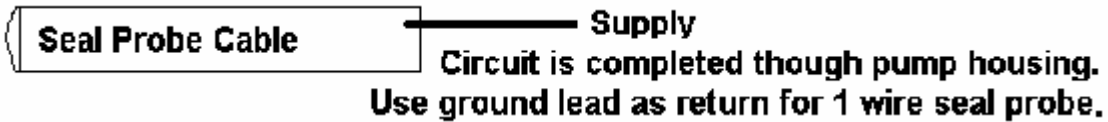
Dual Voltage pumps will have wiring connected as indicated below. These units may be field connected for either 230v or 460v operation by reconnecting the wires as indicated below.



1 Phase Cable Connection Diagram



Optional External Seal Probe





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Initial Installation Troubleshooting:

Only authorized Homa Pump Technology service personnel who are trained professionals shall troubleshoot and repair pumps that are experiencing performance difficulty.

The following is a tabulation of common pump problems and possible causes.

Symptom

Possible Causes

Pump will not start

1,2,3,4

Little or zero discharge

5,6,7,8,

Insufficient discharge flow/pressure

5,6,9,10,11,12

Excessive power consumption

6,9,13

Excessive current draw

6,13,14,15

Excessive pump vibration/noise

12,15,16

Pumps runs & motor protection trips

17,18,19,20,21

Pumps runs manually, but not automatically

22,23,24

LISTING OF CAUSES:

1. Incorrect or no power supplied to motor.
2. Power cable cut.
3. Short to ground in cable or motor winding.
4. Control Panel circuit breaker open.

5. Actual System head is higher than calculated or specified.
6. Incorrect impeller rotation direction.
7. Sump liquid level is below pump's minimum submergence requirement.
8. Closed discharge valve.
9. Wear ring (s) worn. (If Applicable).
10. Vortex at Pump's suction.
11. Discharge valve partially closed.
12. Insufficient NPSHA (Dry Pit Application).
13. Actual System Head is lower than specified resulting in over pumping condition.
14. Voltage supply to motor is lower than required by motor.
15. Worn bearings
16. High system head causing pump to operate at extremely reduced capacity.
17. Object stuck inside impeller.
18. Motor not receiving voltage on all three phases.
19. Phase currents unbalanced or too high.
20. Insulation between phases and earth ground, <1M-ohm.
21. Density of the pumping media too high.
22. Defective level sensor.
23. Hand/Off/Auto switch not in Auto Position.
24. Defective H/O/A switch , relay or contactor coil.

PREVENTIVE MAINTENANCE

Regular preventive maintenance will help ensure longer pump life and more reliable operation. It is recommended that pumps in intermittent operation be inspected twice a year and pumps in continuous operation be inspected every 1,000 hours. The following is a listing of required inspection and maintenance items. (Refer to shop manual for disassembly and reassembly procedures).

If any of the problems described in the following list exists stop operating the pump to avoid damage or personal injury.

1. CABLE ENTRY

Make sure that the cable entry flange and strain relief clamp are tight. If the cable entry is showing signs of leakage remove cable from entry, remove grommet, cut a piece of cable off so that the grommet seats on a new portion of the cable, replace grommet, and reinstall cable assembly, into the top of the motor.

2. CABLES

Inspect the cable for cuts, scrapes or sharp bends. If the outer jacket is damaged, replace the cable. Do not attempt splices within wetwells

3. MOTOR INSULATION RESISTANCE

Megger the insulation between the phases and between any phase and ground. Resistance values should be greater than 1 M ohm. If abnormal readings are obtained contact authorized service center immediately.

4. EXTERNAL PARTS ON PUMP

Make sure that all screws, bolts and nuts are tight. Check the condition of pump lifting eyes and replace if damaged or worn, Replace any external part that appears worn or damaged.

5. SEAL CHAMBER OIL

Check the condition of the oil to see if any water leakage has occurred. Remove the oil fill plug. Drain the oil from the seal chamber into a transparent container. Check for impurities and emulsification. (Oil is cream-like.) If water intrusion has occurred check lower mechanical seal and replace if necessary. Refill seal chamber with fresh oil. Refer to shop manual for type and quantity of oil.

6. IMPELLER

Periodically inspect impeller by turning pump on its side, remove suction strainer nuts and strainer to expose impeller and relocate position of adjusting plate (suction cover) as needed. Replace the impeller if it is damaged or severely worn.

SPARE PARTS

In order to obtain spare parts identify the required parts by looking at the enclosed cross sectional drawing and listing, and contact authorized HOMA PUMP TECHNOLOGY representative with your order. Authentic Homa Pump Technology parts shall be used to maintain warranty.

RECOMMENDED TOOLS AND SUPPLIES

In addition to ordinary, standard tools, ensure that complete set of metric socket wrenches, complete set of Allen wrenches, metric triangular wrench set, dead blow hammer, impeller puller, Loctite 242 (Blue), petroleum jelly and anti- seize compound are on hand.

**If you need additional help,
please call us at:
1 (800) 452 - HOMA**