Manual Index

WEINMAN®

INSTALLATION AND OPERATION MANUAL
CONDENSATE RETURN and BOILER FEED UNITS

Series: ACV, ADV, AEV, AFV

Section 900 & 910

WARNING! - Do not work on this pump until you are sure the pump and associated piping are totally depressurized, and if pumping hot liquids that the temperature is safe to handle.
Be sure that electricity to the motor is shut off and locked out, or if the motor is to be tested while running that it is conducted by a qualified person and safe electrical procedures are followed.
To insure safety and successful repair, if there is anything about the pump and motor you do not completely understand, contact your distributor or the factory for instructions.

IMPORTANT! ***Read all instructions in this manual before operating pump.***
As a result of Crane Pumps & Systems, Inc., constant product improvement program, product changes may occur. As such Crane Pumps & Systems reserves the right to change product without prior written notification.

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Form No. 115210-Rev. C

SAFETY FIRST!

Please Read This Before Installing Or Operating Pump. This information is provided for **SAFETY** and to **PREVENT EQUIPMENT PROBLEMS.** To help recognize this information, observe the following symbols:

IMPORTANT! Warns about hazards that can result in personal injury orIndicates factors concerned with assembly, installation, operation, or maintenance which could result in damage to the machine or equipment if ignored.

CAUTION! Warns about hazards that **can or will cause minor** personal injury or property damage if ignored. Used with symbols below.

WARNING! Warns about hazards that can or will cause serious personal injury, death, or major property damage if ignored. Used with symbols below.

Hazardous fluids can cause fire or explo-sions, burnes or death could result.

Extremely hot - Severe burnes can occur on contact.

Biohazard can cause serious personal injury.

Hazardous fluids can Hazard-ous pressure, eruptions or ex-plosions could cause personal injury or property damage.

Rotating machinery Amputation or severe laceration can result.

Hazardous voltage can shock, burn or cause death.

Only qualified personnel should install, operate and repair pump. Any wiring of pumps should be performed by a qualified electrician.

WARNING ! To reduce risk of electrical shock, pumps and control panels must be properly grounded in accordance with the National Electric Code (NEC) or the Canadian Electrical Code (CEC) and all applicable state, province, local codes and ordinances. Improper grounding voids warranty.

WARNING! To reduce risk of electrical shock, always disconnect the pump from the power source before handling or servicing. Lock out power and tag.

WARNING! Operation against a closed discharge valve will cause premature bearing and seal failure on any pump, and on end suction and self priming pump the heat build may cause the generation of steam with resulting dangerous pressures. It is recommended that a high case temperature switch or pressure relief valve be installed on the pump body.

CAUTION ! Pumps build up heat and pressure during operation-allow time for pumps to cool before handling or servicing.

WARNING ! Do not pump hazardous materials (flammable, caustic, etc.) unless the pump is specifically designed and designated to handle them.

WARNING ! Do not wear loose clothing that may become entangled in moving parts.

WARNING ! Keep clear of suction and discharge openings. **DO NOT** insert fingers in pump with power connected.

Always wear eye protection when working on pumps.

Make sure lifting handles are securely fastened each time before lifting. **DO NOT** operate pump without safety devices in place. Always replace safety devices that have been removed during service or repair. Secure the pump in its operating position so it can not tip over, fall or slide.

DO NOT exceed manufacturers recommendation for maximum performance, as this could cause the motor to overheat.

WARNING ! To reduce risk of electrical shock, all wiring and junction connections should be made per the NEC or CEC and applicable state or province and local codes. Requirements may vary depending on usage and location.

WARNING! Products returned must be cleaned, sanitized, or decontaminated as necessary prior to shipment, to insure that employees will not be exposed to health hazards in handling said material. All Applicable Laws And Regulations Shall Apply.

Bronze/brass and bronze/brass fitted pumps may contain lead levels higher than considered safe for potable water systems. Lead is known to cause cancer and birth defects or other reproductive harm. Various government agencies have determined that leaded copper alloys should not be used in potable water applications. For non-leaded copper alloy materials of construction, please contact factory.

Crane Pumps & Systems, Inc. is not responsible for losses, injury, or death resulting from a failure to observe these safety precautions, misuse or abuse of pumps or equipment.

GENERAL INFORMATION

TO THE PURCHASER:

Congratulations! You are the owner of one of the finest pumps on the market today. These pumps are products engineered and manufactured of high quality components. With years of pump building experience along with a continuing quality assurance program combine to produce a pump which will stand up to the toughest applications.

Check local codes and requirements before installation. Servicing should be performed by knowledgeable pump service contractors or authorized service stations.

RECEIVING:

Upon receiving the pump, it should be inspected for damage or shortages. If damage has occurred, file a claim immediately with the company that delivered the pump. If the manual is removed from the crating, do not lose or misplace.

STORAGE:

Short Term - Pumps are manufactured for efficient performance following long inoperative periods in storage. For best results, pumps can be retained in storage, as factory assembled, in a dry atmosphere with constant temperatures for up to six (6) months.

Long Term - Any length of time exceeding six (6) months, but not more than twenty four (24) months. The units should be stored in a temperature controlled area, a roofed over walled enclosure that provides protection from the elements (rain, snow, wind blown dust, etc..), and whose temperature can be maintained between +40 deg. F and +120 deg. F. Pump should be stored in its original shipping container and before initial start up, rotate impeller by hand to assure seal and impeller rotate freely.

SERVICE CENTERS:

For the location of the nearest Weinman Service Center, check your Weinman representative or Crane Pumps & Systems Service Department in Piqua, Ohio, telephone (937) 778-8947 or Crane Pumps & Systems Canada, Inc., Bramton, Ontario, (905) 457-6223.

INSTALLATION:

1. Chose a clean, dry, well ventilated area in which to install your unit. This not only assures proper operation and increased service life, but speeds maintenance.

2. Install the unit in a position that will permit the condensate to flow by gravity into the receiver. This eliminates the possibility of the return lines becoming moisture laden, thus preventing the system from freeing itself of air.

3. After installation, be certain the unit is perfectly level. Shim it when necessary to level.

4. Connect the discharge piping carefully. Be sure that it is supported independently to prevent pipe strain from being transferred to the pump casing. It is good to install a union, gate valve, and check valve in the discharge line.

5. Wet return line should be connected to the tapping in the receiver tank. Make certain that it slopes slightly downhill toward the condensate receiver.

6. Strainer/Dirt Trap should be installed in the return line immediately before the receiver tank.

7. Vent to atmosphere from tapped opening in the top of the tank using 1” line or larger. **Do not** use valves or traps in the vent line. A tee in the vent line, connected to a drain, will direct overflow water to drain in case of a pump failure.

WARNING - The receiver tank is NOT a pressure vessel. It MUST be vented to atmosphere to prevent pressure build-up. Any internal pressure other than that due to the weight of fluid in the tank IS UNSAFE - Warranty is void if receiver tank is pressurized.

8. Float Switch or Mechanical Alternator should be wired by competent electrician to insure proper performance of the motor. Before wiring, make certain the voltage and cycles of the supply circuit are the same as on the motor nameplate. Refer to wiring diagram on motor nameplate and on switch tag.
   Controls are factory set for specific float travel. Float travel may be adjusted for close control of receiver water level. See attached tag for detailed instructions.

WIRING:

Check the motor nameplate for specific wiring requirements. For safe and proper operation, fuses installed in the safety switches and all wiring **MUST** conform to recommendations of the National Electrical Code.

REVERSING FLOAT POSITION WHEN USING MECHANICAL ALTERNATOR

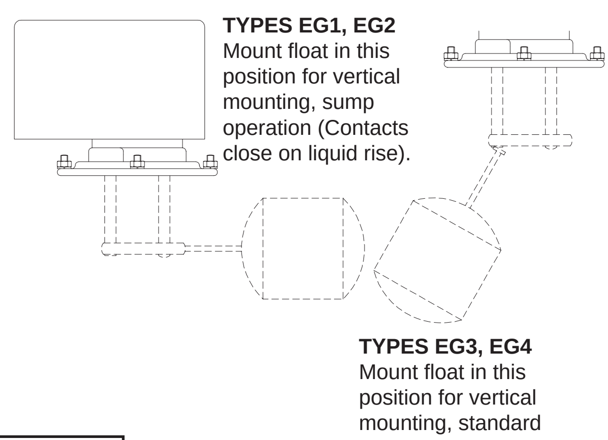


FIGURE 1

PUMP ROTATION:
Pump rotation is clockwise as you look down on the pump. Single phase motors are wired so that they rotate clockwise automatically. Three phase motors, however, should be checked carefully for proper rotation prior to operation.
To do this:

1. Connect wiring leads to pump motor in the usual manner.
2. Start the motor the first time by just touching the starter button and then stopping the motor immediately. When you do this check the pump shaft for proper clockwise rotation.
3. If pump rotation is counter-clockwise, switch any two of the motor wires to obtain proper rotation.

OPERATING:

1. Open all valves in return line and discharge line to boiler.
2. Apply electrical power to system.
   When water level in receiver tank reaches proper level, float switch or alternator will actuate pump motor to return condensate to boiler.

New or repaired water systems must be flushed for several days to eliminate all impurities and make sure the entire system is clean. This simple precaution will give you years more of maintenance-free service. Heating systems should be flushed thoroughly at the start of each heating season for the same reason.

To flush, remove the drain plug at the receiver and drain the system water into the sewer. If the system water remains dirty after flushing, operate it for several days, draining the water into the sewer until it becomes clean.

LUBRICATION:
No lubrication is required for the liquid end of the pump. Motors are equipped with ball bearings which are grease-packed and sealed at the factory. No additional lubrication is required.

Steam Traps should be carefully checked and kept clean. Live steam escaping from receiver tank vent indicates faulty operation of trap.

Strainer/Dirt Trap should be cleaned twice yearly, or oftener if required. Remove cap and screen and flush out trap body.

Tank Drain - Tank should be drained at the end of each heating season by removing drain plug located below return line connection. Do not expose unit to freezing temperatures when it contains water.

CAUTION - Boiler Compound should NOT be introduced into the system through the receiver tank, but added on the discharge side of the pump by means of a commercial injector designed for that purpose. This will prevent wear or clogging caused by certain types of boiler compounds which do not completely dissolve.

DISASSEMBLY:
Whenever it is necessary to repair the motor or replace the mechanical seal, the pump can be removed from its casing quickly and easily without disturbing the piping
(see Fig. 2).

FIGURE 2

INSTALLING A NEW MECHANICAL SEAL:

CAUTION: This seal is a precision product and should be handled accordingly. Be especially careful not to scratch or chip the lapped sealing faces of the washer and floating seat. If reinstalling a used seal, both sealing faces should be replaced.

INSTALLING STATIONARY ELEMENT:
The seat must be seated securely in the seat ring with the lapped face out. The unlapped face is marked and correctly assembled when shipped. Oil the seat ring with light oil and seat it firmly and squarely. If this cannot be done with the fingers, use a sleeve as shown in Figure 3, inserting the cardboard shipping disc between the sleeve and the lapped face to prevent scratching sealing face.

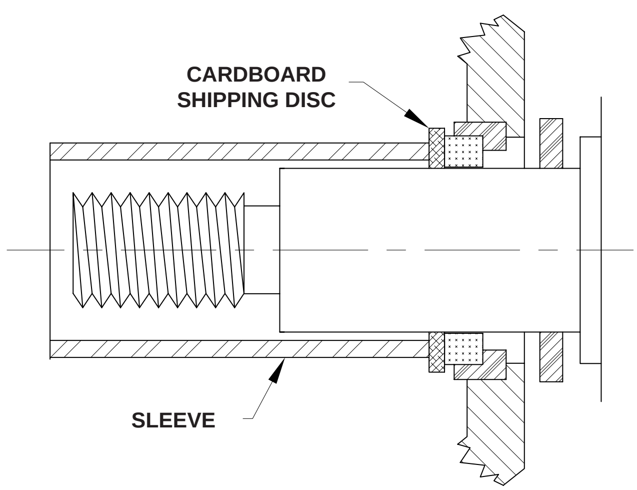


FIGURE 3

INSTALLING ROTATING ELEMENT:
Oil shaft with light oil. Shaft should be clean and polished smooth. Slide seal body on shaft (washer enf first) and seat firmly. A sleeve as shown in Figure 4 will facilitate this operation and prevent the rubber driving ring from pulling out of place as the seal body is slid along the shaft. Assembly of impeller automatically sets seal in proper position.

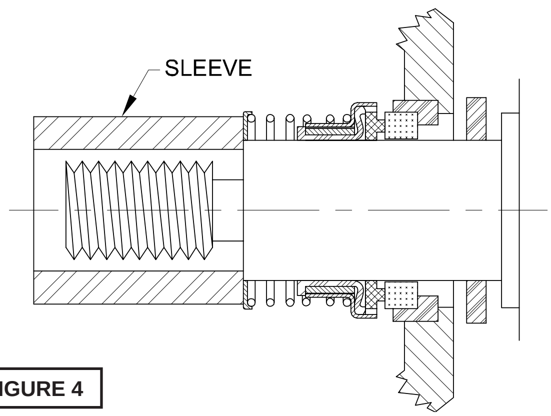


FIGURE 4

Make sure at all times, and particulary before final assembly, that both sealing faces are absolutely clean. Sealing faces should be oiled with clean, light oil.

NEVER RUN THE SEALING FACES DRY. The liquid being handled insures proper lubrication unless other methods of lubrication have been specified. In some cases a short period of operation is required to clear up slight leakage.

PUMP TROUBLES AND THEIR CAUSES:

A. Failure to pump
1. No water in the receiver
2. Rotation in wrong direction
3. Speed too low
4. Return water too hot
5. Total head too high

B. Overloaded Driving Unit
1. Total head too low
2. Unit misailgnment (check for piping strains)

CONDENSATE RETURN UNIT CIRCUIT

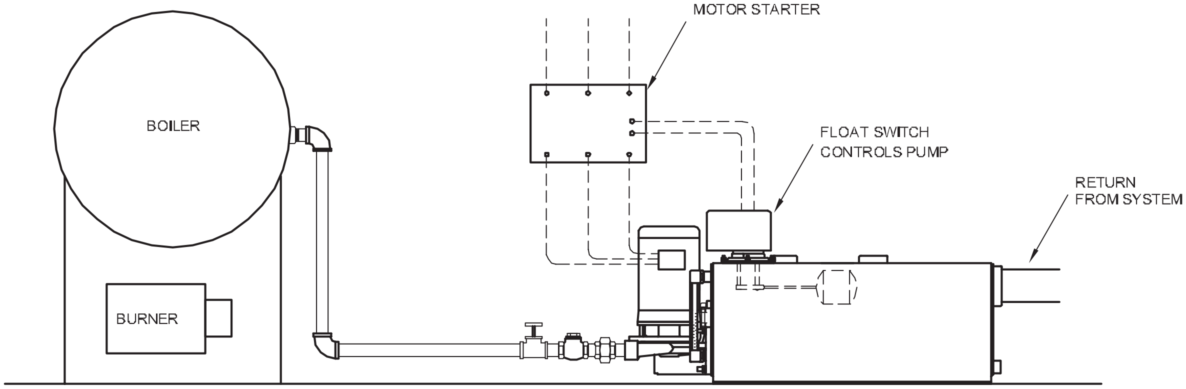


FIGURE 5

BOILER FEED UNIT CIRCUIT

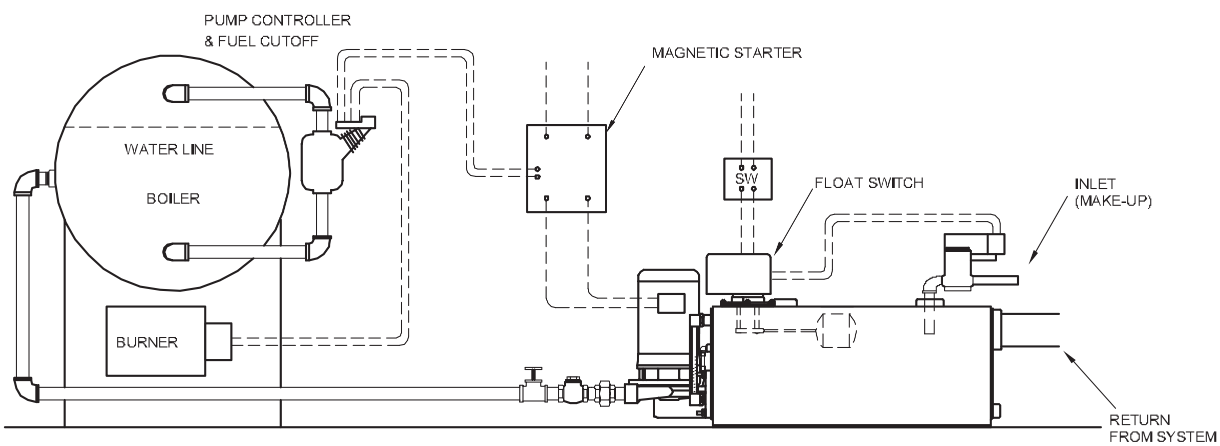
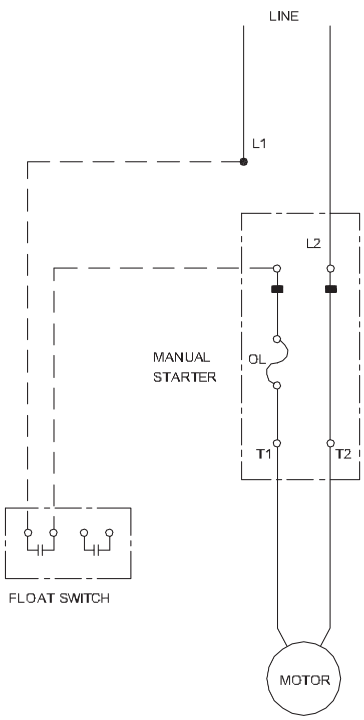


FIGURE 6

TYPICAL WIRING DIAGRAMS

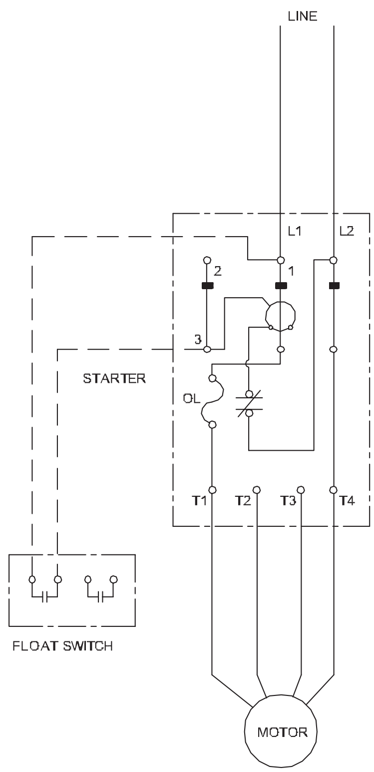
FLOAT SWITCH

SINGLE PHASE MANUAL STARTER



When using manual starter with three position selector switch (Hand-Off-Auto), connect line L1 to “Hand” terminal os switch, and float switch in series to “Auto” terminal and to line L1.

SINGLE PHASE MAGNETIC STARTER

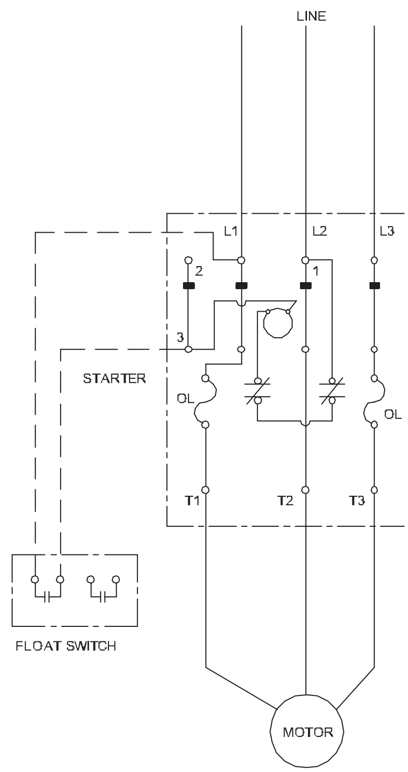


When using magnetic starter with three position selector switch (Hand-Off-Auto), connect float switch to terminals 1 and 2.

For low voltage, connect terminals T1 to T2, and T3 to T4.

For high voltage, connect terminals T2 to T3.

THREE PHASE MAGNETIC STARTER



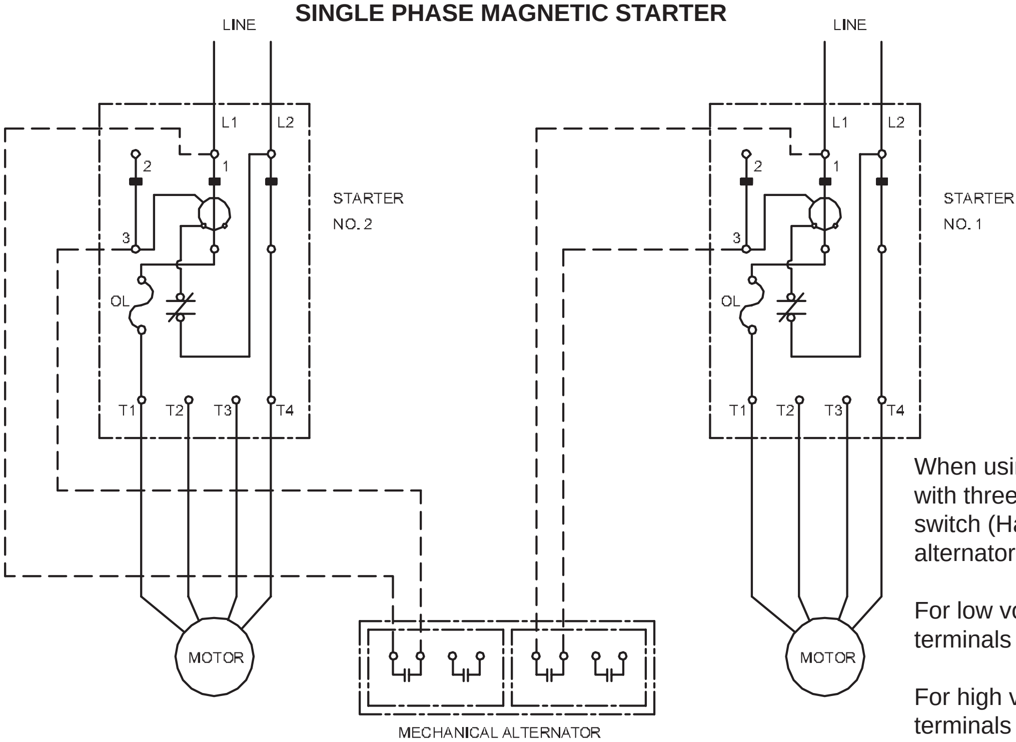
When using magnetic starter with three position selector switch (Hand-Off-Auto), connect float switch to terminals 1 and 2.

FIGURE 7

TYPICAL WIRING DIAGRAMS

MECHANICAL ALTERNATOR

SINGLE PHASE MAGNETIC STARTER

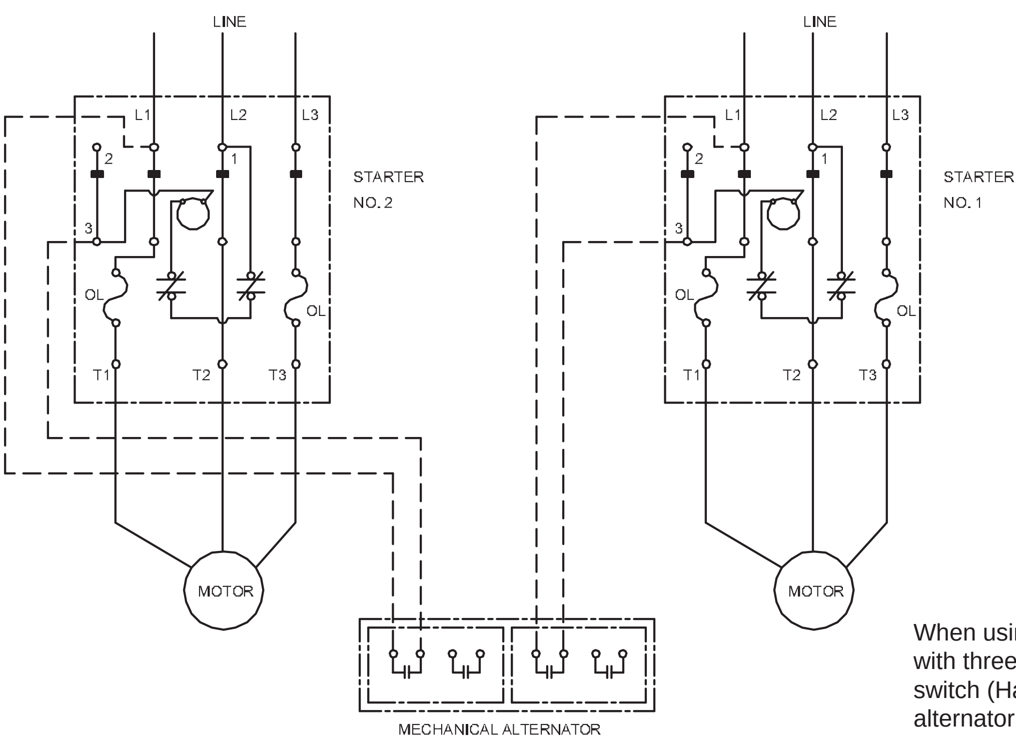


When using magnetic starter with three position selector switch (Hand-Off-Auto), connect alternator to terminals 1 and 2.

For low voltage, connect terminals T1 to T2, and T3 to T4.

For high voltage, connect terminals T2 to T3.

THREE PHASE MAGNETIC STARTER



When using magnetic starter with three position selector switch (Hand-Off-Auto), connect alternator to terminals 1 and 2.

FIGURE 8

Limited 24 Month Warranty

Crane Pumps & Systems warrants that products of our manufacture will be free of defects in material and workmanship under normal use and service for twenty-four (24) months after manufacture date, when installed and maintained in accordance with our instructions.This warranty gives you specific legal rights, and there may also be other rights which vary from state to state. In the event the product is covered by the Federal Consumer Product Warranties Law (1) the duration of any implied warranties associated with the product by virtue of said law is limited to the same duration as stated herein, (2) this warranty is a LIMITED WARRANTY, and (3) no claims of any nature whatsoever shall be made against us, until the ultimate consumer, his successor, or assigns, notifies us in writing of the defect, and delivers the product and/or defective part(s) freight prepaid to our factory or nearest authorized service station. Some states do not allow limitations on how long an implied warranty lasts, so the above limitation may not apply. **THE SOLE AND EXCLUSIVE REMEDY FOR BREACH OF ANY AND ALL WARRANTIES WITH RESPECT TO ANY PRODUCT SHALL BE TO REPLACE OR REPAIR AT OUR ELECTION, F.O.B. POINT OF MANUFACTURE OR AUTHORIZED REPAIR STATION, SUCH PRODUCTS AND/OR PARTS AS PROVEN DEFECTIVE. THERE SHALL BE NO FURTHER LIABILITY, WHETHER BASED ON WARRANTY, NEGLIGENCE OR OTHERWISE.** Unless expressly stated otherwise, guarantees in the nature of performance specifications furnished in addition to the foregoing material and workmanship warranties on a product manufactured by us, if any, are subject to laboratory tests corrected for field performance. Any additional guarantees, in the nature of performance specifications must be in writing and such writing must be signed by our authorized representative. Due to inaccuracies in field testing if a conflict arises between the results of field testing conducted by or for user, and laboratory tests corrected for field performance, the latter shall control. **RECOMMENDATIONS FOR SPECIAL APPLICATIONS OR THOSE RESULTING FROM SYSTEMS ANALYSES AND EVALUATIONS WE CONDUCT WILL BE BASED ON OUR BEST AVAILABLE EXPERIENCE AND PUBLISHED INDUSTRY INFORMATION. SUCH RECOMMENDATIONS DO NOT CONSTITUTE A WARRANTY OF SATISFACTORY PERFORMANCE AND NO SUCH WARRANTY IS GIVEN.**

This warranty shall not apply when damage is caused by (a) improper installation, (b) improper voltage (c) lightning (d) excessive sand or other abrasive material (e) scale or corrosion build-up due to excessive chemical content. Any modification of the original equipment will also void the warranty. We will not be responsible for loss, damage or labor cost due to interruption of service caused by defective parts. Neither will we accept charges incurred by others without our prior written approval.

This warranty is void if our inspection reveals the product was used in a manner inconsistent with normal industry practice and\or our specific recommendations. The purchaser is responsible for communication of all necessary information regarding the application and use of the product. **UNDER NO CIRCUMSTANCES WILL WE BE RESPONSIBLE FOR ANY OTHER DIRECT OR CONSEQUENTIAL DAMAGES, INCLUDING BUT NOT LIMITED TO TRAVEL EXPENSES, RENTED EQUIPMENT, OUTSIDE CONTRACTOR FEES, UNAUTHORIZED REPAIR SHOP EXPENSES, LOST PROFITS, LOST INCOME, LABOR CHARGES, DELAYS IN PRODUCTION, IDLE PRODUCTION, WHICH DAMAGES ARE CAUSED BY ANY DEFECTS IN MATERIAL AND\OR WORKMANSHIP AND\OR DAMAGE OR DELAYS IN SHIPMENT. THIS WARRANTY IS EXPRESSLY IN LIEU OF ANY OTHER EXPRESS OR IMPLIED WARRANTY, INCLUDING ANY WARRANTY OF MERCHANTABILITY OR FITNESS FOR A PARTICULAR PURPOSE**.

No rights extended under this warranty shall be assigned to any other person, whether by operation of law or otherwise, without our prior written approval.

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IMPORTANT!
WARRANTY REGISTRATION

Your product is covered by the enclosed Warranty.
To complete the Warranty Registration Form go to:

http://www.cranepumps.com/ProductRegistration/

If you have a claim under the provision of the warranty, contact your local Crane Pumps & Systems, Inc. Distributor.

RETURNED GOODS
RETURN OF MERCHANDISE REQUIRES A “RETURNED GOODS AUTHORIZATION”.
CONTACT YOUR LOCAL CRANE PUMPS & SYSTEMS, INC. DISTRIBUTOR.

Products Returned Must Be Cleaned, Sanitized, Or Decontaminated As Necessary Prior To Shipment, To Insure That Employees Will Not Be Exposed To Health Hazards In Handling Said Material. All Applicable Laws And Regulations Shall Apply.

Notes