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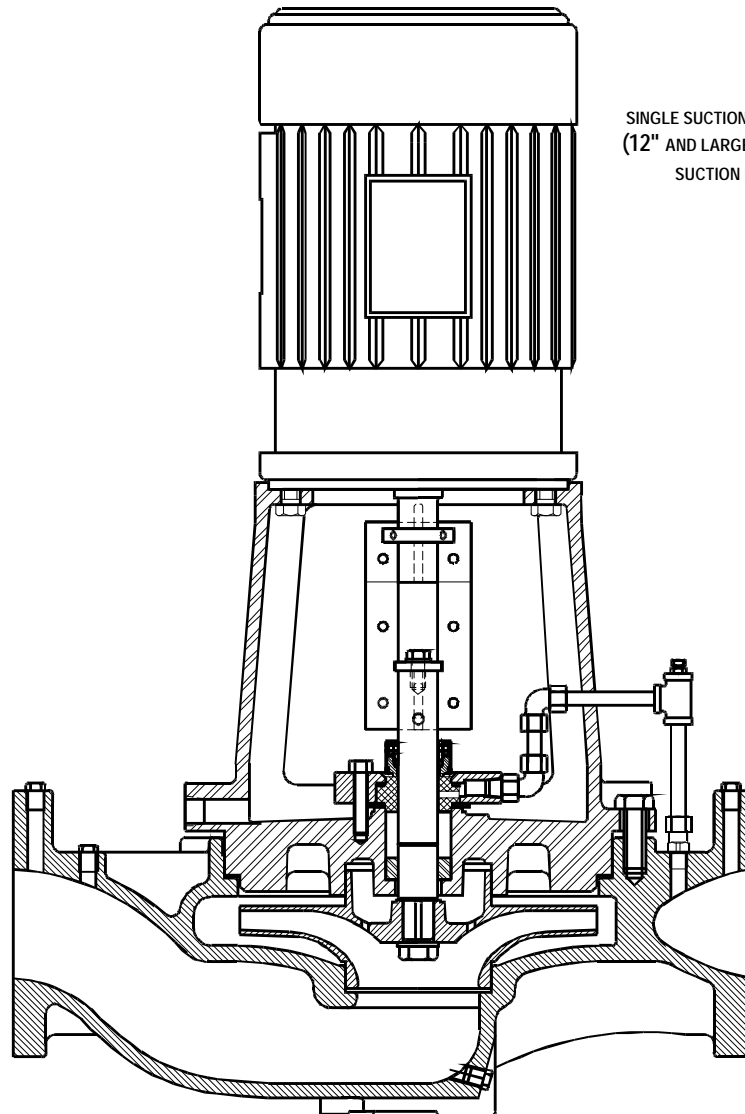
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## INSTALLATION & OPERATING INSTRUCTIONS

# ARMSTRONG®

## COMMERCIAL PUMPS

### SERIES 4300 VERTICAL IN - LINE PUMP



SINGLE SUCTION ILLUSTRATED  
(12" AND LARGER ARE DOUBLE  
SUCTION PUMPS).

## UNCRATING

Armstrong series 4300 vertical in-line pumps are thoroughly inspected before shipment to assure they meet with your order requirements. After removing the pump from the crate, make sure the equipment is in good order and that all components are received as called for on the packing list. Any shortages or damage should be reported immediately. Use extreme care in handling the unit, placing slings carefully so that stress will not be imposed on the pump. NEVER PLACE CABLE SLINGS AROUND THE PUMP SHAFT. The eye bolts or lifting lugs on the motor are intended for lifting only the motor and not the complete unit.

### IMPORTANT

**Do not run the pump for any length of time under very low flow conditions or with the discharge valve closed. To do so could cause the water in the casing to reach super heated steam conditions and will cause premature failure and could cause serious and dramatic damage to the pump and surrounding area.**

## INSTALLATION - SERIES 4300 VERTICAL IN-LINE PUMP

### 1. LOCATION

- Locate the unit as close as practical to the liquid being pumped, with a short, direct suction pipe. Ensure adequate space is left above and around the unit for operation, maintenance, service and inspection of parts.
- Electric motor driven pumps should not be located in damp or dusty location without special protection.

### 2. STORAGE

- Pumps not immediately placed into service, or removed from service and stored, must be properly prepared to prevent rusting.
- Rotate the shaft periodically to keep rotating element free.
- For long term storage, the pump must be placed in a vertical position in a dry environment.
- Internal rusting can be prevented by removing the plugs at the top and bottom of the casing and drain or air blow out all water to prevent rust buildup or the possibility of freezing. Be sure to reinstall the plugs when the unit is made operational. Rustproofing or packing the casing with moisture absorbing material and covering the flanges is acceptable. When returning to service be sure to remove the drying agent from the pump.

### 3. INSTALLATION

- The most important consideration in installing a vertical in-line pump is to make sure the pump is free to 'float' with expansion and contraction of the

pipng. Recommended arrangements are:

- Piping supported at ceiling with additional floor mounted supports under Armstrong Suction Guide and Flo-Trex Valve (Fig. 1 see back page)
- Supported from the ceiling by pipe hangers (Fig. 2 see back page)
- Floor mounted saddle supports (Fig. 3 see back page)
- Where required, additional floor support may be obtained as shown in Fig. 4. Note that the pump must not be rigidly attached either to the plate or to the block. Leave a 1/8" gap between pump and base. The piping must be installed in such a manner that the pump is not used as a pipe support.
- DO NOT support the unit by the motor eye bolts (Fig. 5 see back page) or by any other part of the motor.
- DO NOT rigidly connect the pump to a permanent base (Fig.6 see back page) Note if the pump must be connected to a permanent base, the pump must be isolated from the piping by flexible connectors and the base isolated from the building structure on an inertia base.
- DO NOT install the unit with the shaft horizontal.

### 4. PUMP PIPING - GENERAL

- Never connect a pump to piping, always start piping from pump.
- Use as few bends as possible and preferably long radius elbows.
- Do not use flexible connectors on the suction or discharge.
- Make sure piping exerts no strain on pump as this would distort the casing and cause pump misalignment.
- Suction and discharge pipes may be increased at pump nozzle to suit pump capacity and particular conditions of installation. Use eccentric reducers on suction connection.
- Layout the suction line with a continual rise towards the pump without high points, thus eliminating possibility of air pockets that may prevent the pump from operating.
- A strainer of three or four times the area of the suction pipe, installed in the suction line, will prevent the entrance of foreign materials into the pump. 1/8" diameter perforations in the strainer are typical.
- Test suction line for air leaks before starting; this becomes essential with long suction line or static lift.
- Install, at pump suction, a straight pipe of a length equivalent to 4 or 6 times its diameter; this becomes essential when handling liquids above 120°F (49 °C). Armstrong suction guides may be used in place of the straight pipe run and in line strainer.
- Install isolation valve in both suction and discharge lines on flooded suction application; this is used mainly to isolate the pump for inspection or repair
- Install a non-slam check valve in discharge line between pump and isolation valve to protect pump from excessive back pressure and to prevent water running back through the pump in case of driver failure. Armstrong Flo-Trex valve may be used in place of check valve and isolation valve on pump

### CAUTION

- ➔ Discharge valve only must be used to reduce the pump flow, not the suction valve
- ➔ Care must be taken in the suction line layout and installation, as it is usually the major source of concern in centrifugal pump applications

discharge.

### 5. ALIGNMENT

- The pumping unit is accurately aligned at the factory prior to being shipped.
- Alignment may be verified by assuring equal gap between coupling halves, both sides of coupling.

## OPERATION - SERIES 4300 VERTICAL IN - LINE PUMP

### 6. STARTING PUMP

- The pump must be fully primed on start up. Fill the pump casing with liquid and rotate the shaft by hand to remove any air trapped in the impeller. Air trapped in the casing must be removed by the manual air vent in the seal flush line.
- "Bump" or energize the motor for a fraction of a second and check that the rotation corresponds with the directional arrow on the pump casing.
- To reverse rotation of a three phase motor, interchange any two power leads.
- Start the pump with the discharge valve closed and the suction valve open, then gradually open the discharge valve when the motor is at operating speed. The discharge valve may be "cracked" or open slightly at start up to help eliminate trapped air.

### CAUTION

- ➔ Centrifugal pump rotation is generally "clockwise" when viewing from the motor end.
- ➔ Check rotation arrow prior to operating the unit

- When stopping the pump: Close the discharge valve and de-energize the motor.

### 7. GENERAL CARE

- Vertical In - Line pumps are built to operate without periodic maintenance. A systematic inspection made at regular intervals, will ensure years of trouble-free operation, giving special attention to the following;
- Keep unit clean
- Provide the motor with correctly sized overload protection
- Keep moisture, refuse, dust or other loose particles away from the pump and ventilating openings of the motor

### WARNING

Whenever any service work is to be performed on pumping unit, disconnect power source to driver. Any possibility of the unit starting while being worked on, must be eliminated.

- Avoid operating the unit in overheated surroundings (Above 100 °F / 40 °C)
- If mechanical seal environmental accessories are installed, ensure water is flowing through the sight flow indicator and that filter cartridges are replaced as recommended. (See file 43.85 & 43.86 for seal environmental instructions).

### 8. LUBRICATION

#### PUMP

- Lubrication is not required. There are no bearings in the pump.

#### MOTOR

- Follow the lubrication procedures recommended by the motor manufacturer. Many small and medium sized motors are permanently lubricated.
- Check the lubrication instructions supplied with the motor for the particular frame size indicated on the motor nameplate.

#### MECHANICAL SEAL

- Mechanical seals require no special attention. The mechanical seal is flushed from discharge of the pump casing. Seal environmental controls, installed in the flush lines, such as filters and separators, will prolong seal life in hvac systems.
- Do not run the pump unless properly filled with water as the mechanical seals need a film of liquid between the faces for proper operation. (See file 43.84 for mechanical seal replacement instructions)

### 9. SYSTEM CLEANLINESS

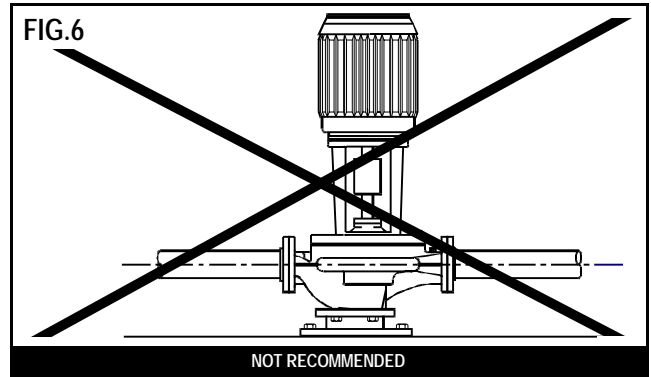
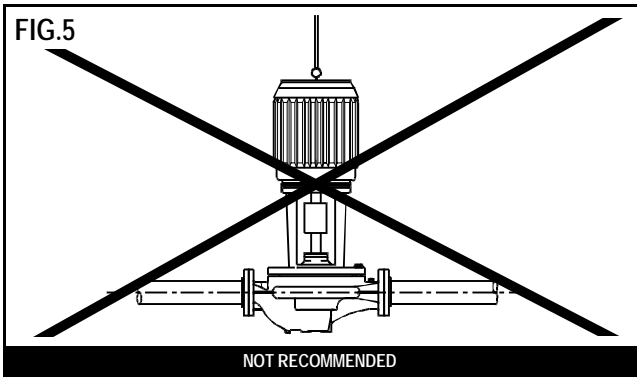
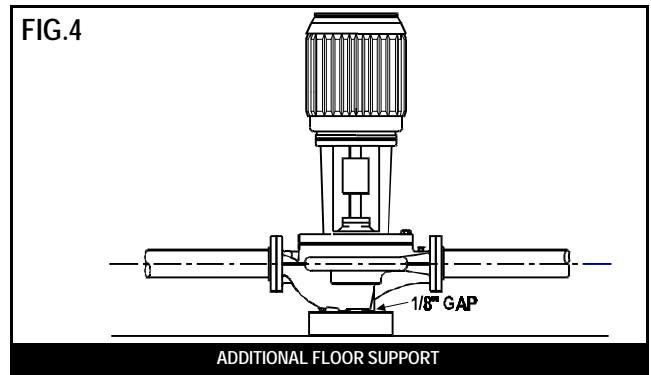
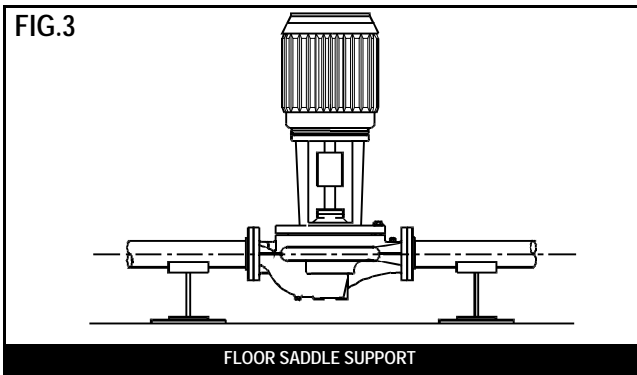
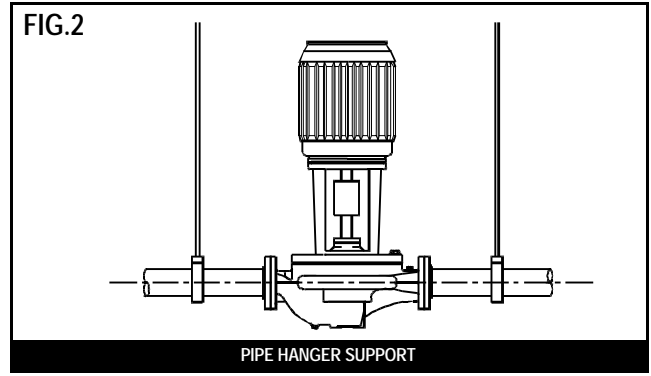
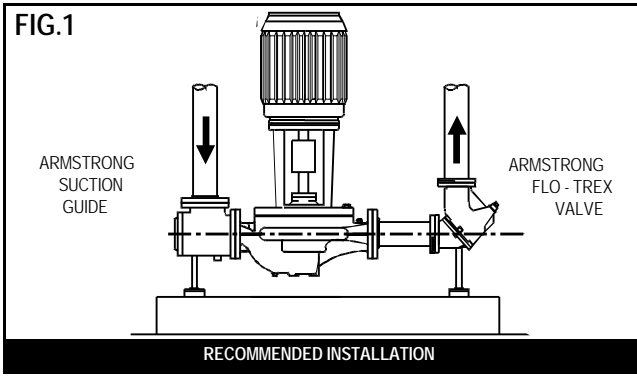
- Before starting the pump the system must be thoroughly cleaned, flushed and drained and replenished with clean liquid.
- Welding slag and other foreign materials, "Stop Leak" and cleaning compounds and improper or excessive water treatment are all detrimental to the pump internals and sealing arrangement.
- Proper operation cannot be guaranteed if the above conditions are not

### NOTE

Particular care must be taken to check the following before the pump is put into operation:

- A. Pump primed?
- B. Alignment correct?
- C. Rotation OK?
- D. Lubrication OK?
- E. Pipe work properly supported?
- F. Voltage supply OK?
- G. Overload protection OK?
- H. Is the system clean?
- I. Is the area around the pump clean?
- J. Pipe work properly supported?

## WARRANTY



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