

---

# Series 4280 Motor Mounted Pump

---

## Installation and operating instructions

**File No:** 42.80

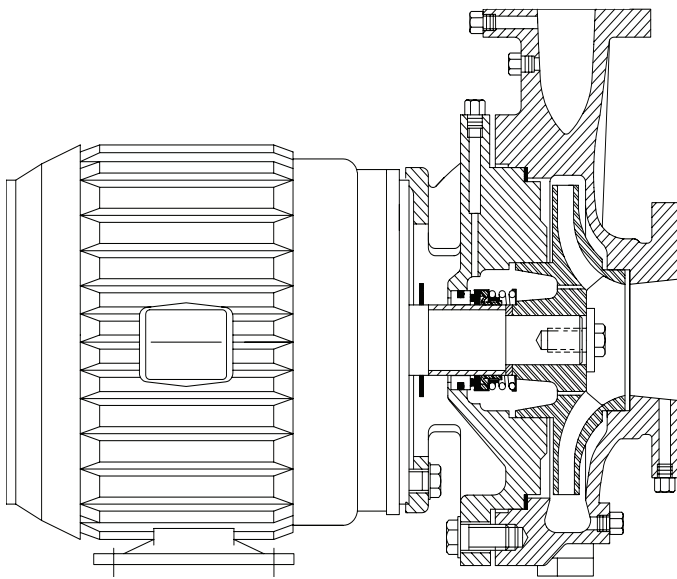
**Date:** FEBRUARY 02, 2015

**Supersedes:** 42.80

**Date:** JANUARY 20, 2015

---

---



For service work instructions refer to **Armstrong Catalog File No.: 42.81**

For replacement parts numbers refer to **Armstrong Catalog File No.: 6042.127 & 128.**

## GENERAL

Armstrong Centrifugal Pumps, properly installed and given reasonable care and maintenance, will perform satisfactorily for a long period of time. These instructions describe the procedures which should be followed to ensure trouble-free operation. All work should be performed by qualified personnel.

## INSPECTION

Armstrong series 4280 motor mounted pumps are thoroughly tested and inspected before shipment to assure they meet with your order requirements. All units must be carefully examined upon arrival for possible damage during transit. Any evidence of mishandling should be reported immediately to the carrier and noted on the freight bill.

## 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 4280 MOTOR MOUNTED 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 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 and bearing damage.

Bearings are lubricated by grease, and must be rotated every two to three months to return the lubricant to the upper half of the bearing and prevent ball damage. Do not leave shaft in same position each time.

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. Rust proofing 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 FOUNDATION AND MOUNTING

The following text is offered as general suggestions for the preparation of a satisfactory foundation.

Foundation should be sufficiently substantial to absorb any vibration and permanently support the unit.

The most satisfactory foundations are made of reinforced concrete and should be at least 2.5 times the shipping weight of the pumping unit. The foundation should be poured well in advance of the installation to allow proper time for drying and curing.

Locate the pump on its foundation and mark off the foundation holes, using the motor feet as the template. Drill (4) holes the required size and insert anchors. Use only the motor feet to secure the pump and motor unit. Do not use the pump casing support feet. Use a tamping tool to drive home the lead sleeve, until it is below the level of the foundation and firmly fixed into the concrete.

Protruding bolts should be avoided, since this arrangement would not allow disassembly, or back-pullout, of the unit without disturbing pipe connections.

If the unit is to be mounted on fabricated steel work or similar structure, the unit should be set over, or as near as possible to, the supporting beams or walls and to be so supported that the unit is not distorted by any yielding or springing of the structure.

With the proper gauge, check the suction and discharge flanges of the pump for vertical position.

Slight misalignment from vertical at this point may be corrected by inserting shims under the motor feet.

When the unit is completely level, the foundation bolts should be tightened evenly and firmly.

#### 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.

Install good supports under suction and discharge piping with anchors near but independent of the pump.

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.  $\frac{1}{8}$ " (3mm) diameter perforations in the strainer are typical.

**For aquatic applications:** Strainer openings must not exceed  $0.05 \text{ in}^2$  ( $0.3 \text{ cm}^2$ ) /  $\frac{1}{4}$ " (6mm) dia hole and the open area be no less than  $10 \text{ in}^2$  ( $65 \text{ cm}^2$ ) and be 4:1 or greater ratio to the cross-sectional area of the strainer inlet connection. The strainer basket shall have a minimum internal volume determined by the inlet connection size, such as:

1.5" (40mm) or less:  $25 \text{ in}^3$  ( $410 \text{ cm}^3$ )

2" (50mm) or greater:  $90 \text{ in}^3$  ( $1475 \text{ cm}^3$ )

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  $1200^\circ\text{F}$  ( $500^\circ\text{C}$ ). 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 discharge.

#### 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.

### OPERATION - SERIES 4280 MOTOR MOUNTED PUMP

#### 1 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 will not be trapped in the casing providing the self-venting center-line discharge is on top, in the vertical position.

**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 achieves full operating speed. The discharge valve may be **cracked** or open slightly at start up to help eliminate trapped air.

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

#### 2 GENERAL CARE

**NOTE:** Check rotation arrow prior to operating the unit. Series 4280 rotation is **clockwise** when viewing from the drive end, looking from behind the motor.

4

Motor mounted pumps are built to operate without periodic maintenance with the exception of lubrication of motor bearings, if required. A systematic inspection made at regular intervals, giving special attention to the following, will ensure years of trouble-free operation.

Keep unit clean.

Provide the motor with correctly sized overload protection. Do not oversize overload protection.

Keep moisture, refuse, dust or other loose particles away from the pump and ventilating openings of the motor.

Avoid operating the unit in overheated surroundings (Above 100°F(40°C))

3 LUBRICATION PUMP



**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 serviced, must be eliminated.

Series 4280 pumps, being motor mounted units, do not include any pump bearings that require lubrication.

For the motor bearings: Follow the lubrication procedures recommended by the motor manufacturer. Many small and medium sized motors are permanently lubricated, particularly at the pump end bearing.

Check the lubrication instructions supplied with the motor for the particular frame size indicated on the motor nameplate.

TORONTO

+1 416 755 2291

BUFFALO

+1 716 693 8813

BIRMINGHAM

+44 (0) 8444 145 145

MANCHESTER

+44 (0) 8444 145 145

BANGALORE

+91 (0) 80 4906 3555

SHANGHAI

+86 21 3756 6696

SÃO PAULO

+55 11 4781 5500

**Mechanical seal**

Mechanical seals require no special attention. The mechanical seal is installed behind the pump impeller, where it is cooled and lubricated by the product being pumped.

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.

4 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 any of these conditions are allowed to exist.

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

- A Pump primed?
- B Rotation **ok**?
- C Lubrication **ok**?
- D Pipe work properly supported?
- E Voltage supply **ok**?
- F Overload protection **ok**?
- G Is the system clean?
- H Is the area around the pump clean?

**Warranty**

Refer to Armstrong General Terms and Warranty sheet.

Contact your local Armstrong representative for full information.