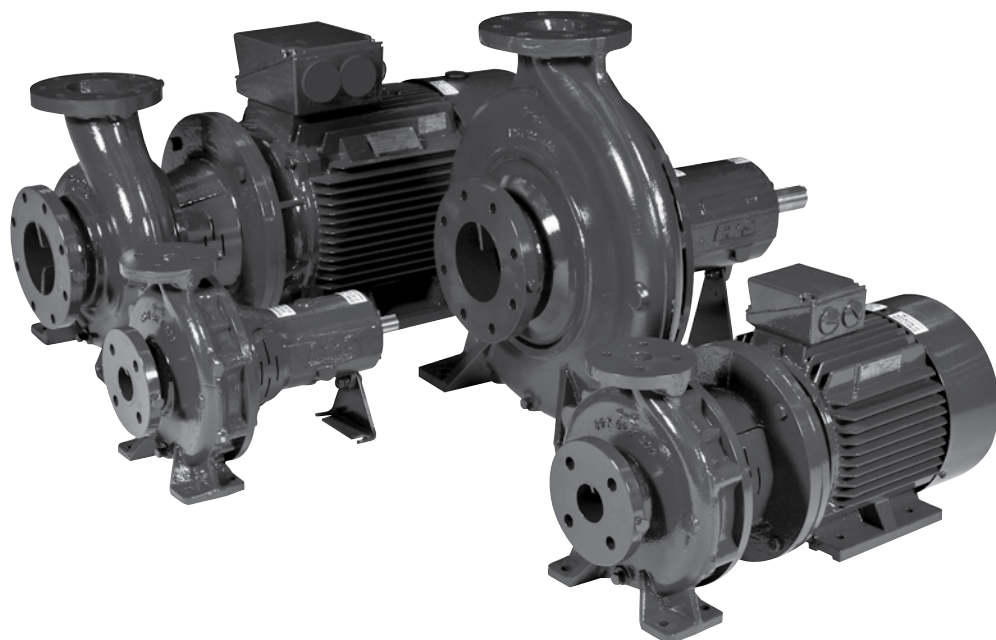


FPS
ISO series



FPS ISO Series
Installation Operations &
Maintenance Instructions



USERS RECORD

Pump Model Number: _____

Pump Serial Number: _____

Impeller Diameter: _____

Motor kW: _____

Motor Speed: _____

Purchased From: _____

1. General

FPS ISO pumps are designed manufactured to give trouble free and satisfactory service if they are properly installed and maintained.

This manual does not take into account on any on site safety regulations which may apply. It is intended to provide the user with essential information required for installing operating and maintaining the Franklin ISO pump.

Examine the pump when it is received to be sure there has been no damage in shipping. Should any be evident, report it immediately to the transport company and ask to have it inspected. Check the name plate of the pump to ensure you have received the correct pump.



ATTENTION

In standard construction the operating conditions should not exceed beyond the maximum operating pressure of 16Bar and temperature of 80°C. For pumping products other than water and liquid temperatures higher than 80°C, please contact Franklin Electric for advice.

The Pump set must only be handled by skilled, trained personnel. The manufacturer accepts no liability for the pump sets if the instructions in this manual are not complied with.

Make sure that all electrical connections and works have been carried out by a certified electrician. All electrical installation, connections and protections must comply with all local, state and national regulations.

2. Location

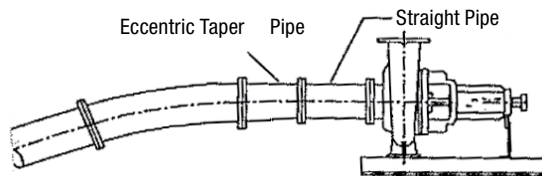
Position the pump unit as close as possible to the liquid being pumped and ensure that lowest suction lift is achieved in conjunction with using the shortest length of suction pipe. Refer to the pump performance curve (NPSHr) to determine the maximum allowable suction lift. Ensure that the pump motor is at least 150mm from the nearest obstruction to enable proper air flow to cool the motor.

3. Installation

All pipe work should be correctly aligned with the pump and firmly supported so that no external loads are imposed on the pump body. In case of the direct coupled units, the pump shaft must be free to turn after the pump has been bolted in position and pipe work connected.

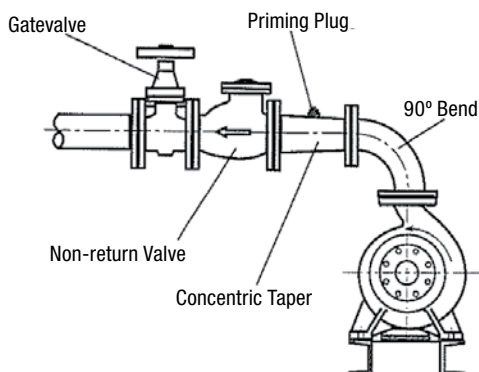
3.1 Suction Piping

Suction piping must be free from air leak. Suction piping should be the same size or larger than the suction inlet of the pump. Tapered eccentric reducers should be used when using larger diameter pipe (Refer the sketch below). The pump should be fitted with a straight pipe of length not less than 3 times the pipe diameter. Make sure that the suction pipe well below the liquid level to prevent vortexing and the consequent entry of air into the suction pipe. Suction pipe line should have continual fall from pump to liquid source to prevent the formation of air pockets. Where there is suction lift a reputable foot valve with water opening of equal or large than that of the suction pipe must be fitted.



3.2 Discharge Piping

Discharge pipe should be selected of a size suitable to carry the required capacity, such that the friction head created is not excessive. To avoid the formation of air pockets in the discharge piping, (i.e. At the high points) vent cocks must be placed to expel any accumulation of air which may affect the discharge capacity of the pump. It is recommended a non return valve is fitted on the discharge side (Refer diagram below for typical pipe work on the discharge side).



4. Direct Coupled Pumps

Flexible coupling must be fitted and aligned in accordance with the coupling manufacturer's recommendations. If the couplings are not properly aligned, premature bearing failure may occur. Coupling alignment also must be checked once the pump is bolted to the foundation.

5. Starting

- Ensure that the foot valve is of good quality and holds prime when the pump is under suction lift. A non return valve can be used under flooded suction.
- Close the discharge gate valve.
- Prime the pump. Pump casing and the suction line must be filled with the liquid being pumped, either by direct filling or if the suction pipe is larger and longer, a diaphragm pump can be used on the suction side to expel the air in the line and prime the pump.
- Turn the pump shaft slowly in order to expel the air trapped in the impeller.
- Ensure that the drive shaft rotation conforms to the direction of rotation indicated by the arrow on the casing.
- Start the unit now and when the pump reaches the full speed open the gate valve slowly till the desired flow is reached.
- If no liquid is delivered stop the pump immediately and check for leaks in the suction side and check the foot valve, re-prime the pump and flow the above procedure.



ATTENTION

Do not run the pump dry for prolong period of time as the mechanical seal can get damaged and the pump will start leaking.

6. Maintenance

- Check the unit regularly for any leaks and smooth operation to prevent seal failure and damage to the pump and motor.
- Check the bearing temperature regularly by feeling the bearing cover to prevent premature bearing failure.
- Check the liquid quality regularly to prevent the internals of the pump from damage by foreign materials.
- Constantly monitor the water level in the supply tank to prevent the pump from running dry and from cavitation if the pump is under suction lift.
- Regularly monitor the pressure gauges and the absorbed current of the motor. If abnormal take proper precautionary measure.
- If the pump is expected to be left unused for an extended period of time, drain the water in the casing, open the casing and spray the inside of the pump with rust inhibiting agent and store in an appropriate place.

7. Trouble Shooting

1. No water or the capacity is less than specified.
 - Excessive suction lift.
 - Check Pump NPSHr.
 - Blocked suction.
 - Pump not holding prime.
 - Speed is too slow.
 - In correct direction of rotation.
 - Air or gasses in the water.
 - Impeller is partially blocked.
 - Discharge head is too high.

2. Bearings are too Hot
 - Couplings are not aligned correctly.
 - Bearings lack lubrication or worn bearings.
 - Unsupported pipeline load on the pump.

3. Power consumption is too high
 - Dynamic head calculation is incorrect. Discharge head is too low.
 - Pump speed is too high.
 - SG of the pumped liquid may be greater than 1.
 - The motor shaft is not in line with the pump shaft or the pump shaft is bent.
 - Blocked pump.

4. Excessive Vibration
 - Pump base is not tightened properly to the foundation or the unit is not properly mounted on the foundation.
 - Motor shaft is not aligned to the pump shaft
 - Impeller is not balanced.
 - Worn out bearings
 - Faulty coupling or the coupling is not aligned properly.

5. Noisy operation
 - Impeller is jammed with foreign object.
 - Impeller is touching the casing.
 - Worn out or faulty bearings
 - Cavitaion.

6. Excessive internal wear of the Pump
 - Cavitation.
 - Presence of excessive air or gas in the product pumped.
 - Presence of solids in the water.
 - Corrosive liquid.

8. Disassembly Procedure

ATTENTION

It is important that the pressure in the pump must be released and the pump is isolated from all pipe work.

1. Remove the back plate casing bolts.
2. Unscrew the impeller nut about two turns and drive a pair of wooden wedge gently between the impeller and the back plate. This procedure must be carried with care so that the impeller is not damaged. Give the impeller nut a sharp blow, using a hammer and a piece of hard wood to spring the impeller from the taper. Remove the impeller nut and sealing washer and slide the impeller out. Lift out the impeller key from the shaft and slide the rotating part of the mechanical seal out.
3. Loosen and remove the joint bolts between the back plate and the bearing housing (or bell housing in case of close coupled pumps) and remove the back plate. Remove the stationary face of the mechanical seal by gently taping it out with a piece of wood.
4. Disassemble the retaining bolts between bearing housing and remove the bearing cover (Only for direct coupled pumps) shaft and bearing. For close couple pumps undo the grub screws on the stub shaft and slide the stub shaft from the motor shaft.

9. Assembly Procedure

The assembly sequence of the ISO pumps are carried out in reverse order of the disassembly sequence.

ATTENTION

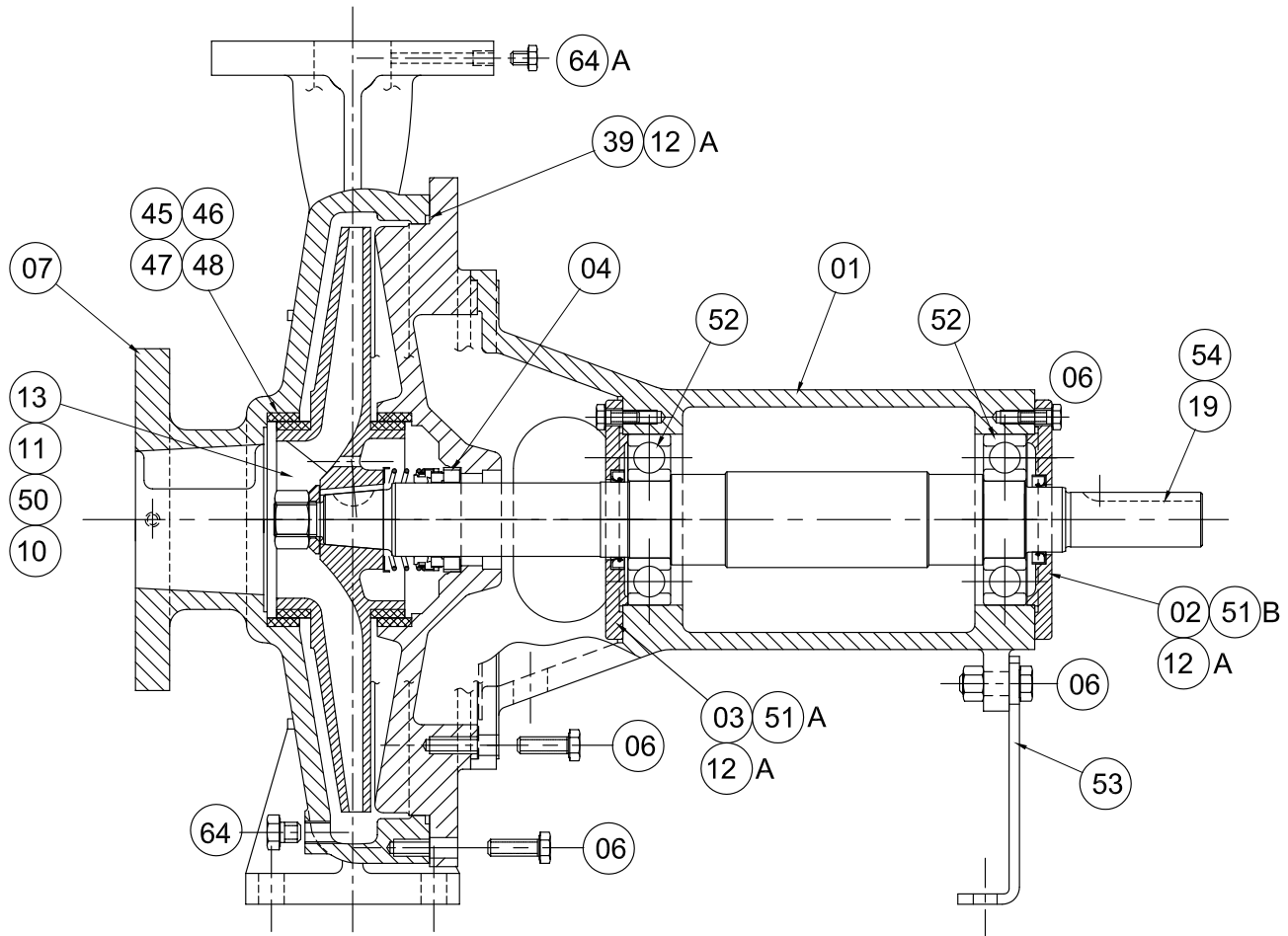
It is always a good practice to change the mechanical seal when overhauling or repairing an ISO pump.

ATTENTION

All mating faces of the pumps should be cleaned during assembly. When mounting the 'O' ring to the casing, grease should be applied to prevent it from falling off or folding while assembling.

FPS ISO Series

ISO Bare Shaft Pump Parts Description

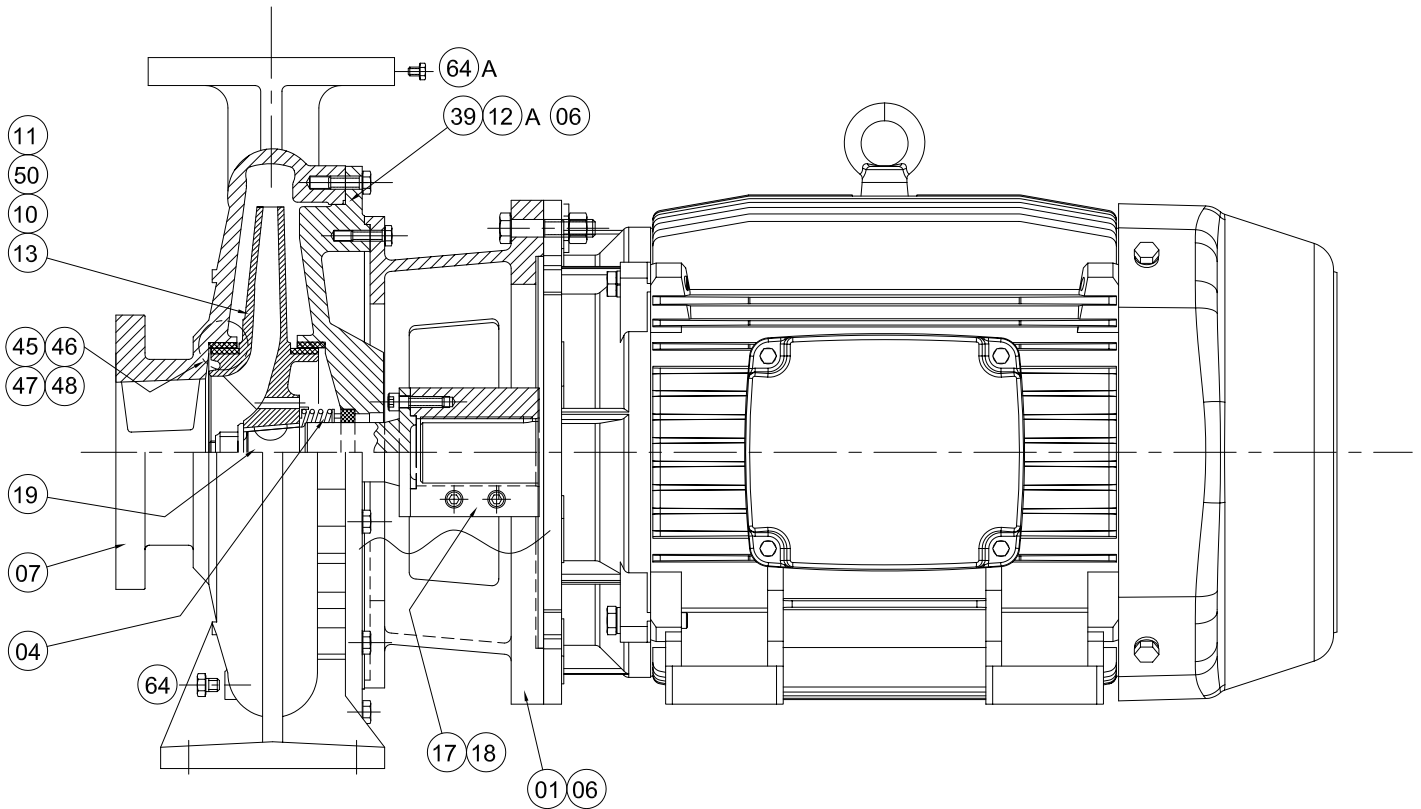


Item	Description
02	Bearing Cap (Rear)
03	Bearing Cap (Front)
04	Mechanical Seal
06	Fastener Set
07	Volute (Casing)
10	Impeller Key - Woodruff
11	Impeller Nut
12A	O-Ring
13	Impeller
19	Shaft DC
01	Bearing Housing
39	Intermediate Cover

Item	Description
50	Impeller Washer
51A	Oil Seal - Front
51B	Oil Seal - Rear
52	Bearing - Ball
53	Support Foot
54	Shaft Key - Input Drive
45	Wear-ring Casing Front (Option)
46	Wear-ring Intermediate cover Rear (Option)
47 & 48	Wear-ring Impeller Front & Rear (Option)
64	Plugs - Casing Drain
64A	Plugs - Casing Suct & Disch

FPS ISO Series

ISO Stub Shaft Pump Parts Description



Item	Description
01	Motor End Adaptor
04	Gland / Mechanical Seal
06	Fastener Set
07	Volute (Casing)
10	Impeller Key
11	Impeller Nut
12A	O-Ring
13	Impeller
17	Muff Coupling
18	Muff Coupling Screws
19	Shaft CC
39	Intermediate Cover
50	Impeller Washer
45	Wear-ring Casing Front (Option)
46	Wear-ring Intermediate cover Rear (Option)
47 & 48	Wear-ring Impeller Front & Rear (Option)
64	Plugs - Casing Drain
64A	Plugs - Casing Suct & Disch

Notes



Franklin Electric

AUSTRALIA / NEW ZEALAND

Franklin Electric (Australia) Pty. Ltd.
106-110 Micro Circuit
Dandenong South, Victoria 3175
Australia

Toll Free: 1300 FRANKLIN

Fax: +61 3 9799 5050

Tel: +61 3 9799 5000

www.franklin-electric.com.au

UNITED STATES

Franklin Electric Co., Inc.
400 E. Spring Street, Bluffton, IN 46714 USA
Tel: +1.260.824.2900 Fax: +1.260.824.2909