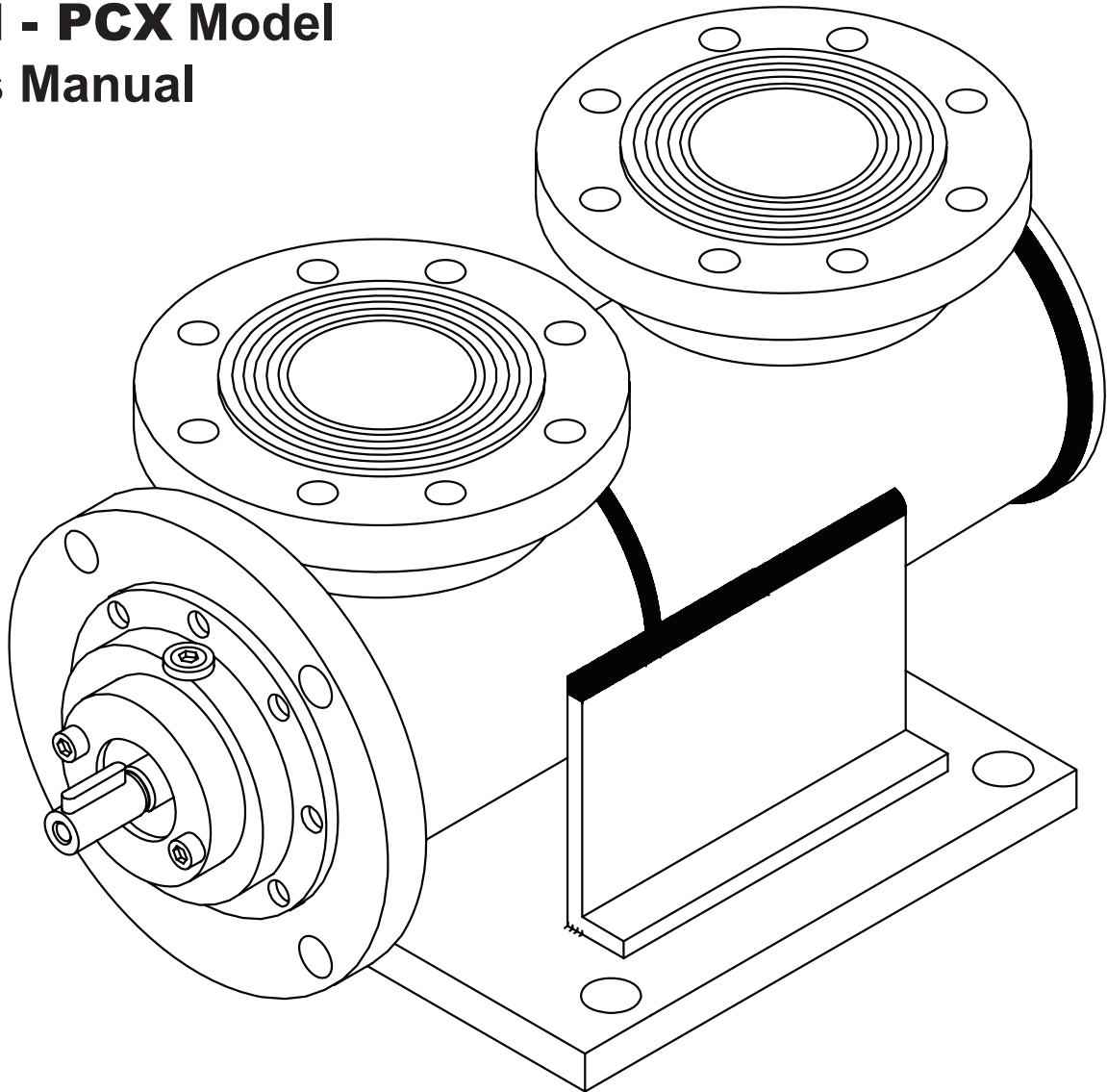




Shanley Pump & Equipment, Inc.

3 Screw Pump Type

SEIM - PCX Model Users Manual



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1.0 – Foreword

This manual is addressed to users of type PCX pumps. While highlighting the care required and providing warnings about correct usage, this document presumes that, the plant where the pump is used, adequate safety regulations and precautions are applied. The maintenance manual is not an accessory, it is an integral part of the pump and must be kept, in good state, close to the pump, and it must be delivered to any subsequent user or new owner. It should not be damaged, must be maintained whole (do not tear pages, keep dry and clean and maintain legibility). The drawings and technical data provided in this document are up to thereof and apply exclusively to type PCX pumps

1.2 – Symbols used



Important warning



Indicates MANDATORY operations and information which requires particular attention, to prevent potential risks.

1.3 – Pump identification

Each SEIM pump is marked with an adhesive plate on the pump body, which bears the identification code of the model (P/N) and the serial number (S/N). Both must always be included in any request to the manufacturer for information and/or intervention.

1.4 – Product warranty

The manufacturer accepts no liability in cases of:

- damage caused by operator negligence;
- failure to respect the instructions and limitations indicated in this user and maintenance manual and/or in the technical information sheets of reference;
- Prior repairs effected with non SEIM spare parts or modification to the original components in a unauthorised manner;
- components subject to normal wear and tear;
- breakage caused by incorrect installation

1.5 – General notes on delivery

Pumps are transported in appropriate packaging. The package is marked with an adhesive plate indicating the contents. Upon receipt of the goods, check that:

- the package is undamaged;
 - the delivery corresponds to the order specifications;
 - the goods have not been damaged during transport.
- If one or more of the above conditions occurs, notify the manufacturer immediately.

2.0 – Plant installation & roll out

2.1 – Use suitable lifting gear

2.2 – Open the packaging, lift the pump as little as possible above ground and approach the installation point (fig. 1)


2.3 – Connect the half-coupling after lightly lubricating the pump shaft (fig.2). Block using the blocker nut (fig.3).

2.4 – Position the pump in line with the motor shaft and connect the motor connection flange to the housing until the mounting bolts can be fully tightened (fig.4).

2.5 – Remove the protective caps from pump. Fill the pump with the fluid to be pumped in aspiration and output (fig.6). Wait a couple of minutes so that the fluid is distributed throughout the pump body. Add fluid until the inside of the pump is completely full.

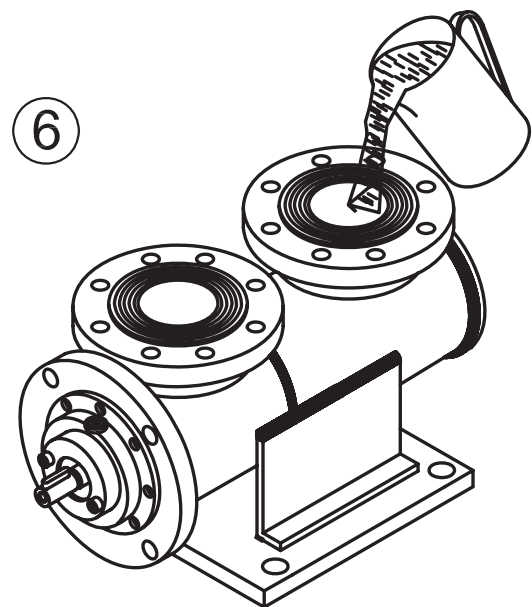
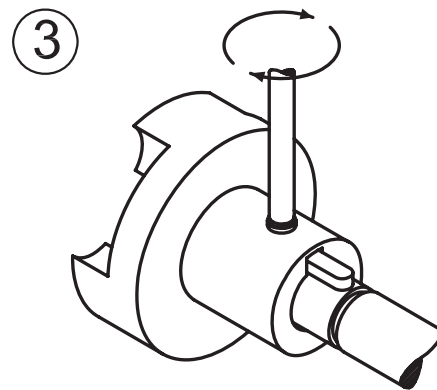
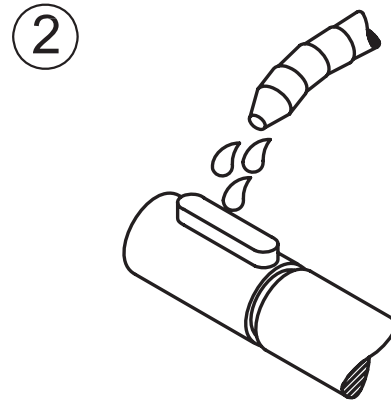
2.6 – Connect the aspiration and output pipes (fig.7).

2.7 – Check the direction of rotation of the pump, pulse start the electric motor and observing the direction of rotation of the motor fan or, where easier, of the shaft through an aperture to be effected in the housing; the direction of rotation must comply with the indications of the arrow on the identification plate.

 ***The first power up should be limited to the time strictly necessary to ensure that the direction of rotation corresponds to the indications of the pump identification plate. This prevents the partial or total damage of the pump in cases of incorrect rotation.***

2.8 – Start the motor after having checked that all the valves on the lines are fully open. At this point the pump begins to “draw” fluid.

2.9 – Run the pump unloaded for a few minutes to facilitate the elimination of any air present in the fluid. Then regulate the pressure to the value foreseen for the system.



3.0 – Dismounting pump components

3.1 Dismounting the seal

3.1.1 Disconnect the pipes after emptying the pump.

3.1.2 Disconnect the pump from the housing and extract the half-coupling after loosening the bolt.

3.1.3 Hold the pump body in a vice with the jaws covered in soft material (®) to avoid damage to the data on the information plate (fig.8).

3.1.4 Remove the key from the central screw (fig.9).

3.1.5 Remove the 4 bolts which connect the motor connection flange to the pump body (fig.9).

3.1.6 Remove the motor connection flange with light blows with a plastic hammer; the fixed section of the mechanical seal will remain within the motor connection flange. Check the O-ring.

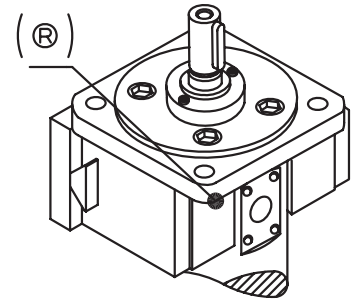
3.1.7 Using a soft adjustable grips of appropriate diameter, extract the fixed section of the mechanical seal from the connection flange (fig.10).

3.1.8 Holding the central screw remove the rotary section of the mechanical seal, rotating clockwise and taking care not to touch the contact surface with your hands (fig.11).

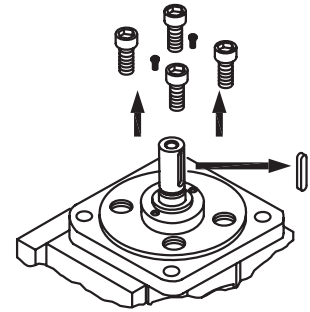
3.2 Dismounting the jacket

3.2.1 Unscrew the screws mating external racket diameter (fig.12) and pull out complete pump in axial direction according to arrow shown.

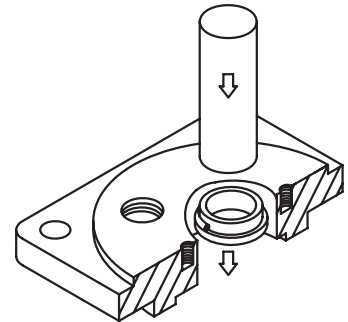
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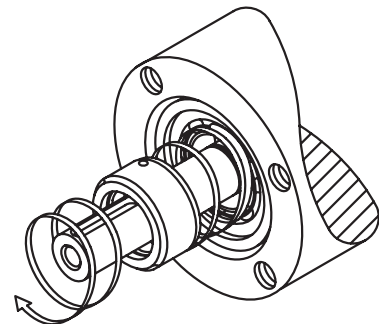
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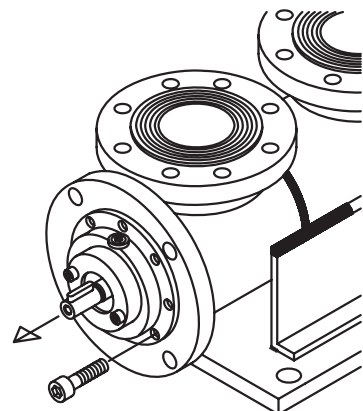
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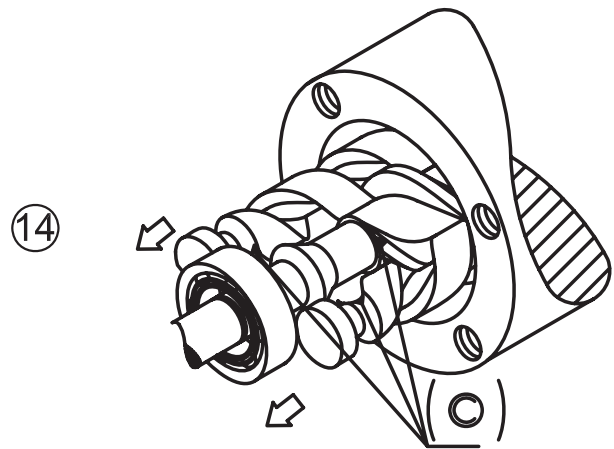


3.3 Dismounting the bearing

To enable execution of this operation, you must have effected all the operations described in the paragraphs above “DISMOUNTING THE MECHANICAL SEAL” and “DISMOUNTING THE MAXIMUM PRESSURE VALVE”

3.3.1 Extract the entire group consisting of the central screw, bearing and idler screws observing the position of the signs (©) on the central screw and the relative idler screws, in order to facilitate the later mounting sequence (fig.14).

3.3.2 Remove the elastic ring and with the help of an extractor, remove the bearing.



4.0 – Mounting pump components

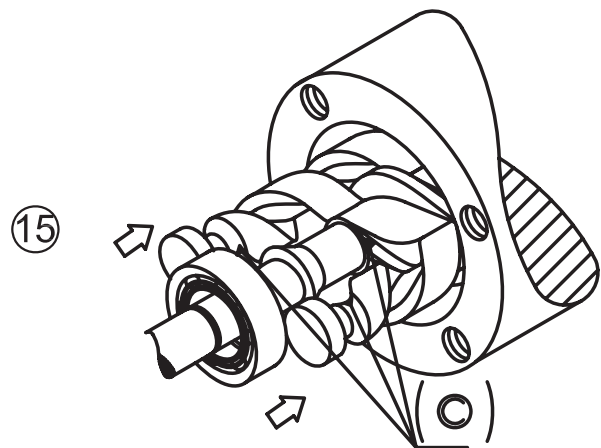
4.1 Remove the elastic ring and with the help of an extractor, remove the bearing.

Before mounting the pump, we recommend careful cleaning of all components. Check all the O-rings, the flat seal and the mechanical seal, if damaged they should be replaced.

4.1.1 Heat the inner bearing ring. Fit the bearing to the central screw, do not damage the bearing or screw.

4.1.2 Ensure that the whole turns freely.

4.1.3 Lubricate the central screw, the two idler screws and insert them into the pump body, taking care that the signs (©) on the central screw and the relative idler screws are in exactly the same position in which they were removed during dismounting (fig.15).



4.2 Mounting the mechanical seal

4.2.1 Lubricate the O-ring and insert the fixed section of the mechanical seal to the motor connection flange.

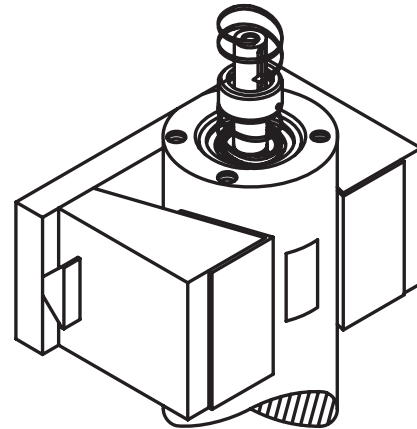
4.2.2 Position the pump vertical holding the central screw still. Fit the rotary section of the mechanical seal rotating clockwise up to the elastic seal end run (fig.16).

4.2.3 Clean the fixed and rotating sealing surfaces of the mechanical seal with denatured alcohol. Lubricate the O-ring and insert it into the site of the motor connection flange..

4.2.4 Insert the motor connection flange to the pump body and tighten, in alternate sequence, the 4 mounting bolts.

4.2.5 Insert the key into its' site in the central screw using a plastic hammer.

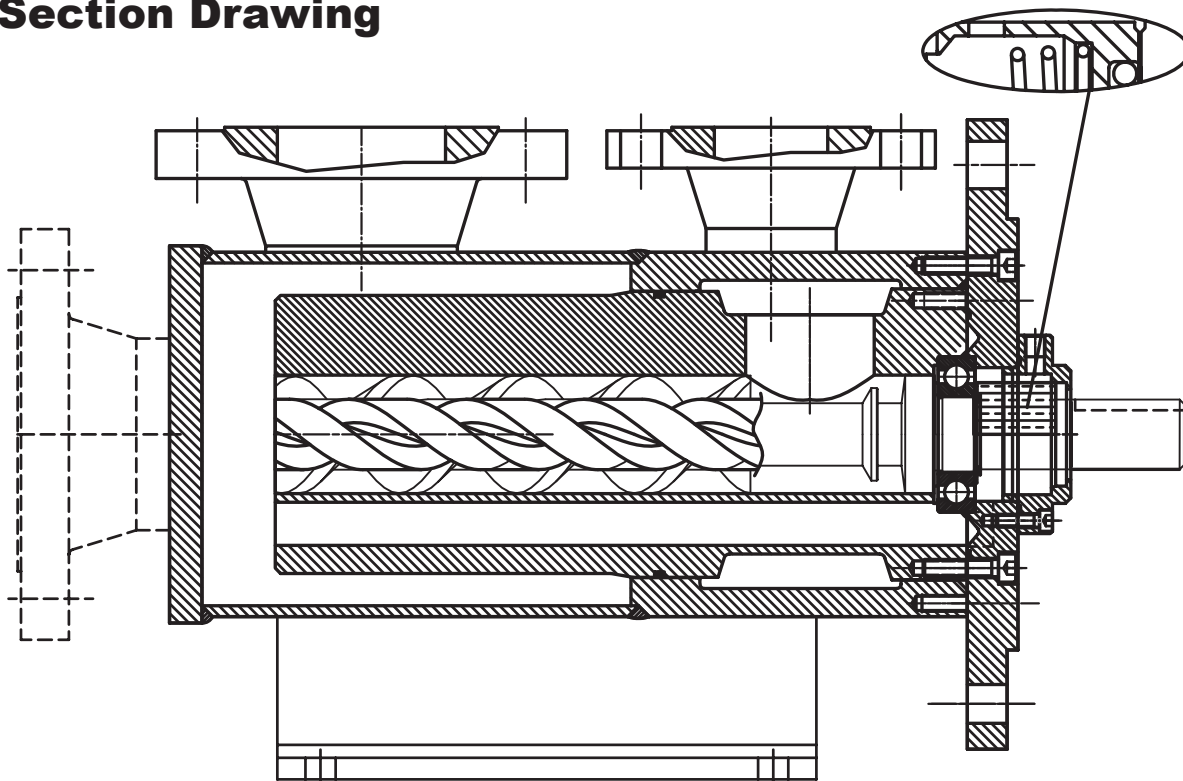
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4.3 Mounting the external jacket.

4.3.1 Lubricate Orings and Oring seats; insert again axially complete pump inside jacket, fit the screws and reassemble following back operations done in 3.2.

5.0 – Section Drawing



6.0 – Problem description and solving

Wrong rotation direction

EFFECT

The motor turns in the wrong direction as indicated by the arrow on the identification plate.

POSSIBLE SOLUTIONS

In three phase motors, two electric phase connection wires must be exchanged.

Throughput too low

EFFECT

- The valves on the line are not fully open.
- The maximum pressure valve is set with too low a pressure value.
- The filter is blocked or an obstacle in the oil flow line.

POSSIBLE SOLUTIONS

- Open the valves and restart the pump.
- Loosen the regulation screw until it may be hand turned and action the pump for a few minutes at no pressure. Then tighten the regulation screw to the setting value desired.
- Check the plant. Check that the obstacle has not entered the pump.

Pressure too low

EFFECT

- Pipe leakage
- Output pressure is too low.
- The maximum pressure valve is set to too low a pressure setting.

POSSIBLE SOLUTIONS

- Check the pipes identifying eventual leaks, particularly inside tanks.
- Replace with a pump with higher throughput.
- Loosen the regulation screw until it may be hand turned and run the pump for a few minutes at no pressure. Then tighten the regulation screw to the setting value desired.

Motor starts badly

EFFECT

- Pressure required from system too high.
- Oil too cold
- The motor set not deliver the power required.
- the motor taring relay is too low.

POSSIBLE SOLUTIONS

- Action the pump with no pressure until the oil returns to normal temperature. Restore, then, the system to working pressure.
- Replace with a higher power rating motor.
- Augment the relay intervention level.

Pump noisy when operating

EFFECT

- If the pump is noisy during operation, check if:
 - The pipe is too long or the section diameter of the pipe is too small.
 - The filter is blocked or the valve is closed in aspiration.
 - The aspiration pressure is elevated.
 - There is air in the system.
 - The motor-pump alignment is incorrect.
 - The pump is worn or damaged. Contact the manufacturer..

7.0 – Spare parts

Clients may request spare parts from the manufacturer for PCX pumps, specifying the code and serial number of the pump on which the components are to be replaced. (Each pump has it's own spare parts:)

Spare parts for PCX pumps

Qty	Description
1	Mechanical seal
1 Set	O-ring
1 Set	O-ring
1	Radial bearing
1 Set *	Gasket

* Only for some models