

# SYDEX / MAINTENANCE AND OPERATION MANUAL

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## Installation – Operation and Maintenance

**Attention:**

The following explanations have the aid to give you all possible information over the SYDEX pumps range.

The right choosing of the pump is depending from the right information received at the order time. Those information received will be saved as the main job references for this pump.

Any application that will not be respecting our suggestions, will not be considered under any warranty possibility.

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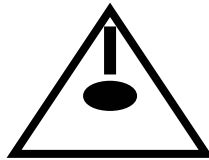
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## 1 General

### 1.1 Safety precautions

Take care following instructions, making in the way that injury or damage to the pump can be avoided because of non-paid attention.

Experienced personnel is required for the following phases:



- \* Always observe the technical datas.
- \* Electrical connections MUST be followed by authorised personnel.
- \* Never start the pump in the wrong direction. Check every time before.
- \* Never put your fingers inside port connections.
- \* Never touch the pump or pipeworks when pumping HOT – STERILIZED – TOXIC liquids.
- \* Never run the pump with suction or delivery port blocked.
- \* Always disconnect the power supply when servicing the pump.
- \* Always get free the pump from pipeworks pressure when maintaining.

### 1.2 Health and safety information

The section gives information on handling, storage and disposal of materials used in the pumps which may be considered hazardous to your health.

Keep every time your Safety Officer informed on all regulations.

If accidentally, hazardous substances are in touch with your skin or inhaled, then the Following precautions should be taken immediately:

SKIN: Wash with fresh water and soap

INHALATION: Get out to fresh air immediately

EYES: Flush with fresh water, find a medical centre immediately

Following scheme is indicating you what used inside pump:

#### WHERE USED

Bearings

Stator - rotor

Oil - general lubrication

pumps surface

#### LIQUID – PRODUCT

anti-size compounds

grease – Vaseline

seal – gearbox

Paint

#### DANGER FOR

releases vapour

hands and skin

eyes and skin

releases dust and fumes if machined.

Treats as fire hazardous.

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## 2 Unpacking , handling and storage

To avoid any problems, when receiving your pump please follow this procedure:

- check delivery note against the good received
- in a case pump has been ordered – delivered with drive, please check is relatives instructions still available. Make immediately claiming if missing.

### 2.1 Unpacking

We do consider this procedure really important and we suggest you to go ahead in this way

- inspect the packing if any possible damage happened during transit
- with care, remove away the packing from the pump
- just having a look on the pump , check any visible sign of damage
- check drive also in a perfect conditions

### 2.2 Handling

All pumps weights, allow you to bring away the pump to the final destination without any big problems.

Only when powered pump, we suggest you to use adequate elevator.

### 2.3 Storage

After point 2.2 when pump has been inspected, in a case the pump will not be installed immediately, it has to be re-packed and placed in a suitable storage.

Points to be followed are:

Place the pump in a good covered storage, dry place, and free from vibrations.

If pump is placed in a dusty atmosphere, a moisture repellent cover is necessary until the pump is installed.

Move the pump weekly by rotating the drive train to prevent block and bearings damage.

If it is forecasted very long time storage (> 6 months), take away the stator alone and protect it internally with adequate grease.

Ask to our technical department which grease type has to be used.

Remove also drain plug (pos.51) to avoid vapour forming.

## 3 Pump description

The pump supplied, takes part to the " VOLUMETRIC PUMP TYPE".

The main part of SYDEX pump is the single helix metal rotor which rotates eccentrically within a double helical resilient stator of twice the pitch length of the rotor.

The rotor of circular cross section creates a continuously forming cavity as it rotates.

The cavity progresses towards the discharge port carrying the pumped liquid inside this cavity by the continuously forming of seal line .

The flow is non-pulsating simply because stator's chamber volume is always constant.

The pump will be considered therefore a positive displacement type with the follows

Benefits:

- self priming even no 100% liquid containing
- very low damage when handling sensitive products
- capacity is direct proportional to the pump speed
- possibility to handle viscous and abrasive material

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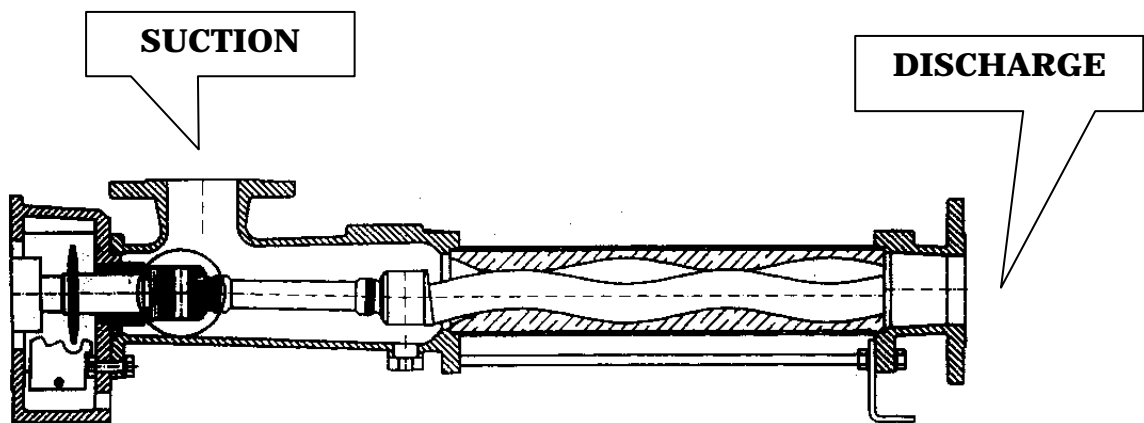
- no pulsation

Also, due to the peculiar SYDEX pump system :

- no considerable torque increasing when reaching the top of the performance
- low noise – vibrations
- self-accomodating of the rotor eccentricity even under pressure
- compact style construction

## 4 Pump installation

Pump must be installed in a horizontal position, leaving a space not less than 30 cm long all around the pump. This will help you in making maintenance when the time and keep motor's temperature as low as motor's specifications.



Pipe works have to be same size of delivery-discharge pump's ports.

Just to help personnel to do servicing, will be very important to have a three –parts joint in suction and discharge port.

When is forecasted a discharge liquid column  $> 15$  m , a non-back-flow valve will help you to avoid that pump-seal system could be overloaded by the water column.

If any dispositive will be mounted on discharge pipe-work, a safety relief valve is suggested to safe the pump from running against closed valve.

When pump is not fixed on the ground, a vibrating compensators are requested.

### Electric connections

All electrical connections, both for SYDEX pump or any other machinery into which SYDEX pump is incorporated , MUST be followed by experienced personnel under the respect of Machinery Directive and their relatives Amendments.

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## 5 Running position

**Remember: DRY RUN THE PUMP IS NOT PERMITTED.**

Just few rounds will probably cause damage to the pumping parts, stator and rotor.

### 5.1 Few preliminary actions before run the pump:

- \* connect the pump to the both suction and delivery pipe-works
- \* fill up the pump by water or the liquid will be handled just later on.

Note: The operation has to done just first time you start the pump.

- \* Nextlly, pump will self-priming by itself.
- \* Before start with power supply, check any valve in the suction / delivery pipe-works is opened.
- \* Make the pump running for few seconds and verify if rotating sense is the RIGHT as well as by the arrow signed over the lantern flange (pos. 005).
- \* In a case wrong electrical application, be in contact with qualified personnel and revise the power supply connections.
- \* Now, run the pump.

When forecasted a long storage period, section 2.3 of this book must be respected.

## 6 Maintenance

All maintenance operations **MUST** be done by qualified experienced personnel.

SYDEX pump by the extremely simplified system of mounting and dismantling will allow you to do servicing and maintenance in a quick time with a good result.  
Follow our indications to avoid any mistakes.

### 6.1 Preliminary operations

Remove power supply from the motor's pump.  
Await liquid temperature goes down.  
Verify no pressure in the suction or delivery pipe-work by checking eventually a manometer.  
Close all valve in suction and discharge.  
Remove slowly pipe works from pump connections.

### 6.2 Removing the stator

- 6.2.1 Unscrew the 4 screws (pos. 910) on the suction port (pos. 050).
- 6.2.2 Remove discharge flange (pos. 050) and the support foot (pos. 870).
- 6.2.3 Unscrew the Tie Rod and extract them (pos. 860).
- 6.2.4 Block drive and shaft (pos. 101); turn the stator out by rotating in anti-clock (pos. 199)
- 6.2.5 Take the new stator, lubricate it by liquid soap and insert it into the Rotor (pos. 199)

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## 6.3 Removing the Suction Chamber

- 6.3.1 Remove the Stator following the instructions (6.3).
- 6.3.2 Remove the screws that unify the Block lantern (005) to the Suction Chamber (pos. 025).
- 6.3.3 Take out the Suction Chamber

## 6.4 Removing the rotor

- 6.4.1 Follow firstly operations explained before, 6.1 + 6.2 + 6.3. Now you can see lantern flange with complete drive train. Put the drive train and the rotor on a support.
- 6.4.2 Remove the elastic ring (775). (models: 039-1L/2S; 045-052/1L/2S INOX; 075-1L/2S)
- 6.4.3 Take away the ring cover the sleeve (440-445). (models: 039-1L/2S; 045-052/1L/2S INOX; 075-1L/2S)
- 6.4.4 Remove the Sleeve (790) and take away the drive train pin's (403).
- 6.4.5 Remove the rotor (199).

## 7 Problems, causes and remedies

A list of possible problems and relative remedies is attached below.

### 7.1 PROBLEM: PUMP DOESN'T START

CAUSES	REMEDIES
Type of motor is Not adequate to the local net.	Check motor and net datas.
A strange body could be located inside the pump.	Open the pump, verify situation and eventually take away the extraneous body.
Stator doesn't resist to the liquid handled.	Check quotation and relative order. Eventually replace stator type with the right one.
Liquid pumped is sedimenting and gets dry.	Clean the pump every time you stop it.
Temperature too high and the stator is blocking the rotor.	Get low temperature liquid. In a case not possible, contact our techs, personnel.

### 7.2 PROBLEM: PUMP DOESN'T SUCK

CAUSES	REMEDIES
Suction pipework is open.	Check all gaskets and screw well all the nuts, screw etc.
Stator is wearred.	Replace the stator according to this manual.
Rotor is wearred.	Replace the rotor according to this manual. Verify if wearing is coming from abrasion or corrosion. Change material eventually.

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Mechanical seal is leaking.

Replace the seal according to this manual.

## 7.3 PROBLEM : UNDER CAPACITY AND PRESSURE

CAUSES	REMEDIES
Electrical motor datas are not correct facing net datas.	Check order datas and installation system.
Too high pressure on delivery pipework.	Misure by a pressure gauge and reduce line pressure eventually.
Air presence in the suction pipework.	Check and close all screws in the suction pipe
Mechanical seal is leaking. Sometimes pump is running dry.	Replace mechanical seal. Fill up the casing, install a dispositive against dry running.
Stator is weared.	Replace stator.
Rotor is weared.	Replace rotor.
Suction lift too big,	Reduce pipe loss by increasing suction pipe work. Keep the suction port closer to the liquid level.

## 7.4 PROBLEM: PUMP IS NOISING

CAUSES	REMEDIES
Weared stator	Replace the stator
Weared rotor.	Replace the rotor.
Weared joint.	Replace the joint.
Air presence in the pipesworks.	Increase liquid level on the suction side.

## 7.5 PROBLEM: PUMPING ELEMENTS WEAR

CAUSES	REMEDIES
Too high pressure.	Use a manometer-pressure gauge to keep delivery pressure under control.



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Too high liquid temperature.

Reduce liquid temperature.  
In a case no possible, contact our personnel.

Liquid handled is stopping inside pump.

Open and clean the pump all the time you stop it.

Pump is running dry.

Fill up the pump first time you use it.  
Install a correct running dry dispositive.