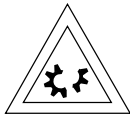


5 Start-up

The NEMO[®] pump design requires strict attention to the following:



Never run the NEMO[®] pump dry!
A few rotations in dry condition will damage the stator!

- Before starting up for the first time, fill the pump with medium. In the case of high viscosity media fill with a liquid. Pump priming is vital to ensure lubrication of the rubber stator. Fill the piping on the pump suction side. In anti-clockwise rotation only: Fill the pump housing.

The NEMO[®] pump is a progressing cavity pump which can produce pressures that may cause the bursting of vessels or pipes.



The power transmission train (shaft, coupling rod, joints, rotor) of the pump may be overloaded thus resulting in damage or breakage.

Also the pump housing parts with their connections may be overloaded and break. There is a table in Section 4 of these Maintenance and Operating Instructions showing the pressure resistance of the pump housing parts.




Never run the pump against a closed inlet or outlet valve!

- Open valves and vents before starting the pump!
- Check the direction of rotation by briefly switching on the pump motor.

NEMO[®] pumps supplied for Food duties

When a pump has been supplied for a food application it is important to ensure that the pump is clean prior to initial pump operation. The cleaning of the pump, before use on food, can be executed in two ways:

- A) by dismantling the pump components and manual cleaning of these parts using suitable detergents. No dirt contamination must enter anew during re-assembly.
- B) By applying a C.I.P. (Cleaning In Place) procedure provided the type and execution of the pump suit such a procedure.

	Date	Name	Signed	Revision: 3
issued	10.08.98	Mangel		Substitute for issue of 30.11.94
approved	11.08.98	Hantschk		
released	12.08.98	Hantschk		text no. 05000
copy to: 95				

A clean in place treatment on the pump should be executed at the following times:

- When the pump is first commissioned for use
- When any spare components are fitted into the wetted area of the pump
- After operations, i.e. before a fairly long idleness of the pump
- After longer idleness, before re-operation.


Many companies have their own C.I.P. procedures which suit to their pumping media, but if you are unsure that your C.I.P. procedure is suitable for the pump supplied then please contact the pump manufacturer.

A recommended C.I.P. procedure is as follows:

- Towns water pre-rinse to get out product left over inside the pump
- 1-2 % water /volume Sodium Hydroxide for 10-20 minutes at 60-80 °C
- Towns water for 5-10 mins
- 1-1.5 % water /volume Nitric Acid for 5-10 mins at 50-70 °C
- Towns water for 5-10 mins.

The flow rate of the rinsing liquids should not be lower than 1.5 m/s during C.I.P. procedure.

When under C.I.P. treatment, the stator has to undergo thermal and chemical stress. It is therefore important to ensure that the NEMO[®] pump is operating in STOP AND GO function during C.I.P. treatment which is **two to three starts with one to two rotations in the course of one minute**. This will provide sufficient cleaning of the rotor/stator conveying cavities and it also reduces the mechanical stress additionally put on the stator through deformation work.

Revision: 1		Date	Name	Signed
Substitute for issue of 30.11.94	issued	10.08.98	Mangel	
	approved	11.08.98	Hantschk	
 text no. R 05000	released	12.08.98	Hantschk	
	copy to:			

MGS: Indicate what applies

4.4 Pressure

If not explicitly confirmed otherwise in the order confirmation, the **maximum permissible pressure (e.g. when turning clockwise) inside the pump housing (A)**:

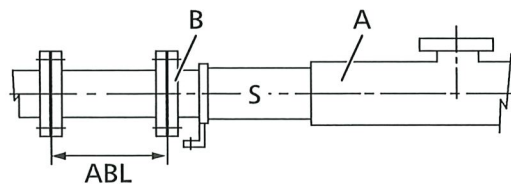
- for models with pump housing of cast iron **6 bar**
- for models with welded pump housing **10 bar**

The maximum permissible pressures inside the end flange (B) is a function of the design applied for connections:

- with flange: maximum nominal pressure (e.g. PN 16)
- with threaded internal socket: maximum 25 bar
- with DIN 11851 "dairy" thread up to DN 100 for one or two stage pumps: max. 12 bar, for multi stage pumps: max. 25 bar
- for other versions: maximum permissible pressure of the socket connection, but not more than 6 bar per pump stage, depending on the stator installed.

4.5 Piping System

- Arrange suction and pressure pipes so that when the pump is not running, the medium is still present before and after the pump.
Sufficient media should remain inside in order to lubricate the pump during restart.
- ▲ The installation of a removable distance piece between the end connection (B) and the pipe work is recommended in order to make the dismantling of the stator easy.
The distance piece (see sketch) needs to have a minimum "ABL" disassembly length.



The values of „ABL“ are shown in the table below, depending on the pump size and the number of stages.