

Maintenance of pumps

DESCRIPTION

- This maintenance unit consists of two pumps: a centrifugal pump and a volumetric pump along with additional components
- Maintenance can be simulated by changing the various components of the pumps.
- The unit is delivered complete with instrumentation as well as technical documentation and suggested activities.
- Pumps are of industrial type.
- Pumps are part of a closed circuit.



SUGGESTED APPLICATIONS

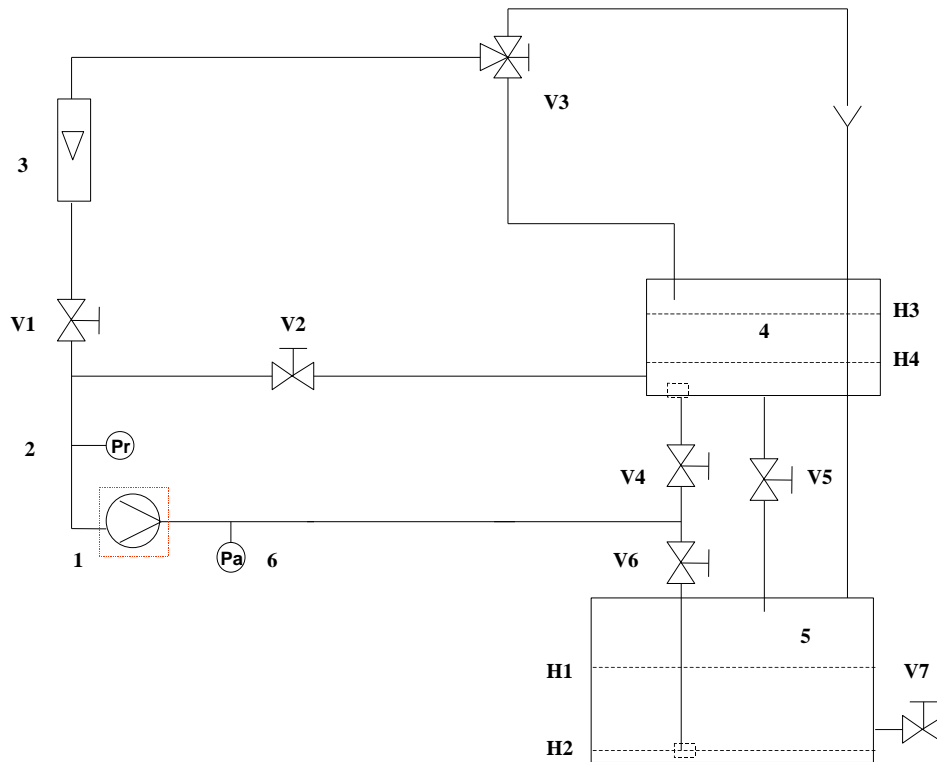
Study of centrifugal and volumetric pumps

- Changing conditions
- In pressure or suction
- Characteristics of the pump:
 - speed – flow rate – pressure – efficiency

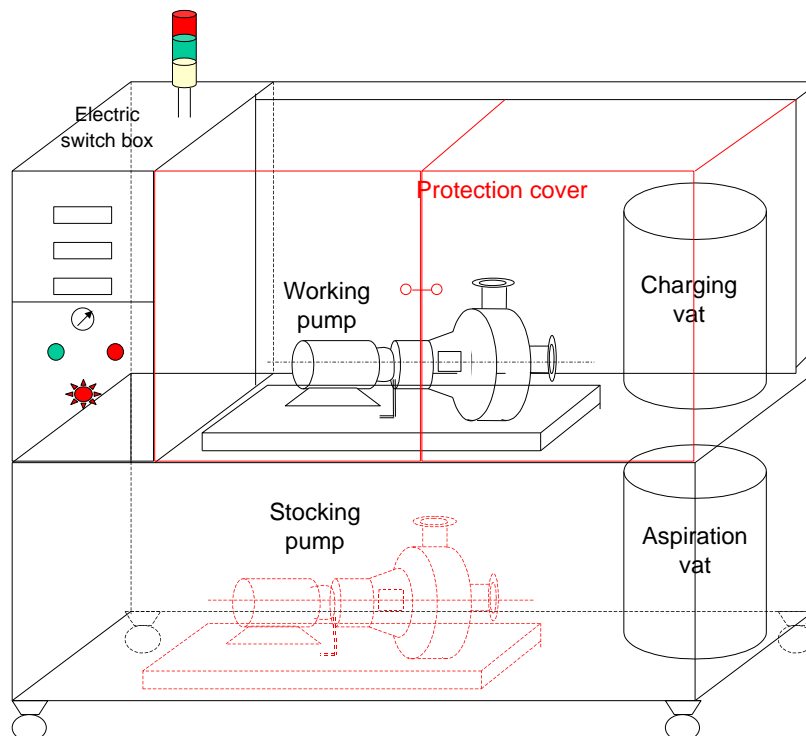
Maintenance of a pump

- Mounting, dismounting, changing parts
- Changing a fitting, a stuffing box, a rolling, a gear ring...

SCHEMATIC DIAGRAM



ARRANGEMENT OF MAJOR COMPONENTS



BASIC SUB-SYSTEM

1. Centrifugal motor-pump with stuffing box

- 3-phased motor - 230/400 V, P = 0.75 kW, 1450 rpm
- 316 AISI stainless steel body, rotor and turbine
- Tightness: stuffing box
- Mounted with an opened turbine Ø 185 mm
- Mounting of a glass flange instead of the stainless steel one in order to observe the turbine and the cavitation phenomenon
- Various types of turbines are provided

2. Centrifugal motor-pump with mechanical fitting

- Without motor
- 316 AISI stainless steel body, rotor and turbine
- Tightness: simple mechanic fitting in carbon/stainless steel
- Mounted with an opened turbine Ø 185 mm
- Standard model without any changing

3. Volumetric motor-pump with lobes

- 3-phased motor- 230/400 V, P = 0.75 kW, 1450 rpm.
- 316 AISI stainless steel body, rotor and turbine
- Safety valve is directly on the pump
- Tightness: simple mechanical fitting in carbon/stainless steel
- 2 turbines tri-lobes

4. Lift manometers

- Dial manometers
- Class: 1.6
- Range: 0/1 bar // 0/10 bar
- With protective valve: 0/1 bar

5. Flow rate

- Rotameter
- Range: 0 – 15 m³/h

6. Charging vat

- Rectangular vat – high density polyethylene
- Volume 100 L
- Overflowing and emptying system
- 2 supplying heights are foreseen (H1 & H2) with a valve that is equipped with offset control

7. Aspiration vat

- Rectangular vat – high density polyethylene
- Volume 100 L
- Overflowing and emptying system
- 2 supplying heights are foreseen (H1 & H2) with a valve that is equipped with offset control

8. Pressure gauges

- Dial manometers
- Class: 1.6
- Range: -1 / 0 bar

9. Circuits

PVC pipeline and valves

Filters

V2, V4, V5, V6 and V7: ¼-turn valve

V3: three-way valve – 4th or 5th tank return

V1: flow adjustment valve with diaphragm

10. Rotation speed sensors

- Digital indicator

11. Cylindrical inductive sensors

- Mounted on a rest with detecting DEL
- Coupled with a programmable digital indicator with microprocessor
- Precision class: 0,2, 4 digits display

12. Power transmitter

FRAME

- Extruded aluminium – mounted on little wheels with brakes
- Plexiglas protecting gates, equipped with stop contact.
- Electric switch box in two parts

ELECTRIC SWITCH BOX

Equipped with three electric plates that can be completely dismantled. Switch box also contains electromechanical components.

Unit can be run in three ways: the motor may be turned on directly, be connected to a starter, or start at regular intervals. The student can wire the system so that it operates in one of these three modes.

UTILITIES

Electricity : 400 VAC three-phased - 50/60 Hz

DIMENSIONS AND WEIGHT

Length: 1400 mm

Width: 800 mm

Height: 2000 mm

Weight: 230 kg.