

Figure 20-3/4

Centrifugal Pump and Bilge Pump, Make SIHI

- |                     |                      |                           |
|---------------------|----------------------|---------------------------|
| 1 Suction housing   | 6 Spacer             | 11 Woodruff key           |
| 2 Discharge housing | 7 Spacer             | 12 Fixing screws and nuts |
| 3 Spacer            | 8 Impeller           | 13 Ball-bearing           |
| 4 Impeller          | 9 Spacer             | 14 Gasket                 |
| 5 Center housing    | 10 Ball-bearing yoke | 15 Bushing                |

C. Schematic Diagram of Pipe Connections and Directions for the Operation of the Centrifugal Pumps Version A and B

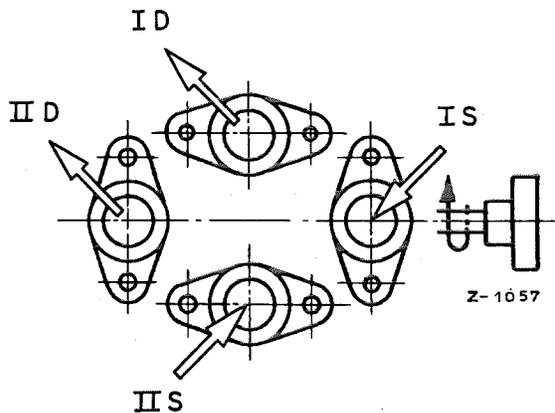


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Pipe Connection Diagram

- ID = Centrifugal pump, discharge pipe connector
- IS = Centrifugal pump, suction pipe connector
- IID = Bilge pump, discharge pipe connector
- IIS = Bilge pump, suction pipe connector

Self-priming centrifugal pumps are sensitive to dirt and foreign bodies and should therefore not be operated without filter.

During the assembly of the pump make sure that the open connectors are covered previous to the installation of the pipe lines, so that foreign bodies (hard solder, welding globules etc.) cannot enter the pump housing; they can destroy the impellers even during initial operation of the pump.

The pump must be filled with water before the pump is taken into operation for the first time and also after the pump has been emptied completely.

#### **D. Stuffing Box Packing of the Centrifugal Pumps A and B**

The correct installation of the stuffing box and the maintenance of same are essential for the satisfactory performance of the pump.

If the stuffing box packing has been compressed after a longer period of operation and repeated tightening of the gland retainer, so that the gland retainer touches the housing, the stuffing box packing must be replenished. For this purpose unscrew the gland retainer and pull out the sleeve, so that additional packing rings can be inserted. If the stuffing box can no longer be sealed this way, the old packing must be removed and a new one installed in its place.

The gland retainer should only be tightened while the engine is not in operation.

#### **E. Heat Exchanger**

##### **a) Removal and Installation**

1. Drain the water of the outer and inner cooling water circulation.
2. Unscrew all connectors of the pipes connected to the heat exchanger (loosen the standard clamps and push aside the rubber sleeves).
3. Unscrew and remove the heat exchanger from its support; the combination heat-exchanger must also be removed from the bracket.
4. The installation is done in the reverse order.

##### **b) Testing for Leaks (heat exchanger removed)**

1. Unscrew the caps.  
(This is only possible at the heat exchangers version B.)
2. Connect the discharge hose of a plunger pump to the fresh water inlet pipe.
3. Plug the fresh water outlet pipe (blind-flange).
4. Fill in water and produce a gauge pressure of approx. 5 atm. with the plunger pump.
5. Jack up one end of the heat exchanger, so that possible leaks can be observed easily.
6. If there are leaks, the heat exchanger can be hard-soldered.
7. The assembly is done in the reverse order.

**Note:** In order to test the combination heat-exchanger proceed according to points 2 through 7.

Faulty combination heat-exchangers must be replaced.