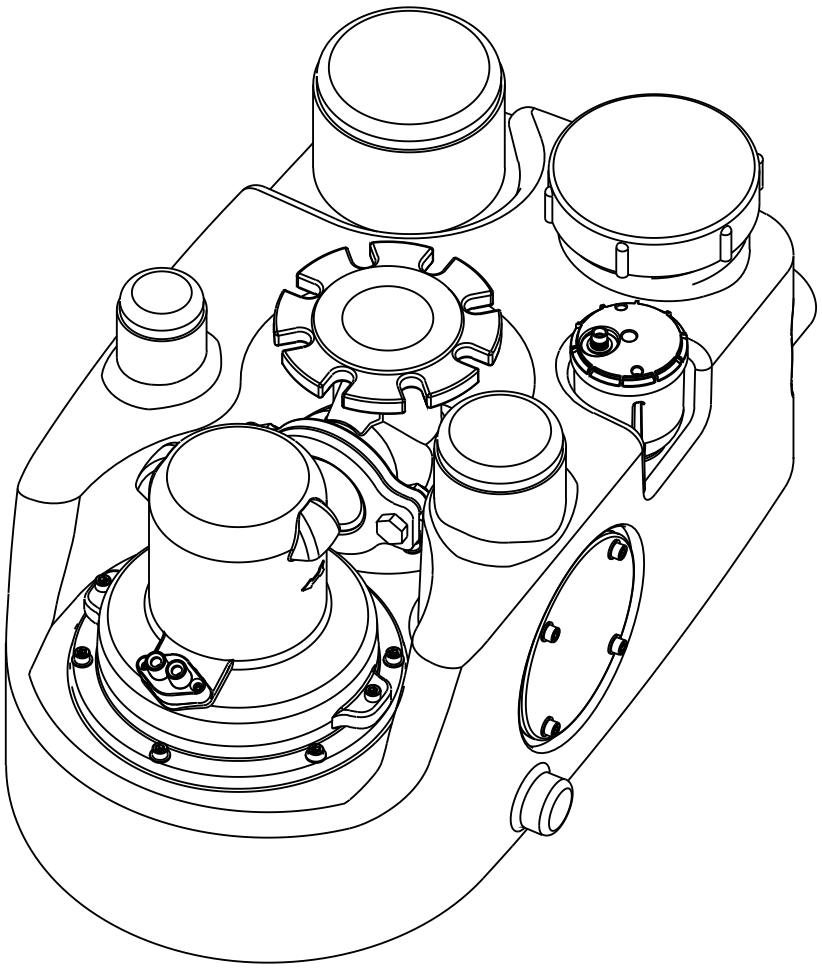
SULZER

Lifting Station Type ABS Sanimat 1000 - 2002
Lifting Station Type ABS Piranhamat 701 and 1002

1100-01



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Installation and Operating Instructions

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Lifting Station Type ABS Sanimat

1000 1002 2002

Lifting Station Type ABS Piranhamat

701 1002

Contents

1 General

1.1 Application areas

These lifting stations may not be used for the collection or pumping of flammable or corrosive liquids. Effluent containing grease, petrol, or oil, should only be brought to the lifting station via a separation device.

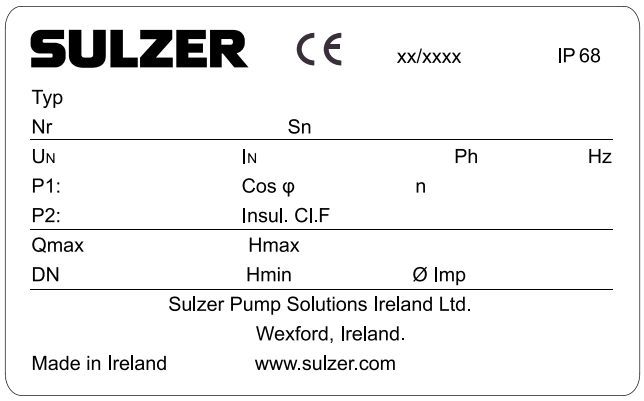
The flood-proof faecal lifting stations of the series Sanimat 1000, 1002, 2002 and Piranhamat 701, 1002 have been designed for the pumping of sewage from locations below the sewer backwash level in accordance with EN 12056.

ATTENTION ***As with all electrical devices, this product may fail due to operating errors, absence of mains voltage, or even a technical defect. Such a failure may result in the medium or water escaping. If damage may occur due to such failures, measures are required to avoid damage arising. In this respect, taking account of the conditions in question, use of an emergency generator, provision of an additional and appropriately connected second unit, and particularly the use of an off-grid alarm system, are to be considered.***

1.2 Nameplate

We recommend that you record the data from the original nameplate in the corresponding form below, and maintain it as a source of reference for the ordering of spare parts, repeat orders and general queries.

Always state the pump type, item number and serial number in all communications



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Legend

Type	Pump type	
Nr./Sn	Item number/Serial number	
xx/xxxx	Production date (week/year)	
UN	Rated voltage	V
IN	Rated current	A
	Frequency	Hz
P1	Rated input power	kW
P2	Rated output power	kW
n	Speed	min-1
Qmax	Max. flow	m^3/h
Hmax	Max. head	m
Ø Imp.	Impeller diameter	mm
DN	Discharge diameter	mm

Figure 1: Nameplate, standard version

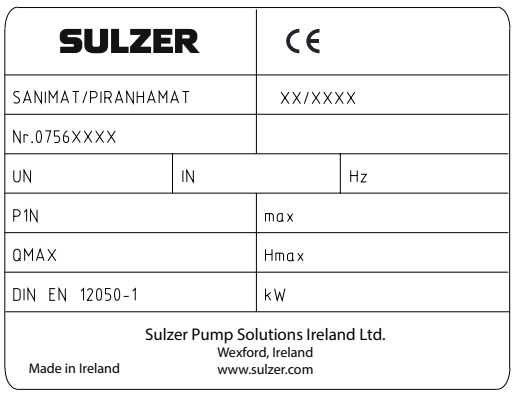

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Figure 2: Nameplate, collection tank Sanimat/Piranhamat

1.3 Design of faecal lifting station Sanimat 1000 with ball valve

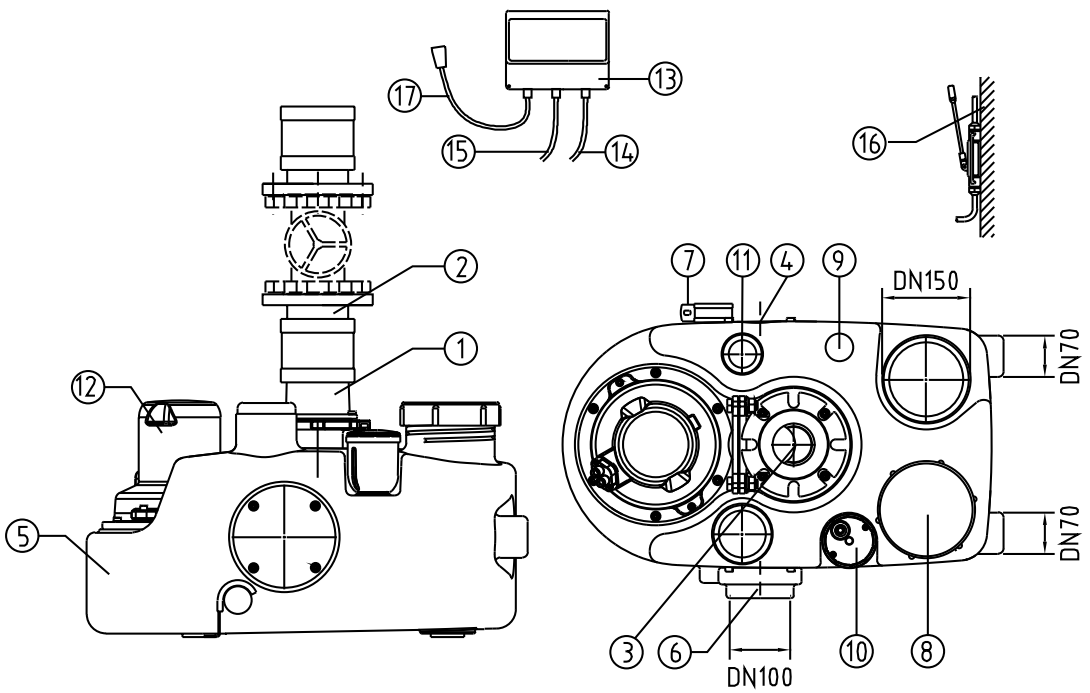


Figure 3: Design of the lifting station Sanimat 1000 with ball valve

1. Discharge connection with DIN flange DN 80
2. Discharge line connection with DIN flange DN 80 and 4” flexible pipe connector supplied as standard .
3. Non-return ball valve.
4. Inlet port (height 220 mm).
5. Collection tank of synthetic material, odour-tight and corrosion resistant.
6. Inlet port (height 180 mm).
7. Anti-flotation brackets for securing lifting station to floor.
8. Inspection opening on the collection tank with threaded shut-off piece.
9. Port (dia. 40 mm) for inserting the submerged tube when connecting the hand membrane pump.
10. Level control by means of submerged tube in the tank.
11. Vent port (DN 70) for connection of the vent line by means of a flexible pipe connector.
12. Sulzer submersible sewage pump, three-phase 400 V, single-phase versions 230 V.
13. Control unit.
14. Cable connected between the submerged tube and the control unit.
15. Motor cable, 4 G 1 for three-phase and single-phase versions, cable length from tank to control box 4 m, from control box to plug 1.5 m.
16. Hand membrane pump (accessory) for emptying the tank in the event of a power failure, or if repair work is necessary.
17. Plug power supply.

NOTE ***The hand membrane pump should not be fastened on to the collection tank.***

1.4 Design of faecal lifting station Sanimat 1002 / Piranhamat 1002

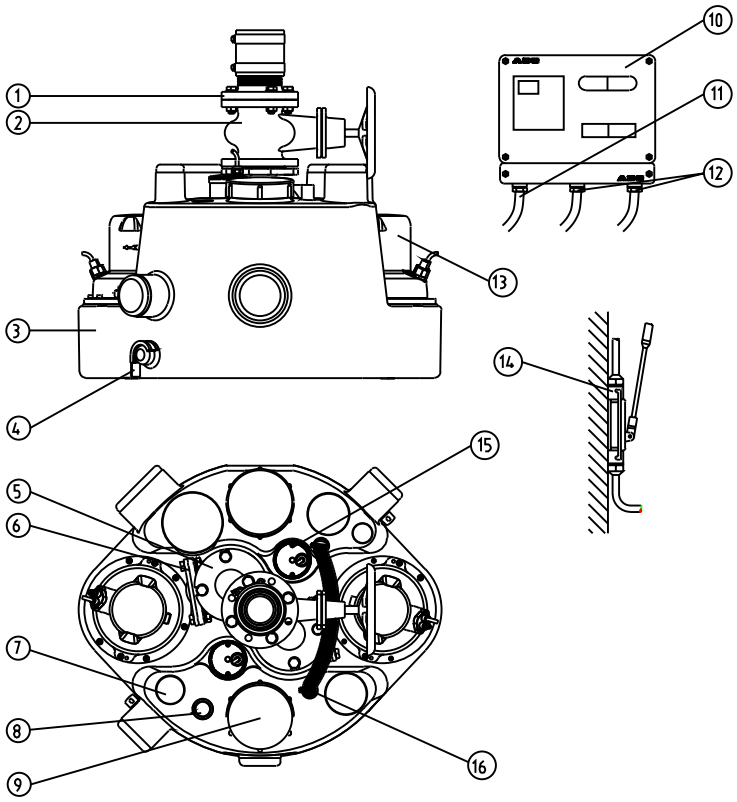


Figure 4: Design of the lifting station Sanimat 1002 and Piranhamat 1002

1. Discharge line connection with DIN flange DN 80 and 4” flexible pipe connector supplied as standard (Piranhamat G1¼“).
2. Shut-off valve, required in the discharge line in accordance with EN 12056.
3. Collection tank of synthetic material, odour-tight and corrosion resistant.
4. Anti-flotation brackets for securing lifting station to floor (only with Sanimat).
5. Intermediate piece with DIN flange DN 80 (only with Sanimat).
6. Non-return ball valve.
7. Vent port (DN 70) for connection of the vent line by means of a flexible pipe connector.
8. Port (dia. 40 mm) for inserting the submerged tube when connecting the hand membrane pump.
9. Inspection opening for collection tank with threaded shut-off piece.
10. Control unit.
11. Control line, connected between the submerged tube and the control unit.
12. Motor cable, 4 G 1.5 for three-phase and 7 G 1.5 with single-phase versions, cable length from tank to control box 4 m, with single unit an additional 1.5 m cable from control box to plug.
13. Sulzer submersible sewage pump, three-phase 400 V, single-phase versions 230 V.
14. Hand membrane pump for emptying the collection tank in the event of a power failure or if repair work is necessary.
15. Level control by means of submerged tube in tank.
16. Connection port for transverse connection of vent tube in order to be able to vent both sides of the collection tank.

NOTE ***Items 2 and 14 are not supplied as standard. The hand membrane pump should not be fastened directly to the collection tank.***

1.5 Design of faecal lifting station Piranhamat 701

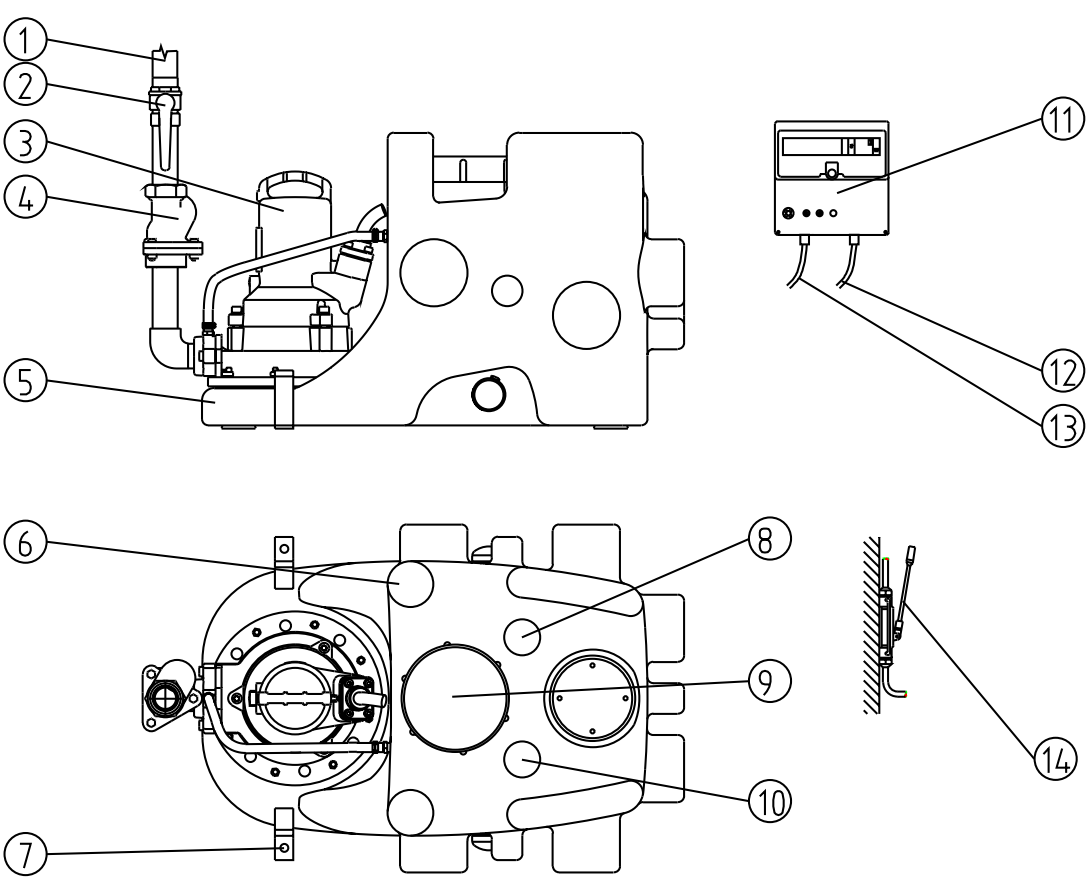


Figure 5: Design of the lifting station Piranhamat 701

1. Discharge line connection G1¼“.
2. Shut-off valve, required in the discharge line in accordance with EN 12056.
3. Sulzer submersible sewage pump, three-phase 400V, single-phase versions 230V.
4. Ball-type, non-return valve.
5. Collection tank of synthetic material, odour-tight and corrosion resistant.
6. Vent port (DN 70) for connection of the vent line by means of a flexible pipe connector.
7. Anti-flotation brackets for securing lifting station to floor.
8. Port (Ø40 mm) for inserting the submerged tube when connecting the hand membrane pump.
9. Inspection opening for collection tank with threaded shut-off piece.
10. Level control by means of submerged tube in tank.
11. Control unit.
12. Motor cable, 4 G 1,5 for three-phase and 7 G 1,5 with single-phase versions, cable length from tank to control box 4 m, with single unit an additional 1.5 m cable from control box to plug.
13. Plastic hose as a control line, connected between the submerged tube and the control unit.
14. Hand membrane pump for emptying the collection tank in the event of a power failure, or if repair work is necessary.

NOTE ***Items 2, 4, and 14 are not supplied as standard. The hand membrane pump should not be fastened directly to the collection tank.***

1.6 Design of faecal lifting station Sanimat 2002

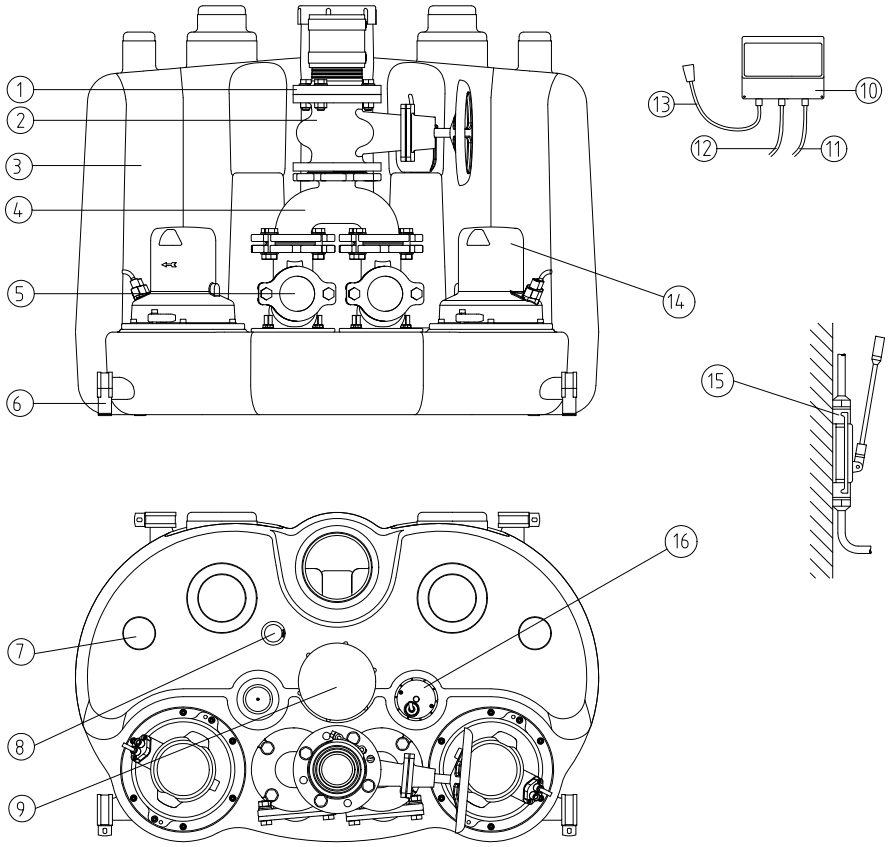


Figure 6: Design of the lifting station Sanimat 2002

1. Discharge line connection with DIN flange DN 80 and 4” flexible pipe connector supplied as standard.
2. Shut-off valve, required in the discharge line in accordance with EN 12056.
3. Collection tank of synthetic material, odour-tight and corrosion resistant.
4. Intermediate piece with DIN flange DN 80.
5. Non-return ball valve.
6. Anti-flotation brackets for securing lifting station to floor.
7. Vent port (DN 70) for connection of the vent line by means of a flexible pipe connector.
8. Port (dia. 40 mm) for inserting the submerged tube when connecting the hand membrane pump.
9. Inspection opening for collection tank with threaded shut-off piece.
10. Control unit.
11. Cable connected between the submerged tube and the control unit.
12. Motor cable, 4 G 1 for three-phase and single-phase versions, cable length from tank to control box 4 m, from control box to plug 1.5 m.
13. Plug power supply.
14. Sulzer submersible sewage pump, three-phase 400 V.
15. Hand membrane pump for emptying the collection tank in the event of a power failure or if repair work is necessary.
16. Level control by means of submerged tube in tank.

NOTE ***Items 2 and 15 are not supplied as standard. The hand membrane pump should not be fastened directly to the collection tank.***

1.7 Description

The flood-proof faecal lifting stations of the series Sanimat 1000, 1002, 2002 and Piranhamat 701, and 1002 consist of a gas- and odour-tight synthetic collection tank in acordance with EN 12050-1, a submersible sewage pump (two submersible pumps in the case of Sanimat 1002, 2002 and Piranhamat 1002), together with a control panel with level control system. The collection tank is equipped as standard with a number of closed inlet ports. These ports are set at various heights, and at diameters DN 70, DN 100 and DN 150, and may be opened as required.
The submersible sewage pump(s) S13/4 W, S14/4 D, S22/4 D, S30/2 D or Piranha S17/2 W, S17/2 D is/are fitted as standard.
The stator winding has been designed as Class F.
The Protection Type of the motor is IP 68, i.e., the motors are fully flood-proof.

The motor shaft is supported in lubricated-for-life ball bearings. The shaft sealing on the motor side is by means of a radial lip seal and on the medium side by two radial lip seals. With the Piranhamat 701 and 1002 sealing on the motor side is by means of a radial lip seal and on the medium side by a mechanical seal.

The hydraulic of the Sanimat 1000, 1002 and 2002 consists of a vortex type impeller and a volute. The impeller is manufactured in cast iron (EN-GJL-250).

The hydraulic of the Piranhamat 701 and 1002 has the Piranha shredding system consisting of a spiral bottom plate containing a stationary cutter ring with cutting edges, and a shredding rotor located below the impeller, for optimum blockage-free running.

The sewage entering via the inlet ports is collected in the odour-tight collection tank.
When a specified liquid level is reached the automatic level control switches on the submersible pump and switches it back off after the collection tank has been emptied.

In the case of twin pumping units (Sanimat 1002, 2002 and Piranhamat 1002) the starting sequence of the pumps should be alternated. The second pump should be considered only as a reserve stand-by pump when calculating pumping output. If level 2 is reached then both pumps work simultaneously. If level 2 remains for longer than 60 seconds the alarm signal takes place.

The lifting stations Sanimat 1000, 1002 and 2002 are supplied with a built-in pressure sensor with membrane switches which (by means of flexible cable) can be connected to the control unit, and used to switch the pump automatically on and off.

The lifting stations Piranhamat 701 and 1002 are supplied with a built-in pipe which (by means of flexible pipe) can be connected to a membrane switch in the control unit, and used to switch the pump automatically on and off.

2 Safety

The general and specifc health and safety guidelines are described in detail in the “Safety Instructions for Sulzer Products Type ABS” booklet. If anything is not clear or you have any questions as to safety make certain to contact the manufacturer Sulzer.

This unit can be used by children aged 8 years and above, and persons with reduced physical, sensory, or mental capabilities, or lack of experience and knowledge, when they have been given supervision or instruction concerning the safe use of the device and understand the hazards involved. Children must not play with the appliance. Cleaning and user maintenance should not be performed by children without supervision.

3 Transport

During transport the unit should not be dropped or thrown.

The unit should never be raised or lowered by the power cable.

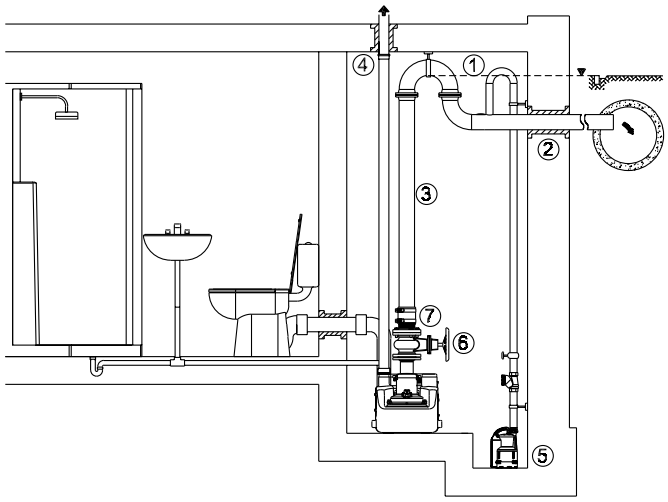
Any hoist used must be adequately dimensioned for the weight of the unit.

All relevant safety regulators as well as general good technical practice must be complied with.

4 Mounting and installation

NOTE ***We recommend that original Sulzer installation accessories be used for mounting and installation of the unit***

As well as good general technical practices, particular attention must be paid to the safety regulations covering work in closed areas.



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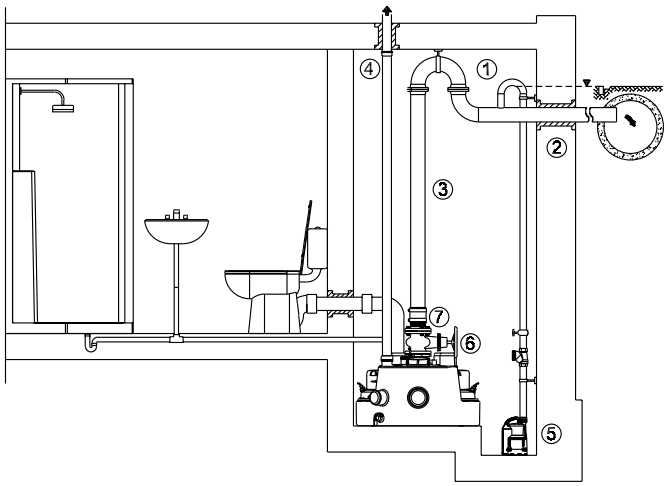
1 Anti-siphon loop
2 Wall opening
3 Discharge line
4 Vent line
5 Dewatering pump
6 Shut-off valve
7 Flanged sleeve with flexible connector

Figure 7: Installation example Sanimat 1000



1095-01

1 Anti-siphon loop
2 Wall opening
3 Discharge line
4 Vent line
5 Dewatering pump
6 Shut off valve
7 Flanged sleeve with flexible connector

Figure 8: Installation example Sanimat 1002

4.1 Site requirements

The rooms in which lifting stations are installed must be adequately dimensioned to ensure that a working area of at least 60 cm width or height is available at the sides or above all control elements or items where maintenance might be required.

Electrical supply / earth:
Three-phase connection: 3 x 400 V + N + Earth
Single-phase supply: 1 x 230 V + N + Earth

Required fusing:
Three-phase connection at 400 V: 3 x 16 A, slow blow
Single-phase connection at 230 V: 1 x 16 A, slow blow

NOTE ***Fusing, cable cross-section, and voltage drop of the power line, must comply with DIN/EN and the relevant local electricity supply regulations.***

Any openings required in walls or ceilings for discharge, vent, or inlet lines, must be of adequate dimensions so that the openings used can be sealed off using noise absorbing materials.
The inlet lines must be laid in such a manner that there is a continuous fall of the prescribed gradient to the inlet ports of the collection tank.

NOTE ***When installing lifting stations the noise protection regulations in buildings to DIN 4109 should be observed.***

4.2 Installation of the collection tank

Determine the installation location and set up the tank so that it is on level ground and horizontal in all directions.
Secure the collection tank against movement or floating with the aid of plugs (3), and hex screws and washers (2).

ATTENTION ***Do not overtighten hex screws or the collection tank may be damaged.***

NOTE ***The collection tanks of the Sanimat 1000 series may also be set up in mirror image manner.***

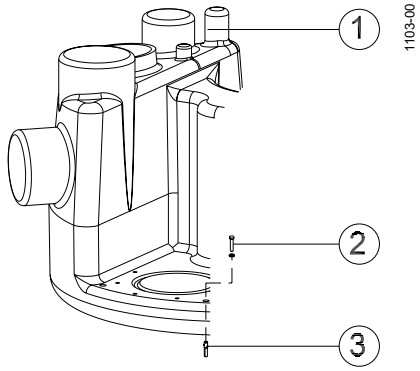


Figure 9: Installation Piranhamat 1002

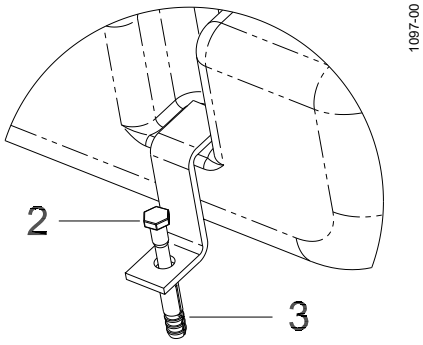


Figure 10: Installation Piranhamat 701

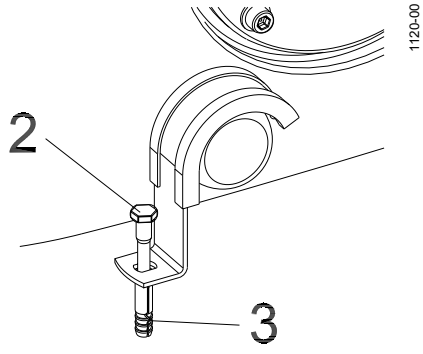


Figure 11: Installation Sanimat 1000, 1002 & 2002

NOTE ***Hexagon head wood screw (2) and dowel (3) not supplied.***

4.3 Discharge line

The discharge line must be installed in compliance with the relevant regulations.

DIN 1986/100 and EN 12056 applies in particular to the following:

- The discharge line should be fitted with a backwash loop (180° bend) located above the backwash level and should then flow by gravity into the collection line or sewer.
- The discharge line should not be connected to a down pipe.
- No other inflows or discharge lines should be connected to this discharge line.

ATTENTION The discharge line should be installed so that it is not affected by frost.

One built-in, non-return ball type valve is supplied as standard with the collection tank Sanimat 1000.
Two built-in, non-return ball type valves are supplied as standard with the collection tank Sanimat 1002 & 2002.
Depending on type, either one or two non-return ball type valves are supplied as standard with the collection tank Piranhamat 1002.

The vent line is connected by means of a push-on sleeve to the vertical outlet at the top of the collection tank.
It should be of constant cross-section (min. DN 70) and should have a continuous rise to above roof level.
The inflow, discharge, and vent lines must be installed with insulated clamping devices adequate to support the pipe work in such a manner that no stress is transferred.

4.3.1 Shut-off valve

The regulation EN 12056-4 states that for sizes from DN 80 a shut-off valve suitable for sewage should be fitted immediately on top of the Sanimat collection tank.

4.4 Connection of inflows

The wastewater inflow sources can be connected to the horizontal or vertical ports by means of push-on sleeves.

4.4.1 Preparation of inflow and outflow ports

All ports are closed off when the unit is supplied and must be opened to make use of them. This is done by cutting off approximately 10 mm from the ends of the selected ports using a saw.
The pipes to both the inlet and outlet ports must be installed so they are not subjected to any stresses. The weight of the pipes (including water in them) must be supported on site by adequate supports (also with plastic pipe lines).

4.4.2 Opening of the collection tank inlet ports

Only open inlet ports that are to be used. Saw off as little as possible so that as much material as possible is left for the plug connection.
File down sharp edges inside and outside.

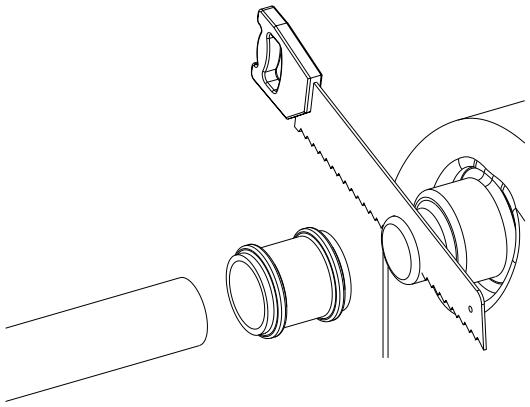


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Figure 12: Opening the connections on the collection tank

4.5 Level control

The Sanimat 1000, 1002 and 2002 level control is a pneumatic type with submerged tube and a control line (cable) to the control unit. The Piranhamat 701 and 1002 level control is a pneumatic type with submerged tube and a control line (plastic hose) to the control unit.
The submerged tube is installed in a fixed manner in the collection tank. The required switching and control devices are already fitted in the control unit.

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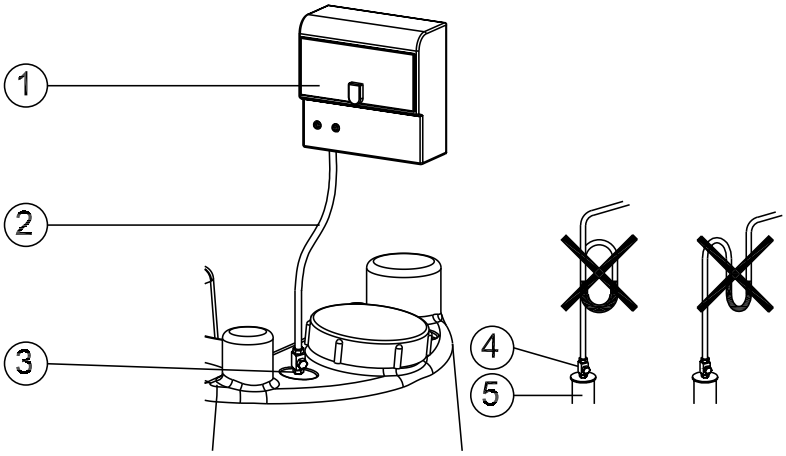

Figure 13: Installation of control line (plastic hose)

1	Control unit	4	Screwed connector submerged tube, SW13
2	Control line	5	Submerged tube
3	Spigot nut		

ATTENTION ***The control unit itself (1) should be installed above possible flood level in such a manner that the control line (2) has a continuous rise to it.***

Control line (2) has a continuous rise as shown in Figure 13.

The control line should be shortened where necessary and pushed on to the hose nozzle of the submerged tube screw connector (4).

The submerged tube screw connector is prevented from turning by a spigot nut (3), fully tightened using an open ended spanner SW 13.

ATTENTION ***The submerged tube screw connector (4) should not be twisted.***

4.6 Installation of the control unit

ATTENTION ***The control unit should be fitted above possible flood level in a well ventilated room and in an easily accessible position. Protection Class of the control unit IP 54.***

The control unit should be secured at all fixing points. The fixing holes are accessible after unscrewing the lower housing cover.

ATTENTION ***Do not drill through the housing of the control unit itself.***

NOTE ***The mounting location of the control unit should be chosen in such a manner that the control line rises in a continuous manner to it. The control line must not be kinked.***

NOTE ***A number of different control box models exist. Please check the wiring diagram/ instruction manual in the control box.***

4.7 Electrical connection

Before commissioning, an expert should check that one of the necessary electrical protective devices is available. Earthing, neutral, earth leakage circuit breakers, etc. must comply with the regulations of the local electricity supply authority and a qualified person should check that these are in perfect order.

ATTENTION ***The power supply system on site must comply with VDE or other local regulations with regard to cross-sectional area and maximum voltage drop. The voltage stated on the nameplate of the pump must correspond to that of the mains***

The power supply cable must be protected by an adequately dimensioned slow-blow fuse corresponding to the rated power of the pump.

The incoming power supply as well as the connection of the pump itself to the terminals on the control panel must comply with the circuit diagram of the control panel as well as the motor connection diagrams and must be carried out by a qualified person.

All relevant safety regulators as well as general good technical practice must be complied with.

NOTE ***The overload relay in the control unit has been correctly set at the factory.***

NOTE ***Please consult your electrician.***

4.8 Wiring diagrams

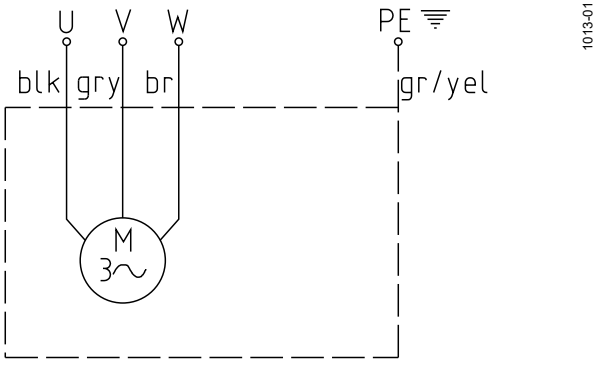

Figure 14: Three Phase

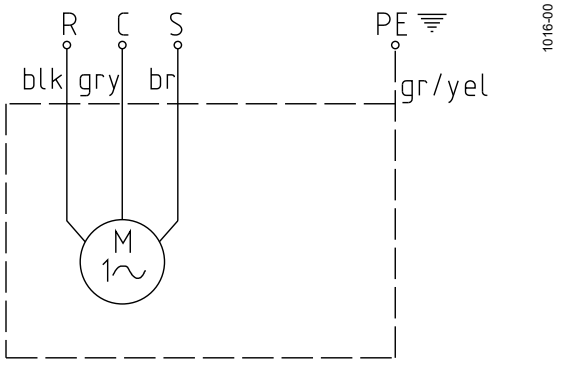

Figure 15: Single Phase

Legend

U, V, W	=	Live	br	=	Brown
PE	=	Earth	R	=	Run
gr/yel	=	Green/Yellow	S	=	Start
blk	=	Black	C		Common (Neutral)
gry	=	Grey			

4.9 Checking direction of rotation

The safety hints in the previous sections must be observed!

When three phase units are being commissioned for the first time, and also when used on a new site, the direction of rotation must be carefully checked by a qualified person.

The direction of rotation should only be altered by a qualified person.

ATTENTION ***The following characteristics of a submersible pump indicate a probable incorrect direction of rotation.***

- The submersible pump runs unevenly and vibrates strongly.
- The submersible pump does not achieve full output and the emptying times for the collection tank are too long.
- The submersible pump makes unusual running noises.
- Alarm sounds on control unit. Consult the Installation and Operating Instruction manual supplied with the control unit

4.10 Installation of the accessories

4.10.1 Installation of the shut-off valve and flanged sleeve

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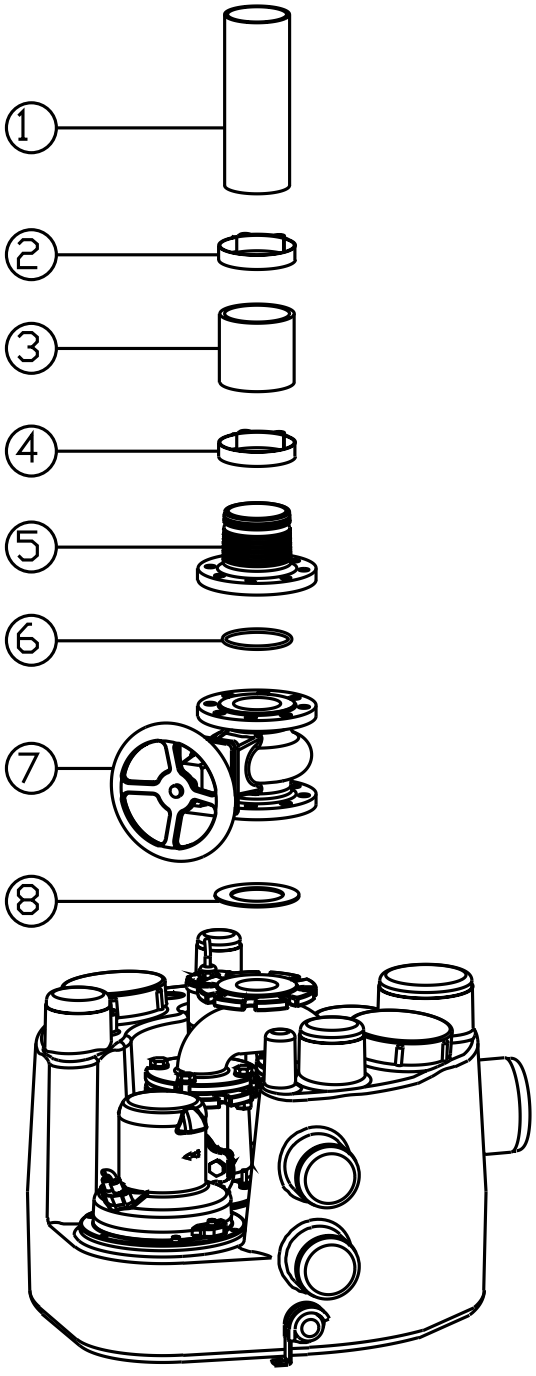


Figure 16: Installation of the shut off valve and flanged sleeve

Place shut-off valve DN 80 (7) with flat gasket (8) on the tank discharge flange DN 80 and fasten using hex bolts and nuts. Place flanged sleeve (5) with o-ring (6) on the shut-off valve and fasten using hex bolts and nuts. Press flexible hose (3) onto the flanged sleeve (5) and tighten clamps (4). Slide discharge line (1) into the flexible hose (3) and tighten clamps (2).

4.10.2 Installation of the hand membrane pump (wall mounted)

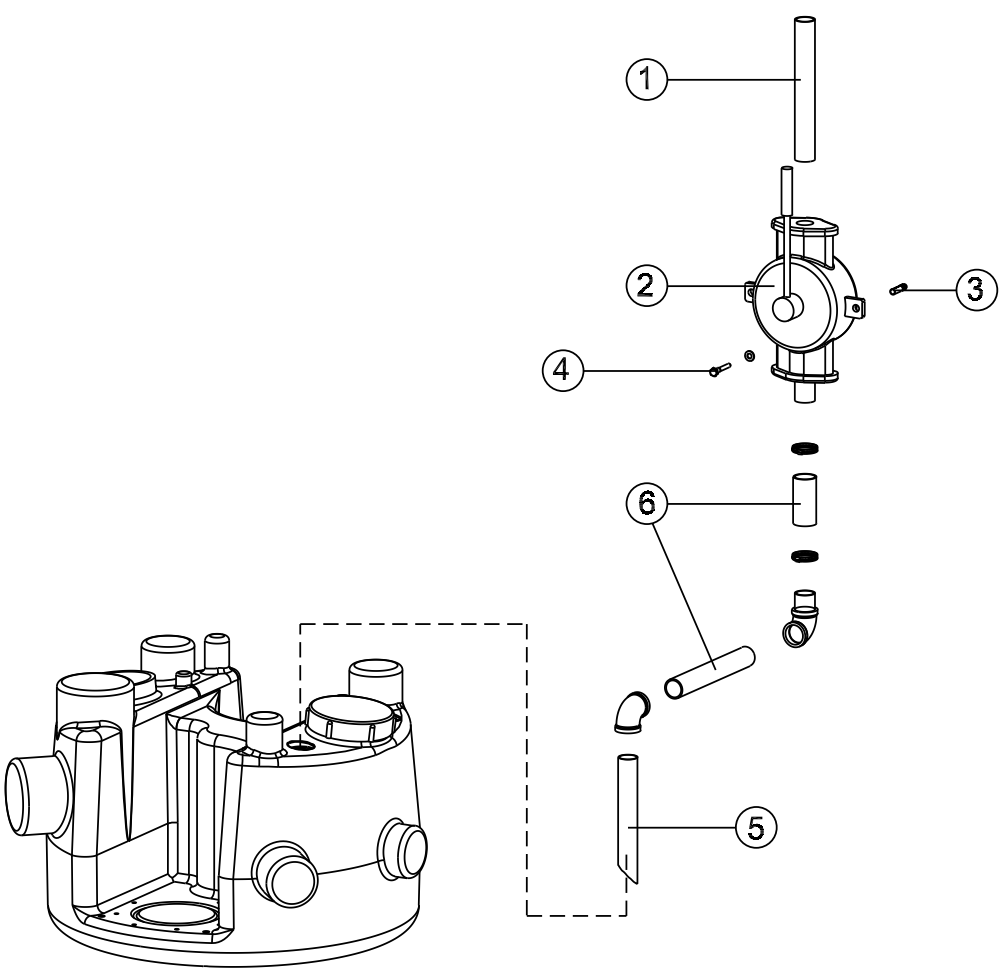


Figure 17: Installation of hand membrane pump

ATTENTION ***The discharge line (1) using the hand membrane pump must be installed independently of the discharge line of the Sulzer submersible sewage pump, and likewise must be provided with an anti-siphon loop located above the sewer backwash level (see also installation example Figure 7). The discharge lines must be brought to a location after the anti-siphon loop.***

Determine a fixing location for the hand membrane pump (2), which is easily accessible and fasten using plugs (3) and screws (4).
The plug at the selected opening in the tank is pressed inwards and removed.
The PVC immersion tube (5) [outer dia. 40 mm] is pushed into the tank until fully home with the tapered section pointing downwards.

Either a pipe with an adhesive sleeve or a hose with a clamp is used then as a suction line (6).

ATTENTION ***The hand membrane pump should never be fastened to the collection tank.***

5 Commissioning

The safety hints in the previous sections must be observed!

Before commissioning, the unit should be checked and a functional test carried out. Particular attention should be paid to the following:

- Have the electrical connections been carried out in accordance with regulations?
- Is the direction of rotation correct - even if run via an emergency generator?
- Was the control line (plastic hose) laid in such a manner that it has a continuous rise?
- Was the collection tank secured against floating?
- Has venting been installed in accordance with the regulations?

ATTENTION ***Before commissioning, the collection tank should be cleaned of any large particles and filled with water. If the control line (plastic hose) was connected to the submerged tube with the tank already full, then the collection tank must be fully emptied once by activation of the "Hand" selector switch. After commissioning, the faecal lifting station is normally operated with the selector switch in "Auto" position.***

5.1 Setting of the run-on time: Sanimat 1000, 1002, 2002 and Piranhamat 701, 1002

The run-on time of the submersible pump is set at manufacture in the control unit at 2 seconds. This value was set by reference to a total head (including friction losses of 3.5 metres).
If the total head is different then the run-on time can be adjusted by means of the setting switch at the front plate of the control unit.

In order to determine the correct run-on time, the level in the collection tank should be checked after completion of an automatic pumping cycle.

The run-on time for the Sanimat 1000, 1002 and 2002 is automatically set by the control unit

ATTENTION ***The run-on time is correctly set if the lower level of the submerged tube is clear of the liquid, and the submersible pump then switches off. If the run-on time is excessively long then noisy operation will be the result (snore operation of the submersible pump).***

6 Maintenance

Before commencing any maintenance work the unit should be completely disconnected from the mains by a qualified person and care should be taken that it cannot be inadvertently switched back on.

When carrying out any repair or maintenance work, the safety regulations covering work in enclosed areas of sewage installations as well as good general technical pratices should be followed.

Servicing must only be carried out by qualified personnel.

To avoid danger if the power cable is damaged, it must be replaced by the manufacturer or its service agent or a similarly qualified person.

NOTE ***The maintenance hints given here are not designed for "do-it-yourself" repairs as special technical knowledge is required.***

NOTE ***A maintenance contract with our Service Department will guarantee you the best technical service under all circumstances.***

6.1 Maintenance of lifting stations in accordance with EN 12056.

It is recommended that the lifting station be inspected monthly and its function checked.

In accordance with EN regulations, the lifting station should be maintained by a qualified person at the following intervals:

- in commercial premises every three months.
- in apartment blocks every six months.
- in a single family home once a year.

In addition we recommend that a maintenance contract be taken out with a qualified company.

6.2 General maintenance hints

Sulzer lifting stations are reliable quality products each being subjected to careful final inspection. Lubricated-for-life ball bearings together with monitoring devices ensure optimum pump reliability provided that the pump has been connected and operated in accordance with the operating instructions.

Should, nevertheless, a malfunction occur, do not improvise but ask your Sulzer Customer Service Department for assistance.

This applies particularly if the unit is continually switched off by the current overload in the control panel, by the thermal sensors of the thermo-control system, or by the seal monitoring system (DI).

Regular inspection and care is recommended to ensure a long service life.

NOTE ***The Sulzer Service Organisation would be pleased to advise you on any applications you may have and to assist you in solving your pumping problems.***

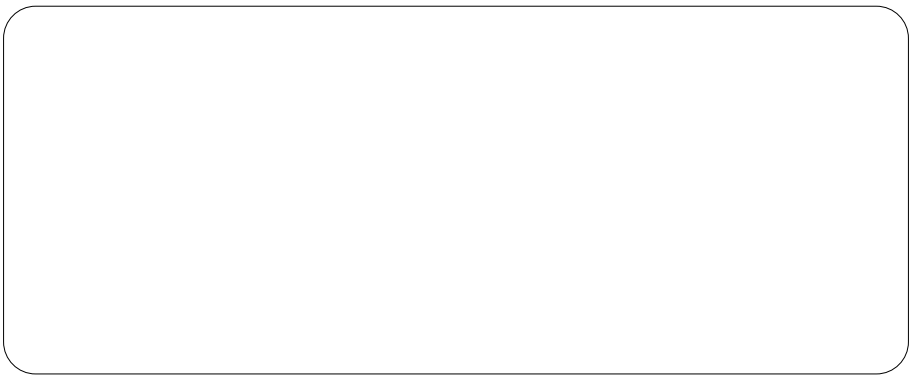
NOTE ***The Sulzer warranty conditions are only valid provided that any repair work has been carried out in Sulzer approved workshop and where original Sulzer spare parts have been used.***

6.3 Oil filling and changing

Waste oil must be disposed of in the proper manner.

6.4 Cleaning of level control pipe

It is recommended that the level control pipe be examined monthly to ensure that no build up of solids occurs inside the pipe thus preventing accurate level control of the lifting station. Build-up of solids inside the pipe can cause continuous pumping, no pumping, or inaccurate switching levels. The pipe can be pulled out of the tank and cleaned, rinsed and replaced. It should be greased as it is put back in.



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