Sewage ejection units

Miniboy and Boy

Operation manual

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Declaration of conformity

We, the **ZEHNDER Pumpen GmbH**
Zwönitzer Straße 19
08344 Grünhain-Beierfeld,

herewith declare
that the sewage ejection units of the type series **Miniboy and Boy**

conform to the following relevant regulations:

- EC low voltage directive 2006/95/EC
- EMC directive 2004/108/EC
- Machinery directive 2006/42/EC

Applied conform standards, particularly

- EN 809
- EN 60 335-1
- EN 60 335-2-41
- EN 50 081-1
- EN 50 082-1

Grünhain, 22/12/2009

Matthias Kotte
Product development

1. General

1.1 Introduction

This operating manual is valid for the sewage ejection units of the type series Miniboy and Boy.
If the instructions of the operation manual – especially the safety instructions - are not observed, or in case of unauthorized modifications of the unit or the installation of non-original spare parts, the guarantee expires automatically. The manufacturer assumes no liability for damages resulting from such behaviour!

Such as any other electrical device, this product may fail due to absence of mains voltage or a technical failure. If damage could occur, an emergency power supply, a hand diaphragm pump, a second unit (duplex unit) and/or an off-grid alarm device should be provided according to the application. We as manufacturer are at your disposal for consultation also after the purchase. In case of failures or damages, please contact your retailer.

Manufacturer: ZEHNDER Pumpen GmbH
Zwönitzer Straße 19
08344 Grünhain-Beierfeld

Manufactured sizes: Miniboy 1.5 W
Miniboy and Boy 1.5 D
Miniboy and Boy 3.0 D
Miniboy and Boy duplex 1.5
Miniboy and Boy duplex 3.0

State of the operation manual: August 2011

1.2 Enquiries and orders

In case of enquiries or orders, address yourself to your specialist retailer.

1.3 Technical data

Type	Output power P_1 (kW)	Output power P_2 (kW)	Voltage U (V)	Power input I_{max} (A)	Pressure socket	Discharge flow Q_{max} (m^3/h)	Discharge height H_{max} (m)
Miniboy 1.5 W	2.0	1.5	230	9.3	DN 100 DN 80	40	7.0
Miniboy and Boy 1.5 D	1.9	1.5	400	3.3	DN100 DN 80	40	7.0
Miniboy and Boy 3.0 D	4.0	3.0	400	6.9	DN100 DN 80	60	11.0
Miniboy and Boy duplex 1.5	2 x 2.0	2 x 1.5	400	3.3	DN 100	40	7.0
Miniboy and Boy duplex 3.0	2 x 4.0	2 x 3.0	400	6.9	DN 100	60	11.0

Type	Rotational speed n (min^{-1})	Gross volume V (l)	Required place LxW (mxm)	Running wheel shape	Supply	Cable length (m)	Inlet height H (mm)
Miniboy simplex	1400	55	1 x1	impeller	DN 100	3.5	180 and 225
Boy simplex		140	1x1		DN 100		225 and 400
Miniboy duplex		150	1.5 x1.5		DN 100		180 and 385
Boy duplex		200	1.5 x 1.5		DN 100/150		285 and 505/650

Maximal media temperature: 55°C

Materials

Tank.....PE-LD
Running wheel.....GRP (impeller),
Seal carrier.....PP
Motor shaft.....Stainless steel
Seals.....NBR

1.4 Range of application

The sewage ejection units of the type series Miniboy and Boy are used for the disposal (collection and conveyance) of domestic and industrial wastewater, also with excrements, which accumulates below the backwater level of the canal.
Duplex units are used where a disruption of the sewage disposal must not occur according to DIN 1986.
The sewage ejection units of the type series Miniboy and Boy must not be used for the conveyance of sewage containing substances which may affect of damage the materials of the pump or the collecting tank.

Limits of application

- **The pump station is not designed for continuous operation! The conveyance data mentioned on the type plate apply only to periodic duty (S3 25 %).**
- **The maximum permitted inlet quantity must always be less than the discharge flow of a pump (see type plate)**

1.5 Accessories

The sewage ejection units of the type series Miniboy and Boy are completely delivered with:
- Pneumatic control and switch box
- Fixing material
- Inlet bend
- Flexible connection for ventilation
- Check valve(s)
- Flexible connection for pressure junction
- Connecting piece (only duplex unit)

2. Safety:

(from:“VDMA sheet 24 292“)

The operation manual at hand provides basic notes which must be taken into account during assembly, operation and maintenance works. Therefore, before assembly and commissioning, this operation manual must be read by the assembler as well as by the responsible personnel/operator at all costs. It always must be available on site of operation of the machine/unit.

The general safety notes listed under the main point safety are not the only notes to be taken into account. Please also observe the specific safety instructions, such as those for private use, listed under other main points.

2.1 Marking of the notes contained in the operation manual

The safety notes contained in this operation manual which can cause danger to persons are specifically marked by the following general danger symbol

Safety sign according to DIN 4844 - W 9,

The following symbol warns against dangers caused by voltage

Safety sign according to DIN 4844 - W 8.

In case of safety notes the non-observance of which can cause danger to the machine and its functioning, the word ATTENTION! is inserted.

Notes that are directly attached to the machine, such as.

- arrow indicating the direction of rotation
- marking of liquid connections

must be observed and kept in completely readable condition at all costs.

2.2 Personnel development and training

The personnel responsible for operation, maintenance, inspection and assembly must have the corresponding qualifications for those types of work. Area of responsibility, competence and the surveillance of the personnel must be regulated precisely by the operator. If the personnel do not possess the necessary knowledge, they must be trained and instructed. By order of the operator, the instruction and training, if necessary, can be carried out by the manufacturer/supplier. Furthermore the operator must make sure that the personnel have completely understood the content of the operation manual.

2.3 Dangers in case of non-observance of the safety notes

The non-observance of the safety notes can cause dangers to persons as well as to the environment and the machine. If the safety notes are not observed, this can result in the loss of all compensation claims.

In detail, non-observance can for instance result in the following damages:

- Failure of important functions of the machine/unit
- Failure of the prescribed methods for maintenance and repair
- Endangerment of persons through electrical, mechanical and chemical influences
- Endangerment of the environment through leakage of hazardous substances

2.4 Safety-conscious way of working

The safety notes listed in this operation manual, the existent national regulations on accident prevention as well as possible internal working, operating, and safety instructions of the operator must be observed.

2.5 Safety notes for the operator/user

- Hot or cold machine components which could cause danger must be secured against contact by the customer.
- Protection against contact with moving parts (e.g. coupling) must not be removed while the machine is operating.
- Leakages (e.g. of the shaft sealing) of hazardous materials to be conveyed (e.g. explosive, toxic, hot) must be discharged in such a way that no danger arises for persons or the environment. The legal requirements must be observed.
- Endangerments through electric power must be eliminated (details concerning this, see e.g. the regulations of the VDE (German Association for Electrical, Electronic and Information Technology) and the local energy suppliers).

2.6 Safety notes concerning maintenance, inspection, and assembly works

The operator must make sure that all maintenance, inspection, and assembly works are carried out by authorised, skilled, and qualified personnel which are adequately informed by having thoroughly studied the operation manual.
Generally, works on the machine are only to be carried out when the machine is turned off. The procedure of switching off the machine, which is described in the operation manual, must be observed at all costs.
Pumps or pump units which convey media that are hazardous to health must be decontaminated. Immediately after completion of the works, all safety and protection devices must be reattached or reactivated.

Before restart, the points listed in the chapter commissioning must be taken into consideration.

2.7 Unauthorised modification of the machine and fabrication of spare parts

Retrofitting or modifications of the machine are permitted only after having consulted the manufacturer. Original spare parts and accessories authorised by the manufacturer ensure the safety. The use of other parts can lead to the removal of liability for the resulting damages.

2.8 Unauthorised modes of operation

The operational reliability is only guaranteed, if the machine is used as intended according to chapter 1 – General. The limit values stated in the data sheet must not be exceeded.

3. Transport and temporary storage

3.1 Transport

The sewage ejection units of the type series Miniboy and Boy must not be thrown or dropped. Furthermore, they should be transported in horizontal position.

3.2 Temporary storage/conservation

For temporary storage and conservation, it suffices if the unit is stored in a cool, dark, dry, and frost-protected place. The unit should be stored in horizontal position.

4. Description

4.1 General

The sewage ejection units of the type series Miniboy and Boy are simplex and/or duplex units ready for connection and entirely flood-proof with gas tight and odour-tight collecting tanks made of plastics. They are operated with vertical, blockage-free sewage pumps with automatic, pneumatic level control. They are completely equipped with a switch box and all necessary switching elements.

4.2 Composition and mode of operation

Sewage (natural incline) is guided through the included inlet bend 90° DN 100 (high temperature plastic sewage pipe) or through a lateral inlet DN 100 (high temperature plastic sewage pipe) into the collecting tank of the sewage ejection unit Miniboy and Boy. An optional inlet connection DN 150 with flange is available for the sewage ejection unit Boy duplex.
The collection container is designed for **pressureless operation**, viz. the incoming sewage is stored pressureless temporarily and afterwards conveyed into the sewer tunnel.
In the impact pipe screwed into the top side of the tank the water rises and compresses the air in the impact pipe until the pressure actuates the dynamic pressure switch in the switch box. In doing so, the pump is switched on and transports the water from the tank through the pressure pipe into the higher located channel. In case of the sewage ejection unit Miniboy duplex and Boy duplex, there is a changeover switch inside of the switch box effecting the alternating activation of the pumps. The second pump only switches on in case of an over-boost operation (one pump cannot handle the feed water quantity).
A check valve in the pressure pipe prevents the backflow of the water from the pressure pipe into the tank.
The switching device is equipped with an alarm buzzer activated in case of a failure of the pump(s) or in case of an excessive water level in the tank. Furthermore, there are alarm contacts inside of the switching device for alarm systems (bell, buzzer, etc.) to be connected external. For the location, please refer to the circuit diagram of the switching device.

5. Installation

5.1 Preparations

- A correct and proper montage is pivotal for the failure-free operation of the pump station. For this reason, the following points must be observed:
- The place of installation should be a well ventilated, dry and rust-free room.
- The place of installation must be large enough. The ceiling heights should be approx. 2 to 2.5 m. According to DIN 1986 part 3, the following applies: *„...All parts of the unit ...(and)...all control elements...must always be safely accessible and easy to operate. ...These parts of the unit must not be obstructed by stored parts, furniture, cover panels or several…“*
- The foundation of the installation room must be constructed for the possible loads depending on the dimensions of the unit.
- In rooms mostly located lower, ground and leakage water is accumulated. Due to this fact, a small chamber should be located in a corner of the room, where the liquids will be accumulated and can be disposed of using a cellar drainage pump.
- A ceiling hook below the place of installation of the pump station facilitates the assembly as well as possible maintenance and repair works on the pump.
- Before starting the assembly, all structural and cable dimensions should be controlled and compared with the dimensions of the unit. In doing to, it is important to ensure that the continuously declining inlet pipe is located not deeper than the inlet height of the collecting tank.

5.2 Assembly

During assembly, it is essential to ensure a zero-potential and tight installation of the pipelines and valves.

5.2.1 Placement

The sewage ejection units of the type series Miniboy and Boy will be adjusted on place of installation to existing pipelines. Here, it is placed in an exactly vertical position and fixed onto the floor using the included fixation screws.
DIN 19 760 part 1:*“...The excrements pump station must be designed in such a way that the fixing devices prevent torsion and buoying upwards...“*

5.2.2 Inlet

The inlet pipe(s) will be connected to the included inlet bend and/or to the lateral inlets. It must be constantly declining. Inclining passages within the inlet are forbidden. The necessary inlets must be opened using a circular-hole saw or a knife and must never be beaked in using a hammer!

Important:
When using the minimum inlet height of 180 mm it must be ensured, that the level control is adjusted in such a way, that the water level of the tank in normal operation slightly increases the lower edge up to a maximum filling of ½ of the inlet pipe before the pump switches on. In case of inlet pipes, dirt depositions are not excluded in this area and in extreme cases, the pipe could be blocked.

5.2.3 Pressure pipe

The mounting of a check valve into the pressure pipe of the pump station is mandatory:
DIN 19 760 part 3: *"...After breaking the discharge flow, backflow preventers must automatically prevent the backflow of the sewage from the pressure pipe. With the activation of the discharge, the backflow preventer must open automatically..."*
It is recommended to mount a gate valve behind the check valve, in order to facilitate the cleaning and/or a possible replacement of the check valve.
The included sealing ring, used for the connection of the pump station to pressure side, must be brushed with an anti-friction agent (acid-free oil), in order to ensure a better sealing during the assembly onto the tank.
The pressure pipe must be laid in a constantly inclining manner and without unnecessary steps in a bend via the level of backed-up water and afterwards constantly declining to the sewer junction. If necessary, pipelines and valves must be supported using pipe clamps or consoles.

ATTENTION When assembling the check valve onto the tank of the pump station, the sealing with the duplex bead construction must be mounted onto the tank. The sealing with one bead construction must be mounted between the check valve and the gate (bead to the check valve). The flange connections will be effected using 4 screws (in every 2nd hole). In case of an simplex unit, the threaded inserts for the fixation of the check valve are executed with two screw-hole circles (for DN 80 and DM 100). Please use the 4 threaded inserts for the nominal size of the check valve to be connected. In case of an simplex unit, a fixation in all 8 threaded inserts is not possible! For this case, the second sealing with a bead included to the check valves is not required!
ATTENTION The screws of the flange connections of the check valve(s) must be uniformly tightened across corners with a maximum torque of 15 Nm. (guideline value: approx. 1 turn of the nut after manual tightening). See also operation manual of the check valves.

5.2.4 Ventilation

The tank ventilation is directly connected to the breather pipe of the building or installed through the roof.

5.2.5 Electrical connection

Safety regulations

- **All used electric devices must comply with the standard IEC 364 / VDE 0100, that means, that the electrical sockets must be equipped with earthing terminals.**
- **The electrical connection may only be effected by an electrically skilled person! The relevant VDE regulations 0100 must be respected!**
- **The mains to which the unit is connected must be equipped with a highly sensitive separate earth leakage circuit breaker IA <30 mA in front of the control or, in order to prevent a failure of the control when the earth leakage circuit breaker is activated, one earth leakage circuit breaker per pump must be installed between the control and the pump. In case of an installation in bath or shower rooms, the respective DIN VDE 0100 part 701 regulations must be respected.**
- **Please respect the regulations of the EN 12 056-4.**
- **In case of a three-phase current supply, an external protection with automatic circuit breakers of characteristic K, in general 3-terminal mechanically blocked, must be executed. In doing so, the complete disconnection from supply is ensured and a 2-phase operation is excluded.**
- **All electrical devices, such as control, alarm sensor and power socket must be installed on a flood-proof position in dry rooms.**
- **Attention! Prior to every assembly and disassembly of the pump or other works on the unit, the unit must be disconnected from the mains.**
- **Due to an overload, the motor can overheat. Never touch the heat surfaces of the motor in case of an overheating.**
- **In case of using an extension cable, it must comply with the included connector cable concerning quality.**

The switching box must be mounted in such a way that the blue pneumatic hose for the pneumatic level control can be laid in a constantly inclining manner. This is indispensable to ensure a proper function of the automatic control. The connector of the simplex unit (CEE- and/or earthing type) is directly connected before commissioning.
Duplex units are connected to the electrical system according to the wiring diagram.
The wiring diagram for the wiring of the pump station is located in the switching box and should be leaved there in order to facilitate the work of maintenance and after-sales-service staff.

6. Commissioning

Before commissioning the unit, all connections must be checked for correct assembly; the check valve must be open.
Now, the connector is plugged into the power socket and, in case of three-phase units, the rotational direction of the pump is checked. This is effected with briefly adjusting the hand/0/automatic-switch to “hand“. During running down of the motor, the rotational direction can be compared via the inspection glass on the upper side with the right rotational direction (directional arrow). If the pump rotates in wrong direction, two of the three phases must be changed.

Disconnect the power supply before carrying out any kind of work on the unit!

Now, the hand/0/automatic-switch is adjusted to “automatic” and a test run is effected. For this purpose, a collecting tank is filled via the normal inlet (washbowl, toilet etc.). The unit must be automatically activated, pump out the tank and deactivated. After switching off, no water shall flow back from the pressure pipe into the tank.

Depending on mounting conditions and discharge height, the follow-up time must be adjusted in such a way that the pump discharges the collecting tanks as far as possible and runs dry for a short time (loud noise during pumping). After the pumping process, the impact pipe shall not dip into the liquid. The follow-up time can be adjusted on the switching device.
During test run, all pipes and valves are checked again for tightness and tightened again, if necessary.
If the pump station works properly, the switch rests in “automatic” position.

7. Maintenance/repair

7.1 Inspection- and maintenance intervals

Inspection- and maintenance intervals according to DIN 1986 part 31: *“Sewage ejection units shall be checked by the operator once per month for serviceability and tightness by observing a monitoring cycle...“*

The unit shall be maintains by an expert. The time intervals shall not be greater than

1st ¼ year in case of units in industrial companies
2nd ½ year in case of units in apartment buildings
3rd 1 year in case of units in single family houses

7.2 Maintenance works

Disconnect the power supply before carrying out any kind of work on the unit!

7.2.1 Collecting tank
Open the inspection cover and squirt the tank using a hose, in order to lose sediments from the tank walls.

7.2.2 Check valve
Open the inspection cover and clean the check valve from the inside.

7.2.3 Miscellaneous
All continuative maintenance works must be effected by the after-sales-service.

The following substances must not be fed:

- **Solid materials, fibrous materials, tar, sand, cement, ash, rough paper, paper towels, paper boards, rubbish, garbage, offal, greases, oils.**
- **All drainage objects lying above the backwater level (EN 12 056-1).**
- **Sewage with dangerous substances (DIN 1986-100), e.g. fatty sewage in industrial kitchens. The inlet may only be effected through a fat separator according to DIN 4040-1.**
- **Sewages containing substances which may attack or damage the materials of the pump of the collecting tank.**

8. Malfunctions; causes and elimination

Disconnect the power supply before carrying out any kind of work on the unit!

In order to disassemble the motor unit from the tank, only the 8 <u>Allen head screws</u> (pos. 13 of the spare parts list) must be loosed. The 4 hexagon screws (pos. 5 of the spare parts list) must not be loosed, because otherwise, the seal ring will be destroyed, oil will escape and the guarantee expires!

Failure	Cause	Removal
1. No motor rotation	- Voltage too low, no voltage	- Check the supply
	- Faulty power supply	- Corrective measure
	- Electric cable defective	- Replacement/after-sales-service
	- Failure in the condenser only in case of a 230 V pump	- Replacement/after-sales-service
	- Running wheel blocked	- Cleaning
	- Motor protection is switched off due to overheating, blockage, voltage failure	- Check/after-sales-service
	- Control failure	- Check/after-sales-service
	- Pneumatic hose and/or connection not tight	- Check/replacement
	- Motor defective	- Replacement/after-sales-service
2. Motor rotates but does not convey	- Running wheel blocked or worn	- Cleaning/replacement
	- Check valve blocked	- Cleaning
	- Gate valve blocked or worn	- Cleaning/open
	- Pressure pipe blocked	- Cleaning
	- Intake fitting blocked	- Cleaning
	- Wrong rotational direction	- Corrective measure
	- Water deficiency in the tank	- Deactivation/after-sales-service
	- Tank ventilation blocked	- Cleaning
	- Pump housing ventilation blocked	- Cleaning
3. Motor rotates and switches off	- Faulty voltage and/or variable	- Corrective measure/after-sales-service
	- Over current release wrongly adjusted	- Adjust it correctly
	- Power reception too high	- After-sales-service
4. Motor does not switch off	- Control failure	- After-sales-service

9. Warranty

As manufacturer, for this product we provide a warranty of 24 months from date of purchase.

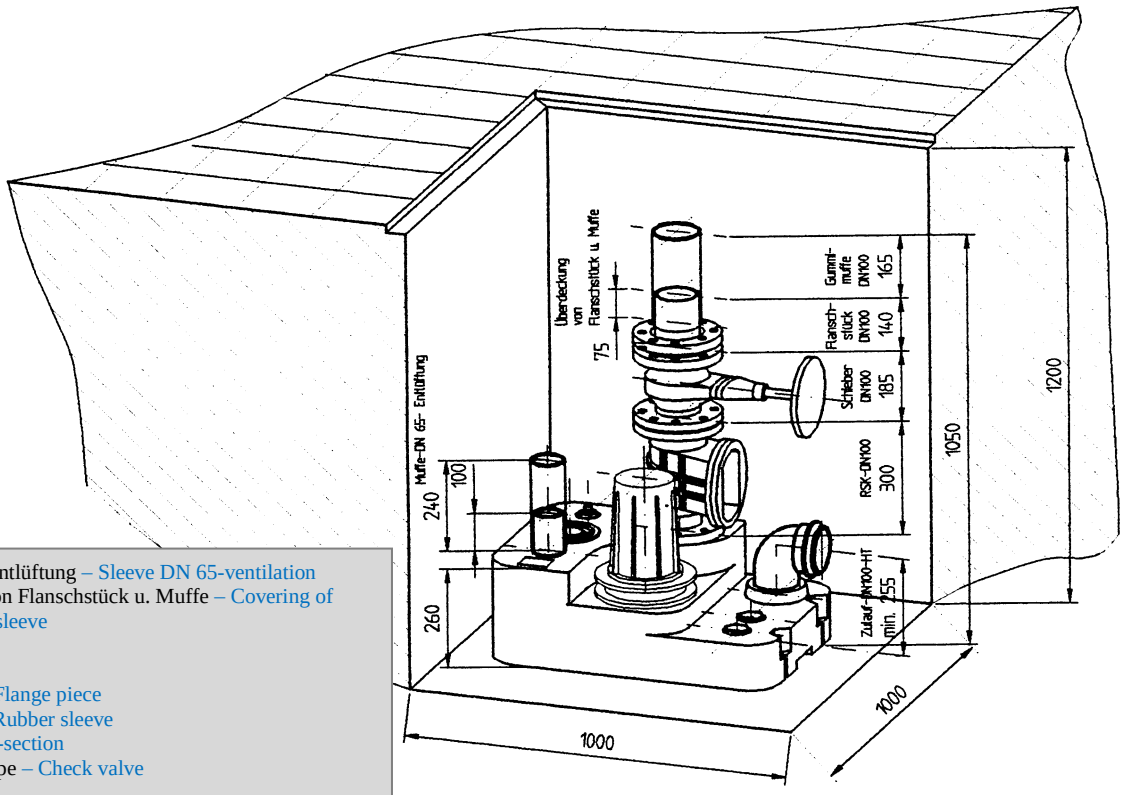
Your sales receipt passes for verification. During that warranty period, we gratuitously remedy all deficiencies which are attributed to material or fabrication defects by either repairing the unit, or by replacing the defective parts (to our choice).

Defects which are attributed to misuse or wear are excluded from warranty. We will assume no responsibility for consequential damages that are caused by a breakdown of the unit.

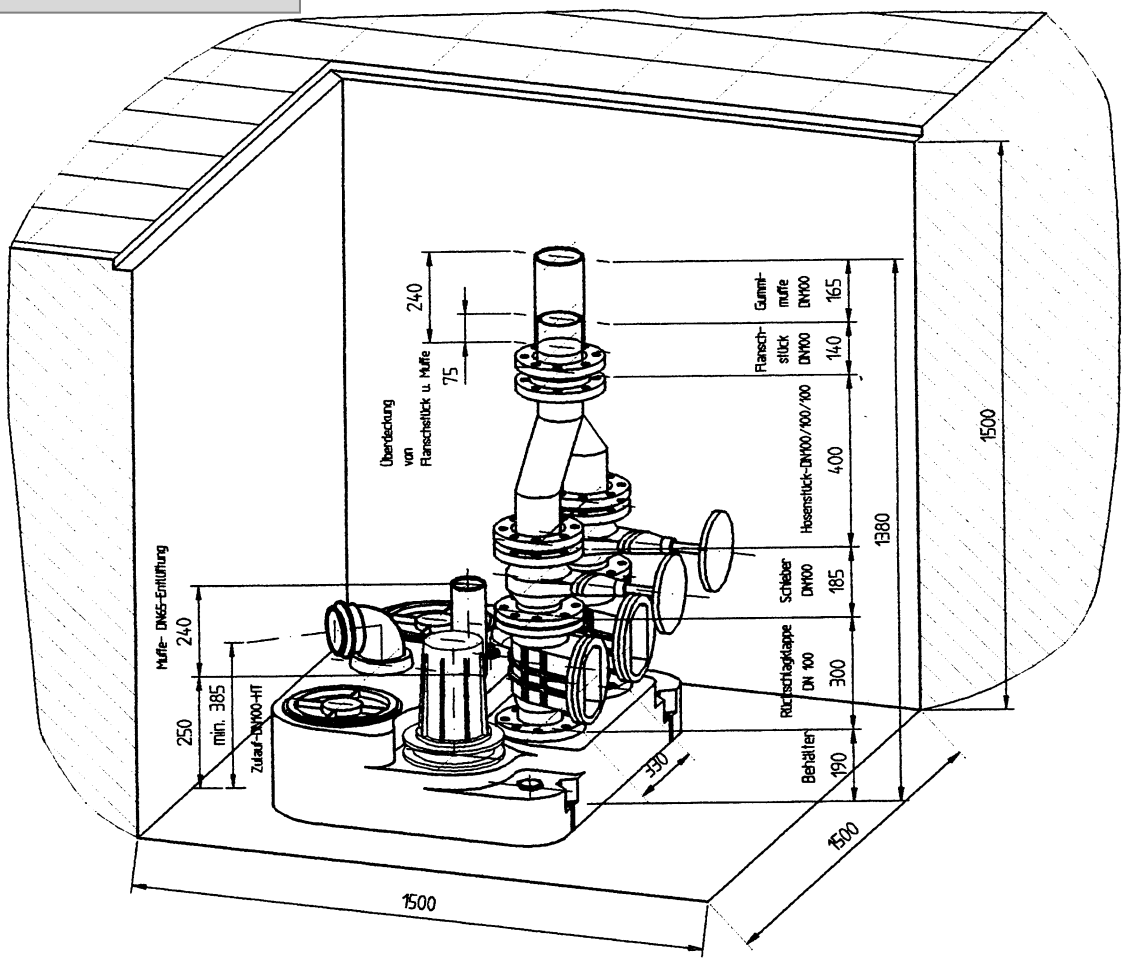
10. Technical modifications

We reserve the possibility of technical modifications for the purpose of further development.

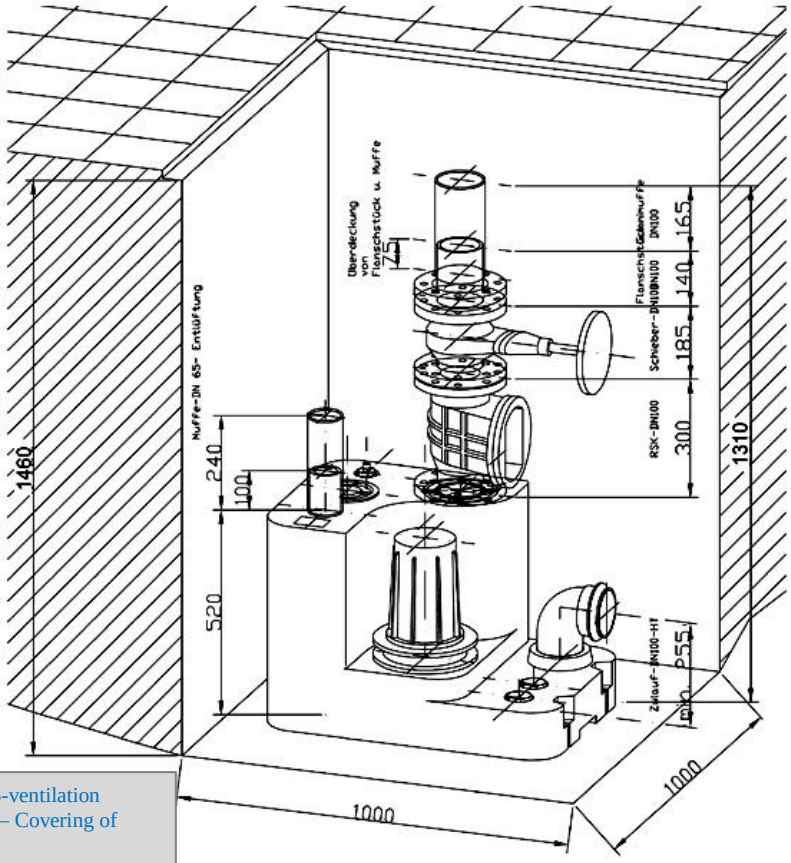
Appendix A: Installation example Miniboy



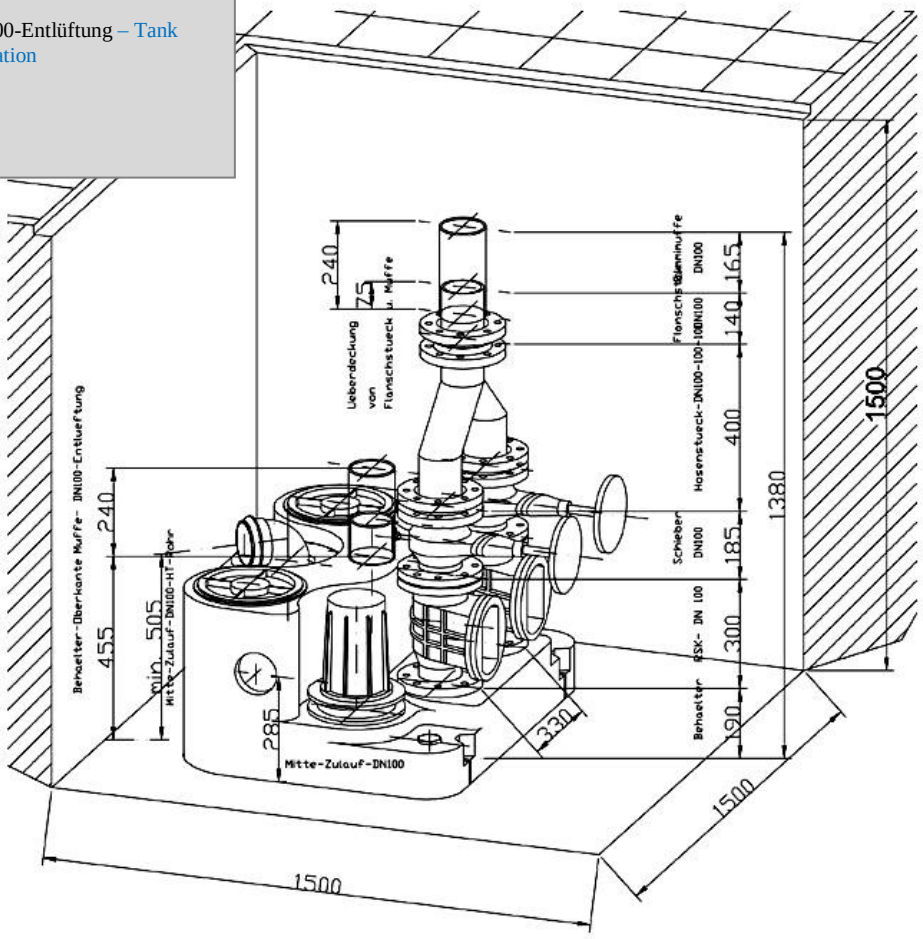
Muffe-DN 65-Entlüftung – Sleeve DN 65-ventilation
Überdeckung von Flanschstück u. Muffe – Covering of flage piece and sleeve
Zulauf - Inlet
Schieber – Gate
Flanschstück – Flange piece
Gummimuffe –Rubber sleeve
Hosenstück – Y-section
Rückschlagklappe – Check valve
Behälter - Tank



Appendix B: Installation example Boy

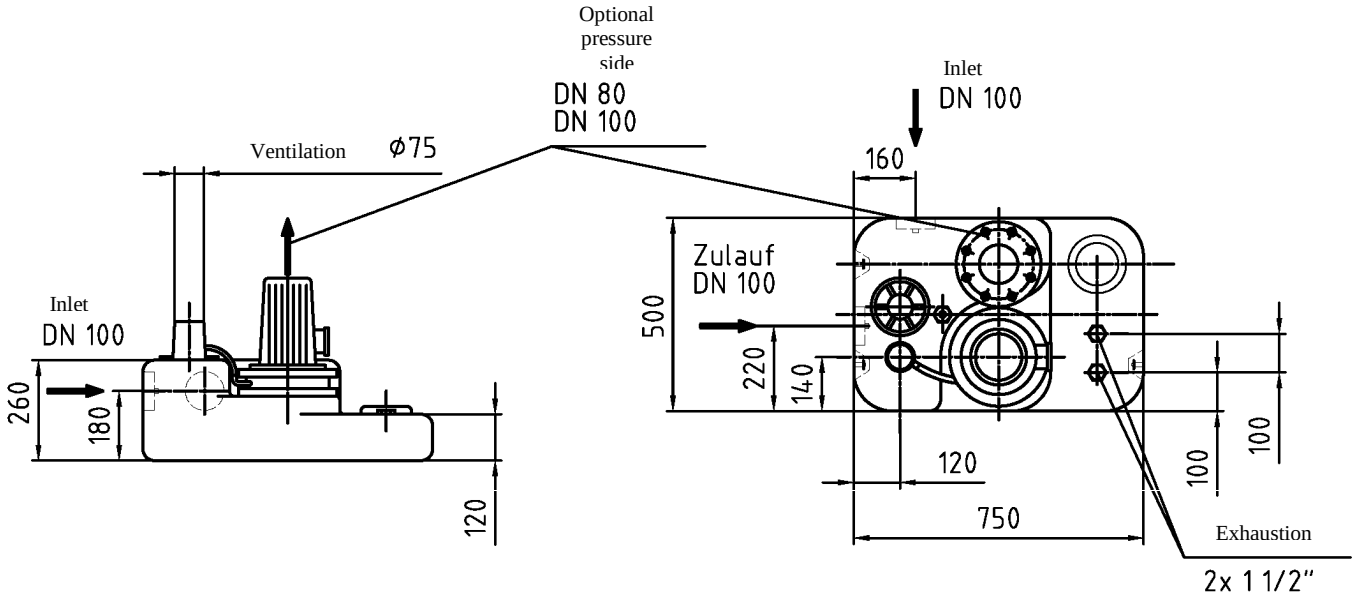


Muffe-DN 65-Entlüftung – Sleeve DN 65-ventilation
Überdeckung von Flanschstück u. Muffe – Covering of flage piece and sleeve
Zulauf - Inlet
Schieber – Gate
Flanschstück – Flange piece
Gummimuffe –Rubber sleeve
Behälter-Oberkante Muffe – DN100-Entlüftung – Tank upper edge sleeve – DN100 ventilation
Mitte-Zulauf –Centre inlet
Rohr-Pipe
Behälter-Tank
Hosenstück – Y-section

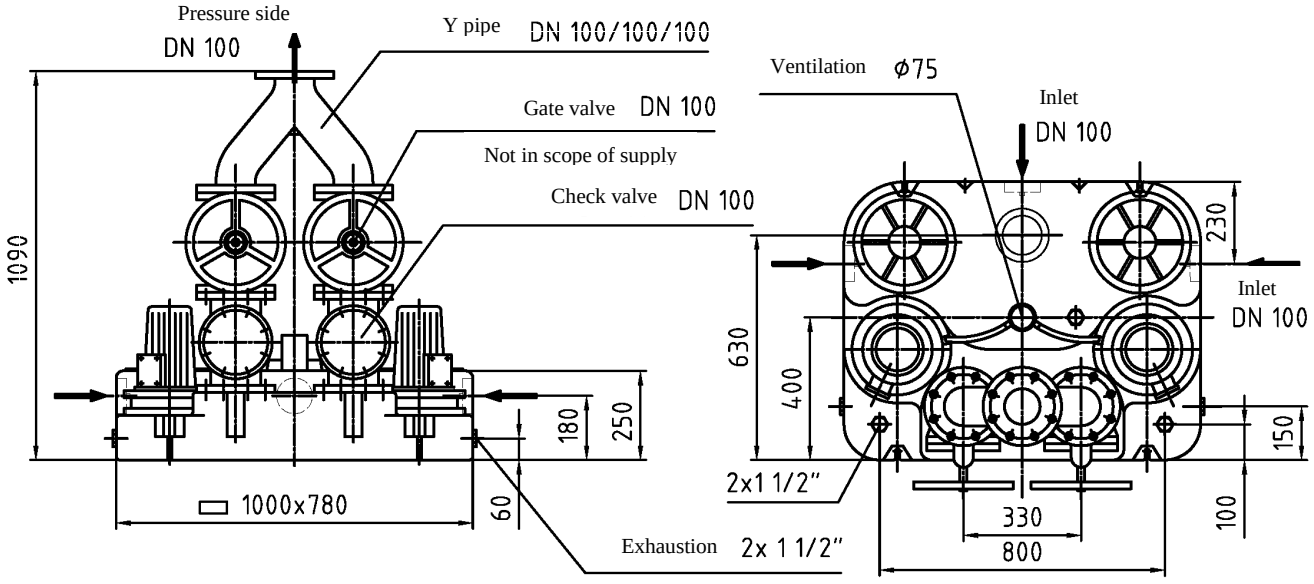


Appendix C: Dimensions Miniboy

Miniboy

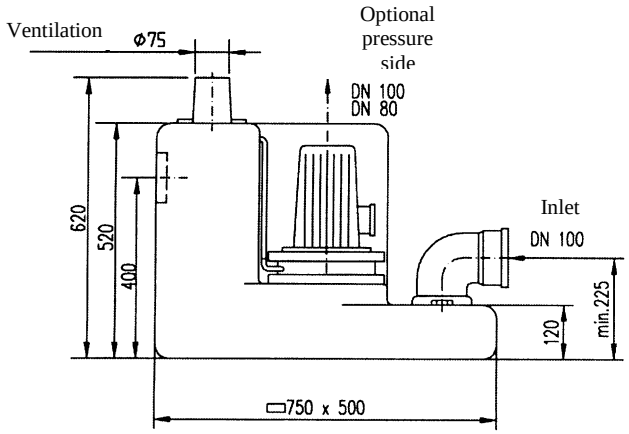


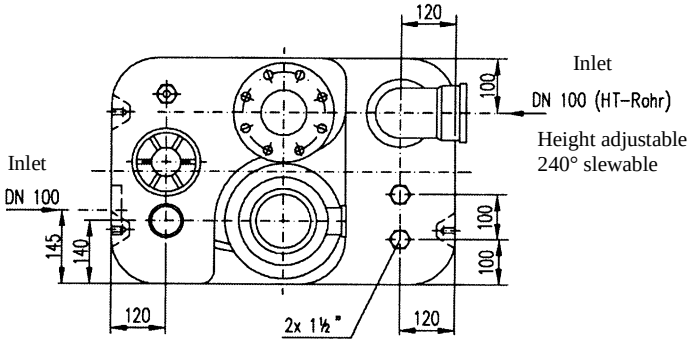
Miniboy duplex



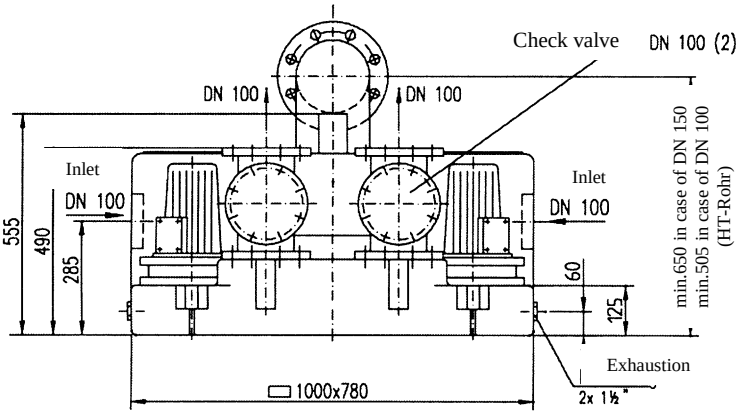
Appendix D: Dimensions Boy

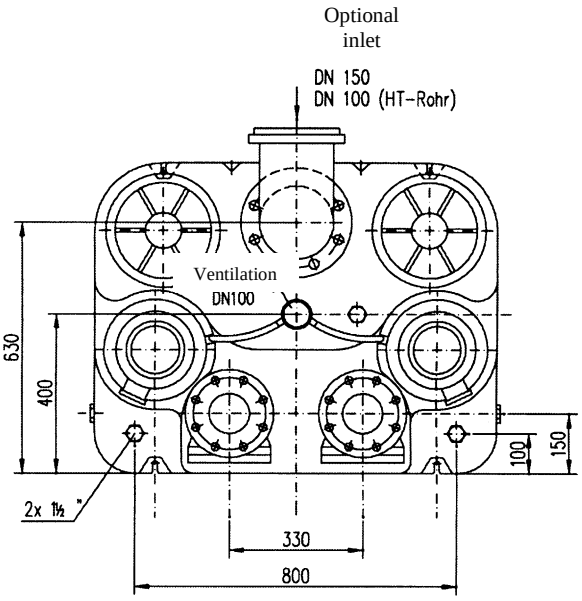
Boy



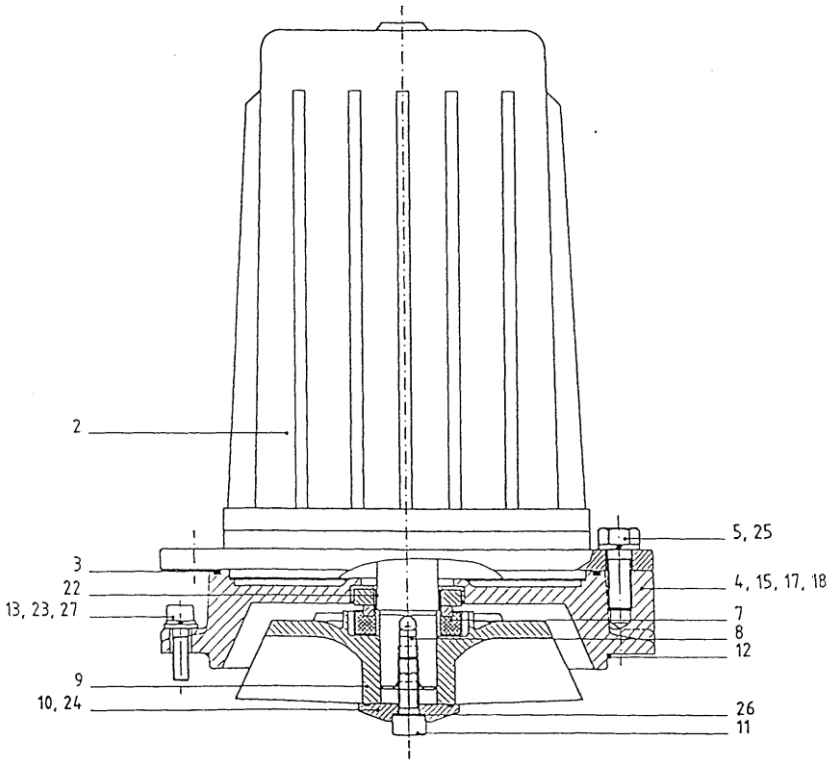


HT-Rohr - high temperature plastic sewage pipe





Appendix E: Sectional drawing and spare parts list



Pos.	Qty.	Designation	Article no.
2	1	Motor unit 1.5 kW-230 V with impeller	10602
2	1(2)	Motor unit 1.5 kW-400 V with impeller	10588
2	1(2)	Motor unit 3.0 kW-400 V with impeller	10589
3	1 (2)	O-ring 190 x 3	14795
4	1 (2)	Seal carrier	10505
5	4 (8)	Hexagon head screw M 12x25	16380
6	1 (2)	Oil filling 0.5 l	11690
7	1 (2)	Seal ring	10482
8	1 (2)	Fitting key	16419
9	1(2)	Free flow impeller 190 mm (1.5 kW)	14786
9	1(2)	Impeller 190 mm (3.0 kW)	14789
10	1(2)	Propeller complete with o-ring and screw	16447
12	1 (2)	O-Ring 190x5 (excepting Boy duplex)	16431
12	(2)	O-Ring 190x6 (only Boy duplex)	16853
13	4 (8)	Allen head screw M8x25	16381
14	1 (2)	Oil filling screw M 8x10	16503
15	1 (2)	Angle nozzle R 3/8“	10705
16	1 (2)	Hose nozzle straight R 3/8“	10849
17	1 (2)	Ventilation hose 0.25 m	10704
18	2 (4)	Hose clamp	16644
	1	Switching device simplex unit three-phase current	
	1	Switching device simplex unit three-phase current	
	(1)	Switching device duplex unit	
	1	Control hose (5.5m)	
	1	Impact pipe cpl. simplex unit Miniboy	
	(1)	Impact pipe cpl. duplex unit Miniboy	
	1	Impact pipe cpl. simplex unit Boy	
	(1)	Impact pipe cpl. duplex unit Boy	
	1	Inspection cover simplex unit incl. seal	
	(2)	Inspection cover duplex unit	
	(2)	Seal for inspection cover duplex unit	
	1	Collecting tray Miniboy simplex	
	(1)	Collecting tank Miniboy duplex	
	1	Collecting tank Boy simplex	
	(1)	Collecting tank Boy duplex	

The indications of quantities in brackets apply to the Miniboy duplex and Boy duplex.

Attention, please respect the following indications!

Safety regulations for the electrical connection

- **All used electric devices must comply with the standard IEC 364 / VDE 0100, that means, that the electrical sockets must be equipped with earthing terminals.**
- **The electrical connection may only be effected by an electrically skilled person! The relevant VDE regulations 0100 must be respected!**
- **The mains to which the unit is connected must be equipped with a highly sensitive separate earth leakage circuit breaker IA <30 mA in front of the control or, in order to prevent a failure of the control when the earth leakage circuit breaker is activated, one earth leakage circuit breaker per pump must be installed between the control and the pump. In case of an installation in bath or shower rooms, the respective DIN VDE 0100 part 701 regulations must be respected.**
- **Please respect the regulations of the EN 12 056-4.**
- **In case of a three-phase current supply, an external protection with automatic circuit breakers of characteristic K, in general 3-terminal mechanically blocked, must be executed. In doing so, the complete disconnection from supply is ensured and a 2-phase operation is excluded.**
- **All electrical devices, such as control, alarm sensor and power socket must be installed on a flood-proof position in dry rooms.**
- **Attention! Prior to every assembly and disassembly of the pump or other works on the unit, the unit must be disconnected from the mains.**
- **Due to an overload, the motor can overheat. Never touch the heat surfaces of the motor in case of an overheating.**
- **In case of using an extension cable, it must comply with the included connector cable concerning quality.**

Limits of application

- **The pump station is not designed for continuous operation! The conveyance data mentioned on the type plate apply only to periodic duty (S3 25 %).**
- **The maximum permitted inlet quantity must always be less than the discharge flow of a pump (see type plate)**

The following substances must not be fed:

- **Solid materials, fibrous materials, tar, sand, cement, ash, rough paper, paper towels, paper boards, rubbish, garbage, offal, greases, oils.**
- **All drainage objects lying above the backwater level (EN 12 056-1).**
- **Sewage with dangerous substances (DIN 1986-100), e.g. fatty sewage in industrial kitchens. The inlet may only be effected through a fat separator according to DIN 4040-1.**
- **Sewages containing substances which may attack or damage the materials of the pump of the collecting tank.**