



Waste water ejection unit

Over ground box

SWH 500/50-80

SWH 500/50-80

Operation manual

Table of contents:

Page

Declaration of conformity	3
1. General.....	4
1.1 Introduction	4
1.2 Enquiries and orders	4
1.3 Technical data.....	4
1.4 Range of application.....	5
1.5 Accessories.....	5
2. Safety	5
2.1 Marking of the notes contained in the operation manual	5
2.2 Personnel development and training	5
2.3 Dangers in case of non-observance of the safety notes	6
2.4 Safety-conscious way of working.....	6
2.5 Safety notes for the operator/user	6
2.6 Safety notes concerning maintenance, inspection, and assembly works.....	6
2.7 Unauthorised modification and fabrication of spare parts	6
2.8 Unauthorised modes of operation.....	7
3. Transport and temporary storage	7
3.1 Transport.....	7
3.2 Temporary storage/conservation	7
4. Description.....	7
5. Installation	8
6. Commissioning	8
7. Maintenance/repair	9
8. Malfunctions; causes and elimination.....	9
9. Warranty.....	10
10. Technical modifications.....	10
11. Dimensions	10
Appendixes	
Appendix 1 Spare parts list	11
Appendix 2 Example of installation	11

Declaration of conformity

- According to EC low voltage directive 73/23/EEC, Appendix III B
 - According to EMC directive 92/31/EEC and 93/68/EEC
 - According to Machinery directive 2006/42/EC
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We, the **ZEHNDER Pumpen GmbH**
Zwönitzer Str. 19
08344 Grünhain-Beierfeld,

herewith declare

that the waste water ejection units of the type series **SWH**

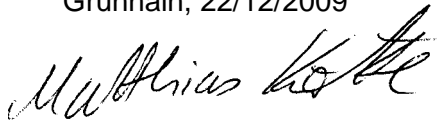
conform to the following relevant regulations:

- **EC low voltage directive 93/68/EEC, Appendix I**
- **EMC directive 92/31/EEC and 93/68/EEC**
- **Machinery directive 2006/42/EC**

Applied conform standards, particularly

- **EN 809** State 1998
- **EN 60 335-1** State 2006 (concept)
- **EN 60 335-2-41** State 2004
- **EN 50 081-1** State 1993
- **EN 50 082-1** State 1994

Grünhain, 22/12/2009



Matthias Kotte
Product development

1. General:

1.1 Introduction

This operating manual is valid for the waste water ejection units of the type series **SWH 500**.

If the instructions of the operation manual – especially the safety instructions - are not observed, or in case of unauthorized modifications of the device 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 second 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 GmbH
Pumpen und Anlagenbau
Zwönitzer Straße 19
08344 Grünhain-Beierfeld

Manufactured sizes: SWH 500/50 SWH 500/50 duplex
 SWH 500/65 SWH 500/65 duplex
 SWH 500/80 SWH 500/80 duplex

State of the operation manual: March 2009

1.2 Enquiries and orders:

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

1.3 Technical data:

SWH 500 simplex and duplex	SWH 500/50	SWH 500/65	SWH 500/80
Output power P_1	380 W	850 W	850 W
Output power P_2	210 W	430 W	430 W
Voltage U	230 V	230 V	230 V
Frequency f	50 Hz	50 Hz	50 Hz
Nominal power reception I_{nenn}	1.8 A	3.7 A	3.7 A
Speed n	2800 min ⁻¹	2800 min ⁻¹	2800 min ⁻¹
Max. discharge flow Q_{max}	7.5 m ³ /h	9.5 m ³ /h	10 m ³ /h
Max. discharge height H_{max}	7.5 m	14 m	8.5 m
Max. medium temperature t_{max}	40°C short-term 90°C		
Pressure connection	G 1 ¼"	G 1 ¼"	G 1 ¼"
Dimensions ØxH	Ø500x520 mm	Ø500x520 mm	Ø500x520 mm

Materials:

Tank	PE	PE	PE
Pump housing	Stainless steel	Stainless steel	Stainless steel
Running wheel	PA 6	PA 6	PA-6
Shaft	1.4301	1.4301	1.4301
Pressure pipe	Stainless steel	Stainless steel	Stainless steel
Sealings	NBR	NBR	NBR

1.4 Range of application

The waste water ejection units of the type series SWH 500 are suitable for the discharge of sewage and/or waste water out of hand washbowls, rinsing tanks, washing machines behind grease separators etc. and may be used in private homes, in the industrial sector or agriculture. They are used where the above-mentioned installations are installed below the backwater level of the channel and the waste water must be pumped upwards.

ATTENTION The waste water ejection units of the type series SWH **must not** be used for the discharge of sewage containing excrements and in front of grease separators.

1.5 Accessories

The waste water ejection units are delivered completely with pump, switching system and non-return valves (integrated into the pump).

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 for example:

- 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 and/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.

ATTENTION

Also a device operating automatically such as an ejection unit must not be operated without supervision for a longer time period.

3. Transport and temporary storage

3.1 Transport

The ejection unit must not be thrown, hit or dropped.

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

The waste water ejection units of the type series SWH are ejection units allowing the automatic discharge to a higher level out of hand washbowls, rinsing tanks, washing machines and similar. The discharge of waste water containing excrements is **not** allowed with these units.

Composition and mode of operation simplex unit:

The ejection units are delivered in assembled condition ready for connection to 230 V, 50 Hz (alternating current). The motor is equipped with a thermal overload protection and switches off automatically if it is too hot. After cooling, it will be reactivated automatically. According to the guidelines of the German Institution for Structural Engineering (DIBt), the units are equipped with non-return valves and operate automatically with an integrated floating switch: if the liquid level inside of the tank exceeds a defined level, the floating switch activates the pump and the pumping process starts. After the tank is pumped out (floating switch decreases) the pump switches off automatically. In doing so, the integrated non-return valve prevents the backflow of the discharged water from the pressure pipe into the tank.

Composition and mode of operation duplex unit:

The ejection units are delivered in assembled condition ready for connection to 230 V, 50 Hz (alternating current). The motor of the pumps is equipped with a thermal overload protection and switches off automatically if it is too hot. After cooling, it will be reactivated automatically. If waste water flows into the ejection unit, the water level inside of the pilot tube screwed into the upper side of the tank raises and compresses the air inside of the pilot tube until the pressure actuates the dynamic pressure switch inside of the switching box. With it, the pump is switched-on and discharges the water from the tank through the pressure pipe into the channel located on a higher level. The changeover switch effects an alternating switching-on of the pumps. Only in case of an overload operation (one pump cannot manage the incoming water) a second pump is activated. The non-return valves inside of the pump prevent the water backflow from the pressure pipe into the tank.

The switching system is equipped with alarm contacts to which, additionally to the alarm buzzer e, other alarm devices (bell, horn, lamp, etc.) may be connected.

5. Installation



- Disconnect the power supply before carrying out any kind of work on the unit.
- According to standard DIN VDE 070, the socket must be equipped with grounding terminals (Safety socket)
- The electrical connections must not be exposed to humidity.

Installation place:

The unit must be installed in a frost-free place and on a plane floor.

Connection of the inlets:

3 x inlet sleeve DN 100 for sewer pipe, 1 x threaded sleeve G 1 ½" IG with blank plug
The necessary inlet sleeves DN 100 must be opened!



Inlets which are not used must be closed!

Connection of the pressure pipe:

There is a ball valve with an internal thread G 1 ¼" at the end of the pressure pipe.

Ventilation:

The ejection units are ventilated through a ventilation pipe DN 40-50 via the roof.
The pipe is mounted to the respective seal collar of the tank cover. Please ensure that the pipe extends max. 100 mm into the tank!

Electrical connection simplex unit

The plug of the unit (protective plug) is connected directly before commissioning. In doing so, it must be ensured that the electric device meets the valid VDE regulations.

Electrical connection duplex unit

The switching box must be attached in such a manner that the air hose for the pneumatic level control can be installed continuously rising and without kinks. Connect the plugs of the pumps to the couplings of the switching system. The plug of the unit (protective plug) shall be connected directly before commissioning and the pumps are switched to automatic operation. In doing so, it must be ensured that the electric device meets the valid VDE regulations.

Please also observe the separate operation manual of the switching system. The switching system is already preset in factory.

6. Commissioning

Prior to commissioning, all connections should be checked again for proper assembly.

Subsequently, connect the plug to the socket. Now, the simplex unit is ready for operation.

In case of duplex units, both pumps are switched to automatic operation. Now, effect a test run. For this purpose, the collecting tank is filled by a normal inlet (washbowl, etc.). The unit must switch-on automatically, empty the tank and switch-off. After switching-off, no water shall flow back from the pressure pipe into the tank. During the test run, all pipes and valves are checked for tightness and sealed again, if necessary. If the ejection units operated properly, the pumps of duplex units rest in automatic operation.



Water escaping out of the hole in the pump housing in case of ejection units SWH 500 is construction-conditioned (ventilation) – no failure!

7. Maintenance/repair



- Disconnect the power supply before carrying out any kind of work on the ejection unit.

For inspection and cleaning unscrew the inspection cover. In order to prevent functional disorders and blockages, regularly remove solid matters and contaminations from the tank and the inlet filter of the pump. The cleaning interval depends on the accumulation of contaminations.



- For troubleshooting and inspection of the motor or the electrical components, please contact your specialist retailer.

8. Malfunctions; causes and elimination



- Disconnect the power supply before carrying out any kind of work on the ejection unit.

Failure	Cause	Removal
1. No motor rotation	- Mains voltage missing or faulty	- Check power socket - Connect mains plug
	- Running wheel is blocked	- Remove cover; remove possibly existing foreign objects, in case of reoccurrence, removal by specialist.
	- Motor is overloaded	- If the motor does not switch-on after cooling, removal by specialist.
	- Level control is defective	- Removal by specialist
	- Motor is defective	- Removal by specialist
2. Motor rotates but does not convey	- Pressure pipe is blocked/Hose is bended	- Remove blockage and/or bends, effect a test running.
	- Pump ventilation in blocked	- Clean the ventilation hole in the pump housing
	- Ball valve is blocked/closed	- Clean/open
	- Non-return valve in not correctly installed	- Rotate, check the function
3. Motor runs in short intervals	- Non-return valve is leaky	- Clean and/or replace the non-return valve
4. Motor rotates with a high noise	- Foreign object reached the device	- Removal by specialist

9. Warranty

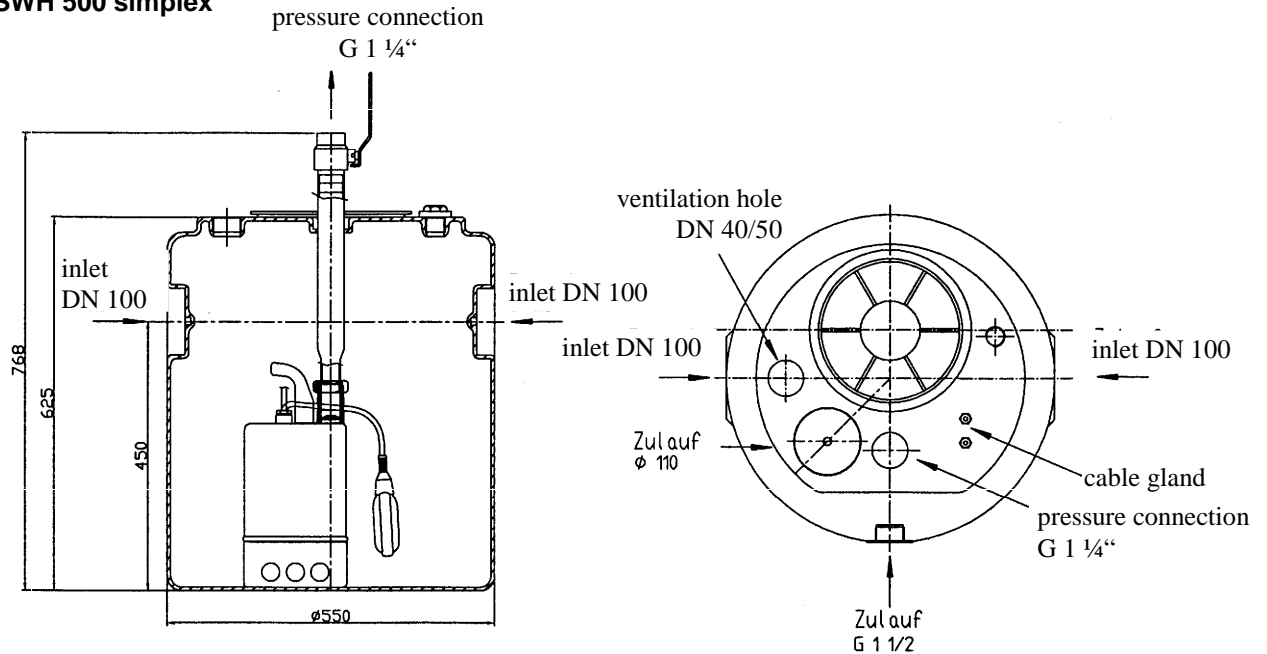
As manufacturer, for this unit we provide a warranty of 24 months from date of purchase. Your sales receipt passes for verification. During that warranty period, we gratuitously remedy all deficiencies which are attributed to material or fabrication defects by either repairing the unit, or by replacing 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

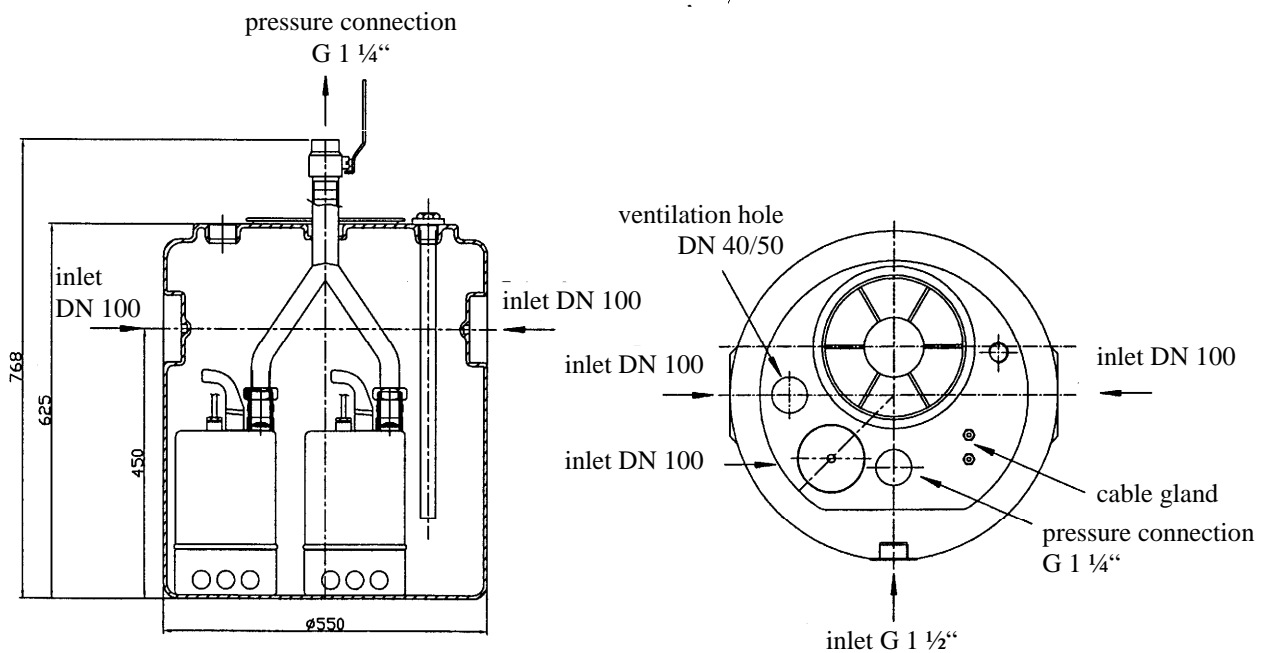
We reserve the possibility of technical modifications for the purpose of further development.

11. Dimensions

SWH 500 simplex



SWH 500 duplex



Appendix 1

Spare parts list SWH 500 simplex

Qty.	Designation	Art. no.
1	Collecting tank SWH 500	100.180
1	Screw cap	ZE1332
1	O-ring for screw cap	133108
2	Blank plug G 1 1/2"	117320
1	O-ring 40x6	117321
1	Cable gland PG 11	117323
1	E-ZW 50 A-2 for SWH 500/50	22016.0
1	E-ZW 65 A for SWH 500/65	80.565
1	E-ZW 80 A for SWH 500/80	80.580

Qty.	Designation	Art. no.
1	Non-return valve R 1 1/4"	117056
1	Double nipple G 1 1/4"	117055.11
1	Pressure pipeline VA	

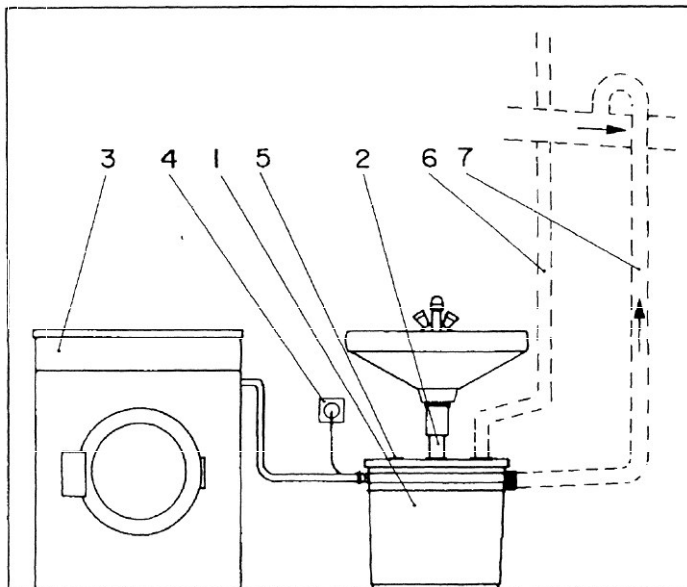
Spare parts list SWH 500 duplex

Qty.	Designation	Art. no.
1	Collecting tank SWH 500	100.180
1	Screw cap	ZE1332
1	O-ring for screw cap	133108
2	Blank plug G 1 1/2"	117320
1	O-ring 40x6	117321
2	Cable gland PG 11	117323
2	E-ZW 50-2 for SWH 500/50	22016.7
2	E-ZW 65 for SWH 500/65	80.565.5
2	E-ZW 80 for SWH 500/80	80.580.4

Qty.	Designation	Art. no.
2	Non-return valve R 1 1/4"	117056
2	Double nipple G 1 1/4"	117055.11
1	Control hose 10 m	60221
1	Pilot tube SWH 500	
1	Y-section DN 32 VA	200.130
1	Control unit ZPS 2	600.780

Appendix 2

Example of installation:



Pos.	Component part
1	Waste water ejection unit
2	Inlet washbowl with siphon
3	Washing machine
4	Electrical connection
5	Additional connection possibility
6	Ventilation (then, without activated charcoal filter)
7	Pressure pipe with loop in channel