

INSTALLATION, OPERATION AND MAINTENANCE INSTRUCTIONS

KESSEL – Wastewater Station *Aqualift® F* for floor-slab installation for wastewater with or without sewage.

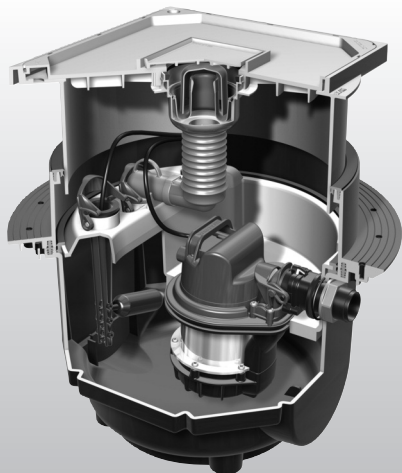


Abb. zeigt Art.-Nr. 28300

Article # 28300 / 28330 / 28350

Product Advantages

- Upper section telescopically height adjustable, rotatable and tiltable.
- Adjustment of cover to the tile grid
- Compression seal flange for attachment of vapour barrier
- As a double-lifting station for increased wastewater demand

Z-53.2-484



- Installation Service

of this unit should be carried out by a licensed professional servicer:

Company / Telephone No.

 **KESSEL**

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Number: 298-057EN
Subject to technical amendments

Safety Instructions

This instruction handbook contains important security advices which must be followed at all times during installation, operation, maintenance and repair of the power unit. The security advices are labelled as follows.



General warning sign according to ISO 3864-B-3-1 tagging endangering of persons.



Warning sign according ISO 3864-B-3-6 to caution against voltage.

Caution

This word indicates security advices, disregarding these will cause severe danger for the station and it's function.

This instruction handbook must be available at all times in the station.

Dear customer,

We are happy, you decided to choose a product made by KESSEL.

Before leaving the factory the whole station has been subject to a strict quality control. However, we kindly ask you to check whether the station has been delivered completely and without any damage. In case of transport damage, please look for the regulations in chapter „guarantee“ of this instruction.

Prior to installation and putting into operation of the Aqualift – it is in your interest - and essential that you carefully read and follow the installation-, operation-, maintenance- and repair instructions.

KESSEL AG

Safety Instructions

General Precaution

For installation, operation, maintenance or repair purposes of the station, all regulations for accident prevention must be followed. DIN- and VDE-Standards and guideline specifications as well as regulation of the local energy supply- and utility undertaking must be carefully followed.

Staff Qualification and Staff Training



The staff for operation, maintenance, inspection and installation must possess appropriate qualification for carrying out these operations. Responsibility, competence and supervising of staff must be exactly arranged by the operator. In case staff doesn't possess the necessary know-how, a training- and an instruction unit must be executed for staff. By order of the operator of the pump station the producer/supplier will execute this training if necessary.

Furthermore, the operator has to assure, that the content of the manual is fully understood by the staff. Herewith, an instruction record must be kept.

Danger caused by voltage



This station contains voltages and controls rotating, mechanicals parts of the station. Disregarding the instruction handbook may result in major property damage, injury or even fatal accident.

Prior to all works at the unit, it must be disconnected from the power supply system network. Main switch and cut-outs must be disconnected which means a de-energized connection and protection against a restart.

Do cut-outs exist, these must be disconnected and indicated with a reference note, so third party is not able to restart the main fuse.

The VDE 0100 applies to all works at the electrical unit.

The unit provided with a earth fault circuit equipment equipped with a design error current of not more the 30 mA.

Do not open the switching tool as it is under voltage. Only skilled personnel for electro is allowed to execute work at the electrical equipment. VDE 0105 gives a definition what is to be considered as a skilled person for electro according to the regulations.

It must be guaranteed that all parts of the electrical unit are in perfect condition. In case of damage the unit should not be put into operation by no means and respectively switched off immediately. Electrical wires should be installed so they cannot be buckled and are non-tensioned.

Safety Instructions

Possible risk of burns for Hands and Fingers

During operation the prime mover may develop a high temperature.

The pumps are equipped with an exterior cutter. Functional requirement does not include any shielding. Therefore, do not stay in danger zone of rotating parts and allow sufficient safe distance. Do not reach into the cutter head or suction area of the pump. Working on the pump is only allowed while the electricity is disconnected and moving parts have fully stopped rotating. Pump should only be put into operation in installed condition and not outdoor. During maintenance- and repair work consider the sharpness of the edges.

Danger of heavy weight/stability of unit parts

Hold the pump only at the handle and slowly discharge it into the ready mounted construction hole. Caution with the parts while lifting and mounting.

Dangerous to Health/Personal Protective Equipment

The effluent unit delivers fecal wastewater containing substances which might be dangerous to health. Avoid any direct contact of wastewater or contaminated unit parts with eyes, mouth or hands while working at the unit. In any case of direct contact, the corresponding body part must be immediately carefully washed and as the case may be disinfected.

Furthermore, the atmosphere in the construction hole may be dangerous to health.



Switch on/Start off operation of the pump

Prior to operation check the conditions on-site

- Avoid dry running the pump!
Do not allow the machine running in dry run or slurping operation at any time, that is cutter equipment, rotor disc and pump box must be flooded until minimum submersion depth at all times.
- The pump builds up a discharge pressure overpressure.

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1. General

1.1 Application

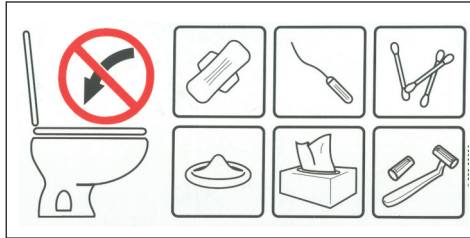
This system is designed for pumping wastewater with or without raw sewage. Important is that sufficient water is always available - pressing the 'water savings' flush on toilets is not recommended.



Important!

The KESSEL Aqualift F Wastewater Station is not for use with flammable or explosive liquids. The system should only be used for the macerating of sewage, toilet paper and gray water. The warranty of this product does not include damage to the system caused by the pump intaking bandages, tampons, cotton swabs, razor blades, moist towels, cotton, hair, sponges, plastic bags, washclothes, diapers or other objects. The pumping of solvents and thinners is also not allowed. It is recommended that the warning sticker shown below is placed in the proper visible area to prevent improper

items entering the drainage system. Condensation fluids from furnaces / heaters should be neutralized or adequately diluted with water.



1.2 System Description

The KESSEL Aqualift F Wastewater Station is a lifting station with an unmatched power to size ratio. Through the use of high end, permanently resistant plastics, the system is able to handle household acids and bases (ph value from 6.5 to 10) as well as cold and hot water (up to 95 deg C for short periods). The lifting station consists of a pump with non-return flap, quick release flange

connection, vertically adjustable upper section and a 300 kg rated tileable cover with an integrated odour free floor drain. For deeper installations in floor slabs, the extension section (Article Number 83071) should be used. KESSEL recommends the connection of a closure valve to the outlet pressure pipe of the system.

The Aqualift F Wastewater Station is available in three models:

- single pump with float switch (Article Number 28300)
- single pump with SDS control unit (Article Number 28350)
- twin pumps with SDS control unit (Article Number 28330)

2. Installation



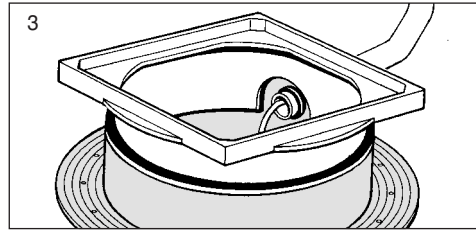
Important:

Pump station is to be installed in frost-free and dry area. Do not immerse cable ends into the water while installation and mounting. Electrical plug connection is to be protected from moisture. In case of flooding danger the mounting of the electrical plug connection should be executed in an area where there is no danger of flooding. Prior to installation of KESSEL pump station *Aqualift® F*, all parts must be checked upon loss during transport.

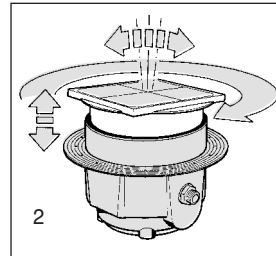
2.1 Installation in slab:

The pump box is to be levelled up horizontally on a granular subbase. Insert the enclosed rubber gasketed seal into the recessed gasket area, grease it and mount the upper section. The telescopically upper section allows a continuously variable adjustment of the pump station *Aqualift F* into already existing installation depth. Ground falling gradient can be levelled out until up to 5°. An adjustment of the cover, p. e. the tile pattern is possible (picture 2).

CAUTION: After final adjustment cut-outs have to be fixed at the upper section especially in the area of cable bushing and where additional inlets were added (picture 3).



After successful water proof check of all existing piping the vessel can be poured into concrete bed.



2.2 KESSEL-Pump Station *Aqualift® F* for depressed installation into the slab (with extension Article # 83070)

Depending on installation depth one or two extensions between upper section and connector may be used. The gaskets are to be greased accordingly. Thereby the drain pipe must be shortened according to the level adjustment.

Installation of covers with selectable surface:

For the covers with choice of surface there is the possibility of fixing tile flooring or natural stone into the cover. This way you can fit the flooring to the room. For tile fixing we recommend products by PCI, Schomburg, Deitermann. To achieve an unproblematic workmanship we recommend the following:

2. Installation

Laying of Natural Stone:


(marble, granite, agglomerated marble)
Grounding of slab p. e. using PCI ground varnish 303. For laying of the slabs use p. e. PCI-Carrament.

Laying of the slab, p. e. using PCI-Carrament (special Natural Stone silicion) area of application analogue to 1.

2.3 Connections

a) off-set inlet-connection

Fully equipped connection socket according to DIN 100 available. The inlet-piping must be installed allowing a minimum of 2 % falling gradient.

 **Attention: Do not drill the vessel.** Improper drilling may cause damage of the inner vessel which may cause leakiness of the pumping equipment.

b) drainage connection

The installation of the drainage connection is only possible after installation of pump according to the instruction in point 2.4. The connec-

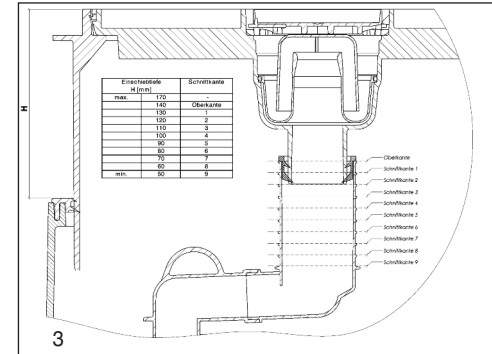
tion of the drainage function to the sump is executed through the attached drainage connection. Insert the drainage connection into the pre-settled wall chase and lock it with the single-hand quick-release fastener.

Using a stormwater tight cover plate (auxiliary equipment) the wall chase must be closed using the provided sealing plug.

Depending on the inlet depth (mortise depth of upper section) the drainage connection can be trimmed to the particular length (see picture No. 3).

c) pressure connection


Pressure connection: 1 ½" male thread
The pressure pipe set (Article No. 28 040) includes a 5 m pressure pipe tube DA 40 and an adapter with a pipe clamp. Alternatively a pressure pipe diameter=40 mm minimum 38 mm can be used for the PVC-adhesive bond. The delivery pipe has to be guided via the local defined backwater level and connected to a ventilated ground-collecting line.



d) cable conduit access

For installation of the electrical lines and if necessary of the air tube for the pressure sensor a cable conduit on site must be provided (see picture No. 4). The empty conduit can be installed in the provided cable bushing which is located in the connector. To avoid condensation water the cable conduit must not be sealed air-tight.

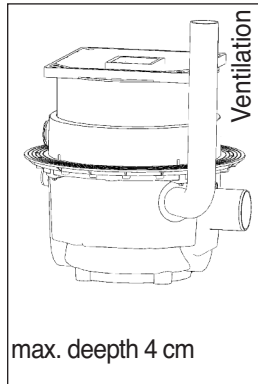
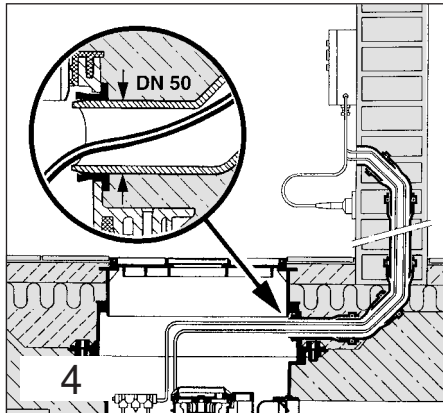
2. Installation

 **The ventilation tube must be installed with a constant increasing slope to the control unit.**

e) Ventilation vent

Ventilation vent shall be provided at all times.

A ventilation pipe must be installed with this system. For this pumping system it must be installed at a minimum of a nominal width DN 70. To avoid unpleasant odour it must be guided



ded across the roof. A fixture access is provided. This is sealed by a socket plug. Remove it for installation purposes. For the Tronic-option it is recommended to install the optical sensor prior to the installation of the fixture vent.


f) Alarm device

For installation of the float switch version the alarm device is strongly recommended. Herewith, failures during operation will be indicated, p. e. an increased water level caused by failure of the pump. In addition a remote control signaller must be installed.

2.4 Installation of the pump:

To avoid damage during transporting the pumps are packed separately. Check

whether the sewage station is free of solid contamination and building material. Whereas this is not the case the complete equipment is to be cleaned. Prior to installation cleaning of all sealed surfaces is essential. Insert the pump into the pump slab and fix it with the help of the two lock staples (safety hook). Fix and lock the rotatable connection with the one-hand-fastener (see picture 5). Assure a back-up of 1 m minimum for the length of the tube for installation to allow to lift out the pump and put it on the tile flooring for maintenance service.

 **Caution: Check after installation whether the pump is mounted stationary. As there are existing two versions, please follow further proceedings.**

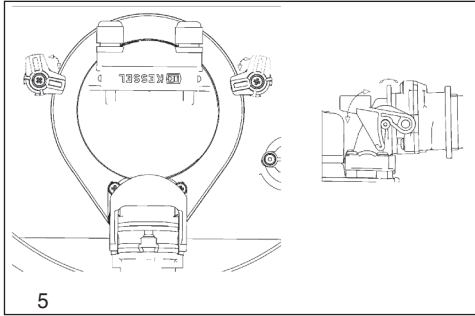
a) *Aqualift® F* Mono with float

After installation the float has to be inserted into the separate opening. Pull the cable together with the plug through the cable conduit. The unit is ready for operation as soon as the power supply is available.

2. Installation

b) **Aqualift® F** Tronic/Duo

Pull the transparent tube of the already installed pressure sensor through the cable



conduit. Pay attention to a unbuckled and permanent rising of installation. In addition the optical sensor (alarm device) is to be inserted into the designated opening. Hereby the purple sealing plug is to be removed. The Tronic version is ready for operation as soon as the cables are connected to the control unit according to the instructions given in the manual.

Refill the vessel with water and proof check

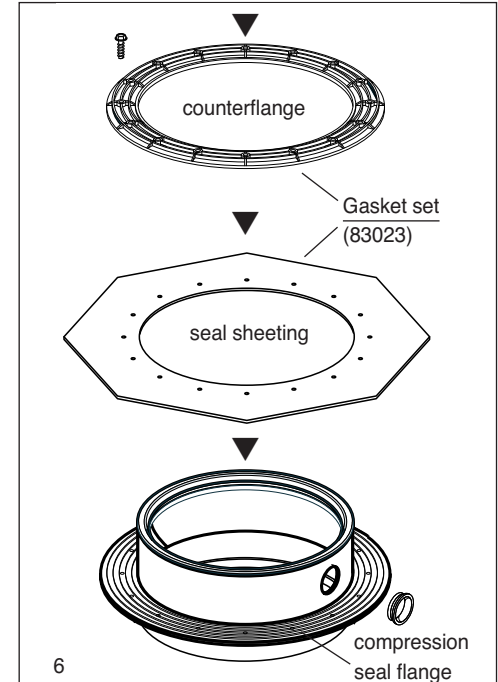
the functions of the floating switch respectively the pressure sensor.

2.5 Installation in concrete slabs subject to high groundwater / moisture (gasket set Article Number 83023)

In case of installation in concrete slabs subject to high groundwater / moisture the KESSEL wastewater pumping station can be easily and unproblematically sealed. Herewith a seal sheeting is clamped between the counterflange made of polymer and at the integrated compression seal flange of the carrier and bolted with the attached screws. Any on site used sealing foil is acceptable. For installation into a water resistant sump pan KESSEL offers an additional matching sealing sheet made out of natural latex material with counterflange. Here, the drill-holes for bolting are already stamped out. (Article Number 83023, see picture 6).

If it is necessary to make an opening for example into the concrete sump pan for the access of the inlet, cable conduit access and so

on these interpenetrations must be executed so watertightness is guaranteed.

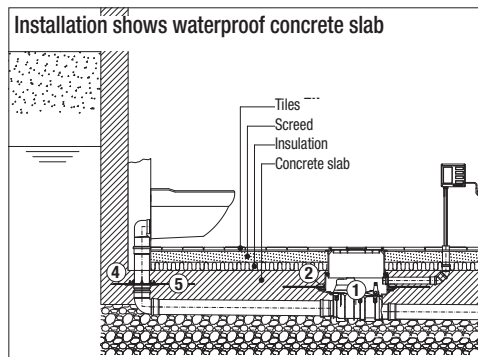
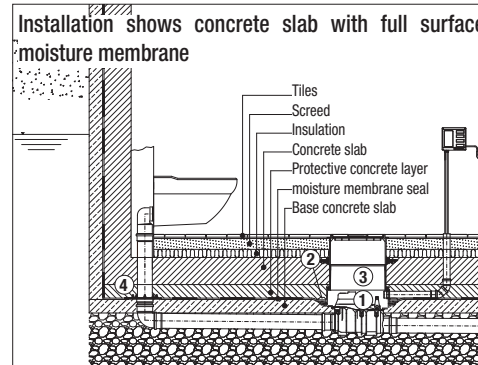


2. Installation

2.5 Installation with moisture connection seal (Sealing set Article Nu. 83023)

In the case that this system is installed in a foundation slab which is protected by a full surface moisture membrane to protect against groundwater or high moisture, the connection flange system (Article Nu. 83023) should be used. The on-site moisture membrane should be connected to the integrated body flange on the Aqualift F and then fixed in place with the 83023 plastic perimeter flange (connection screws are included). In the case that a waterproof concrete foundation slab is used, the NK/SBR heavy duty sealing membrane (included in 83023) should be connected between the integrated body flange and the flange supplied with the 83023 - the sealing membrane has pre-drilled holes to fit perfectly onto the integrated flange. In the case that this water proof slab needs to be penetrated for inlets or conduit pipes, each of these penetrations should be properly sealed against groundwater / moisture.

Illustration (showing Pumpfix F backwater valve)



- ① KESSEL Pumpfix F, Staufix FKA, Staufix SWA or Controllfix
- ② Sealing flange Article # 83023
- ③ Extension section Article # 83071
- ④ Intermediate section DN 100 with stainless steel pressure sealing flange Article # 27198
- ⑤ Polymer sealing membrane Article #27159

2.6 Installation with Extension section (Article Nu. 83071)

When using the extension section, the flange height remains vertically adjustable. If required, the extension section can be shortened on-site by sawing off the appropriate amount.

2.7 Sound Insulation

To help improve sound reduction of the system, the base of the Aqualift F should be decoupled with the concrete foundation (not be in direct contact with slab).

4. Cleaning and Maintenance



Attention: Prior to working on the pump DISCONNECT MAIN PLUG! Follow here all the safety instruction mentioned in chapter 1. Prior to maintenance work the seal housing must be pumped dry so a blow-out the wastewater is avoided.

4.1 Dismantling:

By dismantling of the one-hand-fastener and the two lock staples (safety lever) the pump can be easily taken out without using any tools. The non-return-flap in the pressure joint of the vessel avoids that the wastewater which still remains in the discharge pipe (pressure pipe) returns back to the unit.

4.2 Installation:

Prior to re-installation all sealing faces must be cleaned. Grease the lip sealing in the drain. Re-insert the pump as described in chapter 2.4.

4.3 Maintenance:

For all works at the pump, a lifting of the pump out of the unit is recommended as well as to execute a preliminary cleaning of it. Other tasks as described are not allowed to be executed.

The maintenance work should only be executed by authorized and qualified personnel. Repairs are to be exclusively executed by the manufacturer.

General Maintenance:

According to DIN 12056 a maintenance must be executed by a specialist (specialised company) in the following time intervals:

- after 3 months for units installed in commercial businesses
 - after 6 months for units installed in multifamily housings
- For single-family houses the maintenance service must be executed after six months.

A visual check of the unit site must be executed. The unit must be checked regarding sediments and wearing.

For the following parts a visual check must be executed, if necessary the parts of the unit must be cleaned from sediments.

4.4 Maintenance of the integrated backflow flap:

Remove the pump. Slightly open the backflow flap and therefore allow the water remaining in the pipe to run back into vessel.

After dismantling the pump fixing (Release of the recessed-head screw) the backflow flap

can be taken out and be cleaned. This way an unobstructed access for cleaning of the pressure pipe is possible.

4.5 Withdrawal of Pressure Sensor

Release the air-tube out of the bolting. Check free pass to the control unit (if necessary remove condensation water).

Disassemble air-tube fixing from pumping slab. By opening of the one-hand-fastener check for contamination.

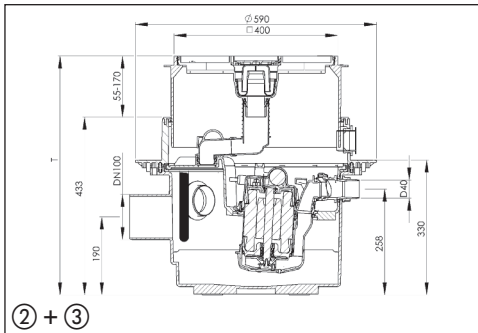
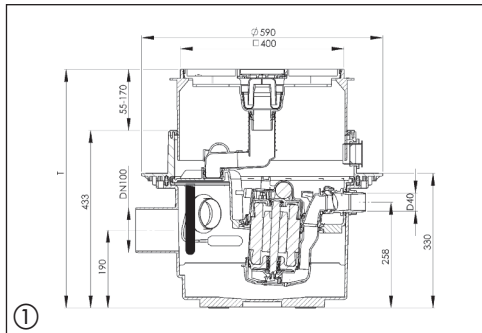
Check pressure sensor: Disassemble air-tube fixing and dip into a provided bucket. If the pump is re-activated by dipping the pressure sensor than the functionality is granted. If this is not the case please contact immediately our customer service.

Prior to re-installation of the pressure sensor into the pumping slab the water must be pumped out of the sump vessel otherwise the setting of the switch-points is not correct.

- cutting unit
- ventilation unit
- pressure access
- pressure sensor

5. Technical Dates

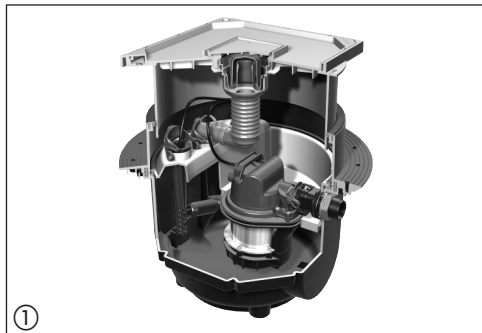
5.1 Dimensioned drawing:



① Wastewater *Aqualift*® F Mono underground single unit with removable pump including floater. Article # 28300

② Wastewater *Aqualift*® F Tronic underground single unit with removable pompe including SDS-switch-unit (self-diagnosis-system). Article # 28350

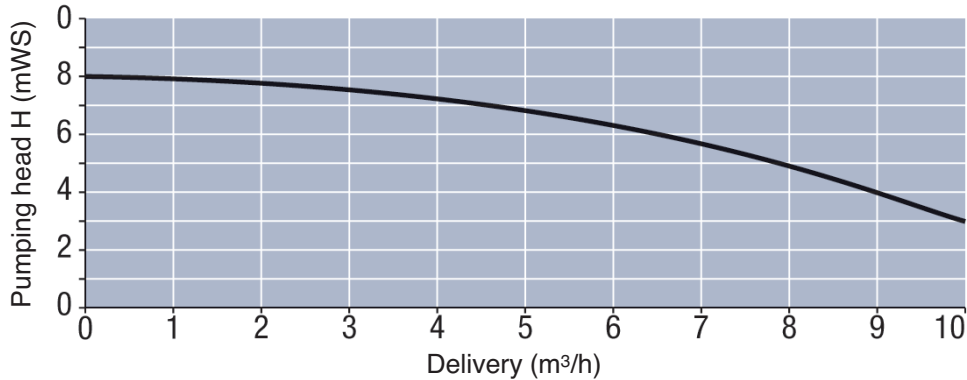
③ Wastewater Station *Aqualift* F Duo underground double unit with two removable pumps including SDS-switch-unit (self-diagnosis-system) Article # 28330



5. Technical Dates

5.2 Performance diagram

Maximum delivery	Q (m ³ /h)	0,0	3,0	5,0	6,5	7,8	9,0	10,0
Pumping head	H (m)	8,0	7,5	6,8	6,0	5,00	4,0	2,8



Kind of current	Voltage	electricity	performance P1 / P2	speed	motor protection	mode
AC	230 V	5,3 A	1000 W / 550 W	2800 min ⁻¹	thermal (integrated)	S 3 - 30 %

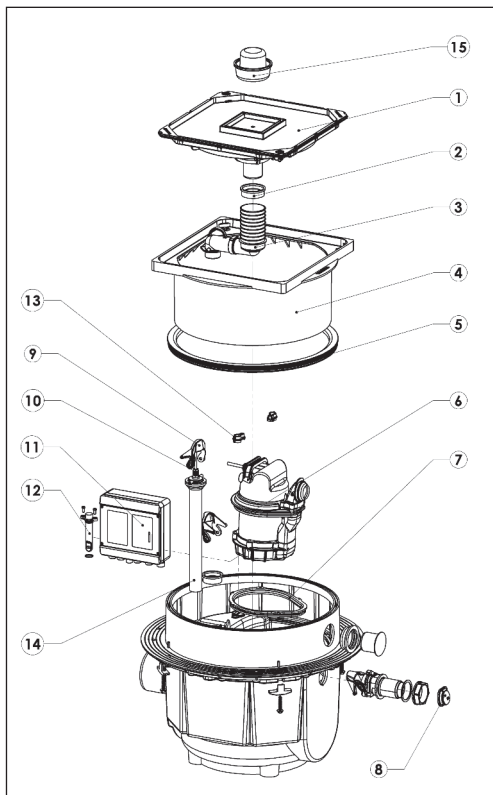
Allowed ambient temperature 0...50°C

Maximum wastewater temperature up to 40°C

6. Assistance support in case of Failure

Failure	Possible Reason	Remedial Treatment
Pump is not running	<ul style="list-style-type: none"> ▶ no mains power supply ▶ mains cable damaged ▶ defective float-switch or pressure-control-unit ▶ ventilation pipe clogged 	<p>check main power check fuse-box repair only by KESSEL customer service check float-switch or pressure (see chapter 4.5) or repair by KESSEL customer service clean ventilation drilling</p>
Rotor blocked	contamination, solid and coarse material are jammed between rotor and suction flange	cleaning of pump
Reduced delivery	<ul style="list-style-type: none"> ▶ wearing of the suction flange ▶ wearing of the rotor/cutting unit ▶ ventilation pipe clogged 	<p>cleaning of pump Replace suction basket impeller, cutting assembly clean ventilation pipe</p>
Pump is running although no wastewater is entering system	<ul style="list-style-type: none"> ▶ defective/leaking non-return-flag ▶ pressure switch clogged ▶ defective/blocked float-switch 	<p>exchange non-return-flag clean pressure-access inspection of tightness for all parts of the unit</p>

7. Auxiliary Equipment / Spare Parts



Position	Part	Article number
1	400x400mm tileable cover	83055
2	DN 50 pipe seal	298-023
3	Outlet connection	298-030
4	Upper section 400x400mm (220mm height)	83061
5	Upper section gasket	173-028
6a	Sewage pump with float switch	298-028
6b	Sewage pump without float switch	298-029
7	Pump flange gasket	298-017
8	Non-return flap	298-013a
9	Pump connection lock	157-004
10	Ventilation pipe (5 meter) – only for Tronic models)	298-045
11	Safety lock	243-298
12	Sensor	80085
13	Securing lock	298-034
14	Pressure switch – only for Tronic models Length = 310 mm (models up to March 2010) Length = 250 mm (models from April 2010)	298-046 298-091
15	Odour trap	47200
	Battery (2 required) – only for Tronic models	197-081

In the case that the control unit up to model Rev 6.4 is replaced with a new control unit, the 250mm long pressure switch should be used.

8. Guarantee

1. In the case that a KESSEL product is defective, KESSEL has the option of repairing or replacing the product. If the product remains defective after the second attempt to repair or replace the product or it is economically unfeasible to repair or replace the product, the customer has the right to cancel the order / contract or reduce payment accordingly. KESSEL must be notified immediately in writing of defects in a product. In the case that the defect is not visible or difficult to detect, KESSEL must be notified immediately in writing of the defect as soon as it is discovered. If the product is repaired or replaced, the newly repaired or replaced product shall receive a new warranty identical to that which the original (defective) product was granted. The term defective product refers only to the product or part needing repair or replacement and not ne-

cessarily to the entire product or unit. KESSEL products are warranted for a period of 24 month. This warranty period begins on the day the product is shipped from KESSEL to its customer. The warranty only applies to newly manufactured products. Additional information can be found in section 377 and 378 of the HGB.

In addition to the standard warranty, KESSEL offers an additional 20 year warranty on the polymer bodies of class I / II fuel separators, grease separators, inspection chambers, wastewater treatment systems and rainwater storage tanks. This additional warranty applies to the watertightness, usability and structural soundness of the product.

A requirement of this additional warranty is that the product is properly installed and operated in accordance with the valid installation and user's manual as well as the corresponding norms / regulations.

2. Wear and tear on a product will not be considered a defect. Problems with products resulting from improper installation, handling or maintenance will also be considered a defect.

EC DECLARATION OF CONFORMITY

Electromagnetism Guidelines 89/336/EEC Electromagnetism Guidelines 89/336/EEC
Low Voltage Guidelines 73/23/EEC

Kessel GmbH, D-85101 Lenting

we declare that the product

**KESSEL Wastewater Station *Aqualift® F* for underground installation
for wastewater with or without sewage**

is in agreement with

EN 12050-3

EN 12100-1 (2003-11)

EN 60335-2 (1996-09)

EN 61000-6-4 (2002-01)

EN 60730-1

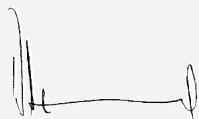
EN 12100-2 (2003-11)

EN 60335-1 (2003-5)

EN 61000-6-1 (2002-1)

EN 809 (1998-11)

Lenting, den 07.03.2007



B. Kessel



A. Kessel

 **KESSEL**

Everything for Drainage

Solutions from a single source

- ▶ Backwater valves and cleanouts
- ▶ Volatile liquid traps
- ▶ Lifting stations, pumps, warning and control units
- ▶ Rainwater management systems
- ▶ Grease, starch and oil / fuel separators
- ▶ Inspection chambers
- ▶ Custom projects for industrial applications
- ▶ Polymer pipe fittings
- ▶ Stainless steel drains and channels



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