



Pressure drainage

- an economic alternative



Move water.



» What means pressure drainage?

Pressure drainage is a combination of several objects on a common pressure pipe. The separate disposal of domestic sewage from a single-family house via a separate pipe is also called pressure drainage. These pipes are connected to a gravity drain via a pressure pipe end-shaft or lead into a wastewater treatment plant.

Such systems require a detailed, technical inspection and precise planning. In this context, it is essential to comply with local regulations and specifications. By means of numerous, successful projects, ZEHNDER PUMPS has proven comprehensive expertise to realize these complex demands.

We execute EDP-based calculations of pressure pipes and support you when selecting the proper pipe cross-section. In most of the cases, pressure pipes with a diameter of 50 or 65 mm are used. In this way, distances of more than 2 kilometres can be covered easily in a very economical way.

To avoid odour nuisances the pressure pipe is led into the transfer shaft below the water surface. Thereby, the leakage and whirling up of hydrogen sulphide H_2S is prevented, which is responsible for the occurrence of unpleasant gases.

» What about the sewage?

About 90% of all households in Germany are connected to the canalization. In urban agglomerations, up to 5 m deep laid gravity pipes lead to treatment plants. In rural areas it is not possible or very cost-intensive to use gravity pipes. The pressure drainage systems from ZEHNDER PUMPS are reliable and

economical alternatives for sewage disposal in those areas. The usage of pumping stations enables a cost-effective connection to the communal-regulated sewage system.



» ZEHNDER pressure drainage | versatile and cost effective

The usage of pressure drainage stations from ZEHNDER PUMPS is recommendable for

- faraway buildings
- groups of houses which are isolated from the canalization due to a river
- city districts which will be connected to a local treatment plant
- an alternative to cost-intensive gravity pipes

In the process, every connected house is equipped with a pumping station from ZEHNDER PUMPS. These stations pump the sewage to a common pressure pipe which is laid at the roadside. In this way, complex sewage systems arise. In the stage of planning new houses and districts, fresh water pipes and sewage pipes can be installed in the same pipe shaft.

Your decision for pressure drainage systems from ZEHNDER PUMPS saves you 50% of the investment and operating costs compared to conventional gravity pipes. For example, the energy costs of one ZEHNDER pumping station for a single-family house are only 8 Euro per year.

» ZEHNDER pressure drainage | proven a thousand times

FPS-polyethylene pumping stations are already used thousands of places to solve complex problems of sewage disposal. Easy installation - also for areas difficult to access, backyards, roadways and installation depths up to 350 cm - and fault-free functionality were decisive arguments for ZEHNDER PUMPS

and against gravity pipes. The average lifespan of the installed pumps is approx. 4.000 hours. Pumping stations of single-family houses only work around 15 hours per year, so a long lifetime of the system is guaranteed.



» Why ZEHNDER PE-pumping stations?

Polyethylene manholes offer a variety of benefits compared to conventional concrete manholes. They are used more and more frequently by municipalities, private households and the industry as an economic alternative.

Your advantages:

✓ Absolute tightness

Manholes made of PE are 100% impermeable to water - especially ground water - and offer very high tear strength and breakage resistance.

✓ Durability

High tightness, strong chemical resistance, best corrosion resistance and smooth plastic surfaces ensure reliable operation for many years.

✓ Flexibility

Easy height adjustment and insertion of further inlets - both could be pre-assembled or even customised subsequently.



Did you know?

We do not only manufacture complete PE pumping stations. We also offer coupling systems with the entire piping and all valves. If you have an existing manhole made of polyethylene or concrete, you can easily install our pre-assembled pumping station equipment. In this case, there is no necessity to replace the whole pumping station. Our technicians are pleased to support you finding the best solution for your application.

✓ Low weight

The lightness of the material simplifies and subsidises the entire handling during transport and installation.

✓ Economic efficiency

Unlikely maintenance costs, favourable installation and cost-effective transportation make our polyethylene pumping stations a very profitable decision.

» Pumping stations

ZEHNDER polyethylene manholes are characterized by low weight, high stability, absolute tightness and easy installation. Supplied as complete systems with one or two pumps, they dispose waste water and sewage. Due to the built-in coupling system, high-efficient and powerful grinder, channel

and vortex pumps can be placed inside the manhole. The coupling system as well as non-return valves and the entire stainless steel piping are pre-installed. The manholes are protected against floating and accessible even for trucks.



Pumping station FPS Basic

| | |
|------------------------|---|
| Material | corrosion-resistant PE-LLD |
| Piping | DN 32, stainless steel, completely assembled |
| Inlet | 1 x DN 150, additional inlets on request |
| Pressure outlet | PE-HD 63 x 5,8 |
| Additional connections | 2 x DN 100 for cable gland and air vent |
| Max. inlet depth | 1 190 up to 1 270 mm |
| Total height* | 1 365 up to 1 675 mm |
| Diameter | 806 mm |
| Configuration | gate valve, ball non-return valve, guide rail, guide chain, coupling system |

* incl. top section and BEGU-manhole cover

available BEGU-manhole covers:
class A accessible
class B drivable (car)
class D drivable (truck)



Pumping station FPS-KE / FPS-KD

| | |
|------------------------|---|
| Material | corrosion-resistant PE-LLD |
| Piping | DN 50, stainless steel, completely assembled |
| Inlet | 1 x DN 150, additional inlets on request |
| Pressure outlet | PE-HD 63 x 5,8 |
| Additional connections | 2 x DN 100 for cable gland and air vent |
| Max. inlet depth | 1 360 up to 2 940 mm |
| Total height* | 1 730 up to 3 540 mm |
| Diameter | 1 100 mm |
| Configuration | gate valves, ball non-return valves, guide rails, guide chains, coupling system |

* incl. top section and BEGU-manhole cover

available BEGU-manhole covers:
class A accessible
class B drivable (car)
class D drivable (truck)

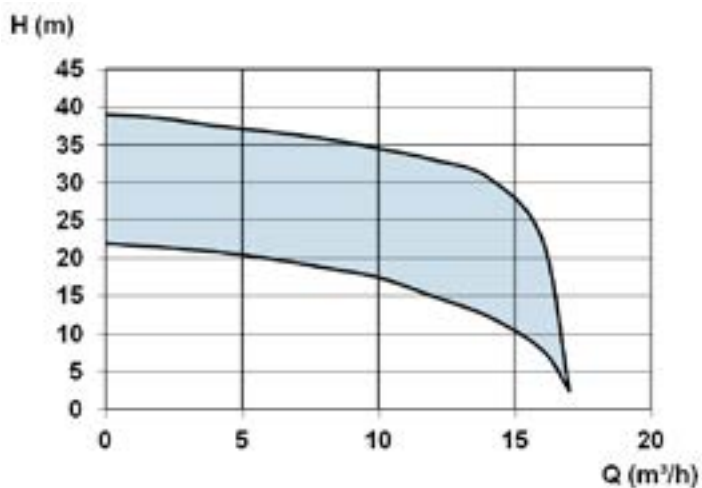


» Submersible grinder pump ZFS 71 Ex



- robust, adjustable cutting system made of corrosion-resistant special alloy
- energy-efficient submersible grinder pump with Ex-protection
- sealed with double, bidirectional mechanical seal within oil bath

| | |
|------------------|---------------------------|
| Material | cast-iron |
| Application | portable or stationary |
| Power | 2,1 up to 3,9 kW |
| Voltage | mono-phase or three-phase |
| Max. flow rate | 17 m ³ /h |
| max. head | 39 m |
| Pressure outlet | DN 50 |
| Protection grade | IP 68 - fully submersible |
| Speed | 2800 min ⁻¹ |



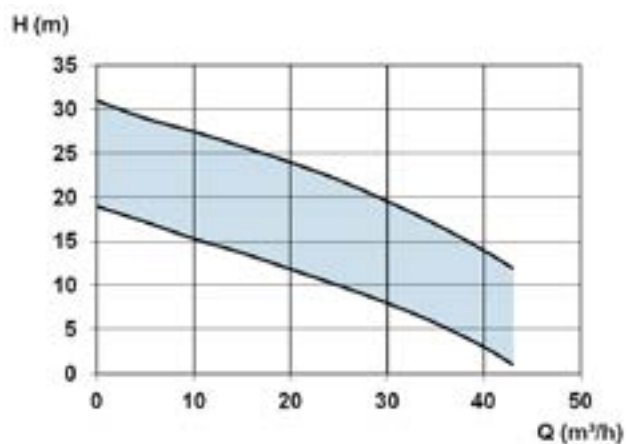
cutting system ZFS 71

» Submersible sewage pump ZPG 71



- energy-efficient submersible sewage pump
- coupling foot available as accessory
- double, bidirectional mechanical seal within oil bath

| | |
|------------------|---------------------------|
| Material | cast-iron |
| Application | portable or stationary |
| Power | 2,1 up to 3,9 kW |
| Voltage | mono-phase or three-phase |
| Max. flow rate | 53 m ³ /h |
| Max. head | 31 m |
| Pressure outlet | DN 50 |
| Protection grade | IP 68 - fully submersible |
| Speed | 2800 min ⁻¹ |
| Solids handling | 40 mm |

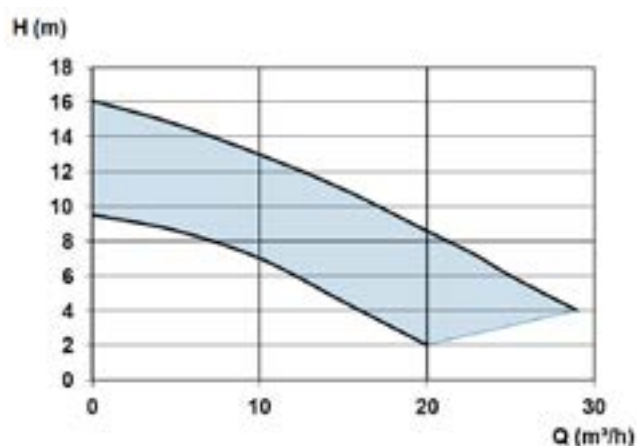


» Submersible sewage pump ZPG 50



- energy-efficient submersible sewage pump
- coupling foot available as accessory
- double, bidirectional mechanical seal within oil bath

| | |
|------------------|---------------------------|
| Material | cast-iron |
| Application | portable or stationary |
| Power | 0,9 up to 2,0 kW |
| Voltage | mono-phase or three-phase |
| Max. flow rate | 29 m ³ /h |
| Max. head | 16,1 m |
| Pressure outlet | DN 50 |
| Protection grade | IP 68 - fully submersible |
| Speed | 2800 min ⁻¹ |
| Solids handling | 41 - 45 mm |



» Consulting & Service

By means of a professional, technical consultancy we are at your disposal for orders and order management. We help you quick and easy with repairs and complaints. For us, high service orientation naturally includes on-site support by our sales representatives.

» Control unit ZPS

Controls are essential parts of the whole pump technology.

ZEHNDER-pump controls are robust, reliable and equipped with a LCD display to monitor the operation data. Furthermore, the control unit has an integrated audible and visible alarm.

It is installed in a dry room, e.g. the cellar. The installation in external cabinets outside the house is also possible. Even large distances are enabled by using a small compressor set.

ZPS 1.1

polypropylene control box for wall-mounting

monitoring of operation on clear text display with signal lights

automatic operation of one mono-phase or three-phase pump

programmable start delay and over-run time

visible and audible alarm with potential-free terminals

level controlled with dynamic pressure system, float switches or 4-20 mA interface

monitoring of operation hours, pump starts, power consumption and maintenance intervals

error memory for 64 errors

phase monitoring for three-phase motors

12 languages available



high water alarm

24h switch-on

ATEX-mode

service-mode

keylock

level indicator

ZPS 2.1 - additional features:

automatic operation of two mono-phase or three-phase pumps

automatic alternating operation

switchover to standby pump in case of malfunction



Did you know?

Our professional pump control unit ZPS does not only offer simple handling with numerous setting options, but is also very flexible.

Standardly supplied for our pumping stations and sewage lifting units, ZPS can also be used for our sewage pumps, waste water pumps and analogical products of other manufacturers.



» Coupling system KS

Our coupling system KS includes three pieces - coupling base, guide piece and rail retainer. All parts are made of hardened cast-iron which guarantees wear-protection, durability and resistance against liquids with solids. The secure maintenance of the pumps is ensured by these robust components.

| Type | Inlet | Outlet | Pressure Nominal |
|--------|--------|--------|------------------|
| KS 50 | DN 50 | DN 50 | PN 10 |
| KS 100 | DN 100 | DN 100 | PN 10 |



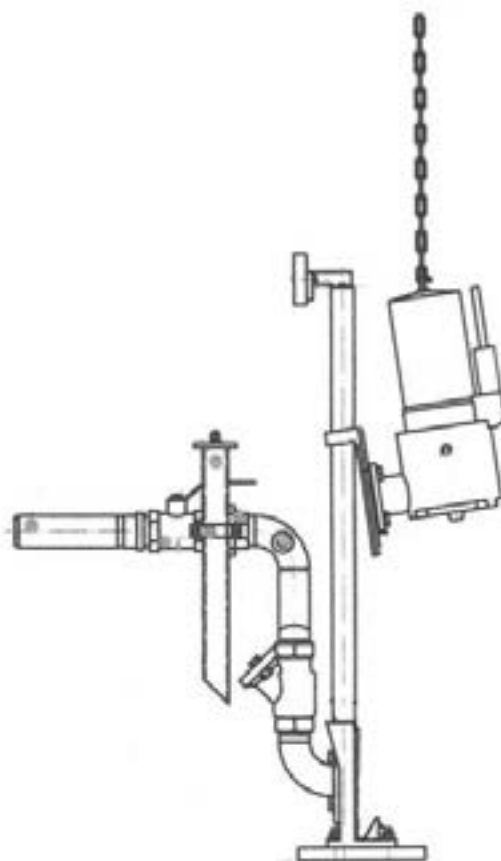
» The ZEHNDER-technology

The technical equipment includes one or two submersible cast-iron pumps with cutting system or channel/vortex impeller and the required valves, e.g. gate valves and non-return valves. The coupling system is a substantial feature of ZEHNDER-pumping stations. Thus, the pump can also be lifted and lowered if the manhole is filled, the coupling and sealing of the pump is automatically.

ZEHNDER-pumping stations are normally installed and connected by well-trained installers. The service is secured by qualified, local customer service points.

» Easy maintenance

For maintenance works on the pump, there is no need to demount it. It can be taken off the manhole via a guide rail system by pulling the guide chain. After service is completed, the pump is placed in the manhole via the guide rail. Due to its tare weight and the special coupling system, the pump is connected to the pressure pipe without further connection works. Enormous costs are saved because it is not necessary to empty and flush the manhole.



Coupling system with piping and guide rail



» Economic efficiency

The low weight of our pumping stations does not only save delivery costs, but also costs for installation. Heavy machines are not required for the shaft installation. Both the polyethylene manholes and the pumps are characterized by very long durability. The used materials guarantee the stability and thereby low-maintenance operation.

The system (guide rail and coupling system) enables quick, easy and cost saving services.



Did you know?

If you are searching for a replacement pump for your existing coupling system, we can help you. Just let us know the existing type of pump and we will produce an adaptor. In this way, every pump can be replaced cost-effective by a ZEHNDER pump.

» Pump technology with satisfaction guarantee

Besides the manhole and the control unit, the appropriate pump is naturally part of our complete package. The pumps of ZEHNDER are made in Germany and thereby ideal for the usage in the area of pressure drainage. The motor housing, pump housing, seal carrier and impellers of our latest innovations ZFS 71 and ZPG 71 as well as of ZPG 50 are made of cast-iron. A double, bidirectional mechanical seal with intermediate oil chamber saves the motor from damages. All pumps are equipped with 10 m power cable with lateral cable gland, strain relief and bend protection as standard.



» Request your pumping station

Contact details

Name
Street
Postal Code
City
Country
Phone
Email

Select medium

Sewage
Faecal-free waste water
Atmospheric water

Select operation type

Operation frequency
Number of users

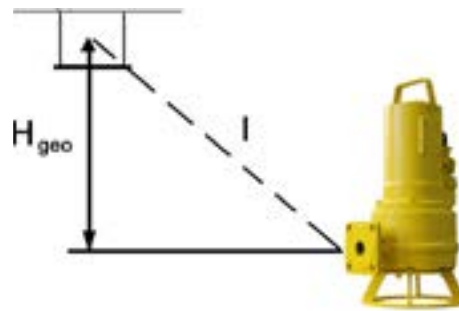
Select drainage objects

| | Quantity |
|------------------------------------|----------|
| Washbasin, Bidet | |
| Shower without stopper | |
| Shower with stopper | |
| Single urinal with toilet tank | |
| Single urinal with flushing valve | |
| Urinal | |
| Bathtub | |
| Kitchen sink | |
| Dishwasher (household) | |
| Washing machine up to 6 kg | |
| Washing machine up to 12 kg | |
| WC with 4,0/4,5 litres toilet tank | |
| WC with 6,0 litres toilet tank | |
| WC with 7,5 litres toilet tank | |
| WC with 9,0 litres toilet tank | |
| Ground run DN 50 | |
| Ground run DN 70 | |
| Ground run DN 100 | |

Select rainwater surfaces

| | | |
|--|---------|----------------|
| Water-permeable surfaces | | |
| Description | Surface | m ² |
| Partially permeable and slight draining surfaces | | |
| Description | Surface | m ² |
| Waterproof surfaces | | |
| Description | Surface | m ² |

Specify the pumping station



Geodetic head (H_{geo}) in m

Select pressure pipe

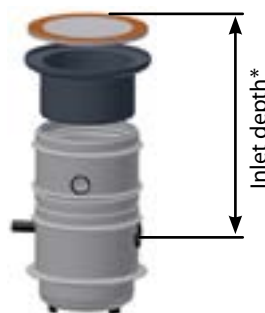
Inner diameter in mm
Length in m
Material

Select pumps

Quantity
Cutting system
Ex-protection
Voltage

Select manhole

Inlet depth in mm



*distance ground level to inlet pipe bottom

Manhole cover class

Select location of control unit

inside building
outside building

Vacuum interrupter*

*Required, if connection to public sewerage network is below installation level of the pump.

Add vacuum interrupter

Comments

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