

## Wilo-DrainLift WS 900.../WS 1100...

**D** Einbau- und Betriebsanleitung  
**GB** Installation and Operating Instructions

**F** Notice de montage et de mise en service  
**E** Instrucciones de instalación y servicio

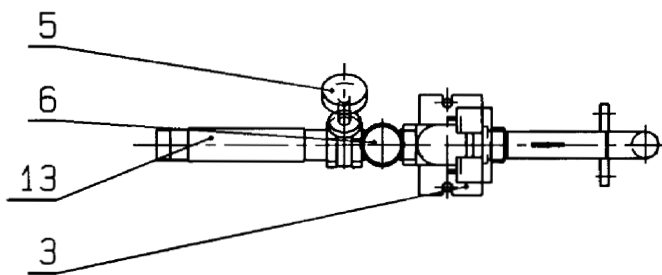
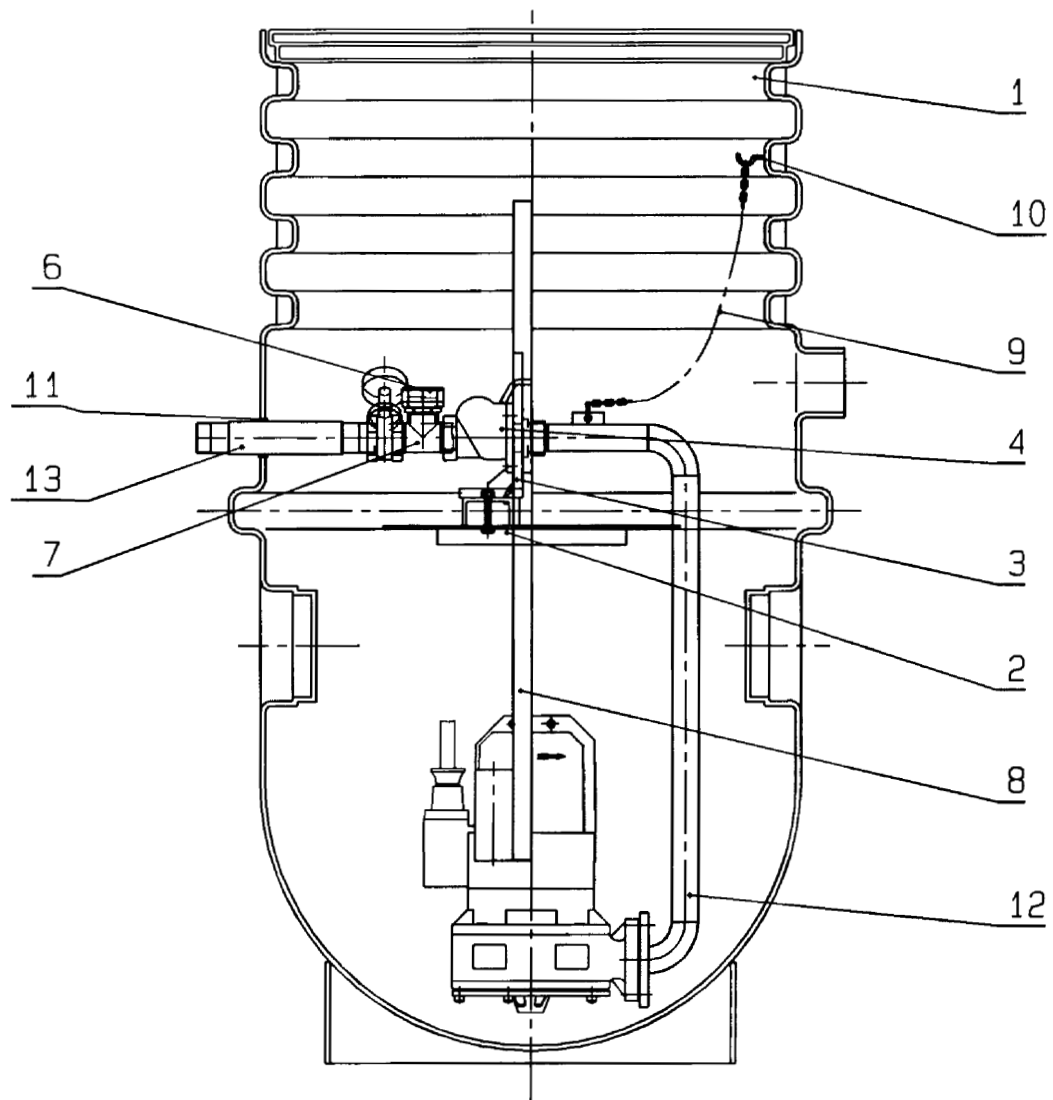


Fig. 1

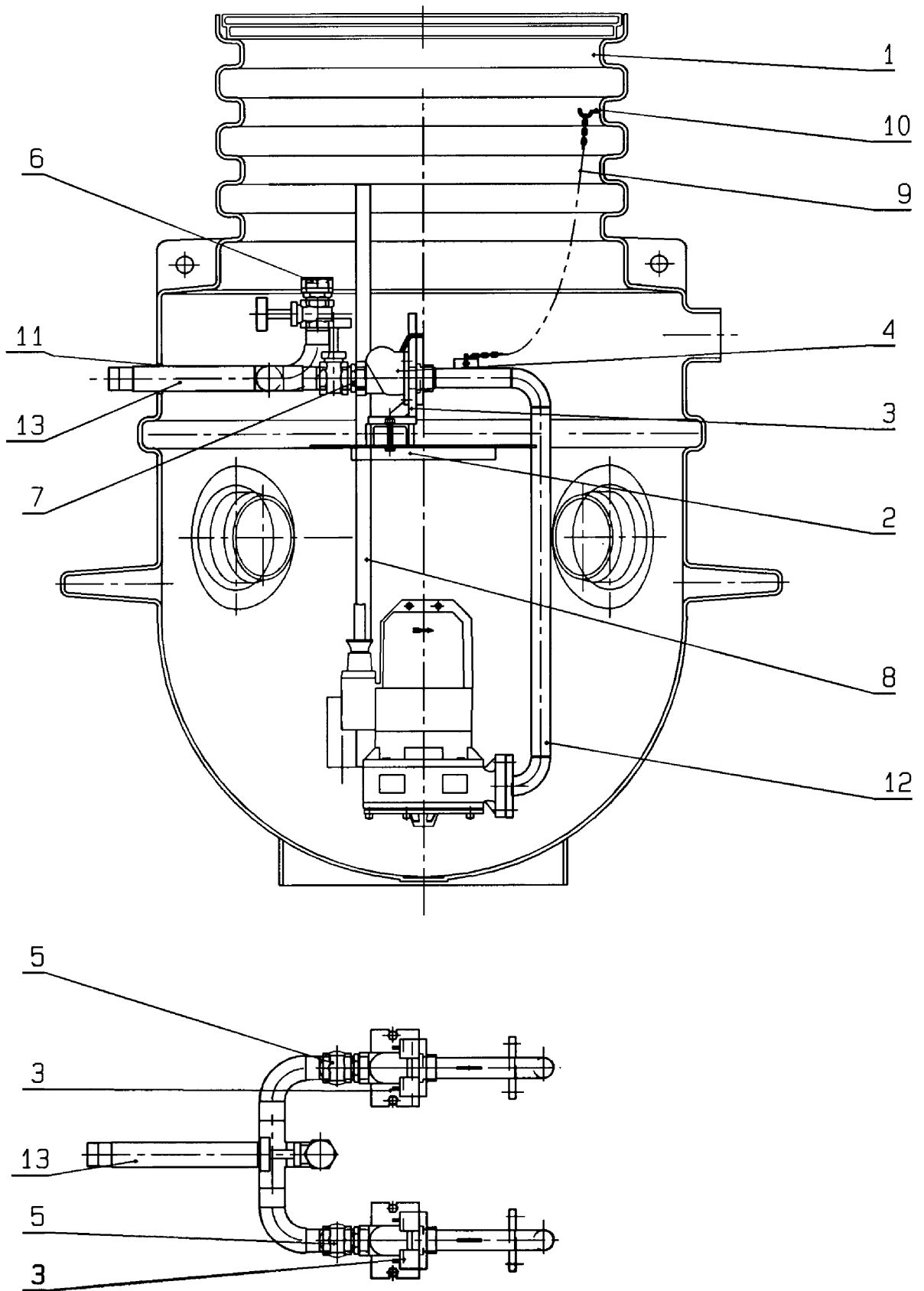


Fig. 2

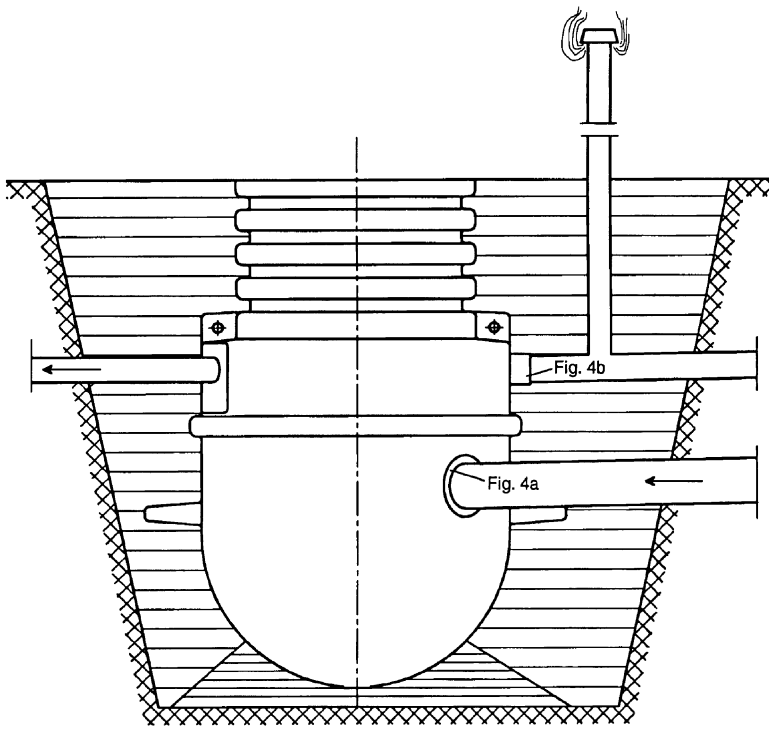


Fig. 3

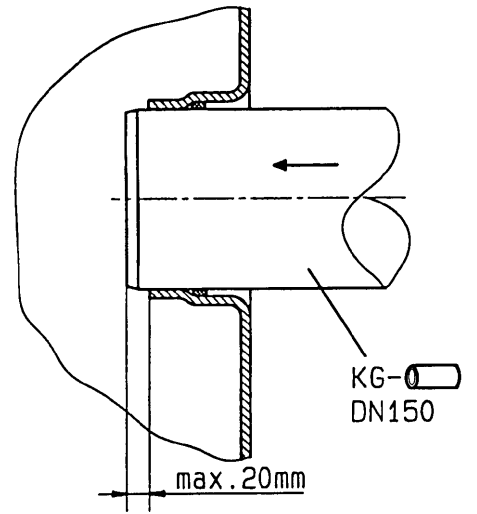


Fig. 4 a

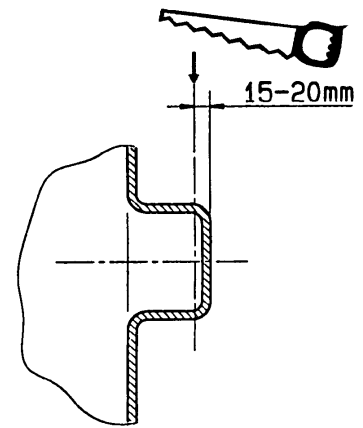


Fig. 4 b

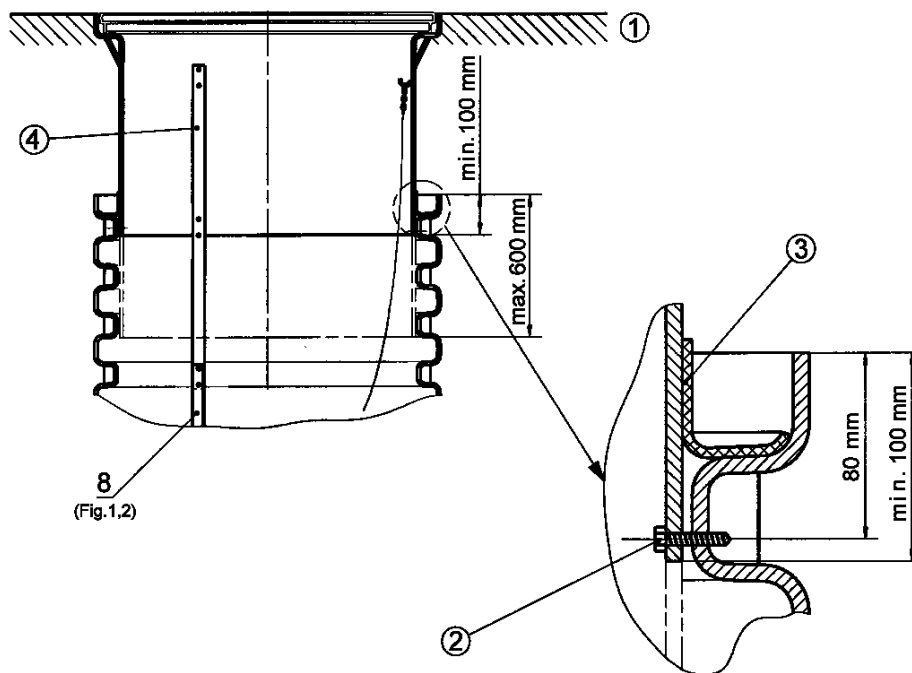


Fig. 5

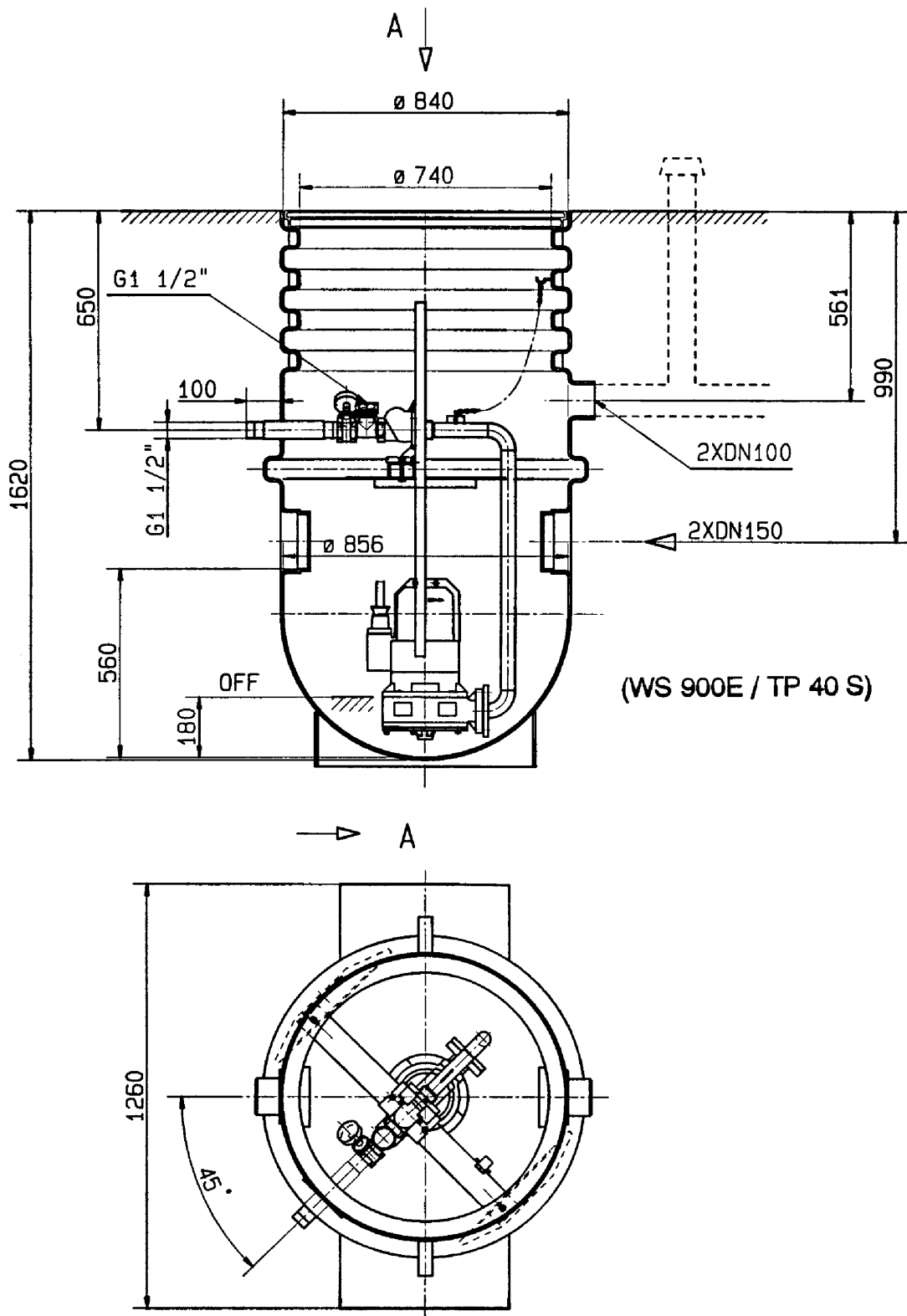
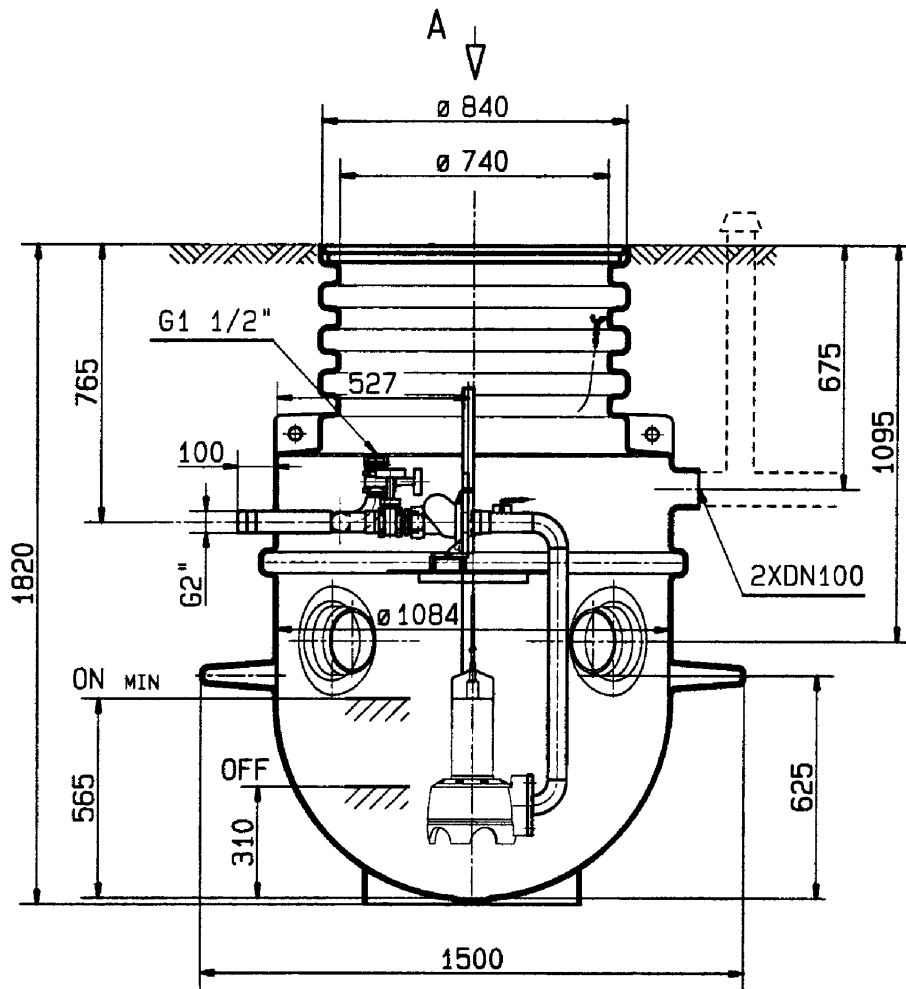


Fig. 6 a



→ A (WS 1100D / TP 50)

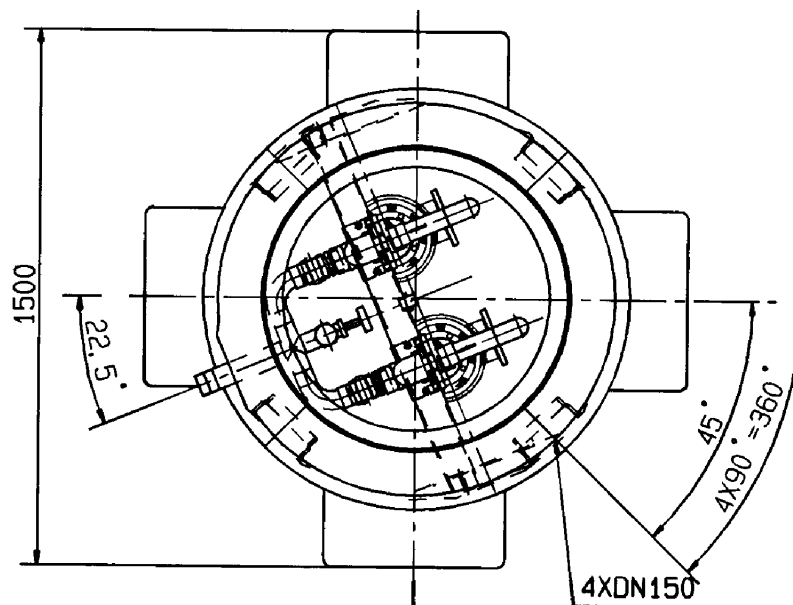


Fig. 6 b

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**GB**

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## 1. General Information

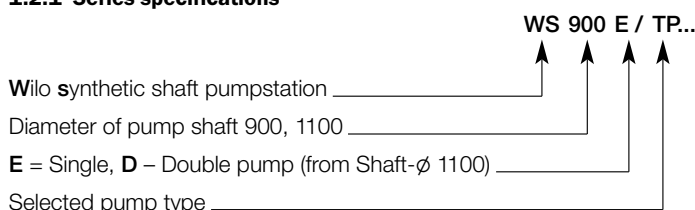
**Assembly and installation should only be carried out by qualified personnel!**

### 1.1 Uses

The Wilo synthetic shaft pumpstation WS is used together with a submersible motor-driven pump from the Wilo Drain series to form a complete pumpstation for the transportation of muddy water, waste water and sewage in the field of building technology (in houses for one or more families, basement garages etc.). It is used in applications where waste water cannot be transported into the public sewerage system by the natural gradient level. Due to the fact that this product is not heavy, the shaft can be lowered into the ground without a hoist or extra concrete work.

### 1.2 Product data

#### 1.2.1 Series specifications



#### 1.2.2 Connection and output data

Shaft for installations at ground level

Maximum working load: 5 kN/m<sup>2</sup> (in accordance with DIN EN 124, Group 1)

Maximum pressure in the compressed air piping: 6 bar  
 Pressure pipe connection: see data sheet/catalogue  
 Waste water inlet: DN 150  
 Connection for ventilation/cable pipe: DN 100  
 Shaft height: see data sheet/catalogue  
 Shaft diameter: see data sheet/catalogue  
 Retaining capacity of shaft: see data sheet/catalogue  
 Dimensions/installation conditions: see data sheet/catalogue

Details of which pumps are suitable for use with which size shaft can be found in the data sheet/catalogue.

## 2. Safety

These instructions contain important information which must be followed when installing and operating the pump. It is therefore imperative that they be read by both the installer and the operator before the pump is installed or started up. Both the general safety instructions in the "Safety precautions" section and those in subsequent sections indicated by danger symbols should be carefully observed.

### 2.1 Instruction symbols in this operating manual

Safety precautions in these operating instructions which, if not followed, could cause personal injury are indicated by the symbol:



Safety precautions warning of danger due to electricity are indicated by the symbol:



The following symbol is used to indicate that by ignoring the relevant safety instructions, damage could be caused to the pump/machinery and its functions:

**ATTENTION!**

### 2.2 Staff training

The personnel installing the pump must have the appropriate qualifications for this work.

### 2.3 Risks incurred by failure to comply with the safety precautions

Failure to comply with the safety precautions could result in personal injury or damage to the pump or installation. Failure to comply with the safety precautions could also invalidate any claim for damages.

In particular, lack of care may lead to problems such as:

- Failure of important pump or machinery functions,
- Personal injury due to electrical, mechanical and bacteriological causes.

### 2.4 Safety precautions for the operator

Current regulations on the prevention of accidents must be observed. Injury resulting from electrical charges must be avoided. The VDE (German association of Electrical Engineers) and national energy supply company regulations must be observed.

### 2.5 Safety information for inspection and assembly

The operator must ensure that all inspection and installation work is carried out by authorised and qualified specialists who have carefully studied these instructions.

In principle, work should not be carried out on a running pump or installation and a second person should always be present.

### 2.6 Unauthorized modification and manufacture of spare parts

Changes to the pump/machinery may only be made in agreement with the manufacturer. The use of original spare parts and accessories authorised by the manufacturer will ensure safety. The use of any other parts may invalidate claims invoking the liability of the manufacturer for any consequences.

### 2.7 Unauthorised operating methods

The operating safety of the pump or installation supplied can only be guaranteed if it is used in accordance with paragraph 1 of the operating instructions. The limiting values given in the catalogue or data sheet must neither be exceeded nor allowed to fall below those specified.

## 3. Transport and storage

**ATTENTION!**

The unit is delivered together with the individual components on a pallet. The pallet may only be transported using permissible load suspension devices. Please ensure that the pallet is stable at all times. Do not suspend the pallet using the transport eyelets on the plastic shaft. These are intended for the transportation of the empty shaft. The pump must be protected against mechanical damage.

## 4. Description of product and accessories

### 4.1 Description of the unit (Fig. 1 and 2)

The unit comprises a plastic shaft made of PE (Fig. 1, pos. 1). This shaft is available in two sizes: WS 900 E for single pumps (Fig. 1), WS 1100 E/D for large single or double pumps (Fig. 2). The hole-shaped form of a part of the shaft walls and the "fins" prevent the lifting of the pump. The following components are assembled in the shaft for the connection of one or two submersible motor-driven pumps:

- Stand for securing the submersible motor-driven pump with easily removable surface coupling (Fig. 1, pos. 3)
- Pressure pipe connection with outer threads (W.-No. 1.4404 / 1.4571) (Fig. 1, pos. 13)
- Shut-off device (Fig. 1, pos. 5)
- Connection for flushing device (air or water), ventilation unit, mobile emergency disposal unit or a industrial type pressure gauge (Fig. 1, pos. 6)
- Cone-shaped backflow preventer (Fig. 1, pos. 4)
- Compressed air piping with flange of V 4 A (W.-No. 1.4404 / 1.4571) for connecting the pump (Fig. 1, pos. 12)



- Chain connected to the pressure pipe for pulling out the pump. Free end of the chain is secured following the assembly of the pump (Fig. 1, pos. 9).

The pipework supplied is for one or two-pump units (Fig. 2).

The synthetic shaft pumpstation, the selected Wilo-Drain pump and the accessories for the units which have been ordered are delivered in an unassembled state.

The shaft features either 2 (WS 900 E) or 4 (WS 1100 E/D) retracted sleeves as DN 150 inlet openings. The unit also has two DN 100 connecting sleeves for the ventilation and cable outlets.

**4.2 Products delivered**

- Wilo-Synthetic pumpstation, with armatures and pressure piping,
- 2 Rolling rings for 2 KG-pipe DN 150 connections,
- Pump(s) and switchgear according to order placed,
- Synthetic shaft pumpstation drawings according to order placed,
- Installation and Operating Instructions

**4.3 Accessories**

Accessories must be ordered separately.

- Shaft cover  $\phi$  830 mm, with non-slip profile,
  - Shaft cover, flood proof,  $\phi$  960 x 100 mm, with non-slip profile,
  - Clamping screw for connection to PE or PVC pressure pipe,
    - 1 1/2" (AG) on 50 mm outer  $\phi$
    - 1 1/2" (AG) on 63 mm outer  $\phi$
    - 2" (AG) on 63 mm outer  $\phi$
  - Shaft extension  $\phi$  730 x 800 mm inc. Assembly material (screws, plates, flat seals and extension length for the stay bar of the level controller)
- Special extension lengths available on request.

**5. Installation**

**5.1 Assembling the shaft**

- The **pit** for the shaft must be deep enough for the inlets to have a sufficient gradient once the shaft has been installed. Should the inlets be positioned high enough, the height of the shaft must be fixed so that the upper edge of the shaft is level with the floor. Otherwise the shaft must be extended.
- The **plastic shaft** should be positioned vertically and in a holohedral manner on filling sand (grain size 0–32 mm) in the pit and shaken gently (Fig. 3).  
When installing a shaft extension, the plastic shaft must be positioned in such a way that the upper edge of the shaft extension is flush with the ground. Maximum distance from the upper edge of the shaft to the ground: 700 mm or in accordance with the length of the extension.

**ATTENTION!** When using a shaft extension > 700 mm (special extension length), the foundation pressure is liable to increase as a result of the depth of the installation (> 2.5 m). Depending on the composition of the ground, the form stability of the plastic-shaft may be put at risk, this will not be covered by guarantee.

- Connecting the **inlets**: Saw off the bottom of the inlet sleeve intended for connection and push the KG inlet pipe (DN 150) into the sleeve using the rolling ring supplied with the unit (Fig. 4 a).
- Connect the **Compressed air piping** (PE or PVC) to the pressure supports using a clamp screw (accessories). The compressed air piping must be kept safe from frost.  
Once the assembly process has been completed, the compressed air piping should undergo a compression test in accordance with ATV A116 and DIN 4279, parts 1–9.
- Connecting the **ventilation/cable pipe**: Saw off the bottom of the support intended for the connection (Fig. 4 b) and connect the ventilation/cable pipe (DN 100) using a connecting sleeve. Connect the conduit of pipes with the gradient to the shaft.
- **Filling the pit**. As long as the grain size of the earth removed from the pit is no larger than 32 mm, this material can be used to fill the pit. Should the grain of the filling material be larger than this or sharper, the shaft wall must be protected by a 50 cm thick layer of sand or

gravel (max. grain size: 32 mm). Filling material should be added and then compressed evenly so that the shaft does not bulge or become misshapen.

Under extreme ground or flooding conditions, the danger of shaft lifting can be combated by placing suitable concrete weights on both of the shaft's lifting preventers (fins) (Fig. 2). These concrete weights should be placed securely over the earth, not directly over the fins themselves. Place sand between the concrete and the fins. This measure is not necessary under normal conditions.

- The user can choose from two different plastic covers (accessories) for **covering the shaft**, one with a seal and one without. The shaft cover with seal is suitable for areas regularly under flood alert. Both covers are accessible.
- Should an **extension of the shaft** (Fig. 5) be necessary or desirable as a result of low-lying inlets or for safety reasons (to protect against frost, for example), an extension can be delivered as an accessory. The maximum extension is 700 mm. Special extension lengths available on request.
  - Prior to the assembly of the shaft extension, the required connections should be made (inlet, ventilation and pressure pipe) and the pit should then be filled to half the height of the shaft (beads which run around the shaft).
  - Push the shaft extension into the shaft opening until the upper edge of the extension is flush with the ground (Fig. 5, pos. 1). For an extension < 150 mm, the use of conventional concrete rings and matching concrete covers is recommended, alternatively the shaft extension must be shortened at the bottom end.
  - The flat seal attached to the shaft extension should be pushed down onto the upper edge of the shaft and the shaft extension fixed in the desired position.
  - Secure the shaft extension to the shaft at the uppermost shaft beads using the six hexagon head screws (Fig. 5, pos. 2) provided.
  - Push the flat seal (pos. 3) into the upper slot of the shaft according to Fig. 5 so that as much of its surface as possible and a small flanging radius lies, without any creases, in the bottom of the slot. Ensure that the area between the flat seal and the bottom of the slot is clean!
  - Fill the pit.
  - Connect the stay bar for the level controller (Fig. 5, pos. 8) to the supplied extension length (Flatsteel pos. 4) using the enclosed bolts (If the shaft extensions is > 700 mm use 2 extension lengths).
- Instead of the shaft extension procedure described above, the ground level can be adapted using suitable concrete rings and the suitable concrete cover for this unit (max. 290 mm).

**5.2 Assembling the pump:**

- Clean shaft.
- Screw the pump and pressure pipe together outside the shaft using the assembly material provided.
- The switch box should be positioned close enough to the pump to ensure that there is sufficient wiring to allow for the pump to be removed from the shaft for maintenance work at a later date.
- Lead the wires for the control gear (pump cable, control wire or pneumatic tube) through the cable pipe to the control gear. Ensure that sufficient wiring is available to reach the side of the shaft.
- Lower the pump and the pressure pipe into the shaft using the chain and secure the coupling. Secure the chain to the chain hooks on the shaft.
- Place the stay bar (Fig. 1 and 2, pos. 8) and level controller in the slit which has been provided for this purpose in the crosshead.
- Adjust the level in accordance with the data sheet for installation and connection dimensions (example for this unit Fig. 6 a, 6 b).

**ATTENTION!** The minimum level (OFF) must not drop below the bottom edge of the motor. The minimum level (ON) required for certain units must ensure that the pump only starts when it is covered by sufficient water for cooling purposes, see examples in Fig. 6 a, 6 b and the drawing of the shaft pumpstation enclosed.

- Loosely bind all wires together, suspend over the flush connection and secure so that they cannot get into the flow medium or in the mouth of the pump's suction inlet. Do not squeeze or bend the wires.

### **5.3 Electrical installation**

Follow the instructions regarding electrical installation contained in the installation and operating instructions for the pump and the control gear.

## **6. Operation**

Follow the operating instructions contained in the installation and operating instructions for the pump and the control gear.

Open the valve in the compressed air piping before switching on the pump.

## **7. Maintenance**

In order to guarantee the highest level of safety and the lowest possible operating costs, the unit should be examined by qualified experts once every six months.

## **8. Problems, Causes and Solutions**

See installation and operation instructions for the pump.



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January 2007



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  - Produkt- und Anwendungsfragen
  - Liefertermine und Lieferzeiten
- Informationen über Ansprechpartner vor Ort
- Versand von Informationsunterlagen

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