

Wilo-TWI 5

Wilo-TWI 5-SE

- | | |
|---|--|
| DE Einbau- und Betriebsanleitung | TR Montaj ve kullanma kılavuzu |
| EN Installation and operating instructions | SV Monterings- och skötselinstruktioner |
| FR Notice de montage et de mise en service | FI Asennus- ja käyttöohje |
| NL Inbouw- en bedieningsvoorschriften | DA Monterings- og driftsvejledning |
| ES Instrucciones de instalación y funcionamiento | PL Instrukcja montażu i obsługi |
| IT Istruzioni di montaggio, uso e manutenzione | CS Návod k montáži a obsluze |
| PT Manual de instalação e funcionamento | RU Инструкция по монтажу и эксплуатации |
| EL Οδηγίες εγκατάστασης και λειτουργίας | |

Fig. 1

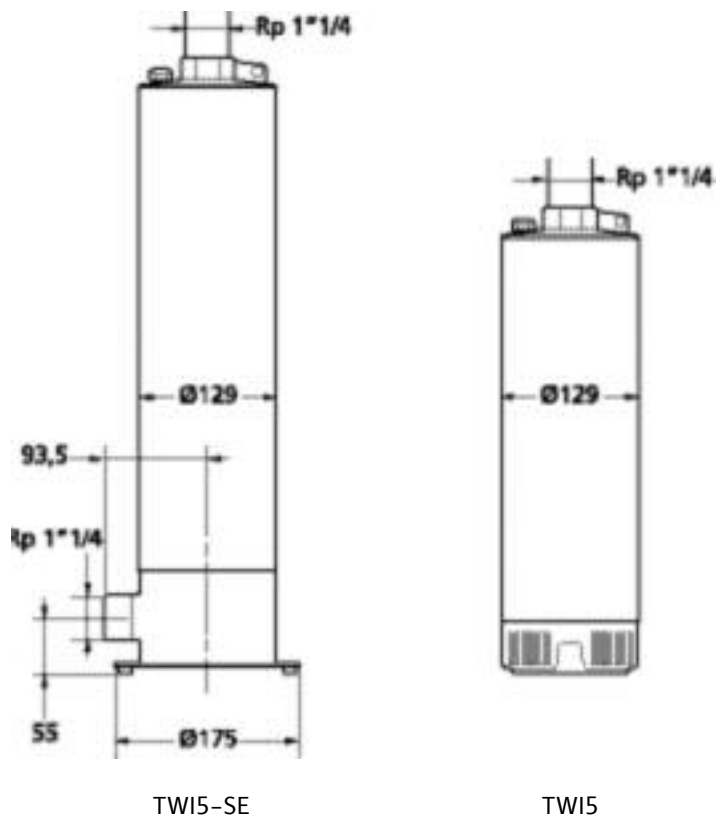


Fig. 2

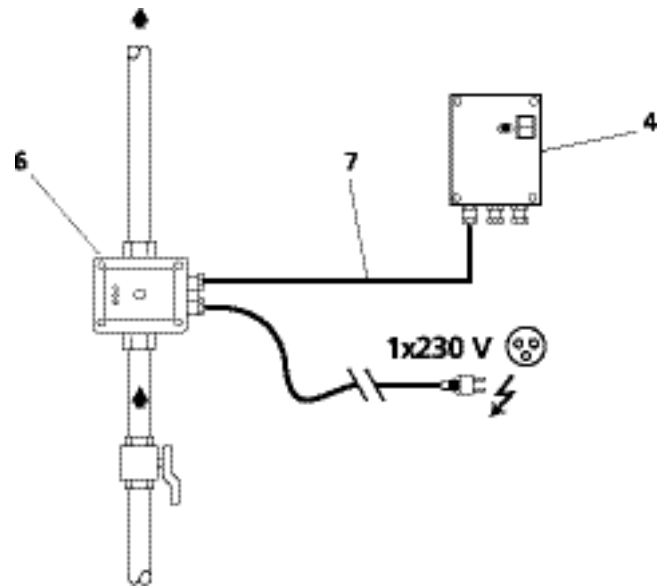


Fig. 3a

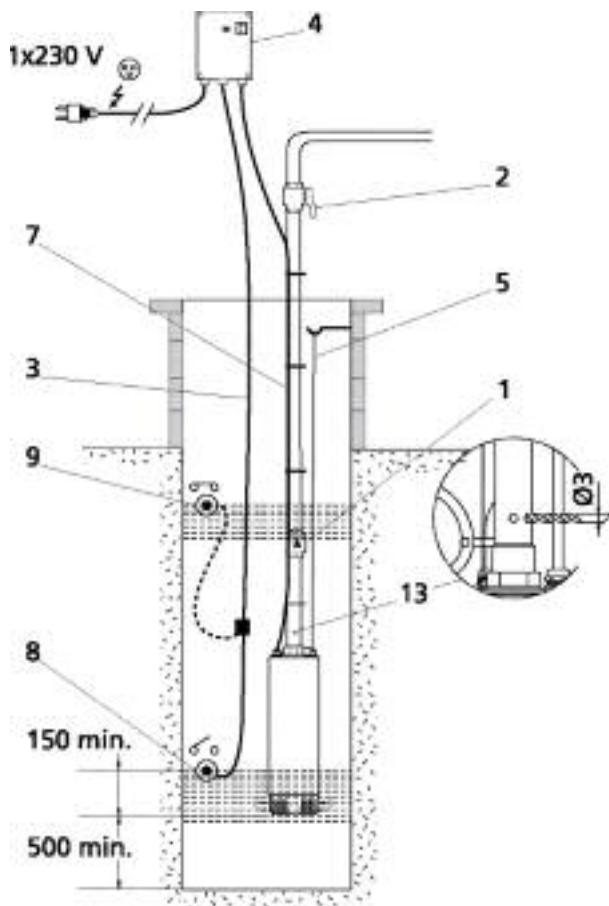


Fig. 3b

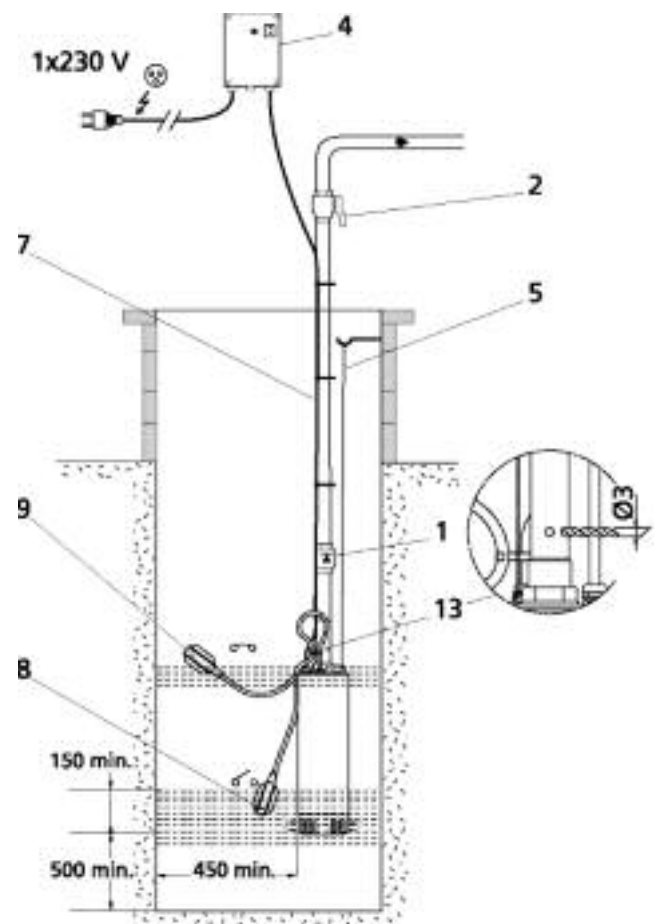


Fig. 4

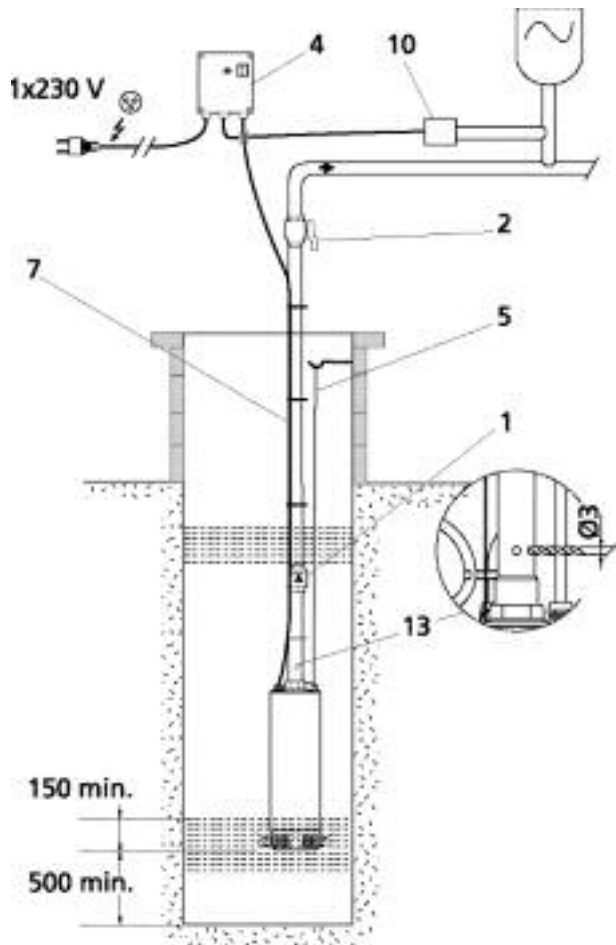


Fig. 5

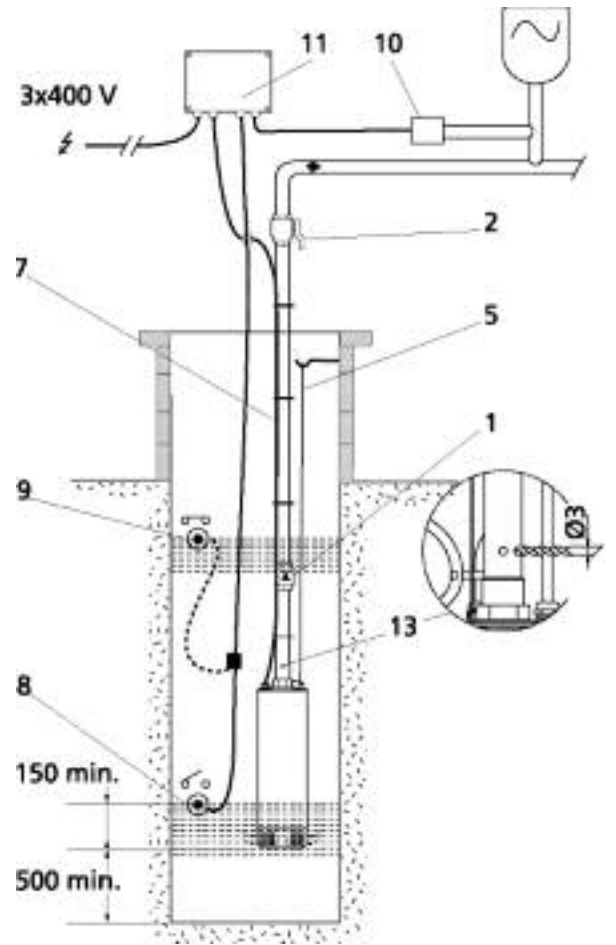


Fig. 6

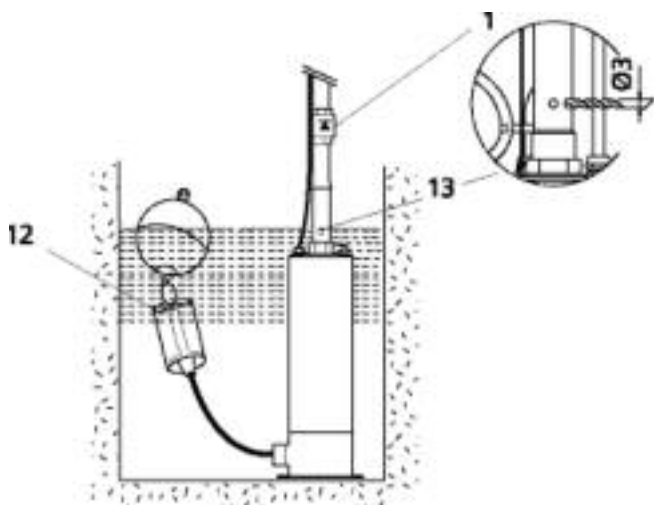


Fig. 7

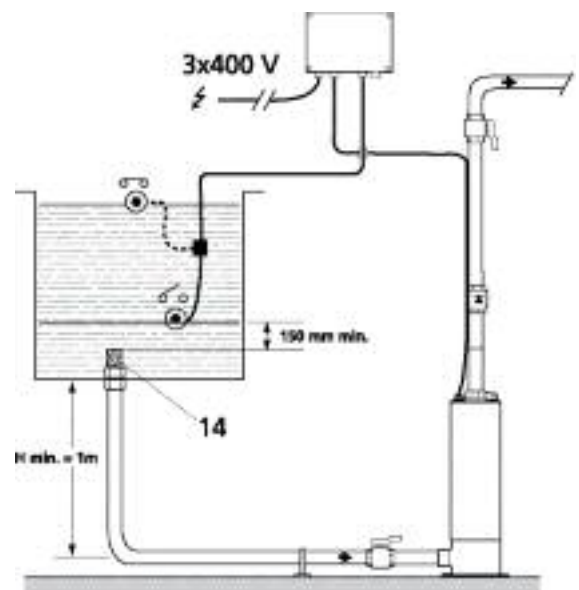


Fig. 8

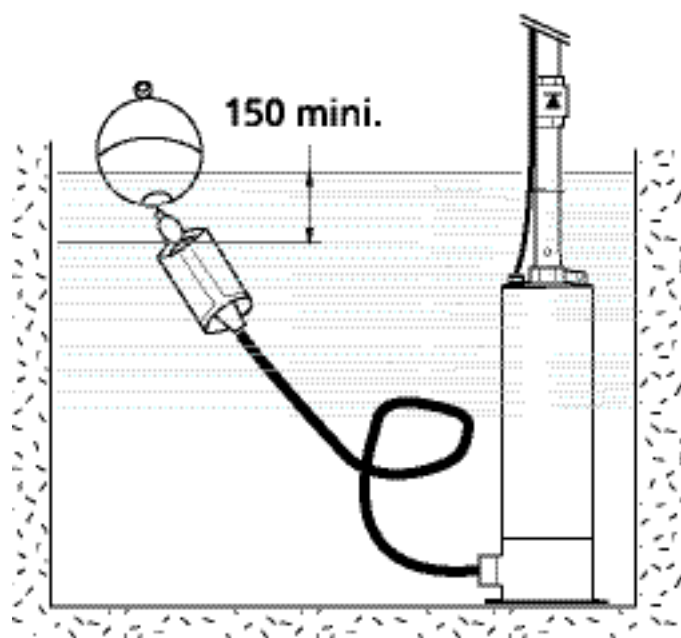
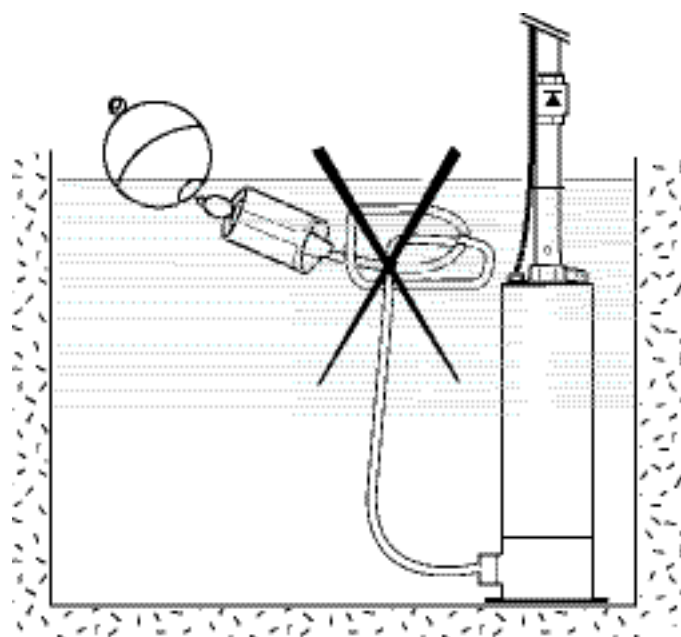


Fig. 9a

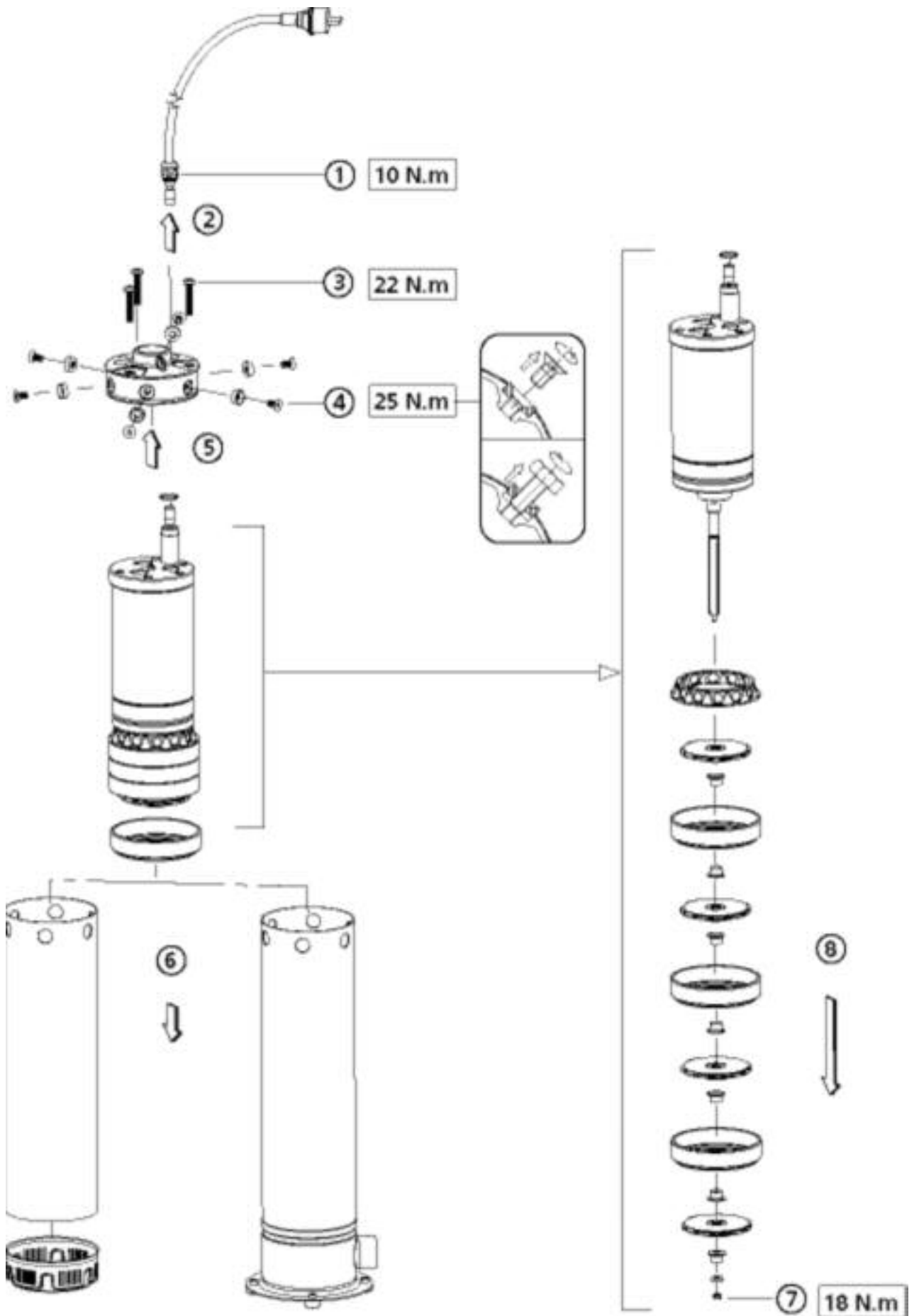
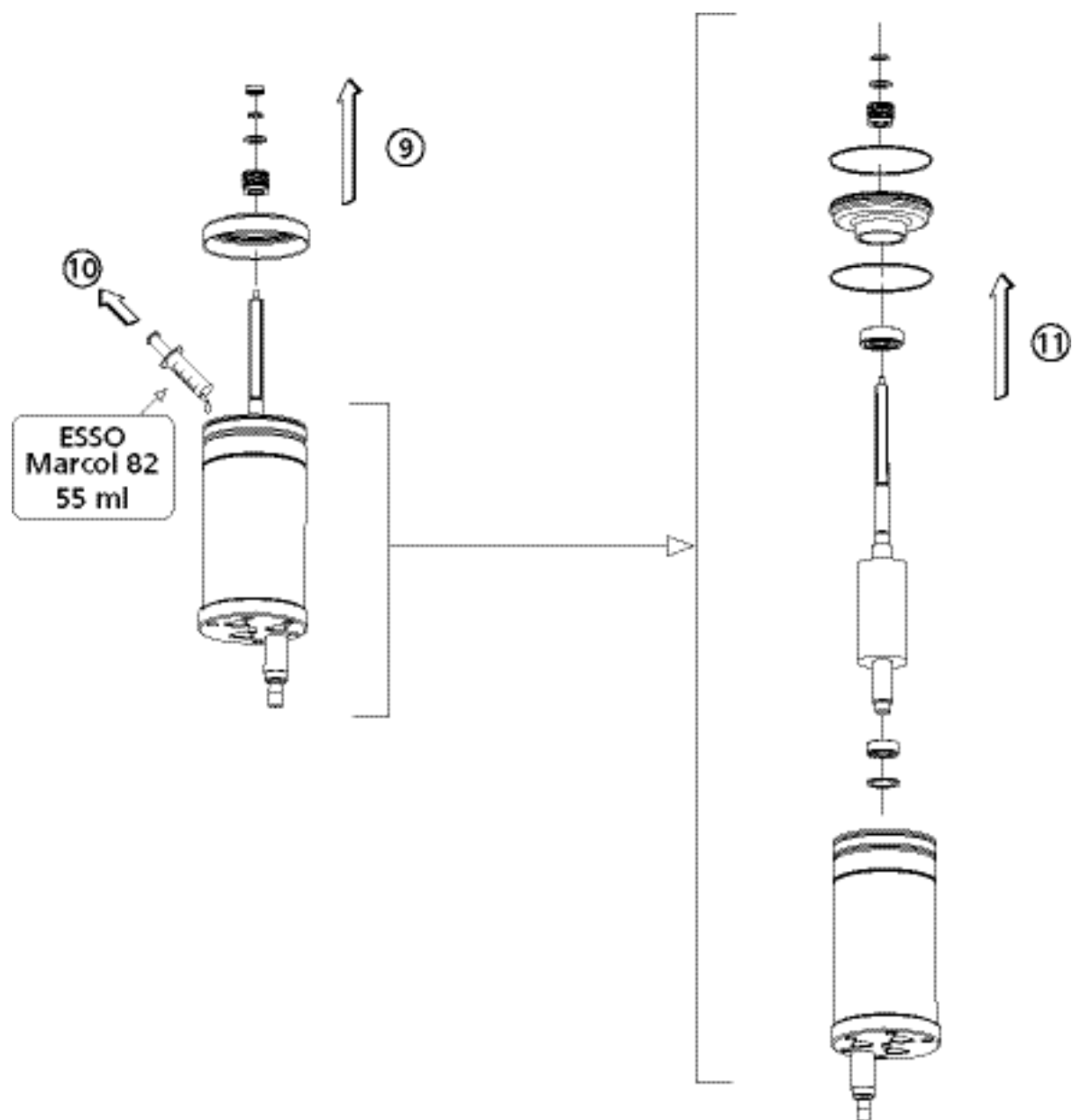


Fig. 9b



1. General

1.1 About this document

The language of the original operating instructions is French. All other languages of these instructions are translations of the original operating instructions.

These Installation and Operating Instructions form an integral part of the unit. They must be kept close to the unit and in readiness whenever required. Precise observance of these instructions is a pre-condition for use of the unit for the intended purpose and for its correct operation. These Installation and Operating Instructions conform to the relevant version of the equipment and the underlying safety standards valid at the time of going to print.

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 operated. Both the general safety instructions in this section and the more specific safety points in the following sections should be observed.

2.1 Instruction symbols used in this operating manual

Symbols



General danger symbol.



Hazards from electrical causes.



NOTE:

Signal words:

DANGER! Imminently hazardous situation. Will result in death or serious injury if not avoided.

WARNING! Risk of (serious) injury. 'Warning' implies that failure to comply with the safety instructions is likely to result in (severe) personal injury.

CAUTION! Risk of damage to the pump/installation. 'Caution' alerts to user to potential product damage due to non-compliance with the safety instructions.

NOTE! Useful information on the handling of the product.

It alerts the user to potential difficulties.

2.2 Personnel qualification

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

2.3 Risks incurred by failure to comply with the safety instructions

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, failure to comply with these safety instructions could give rise, for example, to the following risks:

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

2.4 Safety instructions for the operator

The relevant accident precaution regulations must be observed.

Potential dangers caused by electrical energy must be excluded. Local or general regulations [e.g. IEC, VDE, etc.] and directives from local energy supply companies are to be followed. This appliance is not intended for use by persons (including children) with reduced physical, sensory or mental capabilities, or lack of experience and knowledge, unless they have been given supervision or instruction concerning use of the appliance by a person responsible for their safety.

Children should be supervised to ensure that they do not play with the appliance.

2.5 Safety instructions for inspection and assembly

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

Work on a pump or installation should only be carried out once the latter has been brought to a standstill.

2.6 Unauthorised 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 Improper use

The operating safety of the pump or installation can only be guaranteed if it is used in accordance with paragraph 4 of the operating instructions. All values must neither exceed nor fall below the limit values given in the catalogue or data sheet.

3. Transport and storage

When receiving the material, check that there has been no damage during the transport. If any defect has been stated, take the required steps with the carrier within the allowed time.



CAUTION! If the delivered material is to be installed later on, store it in a dry place and protect it from impacts and any outside influences (humidity, frost etc...).

Handle the pump carefully so as not to damage the unit prior to installation.

4. Application



CAUTION! Possible damage of the pump. This pumps are intended for use with water only.

Series TWI5 submersible pumps are suitable for the application areas following:

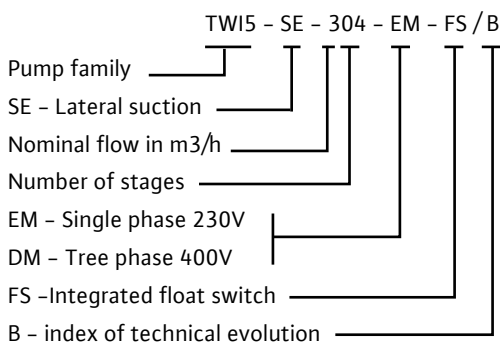
- For not very deep wells, tank, cistern.
- Pumping and water distribution for: domestic use (potable water supply) agricultural use (watering, irrigation),
- Pumped liquids: non polluted, potable, cold, rain waters.

The pump is not suitable for continuous use, e.g. for the operation of fountains. (Continuous operation > 2 hrs reduces the life-time of the pump).

The pump must not be used for emptying swimming pools.

5. Product

5.1 Type key



5.2 Technicals characteristics

- Maximum operating pressure: 10 bar
- Suction pressure (SE version): 0,1 to 4 bar
- Liquid temperatures max.: 40 °C
- Power P1: see nameplate
- Current: see nameplate
- Speed of rotation: see nameplate
- Protection index motor: IP68
- Protection index switchbox (single phase): IP54
- Insulation class: 155
- Frequency: 50 Hz
- Voltage: Single phase: 230V (± 10 %)
Tree phase: 400V (± 10 %)
- Cable length: 20m
- Max. starts per hour: 40
- Maximum immersion depth.: 20m
- Solid part size.: 2mm
- Maximum sand content: 50g/m³

Outline and pipe connections: (See Fig. 1)

5.3 Scope of Supply

- Single phase pump with connecting cable (H07RN-F) and switchbox with 2 m mains cable

and shock-proof plug,
or three phase pump with connecting cable (H07RN-F) and a three cable end.

- The versions FS are delivered with a float switch directly connected to the motor.
SE-type: 4 vibration absorbers with screws.
- Carrying rope 20m.
- Installation and operating instructions.
- Security instructions.

5.4 Accessories

Accessories must be ordered separately.

- Insulation valve
- Non return valve
- Control box and protection
- Circuit breaker
- Float switch
- Overflow sound alarm
- Fluid control
- Pressure switch
- Floating suction filter:
 - suction coarse strainer,
 - suction fine strainer

The use of new accessories is recommended.

For specifications and descriptions of accessories, see catalogue/data sheet.

5.5 Product description (Fig. 2, 3, 4, 5, 6 and 7)

1. Non return valve
2. Valve
3. Float switch
4. Control box (single-phase)
5. Carrying rope
6. Fluid control
7. Supply cable
8. Float in low position
9. Float in high position
10. Pressure switch
11. Connection box (three phase)
12. Floating suction filter
13. Venting hole (Ø3 mm)
14. Suction strainer

5.6 Design of pump and motor

The submersible pump is based on multi-stage and centrifugal design.

All parts in contact with the flow medium are of corrosion-resistant material.

The electric motor is protected of the hydraulic part pump by two mechanicals seal and a oil chamber for maintained the tightness of the motor.

The pumps are supplied with a carrying rope.

The pump base contains a suction strainer.

The SE type model are fitted with a suction support to allow the connection of floating or fixed suction filters, with 4 vibration absorbers for installation on the ground.

The single-phase motor pumps (EM) are delivered ready for connection with a switchbox. It contains:

- Over current protection with manual reset,
- Motor capacitor,

- Connection for a float switch (Low-water – /Dry running protection),
- Cable connected to the terminal box as well as to the pump,
- Connected 2 m long cable with shock-proof plug.

The motor is fitted with a winding protection which automatically switches the motor off if it overheats and on again once it has cooled down. Three-phase pumps (DM) are supplied with bare cable lead ends.

The switch box can be ordered from the Wilo range or provided by the customer.

It must be fitted with a motor safety switch.

Once the over current protective device has been triggered the fault must be reset by operating the cut-out switch.

6. Installation – Mounting



DANGER! Installation and electrical work in compliance with any local codes and by qualified personnel only !



WARNING! Bodily injury
Existing regulations for the prevention of accidents must be observed.



WARNING! Electrical shock hazard
Dangers caused by electrical energy must be excluded.
National Electrical Codes, local codes and regulations must be followed.

6.1 Installation



CAUTION! Possible damage of the pump
Do not transport, hang or suspend the pump by the cable.

- The pump must be installed in frost-free place.
- Fix the rope in the hole of fixing in the superior part of the pump.
- Connect the delivery pipe work.
- Fix the supply cable without constraint to the delivery pipe with the appropriate bindings.
- Lower the pump with the help of the rope and support it so that it is always immersed in water, maximum depth: 20 m and in suspension.
- The pump can run in a horizontal position.
- To ensure that the well diameter is always constant and allows a free lowering of the unit.
- To centre the pump in the middle of the well.
- To ensure that the pump, the electric cable and the rope, in operation, could not rub against the well sides or any other obstacle.
- In final position, the unit must be hung 0.50m at least over the well bottom.
- To ensure that the minimum water height is always 0.15 m over the suction sieve of the pump (pump in operation).
- For outdoor installation, protect the delivery pipe work, the electric box, valves, flap, electric controls from frost.
- If a floating tapping device (suction filter with hose connection) is used take care to ensure that the length of the hose is adapted to the struc-

tural conditions of the cistern. To prevent air from entering, the filter basket must no reach the surface of the water (see Fig. 8).

- The SE type model can be installed directly on the ground using the 4 holes located on the support ($\varnothing 6$ mm bolts).
- The SE-type model can be installed out of water, because the motor is cooled by the fluid (see Fig. 7).
- The versions FS are delivered with a float switch directly connected to the motor, which allow the automatic ON / OFF of the pump (see Fig. 3b). The float switch can move freely.
- The box delivered with the single-phase pumps allows the dry run safety through a float switch adaptation (see § 7.3) or an on-off control through a pressure switch connection (see Fig. 4).
- Control box suggested for three phase version allows the dry running protection by use of a float switch, also the automatic running by pressure switch (see Fig. 5).

6.2 Hydraulic connections



CAUTION! Possible damage of the pump
During the use of SE pump, fill the section hose with water before starting the pump (see Fig. 8).

The TW15 pumps are not self-priming.

- The pipework diameter cannot be inferior to the pump's one on rigid threaded steel pipework or a semi rigid polyethylene high density pipework.
- In the case of a semi rigid pipework the pump must be supported by a cable fixed to the lifting ring situated on the discharge casing.
- The installation of a non return valve in pump outlet and before the isolation valve is obligatory.

6.3 Electrical connections



WARNING! Electrical shock hazard
The electrical connections and the inspections have to be done by a qualified electrician and comply with the applicable local standards.
The power supply of the pump must include a circuit having a residual current difference device (earth fault breaker) acting at no more than 30 mA. In case of cord damaged, make it replace by a qualified electrician.

- Control the kind of current and the network voltage.
- Observe the specifications of the pump nameplate.
- Do not forget to connect the earth.
- The three-phase pump is delivered with a 20 m long cable to be connected with a protection mechanism or a connection box (electrical connection: see installation and operating instructions of the switching device).
- The motors must be protected by a circuit-breaker set to the current mentioned on the nameplate of the motor. Provide a fuse disconnecting switch (type aM) to protect the mains supply.



NOTE: the single-phase pumps have an overcurrent protection, integrated into the box.

- The pump with single-phase motor is cabled and delivered with a capacitor box and a thermic protection. This box has to be connected to the supply network with the cable provided to that effect.
- Connection of a float switch or a pressure switch.



DANGER! Disconnect the pump from the network before opening the box.

Remove the strap and connect in its place the feed cable of the on/off switch and the earth cable if provided. Please refer to the terminal diagram inside the terminal box for details of the electrical connection.

- Levels regulation : to ensure that in off position, the water level is always 150 mm minimum over the suction sieve (see Fig. 3a).

7. Starting up

7.1 Direction of rotation



NOTE: The pressure measured at the borehole outlet with closed valve corresponds to the head of the pump at zero output minus the height between ground level and water level.

Single-phase 230 V: No reverse risk

Three-phase 400 V: To determine the right direction of rotation of the unit, to compare the delivery pressure, and bear in mind that the right direction of rotation corresponds to the highest pressure.

Or by measuring the pressure, delivery valve closed and compare it to the required one.

In case of reverse direction of rotation, interchange the two phase wires inside the box or circuit breaker.

7.2 Operation



CAUTION! Possible damage of the pump

Never allow the pump to run dry or operate with the shut-off valve closed. The manufacturer's guarantee does not cover damage to the pump caused by dry running.

- During the filling of the sump or installation of the pump in this one, take care that the float switch can move freely.
- Once again check all the electric connections, electric protection, rating of the fuse(s).
- Measure the current in each phase and compare with the nominal values mentioned on the nameplate.



CAUTION! Possible damage of the pump

Do not exceed the nominal current of the motor.

- After being submerged, the pump should be switched on and off several times to allow it to be ventilated.
- It is necessary to realize a hole $\varnothing 3$ mm in the

pipings (see Fig. 3, pos. 13) for to improve the air evacuation.

- Measure the power supply voltage with motor running.



NOTE: See 5.2 for allowed tolerance

8. Maintenance



DANGER! Isolate from power supply before checking the pump!

- The pump does not require particular maintenance.
- If the sieve is obstructed, the flow rate decreases significantly, you must carry the pump back, dismantle the cover.
- The repairs on the pump and the modifications of the electric connection will be realized by a specialist or a after sales member only.
- It is advisable to mention the nameplate specifications at the time of a spare parts order.

9. Problems, causes and remedies

Problems	Causes	Remedies
Pump does not start up	Inadequate voltage or voltage drop	Check voltage on start-up, an insufficient cable cross-section can cause a voltage drop that prevents the motor from operating normally.
	Motor power cable break	Measure the resistance between phases. Re-assemble the pump if required and check the cable.
	Motor protection ON	Check the current set on thermal relay and compare it to the mentioned value Important: if it trips repetitively, do not insist (look at the cause). Forcing the unit to operation can damage the motor (by overheating) in a very short time limit.
Pump does not switch on/off	Float switch blocked or cannot move freely	Check float switch and ensure mobility.
No output or a very low output	Very low voltage	Check the power supply at the switch box.
	The suction strainer is obstructed	Reassemble the pump, clear and clean it.
	The valve is closed	Open the valve.
	The direction of rotation is not correct (three-phase motor)	Interchange the two phase wires inside the switch box.
	The non return valve is jammed in the close position	Dismantle and clean the non return valve.
	No water or very low water level in well	Check this level ; it must be at least 0.15 m above the sieve pump (during operating).
	Air in the pump	To carry out a hole \varnothing 3 mm on the discharge pipe (Siehe Bild. 3, pos. 13) between the pump and non-return valve.
Very frequent starts of the pump	Pressure gauge contactor difference too low	Increase the gap between shutdown and start-up.
	Inadequate float set-up	Adjust float location to ensure an appropriate time between pump ON/OFF.
	Bladder tank capacity is too low or insufficiently inflated	Check and adjust pressures (ON/OFF) Check tank inflation. This pressure must be 0.3 bar less than the pump starting pressure. Increase capacity with an additional tank or change the tank.
	The non return valve leaked	Clean or change the non return valve.



CAUTION! Possible damage of the pump

A common cause of faults is a silted-up or choked pump. The pump without stand must hang sufficiently high above the bottom of the shaft that it is not possible for it to silt up.

On repeated trippings of the overload protector it will be necessary to have the pump checked by a specialist or by WIL0 customer services.

If no solution can be found, please contact your plumbing and heating specialist or your nearest Wilo Customer Service or representative.



10. Assembly – Disassembly

CAUTION! Be careful not to mix part.

Unplug the pump.
(see FIG. 9a and 9b)

11. Spare parts

Spare parts are ordered via a local specialist dealer and/or Wilo customer service.

In order to avoid queries and incorrect orders, make sure to mention all data indicated on the nameplate when placing your order.

Subject to technical alterations!

D EG – Konformitätserklärung
GB EC – Declaration of conformity
F Déclaration de conformité CE

(gemäß Anhang / according annex / conforme appendice : II, 1A, 2006/42/EG)

Hiermit erklären wir, dass die Bauart der Baureihe : TWI 5" 1ph*
Here with, we declare that the product type of the series: TWI 5" 3ph**
Par le présent, nous déclarons que l'agrégat de la série :

(Die Seriennummer ist auf dem Typenschild des Produktes angegeben. /
The serial number is marked on the product site plate. /
Le numéro de série est inscrit sur la plaque signalétique du produit.)

in der gelieferten Ausführung folgende einschlägigen Bestimmungen entspricht:
in its delivered state complies with the following relevant provisions:
est conforme aux dispositions suivantes dont il relève:

EG - Maschinenrichtlinie 2006/42/EG
EC - Machinery directive
Directives CE relatives aux machines

Die Schutzziele der Niederspannungsrichtlinie werden gemäß Anhang I, Nr. 1.5.1 der Maschinenrichtlinie 2006/42/EG eingehalten.
The protection objectives of the low-voltage directive are realized according annex I, No. 1.5.1 of the EC-Machinery directive 2006/42/EC.
Les objectifs protection de la directive basse-tension sont respectés conformément à l'appendice I, n° 1.5.1 de la directive CE relatives aux machines 2006/42/CE.

Elektromagnetische Verträglichkeit - Richtlinie 2004/108/EG
Electromagnetic compatibility - directive
Compatibilité électromagnétique - directive

Angewandte harmonisierte Normen, insbesondere:
Applied harmonized standards, in particular:
Normes harmonisées, notamment:

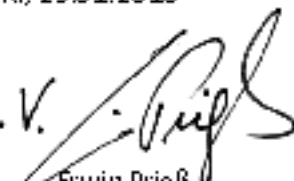
EN ISO 14121-1
EN 809**
EN 60335-2-41*

Bei einer mit uns nicht abgestimmten technischen Änderung der oben genannten Bauarten, verliert diese Erklärung ihre Gültigkeit.
If the above mentioned series are technically modified without our approval, this declaration shall no longer be applicable.
Si les gammes mentionnées ci-dessus sont modifiées sans notre approbation, cette déclaration perd sa validité.

Bevollmächtigter für die Zusammenstellung der technischen Unterlagen ist:
Authorized representative for the completion of the technical documentation:
Mandatitaire pour le complétement de la documentation technique est :

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