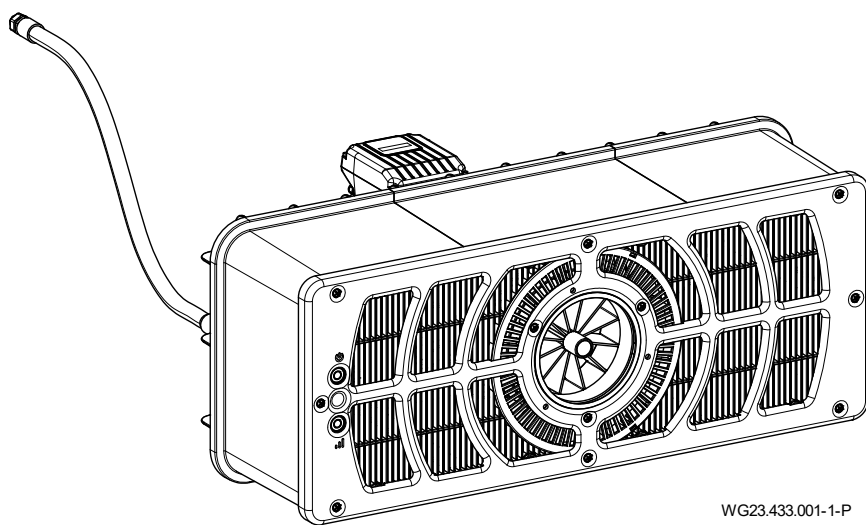




EN Translation of original operation manual

BADU[®]JET Turbo Light

Submerged counter swim unit



WG23.433.001-1-P



beantragt | approval pending |
demandé | aangevraagd |
richiesto | solicitado



BADU® is a trademark of
SPECK Pumpen Verkaufsgesellschaft GmbH

Hauptstraße 3
91233 Neunkirchen am Sand, Germany
Phone +49 9123 949-0
Fax +49 9123 949-260
info@speck-pumps.com
www.speck-pumps.com

All rights reserved.

Contents may not be distributed, duplicated, edited or transferred to third parties without the written permission of SPECK Pumpen Verkaufsgesellschaft GmbH.

This document and all attached documents are not subject to update service!

Subject to technical modifications!

UKCA: Comply Express Ltd, Unit C2 Coalport House, Stafford Park 1, Telford, TF3 3BD, UK

Table of contents

1	About this document.....	5
1.1	Using this manual	5
1.2	Target group	5
1.3	Other applicable documents	5
1.3.1	Symbols and means of representation	5
2	Safety.....	6
2.1	Intended use	6
2.1.1	Possible misuse	6
2.2	Personnel qualification.....	6
2.3	Safety regulations	6
2.4	Protective equipment	6
2.5	Structural modifications and spare parts	6
2.6	Signs	6
2.7	Residual risk	7
2.7.1	Falling parts	7
2.7.2	Rotating parts.....	7
2.7.3	Electrical energy	7
2.7.4	Hot surfaces	7
2.7.5	Suction danger.....	7
2.7.6	Body traps	7
2.7.7	Danger of injury at the inlet nozzles.....	7
2.7.8	Danger of drowning.....	7
2.8	Faults	7
2.8.1	Seized drive unit	8
2.9	Preventing material damage.....	8
2.9.1	Leakage at the installation housing	8
2.9.2	Water splashes over the edge of the pool	8
2.9.1	Dry running	8
2.9.2	Overheating	8
2.9.3	Blockage of the drive	8
2.9.4	Wrong rotation direction of the turbines.....	8
2.9.5	Risk of frost	8
2.9.6	Water temperature	8
2.9.7	Safe use of the product.....	8
3	Description.....	9
3.1	Components.....	9
3.2	Function	9
4	Transport and intermediate storage.....	10
4.1	Transport.....	10
4.2	Packing	10
4.3	Storage	10
4.4	Return	10
5	Installation.....	11
5.1	Installation site (Qualified specialist)	11
5.1.1	Installation point.....	11
5.1.2	There must be ground drainage	11
5.1.3	Ventilation and aeration	11
5.1.4	Structure-borne and airborne noise transmission.....	11
5.1.5	Space requirements	11
5.1.6	Swimming pool with overflow gutter	11
5.2	Installation (Qualified specialist)	12

5.2.1	Installation tip concrete pool	12
5.2.2	Installation note stainless steel/foil pool	15
5.2.3	Cable protective tube	17
5.2.4	System shaft	17
5.2.5	Electrical control.....	17
5.3	Final assembly (Qualified specialist)	18
5.3.1	Installing the piezo buttons	18
5.3.2	Installing the nozzle unit	18
5.3.3	Suction grating assembly.....	19
5.3.4	Fitting the cover panel	19
5.3.5	Installing the plastic panel.....	19
5.3.6	Installing the motor unit.....	20
5.3.7	Possibilities for using the connection nozzle (rear wall)	20
5.3.8	Installation example	20
5.4	Electrical connection (Qualified specialist)	21
5.4.1	Electrical connection of the countercurrent system	21
5.4.2	Terminal box wall mounting	22
5.4.3	Connection diagram.....	22
5.4.4	Control cable wiring diagram	23
5.4.5	Wiring diagram 1-phase 230V 50 Hz.....	23
5.4.6	Terminal box connections	24
5.4.7	Segment display, green and orange LED, fuse	24
5.4.8	DIP switch settings.....	25
5.5	Dismantling	25
6	Commissioning/Decommissioning	26
6.1	Commissioning	26
6.1.1	Checking how easily the motor unit rotates.....	26
6.2	Operation	26
6.2.1	Switching on/off.....	26
6.2.2	Volume regulation.....	26
6.2.3	Ball nozzle.....	26
6.2.4	Operation with remote control.....	27
6.2.5	Motor control	27
6.3	Shutting down	28
6.3.1	Wintering over.....	28
7	Faults	29
7.1	Overview	29
7.1.1	Check the pump after the overload switch has tripped.....	29
8	Maintenance	31
8.1	Warranty	31
8.1.1	Safety-relevant spare parts.....	31
8.2	Service addresses	31
9	Disposal.....	32
10	Technical Data	33
10.1	Dimensional drawing	33
10.2	Exploded drawing	34
11	Index	35

1 About this document

1.1 Using this manual

This manual is a component of the pump/unit. The pump/unit was manufactured and tested according to the generally accepted rules of technology. However, if the pump/unit is used incorrectly, not serviced enough or tampered with, danger to life and limb or material damage could result.

- ➔ Read the manual carefully before use.
- ➔ Keep the manual during the service life of the product.
- ➔ Provide access to the manual for operating and service personnel at all times.
- ➔ Pass the manual on to any future owners or operators of the product.

1.2 Target group

This manual is aimed both at qualified specialists and the end customer. Descriptions aimed only at qualified specialists are indicated accordingly (qualified specialist). This indication applies to the whole point. All other points are universally valid.

1.3 Other applicable documents

- Packing list

1.3.1 Symbols and means of representation

Warnings are used in this manual to warn you of personal injury.

- ➔ Always read and observe warnings.

DANGER

Danger for people.

Non-observance results in death or serious injury.

WARNING

Danger for people.

Non-observance can result in death or serious injury.

CAUTION

Danger for people.

Non-observance can result in light to moderate injury.

NOTICE

Notes to prevent material damage, for better understanding or to optimise the workflow.

Important information and technical notes are specially marked to explain correct operation.

Symbol	Meaning
➔	Instructions for a one-step action.
1. 2.	Directions for a multi-step action. ➔ Observe the order of the steps.

2 Safety

2.1 Intended use

For installation in swimming pools as an attraction, for fitness, as a wave pool, for swimming without turning.

Observing the following information is vital for intended use:

- This manual

The pump/unit may only be operated within the application limits, as specified in this manual. Use in water with a salt content exceeding 0.66 g/l must be authorised by the manufacturer/ supplier.

The device can be used commercially.

Any other use or use exceeding this is **not** an intended use and must first be authorised by the manufacturer/supplier.

2.1.1 Possible misuse

- Insufficient fastening and sealing of the system.
- Opening and servicing of the pump/unit by unqualified personnel.
- Operation for too long in the upper speed range.

2.2 Personnel qualification

This unit can be used by **children** aged 8 and over as well as by persons with limited physical, sensory or mental capacity or by people with a lack of experience or knowledge, provided that they are supervised or have been instructed in the safe use of the unit and understand the resulting dangers.

Children may not play with the unit. Cleaning and **user maintenance** may not be carried out by **children** without supervision.

➔ Ensure that the following work is only performed by trained professionals with the following qualifications:

- For mechanical work, for example replacing ball bearings or mechanical seals: qualified mechanics.
- For work on the electric system: electricians.

➔ Ensure that the following requirements are fulfilled:

- Personnel who do not yet have the appropriate qualifications must receive the required training before being allowed to work on the system.
- The person's responsibilities, for example working on the product, electric equipment or hydraulic systems, are set based on their qualifications and the job description.
- The personnel have read this manual and understand the necessary working steps.

2.3 Safety regulations

The operator of the system is responsible for the adherence to all relevant statutory regulations and guidelines.

➔ Observe the following regulations when using the pump/unit:

- This manual
- Warning and information signs on the product
- Other applicable documents
- The valid national regulations for accident prevention
- The internal occupational, operational and safety regulations of the operator

2.4 Protective equipment

Reaching into moving parts, e.g. coupling and/or impeller fan, can cause serious injury.

➔ Never operate the pump/unit without protective covers.

2.5 Structural modifications and spare parts

Alterations or modifications can affect operational safety.

➔ Never modify or alter the pump/unit without the manufacturer's permission.

➔ Only use original spare parts and accessories authorised by the manufacturer.

2.6 Signs

➔ Ensure that all the signs on the complete pump/unit remain legible.

2.7 Residual risk

2.7.1 Falling parts

- ➔ Only use hoisting and load-bearing equipment which is suitable and technically sound.
- ➔ Do not stand under suspended loads.

2.7.2 Rotating parts

There is a risk of shearing and crushing due to exposed rotating parts.

- ➔ Only perform servicing when the pump/unit is not in operation.
- ➔ Prior to servicing, ensure the pump/unit cannot be switched back on.
- ➔ Immediately after finishing servicing, reattach or reactivate all protective equipment.

2.7.3 Electrical energy

There is an increased risk of electric shock when working on the electrical system due to the humid environment.

Electrical protective earth conductors which were not installed correctly can also result in electric shocks, for example due to oxidation or cable breakage.

- ➔ Observe VDE and utility company regulations.
- ➔ Build swimming pools and their protection according to DIN VDE 0100-702.
- ➔ Before working on the electrical system, take the following measures:
 - Disconnect system from the power supply.
 - Attach a warning sign: "Do not switch on! The system is being worked on."
 - Ensure that the system is free of voltage.
- ➔ Check the electrical system regularly to ensure it is in proper working condition.

2.7.4 Hot surfaces

The electric motor can reach temperatures of up to 80 °C. There is a risk of being burned.

- ➔ Do not touch the motor during operation.
- ➔ Allow the pump/unit to cool down before servicing it.

2.7.5 Suction danger

The following dangers can lead to drowning:

- Wrong outflow direction/rotation direction. See point 2.9.4 on page 8.
- Sucking towards, sucking in or jamming of the body or body parts, clothing and jewellery
- Knotting of the hair
- ➔ **Never** operate the system without suction guards.
- ➔ Do not wear loose swimwear.
- ➔ Use a bathing cap if you have longer hair.
- ➔ Check and clean the suction openings regularly.

2.7.6 Body traps

If openings between 25 mm and 110 mm are unavoidable for constructional reasons, this is only permissible when the installer warns the customer of the potential risk.

- ➔ The owner of the system must alert users to the potential risk of body traps.

2.7.7 Danger of injury at the inlet nozzles

Inlet nozzles and massage accessories operate at high pressure and with high flow speeds. This can result in injuries to eyes or other sensitive body parts.

- ➔ Avoid direct contact of these body parts with the water jet from the inlet nozzles or the massage accessories.

2.7.8 Danger of drowning

Danger of drowning due to strong current for persons of limited swimming ability and physical strength.

- ➔ Adapt the system power to the swimmer.
- ➔ Children and persons with physical and mental disabilities must be supervised.

2.8 Faults

- ➔ In case of a fault, immediately switch the pump off and remove it from operation.
- ➔ Have all faults repaired immediately.

2.8.1 Seized drive unit

Switching on a seized drive unit several times in succession can damage the motor. Observe the following points:

- ➔ Do not switch the unit on repeatedly.
- ➔ Turn the propeller by hand.
- ➔ Clean the drive unit.

2.9 Preventing material damage**2.9.1 Leakage at the installation housing**

Non-observance of the curing time of the ABS bonding can result in leaks and flooding

- ➔ Observe the curing time of at least 12 hours for the ABS bonding
- ➔ Provide sufficient ground drainage
- ➔ Install the unit in a manner which reduces structure-borne and airborne noise transmission. When doing so, observe relevant regulations.
- ➔ In the event of leakage, the system may not be operated and must be disconnected from the mains.

2.9.2 Water splashes over the edge of the pool

Water splashing over the edge of the pool can have the following reasons:

- Wrong dimensioning of the pool.
- Overflow gutters and splash-water tank too small.

2.9.1 Dry running

If run dry, mechanical seals and synthetic parts can be destroyed within only a few seconds.

- ➔ Do not allow the unit to run dry. This also applies to checking the rotation direction.
- ➔ Only start the system when the water level is 350 mm above the system centre.

2.9.2 Overheating

The following factors can lead to overheating of the system:

- Water level too low.
- Ambient temperature which is too high.
- Motor overload switch set incorrectly.
- Blockage of the suction guard by fibres, items of clothing, hairs, leaves, bathing towel etc.
- ➔ Raise the water level.
- ➔ Do not exceed the permitted ambient temperature of 40 °C.
- ➔ Avoid blockages and/or clear existing blockages.

2.9.3 Blockage of the drive

Particles of dirt can block the system. This leads to dry running and overheating.

- ➔ Avoid blockages by fibres, items of clothing, hairs, leaves, bathing towel, etc.

2.9.4 Wrong rotation direction of the turbines

Wrong rotation direction due to:

- Wiring not according to the circuit diagram (e.g. wire labelling not observed)
- Water outflow direction at the nozzle not checked.
 - ➔ The installer must check the outflow direction with a swimming object.

2.9.5 Risk of frost

It is recommended to remove the drive unit during the frost period and store it in a dry room.

- ➔ Drain the unit and pipes at risk of freezing in plenty of time.

2.9.6 Water temperature

The water temperature must not exceed 35 °C.

2.9.7 Safe use of the product

Safe use of the product is no longer guaranteed in the following instances:

- When the front panel is blocked.
- When the drive unit is seized.
- When protective devices, e.g. front panel, are damaged or missing.
- When the electrical installation is defective.

3 Description

3.1 Components

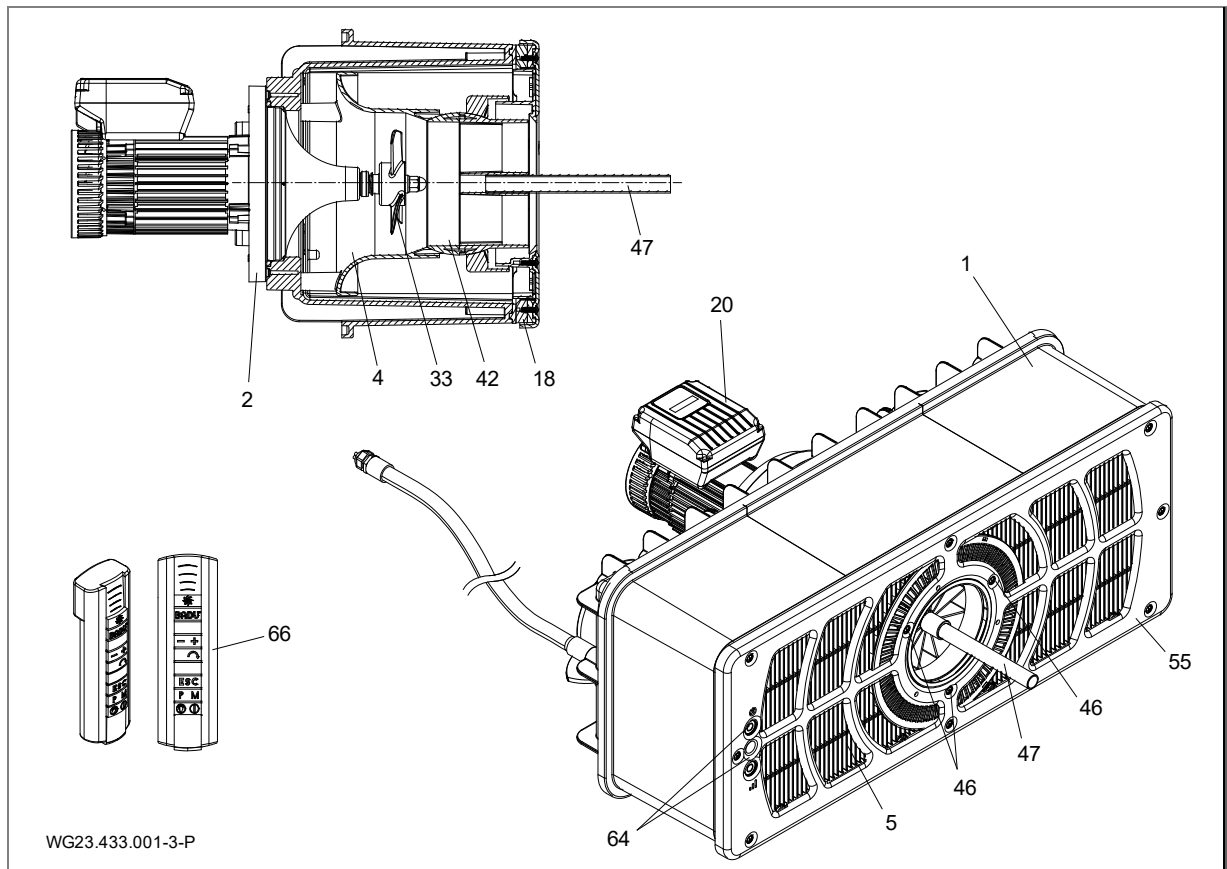


Fig. 1

1	Installation housing	2	Motor unit
4	Suction nozzle unit	5	Suction grating
18	Clamping ring	20	Motor
33	Propeller wheel	42	Ball nozzle
46	Screws	47	Adjustment aid
55	Front panel	64	Piezo button
66	Remote control unit		

3.2 Function

The system (1) is designed for installation in a concrete pool and in a sturdy steel or plastic pool with a smooth wall in the assembly area.

Driven is provided by a motor (20), the power of which can be adjusted in three different stages.

It is switched on and off and controlled by piezo buttons (64) in the front panel (55) and can also be adjusted by a remote control unit (66).

The water is sucked in at the suction grating (5) through the nozzle unit (4) to the propeller wheel (33) and fed back into the pool with a powerful volume flow.

The flow direction can be set by swivelling a ball nozzle (42) 5° in all directions using the adjustment aid (47). The powerful volume flow thus created gives the swimmer a personally adapted swimming experience.

4 Transport and intermediate storage

4.1 Transport

- ➔ Check the delivery conditions:
 - Check the packaging for transport damage.
 - Determine damages, document them with photographs and contact the distributor.

4.2 Packing

Remove the partly pre-assembled system from the packing. Remove the respective pre-assembled parts by undoing the tapping screws and store in a safe place.

4.3 Storage

NOTICE

Corrosion is possible due to storage in humid conditions with fluctuating temperatures!
Condensation can corrode windings and metal parts.

- ➔ Store the drive unit in a dry place at constant temperature if possible.

NOTICE

Damage or loss of individual parts!

- ➔ Do not open the original packaging until installation or keep individual parts in the original packaging until installation.

4.4 Return

- ➔ Empty the drive unit completely.
- ➔ Clean the drive unit.
- ➔ Pack the drive unit in a cardboard box and send it to the dealer or manufacturer.

5 Installation

5.1 Installation site (Qualified specialist)

5.1.1 Installation point

- The system is normally installed at the narrow side of the pool with a recommended minimum pool size of 3 x 5 m.
- It cannot be installed in a round or oval pool.
- The volume flow in the system can lead to circulation in the pool. This can cause an overlap of the volume flow and the return flow which becomes noticeable in the form of an apparent stall in the flow. This happens, above all, when special pool shapes or, for example, steps are installed. Generally, this has only happened very rarely so far and does not constitute a defect. Adjusting the nozzle is usually the simplest remedy here to favourably influence the flow in the pool.

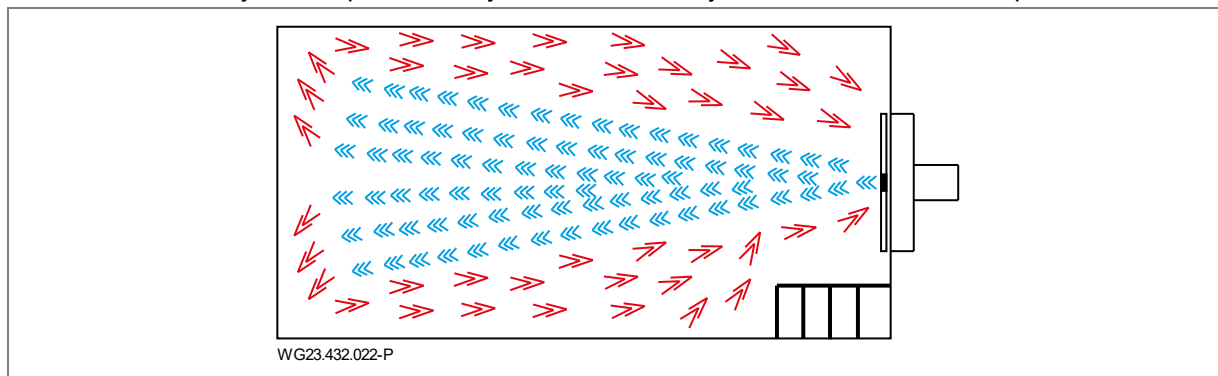


Fig. 2

5.1.2 There must be ground drainage

- ➔ Calculate the size of the ground drain according to the following criteria:
 - Size of the swimming pool.
 - Circulation flow rate.

5.1.3 Ventilation and aeration

- ➔ Ensure sufficient ventilation and aeration. The ventilation and aeration must ensure the following conditions:
 - Prevention of condensation.
 - Minimum distance from motor to the wall: min. 300 mm.
 - Cooling of the motor and other system components, for example switch cabinets and control units.
 - Limitation of the ambient temperature to maximum 40 °C.

5.1.4 Structure-borne and airborne noise transmission

- ➔ Observe the regulations for constructional noise protection, for example DIN 4109.
- ➔ Install the system so that the structure-borne noise and airborne noise are reduced. Use vibration-absorbing materials such as blanket insulators for example.
- The airborne noise emission is specified according to EN ISO 20361.

5.1.5 Space requirements

Leave enough space to be able to remove the motor and drive unit from the rear of the housing.

5.1.6 Swimming pool with overflow gutter

- ➔ Pay attention to adequate dimensioning of the overflow gutter, piping and splash-water tank when planning the swimming pool.

5.2 Installation (Qualified specialist)

5.2.1 Installation tip concrete pool

Concrete pool with foil

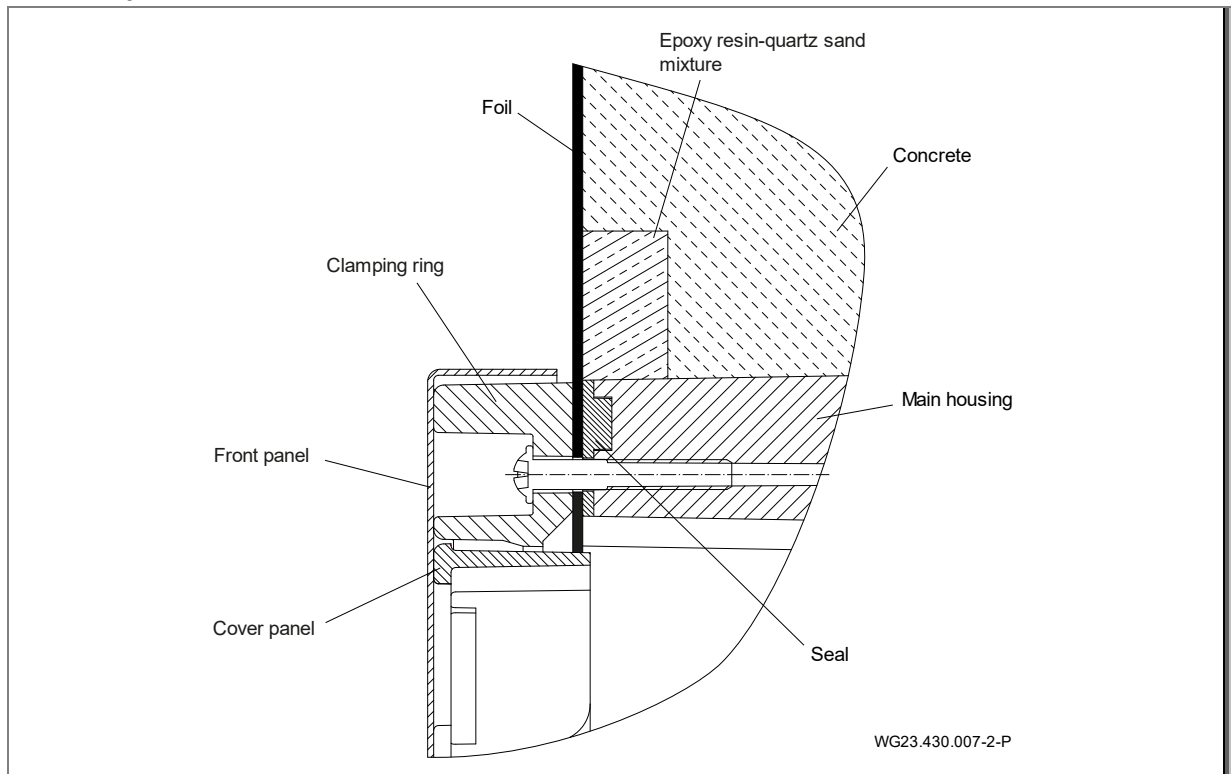


Fig. 3

Tiled concrete pool

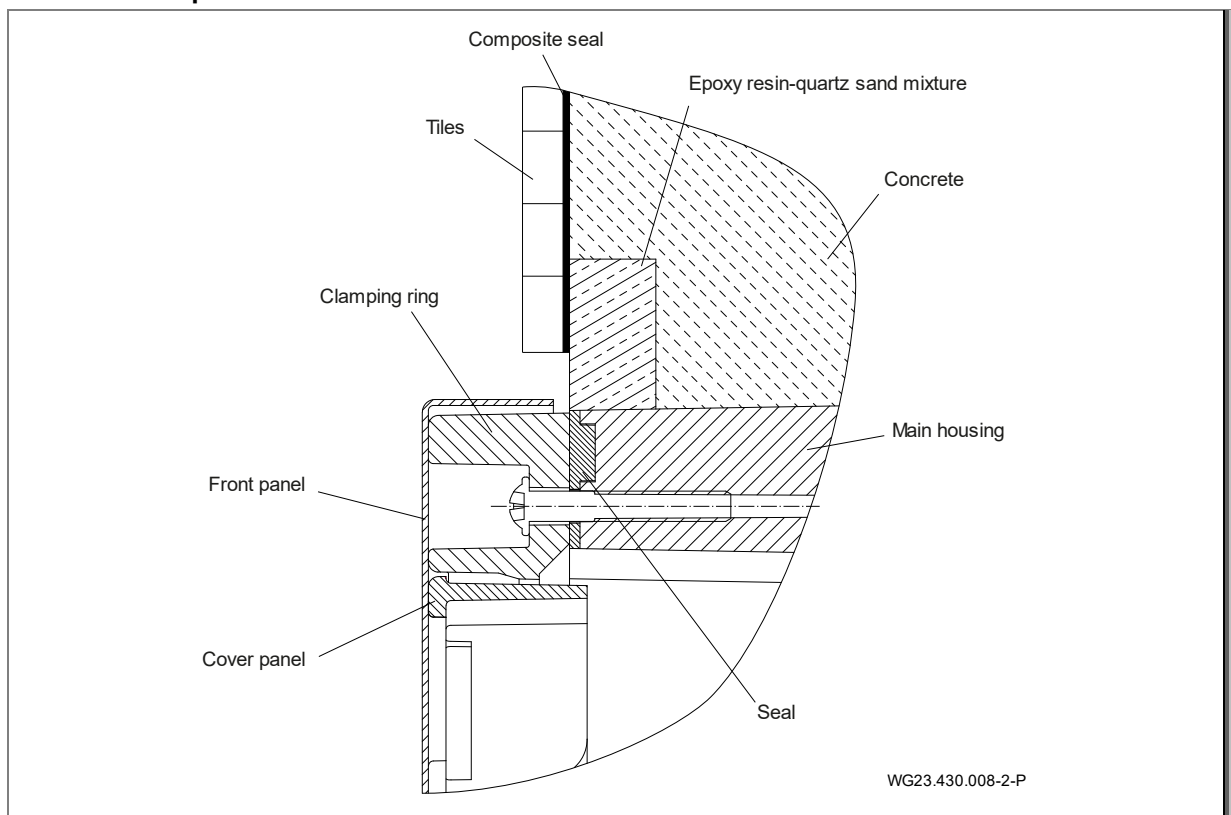


Fig. 4

Pool cutout for concrete pools/formwork

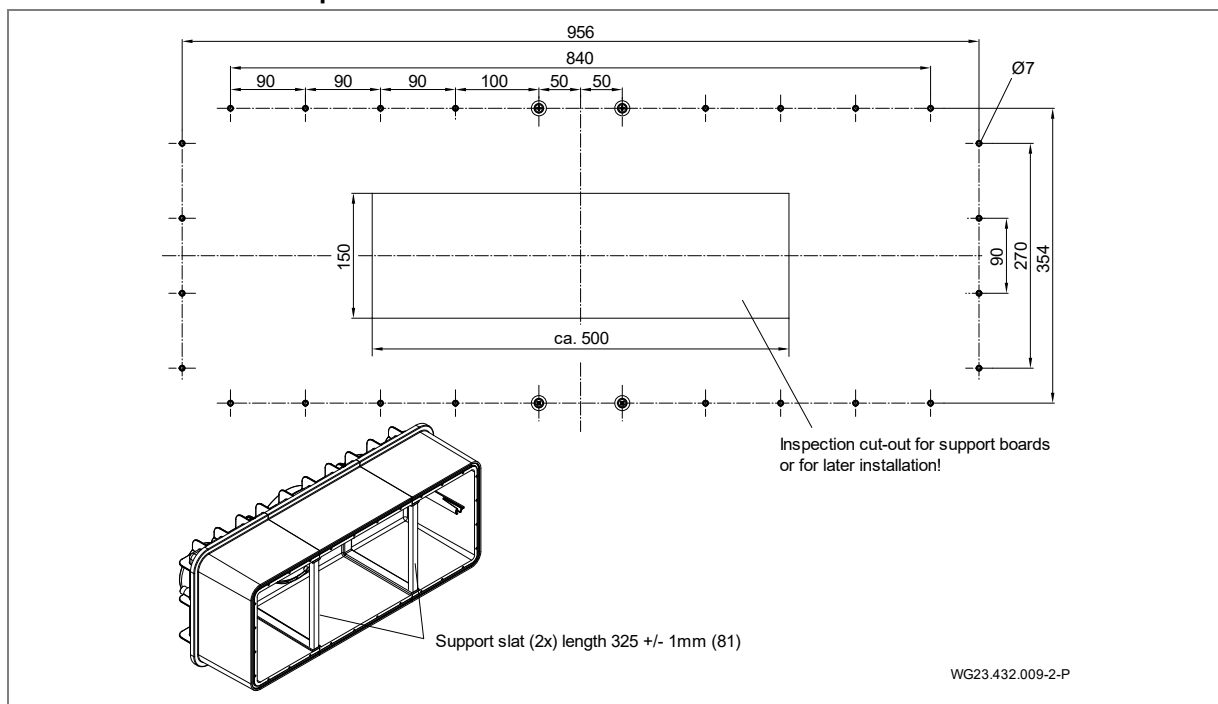


Fig. 5

Installation of formwork for concrete pools

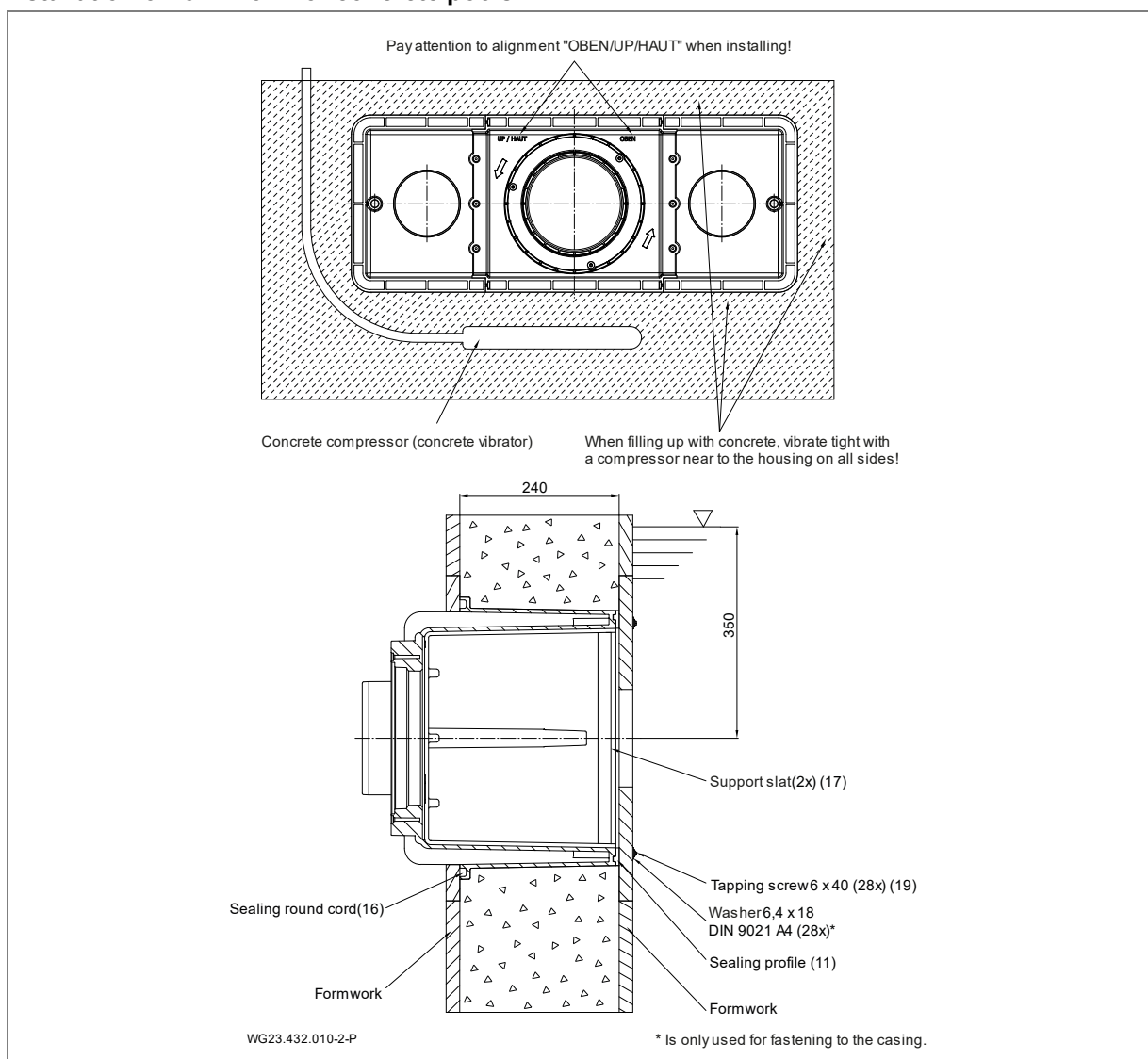


Fig. 6

Installation of the housing in a concrete and tiled pool

NOTICE

It is recommended to lay a surrounding ring of epoxy resin/quartz sand at the pool-side outside wall of the housing (1) as a seal to the concrete wall. See "Fig. 7" on page 14.

➔ Mount a concrete-resistant inlay 30 x 30 mm on the casing on the housing prior to installation.

1. Installation depth: The centre of the installation housing (1) should be mounted 35 cm below the water level.
 2. Drill fastening holes into the casing according to the drilling template.
 3. Clamp support slats (17) between the two overlaps of the inside of the housing.
 4. Press in the sealing profile (11) without tension along the groove on the housing (1) by hand (fix with a drop of instant glue on the floor side).
 5. Place the sealing beading (16) in the groove.
 6. Align the installation housing (1) according to the label "OBEN/UP/ HAUT" and fix to the casing with the tapping screws (19).
- The rectangular cut-out in the casing is optional. This serves for inspection or correct seating or also later installation of the support slats.
- ➔ When concreting, make sure that the concrete is filled up from the bottom to the top and is vibrated tight and reinforced several times on all sides.
7. After the concrete has hardened, the inlay must be removed and a seal applied flush with the front side with an epoxy resin/quartz sand mixture.
 8. Screw the clamping ring (18) to the housing (1) with 28 self-tapping screws (19) with a torque of 6 Nm from the inside of the pool.

NOTICE

- ➔ Observe the hardening time for concrete!
- ➔ Sealing should be applied as a composite seal in accordance with the swimming pool standard DIN 18535.

Installation diagram for installation in a concrete pool with foil cladding (a)

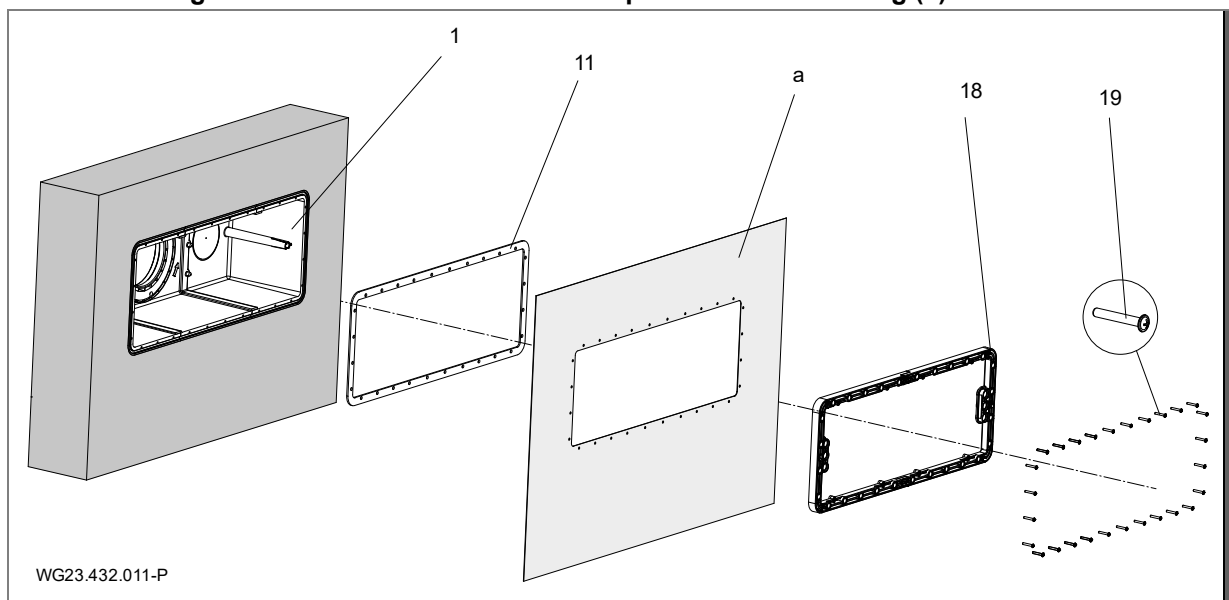


Fig. 7

NOTICE

for concrete pool with foil

- ➔ The foil (a) is pressed against the installation housing (1) with mounted foam rubber seal (11) by the panel (5).
- ➔ For pools with a foil, it is recommended to reduce the rectangular cut-out all round to increase the distance from the holes.
- ➔ The overhanging foil can be stuck to the inside of the housing.

Installation diagram for installation in a tiled concrete pool

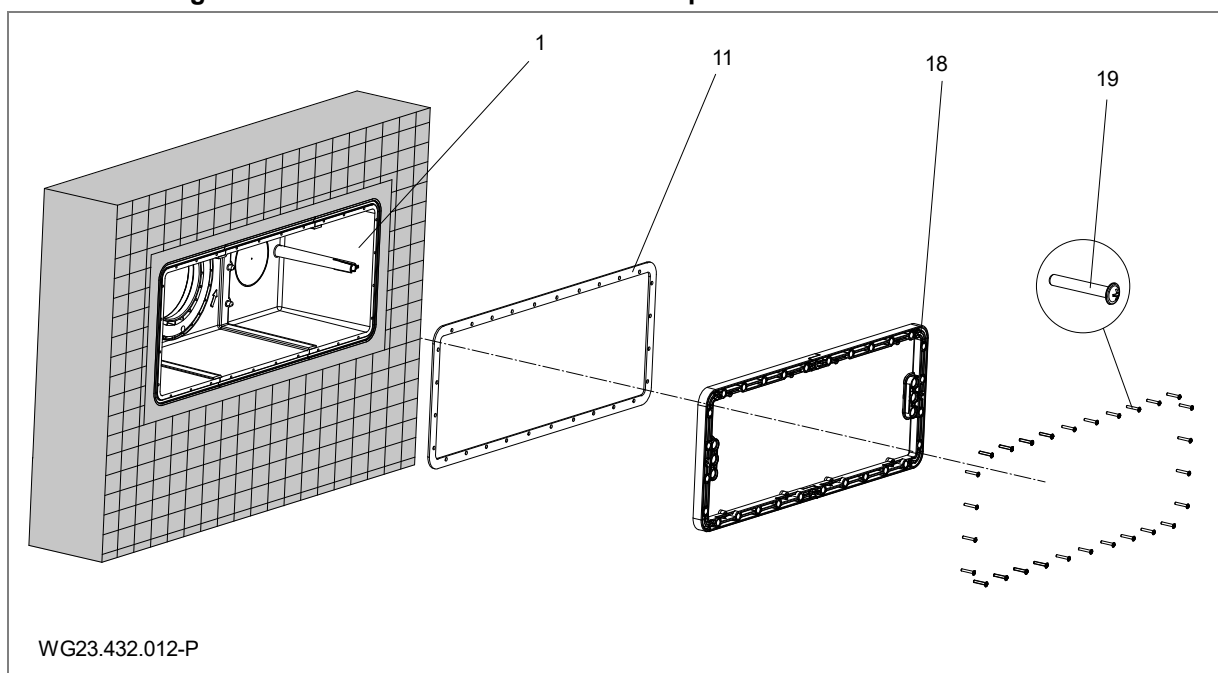


Fig. 8

NOTICE

Note for tiled concrete pool

- ➔ After the concrete has hardened, tiles can be mounted around the panel at a distance of approx. 1 cm.
- ➔ Sealing must be applied as a composite seal in accordance with the swimming pool standard DIN 18535.

5.2.2 Installation note stainless steel/foil pool

Foil pool

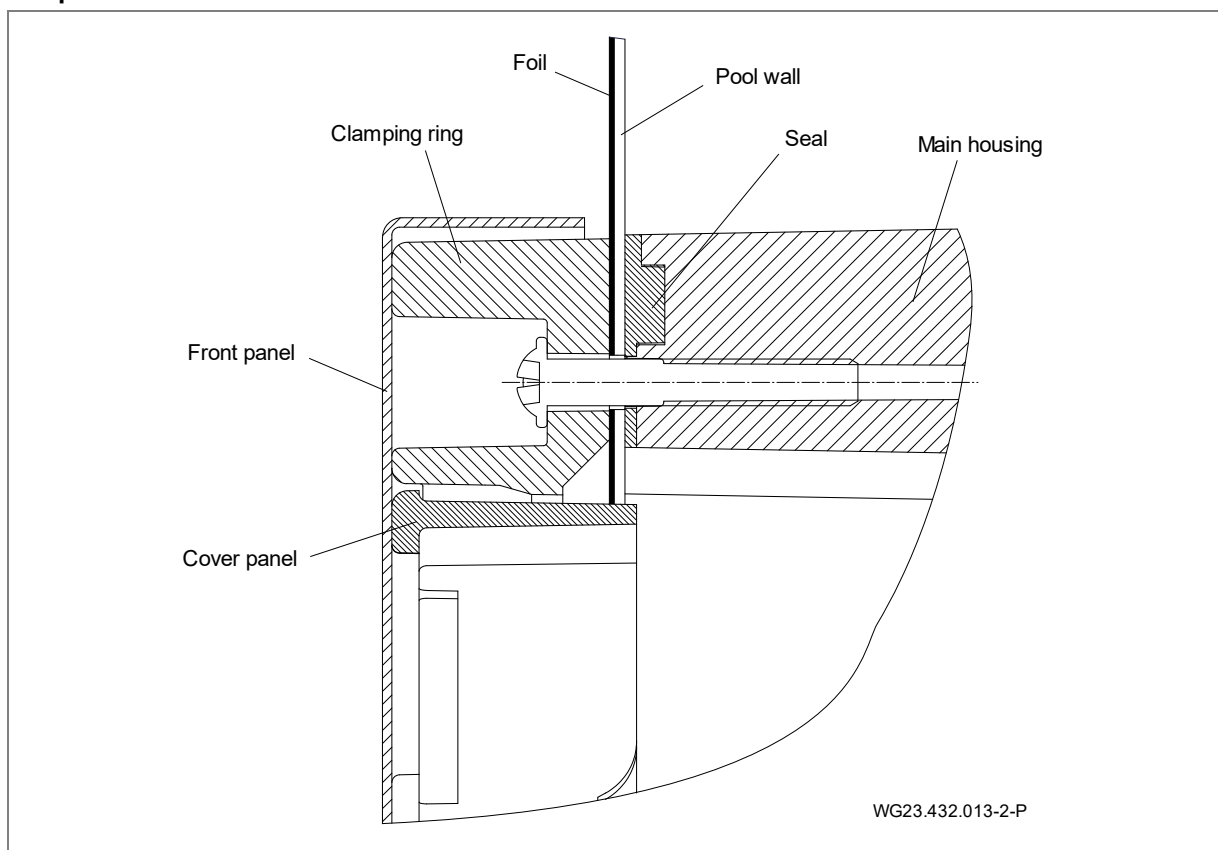


Fig. 9

Stainless steel/plastic pool

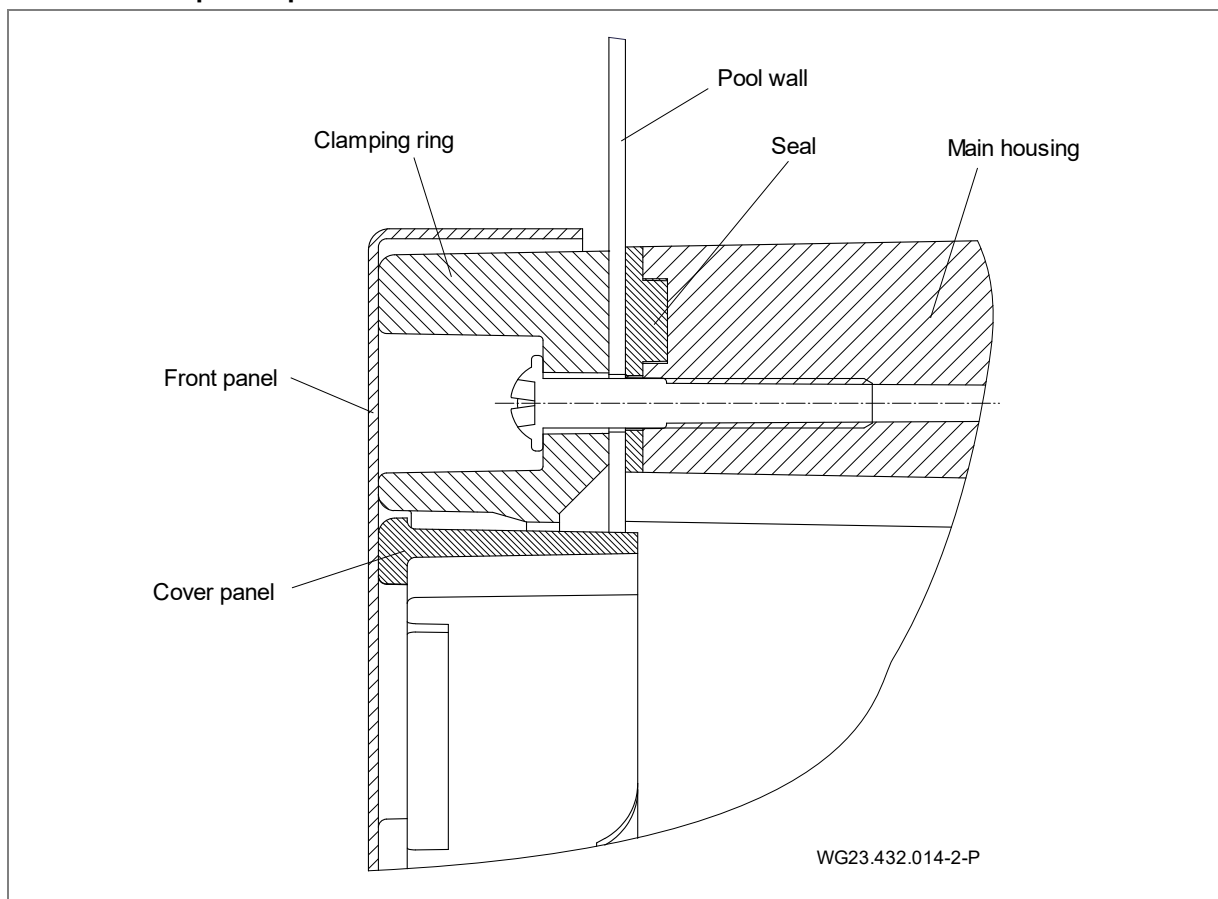


Fig. 10

Pool cut-out for stainless steel/foil pools

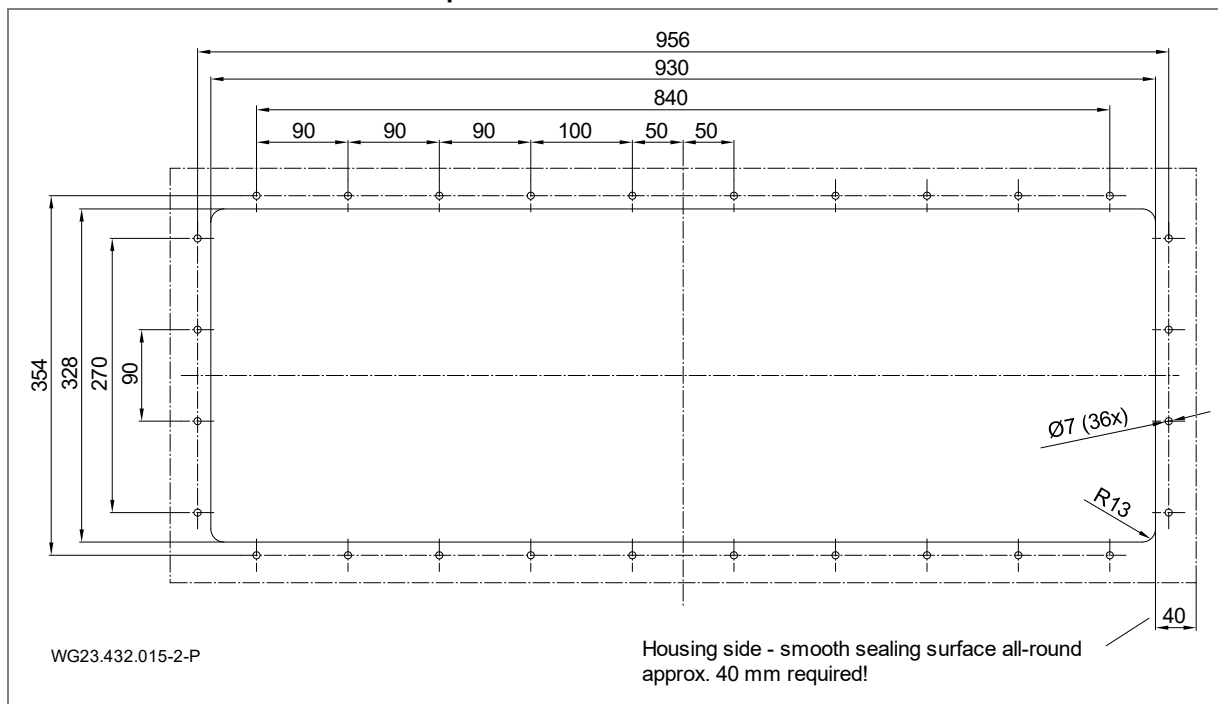


Fig. 11

Installation of the housing in a stainless steel or plastic pool (b)

1. Installation depth: The centre of the installation housing (1) should be mounted 35 cm below the water level.
2. Drill fastening holes and make cut-out in the pool wall according to the drilling template.

NOTICE

For pools with a foil, it is recommended to reduce the rectangular cut-out all round to increase the distance from the holes. The overhanging foil can be stuck to the inside of the housing.

3. Clamp support slats (17) between the two overlaps of the inside of the housing.
4. Press in the foam rubber seal (11) without tension along the groove on the housing (1) by hand. Fix with a drop of instant glue on the floor side.
5. Align the installation housing (1) according to the label "OBEN/UP/ HAUT" to the drilled holes in the outer wall.
6. Screw the suction guard (5) to the housing (1) on the pool wall from the inside of the pool with 36 tapping screws (51) with a torque of 6 Nm.

Installation diagram for installation in a foil/steel or plastic pool

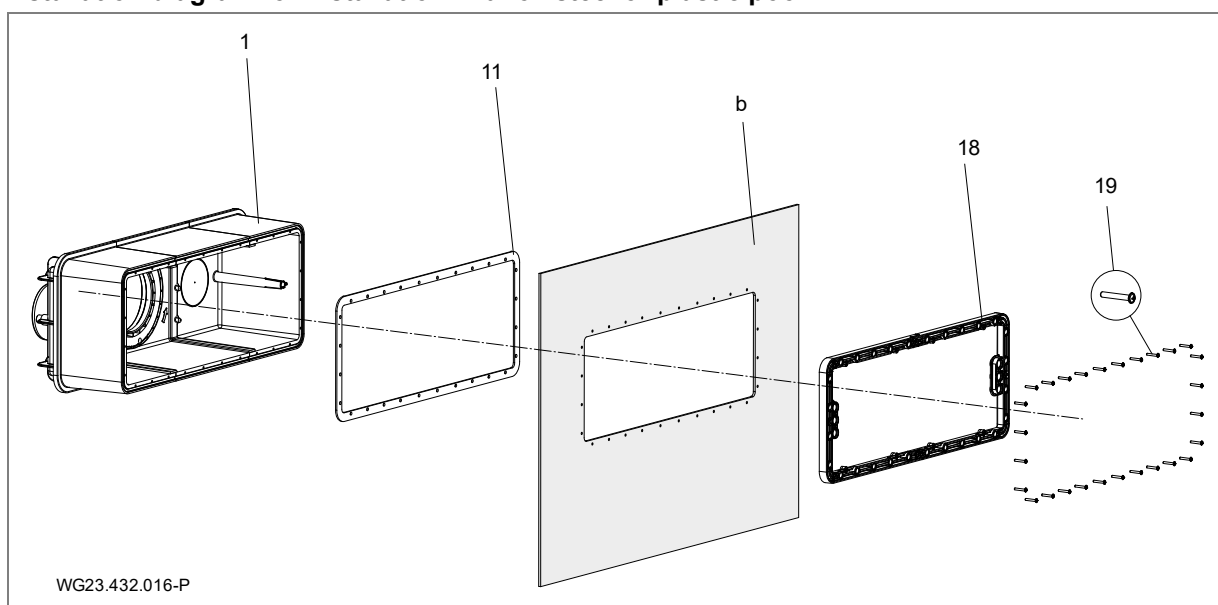


Fig. 12

5.2.3 Cable protective tube

1. Remove grease from the connection nozzle (d, see "Fig. 17" on page 20) on the plastic housing (1) and the connection socket of the cable protection tube (12) with PVC-U/ABS cleaner.
2. Coat both sides with PVC-U/ABS adhesive and then plug or stick together.

5.2.4 System shaft

The system must be installed in a shaft which borders the edge of the pool. The installation space must have perfect ventilation and sufficient ground drainage. There must be a fastening possibility for the cable protection hose (above the water level if possible). There must be a potential equalisation connection in the shaft. See point "Fig. 17" on page 20.

There must be sufficient room for installation and removal of the motor and drive unit.

5.2.5 Electrical control

The terminal box for the countercurrent system must be accommodated in a dry room. The supply cables and system must be connected according to the enclosed circuit diagram. The pertinent regulations (VDE) must be observed. The residual-current circuit breaker must be at least a type "A". Start operation only with the terminal box closed!

Use the cables included. Details of the cables are shown in a separate overview diagram in chapter 5.4.

5.3 Final assembly (Qualified specialist)

⚠ WARNING

Risk of injury from sucking in/suction effect when the panel parts are not installed!

➔ All panel parts **must** be mounted.

All warranty and damage compensation rights will be voided for damages due to noncompliance or incorrect installation.

5.3.1 Installing the piezo buttons

1. Feed the two cables through the cylindrical guide of the clamping ring (18) and the installation housing (1).
2. Press in the piezo buttons (64) with two mounted O-rings (65) each up to the stop. Where necessary, lubricate the O-ring to facilitate fitting.
3. Feed the cables through the 3x sealing insert and seal the free opening with a sealing plug.
4. Tighten the hexagon nut of the cable gland.

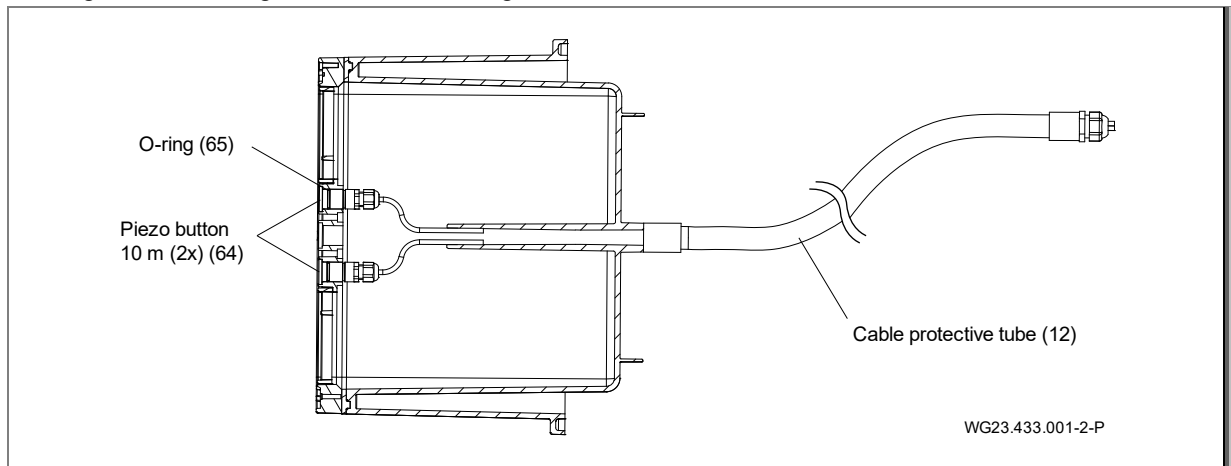


Fig. 13

5.3.2 Installing the nozzle unit

1. Insert the nozzle unit (4) with its 3 fastening domes into the cylindrical depression of the housing centring/flange centring.
2. Tighten the three tapping screws (6x40 (46)) with a torque of 6 Nm.

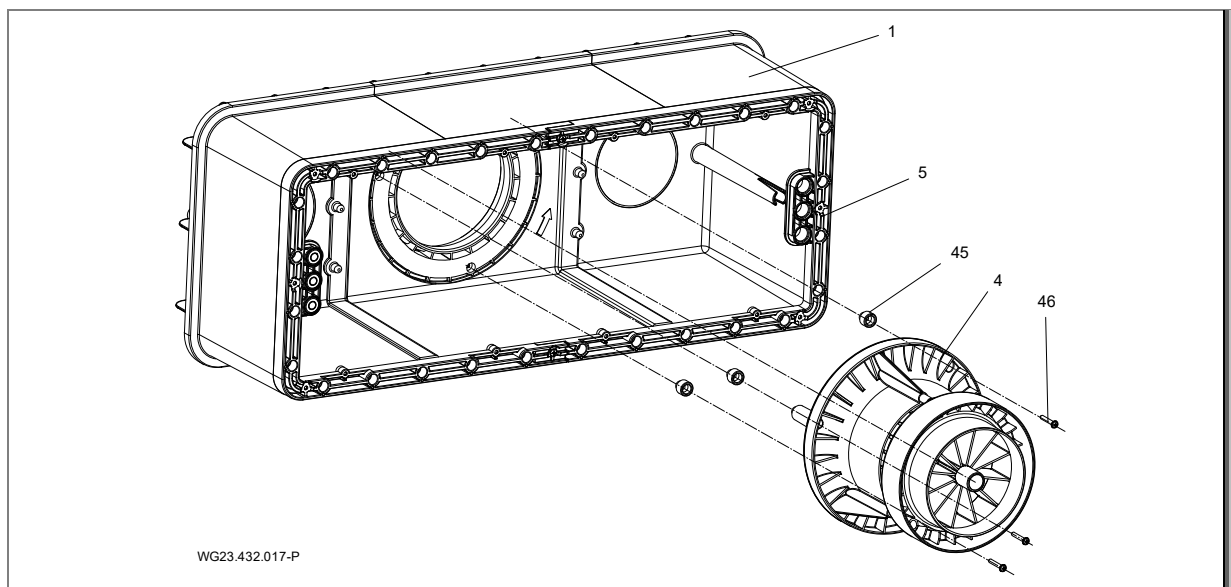


Fig. 14

NOTICE

Appropriate adapters (45) must be installed between the housing and the nozzle unit (4) for a pool wall thickness from 3.5 mm up to max. 27 mm.

The adapter height must be chosen so that the round panel (52) has no gap bigger than 8 mm from the maximally swivelled ball nozzle (42) in the installed state.

The following order kits must be used above a wall thickness of 7 mm:

Wall thickness (mm)	Adapter type	Screw length (mm)	Order kit
0 to 3.5	-	40	-
above 3.5 to 7	Washer 3.5	40	-
above 7 to 11.5	Washer 7	50	1
above 11.5 to 14	C	50	1
above 14 to 17.5	D	50	1
above 17.5 to 21	E	60	2
above 21 to 24	F	60	2
above 24 to 27	G	60	2

5.3.3 Suction grating assembly

Place the suction grating into the recess on the clamping ring and fasten it securely with four self-tapping screws (6 x 22 (51)) each with a torque of 6 Nm.

5.3.4 Fitting the cover panel

1. Clip the cover panel (52) labelled "Top" into the suction grating (5).

5.3.5 Installing the plastic panel

1. Remove two fastening screws (6 x 22) from the clamping ring (18).
2. Align the plastic panel (55) on the clamping ring (18).
3. Tighten the 11 self-tapping screws 6 x 22 (56) with a torque of 6 Nm.

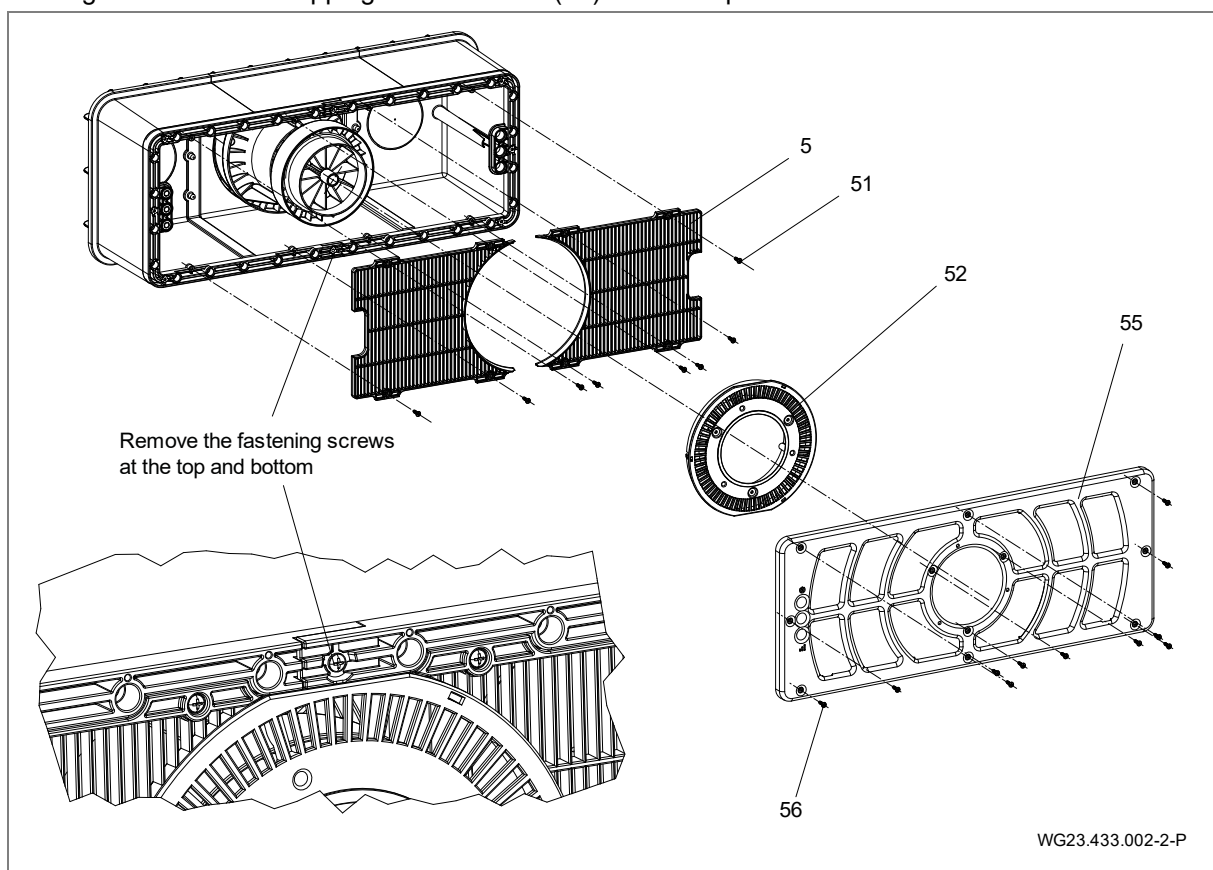


Fig. 15

5.3.6 Installing the motor unit

1. Pull the O-ring (36) onto the motor unit (3).
2. Insert the motor unit (3) centrally with the orientation pin in 6 o'clock position on the housing centring/flange centring.
3. Tighten 10 hexagon socket head tapping screws (7x48 (37)) with a torque of 8 Nm.

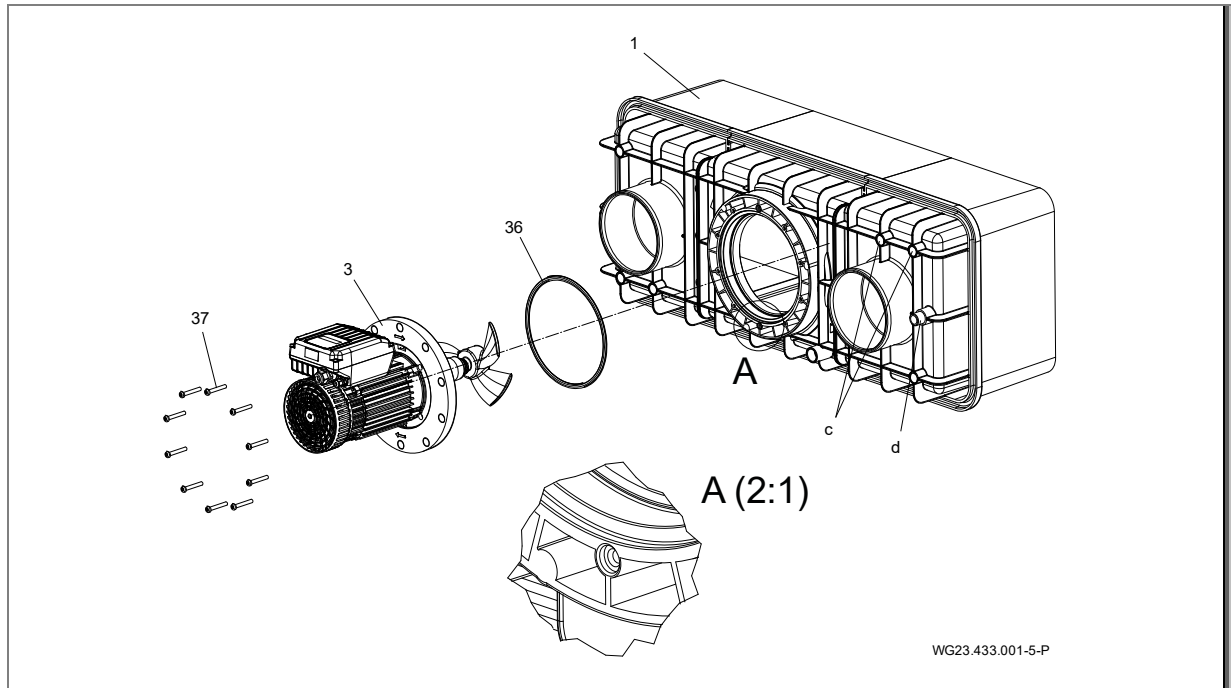


Fig. 16

5.3.7 Possibilities for using the connection nozzle (rear wall)

The connection nozzles (c) can be used for:

- active overwintering
- circulation, avoidance of accumulation of water in the installation housing
- emptying

5.3.8 Installation example

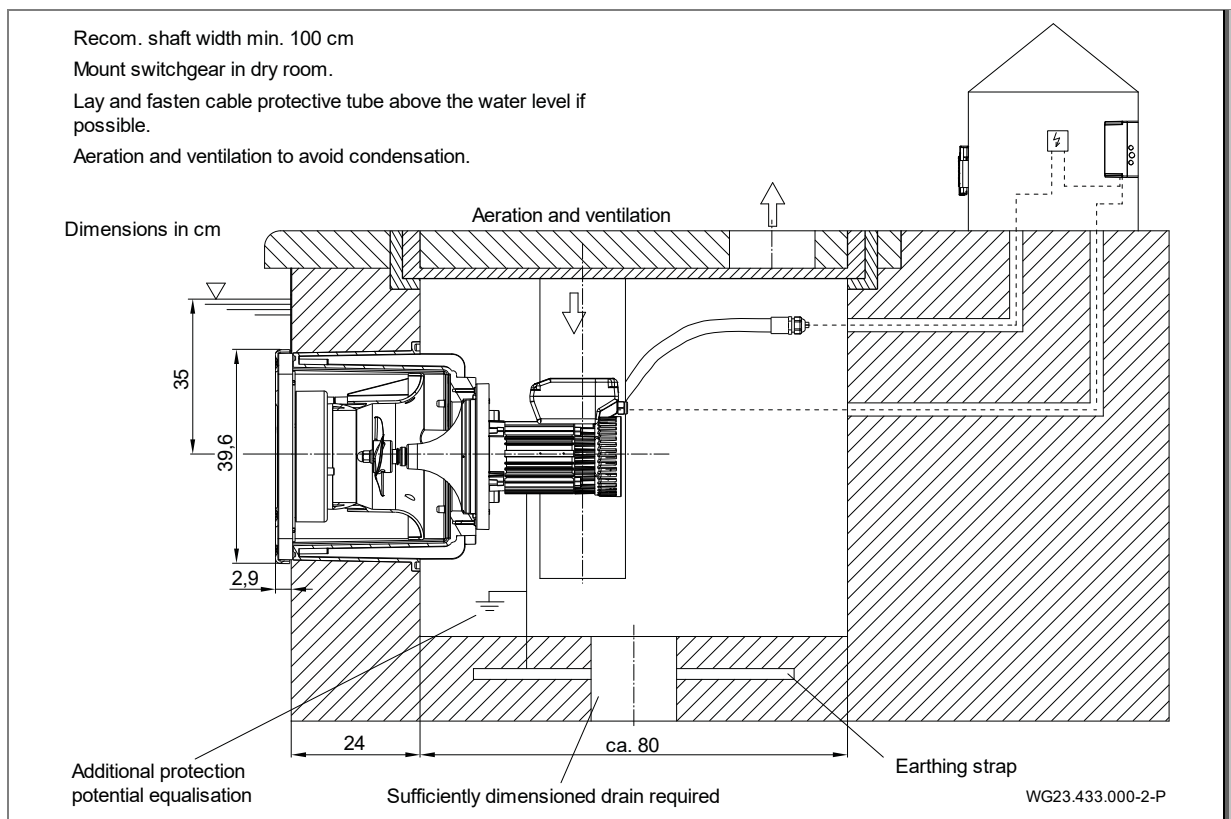


Fig. 17

5.4 Electrical connection (Qualified specialist)

WARNING

Risk of electric shock due to incorrect connections!

- ➔ Electrical connections must always be carried out by authorised specialists.
- ➔ Observe VDE and utility company regulations.
- ➔ Install system for swimming pools and their protection areas in accordance with DIN VDE 0100-702.

WARNING

Risk of electric shock due to voltage on the housing!

- ➔ An overload switch which is set correctly must be installed for pumps with three-phase motors without motor protection. In doing so, observe the values on the motor name plate.
- ➔ Install a disconnecting device with at least a 3 mm contact gap per pole to interrupt the power supply.
- ➔ Protect the circuit with a fault current circuit breaker type A, rated error current $I_{FN} \leq 30$ mA.
- ➔ Only use suitable pipe types according to regional regulations.
- ➔ Adjust minimum diameter of the electrical pipes to accommodate the motor output and pipe length.
- ➔ Do not bend or squash the pipes.
- ➔ If hazardous situations can occur, provide an emergency off switch according to DIN EN 809. The builder/operator must make a decision according to this standard.
- ➔ The included cables are not approved for laying in the ground. The conduit FFKuS-EM-F 25 or, for easier pull-through possibility, FFKuS-EM-F 32 is recommended. These should also be used for casting in concrete.

5.4.1 Electrical connection of the countercurrent system

- ➔ The circuit is partially wired ready for connection. The connections that are still missing must be made by the customer.

On-site connection:

- Fault current circuit breaker $I_{FN} \leq 30$ mA, type A
- Lines must be protected and laid in accordance with the pertinent standards and local conditions (line length, ambient temperature, type of laying, etc.). These are DIN VDE 0100 Part 400 and DIN VDE 0100 Part 500 i.a. The rated flow of the pump must also be observed.
- We recommend the use of an automatic circuit breaker with a tripping characteristic for higher starting currents (motors, pumps).

NOTICE

Cables should be arranged so that electromagnetic interference is minimised and requirements for separation from energised wiring and the control line are observed.

- Shot-circuit switching capability $I_{cw} \leq 6$ kA
- Emergency stop switch, all-pole-switching, with 0 and 1 labelling
- Cable power supply distributor (house connection) to the terminal box: H07RN-F, 3G 2.5 (the cross-section depends on the type of laying and line length)
- ➔ An additional protection potential equalisation, connected to the earth strap, must be provided on the motor for potential equalisation.

See the wiring diagrams for additional information. The parts named above are not part of the scope of supply and must be provided by the customer when installing the system.

5.4.2 Terminal box wall mounting

The terminal box should only be mounted on the wall using the holes provided for this purpose. Securing by other means is not permitted.

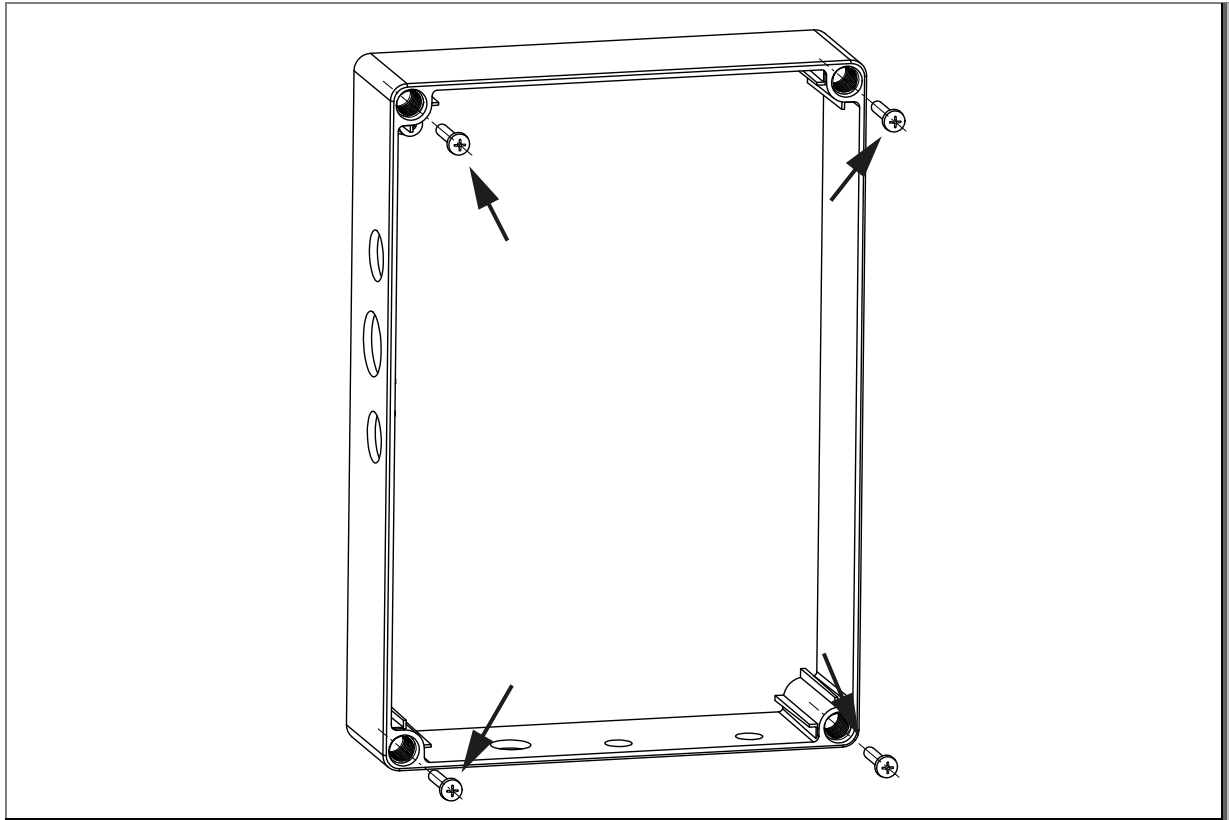


Fig. 18

5.4.3 Connection diagram

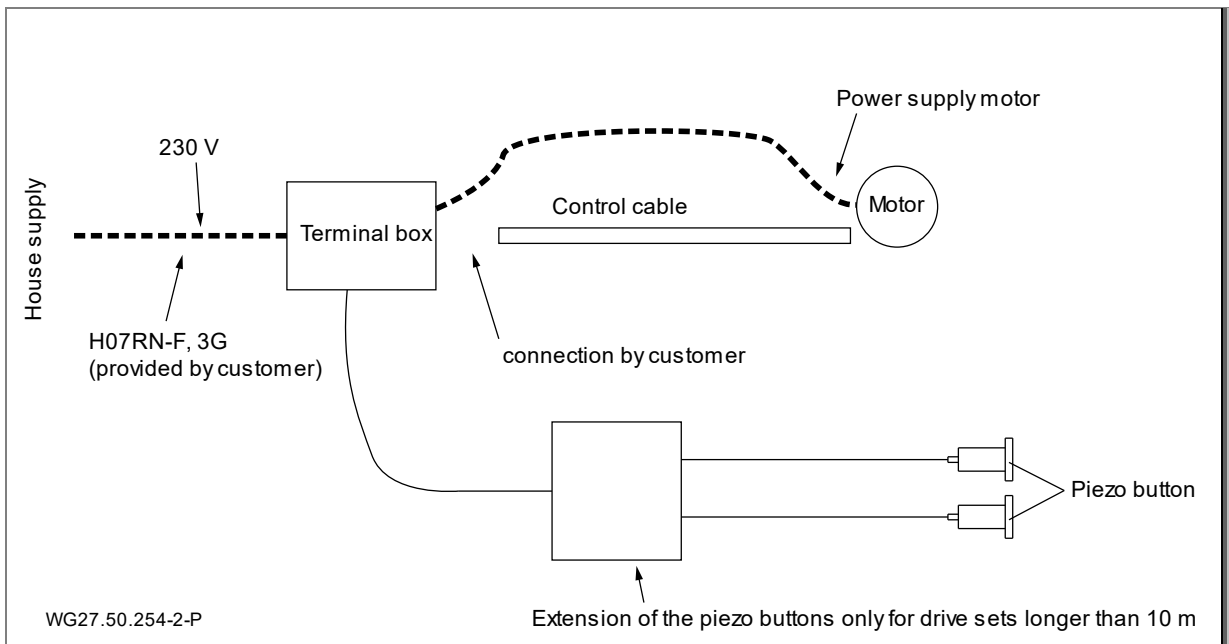


Fig. 19

5.4.4 Control cable wiring diagram

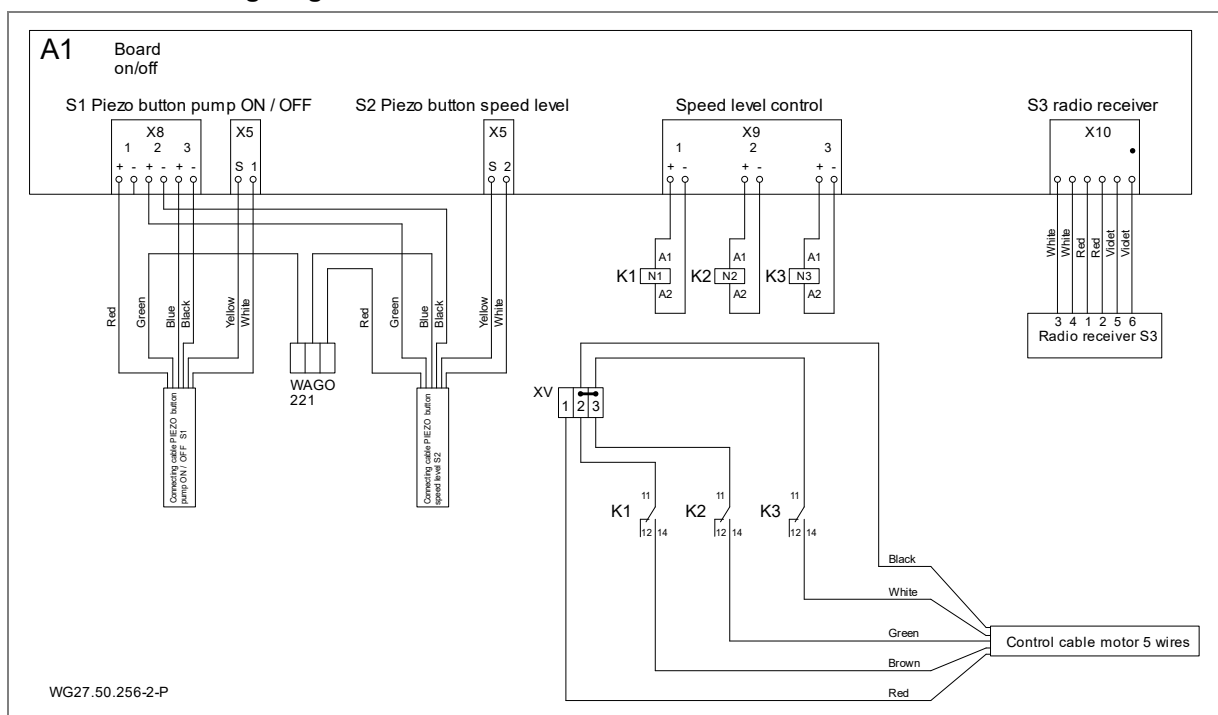


Fig. 20

5.4.5 Wiring diagram 1-phase 230V 50 Hz

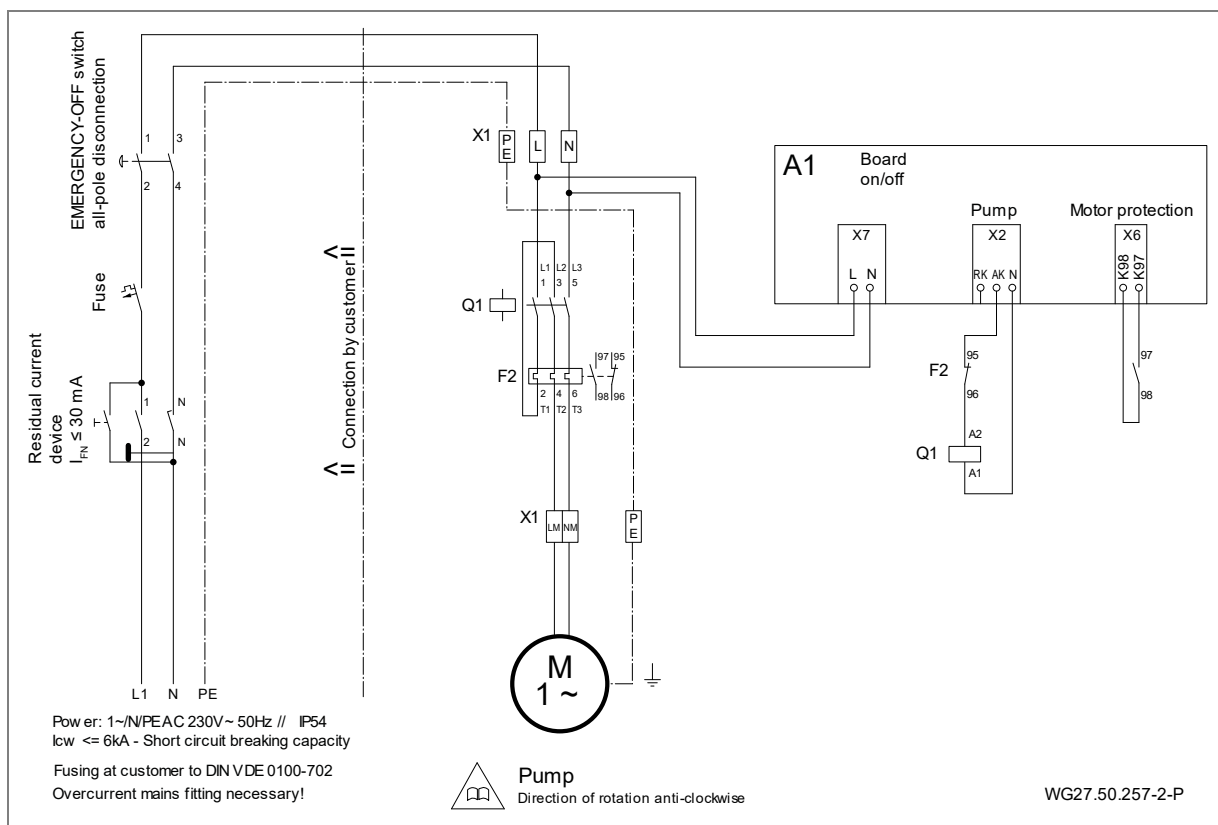


Fig. 21

5.4.6 Terminal box connections

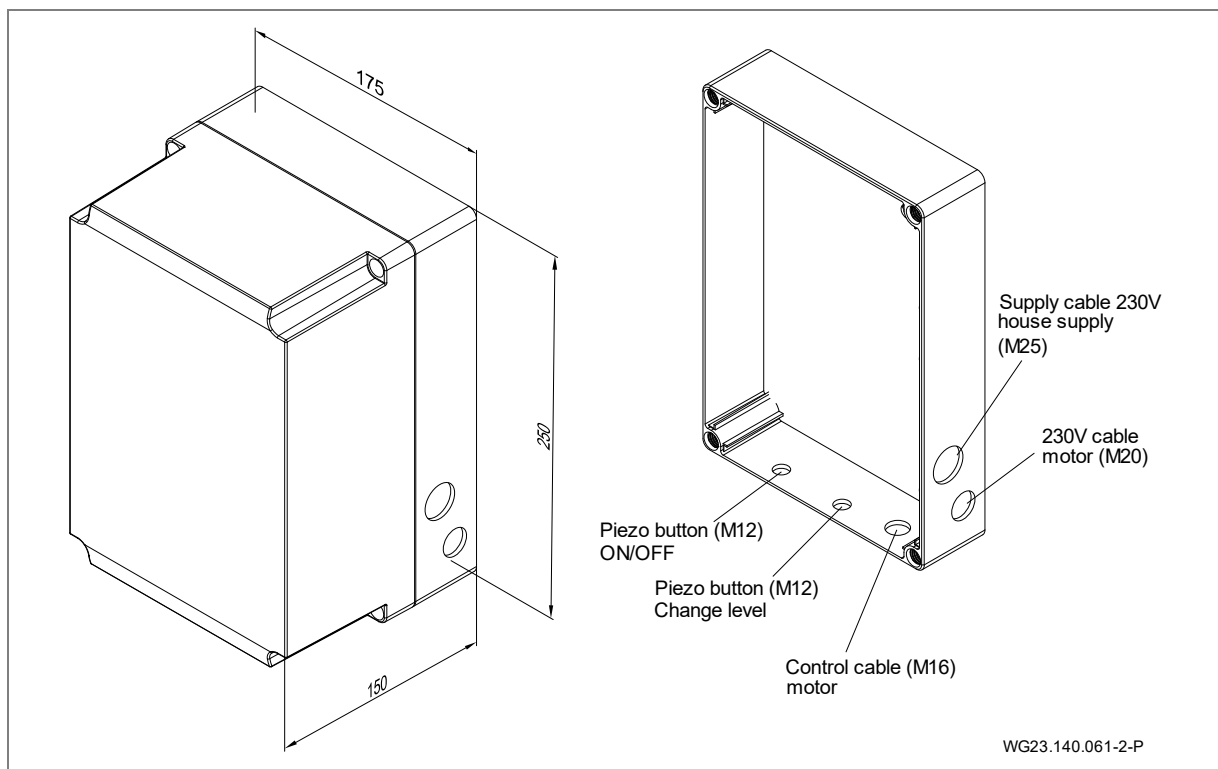


Fig. 22

5.4.7 Segment display, green and orange LED, fuse

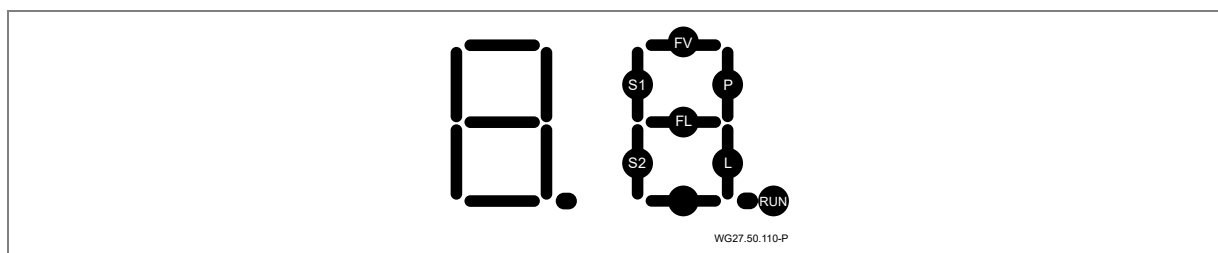


Fig. 23

- *RUN* flashes when the microprocessor is working.
- *S1* lights up when one of the pump's buttons is pressed.
- *P* lights up, the pump should now work and the pump's protection should be on.
- *P* flashes, the pump should be turned on in time mode and the pump's protection should be on.
- *S2* lights up when the LED light button is pressed.
- *L* lights up, the LED light should now be on.
- *L* flashes, the LED light should now be on in time mode.

Error message

- *FL* lights up if there is a short circuit in the cable to the LED floodlight.
- *FL* flashes if there is a disruption in the cable to the LED floodlight.

Note: The error message *FL* only occurs if the condition "LED light turned on" is met. Normally, without there being an error in the lighting circuit, this segment can light up briefly due to the inrush current in the LED lighting module!

- *FV* lights up if the voltage in the microprocessor overloads.

Green and orange LEDs on the circuit board

- *green LED* lights up: Power supply present in the circuit board [Volt].
 - *orange LED* lights up: Motor protection has triggered (over current).
- ➔ Check the motor protection settings.

Circuit board fuse

Replaceable fuse: 3.15 A T

The fuse only needs replacing if the green LED [V] is not lit up.

5.4.8 DIP switch settings

Speeds can be changed automatically using DIP switches 7+8. Another speed can be selected from time to time using the piezo button (speed level).

The system can always be deactivated using the keyboard, regardless of the training plans configured.

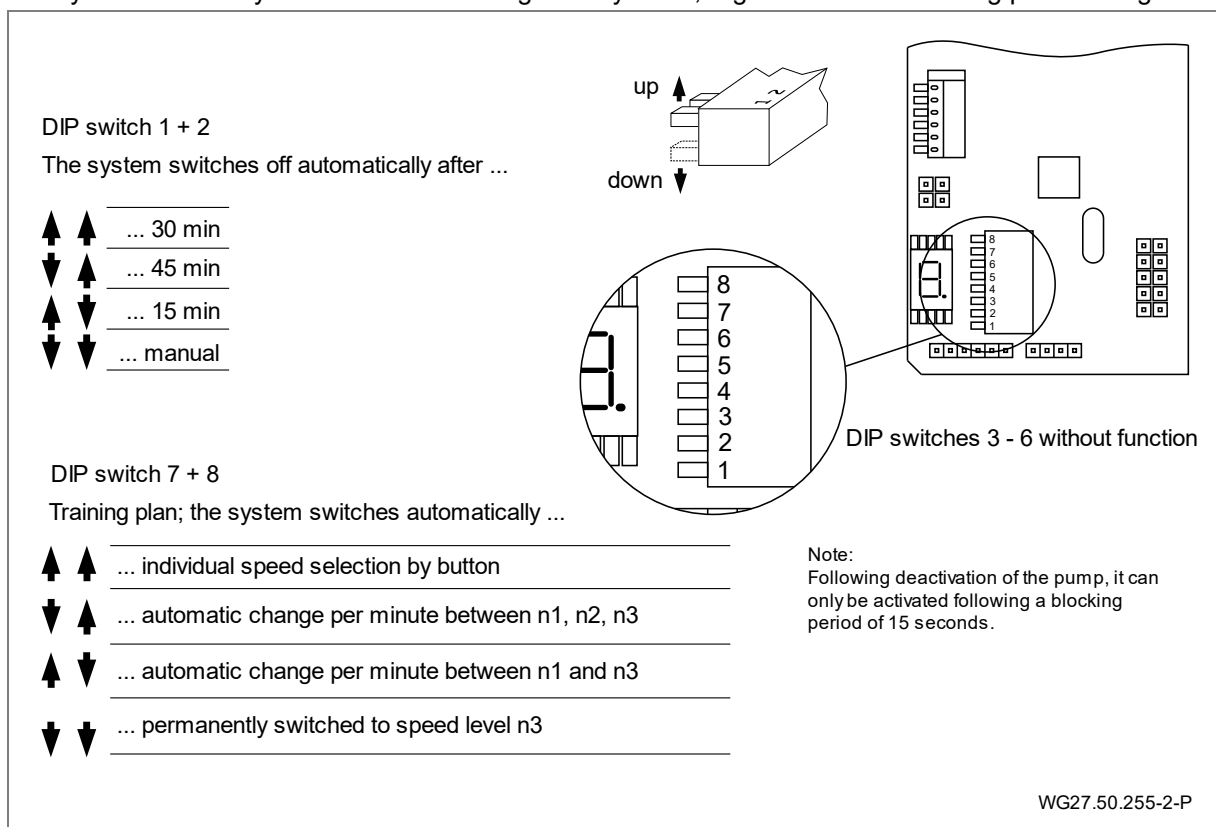


Fig. 24

5.5 Dismantling

The system is dismantled in reverse order of the previously described respective units.

6 Commissioning/Decommissioning

6.1 Commissioning

NOTICE

The pump/unit can be damaged if it runs dry!

- ➔ Ensure that the pump/unit is always full of water. This also applies to checking the rotation direction.

6.1.1 Checking how easily the motor unit rotates

After longer idle periods, the motor unit must be checked for how easily it rotates while it is switched off.

- ➔ Insert an Allen key (size 6) into the motor shaft end on the fan side and turn.

6.2 Operation

6.2.1 Switching on/off

The system can be switched on and off with the remote control unit (66) or by pressing the upper piezo button (64) installed in the panel.

Following deactivation of the pump (piezo button or remote control), the system is secured against reactivation for 15 seconds (blocking period). The on/off switch flashes red during this period. The on/off switch illuminates blue again when the blocking period is over and the pump can be reactivated again.

The button lights "blue" in the off state and "red" in the on state.

The blocking period is provided to prevent any checking errors when operating the speed-controlled pump.

The turbine starts up with a delay of approx. 5 seconds when switching on.

The system always starts at level 1. Delivery state: 2000 rpm.

Please note that, depending on the DIP switch position, an automatic change can be configured. See point 5.4.8 on page 25.

The remote control was already connected with the terminal box by the manufacturer.

6.2.2 Volume regulation

⚠ WARNING

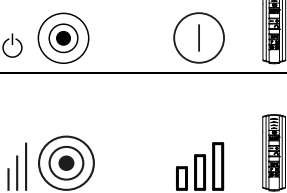
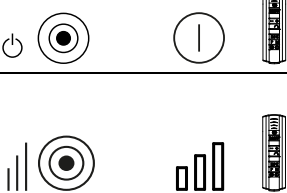
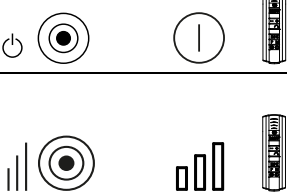
Risk of damage to health!

- ➔ Keep a safe distance from the current nozzle (ball nozzle (42)).

The volume can be regulated by pressing the upper and lower piezo buttons (64) installed in the panel (55) or by the remote control unit (66).

The system can be controlled over a speed range from 1000 rpm to 2600 rpm. Individual performance levels are indicated visually on the buttons.

Display on respective piezo button

	blue	System off
	red	System on
	Flashing red	Blocking period
	Flashes 1 x green	Level 1 = 2000 rpm
	Flashes 2 x green	Level 1 = 2300 rpm
	Flashes 3 x green	Level 1 = 2600 rpm
Switching behaviour: 1 → 2 → 3 → 2 → 1 (for the factory default DIP switch setting)		

6.2.3 Ball nozzle

The nozzle (42) alignment can be set using the pipe Ø25 included in the scope of supply. The direction of the ball nozzle is individually adjustable. The nozzle (42) must usually be set horizontally.

If it is stiff, the nozzle (42) can be loosened and adjusted by undoing the three Phillips tapping screws (46) with a suitable screwdriver. During this, insert the Phillips screwdriver into the respective guide hole on the plastic panel (3x) and push through to the screw.

6.2.4 Operation with remote control

Only the two buttons described are required for the BADU JET Turbo Light. Read the original operating instructions for the BADU JET Wireless Control II remote control for use of the other buttons.

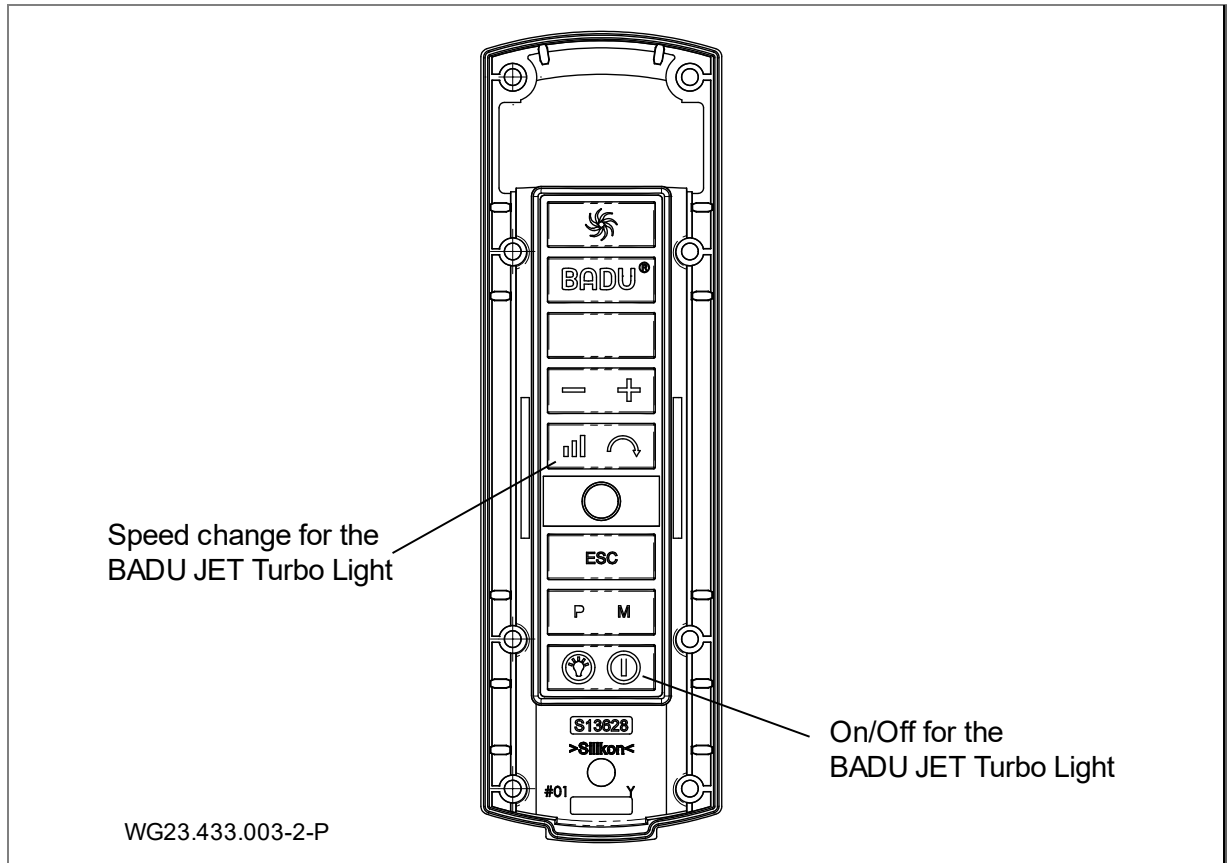


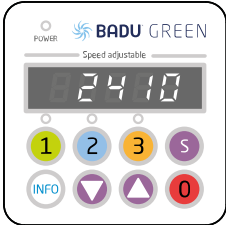
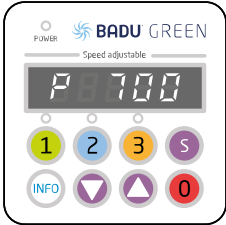
Fig. 25

6.2.5 Motor control

	User interface: (1) LED display: displays the current speed/performance of the motor. (2) 1 2 3: selection of the preset speeds/performance level. (3) INFO: to display the current consumption and select the menu points in the setup. (4) S: No function/blocked (5) ↑ ↓: to change the speed/performance/parameters (6) 0: to stop the motor.
--	--

The software version "rX.X-" appears briefly on the display when the system is started.

	Operation: Press the button 1 2 or 3 to select the preset fixed speed/performance level. The motor is stopped by pressing the 0 button. The "Power" LED flashes and the display shows "oFF".
--	--

 WG27 50.008-P	Setting the speeds/performances: Press the button of the performance level that is to be changed (1 2 3) and then change the speed by using the   buttons. The set speed is stored directly and approached immediately when the performance level is selected again.
 WG27 50.014-P	The pump current power requirements are shown in watt (P XXX) in the display when the  button is pressed. The control unit's display switches off after three minutes without action.

6.3 Shutting down

1. Switch off the system and disconnect from the mains.
2. Lower the water level in the swimming pool to the lower edge of the panel.

6.3.1 Wintering over

For outdoor countercurrent systems which could be endangered by frost during the winter.

Active overwintering:

Formation of ice can be prevented by circulating the water by connecting a filter pump to the nozzle (c).

Passive overwintering:

1. Lower the water level at least to the lower edge of the panel.
2. Pull out the complete drive unit (including the motor) after loosening the 10 tapping screws (37) and store in a dry room.

7 Faults

NOTICE

It is normal for a few drops of water to escape from the mechanical seal from time to time. This is especially true during the break-in period.

Depending on the water quality and number of operating hours, the mechanical seal can begin to leak.

➔ If water leaks constantly, have the mechanical seal replaced by a qualified technician.

NOTICE

We recommend first informing the swimming pool contractor if there are irregularities.

7.1 Overview

Problem: The motor unit is deactivated by a winding protection contact or motor circuit breaker.

Possible cause	Solution
Overload.	➔ Check the motor unit. See point 7.1.1 on page 29.
Media temperature too high.	➔ Wait for the motor winding to cool down and the motor protection to turn back on. ➔ Reduce the media temperature.

Problem: The motor unit is firmly fitted.

Possible cause	Solution
Mechanical seal is stuck.	➔ Turn the motor shaft. See point 6.1.1 on page 26. ➔ Clean the motor unit.

Problem: Leakage on the motor unit.

Possible cause	Solution
Mechanical seal is worn or damaged.	➔ Have a professional replace the mechanical seal.

Problem: Loud motor noise.

Possible cause	Solution
Faulty ball bearings.	➔ Have a mechanic replace the ball bearings.

7.1.1 Check the pump after the overload switch has tripped

If the motor has been switched off by the built-in or external overload switch, carry out the following steps:

1. Disconnect the system from the power supply.
2. Turn the motor shaft on the fan side with an Allen key and check for ease of movement.

If the motor shaft is difficult to turn:

1. Remove the Allen key.
2. Notify Customer Services or your swimming pool builder and have the pump tested.

If the motor shaft is easy to turn:

1. Remove the Allen key.
2. Open the valves completely.
3. Reconnect to the power supply.

NOTICE

If the unit seizes and is repeatedly switched on, the motor can be damaged.

➔ Ensure that the pump/unit is only switched on once.

4. Wait until the built-in overload switch automatically switches the motor on after it has cooled down.
– or –
Reset the motor overload switch.
5. Have an electrician test the power supply, fuses and power consumption.
6. If the built-in or external overload switch switches the motor off again, notify Customer Services.

Overview of possible operating and error messages

If a error occurs, the motor switches off permanently. Exception error: "Undervoltage". The motor automatically switches back on as soon as the voltage is over 209 V for at least 6 seconds.

If an defect occurs, the system must be disconnected from the power supply.

The errors are indicated on the pump motor display.

Error No.	Description
Err 1	Undervoltage intermediate circuit
Err 2	Overvoltage intermediate circuit
Err 3	Supply voltage too low/too high
Err 4	Temperature at the power electronics too high
Err 5	Overtemperature motor
Err 7	Overcurrent electronics
Err 10	Current measurement faulty
Err 20	Abortion during start-up, overload
Err 64	Short-circuit electronics
Err 97	Simultaneous occurrence of several errors or faults
Err 98	Connection to the control unit faulty

8 Maintenance

NOTICE

Disconnect the system from the mains before carrying out maintenance work.

When?	What?
Regularly	➔ Clear foreign bodies from suction openings and propeller. ➔ Turn the propeller wheel (after longer standstill) ➔ Re-tighten screw connections.

➔ After completing all maintenance work, perform all necessary measures for start-up. See point 6.1 on page 26.

8.1 Warranty

The warranty includes the devices delivered and all components. However natural wear and tear (DIN 3151/DIN-EN 13306) on all turning and dynamically loaded components, including electronic components under tension, is not covered under the warranty.

Failure to comply with the safety instructions may void the warranty.

8.1.1 Safety-relevant spare parts

- Suction guards
- Nozzle housing

8.2 Service addresses

Service addresses can be found on our website
www.speck-pumps.com.

9 Disposal

- ➔ Collect harmful media and dispose of it according to the regulations.
- ➔ At the end of its service life, the pump/unit or individual components must be disposed of correctly. Disposal in the household waste is not permitted!
- ➔ Dispose of the packaging materials in the household waste in accordance with the local regulations.

10 Technical Data

Volume flow rate [m³/h]	90 - 200
Power consumption P ₁ [kW] 1~	1,10
Number of nozzles Ø 172 mm	1
Outflow speed [m/s]	1,10 – 2,40
Nozzle swivellable to all sides [degrees]	± 5
Net weight [kg]	28.00

10.1 Dimensional drawing

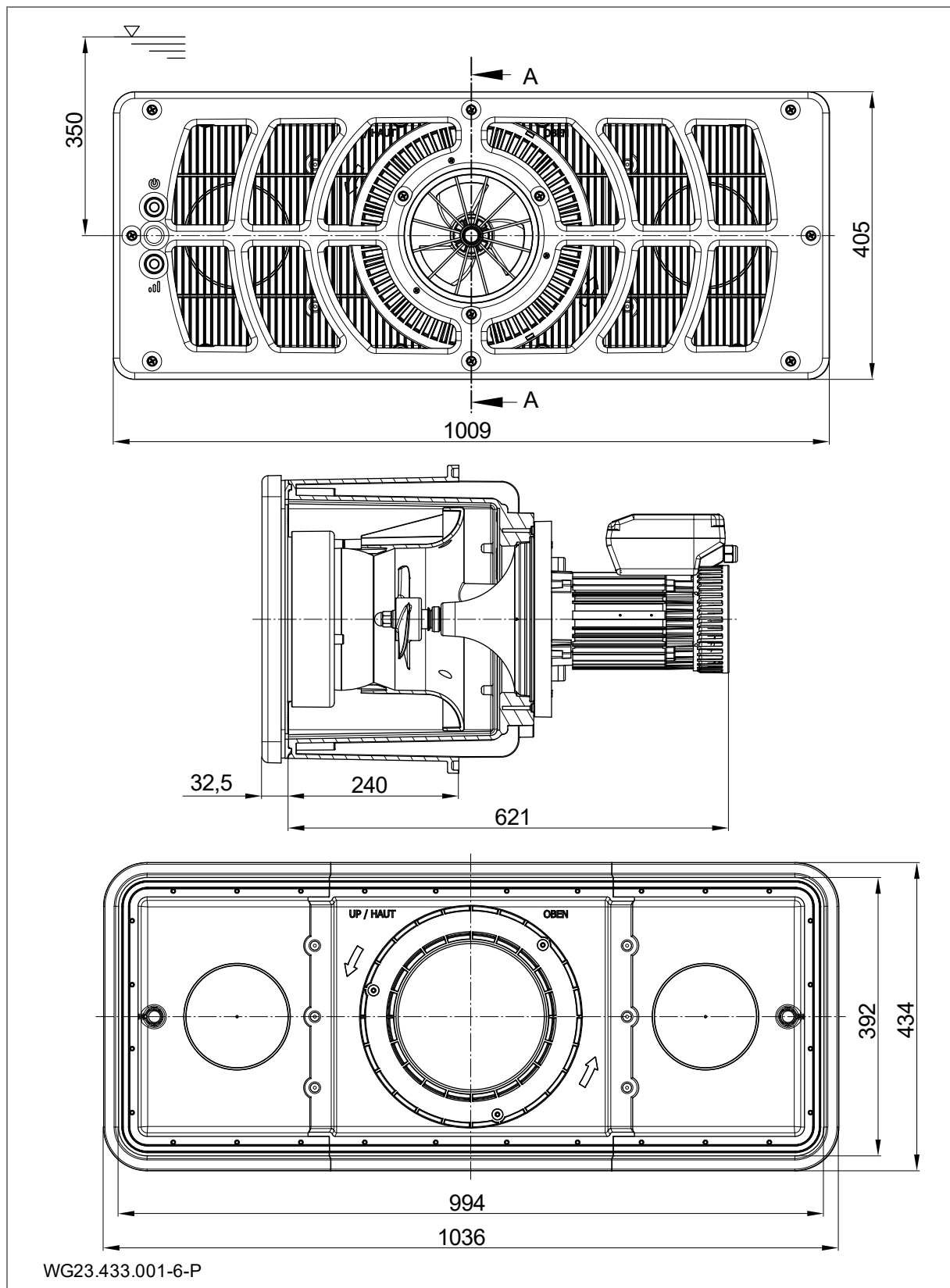
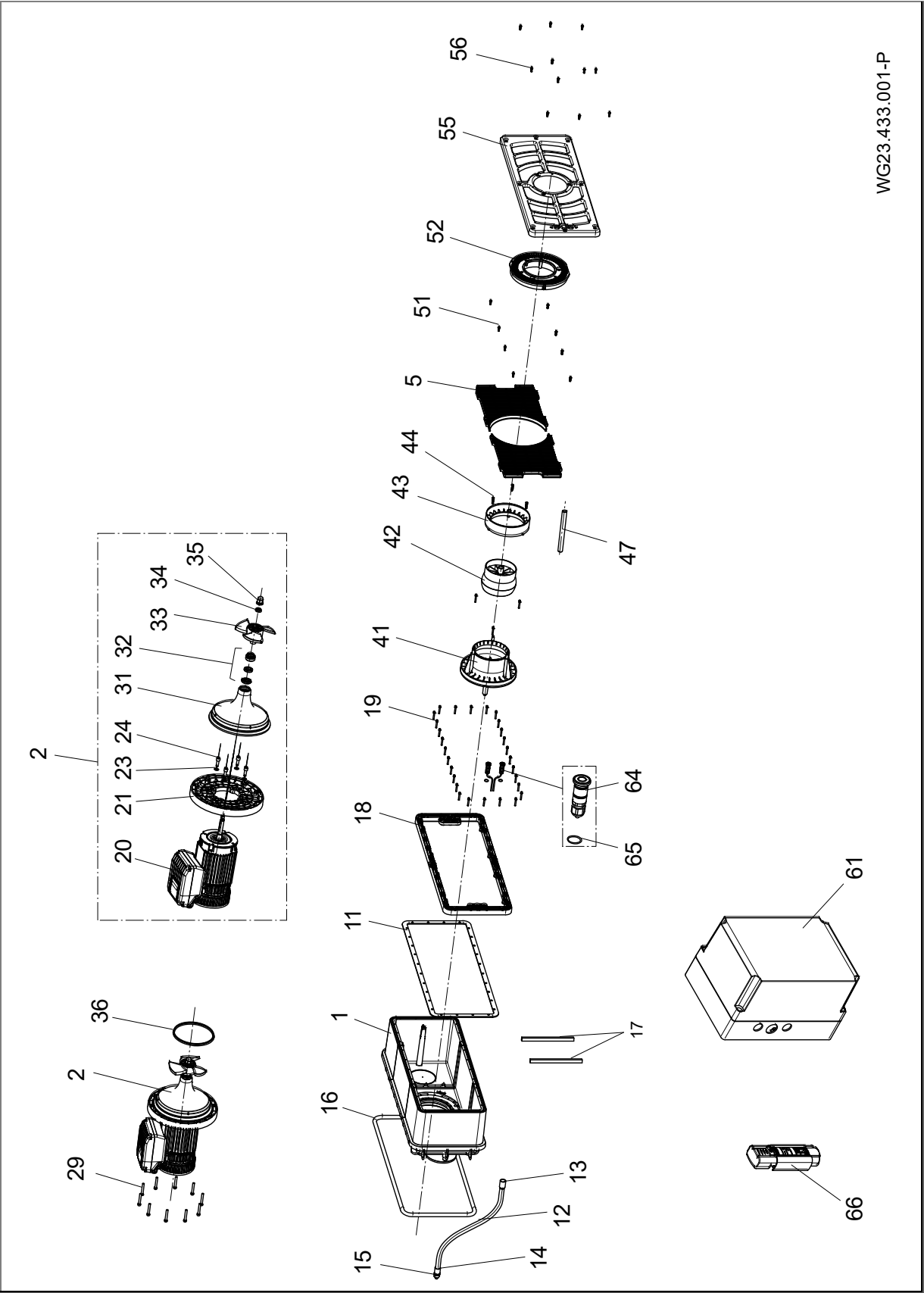


Fig. 26

10.2 Exploded drawing



WG23.433.001-P

Fig. 27

11 Index

C

Commissioning 26

D

Decommissioning 26

Defects

Overview 29

Disposal 32

E

Electrical connection 21

F

Faults 7, 29

Frost 8

I

Installation 11, 12

Intended use 6

M

Maintenance 31

Mechanical seal 29

O

Operation 26

Q

Qualified specialist 11, 12, 21

S

Spare parts 6

Storage 10

T

Transport 10

W

Warranty 31

Wiring diagram 23